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FOREWORD

The International Bulletin on Atomic and Molecular Data for Fusion is prepared by the Atomic and Molecular Data Unit, International Atomic Energy Agency, and published and distributed free of charge by the IAEA to assist in the development of fusion research and technology.

The references and indexations included in the Bulletin are provided by atomic data centres at the following institutions:

Oak Ridge National Laboratory, Oak Ridge, USA National Institute for Standards and Technology, Gaithersburg, USA Kurchatov Institute, Moscow, Russian Federation National Institute for Fusion Science, Toki-shi, Japan Universite de Paris XI, (Paris-Sud), Orsay, France Nuclear Data Section, IAEA, Vienna, Austria

Information in this Bulletin is presented in four parts. In Part 1, the Atomic and Molecular Data Information System (AMDIS) of the International Atomic Energy Agency is presented. In Part 2, the indexed papers are listed separately for structure and spectra, atomic and molecular collisions, and surface interactions. The structure and spectra indexation lines are grouped by process. The first column gives the process, the second one the reactants and then the character of the data contained (Th for theoretical, Ex for experimental, and E/T for both experimental and theoretical). The number in the last column is the reference number in Part 3 of the Bulletin. The atomic and molecular indexation lines are grouped by one collision partner (photon, electron or heavy particle). The first column gives the reactants, the second column gives the process, the third column gives the energy range with the appropriate units, and the last two columns are the same as in the structure and spectra indexation lines. The particle-surface interactions indexation lines are grouped by process. The first column gives the reactants, the second the energy range with the appropriate units, and the last two columns are the same as in the previous cases. Part 3 contains all the bibliographic data for both the indexed and non-indexed references. Those references which are indexed in Part 1 are identified by the repeated indexation lines. The Author Index (part 4) refers to the bibliographic references contained in part 3.

Contributions are solicited on data generation work in progress and on new data in the course of publication. Contributions should include an explanation of their applicability to fusion research and should be sent to:

Atomic and Molecular Data Unit Nuclear Data Section International Atomic Energy Agency Wagramer Strasse 5 P.O. Box 100 A-1400 Vienna, Austria

e-mail: D.Humbert@iaea.org WWW access: http://www-amdis.iaea.org/ In addition to the regular publication of the Bulletin, the **IAEA** Atomic and Molecular Data Unit also performs selective retrospective retrievals from the entire (1950-present) bibliographic data base on request. Retrievals are free of charge and can be made on all of the information indexed in the Bulletin.

Vienna, June 2006

The Editors

News on the Atomic and Molecular Data Unit

As mentioned in the previous edition, the Atomic and Molecular Data Unit normally operates three to four Co-ordinated Reasearch Projects (CRP) at the same time. A CRP is a three to five-year joint project involving approximately 12 laboratories, research teams or institutions, performing coordinated research to achieve a certain well defined goal (e.g. establishment of a particular database, data generation, compilation and assessment for specific types of A+M collision processes, or classes of such processes, etc.). Two CRPs ended in 2005. Results from these CRPs, "Data for molecular processes in edge plasmas" and "Atomic and molecular data for fusion diagnostics", have been published in the IAEA APID Series: volumes 13 and 14, which can be purchased on request. The new generated data have been introduced into ALADDIN, the A+M Data Unit's numerical database (http://www-amdis.iaea.org/ALADDIN/). Two new CRPs on "Atomic and molecular data for plasma modelling" and "Atomic data for heavy element impurities" held their first Research Coodinated Meetings in September and November 2005 respectively. A new CRP on "Data for surface composition dynamics relevant to erosion processes" will hold its first RCM in November 2006. More information on the CRPs are available in previous editions of the Bulletin and on the A+M Data Unit web site.

http://www-amdis.iaea.org/CRP/

The ability to carry out calculations of A+M data through Internet interfaces is of great interest to estimate parameters such as cross sections when no reliable data have been measured or calculated. The A+M Data Unit has encouraged this web calculation approach and already provides such web tools on the Unit home page to calculate various cross sections and rate coefficients. Recently, a new code written by Fainstein for the calculation of differential and total cross sections for single ionization of hydrogenic and helium targets by fast ions has been implemented. Also, with the collaboration of Dubois, the interface to calculate excitation cross sections of bare nuclei with hydrogenic atoms has been extended to include ionization processes. New functionalities have been introduced and the web interface improved with proposed default values for a number of parameters.

http://www-amdis.iaea.org/HEAVY/

The numerical database ALADDIN 3.0 has an entirely redesigned interface. Searches are performed more efficiently by using any possible search criteria combinations along with a filtering function that allows the user to obtain insights into the contents of the database. When possible all requested data are displayed in the same units to permit easy comparison. A unit conversion tool is available and all results can be displayed in tabular and graphical mode. All data from ALADDIN have been reviewed to implement version 3.0. This work is complete for the "atomic and molecular data". The review of the "surface interactions data" is in progress.

http://www-amdis.iaea.org/ALADDIN/

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Chapter 1

The Atomic and Molecular Data Information System

AMDIS is the Atomic and Molecular Data Information System of the International Atomic Energy Agency, established and maintained by the Atomic and Molecular Data Unit, Nuclear Data Section.

AMDIS contains two main parts: AMBDAS, a bibliographic database for atomic and molecular data for fusion research; ALADDIN a numerical database of recommended and evaluated atomic, molecular and plasma-surface interaction data.

AMBDAS, Atomic and Molecular Bibliographic Data System, is an on-line bibliographic data retrieval system. It contains more than 40,000 bibliographic entries with atomic, molecular and plasma-surface interaction data of interest to fusion research, dating back to 1950. Entries may be retrieved by author, process, reactants, type of reference, year of publication and data source (the-oretical or experimental). The interface is a web-based application, easy to use with no required registration. AMBDAS data are regurlarly published in the International Bulletin on Atomic and Molecular Data for Fusion.

ALADDIN, **A** Labelled Atomic **D**ata **IN**terface, is a database system developed to provide a standard and flexible format and interface for the exchange and management of numerical atomic, molecular and plasma-material interaction data of interest to fusion research, originally designed by R. Hulse at the Princeton Plasma Physics Laboratory. This system has been adopted by the IAEA and the Atomic Data Centre Network, an international group of fourteen data centres from several countries, for the exchange of data since 1988.

AMDIS provides a web interface to the ALADDIN Database, accessible from the Unit homepage at http://www-amdis.iaea.org. Simple to use, the interface facilitates searches for recommended or evaluated atomic, molecular, plasma-surface interaction and material properties data. An AL-ADDIN entry consists of searchable labels that characterize the process, reactants; the source of the data, date, laboratory or data centre, and reference; comment lines and the numerical data. When possible all requested data are displayed in the same units to permit easy comparison. A unit conversion tool is available and all results can be displayed in tabular and graphical mode.

Chapter 2

INDEXATION

2.1 Structure and Spectra

Н	Trans. prob., Oscill. Strengths	E/T	114
He	Trans. prob., Oscill. Strengths	$\dot{\mathrm{E/T}}$	114
He	Trans. prob., Oscill. Strengths	E/T	116
$\mathbf{Be^{+}}$	Energy Levels, Wavelengths	E/T	29
\mathbf{Be}^{2+}	Energy Levels, Wavelengths	E/T	30
Be	Trans. prob., Oscill. Strengths	E/T	114
Be^+	Trans. prob., Oscill. Strengths	E/T	114
Be	Trans. prob., Oscill. Strengths	E/T	116
В	Energy Levels, Wavelengths	E/T	52
В	Trans. prob., Oscill. Strengths	E/T	114
С	Trans. prob., Oscill. Strengths	E/T	64
С	Trans. prob., Oscill. Strengths	E/T	96
C^{0+-4+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{N}^+	Trans. prob., Oscill. Strengths	E/T	82
N^{0+-5+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{O}^{2+}	Energy Levels, Wavelengths	E/T	8
O^{3+}	Energy Levels, Wavelengths	E/T	26
\mathbf{O}^+	Trans. prob., Oscill. Strengths	E/T	63
O^{3+}	Trans. prob., Oscill. Strengths	E/T	87
O^{0+-6+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{F}^{3+}	Energy Levels, Wavelengths	E/T	8
\mathbf{F}^{4+}	Energy Levels, Wavelengths	E/T	26
F	Trans. prob., Oscill. Strengths	E/T	114
Ne^{0+-7+}	Energy Levels, Wavelengths	E/T	19
\mathbf{Ne}^{5+}	Energy Levels, Wavelengths	E/T	26
\mathbf{Ne}^{2+}	Trans. prob., Oscill. Strengths	E/T	88
Ne	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Ne}^+	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$	114
${f Ne}^{4+}$	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Ne}^{6+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Ne}^{7+}	Trans. prob., Oscill. Strengths	E/T	114
Na^{0+-2+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Na}^{4+}	Trans. prob., Oscill. Strengths	E/T	114
Na^{5+-8+}	Trans. prob., Oscill. Strengths	E/T	114
Mg	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Mg}^+	Trans. prob., Oscill. Strengths	E/T	114
Mg^{3+}	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$	114
\mathbf{Mg}^{5+}	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$	114
Mg^{6+-10+}	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$	114
Mg	Trans. prob., Oscill. Strengths	E/T	116

\mathbf{Al}^{10+}	Energy Levels, Wavelengths
\mathbf{Al}^{12+}	Trans. prob., Oscill. Strengths
Al^{0+-2+}	Trans. prob., Oscill. Strengths
\mathbf{Al}^{9+}	Trans. prob., Oscill. Strengths
\mathbf{Al}^{10+}	Trans. prob., Oscill. Strengths
Si	Energy Levels, Wavelengths
${f Si}^{2+}$	Energy Levels, Wavelengths
Si^{12+}	Energy Levels, Wavelengths
${f Si}^{9+}$	Trans. prob., Oscill. Strengths
Si^{4+}	Trans. prob., Oscill. Strengths
Si	Trans. prob., Oscill. Strengths
$Si^{0+}-1^{1+}$	Trans. prob., Oscill. Strengths
\mathbf{P}^{11+}	Energy Levels Wavelengths
\mathbf{P}^{0+-2+}	Trans prob Oscill Strengths
$\mathbf{\tilde{S}}^{2+}$	Energy Levels Wavelengths
\mathbf{S}^{4+}	Energy Levels, Wavelengths
$\tilde{\mathbf{S}}^{9+}$	Energy Levels, Wavelengths
S S ⁰⁺ 7+	Trans prob Oscill Strengths
${f S}^{10+}$	Trans. prob. Oscill Strengths
S S ¹¹⁺ 13+	Trans. prob. Oscill Strengths
Cl ⁹⁺	Energy Levels Wavelengths
Cl ⁺	Trans prob Oscill Strongths
	Trans. prob. Oscill Strengths
$Cl^{0+}-2+$	Trans. prob. Oscill Strengths
A n ⁴⁺	From Lovels Wevelengths
A1 A n ⁸⁺	Energy Levels, Wavelengths
A1 A n ⁹⁺	Energy Levels, Wavelengths
Ar A n ¹³⁺	Energy Levels, Wavelengths
Ar A14+	Energy Levels, Wavelengths
Ar Am ¹³⁺ 14+	Energy Levels, Wavelengths
Ar	Energy Levels, wavelengths
Ar ⁻⁶⁺	Energy Levels, wavelengths
Ar ⁻¹⁶⁺	There and Occill Strengths
Ar ¹²⁺	Trans. prob., Oscill. Strengths
Ar	Trans. prob., Oscill. Strengths
Ar-9+	Trans. prob., Oscill. Strengths
Ar^{-1}	Trans. prob., Oscill. Strengths
Ar ¹⁰ + 11+	Trans. prob., Oscill. Strengths
Ar	Trans. prob., Oscill. Strengths
Ar • 9+	Trans. prob., Oscill. Strengths
	Trans. prob., Oscill. Strengths
Ar' = 0+ 3+	Trans. prob., Oscill. Strengths
Ar^{+}	Trans. prob., Oscill. Strengths
Ar°	Trans. prob., Oscill. Strengths
Ar ^o 12+	Trans. prob., Oscili. Strengths
Ar^{12}	Trans. prob., Oscill. Strengths
Ar ¹⁵⁺	Trans. prob., Oscill. Strengths
\mathbf{Ar}^{10+}	Trans. prob., Oscill. Strengths
\mathbf{K}^{10}	Energy Levels, Wavelengths
\mathbf{K}^{0+2+}	Trans. prob., Oscill. Strengths
	Trans. prob., Oscill. Strengths
K ⁺⁰ C 6+	Trans. prob., Oscill. Strengths
$\mathbf{C}\mathbf{a}^{\circ}$	Energy Levels, Wavelengths
Ca^{++}	Energy Levels, Wavelengths
$\mathbf{C}\mathbf{a}^{*+}$	Trans. prob., Oscill. Strengths
	Trans. prob., Oscill. Strengths
Ca^{0+}	Trans. prob., Oscill. Strengths
$(2a^{+} - 11^{+})$	Trans. prob., Oscill. Strengths

E/T	1
n ′/ m	- 4
E/T	74
\mathbf{F}'/\mathbf{T}	114
E/ I	114
E/T	114
11/1	111
E/T	114
n /m	0
E/T	3
E/T	-
E/1	(
F/T	41
L) I	41
E/T	94
=/ =	01
E/T	95
n /m	0 7
E/T	97
\mathbf{F}'/\mathbf{T}	114
Ľ/ I	114
E/T	49
11/1	-10
E/T	114
E/T	3
\mathbf{F}'/\mathbf{T}	7
L/ 1	1
E/T	8
ц/т	0
E/T	114
=/ =	
E/T	114
n /m	114
E/T	114
\mathbf{F}/\mathbf{T}	34
т) т	94
E/T	66
ц/т	00
E/T	66
E/T	114
E/T	9
E/1	3
E/T	10
ц/т	15
E/T	19
	10
E/T	19
n /m	10
E/1	19
\mathbf{F}/\mathbf{T}	28
L) I	20
E/T	45
	10
E/T	54
n /m	07
E/T	67
<u>г</u> /т	60
Ľ/ I	09
E/T	69
ц/т	05
E/T	80
E/T	85
\mathbf{r}'/\mathbf{r}	00
E/1	89
\mathbf{F}/\mathbf{T}	00
12/ I	33
E/T	106
	405
E/T	107
\mathbf{F}'/\mathbf{T}	114
Ľ/ I	114
E/T	114
12/1	111
E/T	114
n /m	
E/T	114
\mathbf{F}'/\mathbf{T}	114
$\mathbf{E}/1$	114
E/T	118
12/ I	110
E/T	47
/	
E/T	114
\mathbf{r}'/\mathbf{r}	
\mathbb{E}/\mathbb{T}	114
F'/T	11/
ц:/ Т	114
E/T	3
±/ ±	
E/T	49
'	10
Γ / Γ	114
E/T	114
E/T	114 114
E/T E/T	114 114
E/T E/T E/T	114 114 114
E/T E/T E/T	114 114 114
E/T E/T E/T E/T	114 114 114 114 114

\mathbf{Ca}^{14+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Ca}^{16+}	Trans. prob., Oscill. Strengths	É/T	114
\mathbf{Ca}^{17+}	Trans. prob., Oscill. Strengths	E/T	114
Ca	Trans. prob., Oscill. Strengths	É/T	116
Sc	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Sc}^+	Trans. prob., Oscill. Strengths	E/T	114
$\mathbf{T}\mathbf{i}^{11+}$	Energy Levels, Wavelengths	E/T	58
${f Ti}^{17+}$	Trans. prob., Oscill. Strengths	E/T	104
Ti^{0+-3+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Ti}^{7+}	Trans. prob., Oscill. Strengths	E/T	114
Ti^{8+-20+}	Trans. prob., Oscill. Strengths	E/T	114
V^{0+3+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Cr}^{7+}	Trans. prob., Oscill. Strengths	E/T	103
Cr	Trans. prob., Oscill. Strengths	E/T	114
	Trans. prob., Oscill. Strengths	E/T	114
Cr^{4+}	Trans. prob., Oscill. Strengths	E/T	114
Cr^{5+}	Trans. prob., Oscill. Strengths	E/T	114
Cr^{9+}	Trans. prob., Oscill. Strengths	E/T	114
$Cr^{10+-22+}$	Trans. prob., Oscill. Strengths	E/T	114
Mn	Trans. prob., Oscill. Strengths	E/T	114
Nn'	Trans. prob., Oscill. Strengths	E/T	114
$\mathbf{M}\mathbf{n}^{o}$	Trans. prob., Oscill. Strengths	E/T	114
Fe ⁻ ' F - ¹²⁺	Energy Levels, Wavelengths	E/I E/T	2
Fe	Energy Levels, wavelengths	E/I E/T	37
\mathbf{Fe}^{24+}	Energy Levels, Wavelengths	£/1 ⋤/Т	(16
$\mathbf{F}\mathbf{e}^{6+}$	Energy Levels, Wavelengths	E/T	10 94
$Fe^{16+-18+}$	Energy Levels, Wavelengths	E/T	$\frac{24}{25}$
Fe^{13+}	Energy Levels, Wavelengths	E/T	23 44
$Fe^{20+-23+}$	Energy Levels, Wavelengths	E/T	57
Fe^+	Trans prob Oscill Strengths	E/T	65
\mathbf{Fe}^{3+}	Trans. prob., Oscill. Strengths	E/T	68
\mathbf{Fe}^{19+}	Trans. prob., Oscill. Strengths	E/T	72
\mathbf{Fe}^{11+}	Trans. prob., Oscill. Strengths	$\mathbf{E}' \mathbf{T}$	73
\mathbf{Fe}^{2+}	Trans. prob., Oscill. Strengths	$\dot{\mathrm{E/T}}$	75
\mathbf{Fe}^{6+}	Trans. prob., Oscill. Strengths	É/T	77
\mathbf{Fe}^+	Trans. prob., Oscill. Strengths	É/T	81
\mathbf{Fe}^{13+}	Trans. prob., Oscill. Strengths	E/T	91
\mathbf{Fe}^+	Trans. prob., Oscill. Strengths	E/T	98
Fe^{0+-2+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Fe}^{6+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Fe}^{7+}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Fe}^{9+}	Trans. prob., Oscill. Strengths	E/T	114
$Fe^{10+-16+}$	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Fe}^{18+}	Trans. prob., Oscill. Strengths	E/T	114
$Fe^{19+-24+}$	Trans. prob., Oscill. Strengths	E/T	114
Fe^{22+}	Trans. prob., Oscill. Strengths	E/T	117
\mathbf{Fe}^{23+}	Trans. prob., Oscill. Strengths	E/T	118
Co	Trans. prob., Oscill. Strengths	E/T	114
Co ⁻ N :15+	Trans. prob., Oscill. Strengths	E/T	114
IN1 ²⁰	Energy Levels, Wavelengths	E/T E/T	44
1N1~ * ' N1:3+	Energy Levels, Wavelengths	E/T E/T	49 70
1N1°'' NT:25+	Trans. prob., Oscill. Strengths	亡/ 1 下 / T	70 70
INI 15+	Trans. prob., Oscill. Strengths	ம்/ 1 ந / ர	79 01
N;0+2+	Trans. prob., Oscill. Strengths	ப்/ 1 〒/T	91 114
N;13+	Trans. prob., Oscill. Strongths	⊔/ 1 F/T	114 117
TAT	Trans. prob., Osoni, Strengths	ш/ т	114

$Ni^{14+-18+}$	Trans. prob., Oscill. Strengths
Ni^{20+}	Trans. prob., Oscill. Strengths
$Ni^{21+-26+}$	Trans. prob., Oscill. Strengths
\mathbf{Cu}^+	Trans. prob., Oscill. Strengths
Cu	Trans. prob., Oscill. Strengths
\mathbf{Cu}^+	Trans. prob., Oscill. Strengths
Cu	Trans. prob., Oscill. Strengths
\mathbf{Zn}^{26+}	Energy Levels, Wavelengths
\mathbf{Zn}^{16+}	Trans. prob., Oscill. Strengths
Zn	Trans. prob., Oscill. Strengths
\mathbf{Zn}^+	Trans. prob., Oscill. Strengths
Ga	Trans. prob., Oscill. Strengths
Ga^+	Trans. prob., Oscill. Strengths
Ge	Trans. prob., Oscill. Strengths
Ge^+	Trans prob Oscill Strengths
As	Trans. prob., Oscill. Strengths
\mathbf{Br}^{2+}	Trans prob Oscill Strengths
Br	Trans prob Oscill Strengths
$\mathbf{K}\mathbf{r}^{22+}$	Energy Levels Wavelengths
Kr	Energy Levels, Wavelengths
Kr ⁷⁺	Trans prob Oscill Strengths
\mathbf{Kr}^{22+}	Trans prob Oscill Strengths
Kr	Trans prob Oscill Strengths
Kr Kr ⁺	Trans. prob. Oscill Strengths
Rh ⁺	Energy Levels Wavelengths
Rb	Trans prob Oscill Strengths
Sr.	Trans. prob. Oscill Strengths
\mathbf{Sr}^+	Trans. prob. Oscill Strengths
Sr Sr	Trans. prob. Oscill Strengths
V	Trans. prob. Oscill Strengths
T V ⁺	Trans. prob. Oscill Strengths
Mo^{13+}	Trans prob. Oscill Strengths
Mo^{33+}	Trans. prob. Oscill Strengths
Mo	Trans. prob. Oscill Strengths
Mo^{33+}	Trans. prob. Oscill Strengths
Bh^{31+}	Trans. prob. Oscill Strengths
Bh	Trans. prob. Oscill Strengths
Pd ⁺	Energy Levels Wavelengths
Δq^+	Energy Levels, Wavelengths
Ag	Trans prob Oscill Strengths
Cd	Trans prob Oscill Strengths
Cd ⁺	Trans prob Oscill Strengths
In	Trans prob Oscill Strengths
In ⁺	Trans prob Oscill Strengths
Sn	Trans prob Oscill Strengths
Sn ⁺	Trans prob Oscill Strengths
I	Trans prob Oscill Strengths
Xe	Energy Levels Wavelengths
$\mathbf{X}\mathbf{e}^+$	Energy Levels Wavelengths
$\mathbf{X}\mathbf{e}^{6+}$	Energy Levels Wavelengths
Xe ⁷⁺⁹⁺	Energy Levels Wavelengths
$Xe^{18+-26+}$	Energy Levels, Wavelengths
$\mathbf{X}\mathbf{e}^{6+}$	Energy Levels, Wavelengths
$\mathbf{X}\mathbf{e}^{32+}$	Energy Levels. Wavelengths
$\mathbf{X}\mathbf{e}^{8+}$	Energy Levels. Wavelengths
$\mathbf{X}\mathbf{e}^{7+}$	Trans. prob., Oscill. Strengths
Xe	Trans. prob., Oscill. Strengths
	I I I I I I I I I I

Б /Т	114
Ľ/ 1 	114
E/T	114
E/T	114
\mathbf{E}'/\mathbf{T}	03
	114
E/1	114
E/T	114
E/T	121
-, - F/T	40
L) I D (T	49
E/T	108
E/T	114
E'/T	114
ы/т г/т	114
Ľ/ 1 E/E	114
E/T	114
E/T	114
E/T	114
\mathbf{E}'/\mathbf{T}	114
D/Т Б/Т	0.0
	00
E/T	114
E/T	23
\mathbf{E}'/\mathbf{T}	12
ц/т г/т	70
E/1	18
E/T	108
E/T	114
$\mathbf{E}' \mathbf{T}$	114
D/ I D/ D	114
E/1	40
E/T	114
E/T	114
E/T	114
ы/т г/т	116
	110
E/T	114
E/T	114
E/T	78
$\mathbf{E}' \mathbf{T}$	100
D/ I D/ D	114
E/1	114
E/T	119
E/T	108
\mathbf{E}'/\mathbf{T}	114
D/Т Б/Т	111
E/1	4
E/T	20
E/T	114
E/T	114
-/- F/T	11/
	114
E/ 1	114
E/T	114
E/T	114
E/T	114
/т г/т	114
E/1	114
E/T	14
E/T	14
E/T	21
\mathbf{E}'/\mathbf{T}	22
ы/т Б/Т	22
Ľ/ 1 D/T	35
E/T	39
E/T	43
E/T	53
E/T	8/
ц/ т р (ф	04
$\mathbf{E}/1$	101

\mathbf{Xe}^{4+}	Trans. prob., Oscill. Strengths	E/T	102
\mathbf{Xe}^{40+}	Trans. prob., Oscill. Strengths	É/T	108
\mathbf{Xe}^{5+}	Trans. prob., Oscill. Strengths	E/T	109
Xe	Trans. prob., Oscill. Strengths	E/T	110
Xe	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Xe}^+	Trans. prob., Oscill. Strengths	E/T	114
Cs	Energy Levels, Wavelengths	E/T	13
\mathbf{Cs}^{51+}	Energy Levels, Wavelengths	E/T	49
\mathbf{Cs}	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Ba}^{34+}	Energy Levels, Wavelengths	E/T	43
Ba	Energy Levels, Wavelengths	E/T	56
Ba	Trans. prob., Oscill. Strengths	E/T	114
Ba ⁺	Trans. prob., Oscill. Strengths	E/T	114
La^{8+}	Energy Levels, Wavelengths	E/T	5
La^{9+}	Energy Levels, Wavelengths	E/T	18
$Ce^{20+-51+}$	Energy Levels, Wavelengths	E/T	10
	Energy Levels, Wavelengths	E/T	33
Pr^+	Energy Levels, Wavelengths	E/T	31
\mathbf{Pr}^{2+}	Energy Levels, Wavelengths	E/T	31
Pr^{2}	Energy Levels, Wavelengths	E/I E/T	30 20
	There are a and the strengths	E/I E/T	00 114
ГГ ⁻ NJ ³⁸⁺	Franzy Levela Wavelengths	£/1 ⋤/┳	114
Nd^{32+}	Trang prob Occill Strongths	Ľ/ I F /T	40 86
Nd ⁺	Trans. prob., Oscill. Strengths	E/T	114
Eu	Trans. prob., Oscill. Strengths	E/T	114
\mathbf{Gd}^{42+}	Energy Levels Wavelengths	E/T	43
Dv	Trans. prob., Oscill. Strengths	E/T	114
Er	Trans. prob., Oscill. Strengths	E/T	114
Tm	Trans. prob., Oscill. Strengths	E/T	114
$\mathbf{Y}\mathbf{b}^+$	Energy Levels, Wavelengths	E/T	15
\mathbf{Yb}^{48+}	Energy Levels, Wavelengths	E'/T	43
$\mathbf{Y}\mathbf{b}^{2+}$	Energy Levels, Wavelengths	É/T	48
Yb	Energy Levels, Wavelengths	É/T	62
Yb	Trans. prob., Oscill. Strengths	É/T	114
\mathbf{Yb}^+	Trans. prob., Oscill. Strengths	E/T	114
Lu	Trans. prob., Oscill. Strengths	E/T	114
Ta	Energy Levels, Wavelengths	E/T	37
\mathbf{Ta}^{45+}	Trans. prob., Oscill. Strengths	E/T	90
Ta	Trans. prob., Oscill. Strengths	E/T	114
W^{30+36+}	Energy Levels, Wavelengths	E/T	32
W^{42+}	Energy Levels, Wavelengths	E/T	32
W^{18+}	Trans. prob., Oscill. Strengths	E/T	113
W	Trans. prob., Oscill. Strengths	E/T	114
Re ⁺	Trans. prob., Oscill. Strengths	E/T	76
Ir^{3+}	Energy Levels, Wavelengths	E/T	17
Ir I	Energy Levels, Wavelengths	E/T	50
Ir • 57+	Trans. prob., Oscill. Strengths	E/T	114
Au ³⁺⁺ Au ⁴⁺ $51+$	Energy Levels, Wavelengths	E/I E/T	43 51
Au $42+50+$	Energy Levels, Wavelengths	டீ/ 1 ந / ர	01 61
Au ⁶⁵⁺	Energy Levels, wavelengths Trans prob. Ocaill Strengths	ம்/ 1 ந/ர	01 100
Au	Trans. prob., Oscill. Strengths	ம/⊥ Е/Т	108 114
Ho	Trans. prob., Oscill. Strengths	Б/Т Е/Т	114
ть т] ⁸⁰⁺	Energy Levels Wavelengths	E/T	40
TI	Trans prob Oscill Strengths	E/T	114
 Ph ³⁸⁺	Energy Levels Wavelengths	E/T	32
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$Pb^{41+-44+}$	Energy Levels, Wavelengths	E/T	32
\mathbf{Pb}^{50+}	Energy Levels, Wavelengths	$\dot{\mathrm{E/T}}$	32
Pb	Trans. prob., Oscill. Strengths	É/Т	114
\mathbf{Pb}^{50+}	Trans. prob., Oscill. Strengths	É/Т	114
\mathbf{Bi}^{80+}	Energy Levels, Wavelengths	$\dot{E/T}$	12
\mathbf{Bi}^{61+}	Energy Levels, Wavelengths	É/Т	43
Bi	Trans. prob., Oscill. Strengths	É/Т	114
\mathbf{Th}^{86+}	Energy Levels, Wavelengths	E/T	12
\mathbf{Th}^{87+}	Energy Levels, Wavelengths	E/T	12
\mathbf{U}^{88+}	Energy Levels, Wavelengths	E/T	12
\mathbf{U}^{89+}	Energy Levels, Wavelengths	E/T	12
\mathbf{U}^{49+}	Energy Levels, Wavelengths	E/T	32
$U^{51+-54+}$	Energy Levels, Wavelengths	E/T	32
\mathbf{U}^{60+}	Energy Levels, Wavelengths	E/T	32
\mathbf{U}	Trans. prob., Oscill. Strengths	E/T	114
Li Z= 11-20	Trans. prob., Oscill. Strengths	E/T	105
Be Z= 6-36	Trans. prob., Oscill. Strengths	E/T	83
Be Z= 4-10	Trans. prob., Oscill. Strengths	E/T	111
Be Z= 4-10	Trans. prob., Oscill. Strengths	E/T	112
Be Z= 5-10	Trans. prob., Oscill. Strengths	E/T	117
N $Z = 7-17$	Energy Levels, Wavelengths	E/T	55
O Z= 8-20	Energy Levels, Wavelengths	E/T	55
O Z= 11-30	Trans. prob., Oscill. Strengths	E/T	71
Ne Z= 42-90	Energy Levels, Wavelengths	E/T	11
Mg Z = 15-18	Trans. prob., Oscill. Strengths	E/T	115
Si Z= 40-42	Trans. prob., Oscill. Strengths	E/T	108
P Z= 26-32	Trans. prob., Oscill. Strengths	E/T	120
Ca Z= 22-47	Energy Levels, Wavelengths	E/T	9
Ti Z= 51-83	Energy Levels, Wavelengths	E/T	59
Ni Z= 74-84	Energy Levels, Wavelengths	E/T	27
Ni Z= 62-64	Trans. prob., Oscill. Strengths	E/T	86
Ni Z= 73-74	Trans. prob., Oscill. Strengths	E/T	86
Cu Z= 29-34	Trans. prob., Oscill. Strengths	E/T	78
Ge Z= 37-42	Trans. prob., Oscill. Strengths	E/T	83
As Z= 37-42	Trans. prob., Oscill. Strengths	E/T	83
Pd Z= 49-100	Trans. prob., Oscill. Strengths	E/T	92
Tm Z= 79-83	Energy Levels, Wavelengths	E/T	6

2.2 Atomic and Molecular Collisions

2.2.1 Photon Collisions

Cd + Kr	Fluorescence	Undef.	E/T	127
Cd + Kr	Photoexcitation	Undef.	E/T	127
$Ba^+ + He$	Fluorescence	3-30 K	Exp	126
$\mathrm{Ba^{+*} + He}$	Fluorescence	3-30 K	Exp	126
$h\nu + Sn$	Photoionization	60.6 eV	E/T	122
$h\nu + Xe$	Photoionization	100-200 eV	Exp	123
$h\nu + Ca$	Photoionization	389 nm	Exp	124
$\mathbf{h} u + \mathbf{H}^{-}$	Photoionization	0.117-2 eV	Th	125
$\mathbf{h}\nu + \mathbf{H}$	Photoionization	0.117-2 eV	Th	125
$h\nu + He$	Photoionization	0.117-2 eV	Th	125
$h\nu + He$	Photoexcitation	76.2-77.4 eV	Exp	128
$h\nu + He$	Photoionization	76.2-77.4 eV	Exp	128
$h\nu + O^+$	Photoionization	30-130 eV	Th	129

$h\nu$ +	$\cdot \mathbf{O}^{2+}$	Photoionization	30-130 eV	Th	129
$h\nu$ +	$\cdot \mathbf{O}^{3+}$	Photoionization	30-130 eV	Th	129
$h\nu$ +	$\cdot \mathbf{O}^{4+}$	Photoionization	30-130 eV	Th	129
$h\nu$ +	· Ne	Photoionization	84-146 eV	Exp	130
$h\nu$ +	\cdot Ar	Photoionization	84-146 eV	Exp	130
$h\nu$ +	$\cdot \mathbf{H}_2^+$	Photodissociation	228-400 nm	Th	131
$h\nu$ +	$\cdot \mathbf{H}_2^+$	Photoionization	228-400 nm	Th	131
$h\nu$ +	\cdot Ne	Photoionization	1.5 eV	Th	132
$h\nu$ +	· Rb	Photoexcitation	Undef.	Th	133
$h\nu$ +	$\cdot \mathbf{Rb}^*$	Photoexcitation	Undef.	Th	133
$h\nu$ +	· Xe	Photoionization	800 nm	Exp	134
$h\nu$ +	·He	Photoionization	84 eV	Th	135
$h\nu$ +	$\cdot \mathrm{Te}^{-}$	Photodetachment	34-130 eV	Exp	136
$h\nu$ +	· Ti	Fluorescence	4996-7000 eV	E/T	137
$h\nu$ +	· Ti	Photoionization	4996-7000 eV	E/T	137
$h\nu$ +	· He	Photoexcitation	64.11-65.12 eV	E/T	138
$h\nu$ +	· He	Photoionization	20-25 eV above threshold	E/T	139
$h\nu$ +	· Ar	Photoionization	$4x10^{13} - 1.3x10^{14} \text{ w/cm}^2$	E/T	140
$h\nu$ +	$\cdot \mathbf{Xe}$	Photoionization	$4x10^{13} - 1.3x10^{14} \text{ w/cm}^2$	E/T	140
$h\nu$ +	$\cdot \mathbf{N}_2$	Photoionization	$4x10^{13} - 1.3x10^{14} \text{ w/cm}^2$	E/T	140
$h\nu$ +	\cdot O ₂	Photoionization	$4x10^{13} - 1.3x10^{14} \text{ w/cm}^2$	E/T	140
$h\nu$ +	$\cdot \mathbf{F}_2$	Photoionization	$4x10^{13} - 1.3x10^{14} \text{ w/cm}^2$	E/T	140
$h\nu$ +	· Rb	Photoionization	420-600 nm	Exp	141
$h\nu$ +	\cdot N	Photoionization	8707.27 eV	Exp	142
$h\nu$ +	Ar	Photoionization	36.1-36.55 eV	Exp	143
$h\nu$ +	· H ⁻	Photodetachment	15-50 eV	Th	144
$h\nu$ +	· H ⁻	Photoionization	15-50 eV	Th	144
$h\nu +$	$\cdot \mathbf{C}_2 \mathbf{H}_2$	Photoionization	285.8 eV	Th	145
$h\nu +$	· Ne	Photoionization	1.55 eV	Th	146
$h\nu +$	· Ar	Photoionization	25 eV	Th	147
$h\nu +$	· Xe	Photoionization	25 eV	Th D (Th	147
$h\nu +$	\cdot H ₂	Photoionization	53.9-75.7 eV	E/T	148
$h\nu +$	- CO	Photoionization	550 eV	E/T	149
$h\nu +$	· Li ⁻	Photodetachment	2.1-5 eV	E/T	150
$h\nu +$	• K ⁻	Photodetachment	2.1-5 eV	E/T	150
$h\nu +$	· Xe	Photoionization	12.7 eV	E/T	151
$h\nu +$		Photodetachment	Undef.	Th	152
$h\nu +$	H + stat el fid	Photodetachment	Undef.	Th	152
$h\nu +$	$\cdot \mathbf{H}_2$	Photoionization	790-1064 nm	Th	153
$n\nu +$		Total Absorption, Scattering	794.7 nm	Exp	154
$n\nu +$	\cdot Al	Photoexcitation	105 GHz	Exp	155
$n\nu + $	$\cdot \mathbf{Sm'}$	Photoexcitation	Undef. $265, 1106, 103, \dots, -1$	E/T	150
$n\nu +$	$\cdot \ln a$	Photoexcitation	$205-1106 \ 10^{\circ} \ cm^{-1}$		157
$n\nu + $	Mg^2	Photoexcitation	$265-1106 \ 10^{\circ} \ cm^{-1}$		157
$n\nu + $	• Al ^o	Photoexcitation	$265-1106 \ 10^{\circ} \ cm^{-1}$		157
$n\nu + $	• 5 1 ⁻ '	Photoexcitation	$265-1106 \ 10^{\circ} \ cm^{-1}$		157
$n\nu + h = 1$	$\cdot \mathbf{P}^{\circ +}$	Photoexcitation	$205-1106 \ 10^{\circ} \ cm^{-1}$		157
$n\nu + h = 1$	· 5°'	Photoexcitation	$205-1106 10^{\circ} cm^{-1}$	1 fi 1 fi	157
$n\nu + h = 1$	· Al Vn	r notoexcitation	4-425 GHZ	Exp E	158
$n\nu + h = 1$		r notoionization	210-410 eV 10 5 12 5 aV: 240 275	Exp E	109
$n\nu + h\omega$	·п2 п *	r notoexcitation	10.5-13.5 eV; 340-375 nm	Exp E	100
$n\nu + h \cdots$	\mathbf{n}_2	r notoexcitation Photodiggocistics	10.5-15.5 eV; 340-375 nm	Exp E	161
$n\nu + h\nu +$	N.	Photodissociation	14.0-20 EV 14.8.96 oV	схр Гт	101 161
$n\nu + h\nu +$		r notocussociation	14.0-20 eV 14.9.26 eV	Ŀхр Б	101
$n\nu + h\nu +$	0.	Photodissociation	14.0-20 EV 14.8.96 oV	схр Гт	101 161
$\mu\nu$ +	\mathbf{CO}	r notodissociation	14.0-20 eV 14.9.26 eV	ьхр Б	101
$\mathbf{n}\nu$ +		r norescence	14.0-20 eV	ъхр	101

$\mathbf{h}\nu + \mathbf{N}_2$	Fluorescence	14.8-26 eV	Exp	161
$h\nu + NO$	Fluorescence	14.8-26 eV	Exp	161
$\mathbf{h}\nu + \mathbf{O}_2$	Fluorescence	14.8-26 eV	Exp	161
$h\nu + CO$	Photoionization	14.8-26 eV	Exp	161
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	14.8-26 eV	Exp	161
$h\nu + NO$	Photoionization	14.8-26 eV	Exp	161
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	14.8-26 eV	Exp	161
$h\nu + NO$	Photoionization	410-425 eV	Exp	162
$\mathbf{h}\nu + \mathbf{N}_2$	Photodissociation	800 nm	Exp	163
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	800 nm	Exp	163
$h\nu + He$	Photoionization	248 nm	Th	164
$h\nu + Ar$	Photoexcitation	$33,466-33,677 \ cm^{-1}$	E/T	165
$\mathbf{h} u + \mathbf{Ar}^*$	Photoexcitation	$33,466-33,677 \ cm^{-1}$	$\dot{E/T}$	165
$\mathbf{h} u + \mathbf{H}^{-}$	Photodetachment	0-10 eV	Th	166
$h\nu + D^-$	Photodetachment	0-10 eV	Th	166
$h\nu + T^-$	Photodetachment	0-10 eV	Th	166
$h\nu + He$	Photoionization	25-120 eV	Th	167
$h\nu + Xe$	Photoionization	675-840 eV	Th	168
$h\nu + Cs$	Photoionization	675-840 eV	Th	168
$h\nu + Ba$	Photoionization	675-840 eV	Th	168
$h\nu + Be^-$	Photodetachment	111-121 eV	Th	169
$h\nu + He$	Photoionization	0-1 keV	E/T	170
$h\nu + Be^-$	Photodetachment	0-4 a.u.	Th	171
$h\nu + He$	Photoionization	124-474 eV	Th	172
$h\nu + HCl$	Photoionization	40-60 eV	Exp	173
$h\nu + DCl$	Photoionization	$40-60 \mathrm{eV}$	Exp	173
$h\nu + Kr$	Photoexcitation	120-376 nm	Exp	174
$h\nu + Xe$	Photoexcitation	120-376 nm	Exp	174
$h\nu + Mn^+$	Photoionization	$45-70 \mathrm{eV}$	Exp	175
$h\nu + CO$	Photoionization	290-340 eV	Th	176
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	350-445 eV	Exp	177
$h\nu + Na_3^+$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_4$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_4^+$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_5$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_5^+$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_6$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_7$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Na_8$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Mg_2$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Mg_3$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Mg_4$	Total Absorption, Scattering	1-7 eV	Th	178
$h\nu + Mg_5$	Total Absorption, Scattering	1-7 eV	1 n Tu	170
$n\nu + Mg_6$	Total Absorption, Scattering	1-7 eV	1 fl Th	170
$n\nu + Mg_7$	Total Absorption, Scattering	1-7 eV	1 fl Th	170
$n\nu + Mg_8$	Total Absorption, Scattering	1-7 eV	1 fl Th	170
$\mathbf{h}\nu + \mathbf{M}\mathbf{g}_9$	Total Absorption, Scattering	1-7 eV	111 Th	170
$\mathbf{h}\nu + \mathbf{M}\mathbf{g}_{10}$	Total Absorption, Scattering	1-7 eV	111 Th	170
$\mathbf{h}\nu + \mathbf{M}\mathbf{g}_{11}$	Detaionization	1-7 ev	111 Furn	170
$\mathbf{n}\nu \top \mathbf{N}$ $\mathbf{h}\nu \perp \mathbf{H}^{-}$	Photodetachmont	10.6 µ m	њ. Тh	180
$h\nu + Eu^-$	Photodetachment	1064 nm	Evp	181
$h\nu + Ti^{3+}$	Photoionization	42 6-49 4 eV	Exp	189
$h\nu + He$	Photoionization	780 nm	тр Th	183
$h\nu + He$	Photoionization	20-40 excess eV	E/T	184
$h\nu + Ar$	Photoionization	20-40 excess eV	E/T	184
$h\nu + Fe$	Photoexcitation	6370-10.000 eV	Exp	185
			·T.	

$h\nu + Fe$	Photoionization	6370-10,000 eV	Exp	185
$h\nu + Xe$	Photoionization	30 above threshold (eV)	E/T	186
$h\nu + H_2$	Photoionization	0-20 a.u.	Th	187
$h\nu + Xe_{54}$	Photodissociation	800-100 nm	Th	188
$h\nu + Xe_{54}$	Photoexcitation	800-100 nm	Th	188
$h\nu + Xe_{54}$	Photoionization	800-100 nm	Th	188
$h\nu + H_2O$	Photodissociation	$17-41 \mathrm{eV}$	Exp	189
$h\nu + D_2O$	Photodissociation	$17-41 \mathrm{eV}$	Exp	189
$h\nu + H_2O$	Fluorescence	$17-41 \mathrm{eV}$	Exp	189
$h\nu + D_2O$	Fluorescence	$17-41 \mathrm{eV}$	Exp	189
$h\nu + H_2O$	Photoexcitation	$17-41 \mathrm{eV}$	Exp	189
$h\nu + D_2O$	Photoexcitation	$17-41 \mathrm{eV}$	Exp	189
$h\nu + CO$	Photoionization	40-50 eV	E/T	190
$h\nu + Cu$	Elastic Scattering	$8970-9006 \ eV$	Th	191
$h\nu + Cr$	Total Absorption, Scattering	38-47 eV	E/T	192
$h\nu + Cr$	Photoexcitation	38-47 eV	E/T	192
$h\nu + Cr$	Photoionization	38-47 eV	E/T	192
$h\nu + Ca$	Photoionization	0.12-0.28 a.u.	E/T	193
$h\nu + N_2$	Photoionization	$10^{14} - 12x10^{14} \text{ W/}cm^2$	Exp	194
$h\nu + O_2$	Photoionization	$10^{14} - 12x10^{14} \text{ W/}cm^2$	Exp	194
$h\nu + H$	Photoionization	Undef.	$^{\mathrm{Th}}$	195
$h\nu + Xe^{53+}$	Photoionization	Undef.	Th	195
$h\nu + U^{91+}$	Photoionization	Undef.	Th	195
$h\nu + O_2$	Photodissociation	$17-19 \mathrm{eV}$	Exp	196
$h\nu + Ar$	Photoionization	5.4-7.8; 8-14.65 eV	$^{\mathrm{Th}}$	197
$h\nu + Ne$	Fluorescence	52-55.5 eV	Exp	198
$h\nu + Ne$	Photoexcitation	52-55.5 eV	Exp	198
$h\nu + Ne$	Photoionization	52-55.5 eV	Exp	198
$h\nu + He$	Photoionization	795 nm	Exp	199
$h\nu + Ne$	Photoionization	795 nm	Exp	199
$h\nu + Ar$	Photoionization	795 nm	Exp	199
$h\nu + He$	Fluorescence	Undef.	Exp	200
$h\nu + He$	Photoexcitation	Undef.	Exp	200
$h\nu + CO$	Photodissociation	Undef.	Th	201
$h\nu + H_2^+$	Photoionization	790 nm	Th	202
$h\nu + H$	Photoionization	0.1-1 a.u.	Th	203
$h\nu + Ne$	Photoionization	320-1200 eV	E/T	204
$h\nu + Ar$	Photoionization	320-1200 eV	E/T	204
$h\nu + He$	Photoionization	40-120 eV	E/T	205
$h\nu + H_2$	Photoionization	40-120 eV	E/T	205
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	20-35 eV	E/T	206
$h\nu + Y^{3+}$	Total Absorption, Scattering	66-82 eV	E/T	207
$h\nu + Y^{3+}$	Photoexcitation	66-82 eV	E/T	207
$h\nu + C^{2+}$	Photoionization	$40-90 \mathrm{eV}$	E/T	208
$h\nu + Cl^-$	Photodetachment	20-45 eV	Exp	209
$h\nu + N_2$	Photoionization	800 nm	Th	210
$h\nu + O_2$	Photoionization	800 nm	Th	210
$h\nu + C_2$	Photoionization	800 nm	Th	210
$h\nu + O^-$	Photodetachment	$11,700-16,700 \ cm^{-1}$	E/T	211
$h\nu + S^-$	Photodetachment	$11,700-16,700 \ cm^{-1}$	E/T	211
$h\nu + Yb$	Photoexcitation	59.4 keV	Exp	212
$h\nu + Lu$	Photoexcitation	59.4 keV	Exp	212
$h\nu + W$	Photoexcitation	59.4 keV	Exp	212
$h\nu + Re$	Photoexcitation	59.4 keV	Exp	212
$h\nu + Au$	Photoexcitation	59.4 keV	Exp	212
$h\nu + Hg$	Photoexcitation	59.4 keV	Exp	212
$h\nu + Tl$	Photoexcitation	59.4 keV	Exp	212

$h\nu + He$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Li^+$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$\mathbf{h} u + \mathbf{O}^{6+}$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Ne$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Ti$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Cr$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Fe$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Ni$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Cu$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + Mo$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$\mathbf{h} u$ + \mathbf{Mo}^{40+}	Photoionization	$0.1-200 \text{ eV}/z^2$	Th	213
$h\nu + He$	Photoionization	153-173 eV	Th	214
$\mathbf{h}\nu + \mathbf{H}_3$	Photodissociation	$4500-0 \ cm^{-1}$	Th	215
$h\nu + He$	Photoionization	$63-529 {\rm eV}$	Th	216
$h\nu + H$	Photoionization	2700-20 \mathring{A}	Th	217
$h\nu + Be$	Photoionization	13.7-210 eV	Th	218
$h\nu + He$	Photoionization	159-318 eV	Th	219
$h\nu + F^-$	Photodetachment	1400 nm	Th	220
$h\nu + Xe$	Fluorescence	$65 \mathrm{eV}$	E/T	221
$h\nu + Xe^*$	Fluorescence	$65 \mathrm{eV}$	E/T	221
$h\nu + Xe$	Photoionization	$65 \mathrm{eV}$	E/T	221
$h\nu + Xe^*$	Photoionization	$65 \mathrm{eV}$	E/T	221
$h\nu + He$	Photoionization	5.6 keV	Th	222
$h\nu + Ar$	Photoionization	Undef.	Exp	223
$h\nu + C^-$	Photodetachment	0-13 eV	Th	224
$\mathbf{h} u$ + $\mathbf{N}\mathbf{a}_{9}^{+}$	Photoionization	0.1-1.9 Ry	Th	225
$\mathbf{h} u$ + $\mathbf{N}\mathbf{a}_{41}^+$	Photoionization	0.1-1.9 Ry	Th	225
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	800 nm	Th	226
$\mathbf{h} u + \mathbf{D}_2$	Photoionization	800 nm	Th	226
$\mathbf{h} u$ + \mathbf{H}_2	Photodissociation	Undef.	Exp	227
$h\nu + He$	Photoionization	Undef.	Exp	227
$\mathbf{h} u$ + \mathbf{H}_2	Photoionization	Undef.	Exp	227
$h\nu + Kr$	Fluorescence	28.4-28.7 eV	Exp	228
$h\nu + Kr$	Photoionization	28.4-28.7 eV	Exp	228
$\mathbf{h}\nu + \mathbf{N}_2$	Photodissociation	Undef.	Exp	229
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	Undef.	Exp	229
$h\nu + Ne$	Photoionization	865-873 eV	Exp	230
$h\nu + H$	Photoionization	20 keV	Th	231
$\mathbf{h}\nu + \mathbf{H}_2$	Photodissociation	28-45 eV	Exp	232
$h\nu + H_2^*$	Photodissociation	28-45 eV	Exp E (T	232
$h\nu + CsCl$	Photodissociation	7-20 eV	E/T	233
$h\nu + CsBr$	Photodissociation	7-20 eV	E/T	233
$h\nu + Cs_2Cl_2$	Photodissociation	7-20 eV	E/T D/T	233
$h\nu + Cs_2Br_2$	Photodissociation	7-20 eV	E/T	233
$h\nu + CsCl$	Photoexcitation	7-20 eV	E/T	233
$h\nu + CsBr$	Photoexcitation	7-20 eV	E/T	233
$h\nu + Cs_2Cl_2$	Photoexcitation	7-20 eV	E/T D/T	233
$h\nu + Cs_2Br_2$	Photoexcitation	7-20 eV	E/T E/T	233
$n\nu + OSOI$	r notoionization	(-20 eV 7 20 eV	Ľ/ 1 E /T	233 000
$n\nu + CsBr$	r notoionization	(-20 eV 7 20 eV	Ľ/ 1 E /T	233 000
$n\nu + Cs_2Cl_2$	Photoionization	(-20 eV	Ľ/T F/T	233
$n\nu + Cs_2Br_2$	Photoionization	(-20 eV	Ľ/Т ть	233
$n\nu + Ar'$	Photoionization	02.0-04 eV	1 N E	234
$n\nu + ne$	r notoionization	00.0-08.3 eV	схр Б/Т	235 226
$\mathbf{n}\nu + \mathbf{n}_2$	r notodissociation	20-40 eV	Ľ/ 1 E /T	230 220
$\mathbf{n}\nu + \mathbf{H}_2$	r luorescence	20-40 eV	Ľ/ľ Th	230
$\mathbf{n}\nu + \mathbf{m}_2$	r notodissociation	800-1200 nm	ιn	237

$\mathbf{h}\nu + \mathbf{NiC}_4\mathbf{O}_4$	Photodissociation	800-1350 cm	Exp	238
$h\nu + FeC_5O_5$	Photodissociation	800-1350 cm	Exp	238
$\mathbf{h}\nu + \mathbf{Cr}\mathbf{C}_6\mathbf{O}_6$	Photodissociation	800-1350 cm	Exp	238
$\mathbf{h}\nu + \mathbf{NiC}_4\mathbf{O}_4$	Photoionization	800-1350 cm	Exp	238
$\mathbf{h}\nu + \mathbf{FeC}_5\mathbf{O}_5$	Photoionization	800-1350 cm	Exp	238
$\mathbf{h}\nu + \mathbf{Cr}\mathbf{C}_6\mathbf{O}_6$	Photoionization	800-1350 cm	Exp	238
$h\nu + B^+$	Photoionization	25-50 eV	Th	239
$\mathbf{h}\nu + \mathbf{K}^{7+}$	Photoexcitation	$300,000 \ cm^{-1}$	Th	240
$\mathbf{h}\nu + \mathbf{Ti}^{10+}$	Photoexcitation	$300,000 \ cm^{-1}$	Th	240
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{17+}$	Photoexcitation	$100,000-800,000 \ cm^{-1}$	Th	241
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{12+}$	Photoexcitation	$600\text{-}150\ \text{\AA}$	Th	242
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{16+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{17+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{18+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{19+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{20+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{21+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{22+}$	Photoionization	100-2000 Ry	Th	243
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{16+}$	Photoexcitation	53-91 Ry	Th	244
$h\nu + CO$	Photodissociation	$90,000-106,000 \ cm^{-1}$	Th	245
$h\nu + Sn^+$	Photoexcitation	$10^5 \ cm^{-1}$	Th	246
$h\nu + CO$	Photoexcitation	972-967 \mathring{A}	Exp	247
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{18+}$	Photoexcitation	1600-10 Å	Th	248
$h\nu + Os^+$	Photoexcitation	$3800-1900 \ \AA$	Exp	249
$h\nu + Ir^+$	Photoexcitation	$3800-1900 \text{ \AA}$	Exp	249
$h\nu + Cl^+$	Photoexcitation	Undef.	Th	250
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{9+}$	Photoexcitation	0.0-9.0 Ry	Th	251
$\mathbf{h}\nu + \mathbf{O}^{2+}$	Photoexcitation	232.17 nm	Exp	252
$h\nu + Ho^+$	Photoexcitation	$24,000-31,000 \ cm^{-1}$	Exp	253
$h\nu + La_2O_3$	Elastic Scattering	$59.5 \mathrm{keV}$	E/T	255
$h\nu + CeO_2$	Elastic Scattering	$59.5 \mathrm{keV}$	$\dot{E/T}$	255
$h\nu + Nd_2O_3$	Elastic Scattering	$59.5 \mathrm{keV}$	$\dot{E/T}$	255
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	401 eV	Éxp	256
$h\nu + Na$	Photoexcitation	0-12 q^2 a.u.	Th	257
$h\nu + Mg$	Photoionization	594-584 nm	E/T	258
$h\nu + Xe$	Photoionization	Threshold	Exp	259
$h\nu + Xe^*$	Photoionization	Threshold	Exp	259
$\mathbf{h}\nu + \mathbf{A}\mathbf{r}_2$	Photodissociation	252-294.9 eV	Exp	260
$\mathbf{h}\nu + \mathbf{A}\mathbf{r}_2$	Photoionization	252-294.9 eV	Exp	260
$h\nu + CH_4$	Photodissociation	295-580 eV	E/T	261
$h\nu + CO$	Photodissociation	295-580 eV	$\dot{E/T}$	261
$h\nu + CO_2$	Photodissociation	295-580 eV	$\dot{E/T}$	261
$\mathbf{h}\nu + \mathbf{N}_2$	Photodissociation	295-580 eV	$\dot{E/T}$	261
$\mathbf{h}\nu + \mathbf{O}_2$	Photodissociation	295-580 eV	$\dot{E/T}$	261
$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_6$	Photodissociation	295-580 eV	$\dot{E/T}$	261
$\mathbf{h}\nu + \mathbf{C}_{6}\mathbf{H}_{6}$	Photodissociation	295-580 eV	\dot{E}/T	261
$\mathbf{h}\nu + \mathbf{C}_4\mathbf{H}_4\mathbf{O}$	Photodissociation	295-580 eV	$\dot{E/T}$	261
$h\nu + CH_4$	Photoexcitation	295-580 eV	$\dot{E/T}$	261
$h\nu + CO$	Photoexcitation	295-580 eV	$\dot{E/T}$	261
$h\nu + CO_2$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	$\dot{\mathrm{E}/\mathrm{T}}$	261
$\mathbf{h}\nu + \mathbf{N}_2$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	$\dot{E/T}$	261
$h\nu + O_2$	Photoexcitation	295-580 eV	$\dot{E/T}$	261
$h\nu + C_2 H_6$	Photoexcitation	295-580 eV	$\dot{\mathrm{E}/\mathrm{T}}$	261
$h\nu + \tilde{C_6H_6}$	Photoexcitation	295-580 eV	$\dot{\mathrm{E/T}}$	261
$h\nu + C_4 H_4 O$	Photoexcitation	295-580 eV	$\dot{\mathrm{E/T}}$	261
$h\nu + Ne$	Elastic Scattering	865-1102 eV	Th	262

$h\nu + Ne^{6+}$	Elastic Scattering	865-1102 eV	Th	262
$h\nu + Fe^{7+}$	Photoionization	725-755 eV	Th	263
$h\nu + Fe^{8+}$	Photoionization	725-755 eV	Th	263
$h\nu + O^+$	Photoionization	Undef.	Th	264
$h\nu + O^{+*}$	Photoionization	Undef.	Th	264
$h\nu + NO$	Photodissociation	400-430 eV	Exp	265
$h\nu + NO$	Photoexcitation	400-430 eV	Exp	265
$h\nu + NO$	Photoionization	400-430 eV	Exp	265
$h\nu + P$	Photoionization	10.5-25.5 eV	Th	266
$h\nu + Xe$	Photoionization	672-682 eV	Exp	267
$h\nu + He$	Photoionization	795 nm	Exp	268
$h\nu + Ne$	Photoionization	795 nm	Exp	268
$h\nu + Ar$	Photoionization	795 nm	Exp	268
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{22+}$	Photoexcitation	Undef.	E/T	269
$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{24+}$	Photoexcitation	Undef.	E/T	269
$h\nu + CO$	Total Absorption, Scattering	$540-590 \ eV$	Th	270
$h\nu + CO$	Photodissociation	540-590 eV	Th	270
$h\nu + CO$	Photoionization	540-590 eV	Th	270
$h\nu + Mg$	Photoionization	0.145-0.215 a.u.	E/T	271
$h\nu + H^{-}$	Photodetachment	$2.15 \ \mu \ \mathrm{m}$	E/T	272
$h\nu + Cs^-$	Photodetachment	0-0.04 eV	Th	273
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photoionization	40-200 eV	Th	274
$h\nu + Li$	Photoionization	120-910 eV	Exp	275
$h\nu + Kr$	Photoionization	14.326 keV	Exp	276
$\mathbf{h} u + \mathbf{C}_2\mathbf{H}_6$	Photoionization	$10-50 \mathrm{eV}$	Th	277
$h\nu + Ne$	Photoionization	614 nm	Th	278
$h\nu + H$	Photoionization	0.05 a.u.	Th	279
$h\nu + Xe$	Photoionization	$670\text{-}810~\mathrm{eV}$	Th	280
$h\nu + Cs$	Photoionization	$670\text{-}810~\mathrm{eV}$	Th	280
$h\nu + Ba$	Photoionization	$670\text{-}810~\mathrm{eV}$	Th	280
$h\nu + He$	Photoionization	60-142 eV	Exp	281
$h\nu + Ne$	Photoionization	60-142 eV	Exp	281
$\mathbf{h}\nu + \mathbf{NO}_2$	Photoionization	410-420 eV	E/T	282
$h\nu + He$	Photoionization	100-120 eV	Th	283
$h\nu + H$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + C$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + F$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Al$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Si$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Ti$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + V$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Fe$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Co$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Ni$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Cu$	Elastic Scattering	14.9 keV	Exp	284
$\mathbf{h}\nu + \mathbf{Zn}$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Ge$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Zr$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Nb$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Mo$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Rh$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Pd$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Ag$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Cd$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + In$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Sn$	Elastic Scattering	14.9 keV	Exp	284
$h\nu + Gd$	Elastic Scattering	14.9 keV	Exp	284

$h\nu + Dy$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Ho$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Tm$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Yb$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + W$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Re$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Ir$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Pt$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Au$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + Hg$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + U$	Elastic Scattering	14.9 keV	Exp 284
$h\nu + H$	Photoionization	14.9 keV	Exp 284
$h\nu + C$	Photoionization	14.9 keV	Exp 284
$h\nu + F$	Photoionization	14.9 keV	Exp 284
$h\nu + Al$	Photoionization	14.9 keV	Exp 284
$h\nu + Si$	Photoionization	14.9 keV	Exp 284
$h\nu + Ti$	Photoionization	14.9 keV	Exp 284
$h\nu + V$	Photoionization	14.9 keV	Exp 284
$h\nu + Fe$	Photoionization	14.9 keV	Exp 284
$h\nu + Co$	Photoionization	14.9 keV	Exp 284
$h\nu + Ni$	Photoionization	14.9 keV	Exp 284
$h\nu + Cu$	Photoionization	14.9 keV	Exp 284
$h\nu + Zn$	Photoionization	14.9 keV	Exp 284
$h\nu + Ge$	Photoionization	14.9 keV	Exp 284
$h\nu + Zr$	Photoionization	14.9 keV	Exp 284
$h\nu + Nb$	Photoionization	14.9 keV	Exp 284
$h\nu + Mo$	Photoionization	14.9 keV	Exp 284
$h\nu + Rh$	Photoionization	14.9 keV	Exp 284
$h\nu + Pd$	Photoionization	14.9 keV	Exp 284
$h\nu + Ag$	Photoionization	14.9 keV	Exp 284
$h\nu + Cd$	Photoionization	14.9 keV	Exp = 284
$h\nu + In$	Photoionization	14.9 keV	Exp = 284
$h\nu + Sn$	Photoionization	14.9 keV	Exp = 284
$h\nu + Gd$	Photoionization	14.9 keV	Exp = 284
$h\nu + Dy$	Photoionization	14.9 keV	Exp = 284
$h\nu + Ho$	Photoionization	14.9 keV	Exp = 284
$h\nu + Tm$	Photoionization	14.9 keV	Exp 284
$h\nu + Yb$	Photoionization	14.9 keV	Exp = 284
$h\nu + W$	Photoionization	14.9 keV	Exp = 284
$h\nu + Re$	Photoionization	14.9 keV	Exp = 284
$h\nu + lr$	Photoionization	14.9 keV	Exp 284
$h\nu + Pt$	Photoionization	14.9 keV	Exp 284
$h\nu + Au$	Photoionization	14.9 keV	Exp 284
$h\nu + Hg$	Photoionization	14.9 keV	Exp 284
$h\nu + 0$	Photoionization	14.9 keV	Exp 284
$h\nu + He$	Photoionization	75-300 eV	Th 285
$h\nu + Yb$	Elastic Scattering	60 keV	Exp 286
$h\nu + Lu$	Elastic Scattering	60 keV	Exp 286
$h\nu + Hf$	Elastic Scattering	60 keV	Exp 286
$\mathbf{h}\nu + \mathbf{H}$	Photoionization	1-4 eV	Th 287
$h\nu + Ar$	Photoionization	Undef.	$\frac{E}{\Gamma}$ 288
$h\nu + Xe$	Photoionization	Undef.	E/T 288
$\mathbf{n}\nu + \mathbf{O}_2$	Photoionization	Undet.	Е/Т 288
$\mathbf{n}\nu + \mathbf{H}_2$	Photoionization	75.5-103 eV	Exp 289
$\mathbf{h}\nu + \mathbf{D}_2$	Photoionization	75.5-103 eV	Exp 289
$\mathbf{h}\nu + \mathbf{H}_2\mathbf{O}$	Photodissociation	531-552 eV	Exp 290
$\mathbf{h}\nu + \mathbf{H}_2\mathbf{O}$	Photoionization	531-552 eV	Exp 290

$h\nu + H_2^+$	Photodissociation	532 nm	Th	291
$h\nu + H_2^{+*}$	Photodissociation	532 nm	Th	291
$\mathbf{h}\nu + \mathbf{N}_2$	Fluorescence	408-546 eV	Exp	292
$h\nu + N_2O$	Fluorescence	408-546 eV	Exp	292
$h\nu + O_2$	Fluorescence	408-546 eV	Exp	292
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	408-546 eV	Exp	292
$h\nu + N_2O$	Photoionization	408-546 eV	Exp	292
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	408-546 eV	Exp	292
$h\nu + Be$	Photoionization	28-40 eV	Exp	293
$h\nu + H^-$	Photodetachment	0.5-24 keV	Th	294
$\mathbf{h} u + \mathbf{H}^{-}$	Photoionization	0.5-24 keV	Th	294
$h\nu + He$	Photoionization	0.5-24 keV	Th	294
$\mathbf{h}\nu + \mathbf{C}_{60}$	Photoionization	20-300 eV	Exp	295
$h\nu + H_2^+$	Photoionization	532 nm	Th	296
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photodissociation	785 nm	Th	297
$h\nu + HD^+$	Photodissociation	785 nm	Th	297
$h\nu + CO_2$	Photodissociation	800 nm	Exp	298
$\mathbf{h}\nu + \mathbf{NO}_2$	Photodissociation	800 nm	Exp	298
$h\nu + K$	Photoionization	Few eV	Th	299
$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_4$	Photoionization	800 nm	Th	300
$\mathbf{h} u + \mathbf{C}_6\mathbf{H}_6$	Photoionization	800 nm	Th	300
$\mathbf{h} u$ + $\mathbf{C}_{6}\mathbf{H}_{5}\mathbf{F}$	Photoionization	800 nm	Th	300
$\mathbf{h} u + \mathbf{C}_{6}\mathbf{H}_{4}\mathbf{ClF}$	Photoionization	800 nm	Th	300
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	390 nm	Th	301
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	390 nm	Th	301
$\mathbf{h}\nu + \mathbf{F}_2$	Photoionization	390 nm	Th	301
$h\nu + He$	Photoexcitation	30-45 eV	Th	302
$h\nu + He$	Photoionization	30-45 eV	Th	302
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photodissociation	790-800 nm	Th	303
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photoionization	790-800 nm	Th	303
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photodissociation	0.6-0.84 a.u.	Th	304
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photoionization	0.6-0.84 a.u.	Th	304
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	1.6 eV	Th	305
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	1.6 eV	Th	305
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	1.6 eV	Th	305
$h\nu + Ba$	Photoionization	100-150 eV	Th	306
$h\nu + Mn^{2+}$	Total Absorption, Scattering	45-75 eV	Exp	307
$h\nu + Ar$	Photoionization	246-253 eV	E/T	308
$h\nu + He$	Photoionization	39-47 eV	Th	309
$\mathbf{h}\nu + \mathbf{SF}_6$	Photodissociation	686-690 eV	Exp	310
$\mathbf{h}\nu + \mathbf{SF}_6$	Photoionization	686-690 eV	Exp	310
$h\nu + He$	Photoionization	$72 \mathrm{eV}$	Th	311
$h\nu + He^*$	Photoionization	$72 \mathrm{eV}$	Th	311
$h\nu + Cd^+$	Total Absorption, Scattering	24-110 eV	Exp	312
$\mathbf{h} u$ + $\mathbf{C}\mathbf{d}^{2+}$	Total Absorption, Scattering	24-110 eV	Exp	312
$h\nu + CH_3OCH_3$	Photodissociation	450-550 nm	Exp	313
$h\nu + CH_3OCH_3$	Photoionization	450-550 nm	Exp	313
$h\nu + Kr$	Photoionization	Undef.	Exp	314
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photodissociation	0.76-0.88 a.u.	Th	315
$\mathbf{h}\nu + \mathbf{H}_2^+$	Photoionization	0.76-0.88 a.u.	Th	315
$h\nu + He$	Photoionization	179-529 eV	E/T	316
$h\nu + He$	Photoionization	179-529 eV	E/T	317
$h\nu + He$	Photoionization	179-529 eV	${\rm E}/{}'\Gamma$	318
$\mathbf{h}\nu + \mathbf{H}_2$	Fluorescence	13.97-15.84 eV	Exp	319
$\mathbf{h}\nu + \mathbf{D}_2$	Fluorescence	13.97-15.84 eV	Exp	319
$\mathbf{h}\nu + \mathbf{H}_2$	Photoexcitation	13.97-15.84 eV	Exp	319
$\mathbf{h}\nu + \mathbf{D}_2$	Photoexcitation	13.97-15.84 eV	Exp	319

$h\nu$ +	Er	Fluorescence	9.2 keV	E/T	320
$h\nu +$	Er	Photoionization	9.2 keV	É/T	320
$h\nu +$	Xe	Photoexcitation	664-694 eV	Éxp	321
$h\nu +$	Xe	Photoionization	664-694 eV	Exp	321
$h\nu$ +	\mathbf{Sr}	Photoionization	0.21-0.158 a.u.	Th	322
$h\nu$ +	He	Photoionization	800-1800 nm	Exp	323
$h\nu$ +	Ne	Photoionization	800-1800 nm	Exp	323
$h\nu$ +	Ar	Photoionization	800-1800 nm	Exp	323
$h\nu$ +	\mathbf{Na}_2	Fluorescence	4545-5145 Å	Exp	324
$h\nu$ +	CO	Photodissociation	7.78-22.94 eV	Th	325
$h\nu$ +	$\mathbf{H}_{2}\mathbf{S}$	Photodissociation	7.78-22.94 eV	Th	325
$h\nu$ +	TlH	Photodissociation	7.78-22.94 eV	Th	325
$h\nu$ +	CO	Photoionization	7.78-22.94 eV	Th	325
$h\nu$ +	$\mathbf{H}_{2}\mathbf{S}$	Photoionization	7.78-22.94 eV	Th	325
$h\nu$ +	TlH	Photoionization	7.78-22.94 eV	Th	325
$h\nu$ +	\mathbf{C}^{2+}	Photoionization	292-325 eV	E/T	326
$h\nu$ +	$\mathbf{CF}_3\mathbf{SF}_5$	Total Absorption, Scattering	8-60 eV	E/T	327
$h\nu$ +	$\mathbf{CF}_{3}\mathbf{SF}_{5}$	Photoionization	8-60 eV	E/T	327
$h\nu +$	\mathbf{Fe}^{22+}	Photoexcitation	10 Å	Th	328
$h\nu$ +	\mathbf{Fe}^{19+}	Photoexcitation	Undef.	Th	329
$h\nu +$	Na^{3+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu +$	Mg^{4+}	Photoexcitation	$0.0 - 3x10^{6} cm^{-1}$	Th	330
$h\nu +$	Al^{o+}	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th	330
$h\nu +$	Si^{0+}	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th	330
$h\nu +$	$\mathbf{P}^{\prime \pm}$	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th	330
$h\nu +$	\mathbf{S}^{0+}	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th	330
$h\nu +$	CI^{3+}	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th	330
$h\nu +$	Ar^{10+}	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th	330
$n\nu + h\nu + h\nu$	K^{-1}	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	1 n Th	330
$n\nu + h\nu +$	Ca^{+}	Photoexcitation	$0.0 - 3x10^{\circ} \ cm^{-1}$	111 Th	220 220
$\mathbf{n}\nu + \mathbf{h}\nu + \mathbf{h}\nu$	T ;14+	Photoexcitation	$0.0 - 3x10^{6} cm^{-1}$	111 Th	330
$\mathbf{h}\nu + \mathbf{h}\nu \perp$	V^{15+}	Photoexcitation	$0.0 - 3x10^6 \text{ cm}^{-1}$	Th Th	330
$\mathbf{h}\nu + \mathbf{h}\nu \perp$	\mathbf{Cr}^{16+}	Photoexcitation	$0.0 - 3x10^6 \text{ cm}^{-1}$	Th	330
$\mathbf{h}\nu + \mathbf{h}\nu + \mathbf{h}\nu$	Mn ¹⁷⁺	Photoexcitation	$0.0 - 3x10^6 cm^{-1}$	Th	330
$\mathbf{h}\nu + \mathbf{h}\nu + \mathbf{h}\nu$	\mathbf{Fe}^{18+}	Photoexcitation	$0.0 - 3x10^6 cm^{-1}$	Th	330
$h\nu$ +	Co^{19+}	Photoexcitation	$0.0 - 3x10^6 cm^{-1}$	Th	330
$h\nu$ +	Ni^{20+}	Photoexcitation	$0.0 - 3x10^6 cm^{-1}$	Th	330
$h\nu +$	Cu^{21+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu +$	Zn^{22+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu +$	\mathbf{Ga}^{23+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu +$	\mathbf{Ge}^{24+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu +$	\mathbf{As}^{25+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu +$	\mathbf{Se}^{26+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu$ +	\mathbf{Br}^{27+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu$ +	\mathbf{Kr}^{28+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu$ +	\mathbf{Rb}^{29+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu$ +	\mathbf{Sr}^{30+}	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th	330
$h\nu$ +	Ni^{3+}	Photoexcitation	0.0-2.0 Ry	Th	331
$h\nu$ +	\mathbf{Ar}^{12+}	Photoexcitation	$0.0-35.0 \mathrm{Ry}$	Th	332
$h\nu$ +	\mathbf{Ar}^{13+}	Photoexcitation	$0.0-35.0 \mathrm{Ry}$	Th	332
$h\nu$ +	\mathbf{Ar}^{14+}	Photoexcitation	0.0-35.0 Ry	Th	332
$h\nu$ +	\mathbf{Fe}^{3+}	Photoexcitation	$0.0-100,000 \ \AA$	Th	333
$h\nu$ +	\mathbf{N}^{2+}	Photoionization	0.0-150.0 eV	Exp	334
$h\nu$ +	N^{3+}	Photoionization	0.0-150.0 eV	Exp	334
$h\nu$ +	O ³⁺	Photoionization	0.0-150.0 eV	Exp	334
$h\nu$ +	O^{4+}	Photoionization	0.0-150.0 eV	Exp	334

$\mathbf{h}\nu + \mathbf{F}^{3+}$	Photoionization	0.0-150.0 eV	Exp	334
$\mathbf{h} u + \mathbf{F}^{4+}$	Photoionization	0.0-150.0 eV	Exp	334
$h\nu + Ne^{4+}$	Photoionization	0.0-150.0 eV	Exp	334
$h\nu + Pt$	Photoexcitation	5230-2068 \mathring{A}	Exp	335
$h\nu + Xe$	Photoionization	$108,347 \ cm^{-1}$	E/T	336
$h\nu + He$	Photoionization	20-450 excess eV	E/T	337
$h\nu + Mg$	Photoionization	3.3-3.6 eV	E/T	338
$h\nu + Ne$	Photoexcitation	10-33 eV	E/T	339
$\mathbf{h}\nu + \mathbf{H}_2$	Photodissociation	795 nm	Exp	340
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	795 nm	Exp	340
$\mathbf{h} u$ + $\mathbf{N}\mathbf{a}^{10+}$	Fluorescence	3.6 eV	Th	341
$\mathbf{h} u$ + $\mathbf{N}\mathbf{a}^{10+}$	Photoionization	3.6 eV	Th	341
$h\nu + CH_4$	Photoexcitation	18-51 eV; 80 eV	Exp	342
$h\nu + He$	Photoionization	795 nm	E/T	343
$h\nu + Ne$	Photoionization	795 nm	E/T	343
$h\nu + Ar$	Photoionization	795 nm	E/T	343
$h\nu + B$	Total Absorption, Scattering	390-550 eV	E/T	344
$h\nu + C$	Total Absorption, Scattering	390-550 eV	E/T	344
$h\nu + CO$	Total Absorption, Scattering	390-550 eV	E/T	344
$h\nu + CO_2$	Total Absorption, Scattering	390-550 eV	E/T	344
$\mathbf{h} u$ + \mathbf{N}_2	Total Absorption, Scattering	390-550 eV	E/T	344
$h\nu + N_2O$	Total Absorption, Scattering	390-550 eV	E/T	344
$\mathbf{h} u + \mathbf{O}_2$	Total Absorption, Scattering	390-550 eV	E/T	344
$\mathbf{h} u + \mathbf{C}_2\mathbf{H}_2$	Total Absorption, Scattering	390-550 eV	E/T	344
$\mathbf{h} u + \mathbf{CS}_2$	Total Absorption, Scattering	390-550 eV	E/T	344
$h\nu + OCS$	Total Absorption, Scattering	390-550 eV	E/T	344
$h\nu + B$	Photoexcitation	390-550 eV	E/T	344
$h\nu + C$	Photoexcitation	390-550 eV	E/T	344
$h\nu + CO$	Photoexcitation	390-550 eV	E/T	344
$h\nu + CO_2$	Photoexcitation	390-550 eV	E/T	344
$\mathbf{h}\nu + \mathbf{N}_2$	Photoexcitation	390-550 eV	E/T	344
$\mathbf{h}\nu + \mathbf{N}_2\mathbf{O}$	Photoexcitation	390-550 eV	E/T	344
$\mathbf{h}\nu + \mathbf{O}_2$	Photoexcitation	390-550 eV	E/T	344
$\mathbf{n}\nu + \mathbf{C}_2\mathbf{H}_2$	Photoexcitation	390-550 eV	E/I E/T	344
$n\nu + CS_2$	Photoexcitation	390-550 eV	E/I E/T	344
$n\nu + 0CS$	Photoexcitation Db st size i setion	390-550 eV	E/I E/T	344
$n\nu + B$	Photoionization	390-550 eV 200 550 eV	E/1 E/T	344 244
$h\nu + C$	Photoionization	200 550 eV	Е/ I Г/Т	044 944
$h\nu + CO$	Photoionization	200 550 eV	\mathbf{E}/\mathbf{T}	244
$h\nu + CO_2$ $h\nu + N_2$	Photoionization	300 550 eV	E/T	344
$h\nu + N_2$	Photoionization	300 550 eV	\mathbf{E}/\mathbf{T}	344
$h\nu + N_2 O$	Photoionization	390-550 eV	E/T	344
$h\nu + O_2$ $h\nu + C_2H_2$	Photoionization	390-550 eV	E/T	344
$h\nu + C_2 H_2$ $h\nu + CS_2$	Photoionization	390-550 eV	E/T	344
$h\nu + OCS$	Photoionization	390-550 eV	E/T	344
$h\nu + Hg$	Photoionization	15-17 eV	E/T	345
$h\nu + H_0^+$	Photodissociation	790 nm	E/T	346
$h\nu + H_2$ $h\nu + Cl^+$	Photoexcitation	1000 Å	Eyn	347
$h\nu + Cl^{2+}$	Photoexcitation	1000 Å	Exp	347
$h\nu + N_c$	Photoexcitation	950 Å	Evn	3/8
$h\nu + N_2$ $h\nu + S^{6+}$	Photoexcitation	75-20 Å	E/T	340
$h_{\nu} + S^{7+}$	Photoexcitation	75-20 Å	E/T	3/0
$h\nu + S^{8+}$	Photoexcitation	75-20 Å	E/T	3/0
$h\nu + S^{9+}$	Photoexcitation	75-20 Å	E/T	349
$\mathbf{h}\nu + \mathbf{S}^{10+}$	Photooxitation	75 20 Å	ы/т F/T	949 940
$\mathbf{n}\nu + 5$	r notoexcitation	10-20 A	Ľ/ 1	549

$h\nu + S^{11+}$	Photoexcitation	75-20 \mathring{A}	E/T	349
$h\nu + S^{12+}$	Photoexcitation	75-20 Å	E/T	349
$h\nu + S^{13+}$	Photoexcitation	75-20 Å	E/T	349
$h\nu + O$	Photoexcitation	22 \AA	E/T	350
$h\nu + CH^+$	Photodissociation	$31,600-33,000 \ cm^{-1}$	Th	351
$h\nu + O_2$	Photoionization	21-26 eV	Th	352
$h\nu + Xe^{3+}$	Photoionization	37.5 -115 eV	Exp	353
$h\nu + V^-$	Photodetachment	457.9-647.1 nm	Exp	354
$h\nu + Kr$	Photoexcitation	270 nm	Exp	355
$h\nu + Ca$	Photoionization	488 nm	Exp	356
$h\nu + NO$	Total Absorption, Scattering	$530\text{-}536~\mathrm{eV}$	Th	357
$h\nu + NO$	Photoexcitation	$530\text{-}536~\mathrm{eV}$	Th	357
$h\nu + O_2$	Photodissociation	$1-5.6 \ 10^{14} \ \mathrm{W}/cm^2$	Th	358
$\mathbf{h}\nu + \mathbf{F}^{2+}$	Photoionization	$56.3\text{-}75.6\;\mathrm{eV}$	E/T	359
$h\nu + Ne^{3+}$	Photoionization	$56.3\text{-}75.6\;\mathrm{eV}$	E/T	359
$h\nu + SF_6$	Fluorescence	25-80 eV	Exp	360
$h\nu + H^-$	Photodetachment	0.011-0.028 a.u.	Th	361
$h\nu + Kr$	Photoexcitation	$1670-1685 { m ~eV}$	Exp	362
$h\nu + Kr$	Photoionization	$1670-1685 \ eV$	Exp	362
$h\nu + He$	Fluorescence	$69-73 \mathrm{eV}$	Exp	363
$h\nu + He$	Photoexcitation	$69-73 \mathrm{eV}$	Exp	363
$h\nu + Xe$	Photoionization	$10^{16} - 10^{18} \text{ W/}cm^2$	Exp	364
$h\nu + Ne$	Elastic Scattering	863-3900 eV	Th	365
$h\nu + Si^{4+}$	Elastic Scattering	863-3900 eV	Th	365
$h\nu + Ar^{8+}$	Elastic Scattering	863-3900 eV	Th	365
$h\nu + HCl$	Photodissociation	198-204 eV	Exp	366
$h\nu + DCl$	Photodissociation	198-204 eV	Exp	366
$h\nu + HCl$	Photoionization	198-204 eV	Exp	366
$h\nu + DCl$	Photoionization	198-204 eV	Exp	366
$h\nu + Au$	Total Absorption, Scattering	5-14.5 keV	Exp	367
$h\nu + Au$	Photoionization	5-14.5 keV	Exp	367
$h\nu + Zr$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Nb$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Mo$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Tc$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Ru$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Rh$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Pd$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Ag$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Cd$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + In$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Sn$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Sb$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Te$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Ce$	Photoionization	$59.5 \ \mathrm{keV}$	Exp	368
$h\nu + Pr$	Photoionization	59.5 keV	Exp	368
$h\nu + Nd$	Photoionization	59.5 keV	Exp	368
$h\nu + Pm$	Photoionization	59.5 keV	Exp	368
$h\nu + Sm$	Photoionization	59.5 keV	Exp	368
$h\nu + Eu$	Photoionization	59.5 keV	Exp	368
$h\nu + Gd$	Photoionization	59.5 keV	Exp	368
$h\nu + Tb$	Photoionization	59.5 keV	Exp	368
$h\nu + Dy$	Photoionization	59.5 keV	Exp	368
$h\nu + Ho$	Photoionization	59.5 keV	Exp	368
$h\nu + Er$	Photoionization	59.5 keV	Exp	368
$h\nu + Fe$	Elastic Scattering	662 keV	Exp	369
$h\nu + Cu$	Elastic Scattering	662 keV	Exp	369

$h\nu + Zr$	Elastic Scattering	662 keV	Exp	369
$h\nu + Sn$	Elastic Scattering	662 keV	Exp	369
$h\nu + Ta$	Elastic Scattering	662 keV	Exp	369
$h\nu + W$	Elastic Scattering	662 keV	Exp	369
$\mathbf{h}\nu + \mathbf{H}_2$	Photodissociation	790 nm	Exp	370
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	790 nm	Exp	370
$h\nu + He^+$	Photoionization	15-200 eV	Exp	371
$h\nu + Cs^+$	Photoionization	15-200 eV	Exp	371
$h\nu + Ne$	Photoionization	790 nm	Exp	372
$h\nu + Xe$	Photoionization	790 nm	Exp	372
$h\nu + Xe^+$	Photoionization	790 nm	Exp	372
$h\nu + Ar$	Photoionization	775 nm	Exp	373
$h\nu + C^{4+}$	Photoexcitation	Undef.	Th	374
$h\nu + N^{5+}$	Photoexcitation	Undef.	Th	374
$\mathbf{h}\nu + \mathbf{O}^{6+}$	Photoexcitation	Undef.	Th	374
$h\nu + C^{4+}$	Photoionization	Undef.	Th	374
$\mathbf{h}\nu + \mathbf{N}^{5+}$	Photoionization	Undef.	Th	374
$\mathbf{h}\nu + \mathbf{O}^{6+}$	Photoionization	Undef.	Th	374
$h\nu + Ca^{8+}$	Photoexcitation	Undef.	Th	375
$h\nu + Si^{4+}$	Photoexcitation	Undef.	Th	376
$h\nu + H$	Fluorescence	0-16 THz	Th	377
$h\nu + Ar$	Fluorescence	210 eV	E/T	378
$h\nu + Ar$	Photoexcitation	210 eV	E/T	378
$h\nu + H$	Photoionization	10^{10} W/cm^2	Th	379
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	$10^{14} - 10^{10} \text{ W/cm}^2$	Exp	380
$h\nu + NO$	Photodissociation	10^{14} W/cm^2	Exp	381
$h\nu + NO^{2+}$	Photodissociation	10^{14} W/cm^2	Exp	381
$h\nu + NO^{2+}$	Photoionization	10^{14} W/cm^2	Exp	381
$h\nu + NO^{2}$	Photoionization	10^{11} W/cm^2	Exp	381
$n\nu + NO'$	Photodissociation	$5x10^{-1}$ W/cm ⁻	Exp	382
$n\nu + H$	Fluorescence	Under. 2500 oV	1 n Fwp	383
$\mathbf{h}\nu + \mathbf{A}\mathbf{f}$	Fluerescence	2500 eV	схр Бир	004 204
$\mathbf{n}\mathbf{\nu} + \mathbf{K}$	Photoaraitation	3500 eV	Exp Evp	384
$\mathbf{h}\mathbf{\nu} + \mathbf{K}$	Photoexcitation	3500 eV	Exp	384
$h\nu + K$	Photoionization	3500 eV	Exp Evn	384
$h\nu + K$	Photoionization	3500 eV	Evn	38/
$h\nu + H_{a}$	Photoionization	50-140 eV	цлр Th	385
$h\nu + Mn$	Fluorescence	120 eV	Evn	386
$h\nu + Mn$	Photoionization	120 eV	Exp	386
$h\nu + NaI$	Photodissociation	320 nm	Th	387
$h\nu + H_2^+$	Photodissociation	400 nm	Th	388
$h\nu + He$	Photoionization	418 nm	Exp	389
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	Undef.	Th	390
$\mathbf{h}\nu + \mathbf{H}_2$	Photodissociation	20-45 eV	E/T	391
$\mathbf{h}\nu + \mathbf{H}_{2}$	Photoexcitation	20-45 eV	E'/T	391
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	20-45 eV	E'/T	391
$h\nu + Xe$	Photoionization	$54 \mathrm{Rv}$	Th	392
$h\nu + Cs$	Photoionization	54 Rv	Th	392
$h\nu + Ba$	Photoionization	54 Ry	Th	392
$h\nu + H$	Photoionization	150-500 eV	Th	393
$h\nu + OCS$	Photoionization	174.3-570.7 eV	Exp	394
$h\nu + F^-$	Photodetachment	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T	395
$h\nu + He$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T	395
$h\nu + Ne$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T	395
$h\nu + Ar$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T	395
$h\nu + Xe$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T	395

$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	$10^{13} - 10^{16} \text{ W}/cm^2$	E/T	395
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T	395
$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_2$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	$\dot{E/T}$	395
$\mathbf{h}\nu + \mathbf{F}_2$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	$\dot{E/T}$	395
$\mathbf{h}\nu + \mathbf{C}_{6}\mathbf{H}_{6}$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	$\dot{E/T}$	395
$\mathbf{h}\nu + \mathbf{O}_2^+$	Photodissociation	$22-35 \mathrm{eV}$	Exp	396
$\mathbf{h}\nu + \mathbf{O}_2^+$	Photoionization	$22-35 \mathrm{eV}$	Exp	396
$\mathbf{h}\nu + \mathbf{O}_2^+$	Fluorescence	$17-25 \mathrm{eV}$	Exp	397
$\mathbf{h}\nu + \mathbf{O}_2^+$	Photoexcitation	17-25 eV	Exp	397
$h\nu + He$	Photoionization	0.3-0.9 a.u.	Th	398
$h\nu + H$	Photoionization	$0 - 4x10^{17} \text{ W}/cm^2$	Th	399
$h\nu + H^*$	Photoionization	$0 - 4x10^{17} \text{ W}/cm^2$	Th	399
$h\nu + Xe$	Photoexcitation	$10-12 \mathrm{eV}$	Exp	400
$h\nu + Xe$	Photoionization	10-12 eV	Exp	400
$\mathbf{h}\nu + \mathbf{B}^+$	Photoionization	10-45 eV	Th	401
$h\nu + B^{+*}$	Photoionization	$10-45 \mathrm{eV}$	Th	401
$h\nu + Mo$	Total Absorption, Scattering	13.5-41.5 keV	Exp	402
$h\nu + Mo$	Free-Free Transition	13.5-41.5 keV	Exp	402
$h\nu + W$	Elastic Scattering	$1.115 { m MeV}$	E/T	403
$h\nu + Pb$	Elastic Scattering	$1.115 { m MeV}$	E/T	403
$h\nu + Mg$	Photoionization	1.9-6 eV	Th	404
$h\nu + Cs^{-}$	Photodetachment	$0.5-1 \ 10^{12} \ \mathrm{W/cm^2}$	Th	405
$h\nu + H$	Photoexcitation	$0.6-9.1 \; { m GW}/cm^2$	Th	406
$\mathbf{h}\nu + \mathbf{O}_2$	Photodissociation	34-41 eV	Exp	407
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	34-41 eV	Exp	407
$h\nu + He$	Photoionization	70-150 eV	Th	408
$h\nu + Be^{2+}$	Photoionization	70-150 eV	Th	408
$h\nu + C^{4+}$	Photoionization	70-150 eV	Th	408
$h\nu + O^{0+}$	Photoionization	70-150 eV	Th	408
$h\nu + Ne^{\circ +}$	Photoionization	70-150 eV	Th E (Th	408
$h\nu + He$	Photon Collisions	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	409
$h\nu + Ne$	Photon Collisions	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	409
$\mathbf{h}\nu + \mathbf{A}\mathbf{r}$	Photon Collisions	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	409
$n\nu + Ae$	Photon Collisions	$10^{10} - 10^{11} \text{ W/cm}^2$ $10^{13} - 10^{17} \text{ W/cm}^2$	E/1 E/T	409
$n\nu + He$	Photoionization	$10^{13} - 10^{17} \text{ W}/cm^2$ $10^{13} - 10^{17} \text{ W}/cm^2$	E/1 E/T	409
$n\nu + Ne$	Photoionization	$10^{13} - 10^{17} \text{ W}/cm^2$ $10^{13} - 10^{17} \text{ W}/cm^2$	E/1 E/T	409
$n\nu + Ar$	Photoionization	$10^{-10} - 10^{-10} W/cm^2$	E/ 1 E / T	409
$\mathbf{n}\mathbf{\nu} + \mathbf{A}\mathbf{e}$	Photon Collisions	10 - 10 W/Cm	E/ 1 Erm	409
$h\nu + C$	Photon Collisions	10-300 eV	Exp	410
$\mathbf{h}\nu + \mathbf{K}\mathbf{r}$	Photon Collisions	10-300 eV	Exp	410
$h\nu + N_{e}$	Photon Collisions	10-300 eV	Exp	410
$h\nu + H_2$ $h\nu + H_3$ S	Photon Collisions	10-300 eV	Exp	410
$h\nu + H_2 S$ $h\nu + HCl$	Photon Collisions	10-300 eV	Exp	410
$h\nu + HOI$ $h\nu + C$	Photoionization	10-300 eV	Exp	410
$h\nu + e$ $h\nu + Ar$	Photoionization	10-300 eV	Exp	410
$h\nu + Kr$	Photoionization	10-300 eV	Exp	410
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	10-300 eV	Exp	410
$h\nu + H_2S$	Photoionization	10-300 eV	Exp	410
$h\nu + HCl$	Photoionization	10-300 eV	Exp	410
$h\nu + CO_{2}^{3+}$	Photon Collisions	650-700 eV	Exp	411
$h\nu + CF_4$	Photon Collisions	650-700 eV	Exp	411
$h\nu + BF_3^{4+}$	Photon Collisions	650-700 eV	Exp	411
$h\nu + HCCH^{3+}$	Photon Collisions	650-700 eV	Exp	411
$h\nu + CO_2^{3+}$	Photodissociation	650-700 eV	Exp	411
$\mathbf{h}\nu + \mathbf{CF}_{4}$	Photodissociation	$650-700 \mathrm{~eV}$	Exp	411
$\mathbf{h}\nu + \mathbf{BF}_{3}^{4+}$	Photodissociation	$650\text{-}700~\mathrm{eV}$	Exp	411

$h\nu + HCCH^{3+}$	Photodissociation	650-700 eV	Exp	411
$\mathbf{h}\nu + \mathbf{CO}_2^{3+}$	Photoionization	650-700 eV	Exp	411
$\mathbf{h}\nu + \mathbf{CF}_4$	Photoionization	650-700 eV	Exp	411
$h\nu + BF_3^{4+}$	Photoionization	650-700 eV	Exp	411
$\mathbf{h} u$ + HCCH ³⁺	Photoionization	650-700 eV	Exp	411
$h\nu + He$	Photon Collisions	$0.1-450 \ eV$	Exp	412
$\mathbf{h}\nu + \mathbf{H}_2$	Photon Collisions	$0.1-450 \ eV$	Exp	412
$h\nu + HD$	Photon Collisions	$0.1-450 \ eV$	Exp	412
$\mathbf{h}\nu + \mathbf{D}_2$	Photon Collisions	$0.1-450 \ eV$	Exp	412
$h\nu + He$	Photoionization	$0.1-450 \ eV$	Exp	412
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	0.1-450 eV	Exp	412
$h\nu + HD$	Photoionization	$0.1-450 \ eV$	Exp	412
$\mathbf{h}\nu + \mathbf{D}_2$	Photoionization	0.1-450 eV	Exp	412
$\mathbf{h}\nu + \mathbf{O}_3$	Photon Collisions	Undef.	Exp	413
$h\nu + ClONO_2$	Photon Collisions	Undef.	Exp	413
$h\nu + HClO_4$	Photon Collisions	Undef.	Exp	413
$\mathbf{h} u$ + (CH ₃) ₂ S	Photon Collisions	Undef.	Exp	413
$\mathbf{h}\nu + \mathbf{O}_3$	Total Absorption, Scattering	Undef.	Exp	413
$h\nu + ClONO_2$	Total Absorption, Scattering	Undef.	Exp	413
$h\nu + HClO_4$	Total Absorption, Scattering	Undef.	Exp	413
$\mathbf{h} u$ + (CH ₃) ₂ S	Total Absorption, Scattering	Undef.	Exp	413
\mathbf{NH}_3	Photon Collisions	Undef.	Exp	413
\mathbf{NH}_3	Photoionization	Undef.	Exp	413
$\mathbf{n}\mathbf{h} u + \mathbf{H}_2^+$	Photodissociation	228-400 nm	Th	131
$\mathbf{n}\mathbf{h} u + \mathbf{H}_2^+$	Photoionization	228-400 nm	Th	131
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{N}\mathbf{e}$	Photoionization	1.5 eV	Th	132
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{N}\mathbf{e}$	Photoionization	1.55 eV	Th	146
$\mathbf{n}\mathbf{h} u + \mathbf{N}_2$	Photodissociation	800 nm	Exp	163
$\mathbf{n}\mathbf{h} u + \mathbf{N}_2$	Photoionization	800 nm	Exp	163
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{H}\mathbf{e}$	Photoionization	248 nm	Th	164
$\mathbf{n}\mathbf{h} u + \mathbf{H}^{-}$	Photodetachment	$10.6 \ \mu \ \mathrm{m}$	Th	180
$nh\nu + He$	Photoionization	780 nm	Th	183
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{A}\mathbf{r}^{\prime+}$	Photoionization	52.5-54 eV	Th	234
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{N}\mathbf{e}$	Photoionization	65.5-68.3 eV	Exp	235
$\mathbf{n}\mathbf{h} u + \mathbf{H}_2^+$	Photoionization	532 nm	Th	296
$nh\nu + HD^+$	Photodissociation	785 nm	Th	297
$nh\nu + CO_2$	Photodissociation	800 nm	Exp	298
$nh\nu + NO_2$	Photodissociation	800 nm	Exp	298
$nn\nu + He$	Photoionization	39-47 eV	In E	309
$nn\nu + Ae$	Photoionization Distaination	$10^{-5} - 10^{-5}$ W/cm ⁻	Exp E	304
$nn\nu + N_2$	Photoionization	$10^{-2} - 10^{-3}$ W/cm ²	Exp Th	380
$2h\nu + Ar$	Photoionization	25 eV 25 eV	1 fi Th	147
$2h\nu + Ae$	Photoionization	25 eV Undef	111 Th	147
$2n\nu + n$ $2h\nu + Xo^{53+}$	Photoionization	Undef. Undef	111 Th	195
$2h\nu + Xe^{-1}$	Photoionization	Undef. Undef	тн Тh	195
$2h\nu + 0$	Photoionization	5 4_{-7} 8. 8-14 65 eV	Th	107
$2h\nu + H_{0}$	Photoionization	800 nm	Th	226
$2h\nu + H_2$	Photoionization	800 nm	Th	220
$3h\nu + Ar$	Photoionization	5 4-7 8· 8-14 65 eV	Th	107
OH	Photon Collisions	Undef	Exp	413
OH	Photoionization	Undef.	Exp	413
$(H_2O)(CO)$	Photon Collisions	Undef.	Exp	413
$(H_2O)(CO)$	Photodissociation	Undef.	Exp	413
$h\nu + H Z = ?-?$	Photoionization	10^{16} W/cm^2	Th	379
$h\nu + H Z = ?-?$	Fluorescence	Undef.	Th	383
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{H} \mathbf{Z} = ?-?$	Photoionization	$10^{16} {\rm W}/cm^2$	Th	379

$2h\nu + H Z = ?-?$	Fluorescence	Undef.	Th	383
$h\nu + He Z = ?-?$	Photoionization	Undef.	Th	254

2.2.2 Electron Collisions

K + Xe	Excitation	Undef.	Th	662
$\mathbf{e} + \mathbf{H}$	Recombination	4-16 K	Th	414
$\mathbf{e} + \mathbf{C}_4 \mathbf{H}_6$	Elastic Scattering	10-60 eV	Th	415
$\mathbf{e} + \mathbf{C}_4 \mathbf{H}_6$	Angular Scattering	10-60 eV	Th	415
e + H	Angular Scattering	13.6-7830 eV	Th	416
$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Angular Scattering	13.6-7830 eV	Th	416
$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+}$	Angular Scattering	13.6-7830 eV	Th	416
$\mathbf{e} + \mathbf{B}\mathbf{e}^{3+}$	Angular Scattering	13.6-7830 eV	Th	416
e + H	Ionization	13.6-7830 eV	Th	416
$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Ionization	13.6-7830 eV	Th	416
$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+}$	Ionization	13.6-7830 eV	Th	416
$\mathbf{e} + \mathbf{B}\mathbf{e}^{3+}$	Ionization	13.6-7830 eV	Th	416
$e + H^-$	Detachment	0-170 eV	Exp	417
$e + H^-$	Ionization	$0-170 \mathrm{eV}$	Exp	417
e + Xe	Angular Scattering	16-150 eV	Exp	418
e + Xe	Fluorescence	16-150 eV	Exp	418
e + Xe	Excitation	16-150 eV	Exp	418
e + Xe	Ionization	16-150 eV	Exp	418
e + Rb	Angular Scattering	50 eV	E/T	419
e + Rb	Ionization	50 eV	E/T	419
e + He	Ionization	5.6 keV	E/T	420
e + H	Excitation	$40-60 \mathrm{eV}$	E/T	421
$\mathbf{e} + \mathbf{B}^+$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{C}^{2+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{N}^{3+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{O}^{4+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{F}^{5+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{N}\mathbf{e}^{6+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{A} \mathbf{l}^{7+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{A}\mathbf{r}^{14+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{F} \mathbf{e}^{22+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{A} \mathbf{g}^{43+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{H} \mathbf{g}^{76+}$	Ionization	1-10 ionizing energy	E/T	422
$\mathbf{e} + \mathbf{H}_2$	Elastic Scattering	$3.1-7.5 { m MeV}$	E/T	423
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	$3.1-7.5 \mathrm{MeV}$	E/T	423
e + H	Elastic Scattering	0.4-5.0 k	Th	424
$\mathbf{e} + \mathbf{S}\mathbf{c}^{18+}$	Recombination	0-30 eV	E/T	425
$\mathbf{e} + \mathbf{S}\mathbf{c}^+$	Ionization	0-1000 eV	E/T	426
e + Sr	Elastic Scattering	1-100 eV	E/T	427
e + Ba	Elastic Scattering	1-100 eV	E/T	427
$\mathbf{e} + \mathbf{Sr}$	Angular Scattering	1-100 eV	E/T	427
e + Ba	Angular Scattering	1-100 eV	E/T	427
$\mathbf{e} + \mathbf{Sr}$	Total Scattering	1-100 eV	E/T	427
e + Ba	Total Scattering	1-100 eV	E/T	427
e + Kr	Elastic Scattering	250-4500 eV	E/T	428
e + Xe	Elastic Scattering	250-4500 eV	E/T	428
e + Kr	Excitation	250-4500 eV	E/T	428
e + Xe	Excitation	250-4500 eV	E/T	428
e + Kr	Ionization	250-4500 eV	E/T	428
e + Xe	Ionization	250-4500 eV	E/T	428
$\mathbf{e} + \mathbf{H}_2$	Dissociation	0-6 eV	Th	429

e +	\mathbf{H}_2	Excitation	0-6 eV	Th	429
e +	${f Bi^+}$	Ionization	0-100 eV	E/T	430
\mathbf{e} +	${f Bi}^{2+}$	Ionization	0-100 eV	E/T	430
\mathbf{e} +	${f Bi}^{3+}$	Ionization	0-100 eV	E/T	430
\mathbf{e} +	${f Bi}^{4+}$	Ionization	0-100 eV	E/T	430
e +	${f Bi}^{5+}$	Ionization	0-100 eV	E/T	430
\mathbf{e} +	${f Bi}^{6+}$	Ionization	0-100 eV	E/T	430
e +	${f Bi}^{7+}$	Ionization	0-100 eV	E/T	430
e +	\mathbf{Bi}^{8+}	Ionization	0-100 eV	E/T	430
e +	${f Bi}^{9+}$	Ionization	0-100 eV	E/T	430
e +	\mathbf{Bi}^{10+}	Ionization	0-100 eV	E/T	430
e +	\mathbf{H}_{3}^{+}	Dissociation	0-10 eV	E/T	431
e +	\mathbf{H}_{3}^{+}	Recombination	0-10 eV	E/T	431
e +	\mathbf{Pb}^{79+}	Recombination	13-19 eV	E/T	432
e +	He^+	Excitation	3-225 Ry	Th	433
\mathbf{e} +	${f Li}^{2+}$	Excitation	3-225 Ry	Th	433
\mathbf{e} +	Be^{3+}	Excitation	3-225 Ry	Th	433
\mathbf{e} +	\mathbf{B}^{4+}	Excitation	3-225 Ry	Th	433
\mathbf{e} +	\mathbf{C}^{5+}	Excitation	3-225 Ry	Th	433
\mathbf{e} +	\mathbf{O}^{7+}	Excitation	3-225 Ry	Th	433
\mathbf{e} +	${f Ne}^{9+}$	Excitation	3-225 Ry	Th	433
\mathbf{e} +	Pb	Angular Scattering	5-13 eV	E/T	434
\mathbf{e} +	Pb	Excitation	5-13 eV	E/T	434
\mathbf{e} +	$C_4 F_6$	Elastic Scattering	$0.6\text{-}370~\mathrm{eV}$	Exp	435
\mathbf{e} +	$C_4 F_6$	Excitation	$0.6\text{-}370~\mathrm{eV}$	Exp	435
\mathbf{e} +	Ca	Angular Scattering	10.1-64.6 eV	Exp	436
\mathbf{e} +	Ca	Ionization	10.1-64.6 eV	Exp	436
\mathbf{e} +	Ca	Angular Scattering	20-35 eV	Exp	437
\mathbf{e} +	Ca	Excitation	20-35 eV	Exp	437
\mathbf{e} +	Ni^+	Recombination	25-500 eV	Th	438
\mathbf{e} +	Ni^{2+}	Recombination	25-500 eV	Th	438
\mathbf{e} +	Ni ³⁺	Recombination	25-500 eV	Th	438
\mathbf{e} +	Ni^{4+}	Recombination	25-500 eV	Th	438
\mathbf{e} +	Ni^{5+}	Recombination	25-500 eV	Th	438
e +	Ni^{6+}	Recombination	25-500 eV	Th	438
e +	Ni ⁷⁺	Recombination	25-500 eV	Th	438
e +	Ni ⁸⁺	Recombination	25-500 eV	Th	438
e +	Ni^{9+}	Recombination	25-500 eV	Th	438
e +	Ni^{10+}	Recombination	25-500 eV	Th	438
\mathbf{e} +	Ni^{11+}	Recombination	25-500 eV	Th	438
e +	Ni^{12+}	Recombination	25-500 eV	Th	438
e +	Ni^{13+}	Recombination	25-500 eV	Th	438
e +	Ni^{14+}	Recombination	25-500 eV	Th	438
e +	Ni ⁹⁺	Ionization	25-500 eV	Th	438
e +	Ni^{10+}	Ionization	25-500 eV	Th	438
e +	Ni^{11+}	Ionization	25-500 eV	Th	438
e +	Ni^{12+}	Ionization	25-500 eV	Th	438
\mathbf{e} +	Ni^{13+}	Ionization	25-500 eV	Τh	438
e +	Ni^{14+}	Ionization	25-500 eV	Th	438
\mathbf{e} +	Cl ₂	Attachment	0-9 eV	E/T	439
\mathbf{e} +	Cl ₂	Dissociation	0-9 eV	E/T	439
e +	Cl ₂	Excitation	0-9 eV	E/T	439
e +	U^{31+}	Recombination	63.8-73.2 keV	Th	440
e +	\mathbf{H}_2	Excitation	10.5-13.5 eV; 340-375 nm	Exp	441
e +	$\mathrm{Gd}^{\mathrm{so+}}$	Excitation	250-3000 eV	Th D (T	442
e +	Ar	Angular Scattering	14-100 eV	E/T	443
e +	\mathbf{Ar}^*	Angular Scattering	14-100 eV	E/T	443

e + Ar	Excitation	14-100 eV	E/T 443
$\mathbf{e} + \mathbf{Ar}^*$	Excitation	14-100 eV	É/T 443
$\mathbf{e} + \mathbf{C}\mathbf{C}\mathbf{l}_{2}\mathbf{F}_{2}$	Dissociation	10-70 eV	Exp 444
$\mathbf{e} + \mathbf{C}\mathbf{C}\mathbf{l}_{2}\mathbf{F}_{2}$	Ionization	10-70 eV	Exp 444
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Excitation	0.1-15 eV	E/T 445
$\mathbf{e} + \mathbf{CH}_4$	Excitation	0.1-15 eV	Е/Т 445
$\mathbf{e} + \mathbf{CO}_2$	Excitation	0.1-15 eV	Е/Т 445
$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_6$	Excitation	0.1-15 eV	E/T 445
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Electron Collisions	0.1-15 eV	E/T 445
$e + CH_4$	Electron Collisions	$0.1-15 \ eV$	E/T 445
$\mathbf{e} + \mathbf{CO}_2$	Electron Collisions	$0.1-15 \mathrm{eV}$	E/T 445
$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_6$	Electron Collisions	0.1-15 eV	E/T 445
$\mathbf{e} + \mathbf{SF}_4$	Elastic Scattering	0-15 eV	Th 446
$\mathbf{e} + \mathbf{SF}_4$	Excitation	0-15 eV	Th 446
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Elastic Scattering	4-50 eV	Exp 447
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Angular Scattering	4-50 eV	Exp 447
e + H	Angular Scattering	30 eV	Th 448
e + H	Excitation	30 eV	Th 448
e + Ar	Angular Scattering	561.4 eV	Th 449
e + Ar	Ionization	561.4 eV	Th 449
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Elastic Scattering	0-7 eV	Th 450
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Angular Scattering	0-7 eV	Th 450
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Excitation	0-7 eV	Th 450
e + H	Ionization	54-25 eV	E/T 451
e + Ar	Excitation	10-200 eV	E/T 452
$e + Rb^*$	De-excitation	20 eV	E/T 453
e + Rb	Elastic Scattering	20 eV	E/T 453
$e + Rb^*$	Elastic Scattering	20 eV	E/T 453
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	15-30 eV	Th 454
$\mathbf{e} + \mathbf{H}_2$	Excitation	$15-30 \mathrm{eV}$	Th 454
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	612-5612 eV	Th 455
$\mathbf{e} + \mathbf{H}_2$	Ionization	612-5612 eV	Th 455
e + He	Ionization	25-3000 eV	Th 456
$e + CO_2$	Elastic Scattering	1-8 eV	Th 457
$\mathbf{e} + \mathbf{CO}_2$	Angular Scattering	1-8 eV	Th 457
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Elastic Scattering	0.04-1000 eV	E/T 458
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Excitation	0.04-1000 eV	E/T 458
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Elastic Scattering	1 keV	Exp 459
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Angular Scattering	1 keV	Exp 459
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Excitation	1 keV	Exp 459
$e + Mg^+$	Ionization	15-1000 eV	E/T 460
$e + PH_3$	Elastic Scattering	0.5-370 eV	Exp 461
$e + PH_3$	Excitation	0.5-370 eV	Exp 461
$e + PH_3$	Ionization	0.5-370 eV	Exp 461
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Elastic Scattering	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_4 \mathbf{F}_2$	Elastic Scattering	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{F}$	Elastic Scattering	0.4-1000 eV	Exp 462
$e + C_6 H_5 Cl$	Elastic Scattering	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Excitation	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_4 \mathbf{F}_2$	Excitation	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{F}$	Excitation	0.4-1000 eV	Exp 462
$e + C_6H_5Cl$	Excitation	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Ionization	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_4 \mathbf{F}_2$	Ionization	0.4-1000 eV	Exp 462
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{F}$	Ionization	0.4-1000 eV	Exp 462
$e + C_6 H_5 Cl$	Ionization	0.4-1000 eV	Exp 462
e + H	Excitation	54.4 eV	Exp 463

\mathbf{e} +	\mathbf{H}^*	Excitation	54.4 eV	Exp	463
\mathbf{e} +	\mathbf{C}^{3+}	Ionization	70-15,000 eV	Th	464
e +	\mathbf{N}^{4+}	Ionization	70-15,000 eV	Th	464
e +	\mathbf{O}^{4+}	Ionization	70-15,000 eV	Th	464
\mathbf{e} +	\mathbf{O}^{5+}	Ionization	70-15,000 eV	Th	464
e +	\mathbf{Ne}^{6+}	Ionization	70-15,000 eV	Th	464
e +	Ne^{7+}	Ionization	70-15,000 eV	Th	464
e +	\mathbf{O}_2	Fluorescence	10-400 eV	Exp	465
e +	\mathbf{O}_2	Excitation	10-400 eV	Exp	465
e +	\mathbf{Ar}^{16+}	Recombination	Low energy	E/T	466
e +	\mathbf{Ar}^{16+}	Fluorescence	Low energy	E/T	466
e +	${f Si}^{2+}$	Angular Scattering	10.5-13.2 eV	Th	467
e +	${f Si}^{2+}$	Excitation	10.5-13.2 eV	Th	467
e +	Ba	Angular Scattering	5-16 eV	Th	468
e +	Ba	Excitation	5-16 eV	Th	468
e +	Ne	Angular Scattering	16.6-51 eV	Th	469
e +	Ne	Excitation	16.6-51 eV	Th	469
e +	\mathbf{C}_2^-	Detachment	0-30 eV	Exp	470
e +	\mathbf{C}_2^-	Electron Collisions	0-30 eV	Exp	470
e +	$\overline{\mathbf{Ge}^{30+}}$	Recombination	6500-11,000 eV	E/T	471
e +	\mathbf{Ti}^{20+}	Recombination	3-5 keV	É/Т	472
e +	Kr^{8+}	Recombination	0-5 keV	Th	473
e +	\mathbf{Kr}^{26+}	Recombination	0-5 keV	Th	473
e +	\mathbf{Zr}^{12+}	Recombination	0-5 keV	Th	473
e +	\mathbf{Ru}^{16+}	Recombination	0-5 keV	Th	473
e +	\mathbf{Cd}^{20+}	Recombination	0-5 keV	Th	473
e +	$\mathbf{X}\mathbf{e}^{26+}$	Recombination	0-5 keV	Th	473
e +	\mathbf{Xe}^{44+}	Recombination	0-5 keV	Th	473
e +	$C_4H_4N_2O_2$	Ionization	0-1000 eV	E/T	474
e +	\mathbf{H}_{3}^{+}	Dissociation	5-30 eV	Th	475
e +	${f HeH^+}$	Dissociation	5-30 eV	Th	475
e +	\mathbf{H}_3^+	Recombination	5-30 eV	Th	475
e +	${f He}{f H^+}$	Recombination	5-30 eV	Th	475
e +	He	Ionization	100-4000 eV	E/T	476
e +	$\mathrm{He^{+}}$	Angular Scattering	2-30 excitation threshold units	Th	477
e +	$\mathrm{He^{+}}$	Excitation	2-30 excitation threshold units	Th	477
e +	Η	Ionization	0-2 Hartrees	E/T	478
e +	NO	Attachment	7.6-10 eV	Exp	479
e +	NO	Dissociation	7.6-10 eV	Exp	479
e +	\mathbf{Ca}^+	Excitation	1.5-500 threshold	Th	480
e +	${f Ti}^{3+}$	Ionization	40-1000 eV	Exp	481
e +	Ne	Elastic Scattering	10-100 eV	Th	482
\mathbf{e} +	Ne^+	Elastic Scattering	10-100 eV	Th	482
\mathbf{e} +	Na	Elastic Scattering	10-100 eV	Th	482
\mathbf{e} +	Na^+	Elastic Scattering	10-100 eV	Th	482
\mathbf{e} +	\mathbf{Ar}	Elastic Scattering	10-100 eV	Th	482
e +	\mathbf{Ar}^+	Elastic Scattering	10-100 eV	Th	482
\mathbf{e} +	CO	Ionization	0-250 eV	Exp	483
e +	\mathbf{CO}_2	Ionization	0-250 eV	Exp	483
e +	\mathbf{CS}_2	Ionization	0-250 eV	Exp	483
e +	OCS	Ionization	0-250 eV	Exp	483
e +	$\mathbf{C}_2\mathbf{H}_4$	Elastic Scattering	10-500 eV	E/T	484
\mathbf{e} +	$\mathbf{C}_2\mathbf{H}_4$	Total Scattering	10-500 eV	E/T	484
e +	LiH	Elastic Scattering	0-6 eV	Th	485
\mathbf{e} +	LiH	Excitation	0-6 eV	Th	485
\mathbf{e} +	He	Ionization	$200~{\rm eV};1~{\rm MeV}$	Th	486
\mathbf{e} +	Ne	Excitation	16-40 eV	Th	487

e + O	Elastic Scattering	$0.5-18 \ {\rm eV}$	Th 4	.88
e + O	Excitation	$0.5{\text{-}}18 \text{ eV}$	Th 4	.88
$\mathbf{e} + \mathbf{H}_3^+$	Excitation	$15-42 \mathrm{eV}$	Th 4	89
$\mathbf{e} + \mathbf{H}_3^+$	Ionization	$15-42 \mathrm{eV}$	Th 4	.89
$e + CF_3^+$	Dissociation	$100 \mathrm{K}$	Exp 4	90
$e + CF_3^+$	Recombination	100 K	Exp 4	90
$\mathbf{e} + \mathbf{H}_2$	Ionization	10-20 eV	Exp 4	.91
$e + H_3$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$\mathbf{e} + \mathbf{D}_2$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$\mathbf{e} + \mathbf{D}_3$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
e + Hn	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
e + Dm	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$e + H_5$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$e + H_7$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$\mathbf{e} + \mathbf{H}_9$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$\mathbf{e} + \mathbf{H}_{11}$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$e + D_5$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$e + D_7$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$\mathbf{e} + \mathbf{D}_9$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$\mathbf{e} + \mathbf{D}_{11}$	Ionization	$10-20 \mathrm{eV}$	Exp 4	91
$e + Sr^+$	Line Broadening	0-0.6 eV	Th 4	92
e + Xe	Angular Scattering	$40-50 \mathrm{eV}$	Th 4	93
e + Xe	Ionization	$40-50 \mathrm{eV}$	Th 4	93
e + Ag	Ionization	5-25 keV	Exp 4	94
e + Au	Ionization	5-25 keV	Exp 4	94
e + Mg	Angular Scattering	1059 eV	Th 4	.95
e + Mg	Ionization	1059 eV	Th 4	.95
$\mathbf{e} + \mathbf{X} \mathbf{e}^{26+}$	Excitation	$0-85 \mathrm{Ry}$	Th 4	96
e + Kr	Elastic Scattering	20-100 eV	E/T 4	97
e + Kr	Excitation	20-100 eV	E/T 4	97
$\mathbf{e} + \mathbf{O}_2$	Elastic Scattering	7-10 eV	E/T 4	98
$\mathbf{e} + \mathbf{Ar}$	Excitation	11.5-14 eV	E/T 4	.99
$\mathbf{e} + \mathbf{F}\mathbf{e}^{24+}$	Line Broadening	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{F}\mathbf{e}^{25+}$	Line Broadening	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{N}\mathbf{i}^{26+}$	Line Broadening	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{N}\mathbf{i}^{27+}$	Line Broadening	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{Mo}^{40+}$	Line Broadening	0-10 keV	Th 5	00
$e + Mo^{41+}$	Line Broadening	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Recombination	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{F}\mathbf{e}^{25+}$	Recombination	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{Ni}^{26+}$	Recombination	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{N}\mathbf{i}^{27+}$	Recombination	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{Mo}^{40+}$	Recombination	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{Mo}^{41+}$	Recombination	0-10 keV	Th 5	00
$e + Fe^{24+}$	Excitation	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{F}\mathbf{e}^{25+}$	Excitation	0-10 keV	Th 5	00
$e + Ni^{26+}$	Excitation	0-10 keV	Th 5	00
$\mathbf{e} + \mathbf{N}\mathbf{i}^{27+}$	Excitation	0-10 keV	Th 5	00
$e + Mo^{40+}$	Excitation	0-10 keV	Th 5	00
$e + Mo^{41+}$	Excitation	0-10 keV	Th 5	00
e + H	Elastic Scattering	0.01-1.0 a.u.	Th 5	01
e + H	Total Scattering	0.01-1.0 a.u.	Th 5	01
e + H	Ionization	0.01-1.0 a.u.	Th 5	01
$\mathbf{e} + \mathbf{Ar}^{10+}$	Recombination	2000-5000 eV	Th 5	02
$e + Fe^{24+}$	Recombination	2000-5000 eV	Th 5	02
$\mathbf{e} + \mathbf{Ar}^{10+}$	Excitation	2000-5000 eV	Th 5	02
$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Excitation	2000-5000 eV	Th 5	02

$\mathbf{e} + \mathbf{CH}_4$	Excitation	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{CF}_4$	Excitation	10-2000 eV	Th 5	03
$e + CCl_4$	Excitation	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{SiH}_4$	Excitation	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{SF}_6$	Excitation	10-2000 eV	Th 5	03
e + GeH-4	Excitation	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{SiF}_4$	Excitation	$10-2000 \ eV$	Th 5	03
$e + CH_4$	Ionization	$10-2000 \mathrm{eV}$	Th 5	03
$\mathbf{e} + \mathbf{CF}_4$	Ionization	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{CCl}_4$	Ionization	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{SiH}_4$	Ionization	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{SF}_6$	Ionization	10-2000 eV	Th 5	03
e + GeH-4	Ionization	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{SiF}_4$	Ionization	10-2000 eV	Th 5	03
$\mathbf{e} + \mathbf{H}_2$	Dissociation	0-10 eV	Th 5	04
$\mathbf{e} + \mathbf{H}_2$	Excitation	0-10 eV	Th 5	04
e + H	Ionization	$14.6-40 \mathrm{eV}$	Exp 5	05
e + H	Dissociation	14.6-40 eV	Exp 5	06
e + H	Elastic Scattering	$14.6-40 \mathrm{eV}$	Exp 5	06
e + H	Excitation	14.6-40 eV	Exp 5	06
e + H	Ionization	14.6-40 eV	Exp 5	06
$\mathbf{e} + \mathbf{H}_3^+$	Attachment	2-20 eV	E/T 5	07
$e + H_3^+$	Dissociation	2-20 eV	E/T 5	07
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Ionization	250 eV	E/T 5	08
e + Kr	Angular Scattering	750 eV	Exp = 5	09
e + Kr	Ionization	750 eV	Exp 5	09
e + Ge	Fluorescence	$1.62-40.62 { m ~keV}$	Exp 5	10
e + Ge	Ionization	$1.62-40.62 { m ~keV}$	Exp 5	10
e + He	Excitation	$0.5-5.5 \mathrm{keV}$	Th 5	11
e + He	Ionization	$0.5-5.5 \mathrm{keV}$	Th 5	11
$\mathbf{e} + \mathbf{H}_2$	Dissociation	$2 { m keV}$	E/T 5	12
$\mathbf{e} + \mathbf{D}_2$	Dissociation	$2 { m keV}$	E/T 5	12
$\mathbf{e} + \mathbf{H}_2$	Ionization	$2 { m keV}$	E/T 5	12
$e + D_2$	Ionization	$2 { m keV}$	E/T 5	12
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Elastic Scattering	0.5-20 eV	Th 5	13
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Angular Scattering	0.5-20 eV	Th 5	13
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Total Scattering	0.5-20 eV	Th 5	13
e + Cs	Angular Scattering	5-25 eV	E/T 5	14
e + Cs	Excitation	5-25 eV	E/T 5	14
e + NO	Elastic Scattering	2500 eV	Exp 5	15
e + NO	Angular Scattering	2500 eV	Exp 5	15
e + He	Angular Scattering	2-5.6 keV	Th 5	16
e + He	Ionization	2-5.6 keV	Th 5	16
e + He	Angular Scattering	5.6 keV	Th 5	17
e + He	Ionization	5.6 keV	Th 5	17
$e + SF_6$	Elastic Scattering	0.8-1000 eV	Exp 5	18
$e + SF_6$	Excitation	0.8-1000 eV	Exp 5	18
$e + SF_6$	Electron Collisions	0.8-1000 eV	Exp 5	18
$e + \lambda e$	Ionization	0-500 eV	Th 5	19
e + HeH'	Dissociation	0.001-1 eV	Th 5	20
e + HeH	Recombination	0.001-1 eV	Th 5	20
e + Ne	Excitation	910 eV	Exp 5	21
e + INe	Ionization	910 eV	Exp 5	21
e + H	Elastic Scattering	4-30 eV	Th 5	22
e + H	Lotal Scattering	4-30 eV	Th 5	22
e + H	Excitation	4-30 eV	Th 5	22
$\mathbf{e} + \mathbf{S}^{\text{res}}$	De-excitation	0-144 eV	Exp 5	23

$\mathbf{e} + \mathbf{S}^{14+}$	De-excitation	0-144 eV	Exp	523
$e + S^{13+}$	Excitation	0-144 eV	Exp	523
$\mathbf{e} + \mathbf{S}^{14+}$	Excitation	$0-144 \mathrm{eV}$	Exp	523
e + CO	Excitation	$1.91 \mathrm{~eV}$	Exp	524
e + Mg	Elastic Scattering	$0-1 \mathrm{eV}$	Th	525
$\mathbf{e} + \mathbf{N}\mathbf{a}_{20}$	Bremsstrahlung	$10-30 {\rm eV}$	Th	526
$\mathbf{e} + \mathbf{N}\mathbf{a}_8$	Bremsstrahlung	$10-30 {\rm eV}$	Th	526
$\mathbf{e} + \mathbf{N} \mathbf{a}_{92}$	Bremsstrahlung	$10-30 {\rm eV}$	Th	526
$\mathbf{e} + \mathbf{N} \mathbf{a}_{196}$	Bremsstrahlung	$10-30 {\rm eV}$	Th	526
$\mathbf{e} + \mathbf{K}_{92}$	Bremsstrahlung	$10-30 {\rm eV}$	Th	526
$\mathbf{e} + \mathbf{L}\mathbf{i}_{92}$	Bremsstrahlung	$10-30 {\rm eV}$	Th	526
e + Ne	Line Broadening	1000-50,000 K	Th	527
$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Angular Scattering	1585-5640 eV	Th	528
$\mathbf{e} + \mathbf{H} \mathbf{e}^{+*}$	Angular Scattering	1585-5640 eV	Th	528
$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Excitation	1585-5640 eV	Th	528
$\mathbf{e} + \mathbf{H} \mathbf{e}^{+*}$	Excitation	1585-5640 eV	Th	528
$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Ionization	1585-5640 eV	Th	528
$\mathbf{e} + \mathbf{H} \mathbf{e}^{+*}$	Ionization	1585-5640 eV	Th	528
$\mathbf{e} + \mathbf{PH}_2$	Elastic Scattering	0.5-8 eV	Th	529
$e + AsH_3$	Elastic Scattering	0.5-8 eV	Th	529
$e + SbH_3$	Elastic Scattering	0.5-8 eV	Th	529
$\mathbf{e} + \mathbf{N}^+$	Recombination	$1 - 10^5 {\rm ~eV}$	Th	530
$\mathbf{e} + \mathbf{O}^{2+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{F}^{3+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$e + Ne^{4+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{N}\mathbf{a}^{5+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{M} \mathbf{g}^{6+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$e + Al^{7+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{Si}^{8+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{P}^{9+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$e + S^{10+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{Cl}^{11+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{A} \mathbf{r}^{12+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$e + K^{13+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{C} \mathbf{a}^{14+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{S} \mathbf{c}^{15+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{T} \mathbf{i}^{16+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{V}^{17+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{C}\mathbf{r}^{18+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{M} \mathbf{n}^{19+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{F} \mathbf{e}^{20+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$e + Co^{21+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{N}\mathbf{i}^{22+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{C}\mathbf{u}^{23+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{24+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{K} \mathbf{r}^{30+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{Mo}^{36+}$	Recombination	$1 - 10^5 { m eV}$	Th	530
$\mathbf{e} + \mathbf{C} \mathbf{d}^{42+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$\mathbf{e} + \mathbf{X} \mathbf{e}^{48+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	530
$e + Be^+$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{B}^{2+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{C}^{3+}$	Recombination	$10^3 - 10^9$ K	Th	531
$\mathbf{e} + \mathbf{N}^{4+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$e + O_{0}^{5+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{F}^{6+}$	Recombination	$10^3 - 10^9$ K	Th	531
$\mathbf{e} + \mathbf{N}\mathbf{e}^{7+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$e + Na^{8+}$	Recombination	$10^3 - 10^9 { m K}$	Th	531
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$\mathbf{e} + \mathbf{M} \mathbf{g}^{9+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{Al}^{10+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{Si}^{11+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$e + P^{12+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$e + S^{13+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{Cl}^{14+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{Ar}^{15+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{C}\mathbf{a}^{17+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{T}\mathbf{i}^{19+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{C}\mathbf{r}^{21+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{F}\mathbf{e}^{23+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{N}\mathbf{i}^{25+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{Z}\mathbf{n}^{27+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$e + Kr^{33+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{M}\mathbf{o}^{39+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$\mathbf{e} + \mathbf{X} \mathbf{e}^{51+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	531
$e + Cl^+$	Excitation	0-20 Ry	Th	532
$\mathbf{e} + \mathbf{F}\mathbf{e}^{12+}$	Excitation	15-45 Ry	Th	533
$\mathbf{e} + \mathbf{F}\mathbf{e}^{16+}$	Excitation	100-2000 Ry	Th	534
$e + Fe^{17+}$	Excitation	100-2000 Ry	Th	534
$\mathbf{e} + \mathbf{F}\mathbf{e}^{18+}$	Excitation	100-2000 Ry	Th	534
$\mathbf{e} + \mathbf{F}\mathbf{e}^{19+}$	Excitation	100-2000 Ry	Th	534
$\mathbf{e} + \mathbf{F}\mathbf{e}^{20+}$	Excitation	100-2000 Ry	Th	534
$\mathbf{e} + \mathbf{F} \mathbf{e}^{21+}$	Excitation	100-2000 Ry	Th	534
$\mathbf{e} + \mathbf{F} \mathbf{e}^{22+}$	Excitation	100-2000 Ry	Th	534
$\mathbf{e} + \mathbf{N}\mathbf{i}^+$	Excitation	$0-0.5 \mathrm{Ry}$	Th	535
$\mathbf{e} + \mathbf{C}^+$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{N}^{2+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{O}^{3+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{F}^{4+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{N} \mathbf{e}^{5+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{N} \mathbf{a}^{6+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{M} \mathbf{g}^{7+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{A} \mathbf{l}^{8+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{S} \mathbf{i}^{9+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{P}^{10+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{S}^{11+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{Cl}^{12+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{A}\mathbf{r}^{13+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{C}\mathbf{a}^{15+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{T}\mathbf{i}^{17+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{Cr}^{19+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{F}\mathbf{e}^{21+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{N}\mathbf{i}^{23+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{25+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{K} \mathbf{r}^{31+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{Mo}^{37+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{X} \mathbf{e}^{49+}$	Recombination	$10^3 - 10^9 \text{ K}$	Th	536
$\mathbf{e} + \mathbf{M} \mathbf{g}^{8+}$	Recombination	0-207 eV	Exp	537
$\mathbf{e} + \mathbf{SO}_2^+$	Dissociation	0.0001 1.0 eV	Exp	538
$\mathbf{e} + \mathbf{SO}_2^+$	Recombination	0.0001-1.0 eV	Exp	538
$e + O^+$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$\mathbf{e} + \mathbf{F}^{2+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$e + Ne^{3+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$e + Na^{4+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$\mathbf{e} + \mathbf{M} \mathbf{g}^{5+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$\mathbf{e} + \mathbf{Al}^{6+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539

$e + Si^{7+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$e + P^{8+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$e + S^{9+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$\mathbf{e} + \mathbf{C}\mathbf{l}^{10+}$	Recombination	$10 - 10^9 \text{ K}$	Th	530
$\mathbf{e} + \mathbf{\Delta}\mathbf{r}^{11+}$	Recombination	$10 - 10^9 \text{ K}$	Th	539
$\mathbf{c} + \mathbf{C}\mathbf{a}^{13+}$	Recombination	$10 - 10^9 \text{ K}$	Th	530
e + Ca $e + Ti^{15+}$	Recombination	$10 - 10^9 \text{ K}$	Th	530
c + 11 $c + Cr^{17+}$	Recombination	$10 - 10^9 \text{ K}$	Th	530
$a + Ea^{19+}$	Recombination	$10 - 10^9 \text{ K}$	Th	530
e + re	Recombination	$10 - 10^{9} \text{ K}$	тн Тh	530
$c + 7n^{23+}$	Recombination	$10 - 10^{9} \text{ K}$	тн Тh	530
$e + \Sigma n$ $e + K r^{29+}$	Recombination	10 - 10 K $10 - 10^9$ K	1 11 Th	530
$e + Me^{35+}$	Recombination	10 - 10 K $10 - 10^9$ K	1 11 Th	530
e + No	Recombination	10 - 10 K $10 - 10^9$ K	1 11 Th	530
e + Ae	Recombination	$10 - 10^{5} \text{ eV}$	1 11 Th	540
e + Na	Recombination	$1 - 10^{\circ} \text{ eV}$ 1 10° oV	111 Th	540
$e + \Lambda l^{3+}$	Recombination	$1 - 10^{\circ} eV$ 1 $10^{5} eV$	тн Тh	540
e + AI	Recombination	1 - 10 eV 1 105 eV	111 Th	540
e + 51	Recombination	1 - 10 eV 1 105 eV	111 Th	540
$e + r^{+}$	Recombination	$1 - 10^{5} \text{ eV}$	111 Th	540 540
$e + S^{++}$	Recombination	$1 - 10^{5} \text{ eV}$ 1 10^{5} eV	111 Th	540 540
$e + CI^{+}$	Recombination	$1 - 10^{6} \text{ eV}$ 1 10^{5} eV	тн Тh	540
e + Ar	Recombination	$1 - 10^{6} \text{ eV}$ 1 10^{5} eV	111 Th	540 540
$\mathbf{e} + \mathbf{K}$	Recombination	$1 - 10^{6} \text{ eV}$ 1 10^{5} eV	111 Th	540 540
e + Ca	Recombination	$1 - 10^{6} \text{ eV}$ 1 10^{5} eV	111 Th	540 540
e + 3c $e + Ti^{12+}$	Recombination	$1 - 10^{6} \text{ eV}$ $1 - 10^{5} \text{ eV}$	1 II Th	540 540
$e + \Pi$ $e + V^{13+}$	Recombination	$1 - 10^{5} \text{ eV}$	тн Тh	540 540
$\mathbf{e} + \mathbf{v}$ $\mathbf{e} + \mathbf{Cr}^{14+}$	Recombination	$1 - 10^{5} \text{ eV}$	тн Тh	540 540
e + Of $e \perp Mn^{15+}$	Recombination	$1 - 10^{5} \text{ eV}$	Th	540 540
$e + Fe^{16+}$	Recombination	$1 - 10^{5} \text{ eV}$	Th	540 540
$e + Ce^{17+}$	Recombination	$1 - 10^{5} \text{ eV}$	Th	540 540
$e + Ni^{18+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Cu^{19+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Zn^{20+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Ga^{21+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$\mathbf{e} + \mathbf{G}\mathbf{e}^{22+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + As^{23+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Se^{24+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Br^{25+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Kr^{26+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Bb^{27+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Sr^{28+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Y^{29+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Zr^{30+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Nb^{31+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Mo^{32+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Tc^{33+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Bu^{34+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Bh^{35+}$	Recombination	$1 - 10^5 \text{ eV}$	Th	540
$e + Pd^{36+}$	Recombination	$1-10^5$ eV	Th	540
$\mathbf{e} + \mathbf{A}\mathbf{g}^{37+}$	Recombination	$1-10^5$ eV	Th	540
$e + Cd^{38+}$	Recombination	$1-10^5$ eV	Th	540
$e + In^{39+}$	Recombination	$1-10^5$ eV	Th	540
$\dot{\mathbf{e}} + \mathbf{Sn}^{40+}$	Recombination	$1-10^5 \text{ eV}$	Th	540
$e + Sb^{41+}$	Recombination	$1-10^5$ eV	Th	540
$\dot{\mathbf{e}} + \mathbf{T} \mathbf{e}^{42+}$	Recombination	$1 - 10^5 { m eV}$	Th	540
$\mathbf{e} + \mathbf{I}^{43+}$	Recombination	$1-10^5 { m eV}$	Th	540

$\mathbf{e} + \mathbf{X} \mathbf{e}^{44+}$	Recombination	$1 - 10^5 {\rm eV}$	Th	540
$\mathbf{e} + \mathbf{F} \mathbf{e}^{12+}$	Excitation	$0 - 7x10^5 { m K}$	Th	541
$e + Ca^{7+}$	Excitation	0-10 Ry	Th	542
$\mathbf{e} + \mathbf{N}_2 \mathbf{H}^+$	Recombination	0.001 - 0.2 eV	Exp	543
$\mathbf{e} + \mathbf{H}_2$	Ionization	15-3000 eV	Th	544
$\mathbf{e} + \mathbf{SF}_6$	Ionization	0-900 eV	Th	545
$\mathbf{e} + \mathbf{N}\mathbf{H}_4^+$	Recombination	0.001 1.0 eV	E/T	546
$\mathbf{e} + \mathbf{N} \mathbf{D}_4^+$	Recombination	0.001 1.0 eV	E/T	546
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Elastic Scattering	$1-100 \mathrm{eV}$	Exp	547
$\mathbf{e} + \mathbf{SF}_6$	Elastic Scattering	0-50 eV	Th	548
$\mathbf{e} + \mathbf{SF}_6$	Excitation	0-50 eV	Th	548
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Ionization	1-1000 eV	Th	549
$\mathbf{e} + \mathbf{CH}_4$	Ionization	1-1000 eV	Th	549
$e + NH_3$	Ionization	1-1000 eV	Th	549
e + H	Elastic Scattering	100-10,000 eV	Th	550
e + Al	Elastic Scattering	100-10,000 eV	Th	550
e + Ni	Elastic Scattering	100-10,000 eV	Th	550
$\mathbf{e} + \mathbf{A}\mathbf{g}$	Elastic Scattering	100-10,000 eV	Th	550
e + Cm	Elastic Scattering	100-10,000 eV	Th	550
e + H	Angular Scattering	100-10,000 eV	Th	550
e + Al	Angular Scattering	100-10,000 eV	Th	550
e + Ni	Angular Scattering	100-10,000 eV	Th	550
$\mathbf{e} + \mathbf{A}\mathbf{g}$	Angular Scattering	100-10,000 eV	Th	550
e + Cm	Angular Scattering	100-10,000 eV	Th	550
$\mathbf{e} + \mathbf{Al}^{2+}$	Elastic Scattering	Undef.	Th	551
$e + Ar^{7+}$	Elastic Scattering	Undef.	Th	551
$\mathbf{e} + \mathbf{A} \mathbf{l}^{2+}$	Angular Scattering	Undef.	Th	551
$\mathbf{e} + \mathbf{A}\mathbf{r}^{7+}$	Angular Scattering	Undef.	Th	551
e + Mg	Angular Scattering	10-20 eV	Th	552
e + Mg	Excitation	10-20 eV	Th	552
e + La	Ionization	52-84 keV	Exp	553
e + Ce	Ionization	52-84 keV	Exp	553
e + Pr	Ionization	52-84 keV	Exp	553
e + Nd	Ionization	52-84 keV	Exp	553
e + Sm	Ionization	52-84 keV	Exp	553
e + Gd	Ionization	52-84 keV	Exp	553
e + Dy	Ionization	52-84 keV	Exp	553
e + Ho	Ionization	52-84 keV	Exp	553
e + Er	Ionization	52-84 keV	Exp	553
$\mathbf{e} + \mathbf{CH}_4$	Elastic Scattering	400-4000 eV	Exp	554
$\mathbf{e} + \mathbf{N}\mathbf{H}_3$	Elastic Scattering	400-4000 eV	Exp	554
e + He	Ionization	100-200 eV	Th	555
e + He	Ionization	25-100,000 eV	Th	556
$e + Li^+$	Ionization	25-100,000 eV	Th	556
$e + B^{3+}$	Ionization	25-100,000 eV	Th	556
$e + C^{4+}$	Ionization	25-100,000 eV	Th	556
$e + N^{5+}$	Ionization	25-100,000 eV	Th	556
$\mathbf{e} + \mathbf{O}^{\mathbf{b}+}$	Ionization	25-100,000 eV	Th	556
$e + Ne^{\delta +}$	Ionization	25-100,000 eV	Th	556
$e + Na^{9+}$	Ionization	25-100,000 eV	Th	556
$\mathbf{e} + \mathbf{F}\mathbf{e}^{24+}$	Ionization	25-100,000 eV	Th	556
$e + Ag^{45+}$	Ionization	25-100,000 eV	Th	556
$e + U_{a0+}$	Ionization	25-100,000 eV	Th	556
$e + NF_3$	Elastic Scattering	0.5-370 eV	E/T	557
$e + NF_3$	Excitation	0.5-370 eV	E/T	557
$e + NF_3$	Ionization	0.5-370 eV	E/T	557
e + OH	Elastic Scattering	1-500 eV	Th	558

e + OH	Angular Scattering	1-500 eV	Th	558
e + OH	Excitation	1-500 eV	Th	558
e + OH	Ionization	1-500 eV	Th	558
e + Cs	Elastic Scattering	6-200 eV	Exp	559
e + Cs	Angular Scattering	6-200 eV	Exp	559
e + Cs	Excitation	6-200 eV	Exp	559
e + Cs	Ionization	6-200 eV	Exp	559
$\mathbf{e} + \mathbf{H}_2^+$	Dissociation	5-3000 eV	Exp	560
$\mathbf{e} + \mathbf{D}_2^+$	Dissociation	5-3000 eV	Exp	560
e + Ca	Angular Scattering	400 eV	Exp	561
e + Ca	Excitation	400 eV	Exp	561
e + Ca	Ionization	400 eV	Exp	561
$\mathbf{e} + \mathbf{O}^{5+}$	Recombination	Undef.	Th	562
$\mathbf{e} + \mathbf{H}_2^+$	Dissociation	2 keV	Th	563
$\mathbf{e} + \mathbf{H}_2^+$	Angular Scattering	$2 \mathrm{keV}$	Th	563
$\mathbf{e} + \mathbf{H}_2^+$	Ionization	$2 \mathrm{keV}$	Th	563
e + Ca	Angular Scattering	10-100 eV	Exp	564
e + Ca	Excitation	10-100 eV	Exp	564
$e + Fe^+$	Excitation	0.03 - $0.35 \mathrm{Ry}$	Th	565
e + He	Excitation	50-500 eV	Th	566
e + He	Ionization	50-500 eV	Th	566
$\mathbf{e} + \mathbf{N}\mathbf{e}$	Ionization	5-90 eV	Th	567
$\mathbf{e} + \mathbf{N}\mathbf{e}^*$	Ionization	5-90 eV	Th	567
e + He	Angular Scattering	$1 { m GeV}$	Th	568
e + He	Ionization	$1 { m GeV}$	Th	568
$e + CH_3OH$	Attachment	0-16 eV	Exp	569
$\mathbf{e} + (\mathbf{C}_2\mathbf{H}_5)_2\mathbf{N}\mathbf{H}$	Attachment	0-16 eV	Exp	569
$\mathbf{e} + (\mathbf{CH}_3)_2 \mathbf{N}_2 (\mathbf{CH}_3)_2$	Attachment	0-16 eV	Exp	569
$e + CH_3OH$	Dissociation	0-16 eV	Exp	569
$\mathbf{e} + (\mathbf{C}_2\mathbf{H}_5)_2\mathbf{N}\mathbf{H}$	Dissociation	0-16 eV	Exp	569
$\mathbf{e} + (\mathbf{C}\mathbf{H}_3)_2\mathbf{N}_2(\mathbf{C}\mathbf{H}_3)_2$	Dissociation	0-16 eV	Exp	569
e + Kr	Elastic Scattering	100-260 eV	Exp	570
e + Kr	Angular Scattering	100-260 eV	Exp	570
e + Be	Excitation	3-200 eV	Th	571
e + Be'	Excitation	3-200 eV	Th	571
$e + Be^{2+}$	Excitation	3-200 eV	Th	571
$e + Be^{s}$	Excitation	3-200 eV	Th	571
$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_4$	Elastic Scattering	0.5-20 eV		572
$e + C_2 H_4$	Angular Scattering	0.5-20 eV		572
$e + 0^{\circ}$		8-20 eV	Exp Th	573
$e + n_2$	Angulan Costtoning		1 II From	574
$e + SF_6$	Angular Scattering	16 keV	Exp	575
$\mathbf{e} + \mathbf{Sr}_6$	Excitation	10 KeV 10 200 eV	Exp Th	576
e + Ae	Angular Scattoring	10-200 eV	1 II Th	570
e + C	Ingular Scattering	10-200 eV	1 II Th	577
e + C	Floatia Saattoring	10-200 eV	1 II Th	579
e + NO	Existence Scattering	0.2 eV	1 II Th	570
e + NO	Attachmont	5 10 eV	1 II Th	570
$e + H_2O$	Discogistion	5-10 eV	1 II Th	579
$e + H_2O$	Electic Sectoring	5-10 eV	1 II Euro	590
c + Ar	Angular Scattering	5 10 eV	Exp Erm	990 200
c + AI	Angular Scattering	575 1350 aV	Exp ть	000 501
$\bullet + \mathbf{H}$	Ionization	575 1350 eV	111 Th	501
$e + H_{a}^{+}$	Dissociation	0 oV		201 001
$\mathbf{e} + \mathbf{H}_3$	Dissociation		Exp E-m	002 500
$e + HD_{1}^{+}$	Dissociation		Exp E-m	002 500
$e + m p_2$	DISSOCIATION	UEV	Ехр	002

$\mathbf{e} + \mathbf{H}_3^+$	Recombination	0 eV	Exp	582
$\mathbf{e} + \mathbf{H}_2 \mathbf{D}^+$	Recombination	$0 \mathrm{eV}$	Exp	582
$e + HD_2^+$	Recombination	$0 \mathrm{eV}$	Exp	582
$\mathbf{e} + \mathbf{F} \mathbf{e}^{21+}$	Excitation	10-2500 eV	Th	583
$\mathbf{e} + \mathbf{S}^{4+}$	Angular Scattering	15-50 eV	Th	584
$\mathbf{e} + \mathbf{A} \mathbf{r}^{6+}$	Angular Scattering	15-50 eV	Th	584
$e + Ca^{8+}$	Angular Scattering	15-50 eV	Th	584
$\mathbf{e} + \mathbf{S}^{4+}$	Excitation	15-50 eV	Th	584
$\mathbf{e} + \mathbf{Ar}^{6+}$	Excitation	15-50 eV	Th	584
$\mathbf{e} + \mathbf{C}\mathbf{a}^{8+}$	Excitation	15-50 eV	Th	584
e + He	Excitation	56-65 eV	Th	585
e + OCS	Elastic Scattering	0.1-10 eV	Th	586
e + OCS	Angular Scattering	0.1-10 eV	Th	586
$e + Na^{8+}$	Recombination	0-0.5 eV	Exp	587
e + He	Elastic Scattering	300-4500 eV	Exp	588
e + Ne	Elastic Scattering	300-4500 eV	Exp	588
e + Ar	Elastic Scattering	300-4500 eV	Exp	588
e + He	Angular Scattering	300-4500 eV	Exp	588
e + Ne	Angular Scattering	300-4500 eV	Exp	588
e + Ar	Angular Scattering	300-4500 eV	Exp	588
e + He	Excitation	300-4500 eV	Exp	588
e + Ne	Excitation	300-4500 eV	Exp	588
e + Ar	Excitation	300-4500 eV	Exp	588
e + He	Ionization	300-4500 eV	Exp	588
e + Ne	Ionization	300-4500 eV	Exp	588
e + Ar	Ionization	300-4500 eV	Exp	588
e + W	Ionization	50-500 keV	Th	589
e + Au	Ionization	50-500 keV	Th	589
$e + Mo^{33+}$	Excitation	Undef.	Th	590
e + Li	Ionization	55-113 eV	Th	591
$e + Be^+$	Ionization	55-113 eV	Th	591
$\mathbf{e} + \mathbf{B}^{2+}$	Ionization	55-113 eV	Th	591
$e + C^{3+}$	Ionization	55-113 eV	Th	591
$e + C^{3+}$	Excitation	10-70 eV	Th	592
$e + CO_2$	Excitation	0.2-1.2 eV	Th	593
e + H	Ionization	0-0.1 a.u.	Th	594
e + Si	Elastic Scattering	0.2-20 keV	Th	595
e + Cu	Elastic Scattering	0.2-20 keV	Th	595
e + Au	Elastic Scattering	0.2-20 keV	Th	595
e + He	Angular Scattering	37-45 eV	Th	596
$e + He^*$	Angular Scattering	37-45 eV	Th	596
e + He	Excitation	37-45 eV	Th	596
$e + He^*$	Excitation	37-45 eV	Th	596
e + He	Ionization	37-45 eV	Th	596
$e + He^*$	Ionization	37-45 eV	Th	596
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	2.4 keV	E/T	597
$\mathbf{e} + \mathbf{D}_2$	Angular Scattering	2.4 keV	E/T	597
$\mathbf{e} + \mathbf{H}_2$	Ionization	2.4 keV	E/T	597
$\mathbf{e} + \mathbf{D}_2$	Ionization	2.4 keV	E/T	597
e + He	Angular Scattering	1-30 eV	Th	598
$e + He^*$	Angular Scattering	1-30 eV	Th	598
e + He	Excitation	1-30 eV	Th	598
$e + He^*$	Excitation	1-30 eV	Th	598
e + He	Ionization	1-30 eV	Th	598
$e + He^*$	Ionization	1-30 eV	Th	598
$\mathbf{e} + \mathbf{C}_6 \mathbf{F}_5 \mathbf{Cl}$	Attachment	300-550 K	E/T	599
$\mathbf{e} + \mathbf{C}_6 \mathbf{F}_5 \mathbf{Br}$	Attachment	300-550 K	E/T	599

$\mathbf{e} + \mathbf{C}_6 \mathbf{F}_5 \mathbf{I}$	Attachment	$300-550 { m K}$	E/T 5	99
e + Ne	Angular Scattering	16-19 eV	E/T 6	00
e + Ne	Excitation	16-19 eV	E/T 6	00
$\mathbf{e} + \mathbf{O}_3$	Attachment	0-10 eV	Th 6	01
$\mathbf{e} + \mathbf{O}_3$	Dissociation	0-10 eV	Th 6	01
$\mathbf{e} + \mathbf{C}^{2+}$	Ionization	$40-400 {\rm ~eV}$	Th 6	02
$\mathbf{e} + \mathbf{C}^{2+*}$	Ionization	$40-400 \mathrm{eV}$	Th 6	02
$\mathbf{e} + \mathbf{C}_3 \mathbf{H}_4$	Elastic Scattering	1-10 eV	Th 6	03
$\mathbf{e} + \mathbf{C}_3 \mathbf{H}_4$	Angular Scattering	1-10 eV	Th 6	03
$\mathbf{e} + \mathbf{N}_2$	Angular Scattering	$10-100 \mathrm{eV}$	Exp 6	04
$\mathbf{e} + \mathbf{N}_2$	Excitation	$10-100 \mathrm{eV}$	Exp 6	04
e + H	Angular Scattering	250-25,000 eV	Th 6	05
e + H	Ionization	250-25,000 eV	Th 6	05
e + Ho	Fluorescence	0.01-6 MeV/u	Exp 6	06
e + Ho	Ionization	$0.01-6 \ \mathrm{MeV/u}$	Exp 6	06
e + Ba	Angular Scattering	0.1-30 a.u.	Th 6	07
e + Ba	Excitation	0.1-30 a.u.	Th 6	07
e + Kr	Angular Scattering	2.5 keV	Exp 6	08
e + Kr	Excitation	2.5 keV	Exp 6	08
$e + He_2^+$	Dissociation	0.001-20 eV	Exp 6	09
$\mathrm{e} + \mathrm{He}_2^+$	Recombination	0.001-20 eV	Exp 6	09
$\mathbf{e} + \mathbf{H}_2$	Dissociation	4087 eV	Th 6	10
$\mathbf{e} + \mathbf{L} \mathbf{i}_2$	Dissociation	4087 eV	Th 6	10
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	4087 eV	Th 6	10
$\mathbf{e} + \mathbf{L} \mathbf{i}_2$	Angular Scattering	4087 eV	Th 6	10
$\mathbf{e} + \mathbf{H}_2$	Ionization	4087 eV	Th 6	10
$\mathbf{e} + \mathbf{L}\mathbf{i}_2$	Ionization	4087 eV	Th 6	10
$\mathbf{e} + \mathbf{O}_3$	Attachment	0-5 eV	Th 6	11
$\mathbf{e} + \mathbf{O}_3$	Dissociation	0-5 eV	Th 6	11
e + H	Angular Scattering	54.4 eV	Th 6	12
e + H	Excitation	54.4 eV	Th = 6	12
$e + NeH^+$	Dissociation	0.01-30 eV	E/T 6	13
$e + NeH^+$	Recombination	0.01-30 eV	E/T 6	13
$\mathbf{e} + \mathbf{SF}_4$	Elastic Scattering	0.1-370 eV	Exp 6	14
$\mathbf{e} + \mathbf{SF}_4$	Ionization	0.1-370 eV	Exp 6	14
e + Ar	Angular Scattering	13.5-30 eV	Exp 6	15
e + Kr	Angular Scattering	13.5-30 eV	Exp 6	15
e + Ar	Excitation	13.5-30 eV	Exp 6	15
e + Kr	Excitation	13.5-30 eV	Exp 6	15
$\mathbf{e} + \mathbf{Br}_2$	Ionization	10-300 eV	E/T 6	16
$\mathbf{e} + \mathbf{CS}_2$	Ionization	10-300 eV	E/T 6	16
$e + CCI_4$		10-300 eV	E/T 6	16
$\mathbf{e} + \mathbf{SF}_6$		10-300 eV	E/T 6	10
e + OCS		10-300 eV	E/T 6	10
$e + CHCl_3$		10-300 eV	E/T 6	10
$e + CH_3CI$		10-300 eV	E/T 6	10
$e + CF_3Br$		10-300 eV	E/T 6	10
$e + CF_2CI_2$		10-300 eV	E/T 6	10
$e + C_2 H_5 Cl$		10-300 eV	E/T 6	10
$e + C_3 H_7 Cl$		10-300 eV	E/T 6	16
$\mathbf{e} + \mathbf{U}_4 \mathbf{H}_9 \mathbf{C} \mathbf{I}$	Ionization	10-300 eV	E/T = 6	16
$e + C_2 Cl_4$	Ionization	10-300 eV	E/T 6	10
$e + C_2 Cl_6$		10-300 eV	E/T 6	10
$e + CH_3Cl_2$		10-300 eV	E/T 6	10
$e + CH_2Br_2$		10-300 eV	E/T 6	16
$e + CF_2Br_2$	Ionization	10-300 eV	E/T = 6	16
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4 \mathbf{B} \mathbf{r}_2$	Ionization	10-300 eV	E/T 6	16

$e + CH_2ClCCl_3$	Ionization	$10-300 {\rm eV}$	E/T	616
$e + CH_2ClCH_2Cl$	Ionization	10-300 eV	E/T	616
$e + CH_2ClCNCl_2$	Ionization	$10-300 \mathrm{eV}$	E/T	616
$e + CH_3CCl_3$	Ionization	10-300 eV	E/T	616
$e + CHCl_2CCl_3$	Ionization	$10-300 \mathrm{eV}$	E/T	616
$e + CHCl_2CH_3$	Ionization	$10-300 \mathrm{eV}$	E/T	616
$e + CHCl_2CHCl_2$	Ionization	$10-300 \mathrm{eV}$	E/T	616
e + CHClCHCl	Ionization	$10-300 {\rm eV}$	E/T	616
$e + CHClCCl_2$	Ionization	$10-300 \mathrm{eV}$	E/T	616
e + H	Ionization	2-400 eV	Th	617
$e + H^*$	Ionization	2-400 eV	Th	617
$e + Li^{2+}$	Ionization	2-400 eV	Th	617
$e + Li^{2+*}$	Ionization	2-400 eV	Th	617
$e + B^{4+}$	Ionization	2-400 eV	Th	617
$\mathbf{e} + \mathbf{B}^{4+*}$	Ionization	2-400 eV	Th	617
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	25.3-55.3 eV	E/T	618
$\mathbf{e} + \mathbf{H}_2$	Ionization	25.3-55.3 eV	E/T	618
$e + Sc^+$	Ionization	30 eV	Exp	619
$e + Fe^{3+}$	Excitation	$2x10^3 - 2x10^6$ K	Th	620
$e + Cl^{14+}$	Recombination	Undef.	Th	621
$e + Ca^{17+}$	Recombination	Undef.	Th	621
$e + Ni^{25+}$	Recombination	Undef.	Th	621
$e + Zn^{27+}$	Recombination	Undef.	Th	621
$\mathbf{e} + \mathbf{F}\mathbf{e}^{22+}$	Excitation	0.0-100.0 Ry	Th	622
$\mathbf{e} + \mathbf{A} \mathbf{l}^{12+}$	Excitation	$170-300 \mathrm{Ry}$	Th	623
$e + C^+$	Excitation	$3.0-5.5 \log T(k)$	Th	624
$\mathbf{e} + \mathbf{N}\mathbf{e}^{5+}$	Recombination	Undef.	Th	625
$e + Na^{6+}$	Recombination	Undef.	Th	625
$e + Mg^{7+}$	Recombination	Undef.	Th	625
$\mathbf{e} + \mathbf{F}\mathbf{e}^{11+}$	Excitation	0-10.0 Ry	Th	626
$e + Ni^{3+}$	Excitation	0.0-2.0 Ry	Th	627
$e + Al^{2+}$	Excitation	$3.6-5.6 \ log_{10}T(k)$	Th	628
$e + N^{4+}$	Recombination	0.0-15.0 eV	E/T	629
$e + Ne^{7+}$	Recombination	0.0-15.0 eV	E/T	629
$\mathbf{e} + \mathbf{F}\mathbf{e}^{20+}$	Excitation	2.1- $3.0 keV$	E/T	631
$e + Fe^{21+}$	Excitation	2.1- $3.0 keV$	E/T	631
$e + Fe^{22+}$	Excitation	2.1- $3.0 keV$	E/T	631
$e + Fe^{23+}$	Excitation	2.1- $3.0 keV$	E/T	631
$e + U^{91+}$	Ionization	100-500 keV	Th	632
e + Kr	Ionization	20-450 eV	Exp	633
$e + Ba^*$	De-excitation	$20-40 \mathrm{eV}$	E/T	634
$e + Ba^*$	Angular Scattering	$20-40 \mathrm{eV}$	E/T	634
$e + Ba^*$	Excitation	20-40 eV	E/T	634
e + He	Ionization	64.6 eV	E/T	635
$e + C^{2+}$	Excitation	0-150 Ry	Th	636
$\mathbf{e} + \mathbf{F}\mathbf{e}^{22+}$	Excitation	0-150 Ry	Th	636
$e + W^{70+}$	Excitation	0-150 Ry	Th	636
$e + H^+$	Ionization	$E \downarrow 50$ threshold	E/T	637
$e + He^+$	Ionization	$E \downarrow 50$ threshold	E/T	637
$e + Li^+$	Ionization	E ; 50 threshold	E/T	637
$e + Be^+$	Ionization	E ; 50 threshold	E/T	637
$e + B^+$	Ionization	E ; 50 threshold	E/T	637
$e + C^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{N}^+$	Ionization	E ; 50 threshold	E/T	637
$e + O^+$	Ionization	E ; 50 threshold	E/T	637
$e + F^+$	Ionization	E ; 50 threshold	E/T	637
$e + Ne^+$	Ionization	$E \downarrow 50$ threshold	$\dot{E/T}$	637

$e + Na^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{Mg}^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{Al}^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{Si}^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{P}^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{S}^+$	Ionization	E ; 50 threshold	E/T	637
$e + Cl^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{Ar}^+$	Ionization	E ; 50 threshold	E/T	637
$e + K^+$	Ionization	E ; 50 threshold	$\dot{E/T}$	637
$e + Ca^+$	Ionization	E ; 50 threshold	$\dot{E/T}$	637
$\mathbf{e} + \mathbf{S}\mathbf{c}^+$	Ionization	E ; 50 threshold	E/T	637
$e + Ti^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{V}^+$	Ionization	E ; 50 threshold	E/T	637
$e + Cr^+$	Ionization	E ; 50 threshold	E/T	637
$e + Mn^+$	Ionization	E ; 50 threshold	$\dot{E/T}$	637
$e + Fe^+$	Ionization	E ; 50 threshold	E/T	637
$\mathbf{e} + \mathbf{A}$	Ionization	E ; 50 threshold	E/T	637
$e + Ne^{8+}$	Fluorescence	925-1905 eV	Th	638
$e + Ne^{8+}$	Excitation	$925-1905 \ eV$	Th	638
$\mathbf{e} + \mathbf{CH}_4$	Excitation	18-51 eV; 80 eV	Exp	639
$\mathbf{e} + \mathbf{H}_2$	Excitation	$15-45 \mathrm{eV}$	E/T	640
$\mathbf{e} + \mathbf{H}_3^+$	Excitation	$15-45 \mathrm{eV}$	E/T	640
$\mathbf{e} + \mathbf{H}_2$	Ionization	$15-45 \mathrm{eV}$	E/T	640
$\mathbf{e} + \mathbf{H}_3^+$	Ionization	15-45 eV	E/T	640
$e + HCO^+$	Dissociation	3-200 eV	E/T	641
$e + DCO^+$	Dissociation	$3-200 \mathrm{eV}$	E/T	641
$e + HCO^+$	Excitation	$3-200 \mathrm{eV}$	E/T	641
$e + DCO^+$	Excitation	$3-200 \mathrm{eV}$	E/T	641
$\mathbf{e} + \mathbf{F} \mathbf{e}^{14+}$	Excitation	$0 - 8x10^{6} { m K}$	$^{\mathrm{Th}}$	642
$\mathbf{e} + \mathbf{CH}_4$	Excitation	0.1 - 1.5 eV	E/T	643
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Excitation	5-14 eV	Exp	644
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Ionization	5-14 eV	Exp	644
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Elastic Scattering	2-500 eV	Th	645
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Angular Scattering	2-500 eV	Th	645
$e + H_2O$	Excitation	2-500 eV	Th	645
$e + Kr^{4+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{R}\mathbf{b}^{\mathrm{o}+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Sr}^{\mathbf{o}+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Y}^{\prime +}$	Excitation	0.1-10 ionized energy	Th	646
$e + Zr^{8+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Nb^{9+}$	Excitation	0.1-10 ionized energy	Th 	646
$e + Mo^{10+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Tc^{11+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Ru^{12+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Rh^{13+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Pd^{14+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{A}\mathbf{g}^{10+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Cd^{10+}$	Excitation	0.1-10 ionized energy	Th	646
$e + In^{++}$	Excitation	0.1-10 ionized energy	Th	646
$e + Sn^{10+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Sb^{10+}$	Excitation	0.1-10 ionized energy	Th	646
$e + 1e^{20}$	Excitation	0.1-10 ionized energy	Th Th	646
$e + 1^{1}$	Excitation	0.1-10 ionized energy	1 n Th	040
$e + Ae^{-2}$	Excitation	0.1-10 ionized energy	1 n Th	040
$e + Us^{-3+}$	Excitation	0.1-10 ionized energy	1 n Th	040
$e + Ba^{}$	Excitation	0.1-10 ionized energy	1 n Th	040
$e + La^{-\gamma}$	Excitation	0.1-10 ionized energy	ΤU	046

$\mathbf{e} + \mathbf{C}\mathbf{e}^{26+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{P} \mathbf{r}^{27+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{N} \mathbf{d}^{28+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Pm}^{29+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Sm}^{30+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{E}\mathbf{u}^{31+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{G} \mathbf{d}^{32+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Tb^{33+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Dy^{34+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Ho}^{35+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{E} \mathbf{r}^{36+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{T}\mathbf{m}^{37+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Y} \mathbf{b}^{38+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{L} \mathbf{u}^{39+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{H} \mathbf{f}^{40+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{T} \mathbf{a}^{41+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{W}^{42+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{R}\mathbf{e}^{43+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Os^{44+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{I}\mathbf{r}^{45+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{P} \mathbf{t}^{46+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{A} \mathbf{u}^{47+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{H} \mathbf{g}^{48+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{Tl}^{49+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{P} \mathbf{b}^{50+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{B} \mathbf{i}^{51+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Po^{52+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{A} \mathbf{t}^{53+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Rn^{54+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{F} \mathbf{r}^{55+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{R}\mathbf{a}^{56+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{A} \mathbf{c}^{57+}$	Excitation	0.1-10 ionized energy	Th	646
$e + Th^{58+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{P} \mathbf{a}^{59+}$	Excitation	0.1-10 ionized energy	Th	646
$e + U^{60+}$	Excitation	0.1-10 ionized energy	Th	646
$\mathbf{e} + \mathbf{O}_2^+$	Dissociation	0.0-0.4 eV	Exp	647
$\mathbf{e} + \mathbf{O}_2^+$	Recombination	$0.0-0.4 \ \mathrm{eV}$	Exp	647
e + C	Excitation	$0-60 \mathrm{eV}$	Th	648
$\mathbf{e} + \mathbf{X} \mathbf{e}^{3+}$	Ionization	37.5 -115 eV	Exp	649
$\mathbf{e} + \mathbf{P} \mathbf{d}^{19+}$	Recombination	$0.1 - 10^4 \text{ eV}$	Th	650
$\mathbf{e} + \mathbf{A}$	Elastic Scattering	1.01-5 γ	Th	651
$\mathbf{e} + \mathbf{A}$	Angular Scattering	1.01-5 γ	Th	651
e + H	Recombination	1000 eV	Th	652
e + Ar	Angular Scattering	200 eV	E/T	653
e + Ar	Ionization	200 eV	E/T	653
$\mathbf{e} + \mathbf{A} \mathbf{u}^{46+}$	Recombination	2500 eV	Th	654
$\mathbf{e} + \mathbf{A} \mathbf{u}^{46+}$	Ionization	2500 eV	Th	654
e + He	Angular Scattering	488 eV	E/T	655
e + He	Ionization	488 eV	E/T	655
$e + ArH^+$	Dissociation	$0-33 \mathrm{eV}$	Exp	656
$e + ArH^+$	Recombination	$0-33 \mathrm{eV}$	Exp	656
$e + ArH^+$	Excitation	0-33 eV	Exp	656
e + He	Angular Scattering	$601 { m eV}$	$\tilde{E/T}$	657
e + He	Ionization	601 eV	$\dot{E/T}$	657
$e + CF^+$	Dissociation	$0-12.5 {\rm ~eV}$	Exp	658
$e + CF^+$	Recombination	0-12.5 eV	Exp	658
$e + CF^+$	Excitation	$0-12.5 {\rm ~eV}$	Exp	658

e + He	Angular Scattering	2000 eV	Th	659
e + He	Ionization	2000 eV	Th	659
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Electron Collisions	Undef.	E/T	660
$\mathbf{e} + \mathbf{N}_2$	Excitation	Undef.	Exp	661
e + Xe	Excitation	Undef.	Th	662
$e + H^-$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	663
e + H	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	663
e + He	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	663
$e + He^+$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	663
${ m e}+{ m Li}^+$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	663
$\mathbf{e} + \mathbf{B}^{4+}$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	663
e + H	Electron Collisions	Undef.	Th	664
e + Te	Ionization	$6-18 \mathrm{eV}$	Exp	665
$e + In^+$	Excitation	7-300 eV	Exp	666
e + Li	Excitation	$60-95 \ {\rm MeV/u}; \ 0.1-5.0 \ {\rm keV}$	Th	667
e + Li	Ionization	60-95 MeV/u; 0.1-5.0 keV	Th	667
e + K	Ionization	18.7-24.4 eV	Exp	668
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Dissociation	$7-35 \mathrm{eV}$	Exp	669
e + CO	Dissociation	7-35 eV	Exp	669
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Ionization	$7-35 \mathrm{eV}$	Exp	669
e + CO	Ionization	7-35 eV	Exp	669
$\mathbf{e} + \mathbf{Ar}$	Angular Scattering	2 keV	Th	670
e + Ar	Ionization	2 keV	Th	670
$\mathbf{e} + \mathbf{A}\mathbf{u}^{50+}$	Excitation	2.9-5.5 keV	Exp	671
$e + S^{14+}$	Excitation	Undef.	Th	672
$e + Ar^{10+}$	Excitation	Undef.	Th	672
$e + Ca^{18+}$	Excitation	Undef.	Th	672
$e + Be^{2+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$e + C^{4+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$e + O^{6+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$e + Cl^{10+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$e + Fe^{24+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$e + Kr^{34+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$\mathbf{e} + \mathbf{X}\mathbf{e}^{52+}$	Excitation	$10^3 - 10^5 \text{ eV}$	Th	673
$e + He^{2+}$	Recombination	0-400 eV	Th	674
$e + F^{9+}$	Recombination	0-400 eV	Th	674
$e + Na^+$	Recombination	0-400 eV	Th	674
$e + Mg^{2+}$	Recombination	0-400 eV	Th	674
$e + Al^{3+}$	Recombination	0-400 eV	Th	674
$e + Ar^{\circ +}$	Recombination	0-400 eV	Th	674
$\mathbf{e} + \mathbf{Ar}^{10+}$	Recombination	0-400 eV	Th	674
$\mathbf{e} + \mathbf{F} \mathbf{e}^{10+}$	Recombination	0-400 eV	Th	674
$\mathbf{e} + \mathbf{Z}\mathbf{n}^{20+}$	Recombination	0-400 eV	Th	674
$\mathbf{e} + \mathbf{X} \mathbf{e}^{3\pm \pm}$	Recombination	0-400 eV	Th	674
$e + He^{2+}$	Excitation	0-400 eV	Th	674
$\mathbf{e} + \mathbf{F}^{o+}$	Excitation	0-400 eV	Th	674
$e + Na^+$	Excitation	0-400 eV	Th	674
$e + Mg^{2+}$	Excitation	0-400 eV	Th	674
$e + Al^{3+}$	Excitation	0-400 eV	Th	674
$e + Ar^{\circ}$	Excitation	0-400 eV	Th	674
$\mathbf{e} + \mathbf{A} \mathbf{r}^{10+}$	Excitation	0-400 eV	Th	674
$e + Fe^{10}$	Excitation	0-400 eV	Th	674
$\mathbf{e} + \mathbf{Z}\mathbf{n}^{2}$	Excitation	0-400 eV	Th	674
$\mathbf{e} + \mathbf{A} \mathbf{e}^{\mathbf{e} \mathbf{\tau}}$	Excitation	0-400 eV	Th	674
$e + 11^{48+}$	Recombination	3-5 keV	Exp	675
$e + Pt^{**}$	Recombination	U-09 eV	Exp	676
$e + Pb^{2}$	Recombination	1000-3000 keV	Th	677

$\mathbf{e} + \mathbf{U}^{92+}$	Recombination	1000-3000 keV	Th	677
$e + U^{91+}$	Recombination	$100-600 {\rm ~MeV/u}$	Th	678
$e + U^{89+}$	Recombination	$216 { m MeV/u}$	Th	679
$e + U^{90+}$	Recombination	$216 { m MeV/u}$	Th	679
$e + U^{91+}$	Recombination	$216 { m MeV/u}$	Th	679
$e + U^{91+}$	Recombination	$365\text{-}1458~\mathrm{MeV/u}$	Th	680
$\mathbf{e} + \mathbf{C}^{6+}$	Recombination	Undef.	Exp	681
$e + O^{5+}$	Excitation	8-64 Ry	Th	682
$\mathbf{e} + \mathbf{T}\mathbf{i}^+$	Ionization	50-1000 eV	E/T	683
$\mathbf{e} + \mathbf{T}\mathbf{i}^{2+}$	Ionization	50-1000 eV	E/T	683
$\mathbf{e} + \mathbf{Mo}^{33+}$	Excitation	Undef.	Th	684
$\mathbf{e} + \mathbf{N}^+$	Ionization	2-12 eV	Th	685
$\mathbf{e} + \mathbf{G} \mathbf{d}^{36+}$	Excitation	Undef.	Th	686
e + Kr	Excitation	0-10 eV	Exp	687
${ m e}+{ m Kr}^*$	Excitation	0-10 eV	Exp	687
$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	1200 eV	Exp	688
$\mathbf{e} + \mathbf{H}_2$	Ionization	1200 eV	Exp	688
$\mathbf{e} + \mathbf{F} \mathbf{e}^{9+}$	Excitation	$0.0-210.0 \mathrm{Ry}$	Th	689
$\mathbf{e} + \mathbf{Ar}^{16+}$	Excitation	0-580 Ry	Th	690
$e + O^{4+}$	Excitation	$17.6\text{-}30.0\;\mathrm{eV}$	Exp	691
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Dissociation	$0-30 \mathrm{eV}$	Th	692
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Elastic Scattering	$0-30 \mathrm{eV}$	Th	692
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Angular Scattering	$0-30 \mathrm{eV}$	Th	692
$\mathbf{e} + \mathbf{H}_2$	Ionization	$0-30 \mathrm{eV}$	Th	692
e + He	Excitation	500 eV	Exp	693
e + He	Ionization	500 eV	Exp	693
$\mathbf{e} + \mathbf{SF}_6$	Attachment	$0.01\text{-}0.6\;\mathrm{eV}$	Th	694
$\mathbf{e} + \mathbf{SF}_6$	Elastic Scattering	0.01- $0.6 eV$	Th	694
$\mathbf{e} + \mathbf{SF}_6$	Excitation	$0.01\text{-}0.6\;\mathrm{eV}$	Th	694
e + Zn	Elastic Scattering	$3-50 \mathrm{eV}$	Th	695
e + Zn	Excitation	$3-50 \mathrm{eV}$	Th	695
e + K	Excitation	29-500 eV	Exp	696
e + He	Excitation	20-800 eV	Th	697
e + He	Ionization	20-800 eV	Th	697
e + He	Ionization	70-3000 eV	E/T	698
e + H	Ionization	150-500 eV	Th	699
e + He	Ionization	1000 eV	Th	700
${ m e}+{ m Li}^+$	Ionization	1000 eV	Th	700
e + Ar	Ionization	1000 eV	Th	700
$e + K^+$	Ionization	1000 eV	Th	700
e + Li	Excitation	6-20 v (a.u.)	Th	701
e + Li	Ionization	6-20 v (a.u.)	Th	701
$\mathbf{e} + \mathbf{CF}_4$	Elastic Scattering	20-5000 eV	Th	702
$\mathbf{e} + \mathbf{C} \mathbf{F}_3 \mathbf{I}$	Elastic Scattering	20-5000 eV	Th	702
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_6$	Elastic Scattering	20-5000 eV	Th	702
$\mathbf{e} + \mathbf{C}_3 \mathbf{F}_8$	Elastic Scattering	20-5000 eV	Th	702
$e + CF_3$	Elastic Scattering	20-5000 eV	Th	702
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Elastic Scattering	20-5000 eV	Th	702
$\mathbf{e} + \mathbf{CF}_2$	Elastic Scattering	20-5000 eV	Th	702
e + CF	Elastic Scattering	20-5000 eV	Th	702
$\mathbf{e} + \mathbf{CF}_4$	Excitation	$20\text{-}5000~\mathrm{eV}$	Th	702
$\mathbf{e} + \mathbf{C}\mathbf{F}_{3}\mathbf{I}$	Excitation	$20\text{-}5000~\mathrm{eV}$	Th	702
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_6$	Excitation	$20\text{-}5000~\mathrm{eV}$	Th	702
$\mathbf{e} + \mathbf{C}_3 \mathbf{F}_8$	Excitation	$20\text{-}5000~\mathrm{eV}$	Th	702
$e + CF_3$	Excitation	$20\text{-}5000~\mathrm{eV}$	Th	702
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Excitation	20-5000 eV	Th	702
$e + CF_2$	Excitation	20-5000 eV	Th	702

e + CF	Excitation	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{CF}_4$	Ionization	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{CF}_{3}\mathbf{I}$	Ionization	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_6$	Ionization	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{C}_3 \mathbf{F}_8$	Ionization	20-5000 eV	Th 70
$e + CF_3$	Ionization	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Ionization	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{CF}_2$	Ionization	20-5000 eV	Th 70
e + CF	Ionization	20-5000 eV	Th 70
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}$	Attachment	0-14 eV	Exp 70
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}_2$	Attachment	0-14 eV	Exp 70
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}$	Dissociation	0-14 eV	Exp 70
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}_2$	Dissociation	0-14 eV	Exp 70
$\mathbf{e} + \mathbf{O}_2$	Angular Scattering	2500 eV	Exp 70
$\mathbf{e} + \mathbf{O}_2$	Excitation	2500 eV	Exp 70
e + Ar	Excitation	0-200 eV	Exp 70
e + Ca	Angular Scattering	10-70 eV	Th 70
e + Ca	Ionization	$10-70 \mathrm{eV}$	Th 70
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}^+$	Dissociation	$0 \mathrm{eV}$	Exp 70
${ m e}+{ m CH_2}^+$	Dissociation	$0 \mathrm{eV}$	Exp 70
$\mathbf{e} + \mathbf{N}\mathbf{H}_2^+$	Dissociation	$0 \mathrm{eV}$	Exp 70
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}^+$	Angular Scattering	$0 \mathrm{eV}$	Exp 70
$\mathbf{e} + \mathbf{C} \mathbf{H}_2{}^+$	Angular Scattering	$0 \mathrm{eV}$	Exp 70
$\mathbf{e} + \mathbf{N}\mathbf{H}_2^+$	Angular Scattering	$0 \mathrm{eV}$	Exp 70
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}^+$	Recombination	$0 \mathrm{eV}$	Exp 70
${ m e}+{ m CH_2}^+$	Recombination	$0 \mathrm{eV}$	Exp 70
$\mathbf{e} + \mathbf{N}\mathbf{H}_2^+$	Recombination	$0 \mathrm{eV}$	Exp 70
e + Ne	Excitation	2500 eV	E/T 70
e + Ar	Excitation	2500 eV	E/T 70
e + Kr	Excitation	2500 eV	E/T 70
e + C	Ionization	$0.1-10,000 { m ~keV}$	Th 70
e + Ar	Ionization	0.1 -10,000 keV	Th 70
e + Ti	Ionization	0.1 -10,000 keV	Th 70
e + Cr	Ionization	0.1 -10,000 keV	Th 70
e + Ni	Ionization	$0.1-10,000 { m ~keV}$	Th 70
e + Ge	Ionization	$0.1-10,000 { m ~keV}$	Th 70
e + Ag	Ionization	$0.1-10,000 { m ~keV}$	Th 70
e + Sn	Ionization	$0.1-10,000 { m ~keV}$	Th 70
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Dissociation	0.8-600 eV	Exp 71
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Elastic Scattering	0.8-600 eV	Exp 71
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Angular Scattering	0.8-600 eV	Exp 71
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Excitation	0.8-600 eV	Exp 71
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Ionization	0.8-600 eV	Exp 71
e + Ar	Ionization	10-100 eV	Th 71
$e + Ar^*$	Ionization	10-100 eV	Th 71
$\mathbf{e} + \mathbf{SF}_6$	Dissociation	1-10,000 eV	E/T 71
$e + SF_5CF_3$	Dissociation	1-10,000 eV	E/T 71
$\mathbf{e} + \mathbf{SF}_6$	Elastic Scattering	1-10,000 eV	E/T 71
$e + SF_5CF_3$	Elastic Scattering	1-10,000 eV	E/T 71
$\mathbf{e} + \mathbf{SF}_6$	Excitation	1-10,000 eV	E/T 71
$e + SF_5CF_3$	Excitation	1-10,000 eV	E/T 71
$\mathbf{e} + \mathbf{SF}_6$	Ionization	1-10,000 eV	E/T 71
$e + SF_5CF_3$	Ionization	1-10,000 eV	E/T 71
$e + Ba^+$	Dissociation	$0-31 \mathrm{V/cm}$	Exp 71
e + Ne	Angular Scattering	750 eV	Exp 71
e + Ne	Ionization	750 eV	Exp 71
e + He Z = ?-?	Ionization	25-100,000 eV	Th 55

e + Li Z= ?-?	Recombination	Undef.	Th	621
e + O Z = ?-?	Recombination	Undef.	Th	630
e + Ge Z = ?-?	Excitation	0.1-10 ionized energy	Th	646
$e + He^+ Z = ?-?$	Angular Scattering	2-30 excitation threshold units	Th	477
$e + He^+ Z = ?-?$	Excitation	2-30 excitation threshold units	Th	477

2.2.3 Heavy Particles Collisions

H + H	Interaction Potentials	Undef.	Th	716
$H^* + H$	Interaction Potentials	Undef.	Th	716
$H^+ + Ar$	Charge Transfer	1-200 keV/u	Th	721
$\mathbf{H}^+ + \mathbf{O}_2$	Elastic Scattering	$0.5-25.0 \mathrm{keV}$	E/T	739
$\mathbf{H}^+ + \mathbf{O}_2$	Charge Transfer	$0.5-25.0 \mathrm{keV}$	E/T	739
$\mathbf{H}^+ + \mathbf{O}_2$	Total Scattering	$0.5-25.0 \mathrm{keV}$	E/T	739
$H^+ + H$	Elastic Scattering	$10^{-4} - 100 \text{ eV}$	Th	740
$H^+ + H$	Charge Transfer	$10^{-4} - 100 \text{ eV}$	Th	740
$H^+ + H$	Interaction Potentials	$10^{-4} - 100 \text{ eV}$	Th	740
$H^+ + H$	Total Scattering	$10^{-4} - 100 \text{ eV}$	Th	740
$\mathrm{H^{+}}$ + Na	Charge Transfer	4-25 keV	E/T	742
$\mathrm{H^{+}}$ + Na	Ionization	4-25 keV	E/T	742
$\mathbf{H}^+ + \mathbf{O}_2$	Charge Transfer	1.5 keV	E/T	743
$\mathbf{H}^+ + \mathbf{O}_2$	Ionization	1.5 keV	E/T	743
$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	5 keV	E/T	744
$\mathbf{H}^+ + \mathbf{H}_2$	Charge Transfer	0.18-1.0 keV/u	E/T	746
$H^+ + HD$	Charge Transfer	0.18-1.0 keV/u	E/T	746
$\mathbf{H}^+ + \mathbf{D}_2$	Charge Transfer	0.18-1.0 keV/u	E/T	746
H + H	Interaction Potentials	1-5 Å	Th	748
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Charge Transfer	60-120 keV	Exp	750
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_2$	Charge Transfer	60-120 keV	Exp	750
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Charge Transfer	60-120 keV	Exp	750
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_6$	Charge Transfer	60-120 keV	Exp	750
$\mathbf{H}^+ + \mathbf{C}_3 \mathbf{H}_6$	Charge Transfer	60-120 keV	Exp	750
$\mathbf{H}^+ + \mathbf{C}_3 \mathbf{H}_8$	Charge Transfer	60-120 keV	Exp	750
$H + CH_4$	Ionization	60-120 keV	Exp	750
$\mathbf{H} + \mathbf{C}_2 \mathbf{H}_2$	Ionization	60-120 keV	Exp	750
$\mathbf{H} + \mathbf{C}_2 \mathbf{H}_4$	Ionization	60-120 keV	Exp	750
$\mathbf{H} + \mathbf{C}_2 \mathbf{H}_6$	Ionization	60-120 keV	Exp	750
$\mathbf{H} + \mathbf{C}_3 \mathbf{H}_6$	Ionization	60-120 keV	Exp	750
$H + C_3 H_8$	Ionization	60-120 keV	Exp	750
$\mathbf{H}^+ + \mathbf{H}_2$	Dissociation	25-100 keV/u	Exp	754
$\mathbf{H}^+ + \mathbf{H}_2$	Total Scattering	25-100 keV/u	Exp	754
$\mathbf{H}^+ + \mathbf{H}\mathbf{e}$	Charge Transfer	$40-9000 \ {\rm keV}$	Th	762
$\mathbf{H}^+ + \mathbf{Ne}$	Charge Transfer	40-9000 keV	Th	762
$H^+ + Ar$	Charge Transfer	$40-9000 {\rm ~keV}$	Th	762
$H^+ + He$	Ionization	$6 { m MeV}$	Exp	763
$H^+ + He$	Total Scattering	75 keV	E/T	766
$H^+ + He$	Ionization	75 keV	E/T	766
$H^+ + He$	Charge Transfer	400-1200 keV	Th	767
$H^+ + He$	Total Scattering	400-1200 keV	Th	767
$H^+ + He$	Ionization	400-1200 keV	Th	767
$\mathrm{H^{+}+He}$	Total Scattering	0.1-1.5 MeV/amu	Th	769
$\mathrm{H^{+}+He}$	Ionization	0.1-1.5 MeV/amu	Th	769
H + H	Line Broadening	$5000-25,000 { m K}$	Th	773
$\mathrm{H^{+}+He}$	Charge Transfer	$0.293-7.42 { m MeV}$	Th	776
$\mathrm{H^{+}}$ + Ne	Charge Transfer	$0.293-7.42 { m MeV}$	Th	776
$H^+ + Ar$	Charge Transfer	$0.293-7.42 { m MeV}$	Th	776

$\mathrm{H^{+} + He}$	Total Scattering	$0.293-7.42 { m MeV}$	Th	776
$\rm H^+ + Ne$	Total Scattering	$0.293-7.42 { m MeV}$	Th	776
$H^+ + Ar$	Total Scattering	$0.293-7.42 { m MeV}$	Th	776
$\mathrm{H^{+}+Ca^{+}}$	Excitation	1.5-500 threshold	Th	782
$H^+ + H$	Ionization	200 eV; 1 MeV	Th	787
$H^+ + H$	Interaction Potentials	10^{-9} a.u.	Th	790
$H^+ + Ne$	Ionization	5-10,000 keV	Th	792
$H^+ + Ar$	Ionization	5-10,000 keV	Th	792
H + H	Energy Transfer	$3x10^3 - 7x10^3$ K	Th	795
$H^* + H$	Energy Transfer	$3x10^3 - 7x10^3$ K	Th	795
$\mathrm{H^{+}+He^{+}}$	Excitation	$0.5-2000 { m keV}$	Th	806
$\mathrm{H^{+}+He^{+*}}$	Excitation	$0.5-2000 { m ~keV}$	Th	806
$\mathrm{H^{+}+He^{+}}$	Ionization	$0.5-2000 { m keV}$	Th	806
$\mathrm{H^{+}+He^{+*}}$	Ionization	$0.5-2000 { m keV}$	Th	806
$H^+ + Al$	Charge Transfer	$0.3-0.6 { m MeV}$	Exp	807
$H^+ + Ar$	Ionization	$10-5000 {\rm ~keV}$	Th	811
$H^+ + K$	Charge Transfer	0.3-4 keV	Exp	813
$H^+ + H$	Charge Transfer	2 keV	Th	814
$H^+ + H$	Ionization	$2 { m keV}$	Th	814
$H^+ + Ne$	Line Broadening	1000-50,000 K	Th	815
$H^+ + He$	Charge Transfer	20-200 keV	Th	819
$H^+ + H$	Charge Transfer	1-200,000 K	Th	820
$H^+ + H$	Line Broadening	$20,000-25,000 \deg K$	Th	823
$H + H_2$	Interchange reaction	1.49 - 1.85 eV	E/T	826
$H + D_2$	Interchange reaction	1.49 - 1.85 eV	$\dot{E/T}$	826
$\mathbf{H} + \mathbf{H}_2$	Interchange reaction	1.30 - 1.89 eV	E/T	827
$H + D_2$	Interchange reaction	1.30 - 1.89 eV	E/T	827
$H + O_2$	Interchange reaction	300-10,000 K	Th	830
$H^+ + CO$	Excitation	$0-140 \mathrm{eV}$	Th	831
$\mathbf{H} + \mathbf{H}_2$	Excitation	1.5 eV	Exp	837
$H + D_2$	Excitation	$1.5 \ \mathrm{eV}$	Exp	837
H + LiH	Interchange reaction	$0.0-1.0 \ eV$	Th	838
$H + H_2O$	Interchange reaction	$1.2-2.5 { m eV}$	Exp	839
$H + D_2O$	Interchange reaction	$1.2-2.5 { m eV}$	Exp	839
$H^+ + H$	Total Scattering	$0.1-10 \ {\rm keV/u}$	E/T	842
$H^+ + H$	Ionization	$0.1-10 \ {\rm keV/u}$	E/T	842
$\mathrm{H^{+}+CH_{2}}$	Elastic Scattering	0.5-1.5 keV	Th	846
$\mathrm{H^{+}+CH_{2}}$	Charge Transfer	$0.5-1.5 \mathrm{keV}$	Th	846
$\mathrm{H^{+}+CH_{2}}$	Interaction Potentials	$0.5-1.5 \mathrm{keV}$	Th	846
$\mathrm{H^{+}+CH_{2}}$	Total Scattering	$0.5-1.5 \mathrm{keV}$	Th	846
$H^+ + H$	Ionization	20 keV	Th	851
$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	$0.114-68 { m ~MeV/u}$	Th	852
$H^+ + H$	Interaction Potentials	Undef.	Th	857
$H^+ + H$	Charge Transfer	50 keV	Th	858
$H^+ + H$	Excitation	50 keV	Th	858
$\mathrm{H^{+}+He}$	Ionization	50-1000 keV/u	Th	860
$H^+ + Li$	Ionization	50-1000 keV/u	Th	860
$H + H^+$	Charge Transfer	1-5000 eV	Th	861
$H + H^+$	Total Scattering	1-5000 eV	Th	861
H + H	Interaction Potentials	Undef.	Th	865
H + Li	Interaction Potentials	Undef.	Th	866
H + Na	Interaction Potentials	Undef.	Th	866
H + K	Interaction Potentials	Undef.	Th	866
H + Rb	Interaction Potentials	Undef.	Th	866
$H^+ + Ne$	Total Scattering	700-2000 keV	Exp	870
$H^+ + Ne$	Excitation	700-2000 keV	Exp	870
$H^+ + Ne$	Ionization	$700-2000 {\rm ~keV}$	Exp	870

$\mathrm{H^{+}} + \mathrm{He}$	Total Scattering	$50-1500 { m keV}$	Th	876
$\mathrm{H^{+} + He}$	Ionization	$50-1500 { m keV}$	Th	876
$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Dissociation	20-150 keV	Exp	877
$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Ionization	$20-150 {\rm ~keV}$	Exp	877
$\mathbf{H}^+ + \mathbf{N}_2$	Ionization	$4.3 { m MeV}$	Th	881
$\mathrm{H^{+}} + \mathrm{He}$	Total Scattering	50-150 keV	Th	883
$\mathrm{H^{+}} + \mathrm{He}$	Ionization	50-150 keV	Th	883
$\mathbf{H}^+ + \mathbf{H}_2$	Dissociation	$6 { m MeV}$	Exp	887
$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	$6 { m MeV}$	Exp	887
$\mathrm{H^{+}} + \mathrm{H}$	Elastic Scattering	$0.01-1 \ eV$	Th	889
$\mathrm{H^{+}}+\mathrm{C}_{2}\mathrm{H}_{4}$	Dissociation	2 keV	Th	890
$H^+ + H$	Charge Transfer	$2.8-5 { m MeV}$	Th	892
$H^+ + H$	Total Scattering	$2.8-5 { m MeV}$	Th	892
$\mathrm{H^{+}+He}$	Ionization	10-20 keV	Th	896
$H^+ + N$	Charge Transfer	$10^{-4} - 10^3 \text{ eV/u}$	Th	901
$H^+ + He$	Charge Transfer	20 keV	Th	903
$\mathrm{H^{+}} + \mathrm{He}$	Ionization	20 keV	Th	903
$H^+ + S$	Charge Transfer	$10^{-4} - 10^4 \text{ eV/u}$	Th	904
$H^+ + S$	Interaction Potentials	$10^{-4} - 10^4 \text{ eV/u}$	Th	904
$H^+ + He$	Charge Transfer	200-7400 keV	Th	906
$\mathrm{H^{+} + He}$	Total Scattering	200-7400 keV	Th	906
H + Ne	Interaction Potentials	$0.01-30 {\rm eV}$	E/T	908
$H^+ + Ne$	Interaction Potentials	$0.01-30 \ eV$	E/T	908
$H^+ + C_{60}$	Dissociation	2-130 keV	Exp	910
$H^+ + C_{60}$	Ionization	2-130 keV	Exp	910
$H^+ + C_{60}$	Dissociation	1-130 keV	Exp	912
${ m H^{+}} + { m C}_{60}$	Ionization	1-130 keV	Exp	912
H + H + H	Interaction Potentials	Undef.	Th	915
$\mathbf{H} + \mathbf{H}_2$	Interaction Potentials	Undef.	Th	915
$H + CH_4$	Charge Transfer	0.5-5 keV	Exp	916
$H^+ + CH_4$	Charge Transfer	0.5-5 keV	Exp	916
$H + CH_4$	Total Scattering	0.5-5 keV	Exp	916
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Total Scattering	0.5-5 keV	Exp	916
$H^+ + He$	Charge Transfer	630 keV	E/T	920
H' + He	Ionization	630 KeV	E/T D/T	920
$\mathbf{H}^{+} + \mathbf{H}_{2}$	Dissociation	6 MeV	E/T D/T	922
$\mathbf{H}' + \mathbf{H}_2$ $\mathbf{H}^+ + \mathbf{H}_2$	Ionization		E/ I E/T	922
$\Pi' + \Pi$ $\Pi^+ + \Pi$	Charge Transfer	3-100 KeV 10^{-4} 10^2 -V	E/1	923
$\mathbf{n}' + \mathbf{n}$	Elastic Scattering	$10^{-2} - 10^{-2} eV$	1 fi Th	927
$\Pi + \Pi$ $\Pi^+ + \Omega$	Change Transfer	1-500 K	1 II Evro	920
$H^{+} + O_{2}$ $H^{+} + O_{2}$	Lonization	10-100 keV 10.100 keV	Exp	930
$\mathbf{H} + \mathbf{U}_2$ $\mathbf{H} + \mathbf{H}_2$	Interchange reaction	300 1500 K	шхр Th	930
$\mathbf{H} + \mathbf{H}_2$ $\mathbf{H} \perp \mathbf{N}\mathbf{H}$	Interchange reaction	300-3000 K	тп F/T	930 037
$H \perp H_{\circ}$	Interchange reaction	0.0-3.0 eV	$\frac{D}{1}$	942
$H \perp LiF$	Interchange reaction	0.0-3.0 CV	Th	942 947
H + H	Interaction Potentials	Undef	тн Тh	051
H + Li	Interaction Potentials	Undef	Th	951 951
$H \perp N_{2}$	Interaction Potentials	Undef	Th	951 951
H + K	Interaction Potentials	Undef	Th	951
H + Rh	Interaction Potentials	Undef	Th	951
$H^+ + C_2 H_2$	Dissociation	0.01-10 keV	Th	955
$H^+ + C_2 H_c$	Dissociation	0.01-10 keV	Th	955
$H^- + N$	Detachment	3-38 MeV/amu	E/T	958
$H^{-} + N^{7+}$	Detachment	3-38 MeV/amu	Е/Т Е/Т	958
$H^+ + H$	Ionization	3-38 MeV/amu	Е/Т Е/Т	958
$H^- + He$	Detachment	4-30 keV	Exp	961
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$\mathbf{H}^+ + \mathbf{W}$	Ionization	$1.7-5 { m MeV}$	Exp	962
$H^+ + He$	Charge Transfer	630 keV	E/T	964
$H^+ + He$	Ionization	630 keV	E/T	964
$H^+ + He$	Charge Transfer	$1.4-5.8 { m MeV}$	Exp	967
$H^+ + He$	Ionization	$1.4-5.8 \mathrm{MeV}$	Exp	967
$H^+ + H$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$H^+ + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$H^+ + He$	Ionization	$0.3-1.5 \mathrm{MeV}$	Th	972
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Dissociation	$20x10^{-6} - 500 \text{ MeV}$	Exp	973
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Ionization	$20x10^{-6} - 500 \text{ MeV}$	Exp	973
$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	1-5 MeV	E/T	975
$H^+ + Si$	Ionization	2-50 MeV	Exp	977
$H^+ + He$	Charge Transfer	$1 - 4x10^3 \text{ keV}$	Th	978
$H^+ + He$	Ionization	$1 - 4x10^3 \text{ keV}$	Th	978
$\mathbf{H}^+ + \mathbf{Ne}$	Charge Transfer	$10^2 - 5000 \text{ keV}$	Th	979
$\mathbf{H}^+ + \mathbf{A}\mathbf{r}$	Charge Transfer	$10^2 - 5000 \text{ keV}$	Th	979
$H^+ + He$	Excitation	0.25-5 MeV	Th	980
$\mathbf{H}^+ + \mathbf{H}_2\mathbf{O}$	Dissociation	l MeV/u	Exp	982
$H^+ + D_2O$	Dissociation	1 MeV/u	Exp	982
$H^+ + H_2O$ $H^+ + D_2O$		I MeV/u	Exp	982
$H + D_2O$		1 MeV/u	Exp	982
$\mathbf{H}' + \mathbf{H}_2$		1-5 MeV	Th F/T	983
H' + 1a		0.5-3.0 MeV	E/I E/T	984
H' + Au	Ionization	0.5-3.0 MeV	E/1 E	984
$\mathbf{H}^{+} + \mathbf{H}_{2}$ $\mathbf{H}^{+} + \mathbf{H}$	Lanization	15 KeV	Exp Evr	985 085
$\mathbf{n}^+ + \mathbf{n}_2$ $\mathbf{u}^+ + \mathbf{u}_2$	Total Scattoring	$2.6 M_{\odot} V/_{\rm P}$	ьхр ть	900
$\mathbf{H}^+ + \mathbf{H}_0$	Ionization	2.6 MeV/u	111 Th	900
H + CO	Energy Transfor	10^{-6} 1500 cm ⁻¹	Th	900 1007
$H^+ + H_0$	Total Scattoring	10 - 1500 cm 75 koV	T II Fyn	1007
$H^+ \perp H_{0}$	Ionization	75 keV	Exp	1010
$H + H_0$	Interchange reaction	1 43-2 55 eV	E_{XP}	1010
$\mathbf{H} + \mathbf{D}_2$	Interchange reaction	1 43-2 55 eV	E/T	1011
$\mathbf{H} + \mathbf{H}_2$ $\mathbf{H} + \mathbf{H}_2$	Interchange reaction	0 124-1 024 eV	Th	1012
$\mathbf{H} + \mathbf{D}_2$	Interchange reaction	0.124-1.024 eV	Th	1012
H + H	Interaction Potentials	Undef.	Th	1019
$\mathbf{H}^{+} + \mathbf{H}\mathbf{e}$	Charge Transfer	630 keV	E/T	1022
$\mathbf{H}^+ + \mathbf{He}$	Ionization	630 keV	$\dot{\mathrm{E/T}}$	1022
$H^+ + He$	Ionization	$6 { m MeV}$	Éxp	1026
H + CO	Charge Transfer	1-5 keV	Exp	1029
$H + CO_2$	Charge Transfer	1-5 keV	Exp	1029
$\mathbf{H} + \mathbf{N}_2$	Charge Transfer	1-5 keV	Exp	1029
$H^+ + CO$	Charge Transfer	1-5 keV	Exp	1029
$\mathbf{H}^+ + \mathbf{CO}_2$	Charge Transfer	1-5 keV	Exp	1029
H + CO	Total Scattering	1-5 keV	Exp	1029
$H + CO_2$	Total Scattering	1-5 keV	Exp	1029
$H + N_2$	Total Scattering	1-5 keV	Exp	1029
$H^+ + CO$	Total Scattering	1-5 keV	Exp	1029
$\mathbf{H}^+ + \mathbf{CO}_2$	Total Scattering	1-5 keV	Exp	1029
H + CO	Ionization	1-5 keV	Exp	1029
$H + CO_2$	Ionization	1-5 keV	Exp	1029
$\mathbf{H} + \mathbf{N}_2$	Ionization	1-5 keV	Exp	1029
$H^+ + CO$	Ionization	1-5 keV	Exp	1029
$\mathbf{H}^+ + \mathbf{CO}_2$	Ionization	1-5 keV	Exp	1029
$\mathbf{H}^+ + \mathbf{H}$	Charge Transfer	0.01-25 keV/u	Th	1030
$\mathrm{H^{+}} + \mathrm{H}$	Total Scattering	0.01-25 keV/u	Th	1030
H + H	Elastic Scattering	Ultralow	Th	1031

H + H	Interaction Potentials	Ultralow	Th	1031
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Elastic Scattering	0.1-10 keV	Th	1032
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Charge Transfer	$0.1-10 {\rm ~keV}$	Th	1032
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Interaction Potentials	0.1-10 keV	Th	1032
$H^+ + LiF$	Charge Transfer	100 keV	Th	1035
$He + H_2$	Interaction Potentials	Undef.	Th	716
$\mathrm{He} + \mathrm{H}_{2}^{*}$	Interaction Potentials	Undef.	Th	716
$He + O_2$	De-excitation	$10^{-4} - 10^2 \text{ K}$	Th	732
$He^{2+} + H_2$	Dissociation	25-100 keV/u	Exp	754
$He^{2+} + H_2$	Total Scattering	25-100 keV/u	Exp	754
$\mathrm{He^{+} + He}$	Excitation	30-50 keV	Exp	755
$He + CH_3OH$	Excitation	$20-500 \ cm^{-1}$	Th	756
He + He	Elastic Scattering	Very low	Th	758
$He^{2+} + He$	Charge Transfer	40-9000 keV	Th	762
$He^{2+} + Ne$	Charge Transfer	$40-9000 \ {\rm keV}$	Th	762
$\mathrm{He^{+} + Na}$	Charge Transfer	$1 \mathrm{keV}$	E/T	770
$\mathrm{He^{+}}$ + $\mathrm{Na^{*}}$	Charge Transfer	1 keV	E/T	770
$\mathrm{He^{+}}$ + Na	Total Scattering	1 keV	E/T	770
$\mathrm{He^{+}}$ + $\mathrm{Na^{*}}$	Total Scattering	1 keV	E/T	770
$He^{2+} + H$	Charge Transfer	10-406 eV/u	E/T	771
$\mathrm{He^{+}}$ + Ne	Ionization	10-1000 keV/amu	E/T	772
$\mathrm{He^{+}}+\mathrm{Ar}$	Ionization	10-1000 keV/amu	E/T	772
$\mathrm{He^{+}} + \mathrm{H}$	Total Scattering	0.1-1000 GeV/u	Th	777
$\mathrm{He^{+}} + \mathrm{H}$	Ionization	0.1-1000 GeV/u	Th	777
$\mathrm{He^{+}} + \mathrm{He}$	Excitation	30-300 keV	Exp	788
He + He	Association	Undef.	Th	797
$\mathrm{He}^* + \mathrm{He}^*$	Association	Undef.	Th	797
He + He	Ionization	Undef.	Th	797
$\mathrm{He^{*}} + \mathrm{He^{*}}$	Ionization	Undef.	Th	797
He + He	Line Broadening	$310 \mathrm{K}$	Th	799
He + He	Energy Transfer	$310 \mathrm{K}$	Th	799
He + He	Association	$230\ \mu\ \mathrm{K}$	Th	803
He + He	Interaction Potentials	$2\text{-}30\ \mu\ \mathrm{K}$	Th	803
He + He	Elastic Scattering	0.001-2 mk	Th	810
$He^* + He^*$	Elastic Scattering	0.001-2 mk	Th	810
$He^{2+} + H_2$	Charge Transfer	25 keV/u	Th	817
$\mathrm{He}^{2+} + \mathrm{H}_2$	Total Scattering	25 keV/u	Th	817
$\mathrm{He}^{2+} + \mathrm{H}_2$	Ionization	25 keV/u	Th	817
$He^+ + O$	Charge Transfer	0.0001- $3.0000 eV$	Th	821
$\mathrm{He}^{2+} + \mathrm{He}$	Charge Transfer	60-200 keV/amu	Th	824
$He^+ + H$	Elastic Scattering	9-11.6 MeV	Exp	845
$He^+ + D$	Elastic Scattering	9-11.6 MeV	Exp	845
$He^+ + T$	Elastic Scattering	9-11.6 MeV	Exp	845
$He^+ + H$	Total Scattering	9-11.6 MeV	Exp	845
He' + D	Total Scattering	9-11.6 MeV	Exp	845
He' + T	Iotal Scattering	9-11.6 Mev	Exp	845
He + CO	De-excitation	0-30 K		848
He + CO	Excitation Charge Transfer	0-30 K		848
$ne^+ + n_2^+$ $ne^{2+} + n_2^+$	Tatal Scottoring	0.2 - 1.5 V a.u.	1 II Th	850
$\mathbf{ne}^+ + \mathbf{n}_2^+$	Charge Transfer	0.2-1.5 V a.u.	111 Th	000
$\mathbf{H}_{\mathbf{a}^+} + \mathbf{H}$	Excitation	50 kev	111 TL	000 000
$H_{0}^{2+} \perp H_{0}$	Ionization	50 keV	111 Th	860
$H_{0}^{2+} \perp L^{2}$	Ionization	50-1000 keV/u	тп Тh	860
$T_{\rm Ho} \perp L_{\rm I}$	Interaction Potentials	Undef	111 Th	866
$H_{e} + N_{a}$	Interaction Potentials	Undef	тн Тh	866
$H_{e} + K$	Interaction Potentials	Undef	тн Тh	866
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He + Rb	Interaction Potentials	Undef.	Th	866
$He^{2+} + H$	Charge Transfer	20-1600 eV	Th	869
$He^+ + Ne$	Total Scattering	$700-2000 \ {\rm keV}$	Exp	870
$\mathrm{He^{+}}$ + Ne	Excitation	$700-2000 \ {\rm keV}$	Exp	870
$He^+ + Ne$	Ionization	$700-2000 \ {\rm keV}$	Exp	870
$He^{2+} + H$	Charge Transfer	0.1-10 keV/u	Th	874
$He^{2+} + He$	Total Scattering	50-1500 keV	Th	876
$He^{2+} + He$	Ionization	50-1500 keV	Th	876
$He^{2+} + He$	Ionization	$0.19-2.31 { m MeV/u}$	Th	911
$\mathrm{He^{+}}$ + C_{60}	Dissociation	$1-130 {\rm ~keV}$	Exp	912
$\mathrm{He^{+}}$ + C_{60}	Ionization	$1-130 {\rm ~keV}$	Exp	912
$He^{2+} + H$	Heavy Particle Collisions	1-15 keV/u	E/T	913
$He^{2+} + H$	Charge Transfer	1-15 keV/u	E/T	913
$He + CHF_2Cl$	Dissociation	500 K	Exp	914
$\mathrm{He}^{*} + \mathrm{CHF}_{2}\mathrm{Cl}$	Dissociation	500 K	Exp	914
$He + CHF_2Cl$	Ionization	500 K	Exp	914
$\mathrm{He}^{*} + \mathrm{CHF}_{2}\mathrm{Cl}$	Ionization	500 K	Exp	914
$He^{2+} + Na$	Charge Transfer	2-13 keV/u	E/T	917
$He^{2+} + Na$	Ionization	2-13 keV/u	E/T	917
He + HF	Excitation	$10^{-6} - 10^3 \text{ K}$	Th	918
$He + H_2$	Interchange reaction	$10^{-8} - 10^4 \ cm^{-1}$	Th	932
$He^+ + H_2$	Association	0.0-100.0 K	E/T	945
$He^+ + H_2$	Interchange reaction	0.0-100.0 K	E/T	945
$\mathrm{He}^{2+} + \mathrm{H}$	Charge Transfer	10-3000 eV/u	E/T	953
He + Au	Interaction Potentials	Undef.	Th	954
$He + SiO_2$	Interaction Potentials	Undef.	Th	954
$He^* + Au$	Interaction Potentials	Undef.	Th	954
$He^* + SiO_2$	Interaction Potentials	Undef.	Th	954
$He + NH_3$	Energy Transfer	5-300 K	Th	957
$He + NH_3$	Excitation	5-300 K	Th D (Th	957
He' + He	Ionization	3-38 MeV/amu	E/T D/T	958
He' + Ar		3-38 MeV/amu	E/T E/T	958
He' + Ae		3-38 MeV/amu	E/I E/T	958
$He^{+} + IN_{2}$	Ionization	3-38 MeV/amu	E/I E/T	958 059
$\mathbf{n}\mathbf{e}^{-1} + \mathbf{n}$ $\mathbf{u}\mathbf{e}^{2+1} + \mathbf{W}$		3-38 WeV/amu 1.75 MeV	E/1 Even	900
$He^+ + VV$ $He^+ + Ni$	Flagtic Scattoring	1.7-5 MeV 2.2 heV	ыхр ть	902
$He^+ + Sh$	Elastic Scattering	2-3 keV 2 -3 keV	тн Тh	903
$He^+ + SD$ $He^+ + Hf$	Elastic Scattering	2-3 keV 2.3 keV	TH Th	903
$He^+ \perp Ni$	Total Scattering	2-3 keV 2-3 keV	Th	903
$He^+ + Sh$	Total Scattering	2-3 keV	Th	963
$He^+ + Hf$	Total Scattering	2-3 keV	Th	963
$He^{2+} + H$	Ionization	$2x10^{-3} - 10^6$ keV	E/T	969
$He^{2+} + He$	Ionization	$2x10^{-3} - 10^{6}$ keV	E/T	969
$He^+ + CH_4$	Dissociation	$20x10^{-6} - 500 \text{ MeV}$	Exp	973
$He^+ + CH_4$	Ionization	$20x10^{-6} - 500$ MeV	Exp	973
$He^{2+} + H_2O$	Dissociation	1-5 keV	Exp	976
$He^{2+} + H_2O$	Charge Transfer	1-5 keV	Exp	976
$He^{2+} + H_2O$	Ionization	1-5 keV	Exp	976
$He^{2+} + He$	Charge Transfer	$1 - 4x10^3 { m keV}$	Th	978
$He^{2+} + He$	Ionization	$1 - 4x10^3 { m keV}$	Th	978
$He^{2+} + H_2O$	Charge Transfer	6-48 keV	Exp	998
$He^{2+} + H_2O$	Excitation	6-48 keV	Exp	998
$He^{2+} + Au$	Charge Transfer	$1.5 \ \mathrm{MeV/amu}$	Exp	1000
$He^+ + Au$	Ionization	1.5 MeV/amu	Exp	1000
$\mathrm{He^+} + \mathrm{H^+}$	Interaction Potentials	Undef.	Th	1013
$\mathrm{He}^{2+} + \mathrm{H}_2\mathrm{O}$	Dissociation	1.025-12 keV/u	E/T	1014

Charge Transfer	1.025-12 keV/u	E/T	1014
Charge Transfer	200-2000 eV/u	Exp	1016
Charge Transfer	200-2000 eV/u	Exp	1016
Charge Transfer	200-2000 eV/u	Exp	1016
Interaction Potentials	Undef.	Th	1019
Dissociation	0.26 v (a.u.)	Exp	1027
Charge Transfer	0.01-25 keV/u	Th	1030
Total Scattering	0.01-25 keV/u	Th	1030
Elastic Scattering	Ultralow	Th	1033
Elastic Scattering	Ultralow	Th	1033
Interaction Potentials	Ultralow	Th	1033
Interaction Potentials	Ultralow	Th	1033
Interaction Potentials	Undef.	Th	715
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Charge Transfer	0-5 V (a.u.)	E/T	747
Charge Transfer	$40-9000 \ {\rm keV}$	Th	762
Charge Transfer	1-400 keV/u	Th	781
Ionization	1-400 keV/u	Th	781
Interaction Potentials	Undef.	Th	784
Charge Transfer	60-200 keV/amu	Th	824
Excitation	$1-6 { m MeV}$	Exp	843
Excitation	$1-6 { m MeV}$	Exp	843
Excitation	$1-6 { m MeV}$	Exp	843
Excitation	$1-6 { m MeV}$	Exp	843
Ionization	1-6 MeV	Exp	843
Ionization	$1-6 { m MeV}$	Exp	843
Ionization	$1-6 { m MeV}$	Exp	843
Ionization	$1-6 { m MeV}$	Exp	843
Charge Transfer	7 keV	Exp	847
Total Scattering	7 keV	Exp	847
Excitation	Undef.	Th	864
Excitation	Undef.	Th D (Th	864
Charge Transfer	Undef.	E/T	884
Charge Transfer	Undef.	E/T	884
Charge Transfer	Undef.	E/T	884
Charge Transfer	Under.	E/I E/T	884
Charge Transfer	Under.	E/I F/T	884
Change Transfer	Under. Undef	E/I E/T	884 884
Flagtic Scattering	$10^{-12} V$	£/1 ТЪ	004 205
Energy Transfor	8 100 oV	TH Th	800
Interaction Potentials	8 100 eV	Th	800
Total Scattering	8-100 eV	Th	800
Total Scattering	1750-3050 m/s	E/T	0 <i>055</i> 007
Total Scattering	1750-3050 m/s	E/T	907 907
Total Scattering	1750-3050 m/s	E/T	907
Total Scattering	1750-3050 m/s	E/T	907
Excitation	1750-3050 m/s	E/T	907
Excitation	1750-3050 m/s	E/T	907
Excitation	1750-3050 m/s	E/T	907
Excitation	1750-3050 m/s	E/T	907
Ionization	0.19-2.31 MeV/u	-, - Th	911
Line Broadening	200-3000 K	E/T	919
Interchange reaction	$10^{-7} - 10^{-1} \text{ eV}$	Th	939
Interchange reaction	$97-363 { m ~MeV}$	Exp	948
	Charge Transfer Charge Transfer Charge Transfer Interaction Potentials Dissociation Charge Transfer Total Scattering Elastic Scattering Elastic Scattering Elastic Scattering Interaction Potentials Interaction Potentials Interaction Potentials Interaction Potentials Detachment Detachment Detachment Charge Transfer Charge Transfer Charge Transfer Charge Transfer Excitation Interaction Potentials Charge Transfer Excitation Excitation Excitation Excitation Excitation Ionization Ionization Ionization Ionization Charge Transfer Total Scattering Excitation Excitation Charge Transfer Charge	$\begin{array}{llllllllllllllllllllllllllllllllllll$	$\begin{array}{llllllllllllllllllllllllllllllllllll$

Li + H	Interaction Potentials	Undef.	Th	951
Li + Li	Interaction Potentials	Undef.	Th	951
Li + Na	Interaction Potentials	Undef.	Th	951
Li + K	Interaction Potentials	Undef.	Th	951
Li + Rb	Interaction Potentials	Undef.	Th	951
$Li^{3+} + H$	Ionization	$3-38 \ {\rm MeV/amu}$	E/T	958
Li + Li	Interaction Potentials	Undef.	Th	1020
Li + He	De-excitation	Undef.	Th	1024
Li + He	Interaction Potentials	Undef.	Th	1024
Li + He	Excitation	Undef.	Th	1024
$Be^{2+} + H$	Charge Transfer	Undef.	E/T	884
$Be^{2+} + He$	Charge Transfer	Undef.	E/T	884
$Be^{2+} + Li$	Charge Transfer	Undef.	E/T	884
$Be^{2+} + B$	Charge Transfer	Undef.	E/T	884
$Be^{2+} + N$	Charge Transfer	Undef.	E/T	884
$Be^{2+} + Ne$	Charge Transfer	Undef.	E/T	884
$Be^{2+} + Ar$	Charge Transfer	Undef.	E/T	884
$Be^{3+} + H$	Ionization	1-100 GeV/u	Th	924
$B^- + He$	Detachment	2.25-56.25 keV/u	E/T	718
$B^- + Ne$	Detachment	2.25-56.25 keV/u	E/T	718
$\mathrm{B}^- + \mathrm{Ar}$	Detachment	2.25-56.25 keV/u	E/T	718
$\mathbf{B}^{3+} + \mathbf{H}_2$	Ionization	$3.1-7.5 { m MeV}$	E/T	735
$\mathbf{B}^{4+} + \mathbf{H}_2$	Ionization	$3.1-7.5 { m MeV}$	E/T	735
$\mathbf{B}^{2+} + \mathbf{Ce}$	Excitation	$5-7 {\rm MeV}$	Exp	844
$\mathbf{B}^{2+} + \mathbf{Nd}$	Excitation	$5-7 {\rm MeV}$	Exp	844
$B^{2+} + Sm$	Excitation	$5-7 { m MeV}$	Exp	844
$\mathbf{B}^{2+} + \mathbf{E}\mathbf{u}$	Excitation	$5-7 { m MeV}$	Exp	844
$B^{2+} + Gd$	Excitation	$5-7 { m MeV}$	Exp	844
$B^{2+} + Dy$	Excitation	$5-7 { m MeV}$	Exp	844
$B^{2+} + Ho$	Excitation	$5-7 { m MeV}$	Exp	844
$B^{2+} + Yb$	Excitation	$5-7 \mathrm{MeV}$	Exp	844
$B^{2+} + Ce$	Ionization	5-7 MeV	Exp	844
$B^{2+} + Nd$	Ionization	5-7 MeV	Exp	844
$B^{2+} + Sm$	Ionization	5-7 MeV	Exp	844
$B^{2+} + Eu$	Ionization	5-7 MeV	Exp	844
$B^{2+} + Gd$		5-7 MeV	Exp	844
$B^{2+} + Dy$ $D^{2+} + H$	Ionization	5-7 MeV	Exp	844
$B^{2+} + Ho$ $D^{2+} + NI$	Ionization	5-7 MeV	Exp	844
$B^{-} + YD$	Ionization	5-7 MeV	Exp	844
B + He $B^{3+} + C$	Ionization Change Therefore	1.1-1.9 V a.u.	Exp Th	800
$B^{+} + C$ $R^{4+} + C$	Charge Transfer	5-70 MeV		880
$D^{+} + C$ $P^{5+} + C$	Charge Transfer	5-70 MeV 5-70 MeV	1 II Th	000
$B^{3+} + B$	Charge Transfer	J-70 Mev Undef	ТП F/T	884
$B^{3+} + H_0$	Charge Transfer	Undef.	Е/ 1 F /T	004 884
$\mathbf{D}^{+} + \mathbf{H}\mathbf{e}$ $\mathbf{B}^{3+} + \mathbf{I}\mathbf{i}$	Charge Transfer	Undef.	Е/ I F /T	884 884
$\mathbf{D}^{3+} + \mathbf{D}$ $\mathbf{B}^{3+} + \mathbf{B}$	Charge Transfer	Undef.	Е/ 1 F /T	004 884
$\mathbf{D}^{3+} + \mathbf{D}$ $\mathbf{B}^{3+} + \mathbf{N}$	Charge Transfer	Undef.	Е/ 1 F /T	004 884
$\mathbf{D}^{+} + \mathbf{N}$ $\mathbf{B}^{3+} + \mathbf{N}\mathbf{c}$	Charge Transfer	Undef.	Е/ I F /T	884 884
$\mathbf{B}^{3+} + \mathbf{N}\mathbf{e}$	Charge Transfer	Undef.	Е/ 1 F /T	004 884
$\mathbf{D}^+ + \mathbf{A}\mathbf{I}^+$ $\mathbf{B}^{5+} + \mathbf{H}_0$	Ionization	0.10.2.21 MeV/m	E/ 1 Th	004
$\mathbf{B}^{2+} \perp \mathbf{H}_{2}$	Ionization	16 MoV	111 F /T	911 071
$\mathbf{C}^{-} \perp \mathbf{H}_{\mathbf{C}}$	Interaction Potentials	10 MEV 2 25-56 25 koV/m	Ľ/ 1 F /T	971 718
$C \perp H_{\Theta}$	Interaction Potentials	2.20-50.25 KeV/u 2.25-56.25 keV/u	ці і Г / Т	710
$C^{-} \perp H_{0}$	Detectment	2.20-50.25 KeV/u 2.25-56.25 keV/u	ці і Г / Т	718
$C^{-} \perp N_{C}$	Detachment	2.20-50.25 KeV/u 2.25-56.25 keV/u	ці і Г / Т	710
$C^{-} \perp \Lambda r$	Detachment	2.20-50.25 KeV/u 2.25-56.25 keV/u	ці і Г / Т	710 718
$\sim \pm \mathbf{n}$	Detaoninent	2.20-00.20 ACV/U	L'/ L	110

$\mathbf{C}^{5+} + \mathbf{H}^+$	Charge Transfer	$1-24 \ \mathrm{MeV/amu}$	Th 7	28
$\mathbf{C}^{5+} + \mathbf{H}\mathbf{e}^{2+}$	Charge Transfer	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{L}\mathbf{i}^{3+}$	Charge Transfer	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{B}\mathbf{e}^{4+}$	Charge Transfer	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{H}^+$	Excitation	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{H}\mathbf{e}^{2+}$	Excitation	1-24 MeV/amu	Th 7	28
$C^{5+} + Li^{3+}$	Excitation	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{B}\mathbf{e}^{4+}$	Excitation	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{H}^+$	Ionization	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{H}\mathbf{e}^{2+}$	Ionization	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{L}\mathbf{i}^{3+}$	Ionization	1-24 MeV/amu	Th 7	28
$\mathbf{C}^{5+} + \mathbf{B}\mathbf{e}^{4+}$	Ionization	$1-24 \ \mathrm{MeV/amu}$	Th 7	28
$C^{3+} + CO$	Charge Transfer	$0.5 \ \mathrm{keV/u}$	Exp 7	34
$C^{4+} + CO$	Charge Transfer	$0.5 \ \mathrm{keV/u}$	Exp 7	34
$C^{2+} + He$	Charge Transfer	2-10,800 eV	Exp 7	'41
$C^{3+} + He$	Charge Transfer	2-10,800 eV	Exp 7	41
$C^{4+} + He$	Charge Transfer	2-10,800 eV	Exp 7	41
$C^{5+} + He$	Charge Transfer	2-10,800 eV	Exp 7	41
$C^{6+} + He$	Charge Transfer	2-10,800 eV	Exp 7	41
$C^{6+} + He$	Total Scattering	1-25 MeV/u	Th 7	49
$C^{6+} + He$	Ionization	1-25 MeV/u	Th 7	49
$C^{4+} + H$	Charge Transfer	Undef.	Exp 7	52
$C^{6+} + Cs$	Charge Transfer	$1-10^5 \text{ keV/u}$	Th 7	57
$C^{6+} + Cs$	Excitation	$1-10^5 \text{ keV/u}$	Th 7	57
$C^{6+} + Cs$	Ionization	$1-10^5 \text{ keV/u}$	Th 7	57
$C^{2+} + O$	Interaction Potentials	Undef.	Th 7	68
C + O	Interaction Potentials	$40-50 \mathrm{eV}$	E/T 7	74
$C^{+}_{-} + O^{+}_{-}$	Interaction Potentials	$40-50 \mathrm{eV}$	E/T 7	74
$C^{2+} + O$	Interaction Potentials	$40-50 \mathrm{eV}$	E/T 7	74
C^{6+} + He	Ionization	2 MeV/u	Exp 7	85
C^{6+} + He	Total Scattering	3.6-100 MeV	Exp 7	91
$C^{o+} + He$	Ionization	$3.6-100 \mathrm{MeV}$	Exp 7	91
$\mathbf{C} + \mathbf{H}_2$	Interchange reaction	0-0.5 eV	Th 8	33
C + HD	Interchange reaction	0-0.5 eV	Th 8	33
$\mathbf{C} + \mathbf{D}_2$	Interchange reaction	0-0.5 eV	Th 8	33
$C^{++} + H$	Charge Transfer	$10^{-3} - 10^{3} \text{ eV/u}$	Th 8	63
$\mathbf{C}^{\pm +} + \mathbf{H}$	Interaction Potentials	$10^{-9} - 10^{-9} \text{ eV/u}$	Th 8	63
$C^{3+} + Re$		4-8 MeV	Exp 8	78
$C^{3+} + Pt$		4-8 MeV	Exp 8	18
$C^{2+} + Au$ $C^{2+} + Mc$	Ionization Change Transfer	4-8 MeV 24 50 MeV	Exp 8	270
$C^{2+} + Mg$ $C^{2+} + S$	Charge Transfer	54-50 MeV	Exp o	79
$C^{2+} + Ma$	Lonization	34-50 MeV	Exp o Evp 8	79
$C^{2+} + Nig$ $C^{2+} + Si$	Ionization	34-50 MeV	Exp 8	79
$C^{4+} + N_0$	Charge Transfor	25 keV	Exp 8	19
$C^{5+} + Ne$	Charge Transfer	25 keV	Exp 8	82
$C^{6+} + Ne$	Charge Transfer	25 keV 25 keV	Exp 8	82
$C^{4+} \perp Ne$	Ionization	25 keV	Exp 6 Exp 8	82
$C^{5+} \perp Ne$	Ionization	25 keV	Exp 6 Exp 8	82
$C^{6+} \perp Ne$	Ionization	25 keV	Exp 6 Exp 8	82
$\mathbf{C}^{6+} + \mathbf{H}_2$	Total Scattering	0-14 a u	Th 8	86
$\tilde{\mathbf{C}}^{6+} + \tilde{\mathbf{H}}_2$	Ionization	0-14 a u	Th 8	86
$\mathbf{C}^{2+} + \mathbf{H}\mathbf{o}$	Fluorescence	0.01-6 MeV/u	Exp 9	02
$C^{2+} + Ho$	Ionization	0.01-6 MeV/u	Exp 9	02
$C^{6+} + He$	Ionization	0.19-2.31 MeV/m	Th 9	11
$C^+ + H$	Excitation	15-2000 eV	Th 9	26^{-1}
$\mathbf{C} + \mathbf{H}_2$	Interchange reaction	15.5 kJ/mole	Е/Т 9	46
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$C + D_2$	Interchange reaction	15.5 kJ/mole	E/T	946
$C^{6+} + H$	Ionization	3-38 MeV/amu	E/T	958
$\mathrm{C}^- + \mathrm{He}$	Detachment	4-30 keV	Exp	961
$C^{4+} + H_2$	Ionization	$16 { m MeV}$	E/T	971
$C^{2+} + Si$	Ionization	$2-50 {\rm ~MeV}$	Éxp	977
$C^{4+} + H_2$	Dissociation	0.1- $4.67 keV/amu$	Th	1001
$C^{4+} + H_2$	Charge Transfer	0.1- $4.67 keV/amu$	Th	1001
C + O	Association	Undef.	Th	1005
$C^{3+} + H_2O$	Dissociation	60-350 keV/amu	Exp	1006
$\mathbf{C}^{4+} + \mathbf{H}_{2}\mathbf{O}$	Dissociation	60-350 keV/amu	Exp	1006
$\mathbf{C}^{3+} + \mathbf{H}_{2}\mathbf{O}$	Charge Transfer	60-350 keV/amu	Exp	1006
$C^{4+} + H_2O$	Charge Transfer	60-350 keV/amu	Exp	1006
$C^{3+} + H_2O$	Ionization	60-350 keV/amu	Exp	1006
$C^{4+} + H_2O$	Ionization	60-350 keV/amu	Exp	1006
$N^{5+} + H_2$	Charge Transfer	0.2-10 keV/u	Th	719
$N^{5+} + H_2$	Interaction Potentials	0.2-10 keV/u	Th	719
$N^+ + N^-$	Charge Transfer	0.1-10 eV	Th	729
$N^{2+} + He$	Charge Transfer	2-10.800 eV	Exp	741
$N^{3+} + He$	Charge Transfer	2-10.800 eV	Exp	741
$N^{4+} + He$	Charge Transfer	2-10.800 eV	Exp	741
$N^{5+} + He$	Charge Transfer	2-10.800 eV	Exp	741
$N^{6+} + He$	Charge Transfer	2-10.800 eV	Exp	741
$N^{2+} + H$	Charge Transfer	$2x10^{-3} - 300 \text{ keV}$	Th	812
N + 0	Interaction Potentials	0-2 eV	Th	871
$N^{5+} + C$	Charge Transfer	5-70 MeV	Th	880
$N^{6+} + C$	Charge Transfer	5-70 MeV	Th	880
$N^{7+} + C$	Charge Transfer	5-70 MeV	Th	880
$N^{4+} + Ne$	Charge Transfer	25 keV	Exp	882
$N^{5+} + Ne$	Charge Transfer	25 keV	Exp	882
$N^{6+} + Ne$	Charge Transfer	25 keV	Exp	882
$N^{4+} + Ne$	Ionization	25 keV	Exp	882
$N^{5+} + Ne$	Ionization	25 keV	Exp	882
$N^{6+} + Ne$	Ionization	25 keV	Exp	882
$N^{5+} + H$	Charge Transfer	Undef.	—г Е/Т	884
$N^{5+} + He$	Charge Transfer	Undef.	$\mathbf{E}' \mathbf{T}$	884
$N^{5+} + Li$	Charge Transfer	Undef.	$\mathbf{E}' \mathbf{T}$	884
$N^{5+} + B$	Charge Transfer	Undef.	$\mathbf{E}' \mathbf{T}$	884
$\mathbf{N}^{5+} + \mathbf{N}$	Charge Transfer	Undef.	$\mathbf{E}' \mathbf{T}$	884
$N^{5+} + Ne$	Charge Transfer	Undef.	$\mathbf{E}' \mathbf{T}$	884
$N^{5+} + Ar$	Charge Transfer	Undef.	$\mathbf{E}' \mathbf{T}$	884
$N^+ + H$	Charge Transfer	$10^{-4} - 10^3 \text{ eV/u}$	_/ _ Th	901
$N^{7+} + HCl$	Dissociation	98 keV	Exp	952
$N^{7+} + HCl$	Charge Transfer	$98 { m keV}$	Exp	952
N^{7+} + HCl	Total Scattering	$98 { m keV}$	Exp	952
$N^{7+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$N^{5+} + H_2$	Ionization	$16 { m MeV}$	$\mathbf{E'T}$	971
$N^+ + Ar$	Total Scattering	1-50 keV/u	Th	974
$N^+ + Ar$	Ionization	1-50 keV'/u	Th	974
$N^+ + Ne$	Total Scattering	700-1500 keV	Exp	1004
$N^+ + Ar$	Total Scattering	$700-1500 { m keV}$	Exp	1004
$\mathbf{N}^+ + \mathbf{N}_2$	Total Scattering	700-1500 keV	Exp	1004
$N^+ + Ne$	Ionization	700-1500 keV	Exp	1004
$N^+ + Ar$	Ionization	700-1500 keV	Exp	1004
$\mathbf{N}^+ + \mathbf{N}_2$	Ionization	700-1500 keV	Exp	1004
N + O	Association	Undef.	Th	1005
$O^- + He$	Detachment	2.25-56.25 keV/u	E/T	718
$O^- + Ne$	Detachment	2.25-56.25 keV/u	E/T	718
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$O^- + Ar$	Detachment	2.25-56.25 keV/u	E/T	718
$O^+ + O$	Charge Transfer	0.1-10 eV	Th	729
$O^{8+} + H$	Charge Transfer	0.3-0.95 a.u.	E/T	733
$\mathbf{O}^{8+} + \mathbf{H}_2$	Charge Transfer	0.3-0.95 a.u.	E/T	733
O + He	Charge Transfer	1-5 keV	Exp	737
$O + H_2$	Charge Transfer	1-5 keV	Exp	737
$\mathbf{O} + \mathbf{N}_2$	Charge Transfer	1-5 keV	Exp	737
$\mathbf{O} + \mathbf{O}_2$	Charge Transfer	1-5 keV	Exp	737
O + He	Total Scattering	1-5 keV	Exp	737
$O + H_2$	Total Scattering	1-5 keV	Exp	737
$\mathbf{O} + \mathbf{N}_2$	Total Scattering	1-5 keV	Exp	737
$\mathbf{O} + \mathbf{O}_2$	Total Scattering	1-5 keV	Exp	737
O + He	Ionization	1-5 keV	Exp	737
$O + H_2$	Ionization	1-5 keV	Exp	737
$\mathbf{O} + \mathbf{N}_2$	Ionization	1-5 keV	Exp	737
$\mathbf{O} + \mathbf{O}_2$	Ionization	1-5 keV	Exp	737
$O^{2+} + He$	Charge Transfer	2-10,800 eV	Exp	741
$O^{3+} + He$	Charge Transfer	2-10,800 eV	Exp	741
$O^{4+} + He$	Charge Transfer	2-10,800 eV	Exp	741
$O^{5+} + He$	Charge Transfer	2-10,800 eV	Exp	741
$O^{6+} + He$	Charge Transfer	2-10,800 eV	Exp	741
O^{7+} + He	Charge Transfer	$1 - 10^{5} \text{ keV/u}$	Th	757
O^{7+} + He	Excitation	$1 - 10^{5} \text{ keV/u}$	Th	757
$O^{7+} + He$	Ionization	$1-10^5 \text{ keV/u}$	Th	757
$O_{2+}^{2+} + C$	Interaction Potentials	Undef.	Th	768
$O^{8+} + He$	Total Scattering	0.1-1.5 MeV/amu	Th	769
$O^{8+} + He$	Ionization	0.1-1.5 MeV/amu	Th	769
$O^{2+} + C$	Interaction Potentials	40-50 eV	E/T	774
$O^+ + H$	Interaction Potentials	Undef.	Th	784
$O^{\circ+} + H$	Charge Transfer	1-2000 eV/u	Th	809
$O^{\circ+} + H$	Interaction Potentials	1-2000 eV/u	Th	809
$O + H_2$	Interchange reaction	0-30 kcal/mole	Th	828
$O' + H_2$	Interchange reaction	0.3 eV	Th	829
$O + H_2$	Interchange reaction	0.1 eV	1 n Th	834
$O + H_2$	Interchange reaction	0-1.0 ev	1 fi Th	830
$O + H_2$	Interchange reaction	0.0-2.0 eV	111 Th	840 840
O + D	Interchange reaction	0.0-2.0 eV	1 II ТЪ	040 940
$O + D_2$	Ionization	1.1.1.0 V e u	111 Fyn	856
$O^{3+} \perp H_{2}$	Charge Transfer	$0.1 - 10^4 \text{ oV/m}$	Dхр Th	868
$O^{3+} + H_2$	Interaction Potentials	$0.1 - 10^{4} \text{ eV/u}$	Th	868
$O^+ + H_2$	Charge Transfer	$50 - 2r10^5 \text{ eV/u}$	Th	872
$O^{+*} + H_2$	Charge Transfer	$50 - 2x10^{\circ} \text{ eV/u}$	Th	872
$O^+ + H_2$	Interaction Potentials	$50 - 2x10^{5} \text{ eV/u}$	Th	872
$O^{+*} + H_2$	Interaction Potentials	$50 - 2x10^5 \text{ eV/u}$	Th	872
$O^+ + H_2$	Excitation	$50 - 2x10^5 \text{ eV/u}$	Th	872
$O^{+*} + H_2$	Excitation	$50 - 2x10^5 \text{ eV/u}$	Th	872
$O^{6+} + C$	Charge Transfer	5-70 MeV	Th	880
$\mathbf{O}^{7+} + \mathbf{C}$	Charge Transfer	5-70 MeV	Th	880
$\mathbf{O}^{8+} + \mathbf{C}$	Charge Transfer	5-70 MeV	Th	880
$O^{4+} + Ne$	Charge Transfer	25 keV	Exp	882
$\mathbf{O}^{5+} + \mathbf{Ne}$	Charge Transfer	25 keV	Exp	882
$O^{6+} + Ne$	Charge Transfer	25 keV	Exp	882
$O^{4+} + Ne$	Ionization	25 keV	Exp	882
$O^{5+} + Ne$	Ionization	25 keV	Exp	882
$O^{6+} + Ne$	Ionization	25 keV	Exp	882
$O^+ + He$	Charge Transfer	0.5-10 keV	Th	898

$O^{4+} + He$	Ionization	$0.19-2.31 { m MeV/u}$	Th	911
$O^{5+} + He$	Ionization	0.19 - $2.31 { m MeV/u}$	Th	911
$O^{6+} + He$	Ionization	$0.19-2.31 { m ~MeV/u}$	Th	911
$O^{7+} + He$	Ionization	$0.19-2.31 { m ~MeV/u}$	Th	911
$O^{8+} + He$	Ionization	0.19 - $2.31 { m MeV/u}$	Th	911
$0^{+} + 0_{2}$	Charge Transfer	10-100 keV	Exp	930
$0^{+} + 0_{2}$	Ionization	$10-100 {\rm ~keV}$	Exp	930
$\mathbf{O} + \mathbf{H}_2$	Interchange reaction	100-4000 K	Th	931
$\mathbf{O} + \mathbf{H}_2$	Interchange reaction	0.0-2.0 eV	Th	943
$O^{8+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$O^{7+} + H$	Ionization	$0.1-1000 { m ~GeV/u}$	Th	970
$\mathbf{O}^{6+} + \mathbf{H}_2$	Ionization	$16 { m MeV}$	E/T	971
$O^+ + Au$	Ionization	$0.3-5.0 \mathrm{MeV/amu}$	E/T	987
0 + 0	Association	Undef.	Th	1005
$F^- + He$	Detachment	$2.25-56.25 \ { m keV/u}$	E/T	718
$F^- + Ne$	Detachment	2.25-56.25 keV/u	E/T	718
$F^- + Ar$	Detachment	2.25-56.25 keV/u	E/T	718
$\mathbf{F}^{8+} + \mathbf{H}_2$	Total Scattering	$19 { m MeV}$	E/T	738
$\mathbf{F}^{8+} + \mathbf{D}_2$	Total Scattering	$19 { m MeV}$	E/T	738
$\mathbf{F}^{8+} + \mathbf{H}_2$	Ionization	$19 { m MeV}$	E/T	738
$\mathbf{F}^{8+} + \mathbf{D}_2$	Ionization	$19 { m MeV}$	E/T	738
$\mathbf{F}^{9+} + \mathbf{He}$	Total Scattering	1-25 MeV/u	Th	749
$\mathbf{F}^{9+} + \mathbf{He}$	Ionization	1-25 MeV/u	Th	749
$\mathbf{F}^{9+} + \mathbf{He}$	Total Scattering	0.1- $1.5 MeV/amu$	Th	769
$\mathbf{F}^{9+} + \mathbf{He}$	Ionization	0.1- $1.5 MeV/amu$	Th	769
$F^- + He$	Ionization	1.1-1.9 V a.u.	Exp	856
$\mathbf{F}^{9+} + \mathbf{He}$	Total Scattering	50-1500 keV	Th	876
$\mathbf{F}^{9+} + \mathbf{He}$	Ionization	50-1500 keV	Th	876
$\mathbf{F}^{7+} + \mathbf{He}$	Charge Transfer	$1.1 \ {\rm MeV/u}$	Exp	885
$\mathbf{F}^{7+} + \mathbf{Ne}$	Charge Transfer	$1.1 \ {\rm MeV/u}$	Exp	885
$\mathbf{F}^{8+} + \mathbf{He}$	Charge Transfer	$1.1 \ {\rm MeV/u}$	Exp	885
$\mathbf{F}^{8+} + \mathbf{Ne}$	Charge Transfer	1.1 MeV/u	Exp	885
$\mathbf{F}^{7+} + \mathbf{He}$	Excitation	1.1 MeV/u	Exp	885
$\mathbf{F}^{7+} + \mathbf{Ne}$	Excitation	1.1 MeV/u	Exp	885
$\mathbf{F}^{8+} + \mathbf{He}$	Excitation	1.1 MeV/u	Exp	885
$\mathbf{F}^{8+} + \mathbf{Ne}$	Excitation	1.1 MeV/u	Exp	885
$F^{9+} + H_2$	Total Scattering	0-14 a.u.	Th	886
$\mathbf{F}^{9+} + \mathbf{H}_2$	Ionization	0-14 a.u.	Th	886
$\mathbf{F} + \mathbf{H}_2$	Interchange reaction	69-81 MeV	E/T	938
$\mathbf{F} + \mathbf{D}_2$	Interchange reaction	69-81 MeV	E/T	938
$\mathbf{F}^{0+} + \mathbf{Ar}$	Ionization	16 MeV	E/T	971
$\mathbf{F}^{4+} + \mathbf{K}\mathbf{r}$	Ionization	16 MeV	E/T	971
$\mathbf{F}^{\pm+} + \mathbf{H}_2\mathbf{O}$	Dissociation	1 MeV/u	Exp	982
$\mathbf{F}^{7+} + \mathbf{D}_2 \mathbf{O}$	Dissociation	1 MeV/u 1 M.V/	Exp	982
$\mathbf{F}^{+} + \mathbf{H}_2 \mathbf{O}$ $\mathbf{F}^{7+} + \mathbf{D} \cdot \mathbf{O}$	Dissociation	1 MeV/u 1 M.V/	Exp	982
$\mathbf{F}^{+} + \mathbf{D}_2 \mathbf{O}$	Dissociation	1 MeV/u 1 M.V/	Exp	982
$F^{9+} + H_2O$	Dissociation	1 MeV/u 1 M.V/	Exp	982
$\mathbf{F}^{4+} + \mathbf{D}_2\mathbf{O}$	Dissociation	1 MeV/u 1 M.V/	Exp	982
$F^{4+} + H_2O$		1 MeV/u 1 MeV/c	Exp	982
$\mathbf{F}^{7+} + \mathbf{D}_2\mathbf{O}$		1 MeV/u 1 MeV/c	Exp	982
$\mathbf{r}^{+} + \mathbf{n}_2 \mathbf{U}$ $\mathbf{r}^{7+} + \mathbf{D} \mathbf{O}$	Ionization	1 MeV/u 1 MeV/	Exp E	982
$r^{+} + D_2 O$ $r^{9+} + U O$	Ionization	1 MeV/u 1 MeV/m	Exp E	982 099
$r^{+} + n_2 O$ $r^{9+} + D O$	Ionization	1 MeV/u	Exp E	982 099
$\mathbf{r} + \mathbf{D}_2 \mathbf{U}$	Floatia Scottoring	I Mev/u Undof	Exp Th	982 790
1 e + 1 e $N_{e^*} + N_{e^*}$	Elastic Scattering	Undef.	1 fl Th	120
$1 e^* + 1 e$ No* + No*	Elastic Scattering	Undef.	1 fl Th	120
THE + THE	Elastic Scattering	Under.	111	120

Ne + Ne	Interaction Potentials	Undef.	Th	720
$Ne^* + Ne$	Interaction Potentials	Undef.	Th	720
$Ne^* + Ne^*$	Interaction Potentials	Undef.	Th	720
$Ne^{3+} + H$	Charge Transfer	0.1-2000 eV/u	E/T	731
$Ne^{10+} + H$	Charge Transfer	0-5 V (a.u.)	É/T	747
$Ne^{10+} + He$	Total Scattering	1-25 MeV/u	Th	749
$Ne^{10+} + He$	Ionization	1-25 MeV/u	Th	749
$Ne^+ + H_2O$	Dissociation	2-9 keV	Exp	765
$Ne^{3+} + H_2O$	Dissociation	2-9 keV	Exp	765
$Ne^{5+} + H_2O$	Dissociation	2-9 keV	Exp	765
$Ne^{7+} + H_2O$	Dissociation	2-9 keV	Exp	765
$Ne^{9+} + H_2O$	Dissociation	2-9 keV	Exp	765
$Ne^+ + H_2O$	Charge Transfer	2-9 keV	Exp	765
$Ne^{3+} + H_2O$	Charge Transfer	2-9 keV	Exp	765
$\mathrm{Ne}^{5+} + \mathrm{H}_2\mathrm{O}$	Charge Transfer	2-9 keV	Exp	765
$Ne^{7+} + H_2O$	Charge Transfer	2-9 keV	Exp	765
$Ne^{9+} + H_2O$	Charge Transfer	2-9 keV	Exp	765
$Ne^+ + H_2O$	Total Scattering	2-9 keV	Exp	765
$Ne^{3+} + H_2O$	Total Scattering	2-9 keV	Exp	765
$Ne^{5+} + H_2O$	Total Scattering	2-9 keV	Exp	765
$Ne^{7+} + H_2O$	Total Scattering	2-9 keV	Exp	765
$Ne^{9+} + H_2O$	Total Scattering	2-9 keV	Exp	765
$Ne^{10+} + H$	Charge Transfer	1-400 keV/u	Th	781
$Ne^{10+} + H$	Ionization	1-400 keV/u	Th	781
Ne + He	De-excitation	17-300 K	Exp	798
$Ne^* + He$	De-excitation	17-300 K	Exp	798
Ne + He	Excitation	17-300 K	Exp	798
$Ne^* + He$	Excitation	17-300 K	Exp	798
$Ne^{3+} + Mg$	Charge Transfer	$34-50 \mathrm{MeV}$	Exp	879
$Ne^{3+} + Si$	Charge Transfer	34-50 MeV	Exp	879
$Ne^{3+} + Mg$	Ionization	34-50 MeV	Exp	879
$Ne^{3+} + Si$	Ionization	34-50 MeV	Exp	879
$Ne^{\pm \mp} + Ne$	Charge Transfer	25 keV	Exp	882
$Ne^{\circ} + Ne$	Charge Transfer	25 KeV	Exp	882
$1 Ne^{\circ} + 1 Ne$	Charge Transfer	25 KeV	Exp	882
$1Ne^{-1} + 1Ne$ $NL_{5}^{\pm} + NL_{2}$		25 KeV	Exp E	882
$1 e^{6+} + 1 e$	Ionization	25 KeV	Exp E-m	882
Ne^{10+} + Ne	Change Transfer	25 KeV 10 17 IroV	Exp Evr	004 807
$Ne^{10+} + Rb$	Fluoroscopco	10-17 keV 10, 17 keV	Exp Evp	091 807
$Ne^{3+} \pm He$	Fluorescence	$0.01.6 \text{ MeV}/\mu$	Exp Evn	002
$No^{3+} \pm Ho$	Ionization	0.01-6 MeV/u	Exp Evn	902 002
$N_{e} + CHF_{a}Cl$	Dissociation	500 K	Evn	902 914
$Ne^* + CHE_0Cl$	Dissociation	500 K	Exp	914
$Ne + CHF_2Cl$	Ionization	500 K	Exp	914
$Ne^* + CHF_2Cl$	Ionization	500 K	Exp	914
$Ne^+ + Ni$	Elastic Scattering	2-3 keV	Th	963
$Ne^+ + Sb$	Elastic Scattering	2-3 keV	Th	963
$Ne^+ + Hf$	Elastic Scattering	2-3 keV	Th	963
$Ne^+ + Ni$	Total Scattering	2-3 keV	Th	963
$Ne^+ + Sb$	Total Scattering	2-3 keV	Th	963
$Ne^+ + Hf$	Total Scattering	2-3 keV	Th	963
$Ne^{10+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$Ne^{3+} + Si$	Ionization	2-50 MeV	Exp	977
$Ne^{10+} + H$	Charge Transfer	1-500 eV	Th	990
$Ne^{10+} + H$	Excitation	1-500 eV	Th	990
$Ne^+ + Ar$	Charge Transfer	5 keV	Exp	996

Charge Transfer	5 keV	Exp	996
Charge Transfer	5 keV	Exp	996
Total Scattering	5 keV	Exp	996
Total Scattering	5 keV	Exp	996
Total Scattering	5 keV	Exp	996
Ionization	5 keV	Exp	996
Ionization	5 keV	Exp	996
Ionization	5 keV	Exp	996
Charge Transfer	600-1000 eV/q	Exp	1009
Charge Transfer	600-1000 eV/q	Exp	1009
Charge Transfer	600-1000 eV/q	Exp	1009
Charge Transfer	600-1000 eV/q	Exp	1009
Charge Transfer	600-1000 eV/q	Exp	1009
Interaction Potentials	Undef.	Th	1023
Charge Transfer	0.1-1006 eV/u	E/T	1037
Interaction Potentials	Undef.	Th	715
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	É/T	718
Detachment	2.25-56.25 keV/u	É/T	718
Interaction Potentials	Undef.	É/T	724
Line Broadening	0-20,000 K	Th	760
Interaction Potentials	0-20,000 K	Th	760
Interaction Potentials	Undef.	Th	784
Interaction Potentials	Low energy	Th	853
Ionization	360-1100 m/sec	E/T	925
Ionization	360-1100 m/sec	É/T	925
Interaction Potentials	Undef.	Th	951
Interaction Potentials	Undef.	Th	951
Interaction Potentials	Undef.	Th	951
Interaction Potentials	Undef.	Th	951
Interaction Potentials	Undef.	Th	951
Interaction Potentials	Undef.	Th	954
Interaction Potentials	Undef.	Th	954
Association	300 K	E/T	1017
Ionization	300 K	E/T	1017
Interaction Potentials	Undef.	Th	1020
Line Broadening	0-20,000 K	Th	760
Interaction Potentials	0-20,000 K	Th	760
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	2.25-56.25 keV/u	E/T	718
Dissociation	$2 { m MeV}$	Exp	802
Ionization	$2 { m MeV}$	Exp	802
Charge Transfer	10-17 keV	Exp	897
Charge Transfer	10-17 keV	Exp	897
Fluorescence	10-17 keV	Exp	897
Fluorescence	10-17 keV	Exp	897
Excitation	15-2000 eV	Th	926
Ionization	$0.3-5.0 \ \mathrm{MeV/amu}$	E/T	987
Detachment	2.25-56.25 keV/u	E/T	718
Detachment	$2.25-56.25 \ keV/u$	E/T	718
Detachment	$2.25-56.25 \ keV/u$	E/T	718
Interaction Potentials	0-10 eV	Th	759
Interaction Potentials	Undef.	Th	778
	Charge Transfer Charge Transfer Total Scattering Total Scattering Total Scattering Ionization Ionization Ionization Charge Transfer Charge Transfer Charge Transfer Charge Transfer Interaction Potentials Charge Transfer Interaction Potentials Detachment Detachment Detachment Interaction Potentials Interaction Potentials Detachment D	Charge Transfer5 keVCharge Transfer5 keVTotal Scattering5 keVTotal Scattering5 keVIonization5 keVIonization5 keVIonization5 keVIonization5 keVIonization5 keVIonization5 keVIonization5 keVIonization600-1000 eV/qCharge Transfer600-1000 eV/qCharge Transfer600-1000 eV/qCharge Transfer600-1000 eV/qInteraction PotentialsUndef.Detachment2.25-56.25 keV/uDetachment2.25-56.25 keV/uDetachment2.25-56.25 keV/uInteraction PotentialsUndef.Interaction Pote	$\begin{array}{llllllllllllllllllllllllllllllllllll$

S + O	Association	300-14,000 T(k)	Th	929
S + S	Association	300-14,000 T(k)	Th	929
$S^+ + O$	Association	300-14,000 T(k)	Th	929
$S + H_2$	Interchange reaction	0-0.5 eV	Th	935
S + HD	Interchange reaction	0-0.5 eV	Th	935
$S + D_2$	Interchange reaction	0-0.5 eV	Th	935
$S^{13+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$S^+ + Au$	Ionization	$0.3-5.0 \ \mathrm{MeV/amu}$	E/T	987
$\mathbf{S}^{16+} + \mathbf{H}$	Charge Transfer	$0-120 {\rm ~MeV}$	Exp	994
$\mathbf{S}^{16+} + \mathbf{H}$	Ionization	$0-120 {\rm ~MeV}$	Exp	994
$\mathrm{Cl}^- + \mathrm{He}$	Detachment	2.25-56.25 keV/u	E/T	718
$Cl^- + Ne$	Detachment	2.25-56.25 keV/u	E/T	718
$Cl^- + Ar$	Detachment	2.25-56.25 keV/u	E/T	718
$Ar^{8+} + H$	Charge Transfer	0.3-0.95 a.u.	E/T	733
$Ar^{8+} + H_2$	Charge Transfer	0.3-0.95 a.u.	E/T	733
$Ar^{3+}_{2} + N_2$	Dissociation	8 keV	Exp	751
$Ar^{8+} + N_2$	Dissociation	8 keV	Exp	751
$Ar^{9+} + N_2$	Dissociation	8 keV	Exp	751
$\mathbf{Ar}^{11+} + \mathbf{N}_2$	Dissociation	8 keV	Exp	751
$Ar^{12+} + N_2$	Dissociation	8 keV	Exp	751
$Ar^{3+} + N_2$	Charge Transfer	8 keV	Exp	751
$\mathbf{Ar}^{8+} + \mathbf{N}_2$	Charge Transfer	8 keV	Exp	751
$Ar^{9+} + N_2$	Charge Transfer	8 keV	Exp	751
$Ar^{11+} + N_2$	Charge Transfer	8 keV	Exp	751
$Ar^{12+} + N_2$	Charge Transfer	8 keV	Exp	751
$Ar^{3+} + N_2$	Ionization	8 keV	Exp	751
$Ar^{0+} + N_2$	Ionization	8 keV	Exp	751
$\mathbf{Ar}^{3+} + \mathbf{N}_2$	Ionization	8 keV	Exp	751
$Ar^{2+} + N$	Ionization		Exp	751
$Ar^{+} + N_2$	Direction	8 KeV	Exp E	791 796
$\mathbf{Ar}^{8+} + \mathbf{C}_{6}\mathbf{H}_{6}$		120 KeV 120 keV	Exp Evr	100 796
$\mathbf{Ar}^{8+} + \mathbf{C}_{6}\mathbf{H}_{6}$	Dissociation	120 keV 120 keV	Exp Evp	780
$\mathbf{Ar}^{8+} + \mathbf{C}_{2}\mathbf{H}_{4}$	Dissociation	120 keV 120 keV	Exp Evp	780
$\mathbf{Ar} \perp \mathbf{C}_{0}^{-}$	Dissociation	120 KeV 15 keV	E_{XP}	808
$\mathbf{Ar} + \mathbf{C}_2$ $\mathbf{Ar} + \mathbf{C}_2^-$	Interaction Potentials	15 keV	E/T	808
$\mathbf{Ar}^{8+} + \mathbf{H}$	Charge Transfer	1-2000 eV/u	Th	809
$Ar^{8+} + H$	Interaction Potentials	1-2000 eV/u	Th	809
$Ar^{2+} + H_{2+}$	Charge Transfer	0.2-1.5 V a.u.	Th	850
$Ar^{2+} + H_2^+$	Total Scattering	0.2-1.5 V a.u.	Th	850
Ar + Hg	Interaction Potentials	0-250 MeV	E/T	859
$Ar^* + Hg$	Interaction Potentials	$0-250 { m MeV}$	E'T	859
Ar + Hg	Ionization	0-250 MeV	E'/T	859
$Ar^* + Hg$	Ionization	$0-250 { m MeV}$	$\dot{\mathrm{E/T}}$	859
$Ar^{17+} + Rb$	Charge Transfer	10-17 keV	Éxp	897
$Ar^{17+} + Rb$	Fluorescence	10-17 keV	Exp	897
$Ar^{6+} + Ho$	Fluorescence	0.01-6 MeV/u	Exp	902
$Ar^{6+} + Ho$	Ionization	0.01-6 MeV/u	Exp	902
$Ar^{6+} + He$	Ionization	3-38 MeV/amu	E/T	958
$Ar^{6+} + Ar$	Ionization	$3-38 \ \mathrm{MeV/amu}$	E/T	958
$Ar^{6+} + Xe$	Ionization	3-38 MeV/amu	E/T	958
$Ar^{6+} + N_2$	Ionization	3-38 MeV/amu	E/T	958
$Ar^{8+} + He$	Ionization	$3-38 \ \mathrm{MeV/amu}$	E/T	958
$\mathbf{Ar}^{8+}_{a+} + \mathbf{Ar}$	Ionization	3-38 MeV/amu	E/T	958
$Ar^{8+} + Xe$	Ionization	3-38 MeV/amu	E/T	958
$\mathbf{Ar}^{8+}_{101} + \mathbf{N}_2$	Ionization	3-38 MeV/amu	E/T	958
$Ar^{13+} + Li$	Excitation	60-95 MeV/u; 0.1-5.0 keV	Th	981

$Ar^{13+} + Li$	Ionization	$60-95 \ {\rm MeV/u}; \ 0.1-5.0 \ {\rm keV}$	Th	981
$Ar^{18+} + H$	Charge Transfer	$1-500 \mathrm{eV}$	Th	990
$Ar^{18+} + H$	Excitation	$1-500 \mathrm{eV}$	Th	990
$Ar^{18+} + Li$	Excitation	6-20 v (a.u.)	Th	1028
$Ar^{18+} + Li$	Ionization	6-20 v (a.u.)	Th	1028
K + He	Interaction Potentials	Undef.	Th	715
$\mathbf{K} + \mathbf{Ar}$	Interaction Potentials	$220-720 \ cm^{-1}$	Exp	779
$\mathbf{K} + \mathbf{A}\mathbf{r}$	Total Scattering	$220-720 \ cm^{-1}$	Exp	779
$\mathbf{K} + \mathbf{A}\mathbf{r}$	Excitation	$220-720 \ cm^{-1}$	Exp	779
$\mathbf{K}^{+} + \mathbf{R}\mathbf{b}$	Charge Transfer	7 keV	Exp	847
$K^+ + Rb$	Total Scattering	7 keV	Exp	847
K + He	Interaction Potentials	Low energy	Th	853
K + Rb	Interaction Potentials	10-30 a.u.	Th	900
$\mathbf{K} + \mathbf{H}$	Interaction Potentials	Undef.	Th	951
$\mathbf{K} + \mathbf{L}\mathbf{i}$	Interaction Potentials	Undef.	Th	951
K + Na	Interaction Potentials	Undef.	Th	951
$\mathbf{K} + \mathbf{K}$	Interaction Potentials	Undef.	Th	951
K + Rb	Interaction Potentials	Undef.	Th	951
$\mathbf{K} + \mathbf{X}\mathbf{e}$	De-excitation	Undef.	Th	968
$K^+ + Mg$	Charge Transfer	0.1 -3.8 keV	Exp	1008
K + K	Interaction Potentials	Undef.	Th^{1}	1020
$\mathbf{K} + \mathbf{K}_2$	Elastic Scattering	$10^{-9} - 10^{-2}$ K	Th	1034
$\mathbf{K} + \mathbf{K}_2$	Interaction Potentials	$10^{-9} - 10^{-2}$ K	Th	1034
$\mathbf{K} + \mathbf{K}_2$	Total Scattering	$10^{-9} - 10^{-2}$ K	Th	1034
Cr + Cr	Elastic Scattering	10^{-12} a.u.	Th	801
Cr + Cr	Interaction Potentials	10^{-12} a.u.	Th	801
$\mathbf{F}\mathbf{e}^{26+} + \mathbf{H}\mathbf{e}$	Total Scattering	$3.6 \ { m MeV/u}$	Th	988
$\mathbf{F}\mathbf{e}^{26+} + \mathbf{H}\mathbf{e}$	Ionization	3.6 MeV/u	Th	988
$Fe^+ + Co$	Ionization	$0.2-1.75 { m MeV/u}$	Exp	995
$Fe^+ + Cu$	Ionization	$0.2-1.75 { m MeV/u}$	Exp	995
$Co^+ + Co$	Ionization	$0.2-1.75 { m MeV/u}$	Exp	995
$Co^+ + Cu$	Ionization	0.2 - $1.75 \mathrm{MeV/u}$	Exp	995
$Ni^{28+} + SiO_2$	Charge Transfer	$1-10^5 \text{ keV/u}$	Th	757
$Ni^{28+} + SiO_2$	Excitation	$1 - 10^5 {\rm ~keV/u}$	Th	757
$Ni^{28+} + SiO_2$	Ionization	$1 - 10^5 {\rm ~keV/u}$	Th	757
$Ni^{19+} + C$	Ionization	$45 { m MeV/u}$	Exp	966
$Ni^{19+} + Al$	Ionization	$45 { m MeV/u}$	Exp	966
$Ni^{19+} + Ni$	Ionization	$45 { m MeV/u}$	Exp	966
$Ni^{19+} + Ag$	Ionization	$45 { m MeV/u}$	Exp	966
$Ni^{19+} + Au$	Ionization	$45 { m MeV/u}$	Exp	966
$Ni^{19+} + Bi$	Ionization	45 MeV/u	Exp	966
$Ni^{28+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$\mathrm{Kr}^{33+} + \mathrm{H}_2$	Ionization	$68 { m MeV/u}$	E/T	717
Kr + Xe	Energy Transfer	120-376 nm	Exp	764
$Kr^* + Xe$	Energy Transfer	120-376 nm	Exp	764
$\mathrm{Kr}^{33+} + \mathrm{H}_2$	Ionization	$0.114-68 { m MeV/u}$	Th	852
$\mathrm{Kr}^{34+} + \mathrm{H}_2$	Ionization	$0.114-68 { m MeV/u}$	Th	852
$\mathrm{Kr} + \mathrm{Hg}$	Interaction Potentials	$0-250 { m MeV}$	E/T	859
$Kr^* + Hg$	Interaction Potentials	0-250 MeV	E/T	859
Kr + Hg	Ionization	0-250 MeV	E/T	859
$Kr^* + Hg$	Ionization	0-250 MeV	E/T	859
$Kr^{12+} + Ho$	Fluorescence	0.01-6 MeV/u	Exp	902
$Kr^{12+} + Ho$	Ionization	0.01-6 MeV/u	Exp	902
$Kr'^+ + N_2$	Ionization	3-38 MeV/amu	E/T	958
$\mathbf{Kr}^{34+} + \mathbf{He}$	Ionization	$2x10^{-3} - 10^{\circ} \text{ keV}$	E/T	969
$Kr^{34+} + Li$	Excitation	60-95 MeV/u; 0.1-5.0 keV	Th	981
$Kr^{24+} + Li$	Ionization	60-95 MeV/u; 0.1-5.0 keV	Th	981

$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Dissociation	19-200 eV/u	Exp	997
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Charge Transfer	19-200 eV/u	Exp	997
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Ionization	19-200 eV/u	Exp	997
$Kr^{8+} + N_2$	Dissociation	Undef.	Th	1002
$Kr^{8+} + N_2$	Charge Transfer	Undef.	Th	1002
$Kr^{8+} + N_2$	Ionization	Undef.	Th	1002
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Charge Transfer	9.5-171 ev/u	Exp	1025
$\mathbf{Rb^{+} + Rb^{-}}$	Interaction Potentials	5-35 a.u.	Th	753
$Rb^+ + Cs$	Interaction Potentials	5-35 a.u.	Th	753
Bb + Bb	Association	Undef	Exp	800
Bb + Bb	Elastic Scattering	300 K	Exp	805
$Bb^+ + Mg$	Charge Transfer	0-4000 eV	Exp	835
$Bh^+ + Bh$	Charge Transfer	7 keV	Evn	847
$Bb^+ + Bb$	Total Scattering	7 keV	Exp	847
Bb + He	Interaction Potentials	Low energy	$\frac{DAP}{Th}$	853
Bb + He	Line Broadening	10 torr	Evn	854
Bb + Ar	Line Broadening	10 torr	Evn	854
$Bb \perp Cs$	Interaction Potentials	Undef	$\frac{D_{XP}}{Th}$	801
$\mathbf{Rb} + \mathbf{Cs}$ $\mathbf{Rb}^{\pm} \pm \mathbf{Rb}$	Charge Transfor	7 koV	Fyn	005
$\mathbf{P}\mathbf{h}^+ + \mathbf{P}\mathbf{h}$	Internation Detentials	7 keV 7 keV	Exp	905 005
$\mathbf{R}\mathbf{D}^{+} + \mathbf{R}\mathbf{D}^{+}$	Interaction Potentials	7 KeV	ыхр Б/Т	903
$\mathbf{R}\mathbf{b} + \mathbf{R}\mathbf{b}$	Interaction Potentials	200 µ K Undef	15/1 ТЪ	921 051
$\mathbf{R}\mathbf{D} + \mathbf{D}$	Interaction Potentials	Under.	111 Th	951
$\mathbf{R}\mathbf{D} + \mathbf{L}\mathbf{I}$	Interaction Potentials	Under.		951
RD + INa	Interaction Potentials	Under.		951
$\mathbf{R}\mathbf{D} + \mathbf{K}$	Interaction Potentials	Under.	In Th	951
RD + RD	Interaction Potentials	Under.		951
RD + RD	Interaction Potentials	Under.	In E/T	1020
RD + RD	Interaction Potentials	Under.	E/1	1021
Sr + H	Line Broadening	0-20,000 K	Th	760
$\mathbf{Sr} + \mathbf{H}$	Interaction Potentials	0-20,000 K	Th	760
$Mo^{\pm 0+} + He$	Total Scattering	1-25 MeV/u	Th	749
$Mo^{\pm0+} + He$	Ionization	1-25 MeV/u	Th D/T	749
Cd + Kr	Interaction Potentials	Undef.	E/T	726
$\ln + \ln$	Line Broadening	950 K	Exp	1018
$\ln + \ln$	Energy Transfer	950 K	Exp	1018
$\ln + \ln$	Fluorescence	950 K	Exp	1018
$\ln + \ln$	Excitation	950 K	Exp	1018
$1^{10+} + Ne$	Charge Transfer	1.52 keV	Exp	783
$1^{10+} + Ar$	Charge Transfer	1.52 keV	Exp	783
$I^{10+} + Kr$	Charge Transfer	1.52 keV	Exp	783
$1^{10+} + Xe$	Charge Transfer	1.52 keV	Exp	783
$I^{10+} + Ne$	Charge Transfer	1.52 keV	Exp	783
$1^{10+} + Ar$	Charge Transfer	1.52 keV	Exp	783
$I_{15+}^{15+} + Kr$	Charge Transfer	1.52 keV	Exp	783
$1^{10+} + Xe$	Charge Transfer	1.52 keV	Exp	783
$1^{20+} + Ne$	Charge Transfer	1.52 keV	Exp	783
$\mathbf{I}_{20+}^{20+} + \mathbf{Ar}$	Charge Transfer	1.52 keV	Exp	783
$I_{20+}^{20+} + Kr$	Charge Transfer	1.52 keV	Exp	783
$\mathbf{I}_{22+}^{20+} + \mathbf{Xe}$	Charge Transfer	1.52 keV	Exp	783
$1^{20+} + Ne$	Charge Transfer	1.52 keV	Exp	783
$I_{22+}^{22+} + Ar$	Charge Transfer	1.52 keV	Exp	783
$I_{25+}^{25+} + Kr$	Charge Transfer	1.52 keV	Exp	783
$\mathbf{I}^{25+} + \mathbf{Xe}$	Charge Transfer	1.52 keV	Exp	783
$I^- + N_{-}$	Detachment	$3-38 \mathrm{MeV/amu}$	E/T	958
$I^{-} + N^{7+}$	Detachment	$3-38 \ \mathrm{MeV/amu}$	E/T	958
$Xe^{18+} + Ho$	Fluorescence	$0.01-6 \ \mathrm{MeV/u}$	Exp	902
$Xe^{18+} + Ho$	Ionization	$0.01-6 { m MeV/u}$	Exp	902

$\mathbf{X}\mathbf{e}^{11+} + \mathbf{N}_2$	Ionization	3-38 MeV/amu	E/T	958
$Xe^{44+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$Xe^{21+} + CH_4$	Dissociation	$20x10^{-6} - 500 \text{ MeV}$	Exp	973
$Xe^{21+} + CH_4$	Ionization	$20x10^{-6} - 500 \text{ MeV}$	Exp	973
$Xe^{9+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{10+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{11+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{12+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{13+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{14+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{15+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{16+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{17+} + He$	Charge Transfer	180-340 keV	Exp	993
$Xe^{9+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{10+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{11+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{12+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{13+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{14+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{15+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{16+} + He$	Excitation	180-340 keV	Exp	993
$Xe^{17+} + He$	Excitation	180-340 keV	Exp	993
$\mathbf{X}\mathbf{e}^{17+} + \mathbf{N}_2$	Dissociation	340-420 keV	Exp	1003
$\mathbf{X}\mathbf{e}^{18+} + \mathbf{N}_2$	Dissociation	340-420 keV	Exp	1003
$\mathbf{X}\mathbf{e}^{20+} + \mathbf{N}_2$	Dissociation	340-420 keV	Exp	1003
$\mathbf{X}\mathbf{e}^{21+} + \mathbf{N}_2$	Dissociation	340-420 keV	Exp	1003
$\mathbf{Xe}^{17+} + \mathbf{N}_2$	Charge Transfer	340-420 keV	Exp	1003
$\mathbf{Xe}^{18+} + \mathbf{N}_2$	Charge Transfer	340-420 keV	Exp	1003
$Xe^{20+} + N_2$	Charge Transfer	340-420 keV	Exp	1003
$Xe^{21+} + N_2$	Charge Transfer	340-420 keV	Exp	1003
$Xe^{17+} + N_2$	Ionization	340-420 keV	Exp	1003
$Xe^{18+} + N_2$	Ionization	340-420 keV	Exp	1003
$\mathbf{X}\mathbf{e}^{20+} + \mathbf{N}_2$	Ionization	340-420 keV	Exp	1003
$\mathbf{X}\mathbf{e}^{21+} + \mathbf{N}_2$	Ionization	340-420 keV	Exp	1003
Cs + Cs	Association	$100 \ \mu \ k$	Th	723
Cs + Cs	Line Broadening	220-370 deg C	Exp	745
$Cs^+ + Rb$	Interaction Potentials	5-35 a.u.	Th	753
$Cs^+ + Cs$	Interaction Potentials	5-35 a.u.	Th	753
Cs + Cs	Interaction Potentials	Undef.	Th	784
$Cs^+ + Cs$	Interaction Potentials	Undef.	Th	794
Cs + Cs	Association	$54 \ \mu \ k$	Th D (T	855
Cs + Cs	Energy Transfer	Undef.	E/T	894
$Cs^* + Cs$	Energy Transfer	Undef.	E/T	894
$Cs^+ + N$	Ionization	3-38 MeV/amu	E/T	958
$Cs^+ + N^{++}$	Ionization	3-38 MeV/amu	E/T	958
Cs + Cs	Interaction Potentials	Undef.	Th	1020
$Ba^+ + He$	Interaction Potentials	3-30 K	Exp	725
$Ba^{+*} + He$	Interaction Potentials	3-30 K	Exp	725
$1a^{++} + He$	Charge Transfer	0.3 a.u.	Exp	775
$1a^{++} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$1a^{-4} + He$	Charge Transfer	0.3 a.u.	Exp	775
$1a^{} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$1a^{-+} + He$	Charge Transfer	0.3 a.u.	Exp	(75 775
$\mathbf{1a}^{**} + \mathbf{Ae}$	Charge Transfer	0.3 a.u.	Exp	(75 775
$1a^{++} + He$	Charge Transfer	0.3 a.u.	Exp	(75 775
$1a^{++} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$\mathbf{1a}^{++} + \mathbf{He}$	Charge Transfer	0.3 a.u.	Exp	775

$Ta^{45+} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{46+} + He$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{46+} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{47+} + He$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{47+} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{48+} + He$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{48+} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{49+} + He$	Charge Transfer	0.3 a.u.	Exp	775
$Ta^{49+} + Xe$	Charge Transfer	0.3 a.u.	Exp	775
${f Re^+}+{f H}_2$	Interchange reaction	0-8 eV	E/T	832
$\mathrm{Re^{+}+HD}$	Interchange reaction	0-8 eV	E/T	832
$\mathrm{Re}^+ + \mathrm{D}_2$	Interchange reaction	0-8 eV	E/T	832
$Au^{24+} + He$	Total Scattering	$3.6-100 { m MeV}$	Exp	791
$Au^{53+} + He$	Total Scattering	$3.6-100 { m MeV}$	Exp	791
$Au^{24+} + He$	Ionization	$3.6-100 { m MeV}$	Exp	791
$Au^{53+} + He$	Ionization	3.6-100 MeV	Exp	791
$Au^{24+} + He$	Total Scattering	$3.6 \ { m MeV/u}$	E/T	816
$Au^{53+} + He$	Total Scattering	$3.6 \ { m MeV/u}$	E/T	816
$Au^{24+} + He$	Ionization	$3.6 \ { m MeV/u}$	E/T	816
$Au^{53+} + He$	Ionization	$3.6 \ { m MeV/u}$	E/T	816
$Au^{53+} + He$	Total Scattering	3.6 MeV/u	Th	818
$Au^{53+} + He$	Ionization	3.6 MeV/u	Th	818
$Au^{53+} + He$	Total Scattering	3.6 MeV/u	Th	956
$Au^{53+} + He$	Ionization	3.6 MeV/u	Th	956
$Au_{53+}^{53+} + He$	Total Scattering	3.6 MeV/amu	Th	965
$Au^{53+} + He$	Ionization	3.6 MeV/amu	Th	965
$Au^{53+} + He$	Total Scattering	3.6 MeV/u	Th	988
$Au^{33+} + He$	Ionization	3.6 MeV/u	Th	988
$Bi^{02+} + Au$	Charge Transfer	70 MeV/u	Exp	989
$\mathbf{Bi}^{02+} + \mathbf{Au}$	Excitation	70 MeV/u	Exp	989
$U^{02+} + He$	Total Scattering	1 GeV/amu	Exp	793
$U^{22} + He$	Ionization	I GeV/amu	Exp E/T	793
$U^{20+} + Ar$	Charge Transfer	150 MeV/amu	E/I E/T	796
$U^{28+} + H_2$	Charge Transfer	150 MeV/amu	E/I E/T	790
$U^{-2} + IN_2$	Lanization	150 MeV/amu	Е/ 1 Б /Т	790 706
$U^{28+} + H$	Ionization	150 MeV/amu	Б/ I Б / Т	790
$U + H_2$ $U^{28+} + N_2$	Ionization	150 MeV/amu	Б/ 1 F /T	790
$U^{4+} \perp N_0$	Ionization	$1.4 \text{ MoV}/\mu$	E/ 1 Evn	840
$U^{4+} \perp Ar$	Ionization	1.4 MeV/u	Evn	8/10
$U^{4+} + N_{2}$	Ionization	1.4 MeV/u	Exp	849
$U^{6+} + Ne$	Ionization	$1.1 \text{ MeV}/\mu$	Exp	849
$U^{6+} + Ar$	Ionization	1.4 MeV/u	Exp	849
$U^{6+} + N_2$	Ionization	1.4 MeV/u	Exp	849
$\mathbf{U}^{10+} + \mathbf{Ne}$	Ionization	1.4 MeV/u	Exp	849
$\mathbf{U}^{10+} + \mathbf{Ar}$	Ionization	1.4 MeV'/u	Exp	849
$U^{10+} + N_2$	Ionization	1.4 MeV'/u	Exp	849
$U^{92+} + He$	Ionization	1 GeV	Th	862
$U^{91+} + U^{79+}$	Charge Transfer	$466-930 {\rm ~MeV/u}$	Th	875
$U^{92+} + U^{79+}$	Charge Transfer	466-930 MeV/u	Th	875
$U^{92+} + U^{91+}$	Charge Transfer	$466-930 { m MeV/u}$	Th	875
$U^{92+} + U^{92+}$	Charge Transfer	$466-930 { m MeV/u}$	Th	875
$U^{91+} + U^{79+}$	Excitation	$466-930 { m MeV/u}$	Th	875
$U^{92+} + U^{79+}$	Excitation	$466\text{-}930~\mathrm{MeV/u}$	Th	875
$U^{92+} + U^{91+}$	Excitation	$466\text{-}930~\mathrm{MeV/u}$	Th	875
$U^{92+} + U^{92+}$	Excitation	$466\text{-}930~\mathrm{MeV/u}$	Th	875
$U^{91+} + U^{79+}$	Ionization	$466\text{-}930~\mathrm{MeV/u}$	Th	875

$U^{92+} + U^{79+}$	Ionization	$466-930 { m MeV/u}$	Th	875
$U^{92+} + U^{91+}$	Ionization	466-930 MeV/u	Th	875
$U^{92+} + U^{92+}$	Ionization	466-930 MeV/u	Th	875
$U^{92+} + He$	Total Scattering	1 GeV/u	Th	909
$\mathbf{U}^{92+} + \mathbf{He}$	Ionization	1 GeV/u	Th	909
$\mathbf{U}^{10+} + \mathbf{Ar}$	Ionization	1-200 MeV/amu	Th	959
$\mathbf{U}^{10+} + \mathbf{H}_2$	Ionization	1-200 MeV/amu	Th	959
$U^{10+} + N_2$	Ionization	1-200 MeV/amu	Th	959
$\mathbf{U}^{28+} + \mathbf{Ar}$	Ionization	1-200 MeV/amu	Th	959
$U^{28+} + H_2$	Ionization	1-200 MeV/amu	Th	959
$U^{28+} + N_2$	Ionization	1-200 MeV/amu	Th	959
$\mathbf{U}^{28+} + \mathbf{A}\mathbf{\hat{r}}$	Charge Transfer	3.5 MeV/amu	Exp	960
$\mathbf{U}^{31+} + \mathbf{Ar}$	Charge Transfer	3.5 MeV/amu	Exp	960
$\mathbf{U}^{33+} + \mathbf{Ar}$	Charge Transfer	3.5 MeV/amu	Exp	960
$\mathbf{U}^{39+} + \mathbf{Ar}$	Charge Transfer	3.5 MeV/amu	Exp	960
$\mathbf{U}^{42+} + \mathbf{Ar}$	Charge Transfer	3.5 MeV'amu	Exp	960
$\mathbf{U}^{52+} + \mathbf{Ar}$	Charge Transfer	3.5 MeV/amu	Exp	960
$\mathbf{U}^{28+} + \mathbf{Ar}$	Ionization	3.5 MeV/amu	Exp	960
$\mathbf{U}^{31+} + \mathbf{Ar}$	Ionization	3.5 MeV/amu	Exp	960
$\mathbf{U}^{33+} + \mathbf{Ar}$	Ionization	3.5 MeV/amu	Exp	960
$\mathbf{U}^{39+} + \mathbf{Ar}$	Ionization	3.5 MeV/amu	Exp	960
$\mathbf{U}^{42+} + \mathbf{Ar}$	Ionization	3.5 MeV/amu	Exp	960
$\mathbf{U}^{52+} + \mathbf{Ar}$	Ionization	3.5 MeV/amu	Exp	960
$U^{92+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T	969
$U^{92+} + He$	Ionization	1 GeV/amu	Éxp	986
$\mathbf{U}^{92+} + \mathbf{He}$	Ionization	Undef.	Exp	991
$U^{89+} + N_2$	Charge Transfer	397 MeV/u	Exp	992
$U^{89+} + N_2$	Excitation	397 MeV/u	Exp	992
$h\nu + In$	De-excitation	950 K	Exp	1018
$h\nu + In$	Energy Transfer	950 K	Exp	1018
$h\nu + In$	Excitation	950 K	Exp	1018
${\bf H}_2^+ + {\bf H}_2^+$	Elastic Scattering	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{H}\mathbf{D}^{+}$	Elastic Scattering	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{H}\mathbf{T}^{+}$	Elastic Scattering	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{D}_{2}^{+}$	Elastic Scattering	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{DT}^{+}$	Elastic Scattering	Very low	Th	761
$H_2^+ + T_2^+$	Elastic Scattering	Very low	Th	761
$H_2^+ + H_2^+$	Interaction Potentials	Very low	Th	761
$H_2^+ + HD^+$	Interaction Potentials	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{H}\mathbf{T}^{+}$	Interaction Potentials	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{D}_{2}^{+}$	Interaction Potentials	Very low	Th	761
$\mathbf{H}_{2}^{+} + \mathbf{DT}^{+}$	Interaction Potentials	Very low	Th	761
$H_2^+ + T_2^+$	Interaction Potentials	Very low	Th	761
$H_2^+ + O^-$	Interchange reaction	$10 { m MeV}$	Exp	825
$\mathbf{H}_{2}^{+} + \mathbf{Ar}$	Dissociation	1-5 keV	Exp	867
$H_2^+ + Kr$	Dissociation	1-5 keV	Exp	867
$H_2^+ + Ar$	Charge Transfer	1-5 keV	Exp	867
$\mathbf{H}_{2}^{+} + \mathbf{Kr}$	Charge Transfer	1-5 keV	Exp	867
$\mathbf{H}_{2}^{+} + \mathbf{H}\mathbf{e}$	Ionization	1.0 MeV/u	Exp	873
$\mathbf{H}_{2}{}^{+} + \mathbf{N}\mathbf{e}$	Ionization	$1.0 \ {\rm MeV/u}$	Exp	873
$\mathbf{H}_{2}{}^{+}+\mathbf{Ar}$	Ionization	$1.0 \ {\rm MeV/u}$	Exp	873
$\mathbf{H}_{2}^{+} + \mathbf{Kr}$	Ionization	$1.0 \ {\rm MeV/u}$	Exp	873
$\mathbf{H}_{2}^{+} + \mathbf{X}\mathbf{e}$	Ionization	1.0 MeV/u	Exp	873
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Dissociation	2.5-1000 keV	Th	893
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Charge Transfer	2.5-1000 keV	Th	893
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Excitation	2.5-1000 keV	Th	893
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Ionization	2.5-1000 keV	Th	893

${ m H}_2{}^+ + { m C}_{60}$	Dissociation	2-130 keV	Exp	910
${f H}_2{}^+ + {f C}_{60}$	Ionization	2-130 keV	Exp	910
${f H}_2{}^+ + {f C}_{60}$	Dissociation	$1-130 {\rm ~keV}$	Exp	912
${f H}_2{}^+ + {f C}_{60}$	Ionization	$1-130 {\rm ~keV}$	Exp	912
$\mathbf{H}_{2}^{+} + \mathbf{He}$	Interchange reaction	1.0 eV	Th	933
$\mathbf{H}_2 + \mathbf{H}_2$	Interchange reaction	5.0 eV	Th	934
$\mathbf{H}_{2}^{+} + \mathbf{He}$	Interchange reaction	0.6-3.1 eV	E/T	940
$\mathbf{H}_2 + \mathbf{H}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_2 + \mathbf{H}_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$H_2 + HD^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_2 + \mathbf{H}_2 \mathbf{D}^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_2 + \mathbf{H} \mathbf{D}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_2 + \mathbf{D}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$H_2 + D_3^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathbf{H}_2 + \mathbf{C}\mathbf{H}_3^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathbf{H}_2 + \mathbf{C}_2 \mathbf{H}_2^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathbf{H}_{2}^{+} + \mathbf{H}_{2}$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$H_2^+ + HD$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathbf{H}_{2}^{+} + \mathbf{D}_{2}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_{2}^{+} + \mathbf{He}$	Interchange reaction	0.0-2.4 eV	Th	949
$\mathbf{H}_{2}^{+} + \mathbf{H}_{-}$	Charge Transfer	0.4-50 keV	Th	999
$\mathbf{H}_{2}^{+} + \mathbf{H}_{2}$	Excitation	0.4-50 keV	Th	999
$\mathbf{H}_{3}^{+} + \mathbf{H}_{3}$	Interchange reaction	1.0-20.0 kJ/mol	Th	841
$H_3^+ + D$	Interchange reaction	1.0-20.0 kJ/mol	Th	841
$H_3^+ + Cs$	Dissociation	12 keV	Exp	888
$H_3' + Cs$	Charge Transfer	12 KeV	Exp	888
$H_{3} + C_{60}$	Dissociation	2-130 keV	Exp	910
$H_{3} + C_{60}$	Ionization	2-130 KeV	Exp	910
$H_3^+ + C_{60}$		1-130 KeV	Exp E	912
$H_3 + C_{60}$		1-130 KeV	Exp	912
\mathbf{H}_3 + \mathbf{H}_2 \mathbf{H} + + $\mathbf{H}\mathbf{D}$	Interchange reaction	$1.0-15.0 \ 10^{-5} \text{ K}$ 1.0.15.0.10 ⁻³ K	1 n Th	941
$\mathbf{H}_3^+ + \mathbf{H}\mathbf{D}_1^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \text{K}$	111 Th	941 041
$\mathbf{H}_3^+ + \mathbf{D}_2^+$ $\mathbf{H}_2^+ + \mathbf{H}_2^+$	Flastic Scattoring	Vory low	Th	941 761
$HD^+ \perp HT^+$	Elastic Scattering	Very low	Th	761
$HD^+ \perp DT^+$	Elastic Scattering	Very low	Th	761
$HD^+ + HD^+$	Interaction Potentials	Very low	Th	761
$HD^+ + HT^+$	Interaction Potentials	Very low	Th	761
$HD^+ + DT^+$	Interaction Potentials	Very low	Th	761
$HD + H_2^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$HD + H_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD + HD^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD + H_2D^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD + HD_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD + D_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD + D_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD + CH_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathrm{HD}+\mathrm{C_{2}H_{2}^{+}}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD^+ + H_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$HD^+ + HD$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathrm{H}\mathrm{D}^+ + \mathrm{D}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_2\mathbf{D}^+ + \mathbf{H}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$H_2D^+ + HD$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{H}_2\mathbf{D}^+ + \mathbf{D}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathrm{HD}_{2}^{+} + \mathrm{H}_{2}$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathrm{HD}_{2}^{+} + \mathrm{HD}$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathrm{HD}_{2}{}^{+} + \mathrm{D}_{2}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941

$HT^+ + HT^+$	Elastic Scattering	Very low	Th	761
$HT^+ + DT^+$	Elastic Scattering	Very low	Th	761
$HT^+ + HT^+$	Interaction Potentials	Very low	Th	761
$HT^+ + DT^+$	Interaction Potentials	Very low	Th	761
$\mathbf{D}^+ + \mathbf{H}_2$	Charge Transfer	0.18-1.0 keV/u	E/T	746
$D^+ + HD$	Charge Transfer	0.18-1.0 keV/u	E/T	746
$\mathbf{D}^+ + \mathbf{D}_2$	Charge Transfer	0.18-1.0 keV/u	E/T	746
$\mathbf{D} + \mathbf{H}^+$	Charge Transfer	1-200,000 K	Th	820
$D^+ + H$	Charge Transfer	1-200,000 K	Th	820
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{D}^+$	Elastic Scattering	Very low	Th	761
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{T}^+$	Elastic Scattering	Very low	Th	761
$\mathbf{D}_2{}^+ + \mathbf{D}_2{}^+$	Elastic Scattering	Very low	Th	761
$\mathbf{D}_2^+ + \mathbf{D}\mathbf{T}^+$	Elastic Scattering	Very low	Th	761
$\mathbf{D}_2^+ + \mathbf{T}_2^+$	Elastic Scattering	Very low	Th	761
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{D}^+$	Interaction Potentials	Very low	Th	761
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{T}^+$	Interaction Potentials	Very low	Th	761
$\mathbf{D}_2{}^+ + \mathbf{D}_2{}^+$	Interaction Potentials	Very low	Th	761
$\mathbf{D}_{2}^{+} + \mathbf{D}\mathbf{T}^{+}$	Interaction Potentials	Very low	Th	761
$\mathbf{D}_2{}^+ + \mathbf{T}_2{}^+$	Interaction Potentials	Very low	Th	761
$D_2^+ + O^-$	Interchange reaction	$10 \mathrm{MeV}$	Exp	825
$\mathbf{D}_2 + \mathbf{H}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2+\mathbf{H}_3{}^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2 + \mathbf{H}\mathbf{D}^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2+\mathbf{H}_2\mathbf{D}^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2 + \mathbf{H} \mathbf{D}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2 + \mathbf{D}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$D_2 + D_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$D_2 + CH_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2 + \mathbf{C}_2 \mathbf{H}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_2^+ + \mathbf{H}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_{2}^{+} + \mathbf{H}\mathbf{D}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{D}_{2}^{+} + \mathbf{D}_{2}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$D_3^+ + Cs$	Dissociation	12 keV	Exp	888
$D_{3}^{+} + Cs$	Charge Transfer	12 keV	Exp	888
$D_{3}^{+} + H_{2}$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$D_3^+ + HD$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$\mathbf{D}_3^+ + \mathbf{D}_2$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th	941
$DT^+ + DT^+$	Elastic Scattering	Very low	Th	761
$DT^+ + DT^+$	Interaction Potentials	Very low	Th	761
$T_2^+ + HD^+$	Elastic Scattering	Very low	Th	761
$T_2' + HT'$	Elastic Scattering	Very low	Th	761
$T_2' + DT'$	Elastic Scattering	Very low	Th	761
$T_2' + T_2'$	Elastic Scattering	Very low	Th	701
$T_2' + HD'$	Interaction Potentials	Very low	1 n Tu	(01 701
\mathbf{T}_{2} + $\mathbf{H}\mathbf{T}$	Interaction Potentials	Very low	1 n Tu	(01 701
\mathbf{I}_{2} ' + $\mathbf{D}\mathbf{I}$ '	Interaction Potentials	Very low		701
$1_2' + 1_2'$	Interaction Potentials	Very low	1 fl Th	(01 1015
CH + O	Interaction Potentials	Under.	1 fi Fun	1010
$CH_3^+ + H_2$ $CH_3^+ + HD$	Interchange reaction	15 K	Exp E-m	822
$C\mathbf{u}_{1}^{+} + \mathbf{n}\mathbf{D}$	Interchange reaction	10 K 1 0 15 0 10 ⁻³ K	њхр ть	041
$CH_3^+ + H_2^-$	Interchange reaction	$1.0-13.0 \ 10^{-5} \text{ K}$ 1.0.15.0.10 ⁻³ K	111 Th	941 041
$\mathbf{CH}_{1}^{+} + \mathbf{D}$	Interchange reaction	1.0-10.0 10 - K 1.0.15.0.10-3 V	111 Th	941 041
$\mathbf{C}\mathbf{H}_3 + \mathbf{D}_2$	Interchange reaction	1.0-10.0 10 ° K Undef	111 Fwn	941 050
$OH_3 + H$ $OH_4 + H$	Interchange reaction	15 K	њхр Evn	900 800
$CH_4 + HD$	Interchange reaction	15 K	Exp	044 800
$\mathbf{N}_{4}^{+} \perp \mathbf{A}_{r}$	Dissociation	$0.0 M_{\odot}V$	Exp	044 730
112 $+$ Al	DISSOCIATION	0.5 INTE V	шхр	100

$N_2^+ + Ar$	Charge Transfer	$0.9 { m MeV}$	Exp	730
$N_2 + CO$	De-excitation	100-500 K	Th	780
$N_2 + CO^*$	De-excitation	100-500 K	Th	780
$N_2 + CO$	Energy Transfer	100-500 K	Th	780
$N_2 + CO^*$	Energy Transfer	100-500 K	Th	780
$N_2 + CO$	Excitation	100-500 K	Th	780
$N_2 + CO^*$	Excitation	100-500 K	Th	780
$\mathbf{C}_2\mathbf{H}_2{}^+ + \mathbf{H}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathrm{C}_{2}\mathrm{H}_{2}^{+}+\mathrm{HD}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
$\mathbf{C}_2\mathbf{H}_2{}^+ + \mathbf{D}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th	941
A + Ar	Ionization	$0.001\text{-}100 \mathrm{MeV/amu}$	Exp	727
OCS + OCS	Elastic Scattering	$10^{-8} - 10^{-6} \text{ K}$	Th	722
OCS + OCS	Excitation	$10^{-8} - 10^{-6} \text{ K}$	Th	722
OH + CO	Association	0.1-0.8 eV	Th	736
OH + CO	Interchange reaction	0.1-0.8 eV	Th	736
$CS^+ + S$	Interaction Potentials	0-10 eV	Th	759
$CH_3Cl + CH_3Cl$	Elastic Scattering	$10^{-8} - 10^{-6} \text{ K}$	Th	722
$CH_3Cl + CH_3Cl$	Excitation	$10^{-8} - 10^{-6} \text{ K}$	Th	722
$\mathbf{CH}_{5}^{+} + \mathbf{H}_{2}$	Interchange reaction	15 K	Exp	822
$\mathrm{CH}_{5}^{+} + \mathrm{HD}$	Interchange reaction	15 K	Exp	822
$CH_3F + CH_3F$	Energy Transfer	0-17,000 V/cm	E/T	804
$C_5^+ + He$	Dissociation	9-60 eV	Exp	1036
$C_5^+ + He$	Charge Transfer	9-60 eV	Exp	1036
LiH + H	Interchange reaction	0.0-3.0 eV	Th	944
$C_7^+ + He$	Dissociation	9-60 eV	Exp	1036
$C_7^+ + He$	Charge Transfer	9-60 eV	Exp	1036
$\mathbf{C}_9^+ + \mathbf{He}$	Dissociation	9-60 eV	Exp	1036
$C_9^+ + He$	Charge Transfer	9-60 eV	Exp	1036
$H + He^+ Z= ?-?$	Total Scattering	$0.1-1000 { m ~GeV/u}$	Th	777
$H + He^+ Z = ?-?$	Ionization	$0.1\text{-}1000~\mathrm{GeV/u}$	Th	777
$He + He^+ Z= ?-?$	Total Scattering	$0.1\text{-}1000~\mathrm{GeV/u}$	Th	777
$He + He^+ Z= ?-?$	Ionization	$0.1\text{-}1000~\mathrm{GeV/u}$	Th	777

2.3 Surface Interactions

$H^+ + Al$	Secondary Electron Emission	100 keV	Th	1038
$H^+ + Al$	Secondary Electron Emission	100 keV	E/T	1039
$H^- + Cu$	Neutraliz., Ioniz., Dissoc.	$50 \mathrm{eV}$	Th	1043
$H^+ + Ti$	Trapping, Detrapping	1.7 keV	Exp	1050
$H^+ + V$	Trapping, Detrapping	1.7 keV	Exp	1050
$H^+ + Cr$	Trapping, Detrapping	1.7 keV	Exp	1050
$H^+ + C$	Sputtering	$0.045-3.0 { m keV}$	Exp	1052
$H^+ + Al$	Reflection	1-100 keV	Th	1058
$H^+ + Fe$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$H^+ + Cu$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$H^+ + Ag$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$H^+ + Au$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$H^+ + Pb$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$H^+ + C$	Secondary Electron Emission	$1-10 {\rm ~MeV}$	Exp	1064
$\mathbf{H}^+ + \mathbf{Y}_2 \mathbf{O}_3$	Surface Interactions	$3-50 {\rm ~MeV}$	Exp	1067
$H^+ + Y_2 SiO_5$	Surface Interactions	$3-50 {\rm ~MeV}$	Exp	1067
$H^+ + Cu$	Secondary Electron Emission	25 keV	Exp	1072
$H^+ + Au$	Surface Interactions	0.8-45 MeV/u	E/T	1076
$H^+ + Au$	Secondary Electron Emission	0.8-45 MeV/u	E/T	1076
H + Ag	Adsorption, Desorption	Undef.	E/T	1100

H + Pt	Adsorption, Desorption	Undef.	E/T	1100
H + Au	Adsorption, Desorption	Undef.	E/T	1100
H + Ag	Neutraliz., Ioniz., Dissoc.	Undef.	E/T	1100
H + Pt	Neutraliz., Ioniz., Dissoc.	Undef.	E/T	1100
H + Au	Neutraliz., Ioniz., Dissoc.	Undef.	E/T	1100
H + Cu	Adsorption, Desorption	Undef.	Th	1101
H + C	Adsorption, Desorption	$2000 \deg K$	Exp	1106
$H^+ + KCl$	Reflection	$0.5 \ { m MeV/u}$	Exp	1115
$H^+ + KCl$	Secondary Electron Emission	0.5 MeV/u	Exp	1115
$ m H^+ + Li$	Sputtering	$10 - 10^3 \text{ eV}$	Th	1121
H + W	Reflection	3 keV	Th	1122
H + C	Trapping, Detrapping	Undef.	Th	1123
$\mathbf{H}^+ + \mathbf{W}$	Trapping, Detrapping	200 eV	Exp	1126
$\mathbf{H}^+ + \mathbf{W}$	Trapping, Detrapping	500 eV	Exp	1127
$H^+ + C$	Chemical Reactions	150-1500 eV	Exp	1129
$H^+ + C$	Sputtering	150-1500 eV	Exp	1129
$H^+ + Li$	Surface Interactions	Undef.	Exp	1130
$H^+ + Be$	Surface Interactions	Undef.	Exp	1130
$H^+ + Li$	Sputtering	Undef.	Exp	1130
$H^+ + Be$	Sputtering	Undef.	Exp	1130
H + Mo	Reflection	1-3 keV	Exp	1135
$H^+ + Mo$	Reflection	1-3 keV	Exp	1135
H + C	Sputtering	30 keV	Exp	1137
$H^+ + C$	Sputtering	30 keV	Exp	1137
$\mathbf{H}^+ + \mathbf{F}\mathbf{e}$	Sputtering	0.05-1.0 KeV	Exp	1138
$H^+ + C$	Sputtering	10-30 eV	Exp Th	1140
$H^+ + C$	Reflection	10-10,000 eV	I fi Th	1140
$H^+ + C$ $H^+ + A$	Sputtering Secondary Flootnon Emission	10-10,000 eV	1 fi Th	1140
$\mathbf{H}^+ + \mathbf{A}\mathbf{u}$ $\mathbf{H}^+ + \mathbf{C}$	Secondary Electron Emission	1-200 MeV/amu	1 II Th	1147
$\mathbf{H}^+ + \mathbf{C}$	Tranning Detranning	5-10 eV	111 Th	1152
$H^+ + C$ $H^+ + M_0$	Sputtoring	$\frac{1}{2}$ koV	TH Th	1152
$\mathbf{H}^+ + \mathbf{W}$	Surface Interactions	1.7-5 MeV	Evn	1150
$H^+ + \Lambda$	Beflection	710 keV	цлр Th	1160
H + Cu	Neutraliz Ioniz Dissoc	25 eV	Th	1167
H + Cs	Neutraliz Ioniz Dissoc	2.5 eV	Th	1167
H + C	Secondary Electron Emission	25-5000 keV	Th	1180
$H^+ + C$	Secondary Electron Emission	25-5000 keV	Th	1180
$\mathbf{H}^+ + \mathbf{C}$	Secondary Electron Emission	2-7 MeV	Exp	1181
$H^- + Al$	Reflection	Undef.	Th	1190
$H^- + Al$	Neutraliz., Ioniz., Dissoc.	Undef.	Th	1190
$\mathbf{H}^+ + \mathbf{Al}$	Secondary Electron Emission	75-100 keV	Exp	1192
$H^+ + Si$	Secondary Electron Emission	75-100 keV	Exp	1192
$H^+ + LiF$	Secondary Electron Emission	75-100 keV	Exp	1192
$H^+ + LiF$	Secondary Electron Emission	Undef.	Th	1194
$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Sputtering	1.5 keV	Exp	1197
H + Fe	Reflection	$12,000 \deg K$	Exp	1200
H + SS	Reflection	$12,000 \deg K$	Exp	1200
$\mathbf{H}^+ + \mathbf{V}$	Trapping, Detrapping	$300 \deg K$	Exp	1205
H + Al	Secondary Electron Emission	2-4000 keV	Th	1207
H + LiF	Secondary Electron Emission	2-4000 keV	Th	1207
H + Al	Sputtering	2-4000 keV	Th	1207
H + LiF	Sputtering	2-4000 keV	Th	1207
$H^+ + Co$	Reflection	25 keV	Exp	1220
$H^+ + Cu$	Reflection	25 keV	Exp	1220
$H^+ + Co$	Secondary Electron Emission	25 keV	Exp	1220
$H^+ + Cu$	Secondary Electron Emission	25 keV	Exp	1220
$H^+ + Al$	Reflection	3-30 keV	Exp	1225
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$\mathbf{H}^+ + \mathbf{AlF}_3$	Reflection	3-30 keV	Exp	1225
$H^+ + Al$	Reflection	3-30 keV	Th^{-}	1226
$\mathbf{H}^+ + \mathbf{AlF}_3$	Reflection	3-30 keV	Th	1226
$\mathrm{H^{+}} + \mathrm{H_{2}O}$	Sputtering	100 keV	Exp	1230
$H^+ + LiF$	Reflection	100 keV	Th	1232
$H^+ + LiF$	Neutraliz., Ioniz., Dissoc.	100 keV	Th	1232
$\mathrm{He^{+}+Ir}$	Sputtering	2 keV	E/T	1042
$He^+ + Fe$	Trapping, Detrapping	2 keV	Exp	1051
$\mathrm{He^{+}}+\mathrm{SS}$	Trapping, Detrapping	2 keV	Exp	1051
$He^+ + C$	Sputtering	$0.045-3.0 { m keV}$	Exp	1052
$He^+ + Al$	Reflection	1-100 keV	Th	1058
$He^+ + Fe$	Reflection	1-100 keV	Th	1058
$\mathrm{He^{+}}$ + Cu	Reflection	1-100 keV	Th	1058
$\mathrm{He^{+}}+\mathrm{Ag}$	Reflection	1-100 keV	Th	1058
$He^+ + Au$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$\mathrm{He^{+}} + \mathrm{Pb}$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$\mathrm{He^{+}}$ + Si	Reflection	400 keV	Exp	1068
$\mathrm{He^{+}}+\mathrm{Ag}$	Reflection	400 keV	Exp	1068
$\mathrm{He^{+}}+\mathrm{SiO}_{2}$	Reflection	400 keV	Exp	1068
$\mathrm{He^{+}+Cu}$	Secondary Electron Emission	25 keV	Exp	1072
$\mathrm{He^{+}+KBr}$	Sputtering	5 keV	Exp	1085
$\mathrm{He^{+}+RbI}$	Sputtering	5 keV	Exp	1085
$He^+ + Al$	Reflection	60 eV	Exp	1092
$\mathrm{He^{+}}+\mathrm{Al}$	Neutraliz., Ioniz., Dissoc.	60 eV	Exp	1092
He + Al	Sputtering	2.3 keV	Th	1105
$He^+ + Al$	Sputtering	2.3 keV	Th	1105
$He^+ + MgO$	Secondary Electron Emission	0.1-4.0 keV	Exp	1108
$He^{2+} + KCl$	Reflection	0.5 MeV/u	Exp	1115
$He^{2+} + KCI$	Secondary Electron Emission	0.5 MeV/u	Exp	1115
He' + Fe	Trapping, Detrapping	200-1400 eV	Exp	1134
He' + SS	Defension Detrapping	200-1400 eV	Exp E	1134
He + MO	Reflection	1-3 KeV	Exp E	1135
$He^+ + Ho$	Couttoning	1-3 KeV	Exp E-m	1150
$He^{+} + Fe^{-}$	Sputtering	Undef	Exp Th	1130
$H_{0} + SO$	Surface Interactions	Undef.	111 Th	1140
$Ho^* \perp \Lambda u$	Surface Interactions	Undef.	Th	1143
$He^* \perp SiO_2$	Surface Interactions	Undef.	Th	1143
$He^{2+} + H_2O$	Beflection	6 MeV/u	Exp	1149
$He^+ + C$	Sputtering	5-10 eV	Th	1152
$He^{2+} + W$	Surface Interactions	1 7-5 MeV	Exp	1159
$He^+ + Si$	Reflection	4 keV	E/T	1162
$He^+ + TiO_2$	Reflection	1-4 keV	Exp	1165
$He^+ + TiO_2$	Neutraliz., Ioniz., Dissoc.	1-4 keV	Exp	1165
He + Si	Neutraliz., Ioniz., Dissoc.	300 deg K	Exp	1169
He + Er	Neutraliz., Ioniz., Dissoc.	300 deg K	Exp	1169
He + Yb	Neutraliz., Ioniz., Dissoc.	300 deg K	Exp	1169
He + GaAs	Neutraliz., Ioniz., Dissoc.	300 deg K	Exp	1169
$He + CaF_2$	Neutraliz., Ioniz., Dissoc.	300 deg K	Exp	1169
$\mathrm{He^{+}} + \mathrm{Fe}$	Reflection	6-20 keV	Exp	1170
$He^+ + Ni$	Reflection	6-20 keV	Exp	1170
$He^{2+} + Fe$	Reflection	6-20 keV	Exp	1170
$He^{2+} + Ni$	Reflection	6-20 keV	Exp	1170
$He^+ + Fe$	Neutraliz., Ioniz., Dissoc.	6-20 keV	Exp	1170
$\mathrm{He^{+}+Ni}$	Neutraliz., Ioniz., Dissoc.	6-20 keV	Exp	1170
$He^{2+} + Fe$	Neutraliz., Ioniz., Dissoc.	6-20 keV	Exp	1170

$He^{2+} + Ni$	Neutraliz., Ioniz., Dissoc.	6-20 keV	Exp	1170
$He^+ + LiF$	Reflection	$0.5-1.0 { m keV}$	Exp	1171
$He^+ + LiF$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 { m keV}$	Exp	1171
$He^+ + LiF$	Reflection	3 keV	Exp	1173
$\mathrm{He^{+}}+\mathrm{LiF}$	Sputtering	3 keV	Exp	1173
$He^+ + Cu$	Reflection	3 keV	Exp	1175
$\mathrm{He^{+}}+\mathrm{MgO}$	Secondary Electron Emission	0-3000 eV	Exp	1179
$He^+ + Ni$	Reflection	0.1-20 keV	Exp	1188
$He^{2+} + Ni$	Reflection	0.1-20 keV	Exp	1188
$He^+ + Ni$	Neutraliz., Ioniz., Dissoc.	0.1-20 keV	Exp	1188
$He^{2+} + Ni$	Neutraliz., Ioniz., Dissoc.	0.1-20 keV	Exp	1188
$\mathrm{He^{+}}$ + Co	Reflection	25 keV	Exp	1189
$He^+ + Co$	Neutraliz., Ioniz., Dissoc.	25 keV	Exp	1189
He + Al	Reflection	0.5-4.0 keV	Exp	1191
He + Ag	Reflection	0.5-4.0 keV	Exp	1191
$He^+ + Al$	Reflection	0.5-4.0 keV	Exp	1191
$\mathrm{He^{+}}+\mathrm{Ag}$	Reflection	0.5-4.0 keV	Exp	1191
He + Al	Neutraliz., Ioniz., Dissoc.	0.5-4.0 keV	Exp	1191
He + Ag	Neutraliz., Ioniz., Dissoc.	0.5-4.0 keV	Exp	1191
$He^+ + Al$	Neutraliz., Ioniz., Dissoc.	0.5-4.0 keV	Exp	1191
$\mathrm{He^{+}}+\mathrm{Ag}$	Neutraliz., Ioniz., Dissoc.	0.5-4.0 keV	Exp	1191
He + Al	Secondary Electron Emission	12 keV	Exp	1193
He + Si	Secondary Electron Emission	$0-100 \mathrm{eV}$	Exp	1195
He + Cs	Secondary Electron Emission	$0-100 \mathrm{eV}$	Exp	1195
He + Si	Neutraliz., Ioniz., Dissoc.	$0-100 \mathrm{eV}$	Exp	1195
He + Cs	Neutraliz., Ioniz., Dissoc.	$0-100 \mathrm{eV}$	Exp	1195
$He^+ + H_2O$	Sputtering	1.5 keV	Exp	1197
$He^+ + Au$	Reflection	1 keV	Exp	1204
$He^+ + Co$	Reflection	25 keV	Exp	1220
$He^+ + Cu$	Reflection	25 keV	Exp	1220
$He^+ + Co$	Secondary Electron Emission	25 keV	Exp	1220
$He^+ + Cu$	Secondary Electron Emission	25 keV	Exp	1220
$He^+ + Al$	Reflection	100-1000 eV	Th	1222
$He^+ + Al$	Neutraliz., Ioniz., Dissoc.	100-1000 eV	Th	1222
He + Cu	Neutraliz., Ioniz., Dissoc.	Undet.	Exp	1231
$He + H_2O$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp	1231
$\mathbf{He} + \mathbf{C}_6 \mathbf{H}_6$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp	1231
L1' + L1	Sputtering	5-35 eV	IN E	1049
$L1^{+} + Fe$	Reflection Deflection	200-3500 eV	Exp E	1113
$L1^{+} + Cs$	Reflection Deflection	200-3500 eV	Exp E	1113
$\mathbf{L}\mathbf{I}^{+} + \mathbf{I}$	Neutrolia Ionia Dissoo	200-3500 eV	ыхр Бало	1110
$Li^+ + Fe$ $Li^+ + Ce$	Neutraliz, Ioniz, Dissoc.	200-3500 eV 200-3500 eV	Exp Evp	1110
$LI^{+} + CS$ $I_{3}^{+} + I$	Neutraliz, Ioniz, Dissoc.	200-3500 eV 200-3500 eV	Exp Evp	1110
$L^{1} + 1$ $L^{2+} + KC^{1}$	Reflection	200-3500 eV	Exp Evp	1115
$\mathbf{L}_{\mathbf{I}}^{+} + \mathbf{K}_{\mathbf{C}}^{+}$	Secondary Floatron Emission	0.5 MeV/u	Exp Evp	1115
$\mathbf{L}_{\mathbf{I}} + \mathbf{K}_{\mathbf{C}_{\mathbf{I}}}$	Beflection	$10 - 10^3 \text{ eV}$	њхр тъ	1110
$\mathbf{L}\mathbf{I}^{+} + \mathbf{L}\mathbf{I}$	Reflection	$10 - 10^{\circ} \text{ ev}$	111 Fyn	1121
$Li^{+} + Cu$	Reflection	4 KeV 100 2000 oV	ыхр Б/Т	1917
$LI^{+} + Ag$ $L_{i}^{+} + AI$	Secondary Floatron Emission	100-2000 eV 1.5 keV	Е/ 1 F /T	1217
$\mathbf{B}^{3+} + \mathbf{KC}^{1}$	Beflection	1-5 KeV	E/ 1 Evn	1115
$\mathbf{B}_{3+} \perp \mathbf{KC}_{1}$	Secondary Floctron Emission	0.5 MeV/u	Бхр Ехр	1115 1115
$C^+ \perp C$	Sputtering	5.35 eV	њхр Th	1040
C + C	Adsorption Desorption	0.045-3.0 keV	Evp	1049
$C^+ + C$	Secondary Electron Emission	1-10 MeV	Exp	1064
$C^+ + V_0 O_0$	Surface Interactions	3-50 MeV	Exp	1067
$C^+ + Y_2 SiO_2$	Surface Interactions	3-50 MeV	Exp	1067
- 1 i 2010 5		0.00 110 1	-vh	1001

$C^+ + Au$	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$N^+ + H_2O$	Desorption	$0.13-0.85 { m MeV}$	Exp	1104
$N^+ + H_2O$	Sputtering	0.13 - $0.85 { m MeV}$	Exp	1104
$N^+ + Ag$	Reflection	2 keV	Exp	1185
$N^+ + Ag$	Sputtering	2 keV	Exp	1185
$N^{6+} + Fe$	Secondary Electron Emission	$0-500 \mathrm{eV}$	Th	1209
$N^+ + Cu$	Reflection	300 keV	E/T	1211
$N^+ + Co$	Reflection	25 keV	Exp	1220
$N^+ + Cu$	Reflection	25 keV	Exp	1220
$N^+ + Co$	Secondary Electron Emission	25 keV	Exp	1220
$N^+ + Cu$	Secondary Electron Emission	$25 \ \mathrm{keV}$	Exp	1220
$O^+ + C$	Surface Interactions	$1.5-4.0 { m MeV}$	E/T	1046
O + Mo	Reflection	1-3 keV	Exp	1135
$O^+ + Mo$	Reflection	1-3 keV	Exp	1135
$O^+ + Si$	Sputtering	5-15 keV	Th	1156
$\mathbf{O}^+ + \mathrm{TiO}_2$	Surface Interactions	10 keV	Exp	1196
$ m F^+ + LiF$	Reflection	0.5-1.0 keV	Exp	1171
$F^+ + LiF$	Neutraliz., Ioniz., Dissoc.	0.5-1.0 keV	Exp	1171
$\mathbf{F}^{2+} + \mathbf{RbI}$	Reflection	4.2 keV	Exp	1174
$\mathbf{F}^{7+} + \mathbf{RbI}$	Reflection	4.2 keV	Exp	1174
$Ne^+ + C$	Surface Interactions	$1.5-4.0 { m MeV}$	E/T	1046
$\mathrm{Ne^{+}+Ga}$	Reflection	$0.6-1.6 \mathrm{~keV}$	Exp	1060
$Ne^+ + In$	Reflection	$0.6-1.6 \mathrm{~keV}$	Exp	1060
${ m Ne^+}+{ m GaAs}$	Reflection	$0.6-1.6 \mathrm{~keV}$	Exp	1060
$Ne^+ + InP$	Reflection	$0.6-1.6 \mathrm{~keV}$	Exp	1060
$Ne^+ + GaP$	Reflection	$0.6-1.6 \mathrm{keV}$	Exp	1060
$Ne^+ + InAs$	Reflection	$0.6-1.6 \mathrm{keV}$	Exp	1060
$Ne^+ + MgO$	Secondary Electron Emission	0.1-4.0 keV	Exp	1108
$Ne^{10+} + LiF$	Reflection	Undef.	Th	1112
$Ne^{10+} + LiF$	Neutraliz., Ioniz., Dissoc.	Undef.	Th	1112
$Ne^+ + Fe_2O_3$	Sputtering	4-8 keV	Exp	1118
$Ne^+ + Sn$	Sputtering	0.5-1.0 keV	Exp	1141
$Ne^+ + Ni$	Sputtering	5 keV	Exp	1142
$Ne^+ + C$	Sputtering	5-10 eV	Th	1152
$Ne^+ + PERT$	Sputtering	$250 - 10^4 \text{ eV}$	Th	1158
Ne + Al	Reflection	1.5-7.5 keV	Exp	1164
Ne' + Al	Reflection	1.5-7.5 keV	Exp	1164
Ne' + LiF	Reflection	0.5-1.0 keV	Exp	1171
Ne' + LiF	Neutraliz., Ioniz., Dissoc.	0.5-1.0 keV	Exp	1171
Ne' + MgO	Secondary Electron Emission	0-3000 eV	Exp	11/9
Ne' + Ag	Reflection	2 KeV	Exp	1185
$Ne^+ + Ag$	Sputtering	2 KeV 2 4000 ltoV	Exp Th	1180
$Ne^2 + Au$	Secondary Electron Emission	2-4000 keV	1 II Th	1207
$Ne^{3+} + Au$	Secondary Electron Emission	2-4000 keV	1 II Th	1207
$Ne^{4+} + Au$	Secondary Electron Emission	2-4000 keV	1 II Th	1207
$Ne^{5+} + Au$	Secondary Electron Emission	2-4000 keV	1 ll Th	1207
$Ne^{6+} + Au$	Secondary Electron Emission	2-4000 keV	Th Th	1207 1207
$Ne^{7+} + Au$	Secondary Electron Emission	2-4000 keV	Th Th	1207
$Ne^{8+} \pm Au$	Secondary Electron Emission	2 4000 keV	111 Th	1207 1207
$N \rho^{9+} \perp \Lambda m$	Secondary Electron Emission	2-4000 keV	тп Тh	1207
$Ne^+ + \Delta n$	Sputtering	2-4000 keV	111 Th	1207
$Ne^{2+} + \Delta u$	Sputtering	2-4000 keV	111 Th	1207
$Ne^{3+} + \Delta u$	Sputtering	2-4000 keV	- 11 Th	1207
$Ne^{4+} + \Delta u$	Sputtering	2-4000 keV	- 11 Th	1207
$Ne^{5+} + \Delta u$	Sputtering	2-4000 keV	- 11 Th	1207
$Ne^{6+} + Au$	Sputtering	2-4000 keV	Th	1207
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$Ne^{7+} + Au$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$Ne^{8+} + Au$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$Ne^{9+} + Au$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$Ne^+ + Al$	Reflection	2-30  keV	Exp	1214
$Ne^+ + Al$	Secondary Electron Emission	2-30  keV	Exp	1214
$Na^+ + MgO$	Secondary Electron Emission	0.1-4.0  keV	Exp	1108
$Na^+ + Au$	Reflection	200-3500  eV	Exp	1113
$Na^+ + Au$	Neutraliz., Ioniz., Dissoc.	200-3500  eV	Exp	1113
Na + Au	Surface Interactions	Undef.	Th	1143
$Na + SiO_2$	Surface Interactions	Undef.	$\mathrm{Th}$	1143
$Na^+ + Cu$	Reflection	4  keV	Exp	1166
$Na^+ + Al$	Secondary Electron Emission	800  eV	Exp	1177
$Na^+ + MgO$	Secondary Electron Emission	0-3000  eV	Exp	1179
$Al^+ + Al^-$	Reflection	200-3500  eV	Exp	1113
$Al^+ + Al$	Neutraliz., Ioniz., Dissoc.	200-3500  eV	Exp	1113
$Al^+ + (OH)_3/Al$	Chemical Reactions	$0-3.5 \mathrm{~eV}$	Th	1144
$Al^+ + (OH)_3/Al$	Desorption	0-3.5  eV	$\mathrm{Th}$	1144
Si + InP	Sputtering	$0.5-5.0 { m MeV}$	Exp	1040
Si + InSb	Sputtering	$0.5-5.0 { m MeV}$	Exp	1040
Si + InAs	Sputtering	$0.5-5.0 { m MeV}$	Exp	1040
$Si^+ + Si$	Sputtering	5-35  eV	$\mathrm{Th}$	1049
$Si^+ + C$	Secondary Electron Emission	$1-10 {\rm ~MeV}$	$\operatorname{Exp}$	1064
$Si^+ + Al$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + Si$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + Al_2O_3$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + SiO_2$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
${ m Si^+}+{ m GaAs}$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + InSb$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + GaP$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + GaSb$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1117
$Si^+ + Cu$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1182
$Si^+ + SiO_2$	Sputtering	$0.5-5.0 { m MeV}$	$\operatorname{Exp}$	1182
$Si^+ + InSb$	Sputtering	$3 { m MeV}$	$\operatorname{Exp}$	1183
$S^{13+} + C$	Neutraliz., Ioniz., Dissoc.	$65-122 { m MeV}$	Exp	1073
$\mathbf{S}^{14+} + \mathbf{C}$	Neutraliz., Ioniz., Dissoc.	$65-122 { m MeV}$	Exp	1073
$Cl^+ + UF_4$	Chemical Reactions	$195 { m MeV}$	Exp	1084
$Ar^{6+} + Ni$	Reflection	0.88-2  keV/u	E/T	1044
$Ar^{7+} + Ni$	Reflection	0.88-2  keV/u	E/T	1044
$Ar^{8+} + Ni$	Reflection	0.88-2  keV/u	E/T	1044
$Ar^{9+} + Ni$	Reflection	0.88-2  keV/u	E/T	1044
$Ar^{10+} + Ni$	Reflection	0.88-2  keV/u	E/T	1044
$Ar^+ + KCl$	Secondary Electron Emission	5-15  keV	$\operatorname{Exp}$	1045
$Ar^+ + KCl$	Neutraliz., Ioniz., Dissoc.	5-15 keV	Exp	1045
$Ar^+ + W$	Chemical Reactions	0.15-10  keV	Exp	1048
$Ar^+ + W$	Sputtering	0.15-10  keV	Exp	1048
Ar + Al	Adsorption, Desorption	300 deg K	E/T	1054
Ar + Co	Adsorption, Desorption	300 deg K	E/T	1054
Ar + Ni	Adsorption, Desorption	300 deg K	E/T	1054
$Ar^+ + Si$	Sputtering	1-5  keV	Exp	1056
$Ar^+ + Cu$	Sputtering	1-100 eV	'Th	1057
$Ar^+ + Si$	Sputtering	400 eV	'Th	1059
Ar' + Cu	Sputtering	400 eV	Th	1059
Ar' + W	Sputtering	400 eV	Th	1059
$\mathbf{Ar} + \mathbf{H}_2\mathbf{U}$	Sputtering	15 keV	Exp	1066
$Ar' + CO_2$	Sputtering	15 KeV	Exp	1066
Ar' + Si	Sputtering	0.5 keV	Exp	1069
Ar + Al	Sputtering	25 KeV/u	Exp	1078

Ar + Au	Sputtering	$25 { m KeV/u}$	$\operatorname{Exp}$	1078
$Ar + Al_2O_3$	Sputtering	25  KeV/u	$\operatorname{Exp}$	1078
Ar + LiF	Sputtering	25 KeV/u	Exp	1078
$Ar^+ + Si$	Sputtering	500-700  eV	$\mathrm{Th}$	1080
$Ar^+ + In$	Sputtering	10  keV	$\operatorname{Exp}$	1082
$Ar^+ + TiO_2$	Chemical Reactions	2  keV	$\operatorname{Exp}$	1093
$Ar^+ + Al_2O_3$	Sputtering	$1 { m MeV}$	Exp	1095
$Ar^+ + LiF$	Sputtering	$1 { m MeV}$	$\operatorname{Exp}$	1095
$Ar^+ + MgO$	Secondary Electron Emission	0.1-4.0  keV	$\operatorname{Exp}$	1108
$Ar^+ + Si$	Sputtering	4.4-17  keV	$\operatorname{Exp}$	1110
$Ar^+ + Fe$	Sputtering	10  keV	$\operatorname{Exp}$	1114
$Ar^+ + Ni$	Sputtering	10  keV	$\operatorname{Exp}$	1114
$Ar^+ + C$	Secondary Electron Emission	30  keV	$\operatorname{Exp}$	1116
$Ar^+ + MgO$	Secondary Electron Emission	1  keV	$\operatorname{Exp}$	1119
$Ar^+ + Al$	Secondary Electron Emission	130-430  eV	E/T	1120
$Ar^+ + Sn$	Sputtering	0.5-1.0  keV	$\operatorname{Exp}$	1141
$Ar^+ + C$	Reflection	200  eV	$\mathrm{Th}$	1148
$Ar^+ + Cu$	Reflection	200  eV	$\mathrm{Th}$	1148
$Ar^+ + C$	Sputtering	200  eV	$\mathrm{Th}$	1148
$Ar^+ + Cu$	Sputtering	200  eV	$\mathrm{Th}$	1148
$Ar^+ + C$	Sputtering	5-10  eV	$\mathrm{Th}$	1152
$Ar^+ + NaCl$	Sputtering	1  keV	$\mathrm{Th}$	1153
$Ar^+ + PERT$	Sputtering	$250 - 10^4 \text{ eV}$	$\mathrm{Th}$	1158
$Ar^+ + Al$	Secondary Electron Emission	130-430  eV	$\operatorname{Exp}$	1163
$Ar^+ + Al$	Neutraliz., Ioniz., Dissoc.	130-430  eV	$\operatorname{Exp}$	1163
$Ar^+ + Al$	Reflection	$1.5-7.5 { m keV}$	$\operatorname{Exp}$	1164
$Ar^+ + NaCl$	Reflection	$0.5-1.0 \mathrm{keV}$	$\operatorname{Exp}$	1171
$Ar^+ + NaCl$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 \mathrm{keV}$	$\operatorname{Exp}$	1171
Ar + KCl	Reflection	5  keV	Exp	1172
$Ar^+ + KCl$	Reflection	5 keV	Exp	1172
$Ar^{2+} + KCl$	Reflection	5 keV	Exp	1172
Ar + KCl	Neutraliz., Ioniz., Dissoc.	5 keV	Exp	1172
$Ar^+ + KCl$	Neutraliz., Ioniz., Dissoc.	5 keV	Exp	1172
$Ar^{2+} + KCl$	Neutraliz., Ioniz., Dissoc.	5 keV	Exp	1172
Ar' + Au	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$Ar^+ + C$	Secondary Electron Emission	30 keV	Exp	1178
Ar' + MgO	Secondary Electron Emission	0-3000 eV	Exp	11/9
$Ar^+ + SiO_2$	Sputtering Susattaning	60-200 MeV	E/ 1 E / T	1184
$Ar^+ + MgAl_2O_4$	Sputtering	200  Inev	E/ I E-m	1104
$Ar^+ + Cu$ $Ar^+ + H O$	Sputtering	50  KeV	Exp	1107
$Ar^+ + H_2O$ $Ar^+ + CaAs$	Neutraliz Ioniz Dissoa	1.5 Kev 10.70 keV	Exp	1197
$Ar^+ + GaAs$	Sputtoring	10-70 keV 10-70 keV	Exp	1199
$Ar^{4+} \perp Si$	Sputtering	10-70  KeV 1.9-3.9  keV	Exp	1201
$Ar^{4+} \perp H_2O$	Sputtering	1.2-3.2  keV 1.2-3.2  keV	Exp	1201 1201
$\Delta r^{5+} + Si$	Sputtering	1.2-3.2 keV	Exp	1201 1201
$Ar^{5+} + H_0O$	Sputtering	1.2-3.2 keV 1.2-3.2 keV	Exp	1201 1201
$\mathbf{Ar}^{6+} + \mathbf{Si}$	Sputtering	1.2-3.2 keV 1.2-3.2 keV	Exp	1201 1201
$\mathbf{Ar}^{6+} + \mathbf{H}_2\mathbf{O}$	Sputtering	1.2-3.2 keV	Exp	1201
$Ar^{7+} + Si$	Sputtering	1.2-3.2 keV	Exp	1201
$Ar^{7+} + H_2O$	Sputtering	1.2-3.2 keV	Exp	1201
$Ar^{8+} + Si$	Sputtering	1.2-3.2  keV	Exp	1201
$Ar^{8+} + H_2O$	Sputtering	1.2-3.2  keV	Exp	1201
$Ar^{3+} + SiC$	Sputtering	7.5-35 keV	Exp	1203
$Ar^{3+} + GaN$	Sputtering	7.5-35 keV	Exp	1203
$Ar^{8+} + SiC$	Sputtering	7.5-35 keV	Exp	1203
$Ar^{8+} + GaN$	Sputtering	7.5-35  keV	Exp	1203

$Ar^{11+} + SiC$	Sputtering	7.5-35  keV	Exp	1203
$Ar^{11+} + GaN$	Sputtering	$7.5-35 \mathrm{keV}$	Exp	1203
$Ar^{14+} + SiC$	Sputtering	$7.5-35 \mathrm{keV}$	Exp	1203
$Ar^{14+} + GaN$	Sputtering	$7.5-35 \mathrm{keV}$	Exp	1203
$Ar^+ + LiF$	Secondary Electron Emission	2-4000 keV	Th	1207
$Ar^{4+} + LiF$	Secondary Electron Emission	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{8+} + LiF$	Secondary Electron Emission	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{11+} + LiF$	Secondary Electron Emission	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{14+} + LiF$	Secondary Electron Emission	2-4000 keV	$\mathrm{Th}$	1207
$Ar^+ + LiF$	Sputtering	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{4+} + LiF$	Sputtering	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{8+} + LiF$	Sputtering	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{11+} + LiF$	Sputtering	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{14+} + LiF$	Sputtering	2-4000 keV	$\mathrm{Th}$	1207
$Ar^{5+} + F$	Sputtering	$3.9 { m keV}$	Exp	1210
$Ar^{5+} + Si$	Sputtering	$3.9 \ \mathrm{keV}$	Exp	1210
$Ar^+ + Si$	Sputtering	1-5  keV	Exp	1213
$Ar^+ + GeH_2$	Sputtering	1-5  keV	Exp	1213
$Ar^+ + Al$	Secondary Electron Emission	1-5  keV	E/T	1227
$Ar^+ + C$	Chemical Reactions	$0.3-5.0 \ \text{keV}$	Éxp	1228
$K^+ + Cu$	Reflection	50-154  eV	Th	1087
$K^+ + Fe$	Desorption	1 MeV	Exp	1146
$K^+ + SS$	Desorption	$1 { m MeV}$	Exp	1146
$K^+ + Fe$	Secondary Electron Emission	$1 { m MeV}$	Exp	1146
$K^+ + SS$	Secondary Electron Emission	$1 { m MeV}$	Exp	1146
$Ni^{28+} + C$	Surface Interactions	0.8-45 MeV/u	E/T	1076
$Ni^{28+} + Au$	Surface Interactions	0.8-45 MeV/u	E/T	1076
$Ni^{28+} + C$	Secondary Electron Emission	0.8-45 MeV/u	E/T	1076
$Ni^{28+} + Au$	Secondary Electron Emission	0.8-45 MeV/u	E/T	1076
$Ni^+ + C$	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$Ni^+ + Al$	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$Ni^+ + Ni$	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$Ni^+ + Ag$	Secondary Electron Emission	14-95  MeV/amu	Exp	1176
$Ni^+ + Au$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp	1176
$Ni^+ + SiO_2$	Sputtering	$60-200 { m MeV}$	E/T	1184
${f Ni^+} + {f MgAl_2O_4}$	Sputtering	$60-200 { m MeV}$	E/T	1184
$Ni^{19+} + C$	Secondary Electron Emission	45  MeV/u	Exp	1206
$Ni^{19+} + Al$	Secondary Electron Emission	45  MeV/u	Exp	1206
$Ni^{19+} + Ni$	Secondary Electron Emission	45  MeV/u	Exp	1206
$Ni^{19+} + Ag$	Secondary Electron Emission	45  MeV/u	Exp	1206
$Ni^{19+} + Au$	Secondary Electron Emission	45  MeV/u	Exp	1206
$Ni^{19+} + Bi$	Secondary Electron Emission	45  MeV/u	Exp	1206
$Cu^+ + Cu$	Sputtering	5-35  eV	$\mathrm{Th}$	1049
$Cu^- + Al$	Sputtering	9-18 keV	$\operatorname{Exp}$	1063
$Cu^- + Si$	Sputtering	9-18 keV	$\operatorname{Exp}$	1063
$\mathbf{Cu}^+ + \mathbf{SiO}_2$	Desorption	$50 { m MeV}$	$\operatorname{Exp}$	1065
$\mathbf{C}\mathbf{u}^+ + \mathbf{Y}_2\mathbf{O}_3$	Surface Interactions	$3-50 {\rm ~MeV}$	$\operatorname{Exp}$	1067
$\mathbf{Cu}^+ + \mathbf{Y}_2 \mathbf{SiO}_5$	Surface Interactions	$3-50 {\rm ~MeV}$	Exp	1067
$\mathbf{Cu}^+ + \mathbf{Cu}$	Sputtering	2  keV	$\mathrm{Th}$	1079
$Kr^+ + NaCl$	Reflection	0.5-1.0  keV	$\operatorname{Exp}$	1171
$Kr^+ + NaCl$	Neutraliz., Ioniz., Dissoc.	0.5-1.0  keV	$\operatorname{Exp}$	1171
$Kr^+ + Be$	Sputtering	5  keV	Exp	1186
Ag + Ag	Surface Interactions	5  keV	Th	1081
$Ag^+ + Ag$	Sputtering	2  keV	$\mathrm{Th}$	1151
Xe + Al	Adsorption, Desorption	300 deg K	E/T	1054
Xe + Co	Adsorption, Desorption	300 deg K	E/T	1054
Xe + Ni	Adsorption, Desorption	$300 \deg K$	E/T	1054

$Xe^+ + MgO$	Secondary Electron Emission	47  eV	Exp	1086
$Xe^+ + PERT$	Sputtering	$250 - 10^4 \text{ eV}$	Th	1158
$Xe^+ + SiO_2$	Sputtering	$60-200 { m MeV}$	E/T	1184
$Xe^+ + MgAl_2O_4$	Sputtering	$60-200 {\rm ~MeV}$	E/T	1184
$Xe^{29+} + C$	Sputtering	$10^5 \text{ eV}$	Exp	1202
$Xe^{44+} + C$	Sputtering	$10^5 \text{ eV}$	Exp	1202
$Xe^{9+} + Al_2O_3$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$	1207
$Xe^{14+} + Al_2O_3$	Secondary Electron Emission	2-4000  keV	Th	1207
$Xe^{19+} + Al_2O_3$	Secondary Electron Emission	2-4000  keV	Th	1207
$\mathbf{X}\mathbf{e}^{25+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$	1207
$\mathbf{Xe}^{28+} + \mathbf{Al}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$	1207
$Xe^{9+} + Al_2O_3$	Sputtering	2-4000 keV	$\mathrm{Th}$	1207
$\mathbf{X}\mathbf{e}^{14+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$\mathbf{Xe}^{19+} + \mathbf{Al}_2\mathbf{O}_3$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$\mathbf{X}\mathbf{e}^{25+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$Xe^{28+} + Al_2O_3$	Sputtering	2-4000  keV	$\mathrm{Th}$	1207
$Xe^+ + Ni$	Sputtering	50-1000  eV	E/T	1208
$Xe^{29+} + Si$	Sputtering	150  keV	Exp	1212
$Xe^{44+} + Si$	Sputtering	150  keV	Exp	1212
$Xe^{50+} + Si$	Sputtering	150  keV	Exp	1212
$Xe^+ + Al$	Sputtering	2-5  keV	E/T	1221
$Cs^+ + Al$	Sputtering	1-5  keV	Exp	1088
$Cs^+ + Cu$	Sputtering	1-5  keV	Exp	1088
$Cs^+ + Ag$	Sputtering	1-5  keV	Exp	1088
$Cs^+ + Si$	Sputtering	1  keV	Exp	1091
$Cs^+ + SiO_2$	Sputtering	1  keV	Exp	1091
$Cs^+ + Si$	Sputtering	5-15  keV	$\mathrm{Th}$	1156
$Cs^+ + Ti$	Sputtering	1  keV	$\operatorname{Exp}$	1157
$Cs^+ + V$	Sputtering	1  keV	$\operatorname{Exp}$	1157
$Cs^+ + Cu$	Sputtering	1  keV	$\operatorname{Exp}$	1157
$Cs^+ + Ag$	Sputtering	1  keV	$\operatorname{Exp}$	1157
$Cs^+ + Au$	Sputtering	1  keV	Exp	1157
$Cs^+ + Al$	Sputtering	1-5  keV	$\operatorname{Exp}$	1198
$Au^+ + Au$	Sputtering	5-35  eV	$\mathrm{Th}$	1049
$Au^+ + Ta$	Sputtering	6-18 keV	Exp	1062
$Au^- + Al$	Sputtering	9-18 keV	Exp	1063
$Au^- + Si$	Sputtering	9-18 keV	$\operatorname{Exp}$	1063
$Au^{15+} + C$	Sputtering	$200 { m MeV}$	$\operatorname{Exp}$	1070
$Au^+ + Ag$	Sputtering	300-1400 keV	Th	1075
$Au^+ + Au$	Sputtering	300-1400 keV	Th	1075
$Au^{20+} + BeO$	Sputtering	1.8 MeV/u	Exp	1077
$Au^{41+} + BeO$	Sputtering	1.8 MeV/u	Exp	1077
$Au^+ + Au$	Sputtering	64 keV	Th	1150
$Au^+ + Au$	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$Au^+ + Au$	Sputtering	200 keV	Exp	1218
$Pb^{30+} + Si$	Secondary Electron Emission	29 MeV/u	Exp	1071
$Pb^+ + Au$	Secondary Electron Emission	14-95 MeV/amu	Exp	1176
$h\nu + Fe_2O_3$	Secondary Electron Emission	1.5 keV	Exp	1109
$h\nu + FeO$	Secondary Electron Emission	1.5 keV	Exp D (T	1109
e + W	Reflection	8 keV	E/T	1041
e + AI	Secondary Electron Emission	1-10 keV	Th	1053
e + Cu	Secondary Electron Emission	1-10 KeV	1n Th	1053
e + Ag	Secondary Electron Emission	1-10 KeV	1 fl Th	1053
e + Au	Secondary Electron Emission	1-10 KeV	1 fl Th	1003
e + w	Reflection	0.0.2.20 keV	1 fl Th	1083
e + AI	Reflection	U.2-2U KEV	1 n Tu	1103
e + Si	Kenection	0.2-20 keV	In	1103

e + Cu	Reflection	0.2-20  keV	$\mathrm{Th}$	1103
e + Au	Reflection	0.2-20  keV	$\mathrm{Th}$	1103
$\mathbf{e} + \mathbf{SiO}_2$	Reflection	0.2-20  keV	$\mathrm{Th}$	1103
e + C	Reflection	$10 - 10^4 \text{ eV}$	$\mathrm{Th}$	1154
e + Ne	Secondary Electron Emission	0.05- $3.0  keV$	Exp	1215
e + Ar	Secondary Electron Emission	$0.05$ - $3.0 \mathrm{keV}$	Exp	1215
e + Kr	Secondary Electron Emission	$0.05$ - $3.0 \mathrm{keV}$	Exp	1215
e + Xe	Secondary Electron Emission	$0.05$ - $3.0 \mathrm{keV}$	Exp	1215
e + Be	Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$	1216
e + Al	Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$	1216
e + Cu	Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$	1216
e + Au	Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$	1216
e + PERT	Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$	1216
$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Sputtering	$5-250 \mathrm{eV}$	E/T	1224
e + H	Reflection	3-17  eV	$\operatorname{Exp}$	1229
e + C	Reflection	3-17  eV	Exp	1229
e + D	Reflection	3-17  eV	Exp	1229
$H_2^+ + Au$	Surface Interactions	$0.8-45 \ \mathrm{MeV/u}$	E/T	1076
$H_2^+ + Au$	Secondary Electron Emission	$0.8-45 \ \mathrm{MeV/u}$	E/T	1076
$H_2 + Ni$	Adsorption, Desorption	0-1.0  eV	$\mathrm{Th}$	1097
$H_2 + Ni$	Neutraliz., Ioniz., Dissoc.	0-1.0  eV	$\mathrm{Th}$	1097
$H_2 + Mg$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1099
$H_2 + Ti$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1099
$H_2 + Ni$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1099
$H_2 + Pd$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1099
$\mathbf{H}_2 + \mathbf{L}\mathbf{a}$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1099
$H_2 + Mg$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1099
$\mathbf{H}_2 + \mathbf{Ti}$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1099
$H_2 + Ni$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1099
$H_2 + Pd$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1099
$\mathbf{H}_2 + \mathbf{L}\mathbf{a}$	Neutraliz., Ioniz., Dissoc.	Undef.	Th	1099
$\mathbf{H}_2 + \mathbf{A}\mathbf{g}$	Adsorption, Desorption	Undef.	E/T	1100
$H_2 + Pt$	Adsorption, Desorption	Undef.	E/T	1100
$H_2 + Au$	Adsorption, Desorption	Undef.	E/T	1100
$\mathbf{H}_2 + \mathbf{A}\mathbf{g}$	Neutraliz., Ioniz., Dissoc.	Undef.	E/T	1100
$H_2 + Pt$	Neutraliz., Ioniz., Dissoc.	Undef.	E/T	1100
$H_2 + Au$	Neutraliz., Ioniz., Dissoc.	Undef.	E/T	1100
$\mathbf{H}_2 + \mathbf{Ti}$	Adsorption, Desorption	Undef.	Exp	1102
$\mathbf{H}_2 + \mathbf{Pd}$	Adsorption, Desorption	Undef.	Exp	1102
$\mathbf{H}_2 + \mathbf{Ti}$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp	1102
$\mathbf{H}_2 + \mathbf{Pd}$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp	1102
$\mathbf{H}_2 + \mathbf{Pd}$	Adsorption, Desorption	Undef.	Th	1107
$H_2 + Pt$	Neutraliz., Ioniz., Dissoc.	Undef.	Th	1111
$H_2^+ + SiC$	Trapping, Detrapping	1  keV	Exp	1124
$H_2^+ + Mo$	Trapping, Detrapping	1.2  keV	Exp	1125
$H_2^+ + B$	Trapping, Detrapping	1  keV	Exp	1128
$H_{2}^{+} + C$	Sputtering	30-125  eV/amu	Exp	1132
$\mathbf{H}_{2}^{+} + \mathbf{W}$	Trapping, Detrapping	80  eV	Exp	1133
$H_2 + Mo$	Reflection	1-3  keV	Exp	1135
$H_2^+ + Mo$	Reflection	1-3  keV	Exp	1135
$\mathbf{H}_{2^{+}} + \mathbf{C}$	Sputtering	15-30 eV	Exp	1140
$\mathbf{H}_{2^{+}} + \mathbf{C}$	Reflection	0.19-2.4 keV	Exp	1168
$\mathbf{H}_{2^{+}} + \mathbf{C}$	Secondary Electron Emission	2-4000 keV	Γh	1207
$\mathbf{H}_{2^{+}} + \mathbf{C}$	Sputtering	2-4000 keV	$\operatorname{Th}_{-}$	1207
$\mathbf{H}_2 + \mathbf{Pd}$	Reflection	140-230 MeV	$\operatorname{Th}_{-}$	1223
$\mathbf{H}_2 + \mathbf{Pd}$	Neutraliz., Ioniz., Dissoc.	$140-230 { m MeV}$	$\mathrm{Th}$	1223
$\mathbf{H}_{2}^{+} + \mathbf{C}$	Chemical Reactions	$0.3-5.0 \; \mathrm{keV}$	$\operatorname{Exp}$	1228

$\mathbf{H}_{3}^{+} + \mathbf{W}$	Chemical Reactions	0.15-10 keV	Exp	1048
$\mathbf{H}_{3}^{+} + \mathbf{W}$	Sputtering	0.15-10 keV	Exp	1048
$H_3 + Mo$	Reflection	1-3  keV	Exp	1135
$H_3^+ + Mo$	Reflection	1-3 keV	Exp	1135
$\mathbf{H}_{3}^{+} + \mathbf{W}$	Sputtering	9  keV	Exp	1136
$\mathbf{H}_{3}^{+} + \mathbf{W}$	Trapping, Detrapping	9  keV	Exp	1136
$H_3^+ + C$	Sputtering	90  eV	Exp	1139
$H_3^+ + C$	Sputtering	15-30  eV	Exp	1140
$D^+ + Ti$	Trapping, Detrapping	1.7  keV	Exp	1050
$\mathbf{D}^+ + \mathbf{V}$	Trapping, Detrapping	1.7  keV	Exp	1050
$D^+ + Cr$	Trapping, Detrapping	$1.7 \ \mathrm{keV}$	Exp	1050
$\mathbf{D}^+ + \mathbf{C}$	Sputtering	$0.045-3.0 \; \mathrm{keV}$	Exp	1052
$D^+ + Al$	Reflection	1-100  keV	Th	1058
$D^+ + Fe$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$\mathbf{D}^+ + \mathbf{Cu}$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$\mathbf{D}^+ + \mathbf{A}\mathbf{g}$	Reflection	$1-100 {\rm ~keV}$	$\mathrm{Th}$	1058
$\mathbf{D}^+ + \mathbf{A}\mathbf{u}$	Reflection	1-100  keV	Th	1058
$D^+ + Pb$	Reflection	$1-100 {\rm ~keV}$	Th	1058
$\mathbf{D} + \mathbf{C}$	Adsorption, Desorption	$2000 \deg K$	Exp	1106
$D^+ + Li$	Sputtering	$10 - 10^3 \text{ eV}$	$\mathrm{Th}$	1121
$\mathbf{D} + \mathbf{W}$	Reflection	3  keV	$\mathrm{Th}$	1122
$\mathbf{D} + \mathbf{C}$	Trapping, Detrapping	Undef.	$\mathrm{Th}$	1123
$\mathbf{D}^+ + \mathbf{W}$	Trapping, Detrapping	200  eV	Exp	1126
$\mathbf{D}^+ + \mathbf{W}$	Trapping, Detrapping	500  eV	Exp	1127
$D^+ + Li$	Surface Interactions	Undef.	Exp	1130
$D^+ + Be$	Surface Interactions	Undef.	Exp	1130
$D^+ + Li$	Sputtering	Undef.	Exp	1130
$D^+ + Be$	Sputtering	Undef.	Exp	1130
D + C	Sputtering	30  keV	$\operatorname{Exp}$	1137
$D^+ + C$	Sputtering	30  keV	$\operatorname{Exp}$	1137
$D^+ + Fe$	Sputtering	0.05-1.0  keV	$\operatorname{Exp}$	1138
$\mathbf{D}^+ + \mathbf{C}$	Reflection	10-10,000  eV	$\mathrm{Th}$	1145
$\mathbf{D}^+ + \mathbf{C}$	Sputtering	10-10,000  eV	$\mathrm{Th}$	1145
$D^+ + Mo$	Sputtering	2  keV	$\mathrm{Th}$	1155
$\mathbf{D}^+ + \mathbf{V}$	Trapping, Detrapping	$300 \deg K$	$\operatorname{Exp}$	1205
$\mathbf{D}_2 + \mathbf{Ni}$	Adsorption, Desorption	0-1.0 eV	$\mathrm{Th}$	1097
$\mathbf{D}_2 + \mathbf{Ni}$	Neutraliz., Ioniz., Dissoc.	0-1.0 eV	Th	1097
$\mathbf{D}_2 + \mathbf{Pt}$	Neutraliz., Ioniz., Dissoc.	Undef.	Th	1111
$\mathbf{D}_2^+ + \mathbf{SiC}$	Trapping, Detrapping	1 keV	Exp	1124
$D_2^+ + Mo$	Trapping, Detrapping	1.2 keV	Exp	1125
$\mathbf{D}_2^+ + \mathbf{B}$	Trapping, Detrapping	l keV	Exp	1128
$\mathbf{D}_2^+ + \mathbf{C}$	Sputtering	30-125 eV/amu	Exp	1132
$\mathbf{D}_{2}^{+} + \mathbf{W}$	Trapping, Detrapping	80 eV	Exp	1133
$D_2^+ + C$	Chemical Reactions	0.3-5.0 keV	Exp	1228
$\mathbf{D}_{3}^{+} + \mathbf{W}$	Chemical Reactions	0.15-10 keV	Exp	1048
$\mathbf{D}_{3}$ + <b>W</b>	Sputtering	0.15-10 KeV	Exp	1048
$\mathbf{D}_{3}$ + <b>W</b>	Sputtering	9 KeV	Exp	1130
$\mathbf{D}_3$ + W	Trapping, Detrapping	9 KeV	ьхр Балт	1130
$\mathbf{D}_3^+ + \mathbf{C}_1$	Sputtering Deflection	90 eV 1 100 looV	ьхр ть	1139
$\mathbf{I}^+ + \mathbf{A}\mathbf{I}$ $\mathbf{T}^+ + \mathbf{E}_{\mathbf{C}}$	Reflection	1-100  KeV 1 100 keV	1 fl Th	1050
$\mathbf{I}^+ + \mathbf{I}\mathbf{e}$ $\mathbf{T}^+ + \mathbf{C}$	Reflection	1-100  KeV 1 100 keV	1 fl Th	1050
$T^+ + Ou$ $T^+ + Ac$	Reflection	1-100 KeV 1-100 keV	111 Th	1050
$\mathbf{T}^+ + \mathbf{A}\mathbf{g}$	Reflection	1-100 KeV	тп Тh	1050
$\mathbf{T}^+ \perp \mathbf{D}\mathbf{h}$	Reflection	1 100 kev	тп Тh	1050
$\mathbf{T}^+ \perp \mathbf{C}$	Chamical Reactions	150 1500 eV	111 Evn	1190
$\mathbf{T}^+ + \mathbf{C}$	Sputtoring	150-1500 ev 150-1500 eV	њхр Fyr	1129
I T U	Sharenna	T00-T000 G A	Ľхр	1129

$T^+ + Fe$	Sputtering	$0.05-1.0 \; \mathrm{keV}$	Exp	1138
$T^+ + C$	Reflection	10-10,000  eV	$\mathrm{Th}$	1145
$T^+ + C$	Sputtering	10-10,000  eV	$\mathrm{Th}$	1145
CH + C	Adsorption, Desorption	$0.045-3.0 { m keV}$	Exp	1052
$CH_2^+ + C$	Neutraliz., Ioniz., Dissoc.	$6.7 { m MeV}$	Exp	1074
$CH_3 + Fe$	Adsorption, Desorption	Undef.	Exp	1131
$CH_3 + SS$	Adsorption, Desorption	Undef.	Exp	1131
$CH_4 + LiF$	Reflection	$90-500 { m MeV}$	$\mathrm{Th}$	1055
CO + Co	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1098
CO + Co	Desorption	Undef.	$\mathrm{Th}$	1098
CO + Co	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1098
CO + Pd	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1107
CO + Al	Adsorption, Desorption	0-1.2  eV	Exp	1219
$N_2 + W$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1094
$N_2 + W$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1094
$N_2 + W$	Adsorption, Desorption	Undef.	$\mathrm{Th}$	1096
$N_2 + W$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1096
$N_2^+ + C$	Secondary Electron Emission	30  keV	Exp	1116
$N_2^+ + C$	Reflection	Undef.	$\mathrm{Th}$	1161
$N_2^+ + C$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1161
$N_2 + Al$	Adsorption, Desorption	0-1.2  eV	Exp	1219
NO + Al	Adsorption, Desorption	0-1.2  eV	Exp	1219
$\mathbf{O}_2^+ + \mathbf{W}$	Chemical Reactions	$0.15-10 { m keV}$	Exp	1048
$\mathbf{O}_2^+ + \mathbf{W}$	Sputtering	$0.15-10 { m keV}$	Exp	1048
$O_2 + Al$	Reflection	$90-500 { m MeV}$	$\mathrm{Th}$	1055
$\mathbf{O}_2^+ + \mathbf{Si}$	Sputtering	0.5  keV	Exp	1069
$O_2 + Pd$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$	1089
$\mathbf{O}_2 + \mathbf{Cu}$	Adsorption, Desorption	$300 \deg K$	Exp	1090
$\mathbf{O}_2 + \mathbf{Cu}$	Neutraliz., Ioniz., Dissoc.	$300 \deg K$	Exp	1090
$\mathbf{O}_2^+ + \mathbf{Si}$	Sputtering	$4.4-17 { m keV}$	Exp	1110
$\mathbf{O}_2^+ + \mathbf{C}$	Reflection	$0.19-2.4 \mathrm{keV}$	Exp	1168
$O_2 + Al$	Adsorption, Desorption	0-1.2  eV	Exp	1219
$\mathbf{C}\mathbf{u}_2^- + \mathbf{A}\mathbf{l}$	Sputtering	9-18 keV	Exp	1063
$\mathbf{C}\mathbf{u}_2^- + \mathbf{S}\mathbf{i}$	Sputtering	9-18 keV	Exp	1063
$\mathbf{F}_2 + \mathbf{Al}$	Adsorption, Desorption	0-1.2  eV	Exp	1219
$HF^+ + C$	Surface Interactions	$1.5-4.0 { m MeV}$	E/T	1046
$\mathbf{A}\mathbf{u}_{2}^{+} + \mathbf{A}\mathbf{u}$	Sputtering	200  keV	$\mathrm{Th}$	1061
$\mathbf{A}\mathbf{u}_{2}^{+} + \mathbf{T}\mathbf{a}$	Sputtering	6-18  keV	Exp	1062
$Au_2^- + Al$	Sputtering	9-18  keV	Exp	1063
$\mathbf{A}\mathbf{u}_2^- + \mathbf{S}\mathbf{i}$	Sputtering	9-18  keV	Exp	1063
$Au_3^+ + Ta$	Sputtering	6-18  keV	Exp	1062
$\mathrm{Mo}_{2}^{+} + \mathrm{Ar}$	Neutraliz., Ioniz., Dissoc.	8  keV	$\operatorname{Exp}$	1047

### 2.4 Plasma Theory, Models

$\mathrm{H^{+}} + \mathrm{A} + \mathrm{LiF}$	Plasma Theory, Models	$10^{-6} - 10^3 \text{ MeV/u}$	E/T	1233
$\mathrm{He}^{2+} + \mathrm{A} + \mathrm{LiF}$	Plasma Theory, Models	$10^{-6} - 10^3 \text{ MeV/u}$	E/T	1233

#### 2.5 Data Collection, Bibliographic and Progress Report

$\mathrm{H^{+}} + \mathrm{A} + \mathrm{LiF}$	Data Collection, Bibliography	$10^{-6} - 10^3 \text{ MeV/u}$	E/T	1237
$He^{2+} + A + LiF$	Data Collection, Bibliography	$10^{-6} - 10^3 \text{ MeV/u}$	E/T	1237
$\mathbf{e} + \mathbf{H}_2 \mathbf{O} + \mathbf{LiF}$	Data Collection, Bibliography	0.1-15  eV	E/T	1234
$\mathbf{e} + \mathbf{CH}_4 + \mathbf{LiF}$	Data Collection, Bibliography	0.1-15  eV	E/T	1234

$\mathbf{e} + \mathbf{CO}_2 + \mathbf{LiF}$	Data Collection, Bibliography	0.1-15  eV	E/T	1234
$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_6 + \mathbf{LiF}$	Data Collection, Bibliography	0.1-15  eV	E/T	1234
${ m e}+{ m He^+}+{ m LiF}$	Data Collection, Bibliography	Undef.	$\mathrm{Th}$	1236
$CO + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T	1235
$SO_2 + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T	1235
$CS + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T	1235
$HCO^+ + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T	1235
$HCN + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T	1235
$HNC + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T	1235
${f SiO}+{f H}_2+{f LiF}$	Data Collection, Bibliography	Undef.	E/T	1235
$\mathbf{N}_{2}\mathbf{H}^{+}$ + $\mathbf{H}_{2}$ + $\mathbf{LiF}$	Data Collection, Bibliography	Undef.	E/T	1235
${f SiS}$ + ${f H}_2$ + ${f LiF}$	Data Collection, Bibliography	Undef.	E/T	1235
$\mathrm{HCS^{+}} + \mathrm{H_{2}} + \mathrm{LiF}$	Data Collection, Bibliography	Undef.	$\mathrm{E/T}$	1235

#### 2.6 Particle Beam-Matter Interactions

$\mathrm{H^{+}}+\mathrm{Al}+\mathrm{LiF}$	Part. Beam-Matter Interaction	225  keV/u	$\mathrm{Th}$	1239
$\mathrm{H^{+}+C+LiF}$	Part. Beam-Matter Interaction	1-10 MeV/u	$\mathrm{Th}$	1240
$H^+ + Al + LiF$	Part. Beam-Matter Interaction	0.3-0.6 MeV	Exp	1242
$H^+ + Ti + LiF$	Part. Beam-Matter Interaction	$1-3 { m MeV}$	Exp	1250
$\mathrm{H^{+}}+\mathrm{C}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$5.5 { m MeV}$	Exp	1251
$\mathrm{H^{+}+Au+LiF}$	Part. Beam-Matter Interaction	1-7.5  keV/u	Exp	1261
$\mathrm{H^{+}} + \mathrm{N}_{2} + \mathrm{LiF}$	Part. Beam-Matter Interaction	4.3  MeV	$\mathrm{Th}$	1266
$\mathrm{H^{+}}+\mathrm{C}+\mathrm{LiF}$	Part. Beam-Matter Interaction	352-3000  keV	Exp	1270
$\mathrm{H^{+}}$ + O + LiF	Part. Beam-Matter Interaction	352-3000  keV	Exp	1270
$\mathrm{H^{+}} + \mathrm{H} + \mathrm{LiF}$	Part. Beam-Matter Interaction	1-1000 keV	$\mathrm{Th}$	1275
$\mathrm{H^{+}} + \mathrm{W} + \mathrm{LiF}$	Part. Beam-Matter Interaction	200  eV	Exp	1277
$H^+ + C + LiF$	Part. Beam-Matter Interaction	10-10,000  eV	$\mathrm{Th}$	1278
$H^+ + Al + LiF$	Part. Beam-Matter Interaction	$1-1000 {\rm ~keV}$	$\mathrm{Th}$	1283
$H^+ + A + LiF$	Part. Beam-Matter Interaction	$10^{-6} - 10^3 \text{ MeV/u}$	E/T	1284
$H^+ + A + LiF$	Part. Beam-Matter Interaction	$0.5-1.0 { m MeV}$	Th	1292
$H^+ + C + LiF$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1295
$H^+ + Al + LiF$	Part. Beam-Matter Interaction	10  keV	Exp	1296
$H^+ + C + LiF$	Part. Beam-Matter Interaction	$5.5 { m MeV}$	Exp	1297
$H^+ + H_2O + LiF$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1299
$ m H^+ + SiC + LiF$	Part. Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
$ m H^+ + ZnSe + LiF$	Part. Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
$\mathrm{H^{+}+GaAs+LiF}$	Part. Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
$ m H^+ + InP + LiF$	Part. Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
$\mathrm{H^{+}+Al+LiF}$	Part. Beam-Matter Interaction	710  keV	$\mathrm{Th}$	1302
$ m H^+ + Ni + LiF$	Part. Beam-Matter Interaction	$1.8-14 \mathrm{MeV}$	Exp	1307
$ m H^+ + Ni + LiF$	Part. Beam-Matter Interaction	2 MeV/amu	E/T	1308
$\mathrm{He}^{2+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$	1240
He + He + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
He + Li + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
He + N + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
He + S + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
He + Cl + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
${ m He^+}+{ m Si}+{ m LiF}$	Part. Beam-Matter Interaction	$0.5-2.0 { m MeV}$	$\mathrm{Th}$	1248
$\mathrm{He^{+}}+\mathrm{SiO}_{2}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.5-2.0 { m MeV}$	$\mathrm{Th}$	1248
$\mathrm{He^{+}} + \mathrm{Au} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$1-6 { m MeV}$	$\operatorname{Exp}$	1253
$\mathrm{He^{+}} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	2-10 MeV	$\operatorname{Exp}$	1254
$\mathrm{He^{+}}+\mathrm{Si}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$2-10 {\rm MeV}$	$\operatorname{Exp}$	1254
$\mathrm{He^{+}}+\mathrm{Al_{2}O_{3}}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.2-2.5 \mathrm{MeV}$	$\operatorname{Exp}$	1256
$\mathrm{He^{+}}+\mathrm{Zn}+\mathrm{LiF}$	Part. Beam-Matter Interaction	37.5-1750  keV/u	$\operatorname{Exp}$	1262

$He^+ + H_2O + LiF$	Part.	Beam-Matter Interaction	10-400  keV	$\mathrm{Th}$	1265
$\mathrm{He^{+}}+\mathrm{CH}_{4}+\mathrm{LiF}$	Part.	Beam-Matter Interaction	10-400  keV	$\mathrm{Th}$	1265
$He^+ + Al_2O_3 + LiF$	Part.	Beam-Matter Interaction	$50 - 10^4 {\rm keV}$	E/T	1268
$\mathrm{He^{+}}$ + SiC + LiF	Part.	Beam-Matter Interaction	$700-18,000 { m ~keV}$	E/T	1274
$\mathrm{He^{+}} + \mathrm{Ar} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	$1-200 \ {\rm MeV}/{\rm amu}$	$\mathrm{Th}$	1280
$He^{2+} + A + LiF$	Part.	Beam-Matter Interaction	$10^{-6} - 10^3 \text{ MeV/u}$	E/T	1284
$He^+ + Au + LiF$	Part.	Beam-Matter Interaction	0-600  keV/u	Exp	1286
$\mathrm{He^{+}} + \mathrm{A} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	$0.5-1.0 { m MeV}$	$\mathrm{Th}$	1292
$\mathrm{He^{+}}$ + SiC + LiF	Part.	Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
$\mathrm{He^{+}}$ + ZnSe + LiF	Part.	Beam-Matter Interaction	$10-3000 {\rm ~keV/u}$	$\mathrm{Th}$	1301
$\mathrm{He^{+}+GaAs+LiF}$	Part.	Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
${ m He^+}$ + ${ m InP}$ + ${ m LiF}$	Part.	Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$	1301
$Li^{3+} + C + LiF$	Part.	Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$	1240
$Li^+ + C + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Li^+ + Al + LiF$	Part.	Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$Li^+ + Si + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Li^+ + Ni + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Li^+ + Ag + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Li^+ + Ta + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Li^+ + Au + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Li^+ + Au + LiF$	Part.	Beam-Matter Interaction	$1-6 { m MeV}$	Exp	1253
$\mathrm{Li^{+} + H_{2}O + LiF}$	Part.	Beam-Matter Interaction	10-400  keV	$\mathrm{Th}$	1265
$\mathbf{Li^+} + \mathbf{CH}_4 + \mathbf{LiF}$	Part.	Beam-Matter Interaction	10-400  keV	$\mathrm{Th}$	1265
$Li^+ + Ni + LiF$	Part.	Beam-Matter Interaction	$1.8-14 { m MeV}$	Exp	1307
$Li^+ + Ni + LiF$	Part.	Beam-Matter Interaction	$2 { m MeV/amu}$	E/T	1308
Be + C + LiF	Part.	Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
Be + O + LiF	Part.	Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
$\mathrm{Be^{+}} + \mathrm{Si} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	100-700  keV/u	Exp	1246
$\mathrm{Be^{+}} + \mathrm{Si} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	500-7000 keV	Exp	1252
Be + Si + LiF	Part.	Beam-Matter Interaction	0.100-1 MeV/u	Exp	1259
$\mathrm{Be^{+}}$ + SiC + LiF	Part.	Beam-Matter Interaction	700-18,000  keV	E/T	1274
$\mathrm{Be^{+}} + \mathrm{Au} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	0-600  keV/u	Exp	1286
$B^+ + C + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$B^+ + Al + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$B^+ + Si + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$B^+ + Ni + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$\mathrm{B^{+}}+\mathrm{Ag}+\mathrm{LiF}$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$\mathrm{B^{+}+Ta+LiF}$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$B^+ + Au + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$B^+ + Si + LiF$	Part.	Beam-Matter Interaction	100-700  keV/u	Exp	1246
$\mathrm{B^{+}+Au+LiF}$	Part.	Beam-Matter Interaction	$1-6 { m MeV}$	Exp	1253
B + Si + LiF	Part.	Beam-Matter Interaction	$0.100-1 { m MeV/u}$	Exp	1259
$\mathrm{B^{+}+C+LiF}$	Part.	Beam-Matter Interaction	$5-70 { m MeV}$	$\mathrm{Th}$	1263
$B^+ + SiC + LiF$	Part.	Beam-Matter Interaction	$700-18,000 { m ~keV}$	E/T	1274
$\mathbf{C}^{6+} + \mathbf{Cs} + \mathbf{LiF}$	Part.	Beam-Matter Interaction	$1 - 10^5 {\rm ~keV/u}$	$\mathrm{Th}$	1241
$\mathrm{C^{+}+C+LiF}$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$C^+ + Al + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$C^+ + Si + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$C^+ + Ni + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$C^+ + Ag + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$C^+ + Ta + LiF$	Part.	Beam-Matter Interaction	$0.2$ - $1.0 \ \mathrm{MeV/u}$	E/T	1244
$\mathrm{C^{+}+Au+LiF}$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
C + He + LiF	Part.	Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
$\rm C + Li + LiF$	Part.	Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
C + Be + LiF	Part.	Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
C + B + LiF	Part.	Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
C + C + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245

C + N + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + O + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + F + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
C + Ne + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
C + Na + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Mg + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Al + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Si + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Cl + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Ar + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + K + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Ca + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Sc + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Ti + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Cr + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Mn + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Fe + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Cu + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Ge + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Br + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
C + Kr + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$C^+ + Si + LiF$	Part.	Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$	1246
$C^+$ + Au + LiF	Part.	Beam-Matter Interaction	6-10 MeV	$\operatorname{Exp}$	1255
$C^{2+} + C + LiF$	Part.	Beam-Matter Interaction	$4.3-6.0 { m MeV/u}$	Exp	1269
$C^+ + SiC + LiF$	Part.	Beam-Matter Interaction	700-18,000  keV	E/T	1274
$C^{4+} + C + LiF$	Part.	Beam-Matter Interaction	Undef.	Th	1295
$C^+ + C + LiF$	Part.	Beam-Matter Interaction	1 MeV	Exp	1303
N' + C + LiF	Part.	Beam-Matter Interaction	0.2-1.0 MeV/u	E/T D/T	1244
N' + AI + LIF	Part.	Beam-Matter Interaction	0.2-1.0  MeV/u	E/I E/T	1244
IN' + SI + LIF $N^+ + N!' + LIF$	Part.	Beam-Matter Interaction	0.2-1.0  MeV/u	E/ 1 E/T	1244
$N^+ + NI + LIF$ $N^+ + Ag + LF$	Part.	Beam Matter Interaction	0.2-1.0  MeV/u	£/1 F/T	1244
$N^+ + Ag + LiF$ $N^+ + T_2 + LiF$	Port	Beam Matter Interaction	$0.2 \pm 1.0 \text{ MeV}/\text{u}$	E/T	1244
$N^+ + A_1 + LiF$	Part	Beam-Matter Interaction	0.2-1.0  MeV/u	E/T	1244
$N^+ + Si + LiF$	Part	Beam-Matter Interaction	100-700  keV/m	Eyn	1244
$N^+ + Au + LiF$	Part.	Beam-Matter Interaction	6-10 MeV	Exp	1255
$N^+ + C + LiF$	Part.	Beam-Matter Interaction	5-70 MeV	Th	1263
$N^+ + Be + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + C + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Al + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Si + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Ti + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Fe + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Ni + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Cu + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 { m ~MeV/u}$	Exp	1273
$N^+ + Ge + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 { m ~MeV/u}$	$\operatorname{Exp}$	1273
$N^+ + Mo + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$	1273
$N^+ + Ag + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$	1273
$N^+ + Sn + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + Gd + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$N^+ + W + LiF$	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
N' + Au + LiF	Part.	Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp	1273
$\mathbf{N} + \mathbf{P}\mathbf{b} + \mathbf{L}\mathbf{i}\mathbf{F}$	Part.	Beam-Matter Interaction	$10^{\circ} - 10 \text{ MeV}/\text{u}$	Exp E/T	1273
1N + SIC + LIF	Part. $\mathbf{D}_{}$	Beam-Matter Interaction	(100-18,000  keV)	E/T Th	12/4
$O^+ + He + LiF$	Part.	Deam-Matter Interaction	$1 - 10^{\circ} \text{ KeV}/\text{U}$	IN F/T	1241
$O^+ + O^+ + LlF$	Part.	Beam Matter Interaction	0.2-1.0  MeV/u	ம்/ 1 ஈ/ா	1244
$\mathbf{O}^{+} + \mathbf{A}\mathbf{I} + \mathbf{L}\mathbf{I}\mathbf{F}$	rart.	Deam-Matter Interaction	0.2-1.0 IVIEV/U	Ľ/ 1	1244

$\mathrm{O^{+}}+\mathrm{Si}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$O^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E}/T$	1244
$O^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{\mathrm{E}/\mathrm{T}}$	1244
$O^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E}/T$	1244
$O^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$O^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	Exp	1246
$O^+ + C + LiF$	Part. Beam-Matter Interaction	2-10 MeV	$\operatorname{Exp}$	1254
$O^+ + Si + LiF$	Part. Beam-Matter Interaction	2-10 MeV	$\operatorname{Exp}$	1254
$O^+ + C + LiF$	Part. Beam-Matter Interaction	$5-70 {\rm ~MeV}$	$\mathrm{Th}$	1263
$O^+ + SiC + LiF$	Part. Beam-Matter Interaction	$700-18,000 { m ~keV}$	E/T	1274
$\mathbf{F}^+ + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$F^+ + Al + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$\mathrm{F^{+}+Si+LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$\mathrm{F^{+}+Ni+LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$\mathbf{F}^+ + \mathbf{Ag} + \mathbf{LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$ m F^+$ + Ta + LiF	Part. Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$\mathbf{F}^+ + \mathbf{A}\mathbf{u} + \mathbf{L}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$F^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$	1246
$F^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000  keV	E/T	1274
$F^+ + Au + LiF$	Part. Beam-Matter Interaction	0-600  keV/u	$\operatorname{Exp}$	1286
Ne + N + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
$\mathrm{Ne^+} + \mathrm{H_2} + \mathrm{LiF}$	Part. Beam-Matter Interaction	200-1150  keV/u	E/T	1249
$Ne^{4+} + C + LiF$	Part. Beam-Matter Interaction	$4.3-6.0 \mathrm{MeV/u}$	$\operatorname{Exp}$	1269
$\mathbf{Na}^+ + \mathbf{H}_2 + \mathbf{LiF}$	Part. Beam-Matter Interaction	200-1150  keV/u	E/T	1249
$\mathrm{Mg^{+}} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$\mathrm{Mg^{+}} + \mathrm{Al} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Mg^+ + Si + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Mg^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Mg^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Mg^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Mg^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Mg^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700 keV/u	Exp D/T	1246
$Mg' + H_2 + LiF$	Part. Beam-Matter Interaction	200-1150 keV/u	E/T	1249
$Mg^{s_+} + C + LiF$	Part. Beam-Matter Interaction	4.3-6.0  MeV/u	Exp	1269
Mg' + Au + LiF M + GC + LiF	Part. Beam-Matter Interaction	$10^{-9} - 10 \text{ MeV/u}$	Exp E/T	1273
Mg' + SiC + LiF	Part. Beam-Matter Interaction	700-18,000 KeV	E/I E/T	1274
AI' + C + LIF	Part. Beam-Matter Interaction	0.2 - 1.0  MeV/u	上/ 1 下 / T	1244
AI' + AI + LIF	Part. Beam-Matter Interaction	0.2-1.0  MeV/u	E/1 E/T	1244
$AI^{+} + SI + LIF$	Part. Beam Matter Interaction	0.2 - 1.0  MeV/u	Е/ 1 Е /Т	1244
$AI^+ + NI + LIF$	Part. Deam-Matter Interaction	0.2 - 1.0  MeV/u	Ľ/ I Г/Т	1244
$AI^+ + Ag + LIF$ $AI^+ + T_2 + LF$	Part Boam Matter Interaction	0.2 - 1.0  MeV/u	Ľ/ 1 F/T	1244
$Al^+ + Au + LiF$	Part Beam-Matter Interaction	0.2-1.0  MeV/u	E/T	1244
AI + Ii + LiF	Part Beam-Matter Interaction	0.2-1.0  MeV/u	$\frac{D}{1}$	1244
AI + B + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
AI + C + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
AI + N + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Al + O + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
AI + F + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
$\Delta l + Ne + LiF$	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Al + Na + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245 1245
A] + A] + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245 1245
AI + Si + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245 1245
AI + CI + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Al + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Al + Ti + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Al + Cu + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245

Al + Ge + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Al + Br + LiF	Part.	Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Al + Kr + LiF	Part.	Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
$Al^+ + Si + LiF$	Part.	Beam-Matter Interaction	100-700 keV/u	Exp	1246
$Al^+ + C + LiF$	Part.	Beam-Matter Interaction	2-10 MeV	Exp	1254
$Al^+ + Si + LiF$	Part.	Beam-Matter Interaction	2-10 MeV	Exp	1254
$Al^+ + SiC + LiF$	Part.	Beam-Matter Interaction	700-18,000  keV	E/T	1274
Si + Li + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 \mathrm{MeV/u}$	Th	1245
Si + Be + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + B + LiF	Part.	Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Si + C + LiF	Part.	Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Si + N + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + O + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + F + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + Na + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + Mg + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + Al + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + Si + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + P + LiF	Part.	Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Si + Cl + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + Mn + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Si + Fe + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
$\mathrm{Si^{+}} + \mathrm{Si} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	100-700 keV/u	Exp	1246
${ m Si^+}+{ m GaAs}+{ m LiF}$	Part.	Beam-Matter Interaction	3 MeV	Exp	1257
$Si^{5+} + C + LiF$	Part.	Beam-Matter Interaction	$4.3-6.0 { m MeV/u}$	Exp	1269
$Si^+ + SiC + LiF$	Part.	Beam-Matter Interaction	700-18,000  keV	E/T	1274
$\mathrm{P^{+}+GaAs+LiF}$	Part.	Beam-Matter Interaction	$3 { m MeV}$	Exp	1257
$S^{6+} + C + LiF$	Part.	Beam-Matter Interaction	2  MeV/u	Exp	1298
$\mathbf{S}^{10+} + \mathbf{C} + \mathbf{LiF}$	Part.	Beam-Matter Interaction	2  MeV/u	Exp	1298
$S^{11+} + C + LiF$	Part.	Beam-Matter Interaction	2  MeV/u	Exp	1298
$S^{13+} + C + LiF$	Part.	Beam-Matter Interaction	2  MeV/u	Exp	1298
$S^+ + C + LiF$	Part.	Beam-Matter Interaction	$9.6-32 { m MeV}$	Exp	1305
$S^+ + Al + LiF$	Part.	Beam-Matter Interaction	$9.6-32 { m MeV}$	Exp	1305
$S^+ + Ti + LiF$	Part.	Beam-Matter Interaction	$9.6-32 { m MeV}$	$\operatorname{Exp}$	1305
$S^+ + Fe + LiF$	Part.	Beam-Matter Interaction	$9.6-32 { m MeV}$	$\operatorname{Exp}$	1305
$\mathrm{Cl}^{17+} + \mathrm{C} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	1-10 MeV/u	$\mathrm{Th}$	1240
$Cl^+ + C + LiF$	Part.	Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T	1244
$Cl^+ + Al + LiF$	Part.	Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T	1244
$Cl^+ + Si + LiF$	Part.	Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Cl^+ + Ni + LiF$	Part.	Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$\mathrm{Cl}^+ + \mathrm{Ag} + \mathrm{LiF}$	Part.	Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Cl^+ + Ta + LiF$	Part.	Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Cl^+ + Au + LiF$	Part.	Beam-Matter Interaction	0.2-1.0 MeV/u	E/T	1244
$Ar^+ + He + LiF$	Part.	Beam-Matter Interaction	100-150 MeV/amu	Exp	1243
Ar + Li + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ar + Be + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ar + N + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ar + O + LiF	Part.	Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ar + S + LiF	Part.	Beam-Matter Interaction	U.1-1.U MeV/u	Th	1245
Ar + UI + LIF	Part.	Beam-Matter Interaction	0.1-1.0  MeV/u	1h E	1245
$Ar^{+} + C + Lir$	Part.	Beam-Matter Interaction	4.5-0.0 MeV/u	Exp T	1269
Ar + C + LiF Ar + C + LiF	Part.	Beam-Matter Interaction	200 eV	1n Th	1282
Ar + $\cup$ u + Llf An ¹⁷⁺ + $\bigcirc$ t + $\textcircled{I}$ T	Part.	Deam-Matter Interaction	200 ev 400 MeV /	111 Г	1282
Ar $+$ $51 + Llf$ $K^+ + F_c + T^*T$	Part.	Deam-Matter Interaction	400  MeV/u 1.200 MeV/amer	Ľхр ть	1300
$\mathbf{K}^{+} + \mathbf{F}\mathbf{e} + \mathbf{L}\mathbf{i}\mathbf{F}$ $\mathbf{K}^{+} + \mathbf{S}\mathbf{e} + \mathbf{I}\mathbf{i}\mathbf{E}$	Part.	Beam Matter Interaction	1-200  MeV/amu	111 Th	1280
$\mathbf{r} + \mathbf{s}\mathbf{s} + \mathbf{L}\mathbf{R}$	rart.	Beam Matter Interaction	1-200 WeV/amu	111 Fun	126U 1949
	r art.	Deam-marier interaction	100-100 MEV/alliu	Ľлр	1440

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$Ca^{\circ} + C + LiF$	Part. Beam-Matter Interaction	4.3-6.0 MeV/u	Exp	1269
$Ca^+ + C + LiF$	Part. Beam-Matter Interaction	242-264 MeV	Exp	1285
Ti + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + F + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + Mg + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + Al + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + Si + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + S + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ti + Cl + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ti + Ar + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ti + Ti + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
Ti + Kr + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
$Cr^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$	1246
$\mathrm{Cr}^+ + \mathrm{SiC} + \mathrm{LiF}$	Part. Beam-Matter Interaction	700-18,000  keV	E/T	1274
${ m Mn^+} + { m Si} + { m LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$	1246
$\mathrm{Mn^{+}+SiC+LiF}$	Part. Beam-Matter Interaction	700-18,000  keV	E/T	1274
$\mathrm{Fe} + \mathrm{He} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Fe + F + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Fe + Mg + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Fe + Al + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Fe + Si + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Fe + S + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Fe + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
${ m Fe^+}+{ m Si}+{ m LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	Exp	1246
$\mathbf{Fe}^{9+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	$4.3-6.0 { m MeV/u}$	Exp	1269
${ m Fe^+}+{ m SiC}+{ m LiF}$	Part. Beam-Matter Interaction	$700-18,000 { m ~keV}$	E/T	1274
$\mathrm{Fe}^{24+} + \mathrm{Si} + \mathrm{LiF}$	Part. Beam-Matter Interaction	400  MeV/u	Exp	1300
$\mathrm{Co^{+}} + \mathrm{Si} + \mathrm{LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	Exp	1246
$\mathrm{Co^{+}} + \mathrm{SiC} + \mathrm{LiF}$	Part. Beam-Matter Interaction	700-18,000  keV	E/T	1274
$Ni^{28+} + SiO_2 + LiF$	Part. Beam-Matter Interaction	$1-10^5 \mathrm{~keV/u}$	Th	1241
Ni + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + N + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + F + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + Ne + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ni + Kr + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
$Ni^+ + Si + LiF$	Part. Beam-Matter Interaction	1-2 MeV	E/T	1271
$Ni^+ + LiB_3O_5 + LiF$	Part. Beam-Matter Interaction	$1-2 { m MeV}$	$\dot{E/T}$	1271
$Ni^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000 keV	$\dot{\mathrm{E}/\mathrm{T}}$	1274
Cu + Li + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
Cu + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + N + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + Mg + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m ~MeV/u}$	$\mathrm{Th}$	1245
Cu + Al + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + Si + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m ~MeV/u}$	$\mathrm{Th}$	1245
Cu + S + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + Ti + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
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Cu + Fe + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th	1245
Cu + Ni + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Cu + Cu + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Cu + Br + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
$Cu^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700 keV/u	$\operatorname{Exp}$	1246
$Cu^{10+} + C + LiF$	Part. Beam-Matter Interaction	$4.3-6.0 { m MeV/u}$	$\operatorname{Exp}$	1269
$Cu^+ + Si + LiF$	Part. Beam-Matter Interaction	1-2 MeV	E/T	1271
$Cu^+ + LiB_3O_5 + LiF$	Part. Beam-Matter Interaction	$1-2 {\rm MeV}$	E/T	1271
$\mathrm{Cu^{+}+SiC+LiF}$	Part. Beam-Matter Interaction	700-18,000  keV	E/T	1274
$\mathrm{Cu^{+} + Ni + LiF}$	Part. Beam-Matter Interaction	72  keV	E/T	1288
$\mathrm{Cu^{+}+Cu+LiF}$	Part. Beam-Matter Interaction	1  keV	Th	1289
$\mathrm{Cu^{+}}+\mathrm{Zr}+\mathrm{LiF}$	Part. Beam-Matter Interaction	1  keV	$\mathrm{Th}$	1289
${ m Ge^+ + He + LiF}$	Part. Beam-Matter Interaction	100-150  MeV/amu	$\operatorname{Exp}$	1243
Ge + C + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ge + O + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ge + Mg + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ge + Si + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ge + P + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ge + Cl + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$\mathrm{Br}^{35+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	1-10 MeV/u	$\mathrm{Th}$	1240
$ m Kr^+ + He + LiF$	Part. Beam-Matter Interaction	100-150  MeV/amu	$\operatorname{Exp}$	1243
Kr + N + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Kr + S + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$Kr^{13+} + C + LiF$	Part. Beam-Matter Interaction	$4.3-6.0 { m MeV/u}$	$\operatorname{Exp}$	1269
$\mathrm{Kr}^{35+}_{35+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1293
$\mathrm{Kr}^{35+}+\mathrm{Si}+\mathrm{LiF}$	Part. Beam-Matter Interaction	400  MeV/u	$\operatorname{Exp}$	1300
Rb + Si + LiF	Part. Beam-Matter Interaction	Undef.	Exp	1276
m Zr + Si + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Zr + Kr + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
$Zr^+ + Cu + LiF$	Part. Beam-Matter Interaction	1 keV	Th	1289
$Zr^+ + Zr + LiF$	Part. Beam-Matter Interaction	1 keV	Th D (Th	1289
$Nb^{3+} + H^+ + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T	1279
$Nb^{3+} + e + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T	1279
$Nb^{10+} + H^+ + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T	1279
$ND^{10+} + e + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T	1279
$\mathbf{ND}^{10+} + \mathbf{H}^{+} + \mathbf{LIF}^{-}$	Part. Beam-Matter Interaction	10-50  keV/amu	E/1 E/T	1279
$1ND^{-2+} + e + L1F$ $NL^{20+} + L1^{+} + L^{2}F$	Part. Beam-Matter Interaction	10-50  keV/amu	E/1 E/T	1279
$\mathbf{N}\mathbf{D}^{-\circ}$ + $\mathbf{H}^{\circ}$ + $\mathbf{L}\mathbf{I}\mathbf{F}$	Part. Beam-Matter Interaction	10-50  keV/amu	E/1 E/T	1279
$1 \text{ND}^{2+} + \text{e} + \text{LIF}$ $\text{NL}^{25+} + \text{II}^+ + \text{I}^+\text{E}$	Part. Deam-Matter Interaction	10-50  keV/amu	Е/ 1 Е/Т	1279
$\mathbf{N}\mathbf{D}^{25+} + \mathbf{a} + \mathbf{L}\mathbf{F}$	Part Deam Matter Interaction	10-50  keV/amu	Ľ/ I 〒/Т	1279
$\mathbf{N}\mathbf{D}^{+} + \mathbf{E} + \mathbf{L}\mathbf{I}\mathbf{F}$ $\mathbf{N}\mathbf{D}^{30+} + \mathbf{U}^{+} + \mathbf{I}\mathbf{F}$	Part Deam Matter Interaction	10-50  keV/amu	Ľ/ I 〒/Т	1279
$Nb^{30+} \pm a \pm LiF$	Part Boam Matter Interaction	10-50  keV/amu	Б/Т F/T	1279
$\mathbf{N}\mathbf{b}^{35+} \perp \mathbf{H}^+ \perp \mathbf{L}\mathbf{F}$	Part Boam Matter Interaction	10-50  keV/amu	E/T	1279
$Nb^{35+} \perp \rho \perp LiF$	Part Beam-Matter Interaction	10-50  keV/amu	E/T	1279 1270
$Nb^{40+} + H^+ + LiF$	Part Beam-Matter Interaction	10-50  keV/amu	E/T	1279
$Nb^{40+} + e + LiF$	Part Beam-Matter Interaction	10-50  keV/amu	E/T	1279
$M_0 + M_g + LiF$	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
$M_0 + S_i + LiF$	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Pd + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ag + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Ag + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
$\widetilde{Ag} + C + LiF$	Part. Beam-Matter Interaction	$0.1\text{-}1.0 \; \mathrm{MeV}' \mathrm{/u}$	$\mathrm{Th}$	1245
Ag + N + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ag + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ag + F + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Ag + Ne + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245

Ag + Mg + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + Al + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + Si + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + S + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + Cl + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + Ar + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + Ti + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + Ni + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Ag + Cu + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Ag + Ge + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Ag + Br + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$	1245
Ag + Kr + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Ag + U + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Sn + Li + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Sn + O + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
Sn + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
Sn + Ti + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$\mathbf{I}^{53+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	1-10 MeV/u	$\mathrm{Th}$	1240
$I^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18.000  keV	E/T	1274
$Xe^+ + He + LiF$	Part. Beam-Matter Interaction	100-150 MeV/amu	Exp	1243
Xe + N + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Xe + Xe + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th	1245
Gd + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Gd + B + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Gd + C + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Gd + O + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
$L_{II} + L_{I} + L_{I}F$	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Ta + Li + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Ta + C + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Ta + N + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
$T_a + O + LiF$	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
W + Mg + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
W + Si + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Pt + Mg + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Pt + Si + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Li + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + B + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + C + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + N + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + O + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + F + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Na + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Mg + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Al + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Si + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + S + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Cl + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Ar + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
$\Delta u + Ti + LiF$	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th	1245
Au + Cu + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/m	Th	1245
Au + Br + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/m	Th	1245
$\Delta u \perp Kr \perp LiF$	Part Ream-Matter Interaction	0.1-1.0  MeV/u	Th	1945
$Au^+ + SiC + LiF$	Part Beam-Matter Interaction	$700-18\ 000\ \text{keV}$	тп Е/Т	1974
$Au^+ + C + LiF$	Part Beam-Matter Interaction	100 eV	$\frac{1}{Th}$	1987
$Au^+ + Ar + LiF$	Part Beam-Matter Interaction	100 eV	Th	1287
$Au^+ + Au + LiF$	Part Beam-Matter Interaction	100 eV	Th	1287
Pb + Ti + LiF	Part Beam-Matter Interaction	0 1-1 0 MeV/11	Th	1245
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$\mathrm{Pb^{+}}+\mathrm{A}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.5\text{-}1.0 \mathrm{MeV}$	$\mathrm{Th}$	1292
$Bi^{82+} + Au + LiF$	Part. Beam-Matter Interaction	$70 \ {\rm MeV/u}$	Exp	1304
$\mathbf{U}^{92+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	1-10 MeV/u	$\mathrm{Th}$	1240
U + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$	1245
$\mathbf{U}^{28+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	3.5 MeV/amu	Exp	1281
$U^{28+} + Ar + LiF$	Part. Beam-Matter Interaction	3.5 MeV/amu	Exp	1281
e + Al + LiF	Part. Beam-Matter Interaction	1-4000  keV	Th	1247
e + Si + LiF	Part. Beam-Matter Interaction	1-4000  keV	$\mathrm{Th}$	1247
$\mathbf{e} + \mathbf{H}_2 \mathbf{O} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.01-100  eV	$\mathrm{Th}$	1260
$\mathbf{e} + \mathbf{D}_2 \mathbf{O} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.01-100  eV	$\mathrm{Th}$	1260
$\mathbf{e} + \mathbf{H}_2 \mathbf{O} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0-10  keV	$\operatorname{Exp}$	1264
e + C + LiF	Part. Beam-Matter Interaction	$10 { m MeV}$	$\mathrm{Th}$	1267
e + Al + LiF	Part. Beam-Matter Interaction	$10 { m MeV}$	$\mathrm{Th}$	1267
e + W + LiF	Part. Beam-Matter Interaction	50-500  keV	$\mathrm{Th}$	1272
e + C + LiF	Part. Beam-Matter Interaction	$10 - 10^4 \text{ eV}$	$\mathrm{Th}$	1290
$e + H_2O + LiF$	Part. Beam-Matter Interaction	0.1 - 1.0  keV	$\mathrm{Th}$	1291
$H_2 + He + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$\mathbf{H}_2 + \mathbf{S} + \mathbf{LiF}$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$H_2 + Cl + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$\mathbf{H}_{2}^{+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	$0.025\text{-}19.193 \; \mathrm{MeV}$	$\mathrm{Th}$	1258
$\mathbf{H}_{2}^{+} + \mathbf{A}\mathbf{u} + \mathbf{L}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	1-7.5  keV/u	Exp	1261
$\mathbf{H}_{2}^{+} + \mathbf{A}\mathbf{u} + \mathbf{L}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	12.5  keV	Exp	1294
$\mathbf{H}_{2}^{+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1295
$\mathrm{HD^{+}} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1295
$D^+ + W + LiF$	Part. Beam-Matter Interaction	200  eV	Exp	1277
$\mathrm{D^{+}+C+LiF}$	Part. Beam-Matter Interaction	10-10,000  eV	$\mathrm{Th}$	1278
$T^+ + C + LiF$	Part. Beam-Matter Interaction	10-10,000  eV	$\mathrm{Th}$	1278
$\mathrm{CH}_{2}{}^{+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1295
$N_2 + He + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$N_2 + S + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$N_2 + Cl + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$N_2 + Ar + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	$\mathrm{Th}$	1245
A + LiF	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$	1240
$A^+ + A + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$	1245
$A^+ + Al + LiF$	Part. Beam-Matter Interaction	710  keV	$\mathrm{Th}$	1302
A + C + LiF	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1306
A + Al + LiF	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1306
A + Au + LiF	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$	1306

#### 2.7 Interactions of Atomic Particles with Fields

H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1311
$H^* + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1311
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1320
$H^* + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1320
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1321
$H^* + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1321
$H^- + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1322
$H^- + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1323
H + LiF	Atom Field Interaction	16-54 V/cm	$\mathrm{Th}$	1325
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1334
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1340
${f H^+} + {f H} + {f LiF}$	Atom Field Interaction	2  keV	$\mathrm{Th}$	1345
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1346
H + LiF	Atom Field Interaction	Half cycle pulse	E/T	1358

$H^* + LiF$	Atom Field Interaction	Half cycle pulse	E/T	1358
H + LiF	Atom Field Interaction	$10^{8} \text{ V/m}^{-1}$	$\mathrm{Th}$	1359
H + LiF	Atom Field Interaction	0.05 a.u.	$\mathrm{Th}$	1365
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1375
H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1386
$H^* + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1386
H + LiF	Atom Field Interaction	$10^{16} {\rm W}/cm^2$	$\mathrm{Th}$	1390
H + LiF	Atom Field Interaction	33,000 K	Exp	1398
He + H + LiF	Atom Field Interaction	$10^5 \text{ cm/s}$	Th	1318
$He + H^* + LiF$	Atom Field Interaction	$10^{5} \text{ cm/s}$	$\mathrm{Th}$	1318
He + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1323
He + LiF	Atom Field Interaction	16-54 V/cm	$\mathrm{Th}$	1325
$\mathrm{He^{+}} + \mathrm{He} + \mathrm{LiF}$	Atom Field Interaction	30-50 keV	Exp	1326
He + LiF	Atom Field Interaction	780 nm	Th	1333
He + He + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1339
$He^* + He^* + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1339
$He^{2+} + H + LiF$	Atom Field Interaction	$0.1-10 \; \rm keV/u$	$\mathrm{Th}$	1364
He + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
He + LiF	Atom Field Interaction	33,000 K	Exp	1398
Li + LiF	Atom Field Interaction	0-370 MHz	Exp	1342
$Li^* + LiF$	Atom Field Interaction	0-370 MHz	Exp	1342
Li + LiF	Atom Field Interaction	0-10 $\gamma$ a.u.	Th	1360
Li + He + LiF	Atom Field Interaction	1750-3050  m/s	E/T	1371
Li + Ne + LiF	Atom Field Interaction	1750-3050  m/s	$\dot{\mathrm{E}/\mathrm{T}}$	1371
$Li + H_2 + LiF$	Atom Field Interaction	1750-3050  m/s	$\dot{\mathrm{E}/\mathrm{T}}$	1371
$Li + D_2 + LiF$	Atom Field Interaction	1750-3050  m/s	$\dot{\mathrm{E}/\mathrm{T}}$	1371
Li + LiF	Atom Field Interaction	Undef.	Th	1392
Be + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1347
Be + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$\mathbf{C}^{4+} + \mathbf{H} + \mathbf{LiF}$	Atom Field Interaction	Undef.	Exp	1324
C + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$N^+ + LiF$	Atom Field Interaction	1453-5681 $\mathring{A}$	E/T	1372
N + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$O^- + LiF$	Atom Field Interaction	$11,700-16,700 \ cm^{-1}$	E/T	1341
$O^{2+} + LiF$	Atom Field Interaction	1453-5681 $\mathring{A}$	E/T	1372
$O^+ + LiF$	Atom Field Interaction	$5000-80,000 { m K}$	$\mathrm{Th}$	1376
O + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$\mathbf{F}^+ + \mathbf{LiF}$	Atom Field Interaction	30,400-33,600 K	$\operatorname{Exp}$	1353
$\mathbf{F}^{2+} + \mathbf{LiF}$	Atom Field Interaction	30,400-33,600 K	$\operatorname{Exp}$	1353
$\mathbf{F}^{3+} + \mathbf{LiF}$	Atom Field Interaction	1453-5681 $\AA$	E/T	1372
$F^- + LiF$	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/}cm^2$	$\mathrm{Th}$	1374
$\mathbf{F} + \mathbf{LiF}$	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
Ne + LiF	Atom Field Interaction	1.5  eV	$\mathrm{Th}$	1313
Ne + LiF	Atom Field Interaction	1.55  eV	$\mathrm{Th}$	1319
Ne + LiF	Atom Field Interaction	320-1200  eV	E/T	1338
$Ne^{10+} + LiF$	Atom Field Interaction	10-17 keV	$\operatorname{Exp}$	1369
$Ne^{4+} + LiF$	Atom Field Interaction	1453-5681 Å	E/T	1372
Ne + LiF	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	$\mathrm{Th}$	1374
Ne + LiF	Atom Field Interaction	790 nm	$\operatorname{Exp}$	1387
Ne + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
Ne + LiF	Atom Field Interaction	33,000  K	$\operatorname{Exp}$	1398
Na + LiF	Atom Field Interaction	Half cycle pulse	E/T	1358
$Na^* + LiF$	Atom Field Interaction	Half cycle pulse	E/T	1358
Na + LiF	Atom Field Interaction	Undef.	$_{-}^{Th}$	1392
Mg + LiF	Atom Field Interaction	520-285 nm	Exp	1355
Mg + LiF	Atom Field Interaction	Undef.	$_{-}^{Th}$	1392
AI + LiF	Atom Field Interaction	1 MHz	$\operatorname{Exp}$	1329

$Al^* + LiF$	Atom Field Interaction	1 MHz	Exp	1329
Al + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$Si^+ + LiF$	Atom Field Interaction	11,000 K	$\operatorname{Exp}$	1352
$Si^{4+} + LiF$	Atom Field Interaction	50,000-500,000 K	$\mathrm{Th}$	1354
$Si^{13+} + LiF$	Atom Field Interaction	10-17  keV	$\operatorname{Exp}$	1369
$\mathbf{Si}^{14+} + \mathbf{LiF}$	Atom Field Interaction	10-17  keV	Exp	1369
Si + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
P + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$S^- + LiF$	Atom Field Interaction	$11,700-16,700 \ cm^{-1}$	E/T	1341
S + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1392
$Cl^- + LiF$	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	Th	1374
Ar + LiF	Atom Field Interaction	$4x10^{13} - 1.3x10^{14} \text{ w/cm}^2$	E/T	1316
Ar + LiF	Atom Field Interaction	$33.466-33.677 \ cm^{-1}$	_, _ Е/Т	1327
$Ar^* + LiF$	Atom Field Interaction	$33\ 466-33\ 677\ cm^{-1}$	E/T	1327
Ar + LiF	Atom Field Interaction	320-1200 eV	E/T	1338
$Ar^{7+} + LiF$	Atom Field Interaction	52 5-54 eV	$\frac{D}{1}$	1349
Ar + LiF	Atom Field Interaction	Undef	E/T	1367
$\Delta r^{17+} + LiF$	Atom Field Interaction	10-17  keV	Eyn	1369
$\Delta r + LiF$	Atom Field Interaction	$5r10^{12} - 2r10^4 \text{ W/cm}^2$	цлр Th	1374
Ar + LiF	Atom Field Interaction	$\frac{400 \text{ y/cm}}{100 \text{ y/cm}}$	тп F/T	1374
Ar + LiF	Atom Field Interaction	775 nm	Eyn	1373
$A_n + LiF$	Atom Field Interaction	Undef	п П	1200
$\mathbf{A}\mathbf{I} + \mathbf{D}\mathbf{I}\mathbf{I}$ $\mathbf{K} + \mathbf{A}\mathbf{r} + \mathbf{I}\mathbf{i}\mathbf{F}$	Atom Field Interaction	$220, 720, cm^{-1}$	TH Fyp	1392
$\mathbf{K} + \mathbf{A}\mathbf{I} + \mathbf{L}\mathbf{I}\mathbf{F}$	Atom Field Interaction	Earra V	ть ть	1969
$\mathbf{K} + \mathbf{L}\mathbf{F}$	Atom Field Interaction	rew ev Undef	111 Th	1200
$\mathbf{K} + \mathbf{L}\mathbf{F}$	Atom Field Interaction	Under.	1 II Euro	1392
Ca + Lif	Atom Field Interaction	202 mm	Exp	1300
Ca + Lir	Atom Field Interaction	595 IIII Undef	Exp Th	1200
Ca + LiF	Atom Field Interaction			1392
Cr + Lir	Atom Field Interaction	2500-50,000 K	1 n E	1378
Mn + LiF	Atom Field Interaction	120 ev	Exp	1394
$\mathbf{Fe}^{\dagger} + \mathbf{LiF}$	Atom Field Interaction	900 A	Th	1377
Ga + LiF	Atom Field Interaction	250,000-2,000 A	Th	1356
Ge + LiF	Atom Field Interaction	Undef. $5 \cdot 10^{12}$ $2 \cdot 10^{4}$ W/ $2$	Th	1392
$Br^{-} + LiF$	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	Th	1374
Kr + LiF	Atom Field Interaction	$5x10^{12} - 2x10^{4} \text{ W/cm}^{2}$	Th	1374
Kr + LiF	Atom Field Interaction	270 nm	Exp	1380
Kr + LiF	Atom Field Interaction	Undef.	Th	1392
Rb + K + LiF	Atom Field Interaction	$10^{-9} - 10^{-3}$ K	Th	1312
Rb + Rb + LiF	Atom Field Interaction	$10^{-9} - 10^{-3}$ K	Th	1312
Rb + LiF	Atom Field Interaction	Undef.	Th	1315
$Rb^* + LiF$	Atom Field Interaction	Undef.	Th	1315
Rb + Rb + LiF	Atom Field Interaction	300 K	Exp	1344
Tc + LiF	Atom Field Interaction	Undef.	Th	1392
$Cd^{2+} + LiF$	Atom Field Interaction	$5000-60,000 { m K}$	$\mathrm{Th}$	1351
Cd + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$	1389
In + In + LiF	Atom Field Interaction	950 K	$\operatorname{Exp}$	1395
$I^- + LiF$	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	$\mathrm{Th}$	1374
Xe + LiF	Atom Field Interaction	$4x10^{13} - 1.3x10^{14} \text{ w/}cm^2$	E/T	1316
Xe + LiF	Atom Field Interaction	Undef.	E/T	1367
Xe + LiF	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	$\mathrm{Th}$	1374
Xe + LiF	Atom Field Interaction	$10^{16} - 10^{18} \text{ W}/cm^2$	$\operatorname{Exp}$	1385
Xe + LiF	Atom Field Interaction	790  nm	Exp	1387
${ m Xe^+}+{ m LiF}$	Atom Field Interaction	790  nm	Exp	1387
Cs + Cs + LiF	Atom Field Interaction	$100~\mu$ k	$\mathrm{Th}$	1310
Cs + Cs + LiF	Atom Field Interaction	0-20 mT	E/T	1357
$\mathrm{Cs^-} + \mathrm{LiF}$	Atom Field Interaction	0-0.04  eV	$\mathrm{Th}$	1362
Cs + LiF	Atom Field Interaction	Undef.	Exp	1370

Ba + LiF	Atom Field Interaction
$\mathbf{h} u + \mathbf{H}^- + \mathbf{LiF}$	Atom Field Interaction
$h\nu + H + LiF$	Atom Field Interaction
e + H + LiF	Atom Field Interaction
$\mathbf{e} + \mathbf{CO}_2 + \mathbf{LiF}$	Atom Field Interaction
$ m e + He^+ + LiF$	Atom Field Interaction
e + H + LiF	Atom Field Interaction
e + A + LiF	Atom Field Interaction
e + H + LiF	Atom Field Interaction
e + H + LiF	Atom Field Interaction
$ m e + Ba^+ + LiF$	Atom Field Interaction
$\mathbf{H}_{2}^{+} + \mathbf{LiF}$	Atom Field Interaction
$\mathbf{H}_{2}^{+} + \mathbf{LiF}$	Atom Field Interaction
$\mathbf{H}_{2}^{+} + \mathbf{LiF}$	Atom Field Interaction
${ m H_2}^+ + { m LiF}$	Atom Field Interaction
$H_2 + LiF$	Atom Field Interaction
$H_2O + LiF$	Atom Field Interaction
$N_2 + LiF$	Atom Field Interaction
$N_2 + LiF$	Atom Field Interaction
$N_2 + LiF$	Atom Field Interaction
NO + LiF	Atom Field Interaction
$O_2 + LiF$	Atom Field Interaction
$O_2 + LiF$	Atom Field Interaction
$O_2 + LiF$	Atom Field Interaction
$\mathbf{F}_2 + \mathbf{LiF}$	Atom Field Interaction
OH + OH + LiF	Atom Field Interaction
$C_3H_8 + LiF$	Atom Field Interaction
$CH_3F + CH_3F + LiF$	Atom Field Interaction
$CH_3OH + LiF$	Atom Field Interaction
LiCl + LiF	Atom Field Interaction
$CH_3OD + LiF$	Atom Field Interaction
$e + He^+ Z = ?-? + LiB$	FAtom Field Interaction

Undef.	Exp	1396
Undef.	$\mathrm{Th}^{-}$	1322
20  keV	$\mathrm{Th}$	1348
4-16 K	$\mathrm{Th}$	1309
1-8 eV	$\mathrm{Th}$	1328
2-30 excitation threshold units	$\mathrm{Th}$	1336
575-1350  eV	$\mathrm{Th}$	1363
1.01-5 $\gamma$	$\mathrm{Th}$	1381
1000 eV	$\mathrm{Th}$	1382
150-500  eV	$\mathrm{Th}$	1399
0-31 V/cm	Exp	1400
$10^9 - 10^{13} \text{ G}$	E/T	1317
$10^4 - 10^6 \text{ T}$	Th	1331
$10^{10} - 10^{14}$ gauss	$\mathrm{Th}$	1335
800-1200 nm	$\mathrm{Th}$	1350
Undef.	$\mathrm{Th}$	1397
1-15 keV/u	E/T	1373
$4x10^{13} - 1.3x10^{14} \text{ w/}cm^2$	E/T	1316
Undef.	Th	1332
$10^{14} - 10^{16} \text{ W/} cm^2$	Exp	1391
530-536  eV	$\mathrm{Th}$	1383
$4x10^{13} - 1.3x10^{14} \text{ w/}cm^2$	E/T	1316
Undef.	E/T	1367
$1-5.6 \ 10^{14} \ \mathrm{W}/cm^2$	Th	1384
$4x10^{13} - 1.3x10^{14} \text{ w/}cm^2$	E/T	1316
1 mK	Th	1393
800 nm	Exp	1361
0-17,000 V/cm	E/T	1343
10.4-11.2 µ m	Exp	1330
Undef.	$\mathrm{Th}$	1314
$10.4\text{-}11.2 \ \mu \ \mathrm{m}$	Exp	1330
2-30 excitation threshold units	$\mathrm{Th}$	1336

## Chapter 3

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	$egin{array}{llllllllllllllllllllllllllllllllllll$	Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths	E/T E/T E/T E/T E/T
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	${f Ce}^{9+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
34.	C. Jupen, P. Bengtsson, L. <b>The</b> 2s ² 2p ³ 3s, 3p and 3c Phys. Scr. 64, 329-332 (200	Engstroem, A. E. Livingston <b>I Configurations in Nine Times Ionized Chlorine, Cl X</b> 91)	
	$\mathbf{Cl}^{9+}$	Energy Levels, Wavelengths	E/T
35.	H. H. Hacker, R. Burhenn, Bindemann, R. Brakel, G. O. M. Endler, K. Engelhardt, Giannone, P. Grigull, G. Gr M. Hirsch, J. Hofner, F. Ho Kick, J. Kisslinger, S. Klose H. Maassberg, N. Marushch M. G. Pacco-Duechs, F. P. Rust, N. J. Saffert, A. Salat E. Speth, R. Suess, H. Tho H. Wobig, E. Wuersching, I Spectra of Highly Jonize	K. Kondo, M. Anton, D. Assmus, S. Baeumel, C. Beidler, T. Cattanei, A. Dinklage, A. Dodhy, D. Dorst, H. Ehmler, A. Elsner, V. Erckmann, Y. Feng, C. Fuchs, F. Gadelmeier, J. Geiger, L. uenwald, O. Grulke, E. Harmeyer, H. J. Hartfuss, F. Herrnegger, llmann, E. Holzhauer, Y. Igitkhanov, R. Jaenicke, F. Karger, M. e, J. Knauer, H. Kroiss, G. Kuehner, A. Kus, H. Laqua, R. Liu, nenko, K. McCormick, G. Michel, F. Noke, W. R. Ott, M. Otte, Penningsfeld, E. Polunovsky, F. Probst, F. Purps, N. Ruhs, N., J. Sallander, F. Sardei, F. Schneider, M. Schubert, I. Sidorenko, msen, F. Volpe, F. Wagner, A. Weller, C. Wendland, A. Werner, D. Zimmermann	

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 $Xe^{18+-26+}$ 

Energy Levels, Wavelengths

 $\mathrm{E}/\mathrm{T}$ 

36.	L. Dolk, G. M. Wa <b>The Presence of</b> Astron. Astrophys	hlgren, H. Lundberg, Z. S. Li, U. Litzen, S. Ivarsson, I. Ilyin, S. Hubrig Nd and Pr in HgMn Stars . 385, 111-130 (2002)	
	$\mathbf{Pr}^{2+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
37.	N. Jaritz, H. Jaege <b>Investigation of</b> Eur. Phys. J. D 18	er, L. Windholz <b>the Hyperfine Structure of Ta I lines (VI)</b> 8, 267-276 (2002)	
	Та	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
38.	B. Furmann, D. St Hyperfine-Struc Praseodymium Eur. Phys. J. D 1'	efanska, E. Stachowska, J. Ruczkowski, J. Dembczynski ture Measurements and New Levels Evaluation in Singly Ionized 7, 275-284 (2001)	
	$\mathbf{Pr}^+$	Energy Levels, Wavelengths	E/T
39.	M. Gallardo, F. Br Extended Analy Eur. Phys. J. D 14	redice, M. Raineri, A. G. Trigueiros, J. G. Reyna Almandos sis of the Six-times Ionized Xenon, Xe VII 5, 307-314 (2001)	ŗ
	$\mathbf{Xe}^{6+}$	Energy Levels, Wavelengths	$\mathrm{E/T}$
40.	<ul><li>P. Beiersdorfer, S.</li><li>C. L. Harris, R. S.</li><li>Hyperfine Struc</li><li>Phys. Rev. A 64, 6</li></ul>	B. Utter, K. L. Wong, J. R. Crespo Lopez-Urrutia, J. A. Britten, H. Chen, Thoe, D. B. Thorn, E. Traebert <b>ture of Hydrogenlike Thallium Isotopes</b> 032506 (2001)	
	$\mathbf{Tl}^{80+}$	Energy Levels, Wavelengths	$\mathrm{E/T}$
41.	M. Redshaw, E. G Measurement of Silicon Phys. Rev. Lett. 8	. Myers <b>7 the 1s2s</b> ¹ <b>S</b> ₀ <b>-1s2p</b> ³ <b>P</b> ₁ Intercombination Interval in Helium-like 88, 23002 (2002)	
	${f Si}^{12+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
42.	F. Brandi, W. Hog <b>High-Resolution</b> of Krypton J. Phys. B 35, 107	ervorst, W. Ubachs Vacuum-Ultraviolet and Ultraviolet Photoionization Spectroscopy 1-1084 (2002)	
	Kr	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
43.	C. Froese Fischer, Magnetic-Dipole Highly Charged J. Phys. B 34, L76	S. Fritzsche e Transitions between the Lowest $3d^4 J = 2-3$ Transitions in Titanium-like Ions 7-L772 (2001)	
	$egin{array}{l} {f Xe}^{32+} \ {f Ba}^{34+} \ {f Nd}^{38+} \ {f Gd}^{42+} \ {f Yb}^{48+} \ {f Au}^{57+} \ {f Bi}^{61+} \end{array}$	Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths	E/T E/T E/T E/T E/T E/T E/T

44.	G. P. Gupta, A. Z. Msezand Fine-Structure Energy I J. Phys. B 34, 4217-4230 (2	e Levels and Lifetimes in Al-like Iron and Nickel 2001)	
	$\mathbf{Fe}^{13+}$ $\mathbf{Ni}^{15+}$	Energy Levels, Wavelengths Energy Levels, Wavelengths	${ m E/T}$ ${ m E/T}$
45.	M. R. Tarbutt, R. Barnsley Wavelength Measureme Lines of Helium-like Arg J. Phys. B 34, 3979-3991 (2)	, N. J. Peacock, J. D. Silver ents of the Satellite Transitions to the $n = 2$ Resonance gon 2001)	
	$\mathbf{Ar}^{15+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
46.	A. Neogi, E. T. Kennedy, J O'Sullivan Vacuum-Ultraviolet Abs Plasma J. Phys. B 34, L651-L656 (	P. Mosnier, P. van Kampen, J. T. Costello, C. McGuinness, G. sorption Spectrum of the Rb ⁺ Ion in a Laser-Generated 2001)	
	${f Rb}^+$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
47.	<ul> <li>C. Jupen, E. Traebert</li> <li><b>The 2p⁴3s, 3p and 3d co</b></li> <li>J. Phys. B 34, 3053-3061 (2)</li> </ul>	2001)	
	$\mathbf{K}^{10+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
48.	E. Biemont, H. P. Garnir, Z Wyart, Z. G. Zhang Experimental and Theo diative Lifetimes in Yb J. Phys. B 34, 1869-1876 (2	Z. S. Li, V. Lokhnygin, P. Palmeri, P. Quinet, S. Svanberg, J. F. oretical Energy Levels, Transition Probabilities and Ra- III 2001)	
	$\mathbf{Y}\mathbf{b}^{2+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
49.	R. K. Chaudhuri, P. K. Par Ionization Potentials of I Based Linear Response J. Phys. B 33, 5129-5138 (2	nda, H. Merlitz, B. P. Das, U. S. Mahapatra, D. Mukherjee Beryllium-like Ions from the Relativistic Coupled-Cluster- Theory 2000)	
	${f P}^{11+} {f Ca}^{16+} {f Ni}^{24+} {f Zn}^{26+} {f Cs}^{51+}$	Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths Energy Levels, Wavelengths	E/T E/T E/T E/T E/T
50.	V. Philipsen, J. Bastiaansen Even-Parity Auto-Ioniz Ionization Spectroscopy Spectrochimica Acta, Part	n, P. Lievens, E. Vandeweert, R. E. Silverans <b>ing States of Iridium I Observed by Resonance Laser</b> B 57, 95-107 (2002)	
	Ir	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
51.	P. Beiersdorfer, G. V. Brow Multiparameter Data A Rev. Sci. Instrum. 72-1, 50	rn, L. Hildebrandt, K. L. Wong, R. Ali cquisition System for Spectroscopy 98-512 (2001)	

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<ul> <li>53. F. Callegari, M. Gallardo, M. Raineri, A. G. Trigueiros, J. G. Reyna Almandos Spectral Analysis of the 4d⁹5d and 4d⁹5f Configurations in Octuple Ionization of Xenon, Xe IX</li> <li>J. Quant. Spectrose. Radiat. Transfer 73, 13-22 (2002)</li> <li>Xe⁸⁺ Energy Levels, Wavelengths</li> <li>54. A. G. Trigueiros, F. Callegari, N. Mansur, G. H. Cavalcanti, A. J. Mania, M. Gallardo, J. G. Reyna Almandos</li> <li>3d² Configuration in Six-times-Ionized Argon, Ar VII</li> <li>J. Opt. Soc. Am. B 18-11, 1718-1721 (2001)</li> <li>Ar⁶⁺ Energy Levels, Wavelengths</li> <li>55. G. I. Tachiev, C. Froese Fischer Breit-Pauli Energy Levels and Transitions Rates for Nitrogen-like and Oxygen- like Sequences</li> <li>Astron. Astrophys. 385, 716-723 (2002)</li> <li>N Z= 7-17 Energy Levels, Wavelengths</li> <li>O Z= 8-20 Energy Levels, Wavelengths</li> <li>56. J. Lu, CJ. Dai, YF. Xu, SB. Li Perturbed 6snd ^{1,2}D₂ Rydberg Series of Neutral Barium Chin. Phys. Lett. 18-9, 1192 (2001)</li> <li>Ba Energy Levels, Wavelengths</li> <li>57. M. F. Gu, S. M. Kahn, D. W. Savin, E. Behar, P. Beiersdorfer, G. V. Brown, D. A. Liedahl, K. J. Reed</li> <li>Laboratory Measurements of Iron L-Shell Emission: 3-2 Transitions of Fe XXI- XXIV between 10.5 and 12.5 Å</li> <li>Astron. Astrophys. 563, 462-471 (2001)</li> <li>Fe²⁰⁺⁻²³⁺ Energy Levels, Wavelengths</li> <li>58. E. Charro, I. Martin Regularities along Spectral Series in Forbidden Transitions of Ti¹¹⁺ Astron. Astrophys. 373, 720-729 (2001)</li> <li>Ti¹¹⁺ Energy Levels, Wavelengths</li> <li>59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe Fine-Structure in 3d⁴ States of Highly Charged Ti-like Ions J. Chin. Chem. Soc. 48, 525-529 (2001)</li> <li>Ti Z= 51-83 Energy Levels, Wavelengths</li> </ul>		В	Energy Levels, Wavelengths	$\mathrm{E/T}$
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56. J. Lu, CJ. Dai, YF. Xu, SB. Li Perturbed 6snd ^{1,3} D ₂ Rydberg Series of Neutral Barium Chin. Phys. Lett. 18-9, 1192 (2001) Ba Energy Levels, Wavelengths 57. M. F. Gu, S. M. Kahn, D. W. Savin, E. Behar, P. Beiersdorfer, G. V. Brown, D. A. Liedahl, K. J. Reed Laboratory Measurements of Iron L-Shell Emission: $3 \rightarrow 2$ Transitions of Fe XXI- XXIV between 10.5 and 12.5 Å Astron. Astrophys. 563, 462-471 (2001) Fe ²⁰⁺⁻²³⁺ Energy Levels, Wavelengths 58. E. Charro, I. Martin Regularities along Spectral Series in Forbidden Transitions of Ti ¹¹⁺ Astron. Astrophys. 373, 720-729 (2001) Ti ¹¹⁺ Energy Levels, Wavelengths 59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe Fine-Structure in 3d ⁴ States of Highly Charged Ti-like Ions J. Chin. Chem. Soc. 48, 525-529 (2001) Ti Z= 51-83 Energy Levels, Wavelengths		N Z= 7-17 O Z= 8-20	Energy Levels, Wavelengths Energy Levels, Wavelengths	E/T $E/T$
Ba       Energy Levels, Wavelengths         57.       M. F. Gu, S. M. Kahn, D. W. Savin, E. Behar, P. Beiersdorfer, G. V. Brown, D. A. Liedahl, K. J. Reed         Laboratory Measurement Sof Iron L-Shell Emission: 3→2 Transitions of Fe XXII         Astron. Astrophys. 563, 462-471 (2001)         Fe ²⁰⁺ —23+       Energy Levels, Wavelengths         58.       E. Charro, I. Martin         Regularities along Species in Forbidden Transitions of Ti ¹¹⁺ Astron. Astrophys. 373, 720-729 (2001)         Ti ¹¹⁺ Energy Levels, Wavelengths         59.       D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe         Fine-Structure in 3d ⁴ States of Highly Charged Ti-like Ions         J. Chin. Chem. Soc. 48, 52-529 (2001)         Ti Z= 51-83       Energy Levels, Wavelengths	56.	J. Lu, CJ. Dai, YF. Xu, S <b>Perturbed 6snd</b> $^{1,3}D_2$ <b>Ry</b> Chin. Phys. Lett. 18-9, 1192	SB. Li <b>dberg Series of Neutral Barium</b> 2 (2001)	
<ul> <li>57. M. F. Gu, S. M. Kahn, D. W. Savin, E. Behar, P. Beiersdorfer, G. V. Brown, D. A. Liedahl, K. J. Reed</li> <li>Laboratory Measurements of Iron L-Shell Emission: 3→2 Transitions of Fe XXI-XXIV between 10.5 and 12.5 Å</li> <li>Astron. Astrophys. 563, 462-471 (2001)</li> <li>Fe²⁰⁺⁻²³⁺ Energy Levels, Wavelengths</li> <li>58. E. Charro, I. Martin</li> <li>Regularities along Spectral Series in Forbidden Transitions of Ti¹¹⁺</li> <li>Astron. Astrophys. 373, 720-729 (2001)</li> <li>Ti¹¹⁺ Energy Levels, Wavelengths</li> <li>59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe</li> <li>Fine-Structure in 3d⁴ States of Highly Charged Ti-like Ions</li> <li>J. Chin. Chem. Soc. 48, 525-529 (2001)</li> <li>Ti Z= 51-83 Energy Levels, Wavelengths</li> </ul>		Ba	Energy Levels, Wavelengths	E/T
$Fe^{20+-23+}$ Energy Levels, Wavelengths58. E. Charro, I. Martin Regularities along Spectral Series in Forbidden Transitions of Ti ¹¹⁺ Astron. Astrophys. 373, 720-729 (2001) $Ti^{11+}$ Energy Levels, Wavelengths59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe Fine-Structure in 3d4 States of Highly Charged Ti-like Ions J. Chin. Chem. Soc. 48, 525-529 (2001)Ti Z= 51-83Energy Levels, Wavelengths	57.	M. F. Gu, S. M. Kahn, D. W K. J. Reed Laboratory Measuremen XXIV between 10.5 and Astron. Astrophys. 563, 462	<ul> <li>V. Savin, E. Behar, P. Beiersdorfer, G. V. Brown, D. A. Liedahl,</li> <li>ts of Iron L-Shell Emission: 3→2 Transitions of Fe XXI- 12.5 Å</li> <li>2-471 (2001)</li> </ul>	
<ul> <li>58. E. Charro, I. Martin Regularities along Spectral Series in Forbidden Transitions of Ti¹¹⁺ Astron. Astrophys. 373, 720-729 (2001) Ti¹¹⁺ Energy Levels, Wavelengths</li> <li>59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe Fine-Structure in 3d⁴ States of Highly Charged Ti-like Ions J. Chin. Chem. Soc. 48, 525-529 (2001) Ti Z= 51-83 Energy Levels, Wavelengths</li> </ul>		$Fe^{20+-23+}$	Energy Levels, Wavelengths	$\mathrm{E/T}$
Ti ¹¹⁺ Energy Levels, Wavelengths59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe Fine-Structure in 3d ⁴ States of Highly Charged Ti-like Ions J. Chin. Chem. Soc. 48, 525-529 (2001)Ti Z= 51-83Energy Levels, Wavelengths	58.	E. Charro, I. Martin <b>Regularities along Spect</b> Astron. Astrophys. 373, 720	ral Series in Forbidden Transitions of Ti ¹¹⁺ -729 (2001)	
<ul> <li>59. D. Kato, XM. Tong, H. Watanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. Watanabe</li> <li>Fine-Structure in 3d⁴ States of Highly Charged Ti-like Ions</li> <li>J. Chin. Chem. Soc. 48, 525-529 (2001)</li> <li>Ti Z= 51-83 Energy Levels, Wavelengths</li> </ul>		${f Ti}^{11+}$	Energy Levels, Wavelengths	$\mathrm{E/T}$
Ti Z= 51-83 Energy Levels, Wavelengths	59.	D. Kato, XM. Tong, H. W Watanabe <b>Fine-Structure in 3d⁴ St</b> J. Chin. Chem. Soc. 48, 525	Vatanabe, T. Fukami, T. Kinugawa, C. Yamada, S. Ohtani, T. ates of Highly Charged Ti-like Ions 5-529 (2001)	
		Ti Z= 51-83	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$

60.	I. Martinson, C. Jupen
	Atomic Structure Studies Using Tokamak Plasmas
	J. Chin. Chem. Soc. 48, 469-475 (2001)

61.	E. Traebert, P. Beiersdorfer, K. B. Fournier, S. B. Utter, K. L. Wong Soft-X-Ray Spectra of Highly Charged Au Ions in an Electron-Beam Ion Trap Can. J. Phys. 79-2/3, 153-162 (2001)		
	$Au^{42+-50+}$	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
62.	<ol> <li>J. Yi, H. Park, J. Lee Investigation of Even Parity Autoionizing States of Ytterbium Atoms by Two- Photon Ionization Spectroscopy J. Korean Phys. Soc. 39-5, 916-920 (2001)     </li> </ol>		
	Yb	Energy Levels, Wavelengths	$\mathrm{E}/\mathrm{T}$
63.	L. Natarajan <b>Radiative transitions fro</b> J. Quant. Spectrosc. Radiat	m singly ionized oxygen . Transfer 97, 267-277 (2006)	
	$O^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
64.	C. Froese Fischer Some improved transition probabilities for neutral carbon J. Phys. B 39, 2159-2167 (2006)		
	С	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
65.	5. G. Correge, A. Hibbert <b>The oscillator strengths of Fe II</b> $\lambda\lambda$ <b>2507, 2509</b> Astrophys. J. 627, L157-L159 (2005)		
	${ m Fe}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
66. R. M. Schectman, S. R. Federman, M. Brown, S. Cheng, M. C. Fritts, R. E. Irving, N. D. Gibson Oscillator strengths for ultraviolet transitions in Cl II and Cl III Astrophys. J. 621, 1159-1162 (2005)			
	${f Cl^+} {f Cl^{2+}}$	Trans. prob., Oscill. Strengths Trans. prob., Oscill. Strengths	${ m E/T} { m E/T}$
67.	K. M. Aggarwal, F. P. Keen Electron impact excitation Astron. Astrophys. 441, 831	an on of Ar XVII -837 (2005)	
	$\mathbf{Ar}^{16+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
68.	S. N. Nahar, A. K. Pradhan Atomic data from the Ire for Fe IV including fine s Astron. Astrophys. 437, 345	on Project. LIX. New radiative transition probabilities structure -354 (2005)	
	$\mathbf{Fe}^{3+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$

69.	K. M. Aggarwal, F. P. Keenan, S. Nakazaki Energy levels and radiative rates for transitions in Ar XIII, Ar XIV and Ar XV Astron. Astrophys. 436, 1141-1150 (2005)		
	$f Ar^{12+} Ar^{13+}$	Trans. prob., Oscill. Strengths Trans. prob., Oscill. Strengths	E/T E/T
70.	M. Melendez, M. A. Baut Atomic data from the 1 strengths within the 3 Astron. Astrophys. 436, 1	ista Iron Project. LVII. Radiative transition rates and collision d ⁷ configuration of Ni IV 1123-1130 (2005)	
	$Ni^{3+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
71.	E. Landi <b>Radiative transition p</b> Astron. Astrophys. 434, 3	robabilities in the O-like sequence 365-376 (2005)	
	O Z= 11-30	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
72.	V. Jonauskas, P. Bogdand Ferland, R. Kisielius, P. A <b>Energy levels and tran</b> Astron. Astrophys. 433, 7	ovich, F. P. Keenan, M. E. Foord, R. F. Heeter, S. J. Rose, G. J. A. M. van Hoof, P. H. Norrington asition probabilities for nitrogen-like Fe XX 745-750 (2005)	
	$\mathbf{Fe}^{19+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
73.	G. Del Zanna, H. E. Masc <b>Benchmarking atomic</b> Astron. Astrophys. 433, 7	on data for astrophysics: Fe XII 731-744 (2005)	
	$\mathbf{Fe}^{11+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
74.	K. M. Aggarwal, F. P. Ke Electron impact excita Astron. Astrophys. 432, 1	eenan, S. J. Rose ation of Al XIII: A relativistic approach 1151-1155 (2005)	
	$\mathbf{Al}^{12+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
75.	<ul> <li>A. Toner, A. Hibbert</li> <li>Oscillator strengths of transitions in Fe III</li> <li>Mon. Not. R. Astron. Soc. 364, 683-686 (2005)</li> </ul>		
	$\mathbf{Fe}^{2+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
76.	P. Palmeri, P. Quinet, E. <b>Transition probabilitie</b> Mon. Not. R. Astron. So	Biemont, H. L. Xu, S. Svanberg s and lifetimes in singly ionized rhenium c. 362, 1348-1352 (2005)	
	${f Re}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
77.	JL. Zeng, G. Y. Liang, C Electron impact excita Mon. Not. R. Astron. So	G. Zhao, J. R. Shi ation of Ca-like iron Fe ⁶⁺ c. 357, 440-448 (2005)	
	${f Fe}^{6+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$

78.	L. C. Owono Owono, M. G. K. Njock, M. L. C. Owona Angue Core polarization corrections to dipole transitions for one valence electron sys- tems in the quantum-defect approximation Phys. Lett. A 339, 343-351 (2005)		
	Cu Z= 29-34	Trans. prob., Oscill. Strengths	E/T
	$\mathbf{Kr}^{7+}$	Trans. prob., Oscill. Strengths	E/T
	$\mathbf{Mo}^{13+}$	Trans. prob., Oscill. Strengths	$\dot{E/T}$
79.	Y. Zou, R. Hutton, D. Feili, <b>Precision lifetime measu</b> <b>spectroscopy</b> Nucl. Instrum. Methods Ph	C. Neacsu, X. Ma, KH. Schartner, P. H. Mokler rement of the 2p ² P _{3/2} level for Li-like Ni by beam-foil ys. Res. B 235, 192-196 (2005)	
	${f Ni}^{25+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
80.	P. Bogdanovich, R. Karpusk <b>The theoretical study of</b> Nucl. Instrum. Methods Ph	iene <b>spectral characteristics of Ar X</b> ys. Res. B 235, 174-179 (2005)	
	${f Ar}^{9+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
81.	A. Hibbert, G. Correge <b>Transitions in Fe II</b> Phys. Scr. T119, 61-66 (200	5)	
	${ m Fe}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
82.	J. Musielok J-file sum rule tests for comparison of measured Acta Phys. Pol. A 108, 449-	the 3s-3p transition array in singly ionized nitrogen- and calculated data 456~(2005)	
	$\mathbf{N}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
83.	E. Charro, I. Martin <b>Complementary investig</b> Int. J. Quantum Chem. 104	ations using the MCDF and RQDO methods , 446-457 (2005)	
	Be 7— 6-36	Trans prob Oscill Strengths	E/T
	Ge Z = 37-42	Trans. prob., Oscill. Strengths	E/T
	As Z= 37-42	Trans. prob., Oscill. Strengths	É/T
	${f Br}^{2+}$	Trans. prob., Oscill. Strengths	E/T
84.	M. Gallardo, M. Raineri, M. Giuliani, C. Lagorio, S. Padilla, R. Sarmiento, J. G. Reyna Almandos New study on the Xe VIII spectrum		
	J. Quant. Spectrosc. Radiat	5. Transfer 95, 365-372 (2005)	
	$\mathbf{Xe}^{7+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
85.	Y. G. Mulye, L. Natarajan <b>Relativistic transition ra</b> J. Quant. Spectrosc. Radiat	tes for dipole lines of multiply ionized argon 7. Transfer 94, 477-489 (2005)	
	$Ar^{10+-17+}$	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$

86.	J. L. Zeng, J. Y. Zhong, G. Zhao, J. M. Yuan Electron impact collision strengths and oscillator strengths for Ni-like Nd, Sm, Eu, Gd, Ta, and W ions At. Data Nucl. Data Tables 90, 259-317 (2005)		
	Ni Z= 62-64 Ni Z= 73-74 Nd ³²⁺	Trans. prob., Oscill. Strengths Trans. prob., Oscill. Strengths Trans. prob., Oscill. Strengths	E/T E/T E/T
87.	I. Murakami, U. I. Safronova, A. A. Vasilyev, T. Kato Excitation energies, radiative and autoionization rates, dielectronic satellite lines, and dielectronic recombination rates to excited states for B-like oxygen At. Data Nucl. Data Tables 90, 1-74 (2005)		
	$\mathbf{O}^{3+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
88.	E. Landi, A. K. Bhatia <b>Atomic data and spectral line intensities for Ne III</b> At. Data Nucl. Data Tables 89, 195-265 (2005)		
	${f Ne}^{2+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
89.	<ol> <li>W. Eissner, E. Landi, A. K. Bhatia</li> <li>Atomic data and spectral line intensities for Ar XII</li> <li>At. Data Nucl. Data Tables 89, 139-194 (2005)</li> </ol>		
	$\mathbf{Ar}^{11+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
90.	90. J. Y. Zhong, J. Zhang, J. L. Zeng, G. Zhao, M. F. Gu Energy levels, transition probabilities, and electron impact excitations for possi- ble x-ray line emissions of Ni-like tantalum ions At. Data Nucl. Data Tables 89, 101-138 (2005)		
	${f Ta}^{45+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
91.	G. P. Gupta, A. Z. Msezane Large scale CIV3 calculat and lifetimes in Fe XIV a At. Data Nucl. Data Tables	tions of fine-structure energy levels, oscillator strengths, and Ni XVI 89, 1-44 (2005)	
	$\mathbf{Fe}^{13+}$ $\mathbf{Ni}^{15+}$	Trans. prob., Oscill. Strengths Trans. prob., Oscill. Strengths	E/T $E/T$
92.	U. I. Safronova, T. E. Cowan, W. R. Johnson Relativistic many-body calculations of excitation energies, line strengths, tran- sition rates, and oscillator strengths in Pd-like ions Can. J. Phys. 83, 813-828 (2005)		
	Pd Z= 49-100	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
93.	C. Z. Dong, S. Fritzsche <b>Relativistic, relaxation</b> , a Phys. Rev. A 72, 012507 (20	and correlation effects in spectra of Cu II 005)	
	$\mathbf{Cu}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
94.	M. J. Vilkas, Y. Ishikawa, E. Relativistic many-body p. Phys. Scr. 72, 181-199 (2005)	Traebert perturbation calculations of boron-like silicon, Si X	

	${f Si}^{9+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
95.	N. Ben Nessib, H. Elabidi, M Radiative and collisional Phys. Scr. 72, 23-30 (2005)	A. Cornille, J. Dubau atomic data for neon-like silicon	
	${f Si}^{4+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
96.	O. Zatsarinny, K. Bartschat Electron-impact excitation Phys. Rev. A 71, 042702 (2010)	L. Bandurina, V. Gedeon on of carbon 005)	
	С	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
97.	C. Froese Fischer <b>Breit-Pauli lifetimes and</b> Phys. Rev. A 71, 042506 (20	transition probabilities for Si I 005)	
	Si	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
98.	D. R. Beck Ab initio electric dipole f values for Fe II $(3d^64s + 3d^7) J=9/2 \rightarrow 3d^64p J=9/2$ transitions Phys. Scr. 71, 447-452 (2005)		
	${f Fe}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
99.	M. B. Das, S. Karmakar <b>Radiative lifetimes of son</b> Phys. Scr. 71, 266-267 (2009	me excited states of neutral argon $5$	
	Ar	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
100.	K. M. Aggarwal, F. P. Keen Radiative rates, collision in Mo XXXIV Phys. Scr. 71, 251-260 (2005)	an strengths and effective collision strengths for transitions 5)	
	$Mo^{33+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
101.	M. B. Das, S. Karmakar Lifetime measurements figuration of Xe I Phys. Scr. 71, 170-171 (2005)	of some levels belonging to the $5p^5nd$ (n=6,7,8,9) con-	
	Xe	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
102.	E. Biemont, P. Quinet, C. J Transition probabilities i Phys. Scr. 71, 163-169 (2005)	. Zeippen n Xe V 5)	
	$\mathbf{X}\mathbf{e}^{4+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
103.	M. Mohan, A. K. Singh, A. Fine-structure energy le chromium Pramana 65, 75-84 (2005)	K. S. Jha, N. Singh evels, oscillator strengths and lifetimes of chlorine-like	
	${f Cr}^{7+}$	Trans. prob., Oscill. Strengths	E/T
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104.	J. Y. Zhong, J. L. Zeng, Electron impact excit Publ. Astron. Soc. Jpn.	G. Zhao, M. A. Bari, J. Zhang ation of Ti XVIII 57, 835-840 (2005)	
	${f Ti}^{17+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
105.	C. Chen, ZW. Wang Oscillator strengths is sequence from Na IX Commun. Theor. Phys.	for 2s ² S - 2p ² P transitions of the lithium isoelectronic to Ca XVIII 43, 305-308 (2005)	
	Li Z= 11-20	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
106.	P. Bogdanovich, R. Karp The theoretical study Ar X J. Phys. B 38, 1557-1568	buskiene v of the overlapping configurations $2s2p^53\ell$ and $2s^22p^44\ell$ in 8 (2005)	
	${f Ar}^{9+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
107.	<ul> <li>B. Saha, S. Fritzsche</li> <li>M1 and E2 transition</li> <li>J. Phys. B 38, 1161-1171</li> </ul>	<b>hs in Ar II</b> 1 (2005)	
	$\mathbf{Ar}^+$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
108.	M. Huang, M. Andersson Multiconfiguration Disilicon-like ions J. Phys. B 38, 503-508 (2010)	n, T. Brage, R. Hutton, P. Joensson, C. Chongyang, Y. Zou irac-Hartree-Fock calculations for intercombination lines in 2005)	
	Si Z= 40-42	Trans. prob., Oscill. Strengths	E/T
	$\mathbf{Zn}^{16+}$	Trans. prob., Oscill. Strengths	É/T
	$\mathbf{Kr}^{22+}$	Trans. prob., Oscill. Strengths	E/T
	$\mathbf{R}\mathbf{h}^{31+}$	Trans. prob., Oscill. Strengths	E/T
	$Xe^{40+}$	Trans. prob., Oscill. Strengths	E/T
	Au	Irans. prod., Oscili. Strengths	E/1
109.	E. Biemont, V. Buchard, <b>Radiative lifetime and</b> Eur. Phys. J. D 33, 181-	, HP. Garnir, PH. Lefebvre, P. Quinet d oscillator strength determinations in Xe VI -191 (2005)	
	${f Xe}^{5+}$	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$
110.	M. B. Das, S. Karmakar <b>Radiative lifetimes of</b> Eur. Phys. J. D 32, 285-	some excited states of neutral xenon -288 (2005)	
	Xe	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$
111.	M. Zhang, BC. Gou Relativistic energy, os (n=2-6, m1-5) states Int. J. Mod. Phys. C 16	scillator strengths and transition rates of the $1s^22\ell n\ell$ ¹ S(m) for Be-like system 5, 951-968 (2005)	
	Be Z= 4-10	Trans. prob., Oscill. Strengths	$\mathrm{E}/\mathrm{T}$

112.	M. Zhang, BC. Gou Relativistic energy, fine structure and hyperfine structure of the low-lying excited states for Be-like system Chin. Phys. 14, 1554-1558 (2005)			
	Be Z= 4-10	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$	
113.	<ul><li>A. Mihailescu, V. Star</li><li>Complex atoms mo</li><li>J. Optoelectron. Adv.</li></ul>	ncalie odeling for plasma diagnostics Mater. 7, 2413-2420 (2005)		
	$\mathbf{W}^{18+}$	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$	
114.	J. R. Fuhr, W. L. Wie NIST Atomic Trans CRC Handbook of Ch	ese sition Probabilities nemistry and Physics, CRC Press, (2005)		
	н	Trans prob Oscill Strengths	E/T	
	He	Trans. prob., Oscill. Strengths	E/T	
	Be	Trans. prob., Oscill. Strengths	_/ _ E/T	
	$Be^+$	Trans. prob., Oscill. Strengths	E/T	
	В	Trans. prob., Oscill. Strengths	E/T	
	$C^{0+-4+}$	Trans. prob., Oscill. Strengths	É/T	
	$N^{0+-5+}$	Trans. prob., Oscill. Strengths	É/T	
	$O^{0+6+}$	Trans. prob., Oscill. Strengths	É/T	
	$\mathbf{F}$	Trans. prob., Oscill. Strengths	E/T	
	Ne	Trans. prob., Oscill. Strengths	E/T	
	${f Ne^+}$	Trans. prob., Oscill. Strengths	E/T	
	$\mathbf{Ne}^{4+}$	Trans. prob., Oscill. Strengths	E/T	
	${f Ne}^{6+}$	Trans. prob., Oscill. Strengths	E/T	
	${ m Ne}^{7+}$	Trans. prob., Oscill. Strengths	E/T	
	$Na^{0+-2+}$	Trans. prob., Oscill. Strengths	E/T	
	${f Na}^{4+}$	Trans. prob., Oscill. Strengths	E/T	
	$Na^{5+-8+}$	Trans. prob., Oscill. Strengths	E/T	
	$\mathbf{M}\mathbf{g}$	Trans. prob., Oscill. Strengths	E/T	
	${f Mg^+}$	Trans. prob., Oscill. Strengths	E/T	
	${f Mg}^{3+}$	Trans. prob., Oscill. Strengths	E/T	
	${f Mg}^{5+}$	Trans. prob., Oscill. Strengths	E/T	
	$Mg^{6+-10+}$	Trans. prob., Oscill. Strengths	E/T	
	$Al^{0+-2+}$	Trans. prob., Oscill. Strengths	E/T	
	$Al^{9+}$	Trans. prob., Oscill. Strengths	E/T	
	$Al^{10+}$	Trans. prob., Oscill. Strengths	E/T	
	$Si^{0+-11+}$	Trans. prob., Oscill. Strengths	E/T	
	$P^{0+-2+}$	Trans. prob., Oscill. Strengths	E/T	
	$S^{0+-7+}$	Trans. prob., Oscill. Strengths	E/T	
	$S^{10+}$	Trans. prob., Oscill. Strengths	E/T	
	$S^{11+-13+}$	Trans. prob., Oscill. Strengths	E/T	
	$CI^{0+-2+}$	Trans. prob., Oscill. Strengths	E/T	
	$\operatorname{Ar}^{5+}$	Trans. prob., Oscill. Strengths	E/T E/T	
	$Ar^{6+}$	Trans. prob., Oscill. Strengths	E/1 E/T	
	$Ar^{12+}$	Trans. prob., Oscill. Strengths	E/T E/T	
	Ar An13+15+	Trans. prob., Oscill. Strengths	E/ 1 E /T	
	Ar = -2+	Trans. prob., Oscill. Strengths	E/T	
	<b>N</b> [*] + <del>-</del> - + <b>1</b> /15+	Trans. prod., Oscill. Strengths	E/T	
	<b>N</b>  ' <b>1</b> /16+	Trans. prob., Oscill. Strengths	E/T	
	$n^{}$	Trans. prob., Oscill. Strengths	E/T	
	$\mathbf{U}\mathbf{a}^{\circ}$	Trans. prop., Oscill. Strengths	E/T	

$\mathbf{Ca}^{4+}$	Trans. prob., Oscill. Strengths	E/T
$Ca^{6+}$	Trans. prob., Oscill, Strengths	E/T
$Ca^{7+-11+}$	Trans. prob., Oscill, Strengths	E/T
$Ca^{14+}$	Trans. prob., Oscill. Strengths	—/ – E/T
$Ca^{16+}$	Trans. prob., Oscill. Strengths	E/T
Ca ¹⁷⁺	Trans prob Oscill Strengths	E/T
Sc	Trans prob Oscill Strengths	E/T
Sc ⁺	Trans prob Oscill Strengths	E/T
<b>Ti</b> ⁰⁺³⁺	Trans prob Oscill Strengths	E/T
Ti ⁷⁺	Trans. prob. Oscill Strengths	Б/Т Е/Т
$Ti^{8+-20+}$	Trans. prob. Oscill Strengths	Б/Т Е/Т
$V^{0+-3+}$	Trans. prob. Oscill Strengths	Б/Т Е/Т
Cr	Trans prob Oscill Strengths	E/T
Cr	Trans prob. Oscill Strengths	E/T
$\mathbf{Cr}^{4+}$	Trans. prob. Oscill Strengths	Б/Т Е/Т
$Cr^{5+}$	Trans. prob. Oscill Strengths	Е/Т Е/Т
$\mathbf{Cr}^{9+}$	Trans. prob. Oscill Strengths	Е/Т Е/Т
$Cr^{10+-22+}$	Trans. prob. Oscill Strengths	Б/Т Е/Т
Mn	Trans. prob. Oscill Strengths	Е/Т Е/Т
Mn ⁺	Trans. prob. Oscill Strongths	<u>Б/Т</u> Б/Т
Mn ⁵⁺	Trans. prob. Oscill Strengths	E/T
$F_{0}^{0+-2+}$	Trans. prob. Oscill Strongths	E/T
$\mathbf{Fe}^{6+}$	Trans. prob. Oscill Strongths	E/ I F/T
$\mathbf{Fe}^{7+}$	Trans. prob. Oscill Strongths	E/ I F/T
$\mathbf{Fe}^{9+}$	Trans. prob. Oscill Strengths	E/ 1 E/T
$re^{10+16+}$	Trans. prob. Oscill Strengths	E/ 1 F/T
$\mathbf{Fe}^{18+}$	Trans. prob. Oscill Strongths	E/ I F/T
$Fe^{19+-24+}$	Trans. prob. Oscill Strongths	E/ I F/T
re Co	Trans. prob. Oscill Strongths	D/ 1 F/Т
$C_0^+$	Trans. prob. Oscill Strongths	D/ 1 F/Т
$Ni^{0+-2+}$	Trans. prob. Oscill Strengths	Е/Т Е/Т
Ni ¹³⁺	Trans. prob. Oscill Strengths	Е/Т Е/Т
Ni ¹⁴⁺⁻¹⁸⁺	Trans. prob. Oscill Strengths	Б/Т Е/Т
Ni ²⁰⁺	Trans. prob. Oscill Strengths	Е/Т Е/Т
$Ni^{21+-26+}$	Trans. prob. Oscill Strengths	Е/Т Е/Т
Cu	Trans. prob. Oscill Strengths	Е/Т Е/Т
Cu ⁺	Trans. prob. Oscill Strengths	Б/Т Е/Т
Zn	Trans. prob. Oscill Strengths	Е/Т Е/Т
Zn Zn ⁺	Trans. prob. Oscill Strengths	Б/Т Е/Т
Ca	Trans. prob. Oscill Strengths	Е/Т Е/Т
Ga ⁺	Trans. prob. Oscill Strengths	Б/Т Е/Т
Ge	Trans. prob. Oscill Strengths	Б/Т Е/Т
Ge ⁺	Trans. prob. Oscill Strengths	Б/Т Е/Т
As	Trans prob Oscill Strengths	E/T
Br	Trans prob Oscill Strengths	E/T
Kr	Trans prob Oscill Strengths	E/T
Kr ⁺	Trans prob Oscill Strengths	E/T
Rb	Trans prob Oscill Strengths	E/T
Sr	Trans prob Oscill Strengths	E/T
$\mathbf{Sr}^+$	Trans, prob., Oscill, Strengths	E/T
Y	Trans, prob., Oscill, Strengths	E/T
$\mathbf{\tilde{Y}^{+}}$	Trans. prob., Oscill Strengths	E/T
Mo	Trans. prob., Oscill. Strengths	E/T
Rh	Trans. prob., Oscill. Strengths	E/T
Ag	Trans. prob., Oscill. Strengths	E/T
Cd	Trans. prob., Oscill. Strengths	E/T
$\tilde{Cd}^+$	Trans. prob., Oscill. Strengths	E/T E/T

In	Trans. prob., Oscill. Strengths	E/T
$\mathbf{In}^+$	Trans. prob., Oscill. Strengths	E/T
Sn	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Sn}^+$	Trans. prob., Oscill. Strengths	E/T
I	Trans. prob., Oscill. Strengths	E/T
Xe	Trans. prob., Oscill. Strengths	E/T
${f Xe^+}$	Trans. prob., Oscill. Strengths	E/T
Cs	Trans. prob., Oscill. Strengths	E/T
Ba	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Ba}^+$	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Pr}^+$	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Nd^{+}}$	Trans. prob., Oscill. Strengths	E/T
Eu	Trans. prob., Oscill. Strengths	E/T
Dy	Trans. prob., Oscill. Strengths	E/T
Er	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Tm}$	Trans. prob., Oscill. Strengths	E/T
Yb	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Yb^{+}}$	Trans. prob., Oscill. Strengths	E/T
Lu	Trans. prob., Oscill. Strengths	E/T
Та	Trans. prob., Oscill. Strengths	E/T
W	Trans. prob., Oscill. Strengths	E/T
Ir	Trans. prob., Oscill. Strengths	E/T
Au	Trans. prob., Oscill. Strengths	E/T
Hg	Trans. prob., Oscill. Strengths	E/T
Tl	Trans. prob., Oscill. Strengths	E/T
Pb	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Pb}^{50+}$	Trans. prob., Oscill. Strengths	E/T
Bi	Trans. prob., Oscill. Strengths	E/T
U	Trans. prob., Oscill. Strengths	E/T

115. J. Fan, N. W. Zheng

Oscillator strengths and transition probabilities for Mg-like ions Chem. Phys. Lett. 400, 273-278 (2004)

Mg Z= 15-18	Trans. prob., Oscill. Strengths	$\mathrm{E/T}$
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### 116. J. Mitroy, M. W. J. Bromley

**Properties of the triplet metastable states of the alkaline-earth-metal atoms** Phys. Rev. A 70, 052503 (2004)

$\mathbf{He}$	Trans. prob., Oscill. Strengths	E/T
Be	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Mg}$	Trans. prob., Oscill. Strengths	E/T
Ca	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Sr}$	Trans. prob., Oscill. Strengths	E/T

117. I. M. Savukov

Relativistic configuration-interaction perturbation-theory method with application to intercombination and allowed transitions of light Be-like ions Phys. Rev. A 70, 042502 (2004)

Be Z= 5-10	Trans. prob., Oscill. Strengths	E/T
$\mathbf{Fe}^{22+}$	Trans. prob., Oscill. Strengths	E/T

^{118.} K. McKeown, K. M. Aggarwal, F. P. Keenan, S. J. Rose Energy levels and radiative rates for Li-like Ar XVI and Fe XXIV Phys. Scr. 70, 295-303 (2004)

	$\mathbf{Ar}^{15+} \mathbf{Fe}^{23+}$	Trans. prob., Oscill. Strengths Trans. prob., Oscill. Strengths		E/T $E/T$
119.	K. M. Aggarwal, F. P. Keen Electron impact excitati Phys. Scr. 69, 176-188 (200	an on of Mo XXXIV 4)		
	$\mathrm{Mo}^{33+}$	Trans. prob., Oscill. Strengths		$\mathrm{E}/\mathrm{T}$
120.	M. J. Vilkas, Y. Ishikawa Relativistic multireferen of the phosphorus isoele J. Phys. B 37, 4673-4778 (2	ace many-body perturbation ctronic sequence 004)	theory calculations on ions	
	P Z= 26-32	Trans. prob., Oscill. Strengths		$\mathrm{E}/\mathrm{T}$
121.	F. O. Borges, G. H. Cavalca <b>Determination of plasma</b> Braz. J. Phys. 34, 1673-167	anti, A. G. Trigueiros a <b>temperature by a semi-emp</b> 6 (2004)	pirical method	
	Cu	Trans. prob., Oscill. Strengths		$\mathrm{E}/\mathrm{T}$
	3.2 Atomic and	Molecular Collisions	5	
	3.2.1 Photon Collis	ions		
122.	<ol> <li>M. Huttula, E. Kukk, S. Heinasmaki, M. Jurvansuu, S. Fritzsche, H. Aksela, S. Aksela Effects of the open-shell electronic structure in 4d photoionization and Auger decay of atomic Sn. Phys. Rev. A 69, 012702 (2004)</li> </ol>			
	$h\nu + Sn$	Photoionization	60.6  eV	$\mathrm{E}/\mathrm{T}$
123.	R. Sankari, S. Ricz, A. Kove	er, M. Jurvansuu, D. Varga, J. N	ikkinen, T. Ricsoka, H. Aksela,	
	Angular distribution of ergies. Phys. Rev. A 69, 012707 (2	Xe 5p spin-orbit components 004)	s at 100-200-eV photon en-	
	$h\nu + Xe$	Photoionization	$100-200 {\rm ~eV}$	Exp
124.	D. M. Lucas, A. Ramos, J. Webster, D. N. Stacey, A. M Isotope-selective photoic Phys. Rev. A 69, 012711 (2	P. Home, M. J. McDonnell, S. I. Steane onization for calcium ion trap 004)	Nakayama, JP. Stacey, S. C.	
	$h\nu + Ca$	Photoionization	389 nm	Exp
125.	V. I. Usachenko, V. A. Pazo Reexamination of high-e strong-field ATI model. Phys. Rev. A 69, 013406 (2	lzersky, J. K. McIver energy above-threshold ioniza 004)	ation (ATI): An alternative	
	$h u + H^-$	Photoionization	0.117-2 eV	Th
	$\mathbf{n} u + \mathbf{H}$ $\mathbf{h} u + \mathbf{H}\mathbf{e}$	Photoionization Photoionization	0.117-2 eV 0.117-2 eV	Th Th

126.	Y. Fukuyama, Y. Moriwaki, Y. Matsuo Laser-induced fluorescence spectra of $Ba^+*$ -He exciplexes produced in cold He gas. Phys. Rev. A 69, 042505 (2004)			
	${f Ba^+}+{f He}\ {f Ba^{+*}}+{f He}$	Fluorescence Fluorescence	3-30 K 3-30 K	$\operatorname{Exp}$
127.	.27. J. Koperski, M. Czajkowski Electronic structure of the CdKr lowest Rydberg state determined from laser- excitation spectra using supersonic beam and double optical resonance methods. Phys. Rev. A 69, 042509 (2004)			
	${f Cd}+{f Kr}\ {f Cd}+{f Kr}$	Fluorescence Photoexcitation	Undef. Undef.	E/T E/T
128.	Y. H. Jiang, R. Puett Kaindl <b>Partial cross section</b> Phys. Rev. A 69, 042	ner, R. Hentges, J. Viefhaus, M. ns of doubly excited helium k 706 (2004)	. Poiguine, U. Becker, J. M. Ros	t, G. d I ₇ .
	$\mathbf{h} u$ + He $\mathbf{h} u$ + He	Photoexcitation Photoionization	76.2-77.4 eV 76.2-77.4 eV	$\operatorname{Exp}$
<ul> <li>129. S. N. Nahar</li> <li>Photoionization cross sections of O II, O III, O IV, and O V: Benchma R-matrix theory and experiments.</li> <li>Phys. Rev. A 69, 042714 (2004)</li> </ul>				king
	$egin{array}{l} {f h}  u + {f O}^+ \ {f h}  u + {f O}^{2+} \ {f h}  u + {f O}^{3+} \ {f h}  u + {f O}^{4+} \end{array}$	Photoionization Photoionization Photoionization Photoionization	30-130 eV 30-130 eV 30-130 eV 30-130 eV	${f Th}\ {f Th}\ {f Th}\ {f Th}\ {f Th}$
130.	J. B. Bluett, D. Lukic <b>Triple photoionizat</b> Phys. Rev. A 69, 042	, R. Wehlitz ion of Ne and Ar near thres 717 (2004)	hold.	
	$ \begin{aligned} \mathbf{h} \boldsymbol{\nu} + \mathbf{N} \mathbf{e} \\ \mathbf{h} \boldsymbol{\nu} + \mathbf{A} \mathbf{r} \end{aligned} $	Photoionization Photoionization	84-146  eV 84-146  eV	$\operatorname{Exp}$
131.	S. Barmaki, H. Bacha Dissociation and id approach. Phys. Rev. A 69, 043	u, M. Ghalim pnization dynamics of $H_2^+$ v 403 (2004)	with short laser pulses: Th	e $L^2$
	$egin{array}{l} {f h}  u + {f H_2}^+ \ {f n} {h  u} + {f H_2}^+ \ {f h}  u + {f H_2}^+ \ {f h}  u + {f H_2}^+ \ {f n}  u + {f H_2}^+ \end{array}$	Photodissociation Photodissociation Photoionization Photoionization	228-400 nm 228-400 nm 228-400 nm 228-400 nm	${f Th}\ {f Th}\ {f Th}\ {f Th}\ {f Th}$
132.	C. Figueira de Moriss <b>Electron-electron d</b> Phys. Rev. A 69, 043	on Faria, H. Schomerus, X. Liu, ynamics in laser-induced not 405 (2004)	W. Becker nsequential double ionizatior	1.
	$\mathbf{h} u$ + Ne $\mathbf{n}\mathbf{h} u$ + Ne	Photoionization Photoionization	$1.5 { m eV}$ $1.5 { m eV}$	${ m Th}$ Th

133.	I. Bersons, R. Veilande Analytical investigation of one-dimensional Rydberg atoms interacting with half- cycle pulses. Phys. Rev. A 69, 043408 (2004)			
	$egin{array}{l} \mathbf{h} u + \mathbf{R}\mathbf{b} \ \mathbf{h} u + \mathbf{R}\mathbf{b}^* \end{array}$	Photoexcitation Photoexcitation	Undef. Undef.	${ m Th}$ ${ m Th}$
134.	J.Z.H. Zhang, X. Fen Phase-dependent a of linearly polarize Phys. Rev. A 69, 043	g, Z. Xu, DS. Guo ingular distributions of photo d few-cycle pulses. 4409 (2004)	pelectrons in an infinite sequence	
	$h\nu + Xe$	Photoionization	800 nm	Exp
135.	J. N. Das, K. Chakra Converged cross-se hyperspherical par Phys. Rev. A 69, 044	barti, S. Paul ection results for double pho tial wave theory at 6 eV abo 702 (2004)	otoionization of helium atoms in we threshold.	
	$h\nu + He$	Photoionization	84  eV	Th
136.	H. Kjeldsen, F. Folkn <b>Feshbach resonanc</b> Phys. Rev. A 69, 050	nann, T. S. Jacobsen, J. B. West es in inner-shell photodetach 501 (2004)	ment: The case of $Te^-$ .	
	$h\nu + Te^-$	Photodetachment	34-130  eV	Exp
137.	['] . N. Shigeoka, H. Oohashi, T. Tochio, Y. Ito, T. Mukoyama, A. M. Vlaicu, S. Fukushima <b>Experimental investigation of the origin of the Ti K</b> $\alpha''$ satellites. Phys. Rev. A 69, 052505 (2004)			
	$egin{array}{l} \mathbf{h} u + \mathbf{Ti} \ \mathbf{h} u + \mathbf{Ti} \end{array}$	Fluorescence Photoionization	4996-7000 eV 4996-7000 eV	E/T $E/T$
138.	Y. H. Jiang, R. Puett Isotope shifts of do Phys. Rev. A 69, 052	oner, M. Martins, R. Follath, J. Mouble-excitation resonances in 2703 (2004)	1. Rost, G. Kaindl n <b>helium.</b>	
	$h\nu + He$	Photoexcitation	$64.11\text{-}65.12\;\mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
139.	<ul> <li>P. Selles, L. Malegat, A. Huetz, A. K. Kazansky, S. A. Collins, D. P. Seccombe, T. J. Reddish</li> <li>Convergence of the method of the hyperspherical R matrix with semiclassical outgoing waves.</li> <li>Phys. Rev. A 69, 052707 (2004)</li> </ul>			
	$h\nu + He$	Photoionization	$20\mathchar`-25~eV$ above threshold	$\mathrm{E}/\mathrm{T}$
140.	T. Otobe, K. Yabana <b>First-principles cal</b> Phys. Rev. A 69, 053	, JI. Iwata culations for the tunnel ioniza 404 (2004)	ation rate of atoms and molecules.	
	$\begin{array}{l} \mathbf{h}\nu + \mathbf{Ar} \\ \mathbf{h}\nu + \mathbf{Xe} \\ \mathbf{h}\nu + \mathbf{N}_2 \\ \mathbf{h}\nu + \mathbf{O}_2 \\ \mathbf{h}\nu + \mathbf{F}_2 \end{array}$	Photoionization Photoionization Photoionization Photoionization Photoionization	$\begin{array}{l} 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \end{array}$	E/T E/T E/T E/T E/T

141.	T. Takekoshi, G. M. Brooke, B. M. Patterson, R. J. Knize Absolute Rb one-color two-photon ionization cross-section measurement near a quantum interference. Phys. Rev. A 69, 053411 (2004)			
	$h\nu + Rb$	Photoionization	420-600 nm	Exp
142.	<ul> <li>A. De Fanis, G. Pruemper, U. Hergenhahn, M. Oura, M. Kitajima, T. Tanaka, H. Tanaka,</li> <li>S. Fritzsche, N. M. Kabachnik, K. Ueda</li> <li>Photoelectron recapture as a tool for the spectroscopy of ionic Rydberg states.</li> <li>Phys. Rev. A 70, 040702 (2004)</li> </ul>			sa, 5.
	$\mathbf{h}\nu + \mathbf{N}$	Photoionization	$8707.27~{\rm eV}$	Exp
143.	D. H. Jaecks, O. Ye Giant spin-orbit Phys. Rev. A 70, 0	enen, K. W. McLaughlin, Canton,S interactions in argon photoion 40703 (2004)	., J. D. Bozek, M. Downsbrough ization.	
	$\mathbf{h}\nu + \mathbf{Ar}$	Photoionization	36.1 -36.55  eV	Exp
144.	R. Shakeshaft Integral represent mian expansion. Phys. Rev. A 70, 0	tation of the Coulomb Green	function derived from the Stu	r-
	$egin{array}{l} {f h} u + {f H}^- \ {f h} u + {f H}^- \end{array}$	Photodetachment Photoionization	15-50  eV 15-50  eV	${ m Th}$ Th
145.	5. R. Colle, D. Embriaco, M. Massini, S. Simonucci, S. Taioli Auger-electron angular distributions calculated without the two-step approxima- tion: Calculation of angle-resolved resonant Auger spectra of $C_2H_2$ . Phys. Rev. A 70, 042708 (2004)			
	$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_2$	Photoionization	$285.8\;\mathrm{eV}$	Th
146.	3. C. Figueira de Morisson Faria, X. Liu, A. Sanpera, M. Lewenstein Classical and quantum-mechanical treatments of nonsequential double ionization with few-cycle laser pulses. Phys. Rev. A 70, 043406 (2004)			on
	$\mathbf{h} u + \mathbf{N}\mathbf{e}$ $\mathbf{n}\mathbf{h} u + \mathbf{N}\mathbf{e}$	Photoionization Photoionization	$1.55 { m eV}$ $1.55 { m eV}$	${ m Th}$ Th
147.	<ul> <li>T. Nakajima, S. Watanabe</li> <li>Two-photon above-threshold-ionization cross sections of rare-gas atoms by XUV</li> <li>photons.</li> <li>Phys. Rev. A 70, 043412 (2004)</li> </ul>			V
	$egin{array}{l} \mathbf{h} u + \mathbf{Ar} \ \mathbf{h} u + \mathbf{Xe} \ \mathbf{2h} u + \mathbf{Ar} \ \mathbf{2h} u + \mathbf{Xe} \end{array}$	Photoionization Photoionization Photoionization Photoionization	25 eV 25 eV 25 eV 25 eV	Th Th Th Th
148.	W. Vanroose, F. Ma Nonperturbative Phys. Rev. A 70, 0	artin, T. N. Rescigno, C. W. McCu theory of double photoionizat 50703 (2004)	urdy ion of the hydrogen molecule.	
	$\mathbf{h} u + \mathbf{H}_2$	Photoionization	$53.9-75.7 \ eV$	$\mathrm{E/T}$

149.	S. K. Semenov, N. A. Chere	epkov, A. De Fanis, Y. Tamenor	ri, M. Kitajima, H. Tanaka, K.	
	Interplay of different part the O K shell of the CO Phys. Rev. A 70, 052504 (20	rtial waves on vibrationally molecule. 2004)	resolved photoionization of	
	$h\nu + CO$	Photoionization	550  eV	$\mathrm{E}/\mathrm{T}$
150.	J. Sandstroem, G. Haeffler, S. J. Ward <b>Effect of polarization on</b> Phys. Rev. A 70, 052707 (20	I. Kiyan, U. Berzinsh, D. Hanst photodetachment threshold 004)	orp, D. J. Pegg, J. C. Hunnell, s.	
	$egin{array}{l} {f h} u + {f Li}^- \ {f h} u + {f K}^- \end{array}$	Photodetachment Photodetachment	2.1-5 eV 2.1-5 eV	E/T $E/T$
151.	R. Santra, C. H. Greene <b>Multiphoton ionization o</b> Phys. Rev. A 70, 053401 (20	of xenon in the vuv regime. 204)		
	$h\nu + Xe$	Photoionization	12.7  eV	E/T
152.	M. L. Du Closed-orbit theory for p Phys. Rev. A 70, 055402 (20	photodetachment of $H^-$ in a 004)	sef.	
	$egin{array}{l} { m h} u + { m H}^- \ { m h} u + { m H}^- + { m stat} \; { m el} \; { m fld} \end{array}$	Photodetachment Photodetachment	Undef. Undef.	Th Th
153.	LY. Peng, D. Dundas, J. F Dynamic tunnelling ioniz J. Phys. B 36, L295 (2003)	. McCann, K. T. Taylor, I. D. W zation of $H_2^+$ in intense field	Villiams I <b>s.</b>	
	$\mathbf{h} u$ + $\mathbf{H}_2^+$	Photoionization	790-1064 nm	$\mathrm{Th}$
154.	H. S. Moon, S. K. Kim, K. I Atomic coherence change ically induced absorption J. Phys. B 36, 3721 (2003)	Kim, C. H. Lee, J. B. Kim es caused by optical pumpin 1.	g applied to electromagnet-	
	$h\nu + Rb$	Total Absorption, Scattering	794.7 nm	Exp
155.	S. F. Dyubko, V. A. Efremo Microwave spectroscopy J. Phys. B 36, 3797 (2003)	v, V. G. Gerasimov, K. B. MacA of Al I Rydberg states: F to	adam erms.	
	$\mathbf{h} u$ + Al	Photoexcitation	$105 \mathrm{~GHz}$	Exp
156.	H. L. Xu, S. Svanberg, P. Q. <b>Time-resolved laser-indu</b> <b>Hartree-Fock calculation</b> J. Phys. B 36, 4773 (2003)	uinet, H. P. Garnir, E. Biemont ced fluorescence lifetime me s of transition probabilities	easurements and relativistic in Sm II.	
	$\mathbf{h} u + \mathbf{Sm}^+$	Photoexcitation	Undef.	$\mathrm{E}/\mathrm{T}$
157.	I. M. Savukov Accurate calculations of	energies and oscillator streng	gths for light neon-like ions.	

J. Phys. B 36, 4789 (2003)

	$h\nu + Na^+$	Photoexcitation	$265-1106 \ 10^3 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h} u + \mathbf{M}\mathbf{g}^{2+}$	Photoexcitation	$265-1106 \ 10^3 \ cm^{-1}$	$\mathrm{Th}$
	$h\nu + Al^{3+}$	Photoexcitation	$265 - 1106 \ 10^3 \ cm^{-1}$	$\mathrm{Th}$
	$h\nu + Si^{4+}$	Photoexcitation	$265-1106 \ 10^3 \ cm^{-1}$	$\mathrm{Th}$
	$h\nu + P^{5+}$	Photoexcitation	$265-1106 \ 10^3 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h} u$ + $\mathbf{S}^{6+}$	Photoexcitation	$265 - 1106 \ 10^3 \ cm^{-1}$	$\mathrm{Th}$
158.	S. F. Dyubko, V. A. I	Efremov, V. G. Gerasimov, K. B.	MacAdam	
	Microwave spectro J. Phys. B 36, 4827 (	scopy of Al I atoms in Rydbo 2003)	erg states: D and G terms.	
	$h\nu + Al$	Photoexcitation	4-423 GHz	Exp
159.	Y. Tamenori, K. Okad Branching ratios of 3d, 3p and 3s sub-s J. Phys. B 37, 117 (2)	da, S. Tanimoto, T. Ibuki, S. Nag f <b>multiply charged ions forme</b> shells using a coincidence tec 004)	aoka, A. Fujii, Y. Haga, I. H. Suzuki d through photoionization of Kr hnique.	•
	$h\nu + Kr$	Photoionization	$210\text{-}410~\mathrm{eV}$	Exp
160.	J. R. Harries, P. Ham Laser probing of th J. Phys. B 37, 179 (2)	mond, R. Chandler, A. J. Murray ne electron-impact excited c(2 004)	$(\mathbf{2p})^3 \Pi_u$ manifold of states in $H_2$ .	
	$\mathbf{h}\nu + \mathbf{H}_2$	Photoexcitation	10.5-13.5  eV: 340-375  nm	Exp
	$\mathbf{h}\nu + \mathbf{H}_2^*$	Photoexcitation	10.5-13.5  eV; 340-375  nm	Exp
	some diatomic mol J. Phys. B 37, 283 (2) $h\nu + CO$ $h\nu + N_2$ $h\nu + NO$ $h\nu + O_2$ $h\nu + CO$ $h\nu + CO$ $h\nu + N_2$ $h\nu + NO$ $h\nu + N_2$ $h\nu + NO$	ecules in the vacuum ultravid 004) Photodissociation Photodissociation Photodissociation Photodissociation Fluorescence Fluorescence Fluorescence Fluorescence	14.8-26 eV 14.8-26 eV 14.8-26 eV 14.8-26 eV 14.8-26 eV 14.8-26 eV 14.8-26 eV 14.8-26 eV 14.8-26 eV	Exp Exp Exp Exp Exp Exp Exp
	$\mathbf{h}\nu + \mathbf{O}_2$ $\mathbf{h}\nu + \mathbf{O}\mathbf{O}$	Photoionization	14.8-26  eV	Exp
	$h\nu + 00$ $h\nu + N_0$	Photoionization	14 8-26 eV	Exp
	$h\nu + NQ$ $h\nu + NQ$	Photoionization	14 8-26 eV	Exp
	$h\nu + O_2$	Photoionization	14.8-26 eV	Exp
162.	K. Hosaka, J. Adachi Multiplet-specific space NO molecule J. Phys. B 37, L49 (2	, M. Takahashi, A. Yagishita, P. I N 1s photoelectron angular s. 004)	Lin, R. R. Lucchese distributions from the fixed-in-	-
	$h\nu + NO$	Photoionization	$410\text{-}425\;\mathrm{eV}$	Exp
163.	K. Miyazaki, T. Shim Femtosecond-laser- J. Phys. B 37, 753 (2)	izu, D. Normand • <b>induced alignment in Coulon</b> 004)	nb explosion of $N_2$ .	
	$\mathbf{h}\nu + \mathbf{N}_2$	Photodissociation	800 nm	Exp
	$nh\nu + N_0$	Photodissociation	800 nm	Exp
	$h\nu + N_2$	Photoionization	800 nm	Evp
	$nh\nu + N_0$	Photoionization	800 nm	Evp
	······   ···2			БУЪ

164.	J. Zanghellini, M. Kitzler, T Testing the multi-configu J. Phys. B 37, 763 (2004)	. Brabec, A. Scrinzi iration time-dependent Hartr	ree-Fock method.		
	$f h  u + H f e \ n h  u + H f e$	Photoionization Photoionization	248 nm 248 nm	Th Th	
165.	M. L. Keeler, H. Flores-Rue Scaled-energy spectrosco J. Phys. B 37, 809 (2004)	da, J. D. Wright, T. J. Morgan opy of argon atoms in an elect	tric field.		
	$egin{array}{l} \mathbf{h} u + \mathbf{A}\mathbf{r} \ \mathbf{h} u + \mathbf{A}\mathbf{r}^* \end{array}$	Photoexcitation Photoexcitation	$33,466-33,677 \ cm^{-1}$ $33,466-33,677 \ cm^{-1}$	E/T E/T	
166.	<ol> <li>A. M. Frolov</li> <li>Photodetachment of the hydrogen and positronium negative ions.</li> <li>J. Phys. B 37, 853 (2004)</li> </ol>				
	$h\nu + H^-$	Photodetachment	0-10  eV	$\mathrm{Th}$	
	$h\nu + D^-$	Photodetachment	0-10 eV	Th	
	$h u + T^-$	Photodetachment	0-10  eV	$\mathrm{Th}$	
167.	C. W. McCurdy, F. Martin Implementation of exter molecular collision proble J. Phys. B 37, 917 (2004)	rior complex scaling in B-sp ems.	lines to solve atomic and		
	$h\nu + He$	Photoionization	$25\text{-}120~\mathrm{eV}$	$\mathrm{Th}$	
168.	M. Ya. Amusia, A. S. Balter Effects of spin-orbit activ gular distribution asymm J. Phys. B 37, 937 (2004)	akov, L. V. Chernysheva, Z. Felfli vated interchannel coupling o metry parameters.	, S. T. Manson, A. Z. Msezane n dipole photoelectron an-		
	$h\nu + Xe$	Photoionization	675-840  eV	$\mathrm{Th}$	
	$h\nu + Cs$	Photoionization	$675\text{-}840~\mathrm{eV}$	$\mathrm{Th}$	
	$h\nu + Ba$	Photoionization	675-840  eV	$\mathrm{Th}$	
169.	N. M. Carlin, C. A. Ramsbo Corrigendum: K-shell ph B 36, 3637-3651 (2003)]. J. Phys. B 37, 953 (2004)	ttom, K. L. Bell, A. Hibbert otodetachment of the negativ	e ion of beryllium [J. Phys.		
	${ m h} u$ + ${ m Be}^-$	Photodetachment	111-121 eV	$\mathrm{Th}$	
170.	<ul> <li>T. Suric, R. H. Pratt</li> <li>O(1/ω) corrections to the shake-off (shake-up) correlation effects in double (single) ionization of He by absorption of a photon.</li> <li>J. Phys. B 37, L93 (2004)</li> </ul>				
	$h\nu + He$	Photoionization	0-1  keV	E/T	
171.	N. M. Carlin, C. A. Ramsbo Inner-shell photodetachm of $Be^-$ . J. Phys. B 37, 1083 (2004)	ttom, K. L. Bell, A. Hibbert nent of excited ${}^4S \deg$ and ${}^6S \deg$	${ m eg}\ {f metastable}\ {f bound}\ {f states}$		
	${ m h} u$ + Be ⁻	Photodetachment	0-4 a.u.	Th	

172.	J. Colgan, M. S. Pind Double photoioniza J. Phys. B 37, 1153 (	lzola ation of helium at high photon end 2004)	ergies.	
	$h\nu + He$	Photoionization	$124\text{-}474\;\mathrm{eV}$	$\mathrm{Th}$
173.	<ul> <li>F. Burmeister, L. M.</li> <li>M. Martins, H. O. F.</li> <li>Goscinski, L. Karlsson</li> <li>A study of the inn</li> <li>J. Phys. B 37, 1173 (</li> </ul>	Andersson, G. Oehrwall, T. Richter, F. Karlsson, S. L. Sorensen, O. Bjoerneho n, S. Svensson, A. J. Yencha <b>er-valence ionization region in HC</b> 2004)	P. Zimmermann, K. Godehusen, olm, R. Feifel, K. Wiesner, O. Cl and DCl.	
	h u + HCl h u + DCl	Photoionization Photoionization	40-60 eV 40-60 eV	Exp Exp
174.	F. Marchal, P. Berejn Energy transfers in of $Kr({}^{3}P_{1})$ . Tempo J. Phys. B 37, 1279 (	y, N. Sewraj, Y. Salamero, P. Millet n Kr-Xe mixtures following selecti ral analysis in Kr-Xe mixtures. 2004)	ve multiphotonic excitation	
	$f h  u + Kr \ h  u + Xe$	Photoexcitation Photoexcitation	120-376 nm 120-376 nm	Exp Exp
175.	H. Kjeldsen, F. Folkn Absolute cross sect J. Phys. B 37, 1321 (	hann, B. Kristensen, J. B. West, J. E. I tion for photoionization of $Mn^+$ in 2004)	Hansen a <b>the 3p region.</b>	
	$\mathbf{h} u$ + $\mathbf{Mn}^+$	Photoionization	45-70  eV	Exp
176.	S. K. Semenov, N. A. Theoretical study the CO molecule. J. Phys. B 37, 1331 (	Cherepkov, T. Jahnke, R. Doerner of vibrationally resolved photoion 2004)	ization for the C K-shell of	
	$h\nu + CO$	Photoionization	$290\text{-}340~\mathrm{eV}$	Th
177.	O. Kugeler, E. E. Ren $N_2$ valence photoio J. Phys. B 37, 1353 (	nnie, A. Ruedel, M. Meyer, A. Marquet nization below and above the $1s^{-1}$ 2004)	tte, U. Hergehahn ¹ core ionization threshold.	
	$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	$350\text{-}445~\mathrm{eV}$	Exp
178.	I. A. Solov'yov, A. V. <b>Optical response o</b> J. Phys. B 37, L137 (	Solov'yov, W. Greiner f small magnesium clusters. 2004)		
	$h\nu + Na_3^+$	Total Absorption, Scattering	1-7  eV	$\mathrm{Th}$
	$h\nu + Na_4$		1-7  eV	Th
		Total Absorption, Scattering $\tilde{a}$		
	$h\nu + Na_4^+$	Total Absorption, Scattering Total Absorption, Scattering	1-7 eV	Th
	$egin{array}{l} \mathbf{h} u + \mathbf{N}\mathbf{a}_4^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5^+ \end{array}$	Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV	Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{N}\mathbf{a}_4^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5^+ \end{array}$	Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV 1-7 eV	Th Th Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{N}\mathbf{a}_4^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_6 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_6 \end{array}$	Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV	Th Th Th Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{N}\mathbf{a}_4^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_6 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_7 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_7 \end{array}$	Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV	Th Th Th Th Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{N}\mathbf{a}_4^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_5^+ \ \mathbf{h} u + \mathbf{N}\mathbf{a}_6 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_7 \ \mathbf{h} u + \mathbf{N}\mathbf{a}_8 \ \mathbf{h} u + \mathbf{M}\mathbf{a}_6 \end{array}$	Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV	Th Th Th Th Th Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{Na}_4^+ \ \mathbf{h} u + \mathbf{Na}_5 \ \mathbf{h} u + \mathbf{Na}_5^+ \ \mathbf{h} u + \mathbf{Na}_6 \ \mathbf{h} u + \mathbf{Na}_7 \ \mathbf{h} u + \mathbf{Na}_8 \ \mathbf{h} u + \mathbf{Mg}_2 \ \mathbf{h} u + \mathbf{Mg}_2 \end{array}$	Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV	Th Th Th Th Th Th Th Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{Na}_4^+ \ \mathbf{h} u + \mathbf{Na}_5 \ \mathbf{h} u + \mathbf{Na}_5^+ \ \mathbf{h} u + \mathbf{Na}_6 \ \mathbf{h} u + \mathbf{Na}_7 \ \mathbf{h} u + \mathbf{Na}_8 \ \mathbf{h} u + \mathbf{Mg}_2 \ \mathbf{h} u + \mathbf{Mg}_3 \ \mathbf{h} u + \mathbf{Mg}_4 \end{array}$	Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV 1-7 eV	Th Th Th Th Th Th Th Th Th
	$egin{array}{l} \mathbf{h} u + \mathbf{Na}_4^+ \ \mathbf{h} u + \mathbf{Na}_5 \ \mathbf{h} u + \mathbf{Na}_5^+ \ \mathbf{h} u + \mathbf{Na}_6 \ \mathbf{h} u + \mathbf{Na}_7 \ \mathbf{h} u + \mathbf{Na}_8 \ \mathbf{h} u + \mathbf{Mg}_2 \ \mathbf{h} u + \mathbf{Mg}_3 \ \mathbf{h} u + \mathbf{Mg}_4 \ \mathbf{h} u + \mathbf{Mg}_5 \end{array}$	Total Absorption, Scattering Total Absorption, Scattering	1-7 eV 1-7 eV	Th Th Th Th Th Th Th Th Th Th

	$\mathbf{h} u + \mathbf{M}\mathbf{g}_6$	Total Absorption, Scattering	1-7  eV	$\mathrm{Th}$
	$h\nu + Mg_7$	Total Absorption, Scattering	1-7  eV	$\mathrm{Th}$
	$h\nu + Mg_8$	Total Absorption, Scattering	1-7  eV	Th
	$h\nu + Mg_9$	Total Absorption, Scattering	1-7 eV	Th
	$h\nu + Mg_{10}$	Total Absorption, Scattering	1-7 eV	Th
	$\mathbf{h}\nu + \mathbf{M}\mathbf{g}_{11}$	Total Absorption, Scattering	1-7 eV	Th
179.	I. H. Suzuki, A. Fujii H. Ohashi	i, S. Nagaoka, M. Kosugi, K. Okada, T.	Ibuki, S. Samori, Y. Tamenor	i,
	Asymmetric peaks collision interactio J. Phys. B 37, 1433 (	s of photoelectrons and Auger electron following Kr $2p_{3/2}$ hole creation. (2004)	trons formed through post	;_
	$h\nu + Kr$	Photoionization	$1686~{\rm eV}$	Exp
180.	D. A. Telnov, SI. C High-order above- non-Hermitian Flo J. Phys. B 37, 1489 (	hu • <b>threshold multiphoton detachme</b> • <b>quet approach.</b> (2004)	nt of $H^-$ : Time-dependen	ıt
	$h\nu + H^-$	Photodetachment	10.6 $\mu$ m	$\mathrm{Th}$
	$nh\nu + H^-$	Photodetachment	$10.6 \ \mu \ m$	Th
181.	V. T. Davis, J. S. Th An experimental i J. Phys. B 37, 1961 (	nompson <b>nvestigation of the atomic europiu</b> (2004)	ım anion.	
	$h\nu + Eu^-$	Photodetachment	1064  nm	Exp
182.	S. Schippers, A. Muel M. F. Gharaibeh, G. <b>Threshold truncat</b> J. Phys. B 37, L209	ler, R. A. Phaneuf, T. van Zoest, I. Alva Hinojosa, A. S. Schlachter, S. W. Scull ion of a 'giant' dipole resonance in (2004)	rez, C. Cisneros, E. D. Emmons y <b>a photoionization of</b> $Ti^{3+}$ .	3,
	$\mathbf{h} u$ + $\mathbf{Ti}^{3+}$	Photoionization	42.6-49.4  eV	Exp
183.	A. Heinrich, M. Lewe Nonsequential dou J. Phys. B 37, 2087 (	enstein, A. Sanpera able ionization of helium in low-fre (2004)	equency laser fields.	
	$h\nu + He$	Photoionization	780 nm	$\mathrm{Th}$
	$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{H}\mathbf{e}$	Photoionization	780  nm	$\mathrm{Th}$
184.	P. Bolognesi, M. Zitr. <b>Photo-double ioniz</b> J. Phys. B 37, 2285 (	nik, L. Malegat, P. Selles, G. Turri, M. ( zation of argon at 20 and 40 eV ex (2004)	Coreno, R. Camilloni, L. Avald ccess energy.	li
	$\mathbf{h} u$ + He $\mathbf{h} u$ + Ar	Photoionization Photoionization	$\begin{array}{l} 20\text{-}40 \text{ excess eV} \\ 20\text{-}40 \text{ excess eV} \end{array}$	E/T $E/T$
185.	N. Shigeoka, H. Ooha <b>Threshold excitati</b> J. Phys. B 37, 2303 (	ashi, Y. Ito, T. Mukoyama, A. M. Vlaic on in Fe $K\alpha_{3,4}$ satellites. (2004)	cu, S. Fukushima	
	$\mathbf{h} u$ + Fe $\mathbf{h} u$ + Fe	Photoexcitation Photoionization	6370-10,000 eV 6370-10,000 eV	$\operatorname{Exp}$

186.	A. G. Kochur, A. I. Dudenk Calculation of $Xe^{i+}$ phot Auger electrons. J. Phys. B 37, 2401 (2004)	o, I. D. Petrov toion yields in coincidence wi	th energy-selected $M_{45}NN$	
	$h\nu + Xe$	Photoionization	30 above threshold $(eV)$	$\mathrm{E}/\mathrm{T}$
187.	O. A. Fojon, J. Fernandez, J. Interference effects in Hy J. Phys. B 37, 3035 (2004)	A. Palacios, R. D. Rivarola, F. Ma photoionization at high ene	artin rgies.	
	$\mathbf{h} u$ + $\mathbf{H}_2$	Photoionization	0-20 a.u.	$\mathrm{Th}$
188.	D. Bauer Small rare gas clusters in laser wavelengths. J. Phys. B 37, 3085 (2004)	laser fields: Ionization and a	bsorption at long and short	
	$h\nu + Xe_{54}$	Photodissociation	800-100 nm	$\mathrm{Th}$
	$h\nu + Xe_{54}$	Photoexcitation	800-100 nm	Th
	$h\nu + Xe_{54}$	Photoionization	800-100 nm	Th
189.	M. Kato, T. Odagiri, K. Ko <b>Doubly excited states of</b> J. Phys. B 37, 3127 (2004)	dama, M. Murata, K. Kameta, N water in the inner valence ra	. Kouchi ange.	
	$h\nu + H_2O$	Photodissociation	17-41 eV	Exp
	$h\nu + D_2O$	Photodissociation	17-41  eV	Exp
	$h\nu + H_2O$	Fluorescence	17-41  eV	Exp
	$h\nu + D_2O$	Fluorescence	17-41  eV	Exp
	$h\nu + H_2O$	Photoexcitation	17-41  eV	$\operatorname{Exp}$
	$h\nu + D_2O$	Photoexcitation	17-41  eV	Exp
190.	J.H.D. Eland, M. Hochlaf, G Photo double ionization J. Phys. B 37, 3197 (2004)	C. King, P. S. Kreynin, R. J. Lel spectra of CO: Comparison of	Roy, I. R. McNab, JM. Robbe of theory with experiment.	
	$h\nu + CO$	Photoionization	40-50  eV	$\mathrm{E}/\mathrm{T}$
191.	A. N. Hopersky, I. D. Petrov Anomalous elastic scatte J. Phys. B 37, 3313 (2004)	y, A. M. Nadolinsky, V. A. Yavna ering of x-ray photon by an a	a, R. V. Koneev tom with an open shell.	
	$h\nu + Cu$	Elastic Scattering	$8970\text{-}9006\;\mathrm{eV}$	Th
192.	S. B. Whitfield, B. D. Kross <b>Photoelectron spectrom</b> <b>giant resonance.</b> J. Phys. B 37, 3435 (2004)	chell, R. Wehlitz etry of atomic chromium in	the region of the 3p -; 3d	
	$h\nu + Cr$	Total Absorption Scattering	38-47 eV	E/T
	$h\nu + Cr$	Photoexcitation	38-47 eV	E/T
	h u + Cr h u + Cr	Photoionization	38-47  eV	E/T
193.	S. Benec'h, H. Bachau <b>One-, two- and three-ph</b> J. Phys. B 37, 3521 (2004)	oton ionization of calcium.		

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E/T

J. Phys. B 37, 4239 (2004)

$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	$10^{14} - 12x10^{14} \text{ W/cm}^2$	Exp
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	$10^{14} - 12x10^{14} \text{ W/}cm^2$	Exp

195. P. Koval, S. Fritzsche, A. Surzhykov

Electron angular distributions in the two-photon ionization of hydrogen-like ions: A relativistic description.

J. Phys. B 37, 375 (2004)

$h\nu + H$	Photoionization	Undef.	$\mathrm{Th}$
$h\nu + Xe^{53+}$	Photoionization	Undef.	Th
$h\nu + U^{91+}$	Photoionization	Undef.	$\mathrm{Th}$
$2h\nu + H$	Photoionization	Undef.	Th
$2h u + Xe^{53+}$	Photoionization	Undef.	Th
$2h\nu + U^{91+}$	Photoionization	Undef.	$\mathrm{Th}$

196. A. Ehresmann, H. Liebel, H. Schmoranzer, O. Wilhelmi, B. Zimmermann, K.-H. Schartner VUV-fluorescence spectroscopy of O₂ photodissociation into neutral excited fragments between 17 and 19 eV. J. Phys. B 37, 389 (2004)

$\mathbf{h}\nu + \mathbf{O}_2$	Photodissociation	17-19  eV	Exp
- 4			

197. C. McKenna, H. W. van der Hart

Multiphoton ionization cross sections of neon and argon.

J. Phys. B 37, 457 (2004)

$h\nu + Ar$	Photoionization	5.4-7.8; 8-14.65 eV	$\mathrm{Th}$
$2h\nu + Ar$	Photoionization	5.4-7.8; $8-14.65  eV$	$\mathrm{Th}$
$3h\nu + Ar$	Photoionization	5.4-7.8; 8-14.65 eV	$\mathrm{Th}$

198. B. Zimmermann, K.-H. Schartner, O. Wilhelmi, S. Kammer, H. Liebel, A. Ehresmann, H. Schmoranzer

Experimental high resolution study of the photoproduction of  $Ne^+$  3p satellites in the threshold energy range.

J. Phys. B 37, 511 (2004)

$h\nu + Ne$	Fluorescence	52-55.5  eV	Exp
$h\nu + Ne$	Photoexcitation	52-55.5  eV	Exp
$h\nu + Ne$	Photoionization	52-55.5  eV	$\operatorname{Exp}$

199. V.L.B. de Jesus, B. Feuerstein, K. Zrost, D. Fischer, A. Rudenko, F. Afaneh, C. D. Schroeter, R. Moshammer

Atomic structure dependence of nonsequential double ionization of He, Ne and Ar in strong laser pulses.

J. Phys. B 37, L161 (2004)

$h\nu + He$	Photoionization	795 nm	Exp
$h\nu + Ne$	Photoionization	795 nm	Exp
$h\nu + Ar$	Photoionization	795  nm	Exp

200.	J. R. Harries, J. P. S Experimental deter excited states of h J. Phys. B 37, L169	ullivan, Y. Azuma ermination of the lifetimes of the ₂ elium by detection of VUV fluores (2004)	$(-1,0)_n^0$ '2pnd' $(^1P^0)$ doubly scence.	
	$\mathbf{h} u$ + He $\mathbf{h} u$ + He	Fluorescence Photoexcitation	Undef. Undef.	$\begin{array}{c} Exp\\ Exp \end{array}$
201.	T. P. Grozdanov, F. Calculations of ph J. Phys. B 37, 1737 (	Bouakline, L. Andric, R. McCarroll otodissociation cross sections using (2004)	g the Lanczos algorithm.	
	$h\nu + CO$	Photodissociation	Undef.	$\mathrm{Th}$
202.	M. Vafaee, H. Sabzya A detailed and pre J. Phys. B 37, 4143 (	an ecise study of the ionization rates o (2004)	of ${H_2}^+$ in intense laser fields.	
	$\mathbf{h} u$ + $\mathbf{H}_2^+$	Photoionization	790 nm	Th
203.	T. Birkeland, M. For <b>Dynamics of H(2p</b> J. Phys. B 37, 4205 (	re, J. P. Hansen, S. Selsto ) ionization in ultrashort strong la (2004)	ser pulses.	
	$h\nu + H$	Photoionization	0.1-1 a.u.	Th
204.	<ul> <li>B. Paripas, G. Vitez, Aksela</li> <li>Angular dependent</li> <li>L-MM Auger trans</li> <li>J. Phys. B 37, 4507 (</li> </ul>	Gy. Vikor, K. Tokesi, A. Calo, R. San ace of the PCI line shape for pho sitions. (2004)	dari, M. Huttula, S. Aksela, H. toionized Ne K-LL and Ar	
	$\mathbf{h} u + \mathbf{N}\mathbf{e}$ $\mathbf{h} u + \mathbf{A}\mathbf{r}$	Photoionization Photoionization	320-1200 eV 320-1200 eV	E/T $E/T$
205.	J. Colgan, M. S. Pine <b>Time-dependent</b> cl and H ₂ . J. Phys. B 37, L377	dzola, F. Robicheaux lose-coupling calculations for the d (2004)	ouble photoionization of He	
	$ \begin{aligned} \mathbf{h} \boldsymbol{\nu} + \mathbf{H} \mathbf{e} \\ \mathbf{h} \boldsymbol{\nu} + \mathbf{H}_2 \end{aligned} $	Photoionization Photoionization	40-120 eV 40-120 eV	${ m E/T} { m E/T}$
206.	<ul><li>P. Bolognesi, G. Albe</li><li>A study of the part</li><li>J. Phys. B 37, 4575 (</li></ul>	erti, D. B. Thompson, L. Avaldi, G. C. <b>Cal photoionization cross sections o</b> (2004)	King <b>f the</b> $N_2$ <b>valence-shell states.</b>	
	$\mathbf{h} u$ + $\mathbf{N}_2$	Photoionization	$20\text{-}35~\mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
207.	P. Yeates, E. T. Ken Gutierrez, J. B. Gree rukov, L. A. Demekh <b>Theoretical and ex</b> <b>spectrum of triply</b> J. Phys. B 37, 4663 (	nedy, JP. Mosnier, P. van Kampen, M. enwood, Ph. V. Demekhin, I. D. Petrov ina, J. T. Costello <b>xperimental study of the extreme</b> <b>ionized yttrium.</b> (2004)	I.W.D. Mansfield, J. Pedregosa- v, B. M. Lagutin, V. L. Sukho- ultraviolet photoabsorption	
	$egin{array}{l} \mathbf{h} u + \mathbf{Y}^{3+} \ \mathbf{h} u + \mathbf{Y}^{3+} \end{array}$	Total Absorption, Scattering Photoexcitation	66-82 eV 66-82 eV	${ m E/T} { m E/T}$

208.	. DS. Kim, S. T. Manson <b>Photoionization of the ground state of the Be-like</b> $C^{2+}$ <b>ion leading to</b> $C^{3+}$ $2\ell$ <b>and</b> $3\ell$ <b>states.</b> J. Phys. B 37, 4707 (2004)			
	$h\nu + C^{2+}$	Photoionization	40-90  eV	$\mathrm{E}/\mathrm{T}$
209.	A. Aguilar, J. S. Tho S. Gulley, M. Halka, I <b>Double photodetac</b> Phys. Rev. A 69, 022	mpson, D. Calabrese, A. M. Cov D. Hanstorp, J. Sandstroem, B. M. Chment from the $Cl^-$ ion. 711 (2004)	rington, C. Cisneros, V. T. Davis, M. A. McLaughlin, D. J. Pegg	
	${ m h} u+{ m Cl}^-$	Photodetachment	20-45  eV	Exp
210.	A. Jaron-Becker, A. E. Ionization of $N_2$ , $O_2$ Phys. Rev. A 69, 023	Becker, F.H.M. Faisal 2, and linear carbon clusters 410 (2004)	in a strong laser pulse.	
	$\mathbf{h}\nu + \mathbf{N}_{2}$	Photoionization	800 nm	$\mathbf{T}\mathbf{h}$
	$h\nu + \Omega_2$ $h\nu + \Omega_2$	Photoionization	800 nm	Th
	$\mathbf{h} u + \mathbf{C}_2$ $\mathbf{h} u + \mathbf{C}_2$	Photoionization	800 nm	Th
211.	A. K. Langworthy, D. Zeeman transition Phys. Rev. A 69, 025 $h\nu + O^-$ $h\nu + S^-$	M. Pendergrast, J. N. Yukich strengths in photodetachmen 401 (2004) Photodetachment Photodetachment	nt from $O^-$ and $S^-$ . 11,700-16,700 $cm^{-1}$ 11,700-16,700 $cm^{-1}$	E/T E/T
212.	M. Sharma, P. Singh, $L_1 - L_3$ Coster-Kro Phys. Rev. A 59, 032	S. Puri, D. Mehta, N. Singh nig yield for elements with 7 501 (2004)	'0;Z;81.	
	$h\nu + Yb$	Photoexcitation	$59.4 \mathrm{keV}$	Exp
	$h\nu + Lu$	Photoexcitation	$59.4 \mathrm{keV}$	Exp
	$h\nu + W$	Photoexcitation	$59.4 \mathrm{keV}$	Exp
	$h\nu + Re$	Photoexcitation	59.4  keV	$\operatorname{Exp}$
	$h\nu + Au$	Photoexcitation	59.4  keV	$\operatorname{Exp}$
	$h\nu + Hg$	Photoexcitation	59.4  keV	Exp
	$h\nu + TT$	Photoexcitation	59.4 keV	Exp
213.	A. I. Mikhailov, I. A. <b>Nonrelativistic dou</b> Phys. Rev. A 69, 032	Mikhailov, A. N. Moskalev, A. V ble photoeffect on K-shell el 703 (2004)	Y. Nefiodov, G. Plunien, G. Soff ectrons.	
	$h\nu + He$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$h\nu + Li^+$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$\mathbf{h} u$ + $\mathbf{O}^{6+}$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$h\nu + Ne$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$h\nu + Ti$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$\mathbf{h}\nu + \mathbf{Cr}$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$h\nu + Fe$	Photoionization	$0.1-200 \text{ eV}/z^2$	$\mathrm{Th}$
	$h\nu + Ni$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th
	$h\nu + Cu$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th
	$h\nu + Mo$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th
	$\mathbf{n}\nu + \mathbf{Mo}^{\text{HOT}}$	Photoionization	$0.1-200 \text{ eV}/z^2$	Th

214.	C. W. McCurdy, D. A. Theoretical treatment plementation of exter Phys. Rev. A 69, 03270	Horner, T. N. Rescigno, F. Ma nt of double photoionizatio erior complex scaling. 07 (2004)	rtin n of helium using a B-spline im-	
	$h\nu + He$	Photoionization	$153-173 {\rm ~eV}$	$\mathrm{Th}$
215.	V. Kokoouline, C. H. G Photofragmentation Phys. Rev. A 69, 03271	Therefore $H_3$ molecule, includi 11 (2004)	ng Jahn-Teller coupling effects.	
	$\mathbf{h}\nu + \mathbf{H}_3$	Photodissociation	$4500-0 \ cm^{-1}$	$\mathrm{Th}$
216.	A. Y. Istomin, N. L. M. Perturbative analysis in photo-double-ioni Phys. Rev. A 69, 03271	anakov, A. F. Starace s of the triply differential cro zation of He. 13 (2004)	oss section and circular dichroism	
	$\mathbf{h}\nu + \mathbf{He}$	Photoionization	$63\text{-}529~\mathrm{eV}$	$\mathrm{Th}$
217.	R. Radhakrishnan, R. H Nonresonant multip Phys. Rev. A 69, 03340	3. Thayyullathil hoton ionization in atomic 1 07 (2004)	hydrogen.	
	$h\nu + H$	Photoionization	2700-20 Å	$\mathrm{Th}$
218.	S. Laulan, H. Bachau One- and two-photo laser fields. Phys. Rev. A 69, 03340	n double ionization of bery	yllium and ultrashort ultraviolet	
	$h\nu + Be$	Photoionization	$13.7\text{-}210\;\mathrm{eV}$	$\mathrm{Th}$
219.	A. Y. Istomin, N. L. M. Circular dichroism a Phys. Rev. A 70, 01070	anakov, A. V. Meremianin, A. t equal energy sharing in p 02 (2004)	F. Starace hoto-double-ionization of He.	
	$h\nu + He$	Photoionization	$159\text{-}318~\mathrm{eV}$	$\mathrm{Th}$
220.	S. Beiser, M. Klaiber, I <b>Photodetachment in</b> Phys. Rev. A 70, 01140	. Yu. Kiyan <b>a strong circularly polariz</b> 02 (2004)	ed laser field.	
	$\mathbf{h} u$ + $\mathbf{F}^{-}$	Photodetachment	1400 nm	$\mathrm{Th}$
221.	P. O'Keeffe, S. Aloise, Grzhimailo <b>Resonant Auger dec</b> <b>ment from fluorescen</b> Phys. Rev. A 70, 01270	S. Fritzsche, B. Lohmann, U ay of Xe* $4d_{5/2}^{-1}6p$ : A continue polarization studies. 05 (2004)	. Kleiman, M. Meyer, A. N. Grum- tribution to the complete experi-	
	$\mathbf{h}\nu + \mathbf{Xe}$	Fluorescence	$65 \ \mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
	$h\nu + Xe^*$	Fluorescence	65  eV	E/T
	$egin{array}{l} {f h} u+{f Xe}\ {f h} u+{f Xe}^* \end{array}$	Photoionization Photoionization	$\begin{array}{c} 65  \mathrm{eV} \\ 65  \mathrm{eV} \end{array}$	E/T $E/T$
222.	S. Jones, J. H. Macek, Test of the Physicage	D. H. Madison e wave function for the hel	ium ground state	

Test of the Pluvinage wave function for the helium ground state. Phys. Rev. A 70, 012712 (2004)

	$h\nu + He$	Photoionization	$5.6 { m ~keV}$	$\mathrm{Th}$
223.	P. Bolognesi, A. De Fani Complete characteriz photoelectron coincid Phys. Rev. A 70, 022702	s, M. Coreno, L. Avaldi ation of the Ar $2p_{3/2}$ pho ence experiments. 1 (2004)	toionization via Auger-electron-	
	$h\nu + Ar$	Photoionization	Undef.	Exp
224.	H. L. Zhou, S. T. Manso <b>Photodetachment of</b> Phys. Rev. A 70, 022713	n, A. Hibbert, L. Vo Ky, N. F the outer shell of $C^-$ in the 3 (2004)	eautrier, JC. Chang e ground state.	
	$h\nu + C^-$	Photodetachment	0-13  eV	$\mathrm{Th}$
225.	A. Pohl, PG. Reinhard <b>Angular distribution</b> Phys. Rev. A 70, 023202	, E. Suraud of electrons emitted from 2 (2004)	Na clusters.	
	$\mathbf{h} u$ + $\mathbf{Na}_9^+$	Photoionization	0.1-1.9 Ry	$\mathrm{Th}$
	$\mathbf{h} u$ + $\mathbf{Na}_{41}^+$	Photoionization	0.1-1.9 Ry	Th
226.	X. M. Tong, C. D. Lin <b>Time-resolved sequen</b> cycle laser pulse. Phys. Rev. A 70, 023400	ntial double ionization of $36(2004)$	$D_2$ molecules in an intense few-	
	$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	800 nm	$\mathrm{Th}$
	$\mathbf{h}\nu + \mathbf{D}_2$	Photoionization	800 nm	Th
	$2h\nu + H_2$ $2h\nu + D_2$	Photoionization	800 nm 800 nm	Th Th
227.	A. S. Alnaser, X. M. To Cocke Laser-peak-intensity Phys. Rev. A 70, 023413	ng, T. Osipov, S. Voss, C. M. calibration using recoil-ion 3 (2004)	Maharjan, B. Shan, Z. Chang, C. L. momentum imaging.	
	$h\nu + H_2$	Photodissociation	Undef.	Exp
	$h\nu + He$	Photoionization	Undef.	Exp
	$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	Undef.	Exp
228.	A. Ehresmann, S. Klump ner, I. D. Petrov, Ph. V. <b>Observation and iden</b> J. Phys. B 37, L251 (200	op, L. Werner, H. Schmoranzer, Demekhin, V. L. Sukhorukov tification of doubly excited 04)	, S. Kammer, S. Mickat, K. H. Schart- d KrI $4s^24p^45sn \ \ell$ Rydberg series.	
	$h\nu + Kr$	Fluorescence	28.4-28.7  eV	Exp
	$h\nu + Kr$	Photoionization	28.4-28.7  eV	Exp
229.	C. Beylerian, C. Cornag, Coulomb explosion is double ionization of <i>I</i> J. Phys. B 37, L259 (200	gia maging of fragmentation $_{0}$ $_{2}$ . $_{04}$ )	channels following laser-induced	
	$\mathbf{h} u + \mathbf{N}_2$	Photodissociation	Undef.	Exp
	$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	Undef.	Exp

230.	R. Hentges, N. Mueller, J Photoelectron recaptu J. Phys. B 37, L267 (200	J. Viefhaus, U. Heinzmann, U. <b>are observed via second-st</b> 4)	Becker ep Auger decay.	
	$h\nu + Ne$	Photoionization	$865\text{-}873~\mathrm{eV}$	Exp
231.	<ul> <li>A. B. Voitkiv, N. Gruen,</li> <li>Compton scattering be</li> <li>electromagnetic field.</li> <li>J. Phys. B 37, 2641 (2004)</li> </ul>	J. Ullrich <b>by a bound electron in t</b> 4)	he presence of a low-frequ	iency
	$h\nu + H$	Photoionization	$20 \ \mathrm{keV}$	$\mathrm{Th}$
232.	M. Glass-Maujean, S. Klu Photodissociation of d J. Phys. B 37, 2677 (2004	umpp, L. Werner, A. Ehresma oubly excited states of $H_2$ 4)	nn, H. Schmoranzer into H(2s) and H(2p) fragm	nents.
	$egin{array}{l} \mathbf{h} u+\mathbf{H}_2\ \mathbf{h} u+\mathbf{H}_2^* \end{array}$	Photodissociation Photodissociation	28-45 eV 28-45 eV	Exp Exp
233.	E. Kukk, M. Huttula, J. Photoionization, photo J. Phys. B 37, 2739 (2004	Rius i Riu, H. Aksela, S. Akse <b>Dexcitation and photofrag</b> 4)	ela nentation of caesium halide	dimers.
	$\begin{array}{l} \mathrm{h}\nu + \mathrm{CsCl} \\ \mathrm{h}\nu + \mathrm{CsBr} \\ \mathrm{h}\nu + \mathrm{Cs_2Cl_2} \\ \mathrm{h}\nu + \mathrm{Cs_2Br_2} \\ \mathrm{h}\nu + \mathrm{CsCl} \\ \mathrm{h}\nu + \mathrm{CsCl} \\ \mathrm{h}\nu + \mathrm{Cs_2Cl_2} \\ \mathrm{h}\nu + \mathrm{Cs_2Br_2} \\ \mathrm{h}\nu + \mathrm{CsCl} \\ \mathrm{h}\nu + \mathrm{CsBr} \\ \mathrm{h}\nu + \mathrm{CsBr} \\ \mathrm{h}\nu + \mathrm{CsBr} \\ \mathrm{h}\nu + \mathrm{Cs_2Cl_2} \\ \mathrm{h}\nu + \mathrm{Cs_2Br_2} \end{array}$	Photodissociation Photodissociation Photodissociation Photodissociation Photoexcitation Photoexcitation Photoexcitation Photoexcitation Photoionization Photoionization Photoionization Photoionization	7-20 eV 7-20 eV	E/T E/T E/T E/T E/T E/T E/T E/T E/T E/T
234.	E. Costa i Bricha, C.L.S. Multiphoton ionization theory. J. Phys. B 37, 2755 (2004	Lewis, H. W. van der Hart <b>n of</b> $Ar^{7+}$ <b>in two-colour las</b> 4)	er fields using R-matrix Flo	oquet
	$egin{array}{l} {f h} u + {f Ar}^{7+} \ {f n}{f h} u + {f Ar}^{7+} \end{array}$	Photoionization Photoionization	52.5-54  eV 52.5-54  eV	${ m Th}$ Th
235.	Y. Hikosaka, T. Aoto, E. Autoionization selectin J. Phys. B 37, 2823 (2004	Shigemasa, K. Ito vity of Ne ⁺ Rydberg state 4)	es converging to $Ne^{2+}$ ( ¹ S ^e ).	
	$f h  u + N f e \ n h  u + N f e$	Photoionization Photoionization	$\begin{array}{c} 65.5\text{-}68.3 \; \mathrm{eV} \\ 65.5\text{-}68.3 \; \mathrm{eV} \end{array}$	$\begin{array}{c} Exp\\ Exp \end{array}$
236.	T. Odagiri, M. Murata, M. $(\gamma, 2\gamma)$ studies on doul J. Phys. B 37, 3909 (2004)	A. Kato, N. Kouchi oly excited states of molec 4)	ular hydrogen.	
	$egin{array}{l} \mathbf{h} u + \mathbf{H}_2 \ \mathbf{h} u + \mathbf{H}_2 \end{array}$	Photodissociation Fluorescence	25-45  eV 25-45  eV	E/T E/T

237.	I. Maruyama, T. Sako, K. Y <b>Time-dependent nuclear</b> <b>quet approach.</b> J. Phys. B 37, 3919 (2004)	amanouchi wavepacket dynamics of $H_2$	⁺ by quasi-stationary Flo-	
	$h\nu + H_2^+$	Photodissociation	800-1200 nm	Th
238.	S. A. Trushin, W. Fuss, W. Dissociative ionization a relaxation for fragmenta J. Phys. B 37, 3987 (2004)	E. Schmid t high laser intensities: Imp tion.	ortance of resonances and	
	$\mathbf{h} u + \mathbf{NiC}_4\mathbf{O}_4$	Photodissociation	$800-1350 \mathrm{~cm}$	Exp
	$\mathbf{h} u + \mathbf{FeC}_5\mathbf{O}_5$	Photodissociation	$800\text{-}1350 \mathrm{~cm}$	Exp
	$\mathbf{h} u + \mathbf{Cr}\mathbf{C}_6\mathbf{O}_6$	Photodissociation	$800\text{-}1350 \mathrm{~cm}$	Exp
	$\mathbf{h}\nu + \mathbf{NiC}_4\mathbf{O}_4$	Photoionization	$800\text{-}1350 \mathrm{~cm}$	Exp
	$\mathbf{h} u + \mathbf{FeC}_5\mathbf{O}_5$	Photoionization	$800\text{-}1350 \mathrm{~cm}$	Exp
	$\mathbf{h} u + \mathbf{Cr}\mathbf{C}_6\mathbf{O}_6$	Photoionization	$800\text{-}1350~\mathrm{cm}$	Exp
239.	DS. Kim, S. T. Manson Photoionization of the gr $3$ states of $B^{2+}$ . J. Phys. B 37, 4013 (2004)	${f round-state}\ {f Be-like}\ B^+\ {f ion}\ {f lea}$	ading to the $n = 2$ and $n =$	
	$h\nu + B^+$	Photoionization	25-50  eV	Th
240.	R. Das, N. C. Deb, K. Roy, <b>Dipole allowed and inter</b> Astron. Astrophys. 416, 375	A. Z. Msezane combination transitions in $K$ 5 (2004)	$^{7+}$ and $Ti^{10+}$ ions.	
	$egin{array}{l} \mathbf{h} u+\mathbf{K}^{7+}\ \mathbf{h} u+\mathbf{T}\mathbf{i}^{10+} \end{array}$	Photoexcitation Photoexcitation	$\begin{array}{c} 300,\!000 \; cm^{-1} \\ 300,\!000 \; cm^{-1} \end{array}$	Th Th
241.	V. Jonauskas, F. P. Keenan, Ferland, K. M. Aggarwal, R <b>Relativistic allowed and</b> <b>XVIII.</b> Astron. Astrophys. 416, 383	M. E. Foord, R. F. Heeter, S. J. Kisielius, P. H. Norrington forbidden transition probab (2004)	Rose, P.A.M. van Hoof, G. J. bilities for fluorine-like Fe	
	$\mathbf{h} u$ + $\mathbf{Fe}^{17+}$	Photoexcitation	$100,000-800,000 \ cm^{-1}$	Th
242.	P. R. Young Radiative data for Fe XI Astron. Astrophys. 417, 785	<b>II.</b> 5 (2004)		
	$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{12+}$	Photoexcitation	600-150 $\mathring{A}$	$\mathrm{Th}$
243.	M. A. Bautista, C. Mendoza <b>K-shell photoionization a</b> Astron. Astrophys. 418, 117	a, T. R. Kallman, P. Palmeri and electron impact excitation 71 (2004)	n of Fe XVII-Fe XXIII.	
	$h\nu + Fe^{16+}$	Photoionization	100-2000 By	Th
	$h\nu + Fe^{17+}$	Photoionization	100-2000 Ry	Th
	$h\nu + Fe^{18+}$	Photoionization	100-2000 Ry	Th
	$h\nu + Fe^{19+}$	Photoionization	100-2000 Ry	Th
	$h\nu + Fe^{20+}$	Photoionization	100-2000 Ry	Th
	$h\nu + Fe^{21+}$	Photoionization	100-2000 Ry	Th
	$h\nu + Fe^{22+}$	Photoionization	100-2000 Ry	Th
	-		v	

244.	K. M. Aggarwal, F. T. Radiative rates for Astron. Astrophys.	P. Keenan, R. Kisielius r transitions in Fe XVII. 420, 783 (2004)		
	$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{16+}$	Photoexcitation	53-91 Ry	$\mathrm{Th}$
245.	L. Andric, F. Bouak Effect of non-adia ation cross section Astron. Astrophys.	line, T. P. Grozdanov, R. McCarr batic coupling on the isotopic a of CO. 421, 381 (2004)	oll e dependence of the photodissoci-	
	$h\nu + CO$	Photodissociation	90,000-106,000 $cm^{-1}$	$\mathrm{Th}$
246.	C. Colon, A. Alonso- Lifetimes and osci ionized tin. Astron. Astrophys.	Medina <b>llator strengths for the 5s5p6</b> 422, 1109 (2004)	s, 5s5p5d and $5p^3$ levels in single-	
	$h\nu + Sn^+$	Photoexcitation	$10^5 \ cm^{-1}$	Th
247.	M. Eidelsberg, J. L. <b>Oscillator strengt</b> ${}^{13}C^{18}O$ <b>between 9</b> Astron. Astrophys.	Lemaire, J. H. Fillion, F. Rostas, hs for transitions to Rydbe 37 and 972 Å. 424, 355 (2004)	S. R. Federman, Y. Sheffer rg levels in ${}^{12}C^{16}O$ , ${}^{13}C^{16}O$ and	
	$h\nu + CO$	Photoexcitation	972-967 $\AA$	Exp
248.	V. Jonauskas, F. P. F P.A.M. van Hoof, P. <b>Dirac-Fock energy</b> Astron. Astrophys.	Keenan, M. E. Foord, R. F. Heeter, H. Norrington <b>r levels and transition probab</b> 424, 363 (2004)	S. J. Rose, G. J. Ferland, R. Kisielius, ilities for oxygen-like Fe XIX.	
	$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{18+}$	Photoexcitation	1600-10 Å	Th
249.	S. Ivarsson, G. M. W Constraining the v star $\chi$ Lupi, with Astron. Astrophys.	Vahlgren, Z. Dai, H. Lundberg, D. very heavy elemental abundan new atomic data for Os II an 425, 353 (2004)	S. Leckrone ce peak in the chemically peculiar d Ir II.	
	$egin{array}{l} {f h} u + {f Os}^+ \ {f h} u + {f Ir}^+ \end{array}$	Photoexcitation Photoexcitation	$\begin{array}{c} 3800\text{-}1900\ \mathring{A} \\ 3800\text{-}1900\ \mathring{A} \end{array}$	Exp Exp
250.	S. S. Tayal Accurate calculati wavefunctions. Astron. Astrophys.	on of oscillator strengths for 426, 717 (2004)	Cl II lines using non-orthogonal	
	$h\nu + Cl^+$	Photoexcitation	Undef.	$\mathrm{Th}$
251.	K. M. Aggarwal, F. T. Radiative rates for Astron. Astrophys.	P. Keenan <b>r E1, E2, M1 and M2 transit</b> 427, 763 (2004)	ions in Fe X.	
	$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{9+}$	Photoexcitation	0.0-9.0 Ry	$\mathrm{Th}$
252.	S. J. Smith, I. Cadez Measurement of t	z, A. Chutjian, M. Niimura he metastable lifetime for the	e $2s^2 2p^2 {}^1S_0$ level in $O^{2+}$ .	

Astrophys. J., Part 1 602, 1075 (2004)

	$\mathbf{h} u$ + $\mathbf{O}^{2+}$	Photoexcitation	$232.17~\mathrm{nm}$	Exp
253.	J. E. Lawler, C. Sneden, A Improved atomic data three metal-poor stars Astrophys. J., Part 1 604	J. J. Cowan for Ho II and new holmi , 850 (2004)	um abundances for the Sun and	
	$h\nu + Ho^+$	Photoexcitation	$24{,}000{-}31{,}000\ cm^{-1}$	Exp
254.	S. Otranto, C. R. Garibot Angular distributions quence. Eur. Phys. J. D 27, 215 (	tti <b>for photo-double-ionizat</b> (2003)	ion of the He isoelectronic se-	
	$h\nu + He Z = ?-?$	Photoionization	Undef.	Th
255.	O. Icelli, S. Erzenoglu A new method for th sections in some lantha system. Nucl. Instrum. Methods	e determination of molec mide compounds with ene Phys. Res. B 215, 9 (2004)	ular scattering differential cross rgy dispersive X-ray fluorescence	
	$\mathbf{h}\nu + \mathbf{L}\mathbf{a}_2\mathbf{O}_3$	Elastic Scattering	$59.5 \ \mathrm{keV}$	E/T
	$h\nu + CeO_2$	Elastic Scattering	59.5  keV	E/T
	$h\nu + Nd_2O_3$	Elastic Scattering	59.5  keV	E/T
256.	R. Feifel, V. Kimberg, A. Piancastelli, S. L. Sorense <b>Profile of resonant pho</b> <b>photon frequency detu</b> Phys. Rev. A 70, 032708	Baev, F. Germukhanov, H en, L. Karlsson, S. Svensson <b>btoelectron spectra versus</b> <b>ining.</b> (2004)	Agren, C. Miron, G. Oehrwall, M. N.	
	$\mathbf{h} u + \mathbf{N}_2$	Photoionization	401  eV	Exp
257.	Z. Chen, A. Z. Msezane Generalized oscillator Phys. Rev. A 70, 032714	strengths for inner-shell (2004)	electron transitions.	
	$h\nu + Na$	Photoexcitation	0-12 $q^2$ a.u.	Th
258.	I. Liontos, A. Bolovinos, S Single and double ioni ${}^{1}S_{0}$ autoionizing state: Phys. Rev. A 70, 033403	S. Cohen, A. Lyras zation of magnesium via a Experimental and theory (2004)	four-photon excitation of the $3p^2$ etical analysis.	
	$h\nu + Mg$	Photoionization	594-584  nm	E/T
259.	F. Lepine, Ch. Bordas, C Atomic photoionizatio Phys. Rev. A 70, 033417	. Nicole, M.J.J. Vrakking <b>n process under magnific</b> (2004)	ation.	
	$egin{array}{l} \mathbf{h} u + \mathbf{X}\mathbf{e} \ \mathbf{h} u + \mathbf{X}\mathbf{e}^* \end{array}$	Photoionization Photoionization	Threshold Threshold	$\begin{array}{c} Exp\\ Exp \end{array}$
260.	<ul> <li>A. De Fanis, M. Oura, N.</li> <li>R. Doerner, Y. Tamenori,</li> <li>Photoelectron-photoio</li> <li>J. Phys. B 37, L235 (2004)</li> </ul>	Saito, M. Machida, M. Nago H. Chiba, M. Takahashi, J.H m-photoion coincidence in 4)	shi, A. Knapp, J. Nickles, A. Czasch, I.D. Eland, K. Ueda A <b>Ar dimers.</b>	

$\mathbf{h} u + \mathbf{A}\mathbf{r}_2$	Photodissociation	252-294.9  eV	Exp
$\mathbf{h} u + \mathbf{Ar}_2$	Photoionization	252-294.9  eV	Exp

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Vibrational structure in inner shell photoionization of molecules. J. Phys. B 37, R89 (2004)

$h\nu + CH_4$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + CO$	Photodissociation	$295\text{-}580~\mathrm{eV}$	É/T
$h\nu + CO_2$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + N_2$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + O_2$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_6$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$\mathbf{h}\nu + \mathbf{C}_{6}\mathbf{H}_{6}$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + C_4H_4O$	Photodissociation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + CH_4$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + CO$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + CO_2$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + N_2$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$h\nu + O_2$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_6$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$\mathbf{h}\nu + \mathbf{C}_{6}\mathbf{H}_{6}$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T
$\mathbf{h}\nu + \mathbf{C}_4\mathbf{H}_4\mathbf{O}$	Photoexcitation	$295\text{-}580~\mathrm{eV}$	E/T

262. A. N. Hopersky, V. A. Yavna, A. M. Nadolinsky, D. V. Dzuba
Elastic scattering of photon by the Ne atom and the Ne⁶⁺ ion.
J. Phys. B 37, 2511 (2004)

$h\nu + Ne$	Elastic Scattering	865-1102  eV	Th
$\mathbf{h}\nu + \mathbf{N}\mathbf{e}^{6+}$	Elastic Scattering	865-1102  eV	$\mathrm{Th}$

# 263. J. Zeng, G. Dong, G. Zhao, J. Yuan The photoionization of Fe⁷⁺ and Fe⁸⁺ in the 2p-3d resonance energy region. J. Phys. B 37, 2529 (2004)

$h\nu + Fe^{7+}$	Photoionization	$725-755 \ eV$	Th
$h\nu + Fe^{8+}$	Photoionization	$725-755 \ eV$	Th

#### 264. F. Delahaye, S. N. Nahar, A. K. Pradhan, H. L. Zhang Resolution and accuracy of resonances in R-matrix cross sections. J. Phys. B 37, 2585 (2004)

$h\nu + O^+$	Photoionization	Undef.	$\mathrm{Th}$
$h\nu + O^{+*}$	Photoionization	Undef.	Th

265. S.-W. Yu, W. C. Stolte, R. Guillemin, G. Oehrwall, I. C. Tran, M. N. Piancastelli, R. Feng, D. W. Lindle Photofragmentation study of core-excited NO.

J. Phys. B 37, 3583 (2004)

$h\nu + NO$	Photodissociation	400-430  eV	Exp
$h\nu + NO$	Photoexcitation	400-430  eV	Exp
$h\nu + NO$	Photoionization	400-430  eV	$\operatorname{Exp}$

266. S. S. Tayal

**Photoionization of atomic phosphorus from ground and excited states.** J. Phys. B 37, 3593 (2004)

	$h\nu + P$	Photoionization	$10.5-25.5 \ {\rm eV}$	$\mathrm{Th}$
267.	T. Matsui, H. Yoshii, K. Tsu Morioka, T. Hayaishi <b>Multiple photoionization</b> J. Phys. B 37, 3745 (2004)	ukamoto, S. Kawakita, E. Murakan following $3d_{5/2} - shell$ thresh	ami, J. Adachi, A. Yagishita, Y. hold ionization of Xe.	
	$h\nu + Xe$	Photoionization	672-682  eV	Exp
268.	A. Rudenko, K. Zrost, C. I Ullrich Resonant structures in of atoms in the tunnellin J. Phys. B 37, L407 (2004)	D. Schroeter, V.L.B. de Jesus, B. the low-energy electron cont ng regime.	Feuerstein, R. Moshammer, J. inuum for single ionization	
	$h\nu + He$	Photoionization	795  nm	Exp
	$h\nu + Ne$	Photoionization	795 nm	Exp
	$h\nu + Ar$	Photoionization	795 nm	Exp
269.	A. Natarajan, L. Natarajan $K\beta$ x-ray satellites of hig J. Phys. B 37, 4789 (2004)	ghly ionized iron.		
	$h\nu + Fe^{22+}$	Photoexcitation	Undef	E/T
	$h u + Fe^{24+}$ $h u + Fe^{24+}$	Photoexcitation	Undef.	E/T
270.	N. A. Cherepkov, S. K. Sem O K-shell photoemission experiment. J. Phys. B 37, 4803 (2004)	nenov, A. V. Golovin, J. Adachi, An of the CO molecule: Comp	A. Yagishita parison between theory and	
	$h\nu + CO$	Total Absorption. Scattering	540-590  eV	Th
	$h\nu + CO$	Photodissociation	540-590 eV	Th
	$h\nu + CO$	Photoionization	$540-590 \ eV$	$\mathrm{Th}$
271.	A. Reber, F. Martin, H. Ba <b>Three-photon above-thr</b> Phys. Rev. A 68, 063401 (2	chau, R. S. Berry eshold ionization of magnesiu 003)	ım.	
	$h\nu + Mg$	Photoionization	0.145-0.215 a.u.	$\mathrm{E}/\mathrm{T}$
272.	R. Reichle, H. Helm, I. Yu. <b>Detailed comparison of of the negative hydrogen</b> Phys. Rev. A 68, 063404 (2)	Kiyan theory and experiment of str n ion. 2003)	cong-field photodetachment	
	$\mathbf{h} u$ + $\mathbf{H}^-$	Photodetachment	$2.15~\mu$ m	$\mathrm{E}/\mathrm{T}$
273.	A. A. Khusivadze, I. I. Fabr Static electric-field effect region. Phys. Rev. A 68, 063405 (2	rikant, U. Thumm ets in the photodetachment of 2003)	of $Cs^-$ at the 3P resonance	
	${ m h} u$ + ${ m Cs}^-$	Photodetachment	0-0.04  eV	$\mathrm{Th}$
274.	J. Colgan, M. S. Pindzola, I <b>Time-dependent studies</b> Phys. Rev. A 68, 063413 (2	F. Robicheaux of single and multiple photo 2003)	ionization of $H_2^+$ .	

	$\mathbf{h}\nu + \mathbf{H}_2^+$	Photoionization	40-200  eV	Th
275.	R. Wehlitz, M. M. M. M. Double-to-single J Phys. Rev. A 69, 06	Martinez, J. B. Bluett, D. Lukic, S. photoionization ratio of lithiun 62709 (2004)	B. Whitfield n at medium energies.	
	$h\nu + Li$	Photoionization	$120\text{-}910~\mathrm{eV}$	Exp
276.	G. B. Armen, E. P. <b>Spectator-electron</b> Phys. Rev. A 69, 06	Kanter, B. Kraessig, J. C. Levin, S n behavior during cascade dec 52710 (2004)	S. H. Southworth, L. Young ay in krypton.	
	$h\nu + Kr$	Photoionization	$14.326~{\rm keV}$	Exp
277.	D. Toffoli, M. J. Sin <b>Cross-section and</b> valence photoioni Phys. Rev. A 69, 06	npson, R. R. Lucchese <b>asymmetry-parameter calcul</b> <b>zation of ethane.</b> 52712 (2004)	ations for the outer- and inner-	
	$\mathbf{h}\nu + \mathbf{C}_2\mathbf{H}_6$	Photoionization	10-50  eV	$\mathrm{Th}$
278.	A. S. Kornev, E. B. $Ne^+$ and $Ne^{2+}$ io between theory at Phys. Rev. A 69, 06	Tulenko, B. A. Zon on formation in circularly pol nd experiment. 35401 (2004)	arized laser fields: Comparison	
	$\mathbf{h}\nu + \mathbf{Ne}$	Photoionization	$614 \mathrm{~nm}$	$\mathrm{Th}$
279.	K. I. Dimitriou, D. C Origin of the dou of hydrogen atom Phys. Rev. A 70, 06	G. Arbo, S. Yoshida, E. Persson, J ble-peak structure in the mon as driven by strong laser fields 51401 (2004)	. Burgdorfer nentum distribution of ionization	
	$\mathbf{h}\nu + \mathbf{H}$	Photoionization	0.05 a.u.	$\mathrm{Th}$
280.	M. Ya. Amusia, N. <b>Spin polarization</b> Phys. Rev. A 70, 06	A. Cherepkov, L. V. Chernysheva, of photoelectrons from 3d ele 52709 (2004)	Z. Felfli, A. Z. Msezane ctrons of Xe, Cs, and Ba.	
	$h\nu + Xe$	Photoionization	$670-810 {\rm ~eV}$	$\mathrm{Th}$
	$h\nu + Cs$	Photoionization	$670\text{-}810~\mathrm{eV}$	$\mathrm{Th}$
	$h\nu + Ba$	Photoionization	670-810  eV	$\mathrm{Th}$
281.	<ul> <li>P. Bolognesi, R. Fla</li> <li>Experimental obs</li> <li>2s.</li> <li>Phys. Rev. A 70, 06</li> </ul>	mmini, A. Kheifets, I. Bray, L. Av ervation of initial-state effects 52715 (2004)	aldi in photo-double-ionization of Ne	
	$h\nu + He$	Photoionization	60-142 eV	Exp
	$h\nu + Ne$	Photoionization	60-142  eV	Exp
282.	N. Saito, D. Toffoli, Yamaoka, M. Kitaji Symmetry- and m molecule. Phys. Rev. A 70, 06	R. R. Lucchese, M. Nagoshi, A. ma, H. Tanaka, U. Hergenhahn, K <b>nultiplet-resolved N 1s photoio</b> 52724 (2004)	De Fanis, Y. Tamenori, M. Oura, H Ueda nization cross sections of the $NO_2$	
	$h\nu + NO_2$	Photoionization	$410-420 {\rm ~eV}$	$\mathrm{E/T}$

283. D. A. Horner, J. Colgan, F. Martin, C. W. McCurdy, M. S. Pindzola, T. N. Rescigno Symmetrized complex amplitudes for He double photoionization from the timedependent close-coupling and exterior complex scaling methods. Phys. Rev. A 70, 064701 (2004)

	$\mathbf{h}\nu + \mathbf{H}\mathbf{e}$	Photoionization	$100\text{-}120~\mathrm{eV}$	Th
284. P. La	Singh, D. Mehta arge angle elast	, S. Kumar, M. Sharma, S. Puri, J. ic and inelastic scattering of 14	S. Shahi, N. Singh 4.93 keV photons.	
Nı	ucl. Instrum. Met	thods Phys. Res. B 222, 1 (2004)		
	$\mathbf{h}_{\nu} \perp \mathbf{H}$	Elastic Scattering	14.9  keV	Evp
	$h\nu + H$ $h\nu + C$	Elastic Scattering	14.9  keV	Exp
	$h\nu + C$ $h\nu + F$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Al$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Si$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Ti$	Elastic Scattering	14.9  keV	Exp
	$h\nu + V$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Fe$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Co$	Elastic Scattering	14.9  keV	$\operatorname{Exp}$
	$h\nu + Ni$	Elastic Scattering	$14.9 { m ~keV}$	Exp
	$h\nu + Cu$	Elastic Scattering	$14.9 \ \mathrm{keV}$	Exp
	$h\nu + Zn$	Elastic Scattering	$14.9 \mathrm{keV}$	Exp
	$h\nu + Ge$	Elastic Scattering	14.9  keV	$\operatorname{Exp}$
	$h\nu + Zr$	Elastic Scattering	$14.9 \mathrm{~keV}$	$\operatorname{Exp}$
	$h\nu + Nb$	Elastic Scattering	$14.9 \mathrm{keV}$	$\operatorname{Exp}$
	$h\nu + Mo$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Rh$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Pd$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Ag$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Cd$	Elastic Scattering	14.9 keV	Exp
	$h\nu + In$	Elastic Scattering	14.9 keV	Exp
	$h\nu + Sn$	Elastic Scattering	14.9 keV	Exp
	$n\nu + Ga$	Elastic Scattering	14.9 KeV	Exp
	$n\nu + Dy$	Elastic Scattering	14.9 KeV	Exp
	$n\nu + Ho$	Elastic Scattering	14.9  KeV 14.0  boV	Exp
	$m\nu + 1m$	Elastic Scattering	14.9  KeV 14.0  IroV	Exp
	$n\nu + 10$	Elastic Scattering	14.9  KeV 14.0  keV	Exp
	$n\nu + w$ $h\nu + Bo$	Elastic Scattering	14.9  KeV 14.0  keV	Exp
	$h\nu + Ie$ $h\nu + Ir$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Pt$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Au$	Elastic Scattering	14.9  keV	Exp
	$h\nu + Hg$	Elastic Scattering	14.9  keV	Exp
	$h\nu + U$	Elastic Scattering	14.9  keV	Exp
	$h\nu + H$	Photoionization	$14.9 \mathrm{keV}$	Exp
	$h\nu + C$	Photoionization	$14.9 \mathrm{keV}$	Exp
	$h\nu + F$	Photoionization	$14.9 { m ~keV}$	Exp
	$h\nu + Al$	Photoionization	$14.9 \mathrm{~keV}$	Exp
	$h\nu + Si$	Photoionization	$14.9 \mathrm{~keV}$	Exp
	$h\nu + Ti$	Photoionization	14.9  keV	Exp
	$h\nu + V$	Photoionization	14.9  keV	Exp
	$h\nu + Fe$	Photoionization	14.9  keV	Exp
	$h\nu + Co$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Ni$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Cu$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Zn$	Photoionization	14.9  keV	Exp

	$h\nu + Ge$	Photoionization	$14.9 { m ~keV}$	Exp
	$\mathbf{h}\nu + \mathbf{Zr}$	Photoionization	$14.9 { m ~keV}$	Exp
	$h\nu + Nb$	Photoionization	$14.9 { m ~keV}$	Exp
	$h\nu + Mo$	Photoionization	$14.9 { m ~keV}$	Exp
	$h\nu + Rh$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Pd$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Ag$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Cd$	Photoionization	$14.9 { m keV}$	Exp
	$\mathbf{h}\mathbf{\nu} + \mathbf{I}\mathbf{n}$	Photoionization	14.9  keV	Exp
	$h\nu + Sn$	Photoionization	14.9  keV	Exp
	$\mathbf{h} u + \mathbf{Gd}$	Photoionization	$14.9 { m ~keV}$	Exp
	$h\nu + Dy$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Ho$	Photoionization	14.9  keV	Exp
	$h\nu + Tm$	Photoionization	$14.9 { m keV}$	Exp
	$h\nu + Yb$	Photoionization	14.9  keV	Exp
	$h\nu + W$	Photoionization	14.9  keV	Exp
	$h\nu + Re$	Photoionization	14.9  keV	Exp
	$h\nu + Ir$	Photoionization	14.9  keV	Exp
	$h\nu + Pt$	Photoionization	14.9 keV	Exp
	$h\nu + Au$	Photoionization	14.9 keV	Exp
	$h\nu + Hg$	Photoionization	14.9 keV	Exp
	$h\nu + 0$	Photoionization	14.9 keV	Exp
286.	$h\nu + He$ P. Singh, D. Mehta	Photoionization A. N. Singh, S. Puri, J. S. Shahi	75-300  eV	Th
	Measurements of for 59.536 keV $\gamma$ Nucl. Instrum. Me	f Rayleigh, Compton and resona – rays. thods Phys. Res. B 225, 198 (2004	ant Raman scattering cross	-sections
	$h\nu + Yb$	Elastic Scattering	60  keV	Exp
	$h\nu + Lu$	Elastic Scattering	$60 \ \mathrm{keV}$	Exp
	$h\nu + Hf$	Elastic Scattering	$60 \ \mathrm{keV}$	Exp
287.	M. Faye, S. T. War Non resonant tw angular distribut Phys. Scr. 68, 352	ne, S. Ndiaye vo photon ionization of atomic tion. (2003)	hydrogen: Exact express	ions of
	$h\nu + H$	Photoionization	1-4 eV	$\mathrm{Th}$
288.	G. G. Paulus, F. G Interference effect Phys. Scr. 68, C11	rasbon, H. Walther cts in above-threshold ionization 8 (2003)	on.	
	$\mathbf{h}\nu + \mathbf{Ar}$	Photoionization	Undef.	$\mathrm{E}/\mathrm{T}$
	$h\nu + Xe$	Photoionization	Undef.	E/T
	$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	Undef.	$\mathrm{E/T}$
289.	Th. Weber, A. C Rotenberg, G. Mei Schmidt-Boecking, Fully differential	zasch, O. Jagutzki, A. Mueller, V gs, M. H. Prior, S. Daveau, A. L. R. Doerner cross sections for photo-doubl	T. Mergel, A. Kheifets, J. Fer- Landers, C. L. Cocke, T. Osi e-ionization of $D_2$ .	agin, E. pov, H.

Phys. Rev. Lett. 92, 163001 (2004)

	$ \begin{aligned} \mathbf{h} \boldsymbol{\nu} &+ \mathbf{H}_2 \\ \mathbf{h} \boldsymbol{\nu} &+ \mathbf{D}_2 \end{aligned} $	Photoionization Photoionization	$75.5-103 { m eV}$ $75.5-103 { m eV}$	Exp Exp
290. M K <b>R</b> Pl	. N. Piancastelli, R. Sanka . Ueda <b>esonant Auger decay</b> ( hys. Rev. A 71, 010703 (2	uri, S. Sorensen, A. De Fanis, H. Yo of above-threshold core-excite 2005)	shida, M. Kitajima, H. Tanaka, ed <i>H</i> ₂ <i>O</i> .	
	$h\nu + H_2O$ $h\nu + H_2O$	Photodissociation Photoionization	531-552 eV 531-552 eV	Exp Exp
291. Z. E: of Pl	Zhou, SI. Chu xploration of Coulomb ² molecules. hys. Rev. A 71, 011402 (2	o explosion dynamics through	n excited vibrational states	
	$egin{array}{l} \mathbf{h} u + \mathbf{H}_2^+ \ \mathbf{h} u + \mathbf{H}_2^{+*} \end{array}$	Photodissociation Photodissociation	532 nm 532 nm	$_{\mathrm{Th}}$
292. M Fe C th Pl	Alagia, R. Richter, S. S. Pifel, S. Sorensen, A. De F. ore level ionization d meshold-electron coince hys. Rev. A 71, 012506 (2	Stranges, M. Agaker, M. Stroem, Janis, K. Ueda, R. Fink, JE. Rub <b>ynamics in small molecules</b> <b>idence spectroscopy.</b> 2005)	J. Soederstroem, C. Sathe, R. bensson studied by x-ray-emission	
	$\begin{array}{l} {\rm h} \nu + {\rm N}_2 \\ {\rm h} \nu + {\rm N}_2 {\rm O} \\ {\rm h} \nu + {\rm O}_2 \\ {\rm h} \nu + {\rm N}_2 \\ {\rm h} \nu + {\rm N}_2 {\rm O} \\ {\rm h} \nu + {\rm O}_2 \end{array}$	Fluorescence Fluorescence Fluorescence Photoionization Photoionization Photoionization	408-546 eV 408-546 eV 408-546 eV 408-546 eV 408-546 eV 408-546 eV	Exp Exp Exp Exp Exp Exp
293. R. Si Pl	. Wehlitz, D. Lukic, J. B. ingle and double photo hys. Rev. A 71, 012707 (2	Bluett bionization of beryllium below 2005)	7 40 eV.	
	$h\nu + Be$	Photoionization	28-40 eV	Exp
294. E. Sl gr Pl	Z. Liverts, M. Ya. Amus hape variation of the tw cowth. hys. Rev. A 71, 012715 (2	ia, E. G. Drukarev, R. Krivec, V. vo-electron photoionization sp 2005)	B. Mandelzweig ectrum with photon energy	
	$egin{array}{l} \mathbf{h} u+\mathbf{H}^-\ \mathbf{h} u+\mathbf{H}^-\ \mathbf{h} u+\mathbf{He} \end{array}$	Photodetachment Photoionization Photoionization	0.5-24 keV 0.5-24 keV 0.5-24 keV	Th Th Th
295. S. Pa le Pl	Korica, D. Rolles, A. Reartial cross sections and nce photoemission of the hys. Rev. A 71, 013203 (2)	inkoester, B. Langer, J. Viefhaus, ad angular distributions of res $C_{60}$ . 2005)	S. Cvejanovic, U. Becker conant and nonresonant va-	
	$\mathbf{h}\nu + \mathbf{C}_{60}$	Photoionization	20-300  eV	Exp
296. D A T	. A. Telnov, SI. Chu b initio study of high- ime-dependent non-He	order harmonic generation of ermitian Floquet approach.	$H_2^+$ in intense laser fields:	

Phys. Rev. A 71, 013408 (2005)

$\mathbf{h} u$ + $\mathbf{H}_2^+$	Photoionization	532  nm	$\mathrm{Th}$
$\mathbf{n}\mathbf{h} u$ + $\mathbf{H}_2^+$	Photoionization	532  nm	$\mathrm{Th}$

297. V. Roudnev, B. D. Esry

 $HD^+$  photodissociation in the scaled coordinate approach.

Phys. Rev. A 71, 013411 (2005)

$h\nu + H_2^+$	Photodissociation	785 nm	$\mathrm{Th}$
$h\nu + HD^+$	Photodissociation	785 nm	$\mathrm{Th}$
$\mathbf{nh}\nu + \mathbf{HD}^+$	Photodissociation	785  nm	$\mathrm{Th}$

298. K. Zhao, W. T., III Hill
Ejection anistropy in three-atom Coulomb explosions.
Phys. Rev. A 71, 013412 (2005)

$h\nu + CO_2$	Photodissociation	800 nm	Exp
$h\nu + NO_2$	Photodissociation	800 nm	Exp
$\mathbf{n}\mathbf{h} u + \mathbf{C}\mathbf{O}_2$	Photodissociation	800 nm	Exp
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{N}\mathbf{O}_2$	Photodissociation	800 nm	$\operatorname{Exp}$

 299. T. Nakajima, G. Buica Modification of the photoelectron angular distribution through laser-induced continuum structure. Phys. Rev. A 71, 013413 (2005)

$h\nu + K$ Photoionization Few eV
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300. T. K. Kjeldsen, C. Z. Bisgaard, L. B. Madsen, H. Stapelfeldt Influence of molecular symmetry on strong-field ionization: Studies on ethylene, benzene, fluorobenzene, and chlorofluorobenzene. Phys. Rev. A 71, 013418 (2005)

$\mathbf{h} u + \mathbf{C}_2\mathbf{H}_4$	Photoionization	800  nm	$\mathrm{Th}$
$\mathbf{h}\nu + \mathbf{C}_{6}\mathbf{H}_{6}$	Photoionization	800  nm	Th
$\mathbf{h} u + \mathbf{C}_6\mathbf{H}_5\mathbf{F}$	Photoionization	800  nm	$\mathrm{Th}$
$h\nu + C_6H_4ClF$	Photoionization	800  nm	$\mathrm{Th}$

#### 301. D. Dundas, J. M. Rost

Molecular effects in the ionization of  $N_2$ ,  $O_2$ , and  $F_2$  by intense laser fields. Phys. Rev. A 71, 013421 (2005)

$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	390 nm	$\mathrm{Th}$
$\mathbf{h}\nu + \mathbf{O}_2$	Photoionization	390 nm	$\mathrm{Th}$
$\mathbf{h}\nu + \mathbf{F}_2$	Photoionization	390 nm	$\mathrm{Th}$

302. S. X. Hu, L. A. Collins

**Time-dependent study of photon-induced autoionization decay.** Phys. Rev. A 71, 062707 (2005)

$h\nu + He$	Photoexcitation	30-45  eV	$\mathrm{Th}$
$h\nu + He$	Photoionization	30-45  eV	$\mathrm{Th}$

303. H. Sabzyan, M. Vafee

Intensity dependence of the  $H_2^+$  ionization rates in Ti:sapphire laser fields above the Coulomb-explosion threshold. Phys. Rev. A 71, 063404 (2005)

	$egin{array}{l} \mathbf{h} u+\mathbf{H}_2^+\ \mathbf{h} u+\mathbf{H}_2^+ \end{array}$	Photodissociation Photoionization	790-800 nm 790-800 nm	Th Th
304.	A. Palacios, S. Barmaki, H. <b>Two-photon ionization o</b> Phys. Rev. A 71, 063405 (2	Bachau, F. Martin of $H_2^+$ by short laser pulses. 2005)		
	$egin{array}{l} { m h} u+{ m H_2}^+\ { m h} u+{ m H_2}^+ \end{array}$	Photodissociation Photoionization	0.6-0.84 a.u. 0.6-0.84 a.u.	Th Th
305.	V. I. Usachenko, SI. Chu Strong-field ionization o A generalized strong-fie model. Phys. Rev. A 71, 063410 (2	f laser-irradiated light homored and approximation-linear com	nuclear diatomic molecules: bination of atomic orbitals	
	$h\nu + H_0$	Photoionization	1.6 eV	$\mathbf{T}\mathbf{h}$
	$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	1.6 eV	Th
	$h\nu + O_2$	Photoionization	1.6 eV	Th
306.	M. Kutzner, G. P. Wright, <b>Polarization effects in tl</b> Phys. Rev. A 71, 064702 (2	G. B. Cross ne photoionization of barium 2005)	4d electrons.	
	$h\nu + Ba$	Photoionization	100-150  eV	$\mathrm{Th}$
307.	D. Kilbane, E. T. Kennedy, <b>On the 3p-subshell photo</b> J. Phys. B 38, L1 (2005)	JP. Mosnier, P. van Kampen, J pabsorption spectra of iron-gro	T. Costello oup ions: The case of $Mn^{2+}$ .	
	$\mathbf{h} u$ + $\mathbf{Mn}^{2+}$	Total Absorption, Scattering	$45\text{-}75~\mathrm{eV}$	Exp
308.	P. Lablanquie, S. Sheinerma Dynamics of double ph threshold electron-Auge J. Phys. B 38, L9 (2005)	an, F. Penent, T. Aoto, Y. Hikosa otoionization near the Ar 2p r electron coincidence spectro	ka, K. Ito • threshold investigated by oscopy.	
	$\mathbf{h} u$ + Ar	Photoionization	$246\text{-}253~\mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
309.	S. X. Hu, J. Colgan, L. A. <b>Triple-differential cross-</b> <b>threshold.</b> J. Phys. B 38, L35 (2005)	Collins -sections for two-photon dou	able ionization of He near	
	$\mathbf{h} u$ + He $\mathbf{n}\mathbf{h} u$ + He	Photoionization Photoionization	$\begin{array}{c} 39\text{-}47 \ \mathrm{eV} \\ 39\text{-}47 \ \mathrm{eV} \end{array}$	$_{\mathrm{Th}}^{\mathrm{Th}}$
310.	G. Pruemper, Y. Tamenor Tanaka, K. Ueda Ultrafast dissociation o coincidence spectroscop J. Phys. B 38, 1 (2005)	i, A. De Fanis, U. Hergenhahn, f F 1s excited $SF_6$ probed by.	M. Kitajima, M. Hoshino, H.	
	$egin{array}{l} {f h} u + {f SF}_6 \ {f h} u + {f SF}_6 \end{array}$	Photodissociation Photoionization	686-690 eV 686-690 eV	Exp Exp
311.	J. Berakdar, N. M. Kabach	nik		

**Two-electron photoemission from polarized atoms.** J. Phys. B 38, 23 (2005)

	$egin{array}{l} \mathbf{h} u + \mathbf{He} \ \mathbf{h} u + \mathbf{He}^* \end{array}$	Photoionization Photoionization	72 eV 72 eV	$_{\mathrm{Th}}$
312.	D. Kilbane, E. T. Kennedy, <b>EUV photoabsorption sp</b> J. Phys. B 38, 83 (2005)	JP. Mosnier, J. T. Costello, P. pectra of Cd II and Cd III.	van Kampen	
	$egin{array}{l} \mathbf{h} u + \mathbf{Cd}^+ \ \mathbf{h} u + \mathbf{Cd}^{2+} \end{array}$	Total Absorption, Scattering Total Absorption, Scattering	24-110 eV 24-110 eV	Exp Exp
313.	<ul> <li>E. Mejia-Ospino, G. Garcia</li> <li><b>Resonance multiphoton</b></li> <li><b>C and B states.</b></li> <li>J. Phys. B 38, 109 (2005)</li> </ul>	, A. Guerrero, I. Alvarez, C. Cisno ionization and dissociation of	eros [•] dimethyl ether via the C',	
	$egin{array}{l} \mathbf{h} u + \mathbf{CH}_3\mathbf{OCH}_3\ \mathbf{h} u + \mathbf{CH}_3\mathbf{OCH}_3 \end{array}$	Photodissociation Photoionization	450-550 nm 450-550 nm	Exp Exp
314.	E. Gubbini, U. Eichmann, M Strong laser field ionizat tering. J. Phys. B 38, L87 (2005)	M. Kalashnikov, W. Sandner tion of Kr: First-order relativ	vistic effects defeat rescat-	
	$h\nu + Kr$	Photoionization	Undef.	Exp
315.	A. Palacios, H. Bachau, F. B <b>Resonant effects in the</b> J. Phys. B 38, L99 (2005)	Martin Coulomb explosion of $H_2^+$ by	ultrashort laser pulses.	
	$egin{array}{l} \mathbf{h} u + \mathbf{H}_2^+ \ \mathbf{h} u + \mathbf{H}_2^+ \end{array}$	Photodissociation Photoionization	0.76-0.88 a.u. 0.76-0.88 a.u.	Th Th
316.	<ul> <li>A. Knapp, A. Kheifets, I. J. Nickles, S. Kammer, O. Jag</li> <li>H. Schmidt-Boecking, C. L.</li> <li>Photo double ionization opolarized light.</li> <li>J. Phys. B 38, 615 (2005)</li> </ul>	Bray, Th. Weber, A. L. Landers gutzki, L.Ph.H. Schmidt, M. Scho Cocke, R. Doerner of helium 100 eV and 450 eV a	s, S. Schoessler, T. Jahnke, J. effler, T. Osipov, M. H. Prior, bove threshold: I. Linearly	
	$h\nu + He$	Photoionization	$179-529 \mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
317.	<ul> <li>A. Knapp, A. Kheifets, I. J. Nickles, S. Kammer, O. Jag</li> <li>H. Schmidt-Boecking, C. L.</li> <li>Photo double ionization cularly polarized light.</li> <li>J. Phys. B 38, 635 (2005)</li> </ul>	Bray, Th. Weber, A. L. Landers gutzki, L.Ph.H. Schmidt, M. Scho Cocke, R. Doerner of helium 100 eV and 450 eV	s, S. Schoessler, T. Jahnke, J. effler, T. Osipov, M. H. Prior, V above threshold: II. Cir-	
	$h\nu + He$	Photoionization	179-529  eV	$\mathrm{E}/\mathrm{T}$
318.	A. Knapp, B. Kraessig, A. Jahnke, J. Nickles, S. Kamr H. Prior, H. Schmidt-Boeck <b>Photo double ionization</b> <b>Gerade and ungerade an</b> J. Phys. B 38, 645 (2005)	Kheifets, I. Bray, Th. Weber, A. ner, O. Jagutzki, L.Ph.H. Schmid- ing, C. L. Cocke, R. Doerner of helium 100 eV and 450 nplitudes and their relative p	. L. Landers, S. Schoessler, T. t, M. Schoeffler, T. Osipov, M. eV above threshold: III. hases.	
	$\mathbf{h} u$ + He	Photoionization	$179-529 { m eV}$	$\mathrm{E}/\mathrm{T}$

319. G. Vall-llosera, J. Alvarez Ruiz, P. Erman, E. Melero Garcia, E. Rachlew, S. Menmuir, M. Stankiewicz

The  $np\sigma, \pi$  to EF emission systems in  $D_2$  studied by selective excitation. J. Phys. B 38, 659 (2005)

$\mathbf{h}\nu + \mathbf{H}_2$	Fluorescence	13.97 - 15.84  eV	Exp
$\mathbf{h}\nu + \mathbf{D}_2$	Fluorescence	13.97 - 15.84  eV	Exp
$\mathbf{h} u + \mathbf{H}_2$	Photoexcitation	13.97-15.84  eV	Exp
$\mathbf{h}\nu + \mathbf{D}_2$	Photoexcitation	13.97-15.84  eV	Exp

320. R. A. Barrea, C. A. Perez, T. S. Plivelic, E. V. Bonzi, H. J. Sanchez Anisotropic angular distribution of Er L x-rays following photoionization by linearly polarized radiation. J. Phys. B 38, 839 (2005)

$h\nu + Er$	Fluorescence	9.2  keV	E/T
$h\nu + Er$	Photoionization	9.2  keV	E/T

321. L. Partanen, R. Sankari, S. Osmekhin, Z. F. Hu, E. Kukk, H. Aksela Multiple ionization of Xe – comparison of de-excitation pathways following  $3d_{5/2}$ ionization and  $3d_{5/2}$  -; 6p resonance excitation. J. Phys. B 38, 1881 (2005)  $h\nu + Xe$ Photoexcitation  $664\text{-}694~\mathrm{eV}$ Exp  $h\nu + Xe$ Photoionization 664-694 eVExp 322. M. Madine, H. W. van der Hart Single- and two-photon ionization of Sr. J. Phys. B 38, 1895 (2005)  $h\nu + Sr$ Photoionization 0.21-0.158 a.u. Th 323. D. Comtois, D. Zeidler, H. Pepin, J. C. Kieffer, D. M. Villeneuve, P. B. Corkum Observation of Coulomb focusing in tunnelling ionization of noble gases. J. Phys. B 38, 1923 (2005)  $h\nu + He$ Photoionization 800-1800 nm Exp  $h\nu + Ne$ Photoionization 800-1800 nm Exp  $h\nu + Ar$ Photoionization 800-1800 nm Exp 324. J. J. Camacho, A. Pardo, J.M.L. Poyato A study of the  $B^1\Pi_u$  -;  $X^1\Sigma_g^+$  system of  $Na_2$ . J. Phys. B 38, 1935 (2005) 4545-5145 Å  $h\nu + Na_2$ Fluorescence Exp

325. M. Pernpointner

## The effect of the Gaunt interaction on the molecular ionization spectra of CO, $H_2S$ and TlH.

J. Phys. B 38, 1955 (2005)

$h\nu + CO$	Photodissociation	7.78-22.94  eV	$\mathrm{Th}$
$h\nu + H_2S$	Photodissociation	7.78-22.94  eV	$\mathrm{Th}$
$h\nu + TlH$	Photodissociation	7.78-22.94  eV	$\mathrm{Th}$
$h\nu + CO$	Photoionization	7.78-22.94  eV	$\mathrm{Th}$
$h\nu + H_2S$	Photoionization	7.78-22.94  eV	$\mathrm{Th}$
$h\nu + TlH$	Photoionization	$7.78\text{-}22.94\;\mathrm{eV}$	Th

326.	S.W.J. Scully, A. Aguil M. S. Lubell, R. Puett M. McLaughlin <b>K-shell photoionizat</b> J. Phys. B 38, 1967 (20	lar, E. D. Emmons, R. A. Phaneuf, M ner, A. S. Schlachter, A. M. Covingto tion of Be-like carbon ions: Expe 005)	. Halka, D. Leitner, J. C. Levin, on, S. Schippers, A. Mueller, B. riment and theory for $C^{2+}$ .	
	$\mathbf{h} u$ + $\mathbf{C}^{2+}$	Photoionization	$292\text{-}325~\mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
327.	D.M.P. Holland, D. A. A study of the valence J. Phys. B 38, 2047 (20	Shaw, I. C. Walker, I. J. McEwen, E. ce shell photoelectron and photoa 005)	. Apra, M. F. Guest bsorption spectra of $CF_3SF_5$ .	
	$ \begin{aligned} \mathbf{h} \nu + \mathbf{C} \mathbf{F}_3 \mathbf{S} \mathbf{F}_5 \\ \mathbf{h} \nu + \mathbf{C} \mathbf{F}_3 \mathbf{S} \mathbf{F}_5 \end{aligned} $	Total Absorption, Scattering Photoionization	8-60 eV 8-60 eV	E/T E/T
328.	G. Del Zanna, M. C. C Benchmarking atom Astron. Astrophys. 432	Chidichimo, H. E. Mason <b>iic data for astrophysics: Fe XXI</b> 2, 1137 (2005)	ш.	
	$\mathbf{h} u$ + $\mathbf{Fe}^{22+}$	Photoexcitation	$10 \ \AA$	$\mathrm{Th}$
329.	V. Jonauskas, P. Bogd Ferland, R. Kisielius, F <b>Energy levels and tr</b> Astron. Astrophys. 433	anovich, F. P. Keenan, M. E. Foord, P.A.M. van Hoof, P. H. Norrington cansition probabilities for nitroge 3, 745 (2005)	R. F. Heeter, S. J. Rose, G. J. en-like Fe XX.	
	$\mathbf{h}\nu + \mathbf{F}\mathbf{e}^{19+}$	Photoexcitation	Undef.	$\mathrm{Th}$
330.	E. Landi <b>Radiative transition</b> Astron. Astrophys. 434	probabilities in the O-like seque 4, 365 (2005)	ence.	
	$\mathbf{h} u$ + $\mathbf{N}\mathbf{a}^{3+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h} u$ + $\mathbf{Mg}^{4+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$\mathbf{h}\nu + \mathbf{Al}^{5+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + Si^{6+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + P^{7+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + S^{8+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + Cl^{9+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	$\mathrm{Th}$
	$h\nu + Ar^{10+}$	Photoexcitation	$0.0 - 3x10^{6} cm^{-1}$	$\mathrm{Th}$
	$h\nu + K^{11+}$	Photoexcitation	$0.0 - 3x10^{\circ} cm^{-1}$	Th
	$h\nu + Ca^{12+}$	Photoexcitation	$0.0 - 3x10^{6} cm^{-1}$	Th
	$h\nu + Sc^{10+}$	Photoexcitation Db sts servite time	$0.0 - 3x10^{\circ} cm^{-1}$	Th
	$n\nu + 11$ $h\nu + V^{15+}$	Photoexcitation	$0.0 - 5x10^{\circ} \ cm$ $0.0 - 2x10^{6} \ cm^{-1}$	1 II Th
	$n\nu + v$	Photoexcitation	$0.0 - 5x10^{\circ} \ cm$ $0.0 - 2x10^{6} \ cm^{-1}$	1 II Th
	$\mathbf{n}\nu + \mathbf{O}\mathbf{r}^{+}$ $\mathbf{h}\nu + \mathbf{M}\mathbf{n}^{17+}$	Photoexcitation	$0.0 - 3x 10^{\circ} cm^{-1}$	111 Th
	$h\nu + Kn$ $h\nu \pm Fo^{18+}$	Photoexcitation	$0.0 - 3x 10^{\circ} cm^{-1}$	111 Th
	$h\nu + Fe$ $h\nu + Co^{19+}$	Photoexcitation	$0.0 - 3x 10^{\circ} cm^{-1}$	Th
	$h\nu + 00$ $h\nu + Ni^{20+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + \Gamma u^{21+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + Cu$ $h\nu + Zn^{22+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + Ga^{23+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + Ge^{24+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$h\nu + As^{25+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h} u + \mathbf{S}\mathbf{e}^{26+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h}\nu + \mathbf{Br}^{27+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h}\nu + \mathbf{K}\mathbf{r}^{28+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th
	$\mathbf{h}\nu + \mathbf{R}\mathbf{b}^{29+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	$\mathrm{Th}$
	$\mathbf{h} u + \mathbf{Sr}^{30+}$	Photoexcitation	$0.0 - 3x10^6 \ cm^{-1}$	Th

331.	M. Melendez, M. A. Bautista Atomic data from the Iron project. LVII. Radiative transition rates and collision strengths within the $3d^7$ configuration of Ni IV. Astron. Astrophys. 436, 1123 (2005)			
	$h u + Ni^{3+}$	Photoexcitation	$0.0\text{-}2.0 \mathrm{Ry}$	$\mathrm{Th}$
332.	K. M. Aggarwal, F. P Energy levels and r Astron. Astrophys. 4	2. Keenan, S. Nakazaki radiative rates for transition 36, 1141 (2005)	s in Ar XIII, Ar XIV and Ar XV	7.
	$h\nu + Ar^{12+}$	Photoexcitation	0.0-35.0 By	Th
	$h\nu + Ar^{13+}$	Photoexcitation	0.0-35.0 Ry	Th
	$\mathbf{h} u + \mathbf{A}\mathbf{r}^{14+}$	Photoexcitation	0.0-35.0 Ry	$\mathrm{Th}$
333.	S. N. Nahar, A. K. Pr Atomic data from for Fe IV including Astron. Astrophys. 44	radhan the Iron Project. LIX. New g fine structure. 37, 345 (2005)	radiative transition probabilitie	95
	$h\nu + Fe^{3+}$	Photoexcitation	$0.0\text{-}100,000~\AA$	$\mathrm{Th}$
334.	JM. Bizau, JP. Cha F. Penent, C. Blancar Absolute cross sec $O^{4+}$ , $F^{3+}$ , $F^{4+}$ and Astron. Astrophys. 42 $h\nu + N^{2+}$ $h\nu + N^{3+}$ $h\nu + O^{3+}$ $h\nu + O^{4+}$ $h\nu + F^{3+}$ $h\nu + F^{4+}$ $h\nu + F^{4+}$	<ul> <li>Impeaux, D. Cubaynes, F. J. Wuild, H. Kjeldsen</li> <li>tions for L-shell photoionization</li> <li>Ne⁴⁺.</li> <li>39, 387 (2005)</li> <li>Photoionization</li> </ul>	lleumier, F. Folkmann, T. S. Jacobser ation of the ions $N^{2+}$ , $N^{3+}$ , $O^{3+}$ 0.0-150.0  eV 0.0-150.0  eV 0.0-150.0  eV 0.0-150.0  eV 0.0-150.0  eV 0.0-150.0  eV 0.0-150.0  eV	n, -, Exp Exp Exp Exp Exp Exp
335.	E. A. Den Hartog, M. Improved laborator inum abundances of Astrophys. J., Part 1 $h\nu + Pt$	T. Herd, J. E. Lawler, C. Snedry transition probabilities for of BD +17 deg 2348 and the s 619, 639 (2005) Photoexcitation	en, J. J. Cowan, T. C. Beers r Pt I and application to the plat sun. 5230-2068 Å	Exp
336.	<ul> <li>K. H. J. Woerner, M. Gruetter, E. Vliegen, F. Merkt</li> <li>Role of nuclear spin in photoionization: Hyperfine-resolved photoionization of Xe and multichannel quantum defect theory analysis.</li> <li>Phys. Rev. A 71, 052504 (2005)</li> </ul>			of
	$h\nu + Xe$	Photoionization	$108,347 \ cm^{-1}$	E/T
337.	A. Y. Istomin, N. L. I Nondipole effects in of He. Phys. Rev. A 71, 052	Manakov, A. V. Meremianin, A. <b>a the triply differential cross</b> 702 (2005)	F. Starace section for double photoionizatio	n
	$h\nu + He$	Photoionization	20-450  excess eV	E/T

338.	A. Reber, T. Baynard, H Above-threshold ioni Phys. Rev. A 71, 05340	F. Martin, H. Bachau, R. S. Berry zation near the 3p4d ${}^{1}F^{0}$ autoic 2 (2005)	onizing state in magnesium.	
	$h\nu + Mg$	Photoionization	3.3-3.6 eV	$\mathrm{E}/\mathrm{T}$
339.	H. Yoshida, J. Sasaki, Y. N. M. Kabachnik, K. Ue Study of second-step photoexcitation in No J. Phys. B 38, 465 (2008	Kawabe, Y. Senba, A. De Fanis, M. eda o Auger transitions in Auger o e. 5)	Oura, S. Fritzsche, I. P. Sazhina, cascades following 1s -; 3p	
	$h\nu + Ne$	Photoexcitation	10-33  eV	$\mathrm{E}/\mathrm{T}$
340.	A. Rudenko, B. Feuerst Schroeter, R. Moshamm <b>Fragmentation dynar</b> J. Phys. B 38, 487 (2005)	ein, K. Zrost, V.L.B. de Jesus, T. er, J. Ullrich <b>nic of molecular hydrogen in str</b> 5)	Ergler, C. Dimopoulou, C. D.	
	$ \begin{aligned} \mathbf{h} \boldsymbol{\nu} + \mathbf{H}_2 \\ \mathbf{h} \boldsymbol{\nu} + \mathbf{H}_2 \end{aligned} $	Photodissociation Photoionization	795 nm 795 nm	Exp Exp
341.	E. A. Chowdhury, I. Gh Larmor radiation from J. Phys. B 38, 517 (2005)	ebregziabiher, B. C. Walker <b>m the ultra-intense field ionizat</b> 5)	ion of atoms.	
	$egin{array}{l} \mathbf{h} u + \mathbf{N}\mathbf{a}^{10+} \ \mathbf{h} u + \mathbf{N}\mathbf{a}^{10+} \end{array}$	Fluorescence Photoionization	3.6 eV 3.6 eV	Th Th
342.	H. Fukuzawa, T. Odagir Doubly excited states J. Phys. B 38, 565 (2005)	i, T. Nakazato, M. Murata, H. Miya s of methane produced by photo 5)	agi, N. Kouchi on and electron interactions.	
	$h\nu + CH_4$	Photoexcitation	18-51  eV; 80  eV	Exp
343.	<ul> <li>A. Rudenko, K. Zrost, T</li> <li>C. D. Schroeter, R. Mos</li> <li>Coulomb singularity</li> <li>single ionization.</li> <li>J. Phys. B 38, L191 (20)</li> </ul>	^{Th.} Ergler, A. B. Voitkiv, B. Najjari, hammer, J. Ullrich <b>in the transverse momentum (</b> 05)	V.L.B. de Jesus, B. Feuerstein, distribution for strong-field	
	$h\nu + He$	Photoionization	$795 \ \mathrm{nm}$	E/T
	$h\nu + Ne$	Photoionization	795  nm	$\dot{E/T}$
	$h\nu + Ar$	Photoionization	795  nm	E/T
344.	J-i. Adachi, N. Kosugi, Symmetry-resolved se molecules. J. Phys. B 38, R127 (20	A. Yagishita oft x-ray absorption spectroscop 05)	oy: Its application to simple	
	$h\nu + B$	Total Absorption, Scattering	$390-550~{\rm eV}$	E/T
	$h\nu + C$	Total Absorption, Scattering	$390\text{-}550~\mathrm{eV}$	$\dot{\rm E/T}$
	$h\nu + CO$	Total Absorption, Scattering	390-550  eV	$\mathrm{E}/\mathrm{T}$
	$h\nu + CO_2$	Total Absorption, Scattering	390-550 eV	E/T
	$\mathbf{h}\nu + \mathbf{N}_2$	Total Absorption, Scattering	390-550 eV	E/T
	$\mathbf{n}\nu + \mathbf{N}_2\mathbf{U}$ $\mathbf{h}\nu + \mathbf{\Omega}_2$	Total Absorption, Scattering	390-390 eV 390-550 eV	Е/Т Е/Т
	$\mathbf{h} u + \mathbf{C}_2$ $\mathbf{h} u + \mathbf{C}_2$ $\mathbf{H}_2$	Total Absorption, Scattering	390-550 eV	E/T
	$\mathbf{h} u + \mathbf{CS}_2$	Total Absorption, Scattering	390-550  eV	E/T
------	---------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------	---------------------------------------------------	-------------------------
	$h\nu + OCS$	Total Absorption, Scattering	390-550  eV	E/T
	$\mathbf{h}\nu + \mathbf{B}$	Photoexcitation	390-550  eV	E/T
	$h\nu + C$	Photoexcitation	$390\text{-}550~\mathrm{eV}$	E/T
	$h\nu + CO$	Photoexcitation	390-550  eV	E/T
	$\mathbf{h}\nu + \mathbf{CO}_2$	Photoexcitation	$390\text{-}550~\mathrm{eV}$	E/T
	$\mathbf{h}\nu + \mathbf{N}_2$	Photoexcitation	$390\text{-}550~\mathrm{eV}$	E/T
	$\mathbf{h}\nu + \mathbf{N}_2\mathbf{O}$	Photoexcitation	$390\text{-}550~\mathrm{eV}$	E/T
	$\mathbf{h}\nu + \mathbf{O}_2$	Photoexcitation	$390\text{-}550~\mathrm{eV}$	E/T
	$\mathbf{h} u + \mathbf{C}_2\mathbf{H}_2$	Photoexcitation	$390\text{-}550~\mathrm{eV}$	E/T
	$\mathbf{h} u + \mathbf{CS}_2$	Photoexcitation	390-550  eV	E/T
	$h\nu + OCS$	Photoexcitation	390-550  eV	E/T
	$\mathbf{h}\mathbf{\nu} + \mathbf{B}$	Photoionization	390-550  eV	E/T
	$h\nu + C$	Photoionization	390-550  eV	E/T
	$h\nu + CO$	Photoionization	390-550  eV	E/T
	$\mathbf{h} u + \mathbf{CO}_2$	Photoionization	390-550  eV	E/T
	$\mathbf{h} u$ + $\mathbf{N}_2$	Photoionization	390-550  eV	E/T
	$\mathbf{h} u + \mathbf{N}_2\mathbf{O}$	Photoionization	390-550  eV	E/T
	$\mathbf{h} u + \mathbf{O}_2$	Photoionization	390-550  eV	E/T
	$\mathbf{h} u + \mathbf{C}_2\mathbf{H}_2$	Photoionization	390-550  eV	E/T
	$h\nu + CS_2$	Photoionization	390-550 eV	E/T
	$h\nu + OCS$	Photoionization	390-550  eV	E/T
	J. Phys. B 38, 1657 (2005)			
	$h\nu + Hg$	Photoionization	15-17 eV	E/T
346.	LY. Peng, I. D. Williams, Dissociation of $H_2^+$ from spectra and pulse calibr J. Phys. B 38, 1727 (2005)	J. F. McCann n a short, intense, infrared la ation.	aser pulse: Proton emission	
	$\mathbf{h} u + \mathbf{H}_2^+$	Photodissociation	790 nm	$\mathrm{E}/\mathrm{T}$
347.	R. M. Schectman, S. R. Fee Gibson Oscillator strengths for Astrophys. J., Part 1 621, 1	derman, M. Brown, S. Cheng, M ultraviolet transitions in Cl I 159 (2005)	. C. Fritts, R. E. Irving, N. D. I and Cl III.	
	$h\nu + Cl^+$	Photoexcitation	1000 Å	Exp
	$h\nu + Cl^{2+}$	Photoexcitation	1000 Å	Exp
348.	X. Liu, D. E. Shemansky, M Analysis of the physical Astrophys. J., Part 1 623, 5	f. Ciocca, I. Kanik, J. M. Ajello properties of the $N_2$ c' ${}^{1}\Sigma_{u}^{+}$ (79 (2005)	$(0) - X^{-1}\Sigma_g^{-+}(0)$ transition.	Ĩ
	$\mathbf{h}\nu + \mathbf{N}_2$	Photoexcitation	$950\ { m \AA}$	Exp
349.	J. K. Lepson, P. Beiersdorfe Emission-line spectra of Astrophys. J., Part 1 625, 1	er, E. Behar, S. M. Kahn S VII-S XIV in the 20-75 Å .045 (2005)	wavelength region.	
	$\mathbf{h}\nu + \mathbf{S}^{6+}$ $\mathbf{h}\nu + \mathbf{S}^{7+}$	Photoexcitation	75-20 Å 75-20 Å	E/T
	, ~			/

	$\mathbf{h}\nu + \mathbf{S}^{8+}$	Photoexcitation	75-20 Å	$\mathrm{E}/\mathrm{T}$
	$\mathbf{h} u$ + $\mathbf{S}^{9+}$	Photoexcitation	75-20 $\AA$	E/T
	$\mathbf{h} u$ + $\mathbf{S}^{10+}$	Photoexcitation	75-20 Å	E/T
	$\mathbf{h} u + \mathbf{S}^{11+}$	Photoexcitation	75-20 Å	E/T
	$\mathbf{h} u$ + $\mathbf{S}^{12+}$	Photoexcitation	75-20 Å	E/T
	$\mathbf{h} u + \mathbf{S}^{13+}$	Photoexcitation	75-20 $\mathring{A}$	E/T
350.	M. F. Gu, M. Schmid Kahn <b>Laboratory measu</b>	t, P. Beiersdorfer, H. Chen, D. B rement and theoretical mode	. Thorn, E. Traebert, E. Behar, S. M. eling of K-shell X-ray lines from	
	inner-shell excited Astrophys. J., Part 1	and ionized ions of oxygen. 627, 1066 (2005)		
	$h\nu + O$	Photoexcitation	$22 \ \mathring{A}$	$\mathrm{E/T}$
351.	F. Bouakline, T. P. C. Calculations of nea the Lanczos algorit J. Chem. Phys. 122,	Frozdanov, L. Andric, R. McCarro ar-threshold cross sections for thm. 044108 (2005)	$r$ photodissociation of $CH^+$ using	
	$h\nu + CH^+$	Photodissociation	$31,600-33,000\ cm^{-1}$	$\mathrm{Th}$
352.	K. Takeshita, Y. Sada A theoretical study and 26 eV of the <i>C</i> J. Chem. Phys. 122,	amatu, K. Tanaka y on the inner-valence photoe 9 ₂ molecule. 044302 (2005)	electron spectra lying between 21	
	$\mathbf{h} u + \mathbf{O}_2$	Photoionization	21-26 eV	Th
353.	E. D. Emmons, A. Ag A. S. Schlachter, I. A <b>Photoionization an</b> Phys. Rev. A 71, 042	uilar, M. F. Gharaibeh, S.W.J. Solvarez, C. Cisneros, G. Hinojosa de electron-impact ionization 2704 (2005)	cully, R. A. Phaneuf, A.L.D. Kilcoyne, of $Xe^{3+}$ .	
	$h\nu + Xe^{3+}$	Photoionization	$37.5\text{-}115\;\mathrm{eV}$	Exp
354.	D. Calabrese, A. M.	Covington, W. W. Williams, D.	L. Carpenter, J. S. Thompson, T. J.	
	Photoelectron ang photodetachment of Phys. Rev. A 71, 042	ular distribution measurement of $V^-$ at visible wavelengths. 2708 (2005)	nts of s and d electrons from the	
	$\mathbf{h} u + \mathbf{V}^{-}$	Photodetachment	457.9-647.1  nm	Exp
355.	S. Gilb, V. Nestorov, Kr (n=5-10,s,d,g) the ac-Stark shift Phys. Rev. A 71, 042	S. R. Leone, J. C. Keske, L. Nug electronic wave packets: Elec during wave-packet preparati 2709 (2005)	ent-Glandorf, E. R. Grant tron time-of-flight resolution and on.	
	$h\nu + Kr$	Photoexcitation	270 nm	Exp
356.	J. E. Daily, R. Gomm <b>Two-photon photo</b> Phys. Rev. A 71, 043	hers, E. A. Cummings, D. S. Duri ionization of the Ca $4s3d$ $^{1}D_{2}$ 3406 (2005)	ee, S. D. Bergeson 2 level in an optical dipole trap.	
	$h\nu + Ca$	Photoionization	488 nm	Exp

357.	F. F. Guimaraes, V. Kimberg, V. C. Felicissimo, F. Gel'mukhanov, A. Cesar, H. Agren Phase-sensitive x-ray absorption driven by strong infrared fields. Phys. Rev. A 71, 043407 (2005)			
	$egin{array}{l} \mathbf{h} u + \mathbf{NO} \ \mathbf{h} u + \mathbf{NO} \end{array}$	Total Absorption, Scattering Photoexcitation	530-536 eV 530-536 eV	Th Th
358.	X. M. Tong, Z. X. Zhao, A. Post ionization alignme intense laser field. J. Phys. B 38, 333 (2005)	S. Alnaser, S. Voss, C. L. Cocke, nt of the fragmentation of	, C. D. Lin molecules in an ultrashort	
	$h\nu + O_2$	Photodissociation	$1\text{-}5.6 \ 10^{14} \ \mathrm{W}/cm^2$	$\mathrm{Th}$
359.	A. Aguilar, E. D. Emmons, I Canton, B. Rude, A. S. Sch R. A. Phaneuf <b>Photoionization of ions</b> theory for $E^{2+}$ and $N_{c}^{3+}$	M. F. Gharaibeh, A. M. Covington lachter, G. Hinojosa, I. Alvarez, G of the nitrogen isoelectronic	n, J. D. Bozek, G. Ackerman, S. C. Cisneros, B. M. McLaughlin, sequence: Experiment and	
	J. Phys. B 38, 343 (2005)	•		
	$egin{array}{l} \mathbf{h} u + \mathbf{F}^{2+} \ \mathbf{h} u + \mathbf{N}\mathbf{e}^{3+} \end{array}$	Photoionization Photoionization	$\begin{array}{c} 56.3\text{-}75.6 \text{ eV} \\ 56.3\text{-}75.6 \text{ eV} \end{array}$	${ m E/T} { m E/T}$
360.	J. Alvarez Ruiz, E. Melero Richter <b>Synchrotron radiation in</b> J. Phys. B 38, 387 (2005)	-Garcia, A. Kivimaki, M. Coren	no, P. Erman, E. Rachlew, R. copy of $SF_6$ .	
	$\mathbf{h} u + \mathbf{SF}_6$	Fluorescence	25-80 eV	Exp
361.	T. Mercouris, C. Haritos, C Interference generalized dichromatic fields. J. Phys. B 38, 399 (2005)	. A. Nicolaides cross-section for the multipl	hoton detachment of $H^-$ in	
	$h u + H^-$	Photodetachment	0.011-0.028 a.u.	$\mathrm{Th}$
362.	K. Okada, M. Kosugi, A. Fu H. Suzuki, K. Ohno Variation in resonant A threshold. J. Phys. B 38, 421 (2005)	ıjii, S. Nagaoka, T. Ibuki, S. Sam uger yields into the 1G_4 x nl	ori, Y. Tamenori, H. Ohashi, I. states of Kr across the $L_3$	
	$egin{array}{l} {f h} u+{f K}{f r}\ {f h} u+{f K}{f r} \end{array}$	Photoexcitation Photoionization	$\begin{array}{c} 1670\text{-}1685 \; \mathrm{eV} \\ 1670\text{-}1685 \; \mathrm{eV} \end{array}$	Exp Exp
363.	J. R. Harries, J. P. Sullivan P. Lablanquie, K. Bucar, M Partial photoionization doubly-excited states re J. Phys. B 38, L153 (2005)	, S. Obara, Y. Azuma, J. G. Lar . Zitnik, P. Hammond of helium into the $2s^2S$ and gion.	nbourne, F. Penent, R. I. Hall, $2p^2P$ ion states in the 3lnl'	
	$egin{array}{l} \mathbf{h} u + \mathbf{H}\mathbf{e} \ \mathbf{h} u + \mathbf{H}\mathbf{e} \end{array}$	Fluorescence Photoexcitation	69-73 eV 69-73 eV	Exp Exp
364.	A. DiChiara, S. Palaniyapp	an, A. F. Falkowski, E. L. Huskin	ns, B. C. Walker	

**Cross-shell multielectron ionization of xenon by an ultrastrong field.** J. Phys. B 38, L183 (2005)

$h\nu + Xe$	Photoionization	$10^{16} - 10^{18} \text{ W/}cm^2$	Exp
$\mathbf{n}\mathbf{h}\mathbf{\nu} + \mathbf{X}\mathbf{e}$	Photoionization	$10^{16} - 10^{18} \text{ W/} cm^2$	Exp

365. A. N. Hopersky, A. M. Nadolinsky, D. V. Dzuba, V. A. Yavna Anomalous elastic scattering of x-ray photons by a neon-like ion. J. Phys. B 38, 1507 (2005)

$h\nu + Ne$	Elastic Scattering	$863-3900 \ eV$	$\mathrm{Th}$
$\mathbf{h} u + \mathbf{Si}^{4+}$	Elastic Scattering	$863-3900 \ eV$	$\mathrm{Th}$
$\mathbf{h} u + \mathbf{A}\mathbf{r}^{8+}$	Elastic Scattering	$863-3900 \ eV$	$\mathrm{Th}$

366. E. Sokell, A. A. Wills, M. Wiedenhoeft, X. Feng, D. Rolles, N. Berrah An investigation of dissociative resonant photoionization in HCl and DCl using two-dimensional photoelectron spectroscopy. J. Phys. B 38, 1535 (2005)

$h\nu + HCl$	Photodissociation	$198\text{-}204~\mathrm{eV}$	Exp
$h\nu + DCl$	Photodissociation	$198\text{-}204~\mathrm{eV}$	Exp
$h\nu + HCl$	Photoionization	$198\text{-}204~\mathrm{eV}$	Exp
$h\nu + DCl$	Photoionization	$198\text{-}204~\mathrm{eV}$	Exp

367. C. Kunz, S. Thiess, B. Cowie, T.-L. Lee, J. Zegenhagen
 Outer sub-shell photoabsorption cross-sections determined by X-ray photoelectron spectroscopy up to 14.5 keV.
 Nucl. Instrum. Methods Phys. Res. A 547, 73 (2005)

$h\nu + Au$	Total Absorption, Scattering	5-14.5  keV	Exp
$\mathbf{h}\nu + \mathbf{A}\mathbf{u}$	Photoionization	5-14.5  keV	Exp

#### 368. A. Karabulut, A. Guerol, G. Budak, M. Ertugrul

# K shell and L subshell and L shell photoeffect cross-sections in the atomic region 40 ; Z ; 52 and 58 ; Z ; 68 at 59.537 keV.

Nucl. Instrum. Methods Phys. Res. B 227, 485 (2005)

$h\nu + Zr$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Nb$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Mo$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Tc$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Ru$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Rh$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$\mathbf{h}\nu + \mathbf{Pd}$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Ag$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Cd$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + In$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Sn$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Sb$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Te$	Photoionization	$59.5 \ \mathrm{keV}$	$\operatorname{Exp}$
$h\nu + Ce$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Pr$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Nd$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Pm$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Sm$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Eu$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$\mathbf{h} u + \mathbf{Gd}$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Tb$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Dy$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Ho$	Photoionization	$59.5 \ \mathrm{keV}$	Exp
$h\nu + Er$	Photoionization	$59.5 \ \mathrm{keV}$	Exp

369. S. Krishnaveni, R. Gowda

Incoherent scattering functions of iron, copper, zirconium, tin, tantalum, tungsten, gold and lead, in the momentum range 2  $Å^{-1}$ ; q; 46  $Å^{-1}$  at 661.6 keV photon energy.

Nucl. Instrum. Methods Phys. Res. B 229, 333 (2005)

$h\nu + Fe$	Elastic Scattering	662  keV	Exp
$h\nu + Cu$	Elastic Scattering	662  keV	Exp
$h\nu + Zr$	Elastic Scattering	$662 { m keV}$	Exp
$h\nu + Sn$	Elastic Scattering	$662 { m keV}$	Exp
$h\nu$ + Ta	Elastic Scattering	662  keV	Exp
$h\nu + W$	Elastic Scattering	662  keV	Exp

370. I. Ben-Itzhak, P. Wang, J. Xia, A. M. Sayler, M. A. Smith, J. W. Maseberg, K. D. Carnes, B. D. Esry
Dissociation and ionization of molecular ions by ultra-short intense laser pulses probed by coincidence 3D momentum imaging.
Nucl. Instrum. Methods Phys. Res. B 233, 56 (2005)

$h\nu + H_2$	Photodissociation	790 nm	Exp
$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	790 nm	Exp

371. H. Kjeldsen, F. Folkmann, J. van Elp, H. Knudsen, J. B. West, T. Andersen Absolute measurements of photoionization cross-sections for ions. Nucl. Instrum. Methods Phys. Res. B 234, 349 (2005)

$h\nu + He^+$	Photoionization	15-200  eV	Exp
$h\nu + Cs^+$	Photoionization	15-200  eV	Exp

372. M. Suresh, J. McKenna, B. Srigengan, I. D. Williams, E.M.L. English, S. L. Stebbings, W. A. Bryan, W. R. Newell, E. J. Divall, C. J. Hooker, A. J. Langley Multiple ionization of ions and atoms by intense ultrafast laser pulses. Nucl. Instrum. Methods Phys. Res. B 235, 216 (2005)

$h\nu + Ne$	Photoionization	790 nm	Exp
$h\nu + Xe$	Photoionization	790 nm	Exp
$h\nu + Xe^+$	Photoionization	790 nm	$\operatorname{Exp}$

Exp

373. H. Shimada, Y. Nakai, H. Oyama, K. Ando, T. Kambara, A. Hatakeyama, Y. Yamazaki Recoil-ion momentum spectroscopy of multiply charged argon ions produced by intense (10¹⁶ W cm⁻²) laser light. Nucl. Instrum. Methods Phys. Res. B 235, 221 (2005)

$h\nu + Ar$	Photoionization	775  nm	

374. N.A.B. Faye, A. S. Ndao, A. Konte, M. Biaye, A. Wague
Photoionization energies and oscillator strengths of helium and helium-like ions with Z = 6-8.
Phys. Scr. 71, 602 (2005)

$\mathbf{h} u$ + $\mathbf{C}^{4+}$	Photoexcitation	Undef.	Th
$\mathbf{h} u$ + $\mathbf{N}^{5+}$	Photoexcitation	Undef.	$\mathrm{Th}$
$\mathbf{h} u + \mathbf{O}^{6+}$	Photoexcitation	Undef.	$\mathrm{Th}$
$\mathbf{h}\nu + \mathbf{C}^{4+}$	Photoionization	Undef.	Th
$\mathbf{h}\nu + \mathbf{N}^{5+}$	Photoionization	Undef.	$\mathrm{Th}$
$\mathbf{h} u + \mathbf{O}^{6+}$	Photoionization	Undef.	Th

375.	V. Tayal, G. P. Gupta, A. Z Excitation energies, oscil Phys. Scr. 71, 627 (2005)	. Msezane lator strengths and lifetimes	in Ca IX.	
	$\mathbf{h}\nu + \mathbf{Ca}^{8+}$	Photoexcitation	Undef.	Th
376.	N. Ben Nessib, H. Elabidi, M Radiative and collisional Phys. Scr. 72, 23 (2005)	I. Cornille, J. Dubau atomic data for neon-like sil	icon.	
	$\mathbf{h} u$ + $\mathbf{Si}^{4+}$	Photoexcitation	Undef.	Th
377.	M. W. Horbatsch, E. A. Hes Classical calculation of the hydrogenic atoms. Phys. Rev. A 71, 020501 (20)	sels, M. Horbatsch he lifetimes and branching ra 005)	tios for radiative decays of	
	$h\nu + H$	Fluorescence	0-16 THz	$\mathrm{Th}$
378.	B. Lohmann, B. Langer, G. 5 Configuration-interaction resonant Auger decay. Phys. Rev. A 71, 020701 (20	Snell, U. Kleiman, S. Canton, M. <b>n-induced dynamic spin polari</b> 005)	Martins, U. Becker, N. Berrah ization of the $\operatorname{Ar}^*(2p_{1/2,3/2}^{-1}4s_{1/2})$	$)_{J=1}$
	$egin{array}{l} \mathbf{h} u + \mathbf{Ar} \ \mathbf{h} u + \mathbf{Ar} \end{array}$	Fluorescence Photoexcitation	210 eV 210 eV	E/T $E/T$
379.	C. C. Chirila, R. M. Potvlie <b>Low-order above-thresho</b> Phys. Rev. A 71, 021402 (20	ge old ionization in intense few-c 005)	cycle laser pulses.	
	$egin{array}{ll} \mathbf{h} u + \mathbf{H} & \mathbf{Z}= ?-? \ \mathbf{h} u + \mathbf{H} & \mathbf{h} u + \mathbf{H} & \mathbf{Z}= ?-? \end{array}$	Photoionization Photoionization Photoionization	$\begin{array}{c} 10^{16} \ {\rm W}/cm^2 \\ 10^{16} \ {\rm W}/cm^2 \\ 10^{16} \ {\rm W}/cm^2 \end{array}$	Th Th Th
380.	E. Baldit, S. Saugout, C. Co <b>Coulomb explosion of</b> $N_2$ Phys. Rev. A 71, 021403 (20)	rnaggia <b>using intense 10- and 40-fs</b> l 005)	aser pulses.	
	$egin{array}{l} {f h} u + {f N}_2 \ {f n}{f h} u + {f N}_2 \end{array}$	Photoionization Photoionization	$\begin{array}{l} 10^{14}-10^{16} \ {\rm W}/cm^2 \\ 10^{14}-10^{16} \ {\rm W}/cm^2 \end{array}$	Exp Exp
381.	C. Guo, K. Wright Channel competition bet NO in strong laser fields Phys. Rev. A 71, 021404 (20	ween metastable and dissociat 005)	ted states of doubly ionized	
	$\begin{array}{l} \mathbf{h}\nu + \mathbf{NO} \\ \mathbf{h}\nu + \mathbf{NO}^{2+} \\ \mathbf{h}\nu + \mathbf{NO} \\ \mathbf{h}\nu + \mathbf{NO}^{2+} \end{array}$	Photodissociation Photodissociation Photoionization Photoionization	$\begin{array}{c} 10^{14} \ \mathrm{W}/cm^2 \\ 10^{14} \ \mathrm{W}/cm^2 \\ 10^{14} \ \mathrm{W}/cm^2 \\ 10^{14} \ \mathrm{W}/cm^2 \end{array}$	Exp Exp Exp Exp
382.	C. Guo Observation of selective of Phys. Rev. A 71, 021405 (20	tharge separation following st $005)$	rong-field single ionization.	
	$h\nu + NO^+$	Photodissociation	$5x10^{14}~\mathrm{W}/cm^2$	Exp

383. A. Surzhykov, P. Koval, S. Fritzsche Angular correlations in the two-photon decay of hydrogenlike ions: Relativistic Green's-function approach. Blue Burg A 71, 022500 (2005)

Phys. Rev. A 71, 022509 (2005)

$h\nu + H Z = ?-?$	Fluorescence	Undef.	$\mathrm{Th}$
$h\nu + H$	Fluorescence	Undef.	$\mathrm{Th}$
$2h\nu + H Z = ?-?$	Fluorescence	Undef.	$\mathrm{Th}$

384. M. P. Hertlein, H. Adaniya, K. Cole, B. Feinberg, J. Maddi, M. H. Prior, R. Shriel, A. Belkacem

Electron correlation during photoionization and relaxation of potassium and argon after K-shell photoexcitation.

Phys. Rev. A 71, 022702 (2005)

$h\nu + Ar$	Fluorescence	3500  eV	Exp
$h\nu + K$	Fluorescence	3500  eV	$\operatorname{Exp}$
$h\nu + Ar$	Photoexcitation	3500  eV	Exp
$h\nu + K$	Photoexcitation	3500  eV	Exp
$h\nu + Ar$	Photoionization	3500  eV	Exp
$h\nu + K$	Photoionization	3500  eV	Exp

385. A. S. Kheifets

388.

Single-center model for	double photoionization	of the $H_2$ molecule.
Phys. Rev. A 71, 022704 (	2005)	

386. A. Penttila, S. Heinasmaki, M. Harkoma, S. Fritzsche, R. Sankari, S. Aksela, H. Aksela Effects of electron correlation on the decay process following 3p photoionization in atomic manganese.
Discrete A 71, 020715 (2007)

Phys. Rev. A 71, 022715 (2005)

$h\nu + Mn$	Fluorescence	120  eV	Exp
$h\nu + Mn$	Photoionization	120  eV	Exp

387. B. H. Hosseini, H. R. Sadeghpour, N. Balakrishnan Control of polarized iodine atom branching ratio in NaI photodissociation. Phys. Rev. A 71, 023402 (2005)

$h\nu + NaI$	Photodissociation	320  nm	Th
T. T. Nguyen-Dang, C	. Lefebvre, H. Abou-Rachid, O.	. Atabek	

Floquet representation of absolute phase and pulse-shape effects on laser-driven molecular photodissociation. Phys. Rev. A 71, 023403 (2005)

$\mathbf{h} u + \mathbf{H}_2^+$	Photodissociation	400 nm	Th

389. H. Hasegawa, E. J. Takahashi, Y. Nabekawa, K. L. Ishikawa, K. Midorikawa Multiphoton ionization of He by using intense high-order harmonics in the soft x-ray region. Phys. Rev. A 71, 023407 (2005)

$h\nu + He$	Photoionization	418 nm	Exp
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390.	S. Kawai, C. Jaffe, T. Ionization transition fields. J. Phys. B 38, S261 (	Uzer on states of the hydrogen m 2005)	olecular ion in external elect	ric
	$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	Undef.	$\mathrm{Th}$
391.	M. Glass-Maujean, H Dissociation dynam J. Phys. B 38, 1093 (	. Schmoranzer nics of doubly excited states 2005)	of molecular hydrogen.	
	$\mathbf{h} u + \mathbf{H}_2$	Photodissociation	20-45  eV	E/T
	$\mathbf{h}\nu + \mathbf{H}_2$	Photoexcitation	20-45  eV	E/T
	$\mathbf{h}\nu + \mathbf{H}_2$	Photoionization	20-45  eV	E/T
392.	M. Ya. Amusia, N. A Non-dipole effects Cs and Ba. J. Phys. B 38, 1133 (	. Cherepkov, L. V. Chernysheva, in spin polarization of photoe 2005)	Z. Felfli, A. Z. Msezane electrons from 3d electrons of X	ζe,
	$h\nu + Xe$	Photoionization	$54 \mathrm{Ry}$	$\mathrm{Th}$
	$h\nu + Cs$	Photoionization	$54 \mathrm{Ry}$	$\mathrm{Th}$
	$h\nu + Ba$	Photoionization	$54 \mathrm{Ry}$	$\mathrm{Th}$
393.	SM. Li, J. Berakdar Laser-assisted (e,24 J. Phys. B 38, 1291 (	, ST. Zhang, J. Chen e) reaction in one-electron at 2005)	oms and ions.	
	$h\nu + H$	Photoionization	150-500  eV	$\mathrm{Th}$
394.	A. V. Golovin, J. Ada Inner-shell photoel J. Phys. B 38, L63 (2 $h\nu + OCS$	achi, S. Motoki, M. Takahashi, A. ectron angular distributions f 005) Photoionization	Yagishita rom fixed-in-space OCS molecu 174.3-570.7 eV	<b>iles.</b> Exp
				r
395.	A. Becker, F.H.M. Fa Intense-field many J. Phys. B 38, R1 (20	isal - <b>body S-matrix theory.</b> 005)		
	$h\nu + F^-$	Photodetachment	$10^{13} - 10^{16} \text{ W/}cm^2$	E/T
	$h\nu + He$	Photoionization	$10^{13} - 10^{16} \text{ W}/cm^2$	É/T
	$h\nu + Ne$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	É/T
	$h\nu + Ar$	Photoionization	$10^{13} - 10^{16} \text{ W/} cm^2$	E/T
	$h\nu + Xe$	Photoionization	$10^{13} - 10^{16} \text{ W/}cm^2$	E/T
	$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	$10^{13} - 10^{16} \text{ W/cm}^2$	E/T
	$h\nu + O_2$	Photoionization	$10^{13} - 10^{16} \text{ W/cm}^2$	E/T
	$\mathbf{h} u + \mathbf{C}_2\mathbf{H}_2$	Photoionization	$10^{13} - 10^{10}$ W/cm ²	E/T
	$\mathbf{h}\nu + \mathbf{F}_2$	Photoionization	$10^{13} - 10^{16} \text{ W/cm}^2$ 1013 - 1016 W/cm ²	E/T E/T
	$\mathbf{n}\nu + \mathbf{C}_6\mathbf{H}_6$	Photoionization	$10^{10} - 10^{10} \text{ W}/cm^2$	E/T
396.	R. A. Mackie, D.M.P A dissociative pho J. Phys. B 38, 161 (2	. Holland, D. A. Shaw toionization study of the $O_2^+$ 005)	$B \ ^2\Sigma_g^{-} \ \nu^+ = 2$ state.	
	$h\nu + \Omega_{2}^{+}$	Photodissociation	22-35 eV	Fur
	$\mathbf{h}\nu + \mathbf{O}_2^+$ $\mathbf{h}\nu + \mathbf{O}_2^+$	Photoionization	22-35 eV	Exp

397.	D. A. Shaw, D.M.P. Ho A fluorescence polar ${}^{4}\Pi_{u}$ transitions in th J. Phys. B 38, 173 (200	olland, E. E. Rennie, L. G. Shpinkova ization study of the $O_2^+$ A ${}^2\Pi_u$ - ne excitation range 17-25 eV. 05)	$\mathbf{X}\ ^{2}\Pi_{g}$ and the b $^{4}\Sigma_{g}{}^{-}$ -; a	
	$ \mathbf{h}\nu + \mathbf{O}_2^+ \\ \mathbf{h}\nu + \mathbf{O}_2^+ $	Fluorescence Photoexcitation	17-25 eV 17-25 eV	Exp Exp
398.	H. W. van der Hart, P. <b>Two- and three-pho</b> J. Phys. B 38, 207 (200	Bingham ton ionization of He between $10^1$ (5)	³ and $10^{14}$ W $cm^{-2}$ .	
	$h\nu + He$	Photoionization	0.3-0.9 a.u.	Th
399.	K. J. Meharg, J. S. Par Beyond the dipole ap J. Phys. B 38, 237 (200	eker, K. T. Taylor pproximation for helium and hyd 15)	rogen in intense laser fields.	
	$h\nu + H$ $h\nu + H^*$	Photoionization	$0 - 4x10^{17} \text{ W/}cm^2$ $0 - 4x10^{17} \text{ W/}cm^2$	Th Th
400.	M. Meyer, M. Gisselbr Demekhina, V. L. Sukh <b>Two-colour studies</b> atomic xenon. J. Phys. B 38, 285 (200	echt, A. Marquette, C. Delisle, M. I norukov of the even-parity autoionization 05)	Marzilliere, I. D. Petrov, N. V. n series $5p_{1/2} {}^5n\ell'(\ell - \mathbf{p,f})$ in	
	$\mathbf{h} u + \mathbf{X}\mathbf{e}$ $\mathbf{h} u + \mathbf{X}\mathbf{e}$	Photoexcitation Photoionization	10-12 eV 10-12 eV	Exp
401.	DS. Kim, S. T. Manso <b>Theoretical study of</b> <b>Be-like</b> $B^+$ <b>ion</b> . Phys. Rev. A 71, 03270	on <b>the photoionization of the excite</b> 01 (2005)	ed $1s^22s2p$ $^{1,3}P^0$ states of the	
	$egin{array}{l} \mathbf{h} u + \mathbf{B}^+ \ \mathbf{h} u + \mathbf{B}^{+*} \end{array}$	Photoionization Photoionization	10-45  eV 10-45  eV	Th Th
402.	M. D. de Jonge, C. Q. Lee, A. Mashayekhi Measurement of the imaginary component energy range. Phys. Rev. A 71, 03270	Tran, C. T. Chantler, Z. Barnea, B. x-ray mass attenuation coefficient of the atomic form of molybde 02 (2005)	B. Dhal, D. J. Cookson, WK. nt and determination of the enum over the 13.5-41.5-keV	
	$f h u + Mo \ h u + Mo$	Total Absorption, Scattering Free-Free Transition	$\begin{array}{c} 13.5\text{-}41.5 \ \mathrm{keV} \\ 13.5\text{-}41.5 \ \mathrm{keV} \end{array}$	Exp Exp
403.	B. Kunwar, A. Bhadra, <b>Delbrueck contribut</b> Phys. Rev. A 71, 0327	S.K.S. Gupta, J.P.J. Carney, R. H. 1 ion in the elastic scattering of 1. 24 (2005)	Pratt 115-MeV photons.	
	$ \begin{aligned} \mathbf{h} \boldsymbol{\nu} + \mathbf{W} \\ \mathbf{h} \boldsymbol{\nu} + \mathbf{P} \mathbf{b} \end{aligned} $	Elastic Scattering Elastic Scattering	$1.115 { m MeV}$ $1.115 { m MeV}$	E/T E/T
404.	L.A.A. Nikolopoulos			

Mg in electromagnetic fields: Theoretical partial multiphoton cross sections. Phys. Rev. A 71, 033409 (2005)

	$h\nu + Mg$	Photoionization	1.9-6  eV	$\mathrm{Th}$	
405.	V. E. Chernov, I. Yu Induced dipole eff Phys. Rev. A 71, 03	u. Kiyan, H. Helm, B. A. Zon fect in strong-field photodetac 33410 (2005)	hment of atomic negative ions		
	$h u + Cs^-$	Photodetachment	$0.5\text{-}1\;10^{12}~\mathrm{W}/cm^2$	$\mathrm{Th}$	
406.	L. P. Yatsenko, V. I <b>Two-photon excit</b> <b>induced chirped S</b> Phys. Rev. A 71, 03	. Romanenko, B. W. Shore, T. Hal ation of the metastable 2s star Stark shifts and continuum stre 33418 (2005)	fmann, K. Bergmann te of hydrogen assisted by lase ucture.	er-	
	$h\nu + H$	Photoexcitation	$0.6\text{-}9.1~\mathrm{GW}/cm^2$	$\mathrm{Th}$	
407.	R. Feifel, J.H.D. Ela Vibrationally sele ionization potenti Phys. Rev. A 71, 03	and ected $O^+ - O^+$ fragmentation of ial studied via electron-electron 34501 (2005)	f $O_2$ below the adiabatic doublen coincidence spectroscopy.	le-	
	$\mathbf{h}\nu + \mathbf{O}_2$	Photodissociation	34-41  eV	Exp	
	$h\nu + O_2$	Photoionization	34-41 eV	Exp	
400.	Charge and energy-dependence of the Gaussian description of the triply dif- ferential cross sections for equal-energy sharing photo-double-ionization of two- electrons ions. Phys. Rev. A 71, 034703 (2005)				
	$h\nu + He$	Photojonization	70-150 eV	Th	
	$h\nu + Be^{2+}$	Photoionization	70-150 eV	Th	
	$h\nu + C^{4+}$	Photoionization	70-150 eV	Th	
	$h\nu + O^{6+}$	Photoionization	70-150 eV	Th	
	$h\nu + Ne^{8+}$	Photoionization	70-150 eV	Th	
409.	A. Becker, R. Doern Multiple fragmen J. Phys. B 38, S753	er, R. Moshammer tation of atoms in femtosecond (2005)	l laser pulses.		
	$h\nu + He$	Photon Collisions	$10^{13} - 10^{17} \text{ W/} cm^2$	E/T	
	$h\nu + Ne$	Photon Collisions	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	
	$h\nu + Ar$	Photon Collisions	$10^{13} - 10^{17} \text{ W/cm}^2$	_/ = Е/Т	
	$h\nu + Xe$	Photon Collisions	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	
	$h\nu + He$	Photoionization	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	
	$h\nu + Ne$	Photoionization	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	
	$h\nu + \Lambda r$	Photoionization	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	
	$h\nu + Xe$	Photoionization	$10^{13} - 10^{17} \text{ W/cm}^2$	E/T	
410.	S. Svensson Soft x-ray photoic	onization of atoms and molecu	les.	-	

J. Phys. B 38, S821 (2005)

$h\nu + C$	Photon Collisions	10-300  eV	Exp
$h\nu + Ar$	Photon Collisions	10-300  eV	$\operatorname{Exp}$
$h\nu + Kr$	Photon Collisions	10-300  eV	$\operatorname{Exp}$
$\mathbf{h}\nu + \mathbf{N}_2$	Photon Collisions	10-300  eV	Exp
$h\nu + H_2 S$	Photon Collisions	10-300  eV	Exp

$h\nu + HCl$	Photon Collisions	10-300  eV	Exp
$h\nu + C$	Photoionization	10-300  eV	Exp
$h\nu + Ar$	Photoionization	10-300  eV	Exp
$h\nu + Kr$	Photoionization	10-300  eV	Exp
$\mathbf{h}\nu + \mathbf{N}_2$	Photoionization	10-300  eV	Exp
$\mathbf{h} u + \mathbf{H}_2 \mathbf{S}$	Photoionization	10-300  eV	Exp
$h\nu + HCl$	Photoionization	10-300  eV	$\operatorname{Exp}$

411. K. Ueda, J.H.D. Eland

Molecular photodissociation studied by VUV and soft x-ray radiation. J. Phys. B 38, S839 (2005)

$\mathbf{h}\nu + \mathbf{CO}_2^{3+}$	Photon Collisions	650-700  eV	Exp
$h\nu + CF_4$	Photon Collisions	650-700  eV	Exp
$\mathbf{h}\nu + \mathbf{BF_3}^{4+}$	Photon Collisions	650-700  eV	Exp
$h\nu + HCCH^{3+}$	Photon Collisions	650-700  eV	Exp
$\mathbf{h}\nu + \mathbf{CO}_2^{3+}$	Photodissociation	650-700  eV	Exp
$h\nu + CF_4$	Photodissociation	650-700  eV	Exp
$\mathbf{h}\nu + \mathbf{BF}_3^{4+}$	Photodissociation	650-700  eV	Exp
$h\nu + HCCH^{3+}$	Photodissociation	650-700  eV	Exp
$\mathbf{h}\nu + \mathbf{CO}_2^{3+}$	Photoionization	650-700  eV	Exp
$h\nu + CF_4$	Photoionization	650-700  eV	Exp
$\mathbf{h}\nu + \mathbf{BF}_3^{4+}$	Photoionization	650-700  eV	Exp
$h\nu + HCCH^{3+}$	Photoionization	$650\text{-}700~\mathrm{eV}$	Exp

412. L. Avaldi, A. Huetz

Photodouble ionization and the dynamics of electron pairs in the continuum. J. Phys. B 38, S861 (2005)

$h\nu + He$	Photon Collisions	$0.1-450 \mathrm{~eV}$	Exp
$\mathbf{h}\nu + \mathbf{H}_2$	Photon Collisions	$0.1-450 \ eV$	Exp
$h\nu + HD$	Photon Collisions	$0.1-450 \ eV$	Exp
$\mathbf{h}\nu + \mathbf{D}_2$	Photon Collisions	$0.1-450 \ eV$	Exp
$h\nu + He$	Photoionization	$0.1-450 \ eV$	Exp
$\mathbf{h} u + \mathbf{H}_2$	Photoionization	$0.1-450 \ eV$	Exp
$h\nu + HD$	Photoionization	$0.1-450 \ eV$	Exp
$\mathbf{h}\nu + \mathbf{D}_2$	Photoionization	$0.1-450 \ eV$	Exp

413. N. J. Mason, A. Dawes, R. Mukerji, E. A. Drage, E. Vasekova, S. M. Webb, P. Limao-Vieira Atmospheric chemistry with synchrotron radiation. J. Phys. B 38, S893 (2005)

$h\nu + O_3$	Photon Collisions	Undef.	Exp
$h\nu + ClONO_2$	Photon Collisions	Undef.	Exp
$h\nu + HClO_4$	Photon Collisions	Undef.	$\operatorname{Exp}$
$h\nu + (CH_3)_2 S$	Photon Collisions	Undef.	$\operatorname{Exp}$
$\mathbf{NH}_3$	Photon Collisions	Undef.	$\operatorname{Exp}$
ОН	Photon Collisions	Undef.	$\operatorname{Exp}$
$(H_2O)(CO)$	Photon Collisions	Undef.	$\operatorname{Exp}$
$h\nu + O_3$	Total Absorption, Scattering	Undef.	$\operatorname{Exp}$
$h\nu + ClONO_2$	Total Absorption, Scattering	Undef.	$\operatorname{Exp}$
$h\nu + HClO_4$	Total Absorption, Scattering	Undef.	$\operatorname{Exp}$
$h\nu + (CH_3)_2 S$	Total Absorption, Scattering	Undef.	$\operatorname{Exp}$
$(H_2O)(CO)$	Photodissociation	Undef.	$\operatorname{Exp}$
$\mathbf{NH}_3$	Photoionization	Undef.	$\operatorname{Exp}$
OH	Photoionization	Undef.	Exp

# 3.2.2 Electron Collisions

414.	F. Robicheaux, J. D. Har <b>Three-body recombine</b> Phys. Rev. A 69, 010701	nson ation for protons moving in (2004)	n a strong magnetic field.	
	e + H	Recombination	4-16 K	Th
415.	A. R. Lopes, M.A.P. Lim <b>Low-energy electron c</b> Phys. Rev. A 69, 014702	a, L. G. Ferreira, M.H.F. Bette ollisions with $C_4H_6$ isomer (2004)	ega s.	
	$\mathbf{e} + \mathbf{C}_4 \mathbf{H}_6$	Elastic Scattering	10-60  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{C}_4 \mathbf{H}_6$	Angular Scattering	10-60  eV	$\mathrm{Th}$
416.	<ul> <li>P. L. Bartlett, A. T. Stell</li> <li>Differential ionization</li> <li>4 using a propagating</li> <li>Phys. Rev. A 69, 040701</li> </ul>	bovics cross-section calculations exterior complex scaling m (2004)	for hydrogenic targets with Z ; nethod.	
	e + H	Angular Scattering	13.6-7830  eV	$\mathrm{Th}$
	$e + He^+$	Angular Scattering	13.6-7830  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+}$	Angular Scattering	13.6-7830  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{B}\mathbf{e}^{3+}$	Angular Scattering	13.6-7830  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}$	Ionization	13.6-7830  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Ionization	13.6-7830  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+}$	Ionization	13.6-7830  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{B}\mathbf{e}^{3+}$	Ionization	13.6-7830  eV	$\mathrm{Th}$
417.	K. Fritioff, J. Sandstroem M. Larsson, F. Osterdahl <b>Single and double det</b> Phys. Rev. A 69, 042707	, P. Andersson, D. Hanstorp, F. G. F. Collins, D. J. Pegg, H. I achment from $H^-$ . (2004)	⁷ . Hellberg, R. Thomas, W. Geppert, Danared, A. Kaellberg, N. D. Gibson	
	$e + H^-$	Detachment	$0-170 {\rm ~eV}$	Exp
	$e + H^-$	Ionization	0-170  eV	Exp
418.	J. G. Childers, B. A. deH Ejected electron spect Phys. Rev. A 69, 042713	Tarak, N.L.S. Martin <b>rum of Xe between the</b> ${}^{2}P$ (2004)	$P_{3/2}$ and ${}^2P_{1/2}$ ionic limits.	-
	e + Xe	Angular Scattering	16-150 eV	Exp
	e + Ae	Fluorescence	16-150 eV	Exp
	e + Ae	Excitation	16-150 eV	Exp
	e + Ae	Iomzation	10-130 ev	Exp
419.	M. A. Haynes, B. Lohma Ionization of rubidium Phys. Rev. A 69, 044704	nn, I. Bray, K. Bartschat n <b>by 50-eV electrons.</b> (2004)		
	e + Rb	Angular Scattering	$50  \mathrm{eV}$	E/T
	e + Rb	Ionization	50  eV	E/T
420.	A. S. Kheifets, I. Bray Convergent calculatio	ns of double ionization of	helium: From $(\gamma, 2e)$ to $(e,3e)$	

**processes.** Phys. Rev. A 69, 050701 (2004)

	e + He	Ionization	$5.6 { m ~keV}$	E/T
421.	C. J. Sweeney, A. Gra Supplementary abs hydrogen's n=3 an Phys. Rev. A 69, 052	afe, T. W. Shyn solute differential cross secti d 4 levels by electron impact 709 (2004)	ons for the excitation of atomic t.	
	e + H	Excitation	40-60 eV	$\mathrm{E}/\mathrm{T}$
422.	JC. Chang, HL. Su Electron-impact ion Phys. Rev. A 69, 052	n, WY. Cheng, KN. Huang nization of Be-like ions. 713 (2004)		
	$\mathbf{e} + \mathbf{B}^+$	Ionization	1-10 ionizing energy	E/T
	$\mathbf{e} + \mathbf{C}^{2+}$	Ionization	1-10 ionizing energy	E/T
	$e + N^{3+}$	Ionization	1-10 ionizing energy	E/T
	$e + O_{+}^{4+}$	Ionization	1-10 ionizing energy	E/T
	$\mathbf{e} + \mathbf{F}^{\mathrm{b}+}$	Ionization	1-10 ionizing energy	E/T
	$\mathbf{e} + \mathbf{N} \mathbf{e}^{\mathbf{o}+}$	Ionization	1-10 ionizing energy	E/T
	$\mathbf{e} + \mathbf{A} \mathbf{l}^{\prime +}$	Ionization	1-10 ionizing energy	E/T
	$e + Ar^{14+}$	Ionization	1-10 ionizing energy	E/T
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{22+}$	Ionization	1-10 ionizing energy	E/T
	$\mathbf{e} + \mathbf{A} \mathbf{g}^{+5+}$	Ionization	1-10 ionizing energy	E/T
	$e + Hg^{-1}$	Ionization	1-10 ionizing energy	E/1
424.	from $B^{4+}(1s)$ and $H$ Phys. Rev. A 69, 052 $e + H_2$ $e + H_2$ J. Shertzer, A. Temki Direct calculation of Inclusion of exchan Phys. Rev. A 70, 042	3 ³⁺ (1s ² ) ions. 718 (2004) Elastic Scattering Angular Scattering n of the scattering amplitude v nge. 710 (2004)	3.1-7.5 MeV 3.1-7.5 MeV vithout partial-wave analysis. II.	E/T E/T
	e + H	Elastic Scattering	0.4-5.0 k	Th
425.	S. Kieslich, S. Schippe M. Tokman <b>Determination of t</b> electronic recombin Phys. Rev. A 70, 042	ers, W. Shi, A. Mueller, G. Gwin the 2s-2p excitation energy conation. 714 (2004)	ner, M. Schnell, A. Wolf, E. Lindroth, of lithiumlike scandium using di-	
	$\mathbf{e} + \mathbf{S}\mathbf{c}^{18+}$	Recombination	0-30 eV	$\mathrm{E}/\mathrm{T}$
426.	J. Jacobi, H. Knopp, S. P. Ballance Strong contribution section of $Sc^+$ ions. Phys. Rev. A 70, 042	S. Schippers, A. Mueller, S. D. Lons of indirect processes to the 717 (2004)	och, M. Witthoeft, M. S. Pindzola, C. e electron-impact ionization cross	
	$e + Sc^+$	Ionization	0-1000  eV	E/T
427.	V. G. Baryshevskii, I. Regularization of t Phys. Rev. A 70, 052	D. Feranchuk, P. B. Kats he Coulomb scattering prob 704 (2004)	lem.	

e + Sr	Elastic Scattering	$1-100   \mathrm{eV}$	E/T
e + Ba	Elastic Scattering	$1-100   \mathrm{eV}$	E/T
e + Sr	Angular Scattering	$1-100   \mathrm{eV}$	E/T
e + Ba	Angular Scattering	$1-100   \mathrm{eV}$	E/T
e + Sr	Total Scattering	$1-100   \mathrm{eV}$	E/T
e + Ba	Total Scattering	1-100  eV	E/T

428. W. M. Ariyasinghe, C. Goains

Total electron scattering cross sections of Kr and Xe in the energy range 250-4500 eV.

Phys. Rev. A 70, 052709 (2004)

e + Kr	Elastic Scattering	$250\text{-}4500~\mathrm{eV}$	E/T
e + Xe	Elastic Scattering	250-4500  eV	E/T
e + Kr	Excitation	250-4500  eV	E/T
e + Xe	Excitation	250-4500  eV	E/T
e + Kr	Ionization	250-4500  eV	E/T
e + Xe	Ionization	$250\text{-}4500~\mathrm{eV}$	E/T

429. J. Horacek, M. Cizek, K. Houfek, P. Kolorenc, W. Domcke
Dissociative electron attachment and vibrational excitation of H₂ by low-energy electrons: Calculations based on an improved nonlocal resonance model.
Phys. Rev. A 70, 052712 (2004)

$\mathbf{e} + \mathbf{H}_2$	Dissociation	0-6  eV	Th
$\mathbf{e} + \mathbf{H}_2$	Excitation	$0-6  \mathrm{eV}$	Th

430. S. D. Loch, M. S. Pindzola, N. R. Badnell, F. Scheuermann, K. Kramer, K. Huber, E. Salzborn

Electron-impact ionization of  $Bi^{q+}$  for q=1-10. Phys. Rev. A 70, 052714 (2004)

$\mathbf{e} + \mathbf{B}\mathbf{i}^+$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{B}\mathbf{i}^{2+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{B}\mathbf{i}^{3+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{B} \mathbf{i}^{4+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{B}\mathbf{i}^{5+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{Bi}^{6+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{Bi}^{7+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{Bi}^{8+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{B} \mathbf{i}^{9+}$	Ionization	0-100  eV	E/T
$\mathbf{e} + \mathbf{B} \mathbf{i}^{10+}$	Ionization	0-100  eV	E/T

431. B. J. McCall, A. J. Huneycutt, R. J. Saykally, N. Djuric, G. H. Dunn, J. Semaniak, O. Novotny, A. Al-Khalili, A. Ehlerding, F. Hellberg, S. Kalhori, A. Neau, R. D. Thomas, A. Paal, F. Osterdahl, M. Larsson
Dissociative recombination of rotationally cold H₃⁺. Phys. Rev. A 70, 052716 (2004)

$e + H_3^+$	Dissociation	0-10  eV	E/T
$e + H_3^+$	Recombination	0-10 eV	$\dot{E/T}$

432. N. R. Badnell, D. M. Mitnik, M. S. Pindzola, S. D. Loch, Sh. A. Abdel-Naby Dielectronic recombination of Pb⁷⁹⁺ via high angular momenta. Phys. Rev. A 70, 054701 (2004)

$\mathbf{e} + \mathbf{P} \mathbf{b}^{79+}$	Recombination	13-19  eV	E/T
--------------------------------------------	---------------	-----------	-----

433. C. P. Ballance, N. R. Badnell, E. S. Smyth

#### A pseudo-state sensitivity study on hydrogenic ions.

J. Phys. B 36, 3707 (2003)

$e + He^+$	Excitation	$3-225 \mathrm{~Ry}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+}$	Excitation	3-225 Ry	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}\mathbf{e}^{3+}$	Excitation	$3-225 \mathrm{Ry}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}^{4+}$	Excitation	$3-225 \mathrm{Ry}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}^{5+}$	Excitation	$3-225 \mathrm{~Ry}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{O}^{7+}$	Excitation	$3-225 \mathrm{~Ry}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{e}^{9+}$	Excitation	3-225 Ry	$\mathrm{Th}$

434. C. Herting, G. F. Hanne, K. Bartschat, K. Muktavat, R. Srivastava, A. D. Stauffer Validation of orientation propensities in electron-impact excitation of lead. J. Phys. B 36, 3877 (2003)

e + Pb	Angular Scattering	5-13  eV	E/T
e + Pb	Excitation	5-13  eV	E/T

435. C. Szmytkowski, S. Kwitnewski

Isomer effects on the total cross section for electron scattering from  $C_4F_5$  molecules. J. Phys. B 36, 4865 (2003)

$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_6$	Elastic Scattering	0.6-370  eV	Exp
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_6$	Excitation	$0.6\text{-}370~\mathrm{eV}$	$\operatorname{Exp}$

436. A. J. Murray, D. Cvejanovic

Coplanar symmetric (e,2e) measurements from calcium at low energy. J. Phys. B 36, 4875 (2003)

e + Ca	Angular Scattering	10.1-64.6  eV	Exp
e + Ca	Ionization	10.1-64.6  eV	$\operatorname{Exp}$

437. A. J. Murray, D. Cvejanovic

# Low energy superelastic scattering from the 4 ${}^{1}P_{1}$ state of calcium in an (e,2e) spectrometer.

J. Phys. B 36, 4889 (2003)

e + Ca	Angular Scattering	20-35  eV	Exp
e + Ca	Excitation	20-35  eV	$\operatorname{Exp}$

## 438. M. Mattioli, K. B. Fournier, I. Coffey, M. Finkenthal, C. Jupen, M. Valisa Experimental and simulated M-shell nickel spectra in the 14.4-18.0 nm region from magnetic fusion devices.

J. Phys. B 37, 13 (2004)

$\mathbf{e} + \mathbf{N}\mathbf{i}^+$	Recombination	25-500  eV	Th
$\mathbf{e} + \mathbf{N}\mathbf{i}^{2+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{3+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{4+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{5+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{6+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{7+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{8+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{9+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{10+}$	Recombination	25-500  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{11+}$	Recombination	25-500  eV	$\mathrm{Th}$

	$e + Ni^{12+}$ $e + Ni^{13+}$ $e + Ni^{14+}$ $e + Ni^{9+}$ $e + Ni^{10+}$ $e + Ni^{11+}$ $e + Ni^{12+}$ $e + Ni^{13+}$ $e + Ni^{14+}$	Recombination Recombination Recombination Ionization Ionization Ionization Ionization Ionization Ionization	25-500 eV 25-500 eV 25-500 eV 25-500 eV 25-500 eV 25-500 eV 25-500 eV 25-500 eV 25-500 eV	Th Th Th Th Th Th Th Th
439.	MW. Ruf, S. Barsott Dissociative attach sions with chlorine J. Phys. B 37, 41 (200	ti, M. Braun, H. Hotop, I. I. Fabr ment and vibrational excitat molecules.	ikant ion in low-energy electron colli-	
	$egin{array}{lll} \mathbf{e} + \mathbf{Cl}_2 \ \mathbf{e} + \mathbf{Cl}_2 \ \mathbf{e} + \mathbf{Cl}_2 \end{array}$	Attachment Dissociation Excitation	0-9 eV 0-9 eV 0-9 eV	E/T E/T E/T
440.	S. Zakowicz, W. Schei Dielectronic recom photons. J. Phys. B 37, 131 (20	d, N. Gruen <b>bination into hydrogen-like h</b> 004)	neavy ions with emission of two	)
	$e + U^{91+}$	Recombination	$63.8\text{-}73.2\;\mathrm{keV}$	$\mathrm{Th}$
441.	J. R. Harries, P. Ham Laser probing of th J. Phys. B 37, 179 (20	mond, R. Chandler, A. J. Murray ae electron-impact excited c(2 004)	$({f 2p})^3\Pi_u \ {f manifold} \ {f of} \ {f states} \ {f in} \ H_2.$	
	$\mathbf{e} + \mathbf{H}_2$	Excitation	$10.5\text{-}13.5~\mathrm{eV};340\text{-}375~\mathrm{nm}$	Exp
442.	R. King, G. J. Pert, H An investigation in gadolinium x-ray la J. Phys. B 37, 225 (20	K. M. Aggarwal, F. P. Keenan, S. <b>nto the use of atomic datase</b> <b>aser.</b> 004)	J. Rose ts in simulations of the Ni-like	9
	$\mathbf{e} + \mathbf{G} \mathbf{d}^{36+}$	Excitation	$250\text{-}3000~\mathrm{eV}$	$\mathrm{Th}$
443.	M. A. Khakoo, P. Va Zeman, D. H. Madison <b>Electron impact ex</b> <b>sections and cross-s</b> J. Phys. B 37, 247 (20)	and eventer, J. G. Childers, I. Kan, S. Saxena, R. Srivastava, A. D. citation of the argon $3p^54s$ c section ratios. 004)	nik, C. J. Fontes, K. Bartschat, V Stauffer onfiguration: Differential cross-	
	e + Ar $e + Ar^*$ e + Ar $e + Ar^*$	Angular Scattering Angular Scattering Excitation Excitation	14-100 eV 14-100 eV 14-100 eV 14-100 eV	E/T E/T E/T E/T
444.	<ul><li>B. Sierra, R. Martinez</li><li><b>The electron-impac</b></li><li>J. Phys. B 37, 295 (20)</li></ul>	z, F. Castano et dissociative ionization of $C$ 004)	$Cl_2F_2$ .	
	$\mathbf{e} + \mathbf{C}\mathbf{C}\mathbf{l}_{2}\mathbf{F}_{2}$ $\mathbf{e} + \mathbf{C}\mathbf{C}\mathbf{l}_{2}\mathbf{F}_{2}$	Dissociation Ionization	10-70 eV 10-70 eV	Exp Exp

## 445. Y. Itikawa

Vibrational excitation of polyatomic molecules by electron collisions. J. Phys. B 37, R1 (2004)

	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$ $\mathbf{e} + \mathbf{C} \mathbf{H}_4$ $\mathbf{e} + \mathbf{C} \mathbf{O}_2$	Excitation Excitation Excitation	0.1-15 eV 0.1-15 eV 0.1-15 eV	E/T E/T E/T
	$egin{array}{lll} \mathbf{e} + \mathbf{C}_2 \mathbf{H}_6 \ \mathbf{e} + \mathbf{H}_2 \mathbf{O} \ \mathbf{e} + \mathbf{C} \mathbf{H}_4 \end{array}$	Excitation Electron Collisions Electron Collisions	$\begin{array}{c} 0.1\text{-}15 \ \mathrm{eV} \\ 0.1\text{-}15 \ \mathrm{eV} \\ 0.1\text{-}15 \ \mathrm{eV} \end{array}$	E/T E/T E/T
	$\mathbf{e} + \mathbf{CO}_2 \\ \mathbf{e} + \mathbf{C}_2 \mathbf{H}_6$	Electron Collisions Electron Collisions	0.1-15 eV 0.1-15 eV	E/T E/T
446.	K. L. Baluja, J. A. T Electron collisions J. Phys. B 37, 609 (2	Cossell with the $SF_2$ radical using the 2004)	e R-matrix method.	
	$\mathbf{e} + \mathbf{SF}_4 \\ \mathbf{e} + \mathbf{SF}_4$	Elastic Scattering Excitation	0-15  eV 0-15  eV	${ m Th}$
447.	H. Cho, Y. S. Park, I Measurements of ward angles. J. Phys. B 37, 625 (2	H. Tanaka, S. J. Buckman elastic electron scattering by v 2004)	water vapour extended to	o back-
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O} \\ \mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Elastic Scattering Angular Scattering	4-50 eV 4-50 eV	Exp Exp
448.	P. L. Bartlett, A. T. Iteratively-coupled hydrogen collision J. Phys. B 37, L69 (2)	Stelbovics, I. Bray 1 propagating exterior comple s. 2004)	ex scaling method for ele	ectron-
	$\mathbf{e} + \mathbf{H}$ $\mathbf{e} + \mathbf{H}$	Angular Scattering Excitation	30 eV 30 eV	${ m Th}$ Th
449.	J. W. Cooper, R. W. <b>Double ionization</b> J. Phys. B 37, L77 (2010)	van Boeyen of argon by electron impact: 1 2004)	New theoretical results.	
	e + Ar e + Ar	Angular Scattering Ionization	$\begin{array}{c} 561.4 \; \mathrm{eV} \\ 561.4 \; \mathrm{eV} \end{array}$	${ m Th}$ Th
450.	<ul><li>A. Faure, J. D. Gorfi</li><li>Low-energy electro</li><li>tering.</li><li>J. Phys. B 37, 801 (2)</li></ul>	nkiel, J. Tennyson on collisions with water: Elasti 2004)	c and rotationally inelast	ic scat-
	$\begin{array}{l} \mathbf{e} + \mathbf{H}_2 \mathbf{O} \\ \mathbf{e} + \mathbf{H}_2 \mathbf{O} \\ \mathbf{e} + \mathbf{H}_2 \mathbf{O} \end{array}$	Elastic Scattering Angular Scattering Excitation	0-7 eV 0-7 eV 0-7 eV	${ m Th}\ { m Th}\ { m Th}$
451.	Z. Chen, D. H. Madi Second-order disto gen. J. Phys. B 37, 981 (2	son, C. T. Whelan, H.R.J. Walters orted wave calculation for elect 2004)	ron impact ionization of	hydro-
	e + H	Ionization	54-25  eV	$\mathrm{E/T}$

452.	<ul> <li>52. D. H. Madison, A. Dasgupta, K. Bartschat, D. Vaid</li> <li>Integral cross section for electron-impact excitation of the 3p⁵3d states of argon.</li> <li>J. Phys. B 37, 1073 (2004)</li> </ul>			rgon.
	$\mathbf{e} + \mathbf{Ar}$	Excitation	10-200  eV	E/T
453.	<ul><li>B. V. Hall, Y. Shen, J. Phys. B 37, 1113 (</li></ul>	A. J. Murray, M. C. Standage, W. con scattering from laser excit 2004)	R. MacGillivray, I. Bray ted rubidium at 20 eV inc	ident
	$egin{array}{lll} {f e}+{f Rb}^* \\ {f e}+{f Rb} \\ {f e}+{f Rb}^* \end{array}$	De-excitation Elastic Scattering Elastic Scattering	20 eV 20 eV 20 eV	E/T E/T E/T
454.	<ul> <li>R. F. da Costa, F. J.</li> <li>Electron-impact existence</li> <li>interaction.</li> <li>J. Phys. B 37, L129 (</li> </ul>	da Paixao, M.A.P. Lima <b>ccitation of</b> H ₂ : <b>Minimal orbit</b> (2004)	tal basis for single configur	ation
	$\mathbf{e} + \mathbf{H}_2 \\ \mathbf{e} + \mathbf{H}_2$	Angular Scattering Excitation	15-30 eV 15-30 eV	${ m Th}$ Th
455.	A. Mansouri, C. Dal <b>Double ionization</b> J. Phys. B 37, 1203 (	Cappello, S. Houamer, I. Charpen of $H_2$ by electron impact: A s 2004)	tier, A. Lahmam-Bennani econd Born treatment.	
	$\mathbf{e} + \mathbf{H}_2 \\ \mathbf{e} + \mathbf{H}_2$	Angular Scattering Ionization	$\begin{array}{c} 612\text{-}5612 \ \mathrm{eV} \\ 612\text{-}5612 \ \mathrm{eV} \end{array}$	${ m Th}$ Th
456.	T. Geyer Electron impact do J. Phys. B 37, 1215 (	puble ionization of helium from 2004)	classical trajectory calculat	tions.
	e + He	Ionization	$25\text{-}3000~\mathrm{eV}$	$\mathrm{Th}$
457.	K. M. Dunseath, M. ' Scattering of low-e J. Phys. B 37, 1305 (	Terao-Dunseath energy electrons by helium in 2004)	a $CO_2$ laser field.	
	$\mathbf{e} + \mathbf{CO}_2$ $\mathbf{e} + \mathbf{CO}_2$	Elastic Scattering Angular Scattering	1-8 eV 1-8 eV	${ m Th}$ Th
458.	M. Kimura, C. Mako Contrasting low-en scattering from be J. Phys. B 37, 1461 (	chekanwa, O. Sueoka nergy behavior in total cross se nzene molecules. 2004)	ections for electron and pos	itron
	$\begin{array}{l} \mathbf{e} + \mathbf{C}_6 \mathbf{H}_6 \\ \mathbf{e} + \mathbf{C}_6 \mathbf{H}_6 \end{array}$	Elastic Scattering Excitation	$\begin{array}{c} 0.041000 \text{ eV} \\ 0.041000 \text{ eV} \end{array}$	E/T E/T
459.	H. M. Boechat-Rober Absolute different: from benzene with J. Phys. B 37, 1467 (	ty, M.L.M. Rocco, C. A. Lucas, G ial cross sections for elastic a 1 kev impact energy. 2004)	.G.B. de Souza and inelastic electron scatt	ering
	$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6 \\ \mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Elastic Scattering Angular Scattering	1  keV 1  keV	Exp Exp

	Elabere Seattering	1 10 (	Enp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Angular Scattering	$1 { m keV}$	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Excitation	$1 { m keV}$	Exp

460. C. Becker, H. Knopp, J. Jacobi, H. Teng, S. Schippers, A. Mueller Electron-impact single and multiple ionization of  $Mg^+$  ions. J. Phys. B 37, 1503 (2004)

e -	$\vdash Mg^+$	Ionization	15-1000  eV	E/	T

461. C. Szmytkowski, L. Klosowski, A. Domaracka, M. Piotrowicz, E. Ptasinska-Denga Scattering of electrons from hydride molecules: *PH*₃. J. Phys. B 37, 1833 (2004)

$\mathbf{e} + \mathbf{PH}_3$	Elastic Scattering	$0.5\text{-}370\;\mathrm{eV}$	Exp
$\mathbf{e} + \mathbf{P}\mathbf{H}_3$	Excitation	0.5-370  eV	$\operatorname{Exp}$
$e + PH_3$	Ionization	0.5-370  eV	$\operatorname{Exp}$

462. C. Makochekanwa, O. Sueoka, M. Kimura

Experimental investigation of electron and positron interactions with monosubstituted and disubstituted benzene derivatives: Fluorobenzene, 1, 3-difluorobenzene and 1, 4-difluorobenzene molecules.

J. Phys. B 37, 1841 (2004)

$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Elastic Scattering	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_4 \mathbf{F}_2$	Elastic Scattering	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{F}$	Elastic Scattering	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{Cl}$	Elastic Scattering	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Excitation	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_4 \mathbf{F}_2$	Excitation	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{F}$	Excitation	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{Cl}$	Excitation	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_6$	Ionization	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_4 \mathbf{F}_2$	Ionization	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{F}$	Ionization	0.4-1000  eV	Exp
$\mathbf{e} + \mathbf{C}_6 \mathbf{H}_5 \mathbf{Cl}$	Ionization	0.4-1000  eV	Exp

463. M. L. Gradziel, R. W. O'Neill

Direct measurement of  $P^+$  for electron impact excitation of H(2p) at 54.4 eV. J. Phys. B 37, 1893 (2004)

e + H	Excitation	54.4  eV	Exp
$e + H^*$	Excitation	54.4  eV	Exp

464. M. A. Uddin, A. K. Basak, A.K.M.A. Islam, F. B. Malik

Electron impact single ionization of light ionic targets with charge q ; 2. J. Phys. B 37, 1909 (2004)

$\mathbf{e} + \mathbf{C}^{3+}$	Ionization	70-15,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}^{4+}$	Ionization	70-15,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{O}^{4+}$	Ionization	70-15,000 $\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{O}^{5+}$	Ionization	70-15,000 $\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{e}^{6+}$	Ionization	$70-15,000 \ eV$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{e}^{7+}$	Ionization	$70-15,000 { m ~eV}$	$\mathrm{Th}$

## 465. C. A. Terrell, D. L. Hansen, J. M. Ajello

The near-ultraviolet and visible emission spectrum of  $O_2$  by electron impact. J. Phys. B 37, 1931 (2004)

$\mathbf{e} + \mathbf{O}_2$	Fluorescence	10-400  eV	Exp
$\mathbf{e} + \mathbf{O}_2$	Excitation	10-400  eV	$\operatorname{Exp}$

466.	O. Marchuk, G. Berts Cascades between J. Phys. B 37, 1951 (	schinger, HJ. Kunze, N. R. Badr doubly excited levels in heliu (2004)	nell, S. Fritzsche m-like argon.	
	$\mathbf{e} + \mathbf{Ar}^{16+}$ $\mathbf{e} + \mathbf{Ar}^{16+}$	Recombination Fluorescence	Low energy Low energy	${ m E/T} { m E/T}$
467.	T. Kai, R. Srivastava Electron-impact ex eters. J. Phys. B 37, 2045 (	, S. Nakazaki ccitation of Si ²⁺ : Differential ( (2004)	cross sections and Stokes param-	
	$\mathbf{e} + \mathbf{Si}^{2+}$ $\mathbf{e} + \mathbf{Si}^{2+}$	Angular Scattering Excitation	$\begin{array}{c} 10.5\text{-}13.2 \; \mathrm{eV} \\ 10.5\text{-}13.2 \; \mathrm{eV} \end{array}$	${ m Th}$ ${ m Th}$
468.	K. Muktavat, R. Sriv Electron impact co sition in barium. J. Phys. B 37, 2165 (	astava, A. D. Stauffer <b>Dherence parameters for the e</b> (2004)	xcitation of the $6^1S_0 - 6^1P_1$ tran-	
	e + Ba e + Ba	Angular Scattering Excitation	$5-16  { m eV}$ $5-16  { m eV}$	${ m Th} { m Th}$
469.	O. Zatsarinny, K. Ba <b>B-spline Breit-Pau</b> J. Phys. B 37, 2173 (	rtschat l <b>li R-matrix calculations for ele</b> (2004)	ectron collisions with neon atoms.	
	e + Ne e + Ne	Angular Scattering Excitation	16.6-51  eV 16.6-51  eV	${ m Th}$ Th
470.	L. H. Andersen, O. H <b>Physics with elect</b> J. Phys. B 37, R57 (2)	lerber, Zajfman,D. rostatic rings and traps. 2004)		
	$\mathbf{e} + \mathbf{C}_2^- \ \mathbf{e} + \mathbf{C}_2^-$	Detachment Electron Collisions	0-30 eV 0-30 eV	$\operatorname{Exp}$
471.	X. Zhang, J. R. Cresp H. Tawara, J. Ullrich <b>Experimental stud</b> <b>He-like germanium</b> J. Phys. B 37, 2277 (	oo Lopez-Urrutia, P. Guo, V. Miro ly of the deep-lying dielectro: n ions. (2004)	nov, X. Shi, A. J. Gonzalez Martinez, nic recombination resonances of	
	$\mathbf{e} + \mathbf{G}\mathbf{e}^{30+}$	Recombination	$6500-11,000 \ eV$	E/T
472.	B. E. O'Rourke, H. K <b>Dielectronic recom</b> J. Phys. B 37, 2343 (	Kuramoto, Y. M. Li, S. Ohtani, X. <b>abination in He-like titanium</b> (2004)	M. Tong, H. Watanabe, F. J. Currell	
	$\mathbf{e} + \mathbf{T}\mathbf{i}^{20+}$	Recombination	$3-5 \mathrm{keV}$	E/T
473.	A. V. Korol, F. J. Cu <b>The role of target</b>	urrell, G. F. Gribakin polarization in electron-ion re	ecombination.	

J. Phys. B 37, 2411 (2004)

	$\mathbf{e} + \mathbf{Kr}^{8+}$	Recombination	$0-5 \mathrm{keV}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{Kr}^{26+}$	Recombination	0-5  keV	Th
	$\mathbf{e} + \mathbf{Z} \mathbf{r}^{12+}$	Recombination	0-5  keV	Th
	$\mathbf{e} + \mathbf{R}\mathbf{u}^{16+}$	Recombination	0-5  keV	Th
	$\mathbf{e} + \mathbf{C} \mathbf{d}^{20+}$	Recombination	0-5  keV	Th
	$\mathbf{e} + \mathbf{X} \mathbf{e}^{26+}$	Recombination	0-5  keV	Th
	$\mathbf{e} + \mathbf{X} \mathbf{e}^{44+}$	Recombination	0-5  keV	Th
474.	S. Feil, K. Gluch, S. Ma Becker, A. Stamatovic, T <b>Partial cross sections</b> <b>impact on uracil.</b> J. Phys. B 37, 3013 (2004)	tt-Leubner, P. Scheier, J. Lin . D. Maerk for positive and negative i 4)	ntrakul, M. Probst, H. Deutsch, K. on formation following electron	
	$\mathbf{e} + \mathbf{C}_4 \mathbf{H}_4 \mathbf{N}_2 \mathbf{O}_2$	Ionization	0-1000  eV	$\mathrm{E}/\mathrm{T}$
475.	J. Royal, A. Larson, A. E Effect of couplings in t J. Phys. B 37, 3075 (2004	. Orel the resonance continuum. 1)		
	$e + H_3^+$	Dissociation	5-30 eV	Th
	$e + HeH^+$	Dissociation	5-30 eV	Th
	$e + H_3^+$	Recombination	5-30 eV	Th
	$e + HeH^+$	Recombination	5-30 eV	Th
	J. Phys. B 37, 3215 (2004) e + He	I) Ionization	$100-4000 {\rm ~eV}$	$\mathrm{E}/\mathrm{T}$
477.	A. Chattopadhyay, C. Sin Laser assisted excitation J. Phys. B 37, 3283 (2004)	ha <b>on in electron-hydrogen-lil</b> 1)	ke ion collisions.	
	$e + He^+ Z = ?-?$	Angular Scattering	2-30 excitation threshold units	Th
	$e + He^+$	Angular Scattering	2-30 excitation threshold units	Th
	$e + He^+ Z = ?-?$	Excitation	2-30 excitation threshold units	Th
	$e + He^+$	Excitation	2-30 excitation threshold units	$\mathrm{Th}$
478.	C. W. McCurdy, M. Baer Solving the three-body ing.	tschy, T. N. Rescigno y Coulomb breakup proble	em using exterior complex scal-	
	J. Phys. B 37, R137 (200	4)		
	J. Phys. B 37, R137 (200 e + H	4) Ionization	0-2 Hartrees	$\mathrm{E/T}$
479.	<ul> <li>J. Phys. B 37, R137 (200</li> <li>e + H</li> <li>M. Allan</li> <li>Decay channels in the</li> <li>J. Phys. B 37, L359 (2004)</li> </ul>	4) Ionization dissociative electron attac 4)	0-2 Hartrees	$\mathrm{E/T}$
479.	<ul> <li>J. Phys. B 37, R137 (200</li> <li>e + H</li> <li>M. Allan</li> <li>Decay channels in the</li> <li>J. Phys. B 37, L359 (2004)</li> <li>e + NO</li> </ul>	4) Ionization dissociative electron attac 4) Attachment	0-2 Hartrees chment to NO.	E/T
479.	<ul> <li>J. Phys. B 37, R137 (200</li> <li>e + H</li> <li>M. Allan</li> <li>Decay channels in the</li> <li>J. Phys. B 37, L359 (2004</li> <li>e + NO</li> <li>e + NO</li> <li>e + NO</li> </ul>	<ul> <li>4)</li> <li>Ionization</li> <li>dissociative electron attact</li> <li>4)</li> <li>Attachment</li> <li>Dissociation</li> </ul>	0-2 Hartrees Ehment to NO. 7.6-10 eV 7.6-10 eV	E/T Exp Exp

	$\mathbf{e} + \mathbf{C}\mathbf{a}^+$	Excitation	1.5-500 threshold	Th
481.	T. van Zoest, H. Knopp, J. <b>Electron-impact ionizati</b> J. Phys. B 37, 4387 (2004)	Jacobi, S. Schippers, R. A. Phane on of $Ti^{3+}$ ions.	euf, A. Mueller	
	$\mathbf{e} + \mathbf{T}\mathbf{i}^{3+}$	Ionization	40-1000 ${\rm eV}$	Exp
482.	S. Y. Yousif Al-Mulla <b>The elastic scattering of</b> J. Phys. B 37, 305 (2004)	electrons from atoms and ion	ns containing core holes.	
	$\mathbf{e} + \mathbf{N}\mathbf{e}$	Elastic Scattering	10-100  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{N}\mathbf{e}^+$	Elastic Scattering	10-100  eV	$\mathrm{Th}$
	e + Na	Elastic Scattering	10-100  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{N}\mathbf{a}^+$	Elastic Scattering	10-100  eV	Th
	$\mathbf{e} + \mathbf{A}\mathbf{r}$	Elastic Scattering	10-100  eV	Th
	$\mathbf{e} + \mathbf{A}\mathbf{r}^+$	Elastic Scattering	10-100  eV	$\mathrm{Th}$
483.	J. E. Hudson, C. Vallance, I Absolute electron impac J. Phys. B 37, 445 (2004)	P. W. Harland t ionization cross-sections for	CO, $CO_2$ , OCS and $CS_2$ .	
	e + CO	Ionization	0-250  eV	$\operatorname{Exp}$
	$\mathbf{e} + \mathbf{CO}_2$	Ionization	0-250  eV	$\operatorname{Exp}$
	$\mathbf{e} + \mathbf{CS}_2$	Ionization	0-250  eV	$\operatorname{Exp}$
	e + OCS	Ionization	0-250  eV	Exp
1011	Elastic and absorption of intermediate energy ran J. Phys. B 37, 471 (2004) e + CaH4	Elastic Scattering	10-500 eV	$\mathbf{E}/\mathbf{T}$
	$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_4$ $\mathbf{e} + \mathbf{C}_2 \mathbf{H}_4$	Total Scattering	10-500 eV	E/T
485.	<ul> <li>B. K. Antony, K. N. Joshipe</li> <li><b>R-matrix calculation of</b> I</li> <li>J. Phys. B 37, 1689 (2004)</li> <li><b>e</b> + LiH</li> <li><b>e</b> + LiH</li> </ul>	ura, N. J. Mason, J. Tennyson low-energy electron collisions Elastic Scattering Excitation	<b>with LiH.</b> 0-6 eV 0-6 eV	Th Th
486.	M. J. Roberts <b>Two-body off-shell effect</b> for atomic ionization pro J. Phys. B 37, 2869 (2004)	ts in the second-order Fadde ocesses.	eev-Watson approximation	
	e + He	Ionization	$200~{\rm eV};1~{\rm MeV}$	$\mathrm{Th}$
487.	C. P. Ballance, D. C. Griffin <b>Electron-impact excitati</b> J. Phys. B 37, 2943 (2004)	on of neon: A pseudo-state co	onvergence study.	
	e + Ne	Excitation	16-40  eV	Th
488.	M. Plummer, C. J. Noble, M Low-energy behaviour of J. Phys. B 37, 2979 (2004)	A. Le Dourneuf f e-O scattering calculations.		

$\mathbf{e} + \mathbf{O}$	Elastic Scattering	0.5-18  eV	Th
e + O	Excitation	0.5-18  eV	$\mathrm{Th}$

489. J. D. Gorfinkiel, J. Tennyson Electron - H₃⁺ collisions at intermediate energies.
J. Phys. B 37, L343 (2004)

$\mathbf{e} + \mathbf{H}_3^+$	Excitation	15-42  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}_3^+$	Ionization	15-42  eV	$\mathrm{Th}$

490. G. Angelova, J. L. LeGarrec, C. Rebrion-Rowe, B. R. Rowe, O. Novotny, J.B.A. Mitchell **The dissociative recombination of**  $CF_3^+$ . J. Phys. B 37, 4135 (2004)

$\mathbf{e} + \mathbf{CF}_3^+$	Dissociation	100 K	Exp
$\mathbf{e} + \mathbf{CF}_3^+$	Recombination	100 K	$\operatorname{Exp}$

491. T. Fiegele, G. Hanel, O. Echt, A. Stamatovic, P. Scheier, T. D. Maerk Appearance energies of hydrogen and deuterium cluster ions. J. Phys. B 37, 4167 (2004)

$e + H_2$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{H}_3$	Ionization	10-20 eV	Exp
$\mathbf{e} + \mathbf{D}_2$	Ionization	10-20  eV	Exp
$e + D_3$	Ionization	10-20  eV	Exp
e + Hn	Ionization	10-20  eV	Exp
e + Dm	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{H}_5$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{H}_7$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{H}_9$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{H}_{11}$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{D}_5$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{D}_7$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{D}_9$	Ionization	10-20  eV	Exp
$\mathbf{e} + \mathbf{D}_{11}$	Ionization	10-20  eV	Exp

492. D. Vrinceanu, H. R. Sadeghpour, K. Bartschat
Electron-impact broadening of Sr⁺ lines in ultracold neutral plasmas.
J. Phys. B 37, L371 (2004)

	$\mathbf{e} + \mathbf{Sr}^+$	Line Broadening	0-0.6  eV	Th
493.	<ul> <li>A. Prideaux, D. H. Madison</li> <li>Doubly differential cross trons.</li> <li>J. Phys. B 37, 4423 (2004)</li> </ul>	s sections for ionization of xer	non by spin-polarized elec-	
	e + Xe e + Xe	Angular Scattering Ionization	40-50 eV 40-50 eV	Th Th
494.	Y. Wu, Z. An, M. T. Liu, Y Measurements of L-shel	7. M. Duan, C. H. Tang, Z. M. Lu l x-ray production cross sect	o ions of Au and Ag by low	

494. Y. Wu, Z. An, M. T. Liu, Y. M. Duan, C. H. Tang, Z. M. Luo Measurements of L-shell x-ray production cross sections of Au and Ag by low energy electron impact. J. Phys. B 37, 4527 (2004)

e + Ag	Ionization	5-25  keV	Exp
e + Au	Ionization	5-25  keV	Exp

495.	<ul> <li>N. Watanabe, J. W. Cooper, R. W. van Boeyen, J. P. Doering, J. H. Moore, M. A. Coplan (e,3e) collisions on Mg in the impulsive regime studied by the second Born approximation.</li> <li>J. Phys. B 37, 4551 (2004)</li> </ul>				
	e + Mg e + Mg	Angular Scattering Ionization	$1059 { m eV}$ $1059 { m eV}$	${ m Th}$ ${ m Th}$	
496.	N. R. Badnell, K. A. H Ballance <b>Electron-impact exe</b> J. Phys. B 37, 4589 (2	Berrington, H. P. Summers, M. G citation of $Xe^{26+}$ and its resu (004)	. O'Mullane, A. D. Whiteford, C ltant spectral signature.	C. P.	
	$\mathbf{e} + \mathbf{X} \mathbf{e}^{26+}$	Excitation	0-85 Ry	$\mathrm{Th}$	
497.	<ul> <li>H. Cho, R. P. McEach</li> <li>The role of absorption</li> <li>J. Phys. B 37, 4639 (2)</li> </ul>	ran, H. Tanaka, S. J. Buckman tion in intermediate energy 004)	elastic electron scattering fi	rom	
	$\mathrm{e}+\mathrm{Kr}\ \mathrm{e}+\mathrm{Kr}$	Elastic Scattering Excitation	20-100 eV 20-100 eV	${ m E/T} { m E/T}$	
498.	I. Linert, G. C. King, Measurements of dibackward direction J. Phys. B 37, 4681 (2) $e + O_2$	M. Zubek <b>ifferential cross sections for e</b> <b>by molecular oxygen.</b> 004) Elastic Scattering	elastic electron scattering in 7-10 eV	the E/T	
499.	O. Zatsarinny, K. Bart <b>B-spline Breit-Paul</b> J. Phys. B 37, 4693 (2	eschat i <b>R-matrix calculations for ele</b> 004)	ctron collisions with argon at	oms.	
	e + Ar	Excitation	11.5-14  eV	E/T	
500.	A. Dasgupta, K. G. W <b>Z-scaled K-shell die</b> Phys. Rev. A 69, 0227	Thitney electronic recombination rate 702 (2004)	coefficients.		
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Line Broadening	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{25+}$	Line Broadening	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{N} \mathbf{i}^{26+}$	Line Broadening	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{N} \mathbf{i}^{27+}$	Line Broadening	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{Mo}^{40+}$	Line Broadening	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{Mo}^{41+}$	Line Broadening	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Recombination	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{25+}$	Recombination	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{N}\mathbf{i}^{26+}$	Recombination	0-10  keV	$\mathrm{Th}$	
	$e + Ni^{27+}$	Recombination	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{Mo}^{40+}$	Recombination	0-10  keV	$\mathrm{Th}$	
	$e + Mo^{41+}$	Recombination	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Excitation	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{25+}$	Excitation	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{N}\mathbf{i}^{26+}$	Excitation	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{N}\mathbf{i}^{27+}$	Excitation	0-10  keV	$\mathrm{Th}$	
	$\mathbf{e} + \mathbf{M}\mathbf{o}^{40+}$	Excitation	0-10  keV	$\mathrm{Th}$	
	$e + Mo^{41+}$	Excitation	0-10  keV	$\mathrm{Th}$	

501. P. L. Bartlett, A. T. Stelbovics
 Complete direct method for electron-hydrogen scattering: Application to the collinear and Temkin-Poet models.

Phys. Rev. A 69, 022703 (2004)

e + H	Elastic Scattering	0.01-1.0 a.u.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}$	Total Scattering	0.01-1.0 a.u.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}$	Ionization	0.01-1.0 a.u.	$\mathrm{Th}$

502. E. Behar, V. L. Jacobs, J. Oreg, A. Bar-Shalom, S. L. Haan

Effects of quantum interference between radiative and dielectronic recombination on photorecombination cross-section profiles for the He-like ions  $Ar^{16+}$  and  $Fe^{24+}$ . Phys. Rev. A 69, 022704 (2004)

$\mathbf{e} + \mathbf{Ar}^{16+}$	Recombination	$2000\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Recombination	$2000\text{-}5000\;\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{16+}$	Excitation	$2000\text{-}5000\;\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Excitation	$2000\text{-}5000~\mathrm{eV}$	Th

503. K. N. Joshipura, M. Vinodkumar, C. G. Limbachiya, B. K. Antony Calculated total cross sections of electron-impact ionization and excitations in tetrahedral (XY₄) and SF₆ molecules. Phys. Rev. A 69, 022705 (2004)

$\mathbf{e} + \mathbf{CH}_4$	Excitation	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_4$	Excitation	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CCl}_4$	Excitation	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SiH}_4$	Excitation	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SF}_6$	Excitation	10-2000  eV	$\mathrm{Th}$
e + GeH-4	Excitation	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SiF}_4$	Excitation	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CH}_4$	Ionization	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_4$	Ionization	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CCl}_4$	Ionization	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SiH}_4$	Ionization	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SF}_6$	Ionization	10-2000  eV	$\mathrm{Th}$
e + GeH-4	Ionization	10-2000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SiF}_4$	Ionization	10-2000  eV	Th

## 504. A. Laricchiuta, R. Celiberto, R. K. Janev

Electron-impact-induced allowed transitions between triplet states of  $H_2$ . Phys. Rev. A 69, 022706 (2004)

$\mathbf{e} + \mathbf{H}_2$	Dissociation	0-10  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}_2$	Excitation	0-10  eV	$\mathrm{Th}$

505. J. G. Childers, K. E., Jr. James, I. Bray, M. Baertschy, M. A. Khakoo Low-energy electron scattering from atomic hydrogen. I. Ionization. Phys. Rev. A 69, 022709 (2004)

$\mathbf{e} + \mathbf{H}$ Ionization 14.6-40 eV	H Ionization	$14.6-40 { m eV}$	Exp
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506. K. E., Jr. James, J. G. Childers, M. A. Khakoo Low-energy electron scattering from atomic hydrogen. II. Elastic and inelastic scattering. Phys. Rev. A 69, 022710 (2004)

	e + H e + H	Dissociation Elastic Scattering	14.6-40 eV 14.6-40 eV	Exp Exp
	e + H	Excitation	14.6-40 eV	Exp
	e + H	Ionization	14.6-40 eV	Exp
507.	S. Kalhori, R. Thor Larson, A. J. Huney Paal, F. Osterdahl, <b>Resonant ion-pair</b> Phys. Rev. A 69, 02	nas, A. Al-Khalili, A. Ehlerding, F rcutt, B. J. McCall, N. Djuric, G. H A. E. Orel r formation in electron collision 22713 (2004)	Hellberg, A. Neau, M. Larsson, J. Dunn, J. Semaniak, O. Novotny, A. Swith rovibrationally cold $H_3$	A. A. +.
	$e + H_{2}^{+}$	Attachment	2-20 eV	E/T
	$e + H_3^+$	Dissociation	2-20 eV	E/T
508.	D. S. Milne-Brownli <b>Dynamics in elec</b> Phys. Rev. A 69, 03	e, S. J. Cavanagh, B. Lohmann, C. C tron-impact ionization of $H_2O$ . 32701 (2004)	Champion, P. A. Hervieux, J. Hanss	en
	$\mathbf{e}+\mathbf{H}_{2}\mathbf{O}$	Ionization	250  eV	E/T
509.	A.C.F. Santos, A. F. Doubly differenti pact. Phys. Rev. A 69, 03	Iasan, R. D. DuBois al multiple ionization of krypt 32706 (2004)	on by positron and electron in	n-
	e + Kr	Angular Scattering	$750 \mathrm{eV}$	Exp
	e + Kr	Ionization	$750  \mathrm{eV}$	Exp
510.	C. Merlet, X. Llove Measurements of duction cross sect Phys. Rev. A 69, 03	t, F. Salvat absolute K-shell ionization cros tions of Ge by electron impact. 32708 (2004)	ss sections and L-shell x-ray pr	0-
	e + Ge e + Ge	Fluorescence Ionization	$\begin{array}{c} 1.62\text{-}40.62 \ \mathrm{keV} \\ 1.62\text{-}40.62 \ \mathrm{keV} \end{array}$	
511.	A. S. Kheifets Second-order Bor particle impact. Phys. Rev. A 69, 03	rn model for two-electron ato 32712 (2004)	mic ionization by fast charge	d-
	e + He	Excitation	$0.5-5.5 \ \mathrm{keV}$	$\mathrm{Th}$
	e + He	Ionization	0.5- $5.5  keV$	$\mathrm{Th}$
512.	JY. Chesnel, D. M Autoionization el collisions: Experi Phys. Rev. A 70, 02	artina, P. Sobocinski, O. Kamalou, ectrons following double excit mental and theoretical evidence 10701(R) (2004)	F. Fremont, J. Fernandez, F. Mart ation of $D_2$ in 2.4 keV $e^- + h$ e.	in D ₂
	$\mathbf{e} + \mathbf{H}_2$	Dissociation	$2 { m keV}$	E/T
	$\mathbf{e} + \mathbf{D}_2$	Dissociation	2  keV	É/T
	$\mathbf{e} + \mathbf{H}_2$	Ionization	2  keV	E/T
	$\mathbf{e} + \mathbf{D}_2$	Ionization	$2 {\rm ~keV}$	E/T
513.	C. S. Trevisan, A. E Ab initio study o	2. Orel, T. N. Rescigno f low-energy electron collisions	with tetrafluoroethene $C_2F_4$ .	

Phys. Rev. A 70, 012704 (2004)

	$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4 \\ \mathbf{e} + \mathbf{C}_2 \mathbf{F}_4 \\ \mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Elastic Scattering Angular Scattering Total Scattering	0.5-20 eV 0.5-20 eV 0.5-20 eV	Th Th Th
514.	G. Baum, S. Foerster, N. I Angle-differential cross electron-impact excitat Phys. Rev. A 70, 012707 (	Pavlovic, B. Roth, K. Bartschat, sections and spin-asymmetr ion of spin-polarized cesium 2004)	, I. Bray y parameters for spin-polarized n atoms.	
	e + Cs e + Cs	Angular Scattering Excitation	$5-25 {\rm eV}$ $5-25 {\rm eV}$	E/T $E/T$
515.	JM. Sun, ZP. Zhong, L. Superexcited states of troscopy. Phys. Rev. A 70, 012708 (	-F. Zhu, WB. Li, XJ. Liu, Z. NO studied by angle-resolv 2004)	-S. Yuan, KZ. Xu zed electron-energy-loss spec-	
	e + NO e + NO	Elastic Scattering	2500 eV 2500 eV	Exp Exp
516.	L. U. Ancarani, T. Montag Role of the helium gro Phys. Rev. A 70, 012711 (	gnese, C. Dal Cappello und state in (e,3e) processes 2004)	5.	τ. P
	e + He e + He	Angular Scattering Ionization	2-5.6 keV 2-5.6 keV	Th Th
517.	S. Jones, J. H. Macek, D. <b>Test of the Pluvinage v</b> Phys. Rev. A 70, 012712 (	H. Madison vave function for the helium 2004)	n ground state.	
	e + He e + He	Angular Scattering Ionization	5.6 keV 5.6 keV	Th Th
518.	C. Makochekanwa, M. Kin Experimental study of by $SF_6$ molecules. Phys. Rev. A 70, 022702 (	nura, O. Sueoka total cross sections for pos 2004)	itron and electron scattering	
	$\mathbf{e} + \mathbf{SF}_6 \\ \mathbf{e} + \mathbf{SF}_6 \\ \mathbf{e} + \mathbf{SF}_6$	Elastic Scattering Excitation Electron Collisions	0.8-1000 eV 0.8-1000 eV 0.8-1000 eV	Exp Exp Exp
519.	D. A. Erwin, J. A. Kunc Ionization of excited xe Phys. Rev. A 70, 022705 (	enon atoms by electrons. 2004)		
	e + Xe	Ionization	0-500  eV	$\mathrm{Th}$
520.	H. Takagi <b>Theoretical study of th</b> Phys. Rev. A 70, 022709 (	e dissociative recombination 2004)	n of <i>HeH</i> ⁺ .	
	$\mathrm{e}+\mathrm{HeH^+}$ $\mathrm{e}+\mathrm{HeH}$	Dissociation Recombination	0.001-1 eV 0.001-1 eV	Th Th

521.	M. Oura, Y. Tamenori, T. Hayaishi, Y. Kanai, H. Yoshii, K. Tsukamoto, F. Koike Observation of the angle-resolved resonant Auger emission from the $[1s2p](^{3,1}P)3p^2$ 1P doubly excited 2p-2h states of Ne. Phys. Rev. A 70, 022710 (2004)			$P)3p^2$
	e + Ne e + Ne	Excitation Ionization	$\begin{array}{c} 910  \mathrm{eV} \\ 910  \mathrm{eV} \end{array}$	$\operatorname{Exp}$
522.	M. C. Witthoeft, S. <b>Time-dependent c</b> Phys. Rev. A 70, 02	D. Loch, M. S. Pindzola close-coupling theory for e+H 2711 (2004)	elastic and inelastic scatteri	ng.
	e + H	Elastic Scattering	4-30  eV	$\mathrm{Th}$
	e + H	Total Scattering	4-30 eV	$\mathrm{Th}$
	e + H	Excitation	4-30 eV	$\mathrm{Th}$
523.	D. L. Robbins, A. Y K. J. Reed, A. J. Sm Measurement of t and $S^{14+}$ at relati Phys. Rev. A 70, 02	a. Faenov, T. A. Pikuz, H. Chen, hith he polarization of the K-shell vistic electron beam energies. 2715 (2004)	P. Beiersdorfer, M. J. May, J. D. resonance line emission of .	Junn, $S^{13+}$
	$\mathbf{e} + \mathbf{S}^{13+}$	De-excitation	0-144  eV	Exp
	$e + S^{14+}$	De-excitation	$0-144 {\rm ~eV}$	Exp
	$e + S^{13+}$	Excitation	$0-144   \mathrm{eV}$	Exp
	$\mathbf{e} + \mathbf{S}^{14+}$	Excitation	$0-144 \mathrm{eV}$	Exp
524.	G. B. Poparic, S.M.J Forward-to-backw excitation via the Phys. Rev. A 70, 02	D. Galijas, D. S. Belic vard differential-cross-section r ² Π resonance of CO. 4701 (2004)	atio in electron-impact vibrat	ional
	e + CO	Excitation	$1.91 \mathrm{~eV}$	Exp
525.	K. Bartschat, O. Zat On the convergen from magnesium. J. Phys. B 37, 2617	tsarinny, I. Bray, D. V. Fursa, A. 7 ace of close-coupling results for (2004)	Γ. Stelbovics r low-energy electron scatte	ring
	e + Mg	Elastic Scattering	0-1  eV	$\mathrm{Th}$
526.	L. I. Kurkina Resonance behav energy electrons v J. Phys. B 37, 2649	iour of the bremsstrahlung p with alkali-metal clusters. (2004)	process in collisions of the	low-
	$\mathbf{e} + \mathbf{N}\mathbf{a}_{20}$	Bremsstrahlung	10-30  eV	Th
	$e + Na_8$	Bremsstrahlung	10-30  eV	Th
	$\mathbf{e} + \mathbf{N} \mathbf{a}_{92}$	Bremsstrahlung	10-30 eV	$\mathrm{Th}$
	$e + Na_{196}$	Bremsstrahlung	10-30  eV	Th
	$e + K_{92}$	Bremsstrahlung	10-30 eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{L} \mathbf{i}_{92}$	Bremsstrahlung	10-30  eV	$\mathrm{Th}$
527.	V. Milosavljevic, S. J. Electron and ion J. Phys. B 37, 2713	Djenize, M. S. Dimitrijevic contributions to the Ne I spec (2004)	tral line broadening.	
	e + Ne	Line Broadening	1000-50,000 K	$\mathrm{Th}$
		-		

528. N. Andersen, K. Bartschat

#### Dipole polarization in coherently excited Stark manifolds.

J. Phys. B 37, 3809 (2004)

$e + He^+$	Angular Scattering	1585-5640  eV	$\mathrm{Th}$
$e + He^{+*}$	Angular Scattering	1585-5640  eV	$\mathrm{Th}$
$e + He^+$	Excitation	1585-5640  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}\mathbf{e}^{+*}$	Excitation	1585-5640  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}\mathbf{e}^+$	Ionization	$1585\text{-}5640\;\mathrm{eV}$	$\mathrm{Th}$
$e + He^{+*}$	Ionization	1585-5640  eV	$\mathrm{Th}$

529. M.H.F. Bettega, M.A.P. Lima

Electron collisions with the hydrides  $PH_3$ ,  $AsH_3$  and  $SbH_3$ . J. Phys. B 37, 3859 (2004)

$\mathbf{e} + \mathbf{P}\mathbf{H}_2$	Elastic Scattering	$0.5-8 \ \mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{AsH}_3$	Elastic Scattering	$0.5-8 \ \mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SbH}_3$	Elastic Scattering	0.5-8  eV	$\mathrm{Th}$

530. O. Zatsarinny, T. W. Gorczyca, K. T. Korista, N. R. Badnell, D. W. Savin Dielectronic recombination data for dynamic finite-density plasmas. IV. The carbon isoelectronic sequence.

Astron. Astrophys. 417, 1173 (2004)

$e + N^+$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$e + O^{2+}$	Recombination	$1-10^5 {\rm ~eV}$	$\mathrm{Th}$
$e + F^{3+}$	Recombination	$1-10^5 { m ~eV}$	$\mathrm{Th}$
$e + Ne^{4+}$	Recombination	$1-10^5 { m ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{a}^{5+}$	Recombination	$1-10^5 { m ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{g}^{6+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{l}^{7+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$e + Si^{8+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{P}^{9+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S}^{10+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Cl}^{11+}$	Recombination	$1 - 10^5 {\rm \ eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{12+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{K}^{13+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{14+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S} \mathbf{c}^{15+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T} \mathbf{i}^{16+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{V}^{17+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{r}^{18+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{n}^{19+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{20+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$e + Co^{21+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{22+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{u}^{23+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{24+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{K} \mathbf{r}^{30+}$	Recombination	$1 - 10^5 {\rm ~eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Mo}^{36+}$	Recombination	$1 - 10^5 { m eV}$	Th
$e + Cd^{42+}$	Recombination	$1 - 10^5 { m eV}$	Th
$\mathbf{e} + \mathbf{X} \mathbf{e}^{48+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$

^{531.} J. Colgan, M. S. Pindzola, N. R. Badnell Dielectronic recombination data for dynamic finite-density plasmas. V: The lithium isoelectronic sequence. Astron. Astrophys. 417, 1183 (2004)

	$e + Be^+$	Recombination	$10^3 - 10^9 \text{ K}$	Th
	$e + B^{2+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{C}^{3+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{N}^{4+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{O}^{5+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{F}^{6+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{N}\mathbf{e}^{7+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$e + Na^{8+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{M} \mathbf{g}^{9+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{Al}^{10+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{Si}^{11+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{P}^{12+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{S}^{13+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{Cl}^{14+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{A} \mathbf{r}^{15+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{C} \mathbf{a}^{17+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{T} \mathbf{i}^{19+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{C} \mathbf{r}^{21+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{23+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$e + Ni^{25+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$e + Zn^{27+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{K} \mathbf{r}^{33+}$	Recombination	$10^3 - 10^9 { m K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{M}\mathbf{o}^{39+}$	Recombination	$10^3 - 10^9 \text{ K}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{X} \mathbf{e}^{51+}$	Recombination	$10^3 - 10^9 \text{ K}$	$\mathrm{Th}$
JJ2.	Electron impact exc Astron. Astrophys. 418	itation of fine-structure lev 3, 363 (2004)	vels in Cl II.	
	$e + Cl^+$	Excitation	0-20 Ry	Th
533.	K. M. Aggarwal, F. P. Electron impact exc Astron. Astrophys. 418 $\mathbf{e} + \mathbf{F}\mathbf{e}^{12+}$	Keenan <b>itation of Fe XIII.</b> 3, 371 (2004) Excitation	$15-45 \mathrm{~Ry}$	Th
534.	M. A. Bautista, C. Mer <b>K-shell photoionizat</b> Astron. Astrophys. 418	ndoza, T. R. Kallman, P. Palm ion and electron impact ex 3, 1171 (2004)	eri ccitation of Fe XVII-Fe XXII	Ί.
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{16+}$	Excitation	100-2000 Rv	Th
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{17+}$	Excitation	100-2000 Ry	$\mathrm{Th}$
	$e + Fe^{18+}$	Excitation	100-2000 Ry	$\mathrm{Th}$
	$e + Fe^{19+}$	Excitation	100-2000 Ry	$\mathrm{Th}$
	$e + Fe^{20+}$	Excitation	100-2000 Ry	Th
	$e + Fe^{21+}$	Excitation	100-2000 By	Th
	$\mathbf{e} + \mathbf{F}\mathbf{e}^{22+}$	Excitation	100-2000 Ry	Th
535.	M. A. Bautista Atomic data from the Astron. Astrophys. 420	<b>ne Iron project. LV. Elect</b> r ), 763 (2004)	on impact excitation of Ni I	Γ.
	$e + Ni^+$	Excitation	$0-0.5 \mathrm{Ry}$	Th
536.	Z. Altun, A. Yumak, N Dielectronic recomb boron isoelectronic	R. Badnell, J. Colgan, M. S. bination data for dynamic sequence.	Pindzola finite-density plasmas. VI.	The

Astron. Astrophys. 420, 775 (2004)

$e + C^+$	Recombination	$10^3 - 10^9 \text{ K}$	Th
$\mathbf{e} + \mathbf{N}^{2+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$e + O^{3+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F}^{4+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{e}^{5+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{a}^{6+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$e + Mg^{7+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$e + Al^{8+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Si}^{9+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{P}^{10+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S}^{11+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Cl}^{12+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{13+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{15+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T} \mathbf{i}^{17+}$	Recombination	$10^3 - 10^9 \text{ K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{r}^{19+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{21+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{23+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$e + Zn^{25+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{K} \mathbf{r}^{31+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$e + Mo^{37+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{X} \mathbf{e}^{49+}$	Recombination	$10^3 - 10^9 {\rm K}$	$\mathrm{Th}$

537. S. Schippers, M. Schnell, C. Brandau, S. Kieslich, A. Mueller, A. Wolf Experimental Mg IX photorecombination rate coefficient. Astron. Astrophys. 421, 1185 (2004)

$\mathbf{e} + \mathbf{M} \mathbf{g}^{8+}$	Recombination	0-207  eV	Exp
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538. W. D. Geppert, F. Hellberg, A. Ehlerding, J. Semaniak, F. Osterdahl, M. Kaminska, V. Zhaunerchyk, A. Al-Khalili, M. af Ugglas, R. Thomas, A. Kaellberg, M. Larsson Dissociative recombination of S¹⁸O₂+: Evidence for three-body breakup. Astrophys. J., Part 1 610, 1228 (2004)

$\mathbf{e} + \mathbf{SO}_2^+$	Dissociation	0.0001-1.0  eV	Exp
$\mathbf{e} + \mathbf{SO}_2^+$	Recombination	0.0001-1.0  eV	Exp

539. D. M. Mitnik, N. R. Badnell Dielectronic recombination data for dynamic finite-density plasmas. VIII. The nitrogen isoelectronic sequence. Astron. Astrophys. 425, 1153 (2004)

$e + O^+$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F}^{2+}$	Recombination	$10 - 10^9 { m K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{e}^{3+}$	Recombination	$10 - 10^9 { m K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{a}^{4+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{g}^{5+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Al}^{6+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Si}^{7+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{P}^{8+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S}^{9+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Cl}^{10+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{11+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{13+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T} \mathbf{i}^{15+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{r}^{17+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{19+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$

$\mathbf{e} + \mathbf{N} \mathbf{i}^{21+}$	Recombination	$10 - 10^9 { m K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{23+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{K} \mathbf{r}^{29+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Mo}^{35+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{X} \mathbf{e}^{47+}$	Recombination	$10 - 10^9 {\rm K}$	$\mathrm{Th}$

540. O. Zatsarinny, T. W. Gorczyca, K. Korista, N. R. Badnell, D. W. Savin
Dielectronic recombination data for dynamic finite-density plasmas.
Astron. Astrophys. 426, 699 (2004)

$e + Na^+$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{g}^{2+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{l}^{3+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Si}^{4+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{P}^{5+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S}^{6+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$e + Cl^{7+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A}\mathbf{r}^{8+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$e + K^{9+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{10+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S}\mathbf{c}^{11+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T}\mathbf{i}^{12+}$	Recombination	$1 - 10^5 {\rm eV}$	$\mathrm{Th}$
$e + V^{13+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}\mathbf{r}^{14+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{n}^{15+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{16+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$e + Co^{17+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$e + Ni^{18+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{u}^{19+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{20+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{G}\mathbf{a}^{21+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{G}\mathbf{e}^{22+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A}\mathbf{s}^{23+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S}\mathbf{e}^{24+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}\mathbf{r}^{25+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{K} \mathbf{r}^{26+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{R} \mathbf{b}^{27+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Sr}^{28+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Y}^{29+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{r}^{30+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$e + Nb^{31+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Mo}^{32+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T}\mathbf{c}^{33+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{R} \mathbf{u}^{34+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{R} \mathbf{h}^{35+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{P} \mathbf{d}^{36+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{g}^{37+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{d}^{38+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{In}^{39+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Sn}^{40+}$	Recombination	$1 - 10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{S} \mathbf{b}^{41+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$e + Te^{42+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{I}^{43+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{X} \mathbf{e}^{44+}$	Recombination	$1-10^5 { m eV}$	$\mathrm{Th}$

541. K. M. Aggarwal, F. P. Keenan Effective collision strengths for transitions in Fe XIII. Astron. Astrophys. 429, 1117 (2005)

	$\mathbf{e} + \mathbf{F} \mathbf{e}^{12+}$	Excitation	$0 - 7x10^5 { m K}$	$\mathrm{Th}$
542.	E. Landi, P. J. Storey, C. J. Atomic data and spectra Astrophys. J., Part 1 607, 64	Zeippen <b>l line intensities for Ca VIII</b> 40 (2004)		
	$\mathbf{e} + \mathbf{C}\mathbf{a}^{7+}$	Excitation	0-10 Ry	Th
543.	W. D. Geppert, R. Thomas Ugglas, N. Djuric, A. Paal, I <b>Dissociative recombination</b> Astrophys. J., Part 1 609, 44	, J. Semaniak, A. Ehlerding, T. M. Larsson on of $N_2H^+$ : Evidence for fra 59 (2004)	J. Millar, F. Osterdahl, M. af	
	$\mathbf{e} + \mathbf{N}_2 \mathbf{H}^+$	Recombination	$0.001\text{-}0.2\;\mathrm{eV}$	Exp
544.	X. Liu, D. E. Shemansky Ionization of molecular h Astrophys. J., Part 1 614, 12	<b>ydrogen.</b> 132 (2004)		
	$\mathbf{e} + \mathbf{H}_2$	Ionization	15-3000  eV	Th
545.	S. Pal, J. Kumar Differential, partial and t J. Chem. Phys. 120, 4658 (2	total electron impact ionization (2004)	on cross sections for $SF_6$ .	
	$\mathbf{e} + \mathbf{SF}_6$	Ionization	0-900  eV	Th
546.	J. Ojekull, P. U. Andersson, Rosen, R. Thomas, M. Larss Ugglas, N. Markovic <b>Dissociative recombinati</b> <b>and ab initio molecular o</b> J. Chem. Phys. 120, 7391 (2)	M. B. Nagard, J.B.C. Pettersson on, F. Osterdahl, J. Semaniak, H. on of $NH_4^+$ and $ND_4^+$ ions: lynamics. 2004)	, A. M. Derkatch, A. Neau, S. Danared, A. Kaellberg, M. af Storage ring experiments	
	$\mathbf{e} + \mathbf{NH}_4^+ \\ \mathbf{e} + \mathbf{ND}_4^+$	Recombination Recombination	0.001-1.0 eV 0.001-1.0 eV	${ m E/T}$ ${ m E/T}$
547.	R. Panajotovic, M. Jelisavci Buckman <b>Electron scattering from</b> J. Chem. Phys. 121, 4559 (2	c, R. Kajita, T. Tanaka, M. Kitaj <b>tetrafluoroethylene.</b> 2004)	ima, H. Cho, H. Tanaka, S. J.	
	$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Elastic Scattering	1-100 eV	Exp
548.	C. Winstead, V. McKoy <b>Low-energy electron colli</b> J. Chem. Phys. 121, 5828 (2	isions with sulfur hexafluorid 2004)	$\mathbf{e}, SF_6.$	
	$\mathbf{e} + \mathbf{SF}_6$	Elastic Scattering	0-50 eV	Th Th
549.	C. Champion, J. Hanssen, P Differential and total (e, J. Chem. Phys. 121, 9423 (2)	2004)	olyatomic molecules.	111
	$e + H_2O$	Ionization	1-1000  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{CH}_4 \\ \mathbf{e} + \mathbf{NH}_3$	Ionization Ionization	1-1000 eV 1-1000 eV	Th Th

550. A. Jablonski, F. Salvat, C. J. Powell

Comparison of electron elastic-scattering cross sections calculated from two commonly using atomic potentials.

J. Phys. Chem. Ref. Data 33, 409 (2004)

e + H	Elastic Scattering	100-10,000  eV	$\mathrm{Th}$
e + Al	Elastic Scattering	100-10,000  eV	$\mathrm{Th}$
e + Ni	Elastic Scattering	100-10,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A}\mathbf{g}$	Elastic Scattering	100-10,000  eV	$\mathrm{Th}$
e + Cm	Elastic Scattering	100-10,000  eV	$\mathrm{Th}$
e + H	Angular Scattering	100-10,000  eV	$\mathrm{Th}$
e + Al	Angular Scattering	100-10,000  eV	$\mathrm{Th}$
e + Ni	Angular Scattering	100-10,000  eV	$\mathrm{Th}$
e + Ag	Angular Scattering	100-10,000  eV	$\mathrm{Th}$
e + Cm	Angular Scattering	100-10,000  eV	$\mathrm{Th}$

551. Y. Nishikawa, E. Kimura, T. Kai, Y. Itikawa, S. Nakazaki Elastic scattering of electrons from Na-like ions. J. Phys. Soc. Japan 73, 348 (2004)

$\mathbf{e} + \mathbf{A} \mathbf{l}^{2+}$	Elastic Scattering	Undef.	$\mathrm{Th}$
$e + Ar^{7+}$	Elastic Scattering	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{l}^{2+}$	Angular Scattering	Undef.	$\mathrm{Th}$
$e + Ar^{7+}$	Angular Scattering	Undef.	$\mathrm{Th}$

552. T. Kai, T. Kubo, R. Srivastava, S. Nakazaki

Electron impact excitation to the 3  ${}^{1}D$  state of magnesium from the ground state. J. Phys. Soc. Japan 73, 885 (2004)

e + Mg	Angular Scattering	10-20  eV	Th
e + Mg	Excitation	10-20  eV	Th

553. M. L. Mallikarjuna, S. B. Appaji Gowda, K. E. Ganesh, R. Gowda, T. K. Umesh A method to determine the K-shell photoeffect cross sections of some rare earth elements.

Nucl. Instrum. Methods Phys. Res. B 215, 4 (2004)

e + La	Ionization	52-84  keV	Exp
e + Ce	Ionization	52-84  keV	Exp
e + Pr	Ionization	52-84  keV	Exp
e + Nd	Ionization	52-84  keV	Exp
e + Sm	Ionization	52-84  keV	Exp
e + Gd	Ionization	52-84  keV	Exp
e + Dy	Ionization	52-84  keV	Exp
e + Ho	Ionization	52-84  keV	Exp
e + Er	Ionization	52-84  keV	Exp

554. W. M. Ariyasinghe, T. Wijeratne, P. Palihawadana Total electron scattering cross sections of  $CH_4$  and  $NH_3$  molecules in the energy range 400-4000 eV. Nucl. Instrum. Methods Phys. Res. B 217, 389 (2004)

$\mathbf{e} + \mathbf{C}\mathbf{H}_4$	Elastic Scattering	400-4000  eV	Exp
$\mathbf{e} + \mathbf{N}\mathbf{H}_3$	Elastic Scattering	400-4000  eV	Exp

555. M. S. Pindzola, F. Robicheaux, J. P. Colgan, M. C. Witthoeft, J. A. Ludlow Electron-impact single and double ionization of helium. Phys. Rev. A 70, 032705 (2004)

$\mathbf{e} + \mathbf{H}\mathbf{e}$	Ionization	100-200  eV

Th

556. M. A. Uddin, M.A.K. Fazlul Haque, A. K. Basak, B. C. Saha Calculations of electron-impact single-ionization cross sections of helium isoelectronic systems.

Phys. Rev. A 70, 032706 (2004)

e + He Z = ?-?	Ionization	25-100,000  eV	$\mathrm{Th}$
e + He	Ionization	25-100,000  eV	$\mathrm{Th}$
${ m e}+{ m Li}^+$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}^{3+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}^{4+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}^{5+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{O}^{6+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{e}^{8+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{a}^{9+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{g}^{45+}$	Ionization	25-100,000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{U}^{90+}$	Ionization	25-100,000  eV	$\mathrm{Th}$

557. C. Szmytkowski, A. Domaracka, P. Mozejko, E. Ptasinska-Denga, L. Klosowski, M. Piotrowicz, G. Kasperski

### Electron collisions with nitrogen trifluoride $(NF_3)$ molecules. Phys. Rev. A 70, 032707 (2004)

$e + NF_3$	Elastic Scattering	0.5-370  eV	E/T
$e + NF_3$	Excitation	$0.5\text{-}370~\mathrm{eV}$	E/T
$e + NF_3$	Ionization	$0.5\text{-}370~\mathrm{eV}$	E/T

### 558. A.M.C. Sobrinho, N.B.H. Lozano, M.-T. Lee

Elastic and absorption cross sections for electron-hydroxyl radical collisions. Phys. Rev. A 70, 032717 (2004)

Elastic Scattering	$1-500   \mathrm{eV}$	$\mathrm{Th}$
Angular Scattering	1-500  eV	$\mathrm{Th}$
Excitation	1-500  eV	$\mathrm{Th}$
Ionization	1-500  eV	Th
	Elastic Scattering Angular Scattering Excitation Ionization	Elastic Scattering1-500 eVAngular Scattering1-500 eVExcitation1-500 eVIonization1-500 eV

559. E. Surdutovich, W. E. Kauppila, C. K. Kwan, E. G. Miller, S. P. Parikh, K. A. Price, T. S. Stein

Measurements of cross-sections for positrons and electrons scattered by Cs atoms. Nucl. Instrum. Methods Phys. Res. B 221, 97 (2004)

e + Cs	Elastic Scattering	6-200  eV	Exp
e + Cs	Angular Scattering	6-200  eV	Exp
e + Cs	Excitation	6-200  eV	Exp
e + Cs	Ionization	6-200  eV	Exp

560. M. O. Abdellahi El Ghazaly, J. Jureta, X. Urbain, P. Defrance
Total cross sections and kinetic energy release for the electron impact dissociation of H₂⁺ and D₂⁺.
J. Phys. B 37, 2467 (2004)

$\mathbf{e} + \mathbf{H}_2^+$	Dissociation	5-3000  eV	Exp
$\mathbf{e} + \mathbf{D}_2^+$	Dissociation	5-3000  eV	Exp

561. M. Stevenson, A. Crowe

Excitation-ionization of the calcium atom by electron impact. J. Phys. B 37, 2493 (2004)

	$egin{array}{c} \mathbf{e} + \mathbf{C} \mathbf{a} \\ \mathbf{e} + \mathbf{C} \mathbf{a} \\ \mathbf{e} + \mathbf{C} \mathbf{a} \end{array}$	Angular Scattering Excitation Ionization	400 eV 400 eV 400 eV	Exp Exp Exp
562.	<ul> <li>F. Delahaye, S. N. Nahar, A. K. Pradhan, H. L. Zhang</li> <li>Resolution and accuracy of resonances in R-matrix cross sections.</li> <li>J. Phys. B 37, 2585 (2004)</li> </ul>			
	$e + O^{5+}$	Recombination	Undef.	$\mathrm{Th}$
563.	O. Chuluunbaatar, B. B. Joulakian, K. Tsookhuu, S. I. Vinitsky Modified two-centre continuum wavefunction: Application to the dissociative ionization of $H_2^+$ by fast electrons. J. Phys. B 37, 2607 (2004)			
	$\mathbf{e} + \mathbf{H}_2^+$	Dissociation	2  keV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}_2^+$	Angular Scattering	$2 { m keV}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}_2^+$	Ionization	$2 {\rm ~keV}$	$\mathrm{Th}$
564.	S. Milisavljevic, D. Sevic, V. Pejcev, D. M. Filipovic, B. P. Marinkovic Differential and integrated cross sections for the electron excitation of the 4 ${}^{1}P^{0}$ state of calcium atom. J. Phys. B 37, 3571 (2004)			
	e + Ca	Angular Scattering	$10-100 {\rm ~eV}$	Exp
	e + Ca	Excitation	10-100 eV	Exp
565.	C. A. Ramsbottom, C. J. Noble, V. M. Burke, M. P. Scott, P. G. Burke Configuration interaction effects in low-energy electron collisions with Fe II. J. Phys. B 37, 3609 (2004)			
	$e + Fe^+$	Excitation	$0.03-0.35 \mathrm{~Ry}$	$\mathrm{Th}$
566.	C. Plottke, P. Nicol, I. Bray, D. V. Fursa, A. T. Stelbovics Electron-impact helium double excitation within the S-wave model. J. Phys. B 37, 3711 (2004)			
	e + He e + He	Excitation Ionization	50-500 eV 50-500 eV	${ m Th}$ Th
567.	C. P. Ballance, D. C. Griffin, J. A. Ludlow, M. S. Pindzola Electron-impact ionization of metastable neon. J. Phys. B 37, 4779 (2004)			
	e + Ne	Ionization	5-90 eV	Th
	$e + Ne^*$	Ionization	5-90 eV	Th
568.	A. B. Voitkiv, B. Najjari Ionization of helium by relativistic highly charged ions within the symmetric eikonal approximation. J. Phys. B 37, 4831 (2004)			
	e + He e + He	Angular Scattering Ionization	1 GeV 1 GeV	${ m Th}$ Th
569.	T. Skalicky, M. Allar The assignment of ing hydroxyl and J. Phys. B 37, 4849	n E dissociative electron attachme amino groups. (2004)	nt bands in compounds contain-	
	$\begin{array}{l} {\bf e} + {\bf C}{\bf H}_3{\bf O}{\bf H} \\ {\bf e} + ({\bf C}_2{\bf H}_5)_2{\bf N}{\bf H} \\ {\bf e} + ({\bf C}{\bf H}_3)_2{\bf N}_2({\bf C}{\bf H}_3)_2 \\ {\bf e} + {\bf C}{\bf H}_3{\bf O}{\bf H} \\ {\bf e} + ({\bf C}_2{\bf H}_5)_2{\bf N}{\bf H} \\ {\bf e} + ({\bf C}{\bf H}_3)_2{\bf N}_2({\bf C}{\bf H}_3)_2 \end{array}$	Attachment Attachment Dissociation Dissociation Dissociation	0-16 eV 0-16 eV 0-16 eV 0-16 eV 0-16 eV 0-16 eV	Exp Exp Exp Exp Exp Exp
------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------	----------------------------------------------------------------	----------------------------------------
570.	A. R. Milosavljevic, D. Sevi <b>Critical minimum in elas</b> J. Phys. B 37, 4861 (2004)	c, B. P. Marinkovic stic electron scattering by kr	ypton.	
	e + Kr e + Kr	Elastic Scattering Angular Scattering	100-260 eV 100-260 eV	Exp Exp
571.	C. P. Ballance, D. C. Griffin Electron-impact excitati Phys. Rev. A 68, 062705 (2	n, J. P. Colgan, S. D. Loch, M. S on of beryllium and its ions. 003)	. Pindzola	
	e + Be	Excitation	3-200  eV	Th
	$e + Be^+$	Excitation	3-200 eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{B}\mathbf{e}^{2+}$	Excitation	3-200  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{B}\mathbf{e}^{3+}$	Excitation	3-200  eV	$\mathrm{Th}$
572.	C. S. Trevisan, A. E. Orel, <b>Ab initio study of low-en</b> Phys. Rev. A 68, 062707 (2	T. N. Rescigno nergy electron collisions with 003)	ı ethylene.	
	$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_4 \\ \mathbf{e} + \mathbf{C}_2 \mathbf{H}_4$	Elastic Scattering Angular Scattering	0.5-20  eV 0.5-20  eV	Th Th
573.	S. J. Smith, J. A. Lozano, S Electron excitation cross transitions in $O^{3+}$ . Phys. Rev. A 68, 062708 (2	S. S. Tayal, A. Chutjian as sections for the $2s^22p$ $^2P^0$ 003)	) -; $2s2p^2 \ ^4P$ and $2s2p^2 \ ^2D$	
	$\mathbf{e} + \mathbf{O}^{3+}$	Excitation	8-20 eV	Exp
574.	H. Feng, W. Sun, M. A. Mo Parameter-free nonadials citation in electron-mole Phys. Rev. A 68, 062709 (2	orrison patic correlation-polarization ecule scattering: Application 003)	potential for vibrational ex- to $e - N_2$ collisions.	
	$\mathbf{e} + \mathbf{N}_2$	Excitation	0-5 eV	$\mathrm{Th}$
575.	S. Mondal, R. Shanker Observation of interfere collisions. Phys. Rev. A 69, 060701 (2	nce effects in ejected electro	ons from 16.0-keV $e^ SF_6$	
	$\mathbf{e} + \mathbf{SF}_6 \\ \mathbf{e} + \mathbf{SF}_6$	Angular Scattering Ionization	16 keV 16 keV	Exp Exp
576.	K. Bartschat, A. Dasgupta, Close-coupling and dister the $(5p^56p)$ states of xere Phys. Rev. A 69, 062706 (2	D. H. Madison orted-wave calculations for el on. 004)	lectron-impact excitation of	
	e + Xe	Excitation	10-200 eV	$\mathrm{Th}$

577.	XF. Jia, MH. Liu, S <b>Triple-differential cro</b> <b>bon.</b> Phys. Rev. A 69, 06270	-Y. Sun, Y. Wu oss sections for inner-shell e 7 (2004)	lectron-impact ionization of ca	ar-
	e + C e + C	Angular Scattering Ionization	10-200 eV 10-200 eV	${ m Th}$ Th
578.	Z. Zhang, W. Vanroose, Low-energy electron shape resonances in a Phys. Rev. A 69, 06271	C. W. McCurdy, A. E. Orel, T scattering of NO: Ab initio the local complex potential 1 (2004)	. N. Rescigno analysis of the ${}^{2}\Sigma^{-}$ , ${}^{1}\Delta$ , and ${}^{1}\Sigma^{-}$ model.	$\Sigma^+$
	e + NO e + NO	Elastic Scattering Excitation	0-2 eV 0-2 eV	${ m Th}$ Th
579.	D. J. Haxton, Z. Zhang, Dynamics of dissociat state of the anion. Phys. Rev. A 69, 06271	HD. Meyer, T. N. Rescigno, tive attachment of electrons	C. W. McCurdy to water through the 2B_1 meta	stable
	$\mathrm{e} + \mathrm{H}_2\mathrm{O} \ \mathrm{e} + \mathrm{H}_2\mathrm{O}$	Attachment Dissociation	5-10 eV 5-10 eV	${ m Th}$ ${ m Th}$
580.	B. Mielewska, I. Linert, Differential cross sect range 130 deg - 180 d Phys. Rev. A 69, 06271	G. C. King, M. Zubek tions for elastic electron scat leg. 6 (2004)	tering in argon over the angul	lar
	$\mathbf{e} + \mathbf{Ar}$ $\mathbf{e} + \mathbf{Ar}$	Elastic Scattering Angular Scattering	5-10 eV 5-10 eV	$\operatorname{Exp}$
581.	Y. Attaourti, S. Taj Relativistic electroni electron impact. Phys. Rev. A 69, 06341	c dressing in laser-assisted i 1 (2004)	onization of atomic hydrogen	by
	$\mathbf{e} + \mathbf{H}$ $\mathbf{e} + \mathbf{H}$	Angular Scattering Ionization	$\begin{array}{c} 575\text{-}1350 \ \mathrm{eV} \\ 575\text{-}1350 \ \mathrm{eV} \end{array}$	${ m Th}$ Th
582.	D. Strasser, L. Lammich Breakup dynamics as nation. Phys. Rev. A 69, 06470	n, H. Kreckel, M. Lange, S. Kroh nd isotope effects in $D_2H^+$ 2 (2004)	an, D. Schwalm, A. Wolf, D. Zajfm and $H_2D^+$ dissociative recomb	an b <b>i-</b>
	$e + H_3^+$ $e + H_2D^+$ $e + HD_2^+$ $e + H_3^+$ $e + H_2D^+$ $e + HD_2^+$	Dissociation Dissociation Dissociation Recombination Recombination	0 eV 0 eV 0 eV 0 eV 0 eV 0 eV	Exp Exp Exp Exp Exp Exp
583.	M. F. Gu Electron-impact exci matrix and distorted Phys. Rev. A 70, 06270	itation of Fe XXII: Compa -wave approaches. 4 (2004)	arative study of relativistic 1	R-
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{21+}$	Excitation	10-2500  eV	$\mathrm{Th}$

584. T. Kai, R. Srivastava, S. Nakazaki

Electron-impact excitation of the 3s3p  ${}^{1}P^{0}$  state of Mg-like ions:  $S^{4+}$ ,  $Ar^{6+}$ , and  $Ca^{8+}$ .

Phys. Rev. A 70, 062705 (2004)

$\mathbf{e} + \mathbf{S}^{4+}$	Angular Scattering	15-50 eV	Th
c + b	Angular Scattering	15-50 eV	11 Th
$e + Ar^{-1}$	Angular Scattering	15-50 ev	1 []
$e + Ca^{8+}$	Angular Scattering	15-50  eV	Th
$\mathbf{e} + \mathbf{S}^{4+}$	Excitation	15-50  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{6+}$	Excitation	15-50  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{8+}$	Excitation	15-50  eV	$\mathrm{Th}$

585. Z.-S. Yuan, X.-Y. Han, X.-J. Liu, L.-F. Zhu, K.-Z. Xu, L. Voky, J.-M. Li Theoretical investigations on the dynamical correlation in double excitations of helium by the R-matrix method. Phys. Rev. A 70, 062706 (2004) e + He Excitation 56-65 eV Th

586. M.H.F. Bettega, M.A.P. Lima, L. G. Ferreira Elastic scattering of low-energy electrons by OCS. Phys. Rev. A 70, 062711 (2004)

e + OCS	Elastic Scattering	0.1-10  eV	Th
e + OCS	Angular Scattering	0.1-10 eV	Th

587. D. Nikolic, E. Lindroth, S. Kieslich, C. Brandau, S. Schippers, W. Shi, A. Mueller, G. Gwinner, M. Schnell, A. Wolf Dielectronic recombination resonances in Na⁸⁺. Phys. Rev. A 707, 062723 (2004)

$\mathbf{e} + \mathbf{N}\mathbf{a}^{8+}$ Recombination 0-0.5 eV	$\operatorname{Exp}$
-----------------------------------------------------------------	----------------------

588. W. M. Ariyasinghe, C. Goains, D. Powers, T. Wijeratne, P. Palihawadana Total electron scattering cross sections of He, Ne and Ar at intermediate electron energies.

Nucl. Instrum. Methods Phys. Res. B 225, 191 (2004)

Elastic Scattering	300-4500  eV	Exp
Elastic Scattering	300-4500  eV	$\operatorname{Exp}$
Elastic Scattering	300-4500  eV	$\operatorname{Exp}$
Angular Scattering	300-4500  eV	$\operatorname{Exp}$
Angular Scattering	300-4500  eV	Exp
Angular Scattering	300-4500  eV	$\operatorname{Exp}$
Excitation	300-4500  eV	$\operatorname{Exp}$
Excitation	300-4500  eV	Exp
Excitation	300-4500  eV	Exp
Ionization	300-4500  eV	$\operatorname{Exp}$
Ionization	300-4500  eV	$\operatorname{Exp}$
Ionization	300-4500  eV	$\operatorname{Exp}$
	Elastic Scattering Elastic Scattering Elastic Scattering Angular Scattering Angular Scattering Excitation Excitation Excitation Ionization Ionization Ionization	Elastic Scattering $300-4500 \text{ eV}$ Elastic Scattering $300-4500 \text{ eV}$ Elastic Scattering $300-4500 \text{ eV}$ Angular Scattering $300-4500 \text{ eV}$ Angular Scattering $300-4500 \text{ eV}$ Angular Scattering $300-4500 \text{ eV}$ Excitation $300-4500 \text{ eV}$ Excitation $300-4500 \text{ eV}$ Excitation $300-4500 \text{ eV}$ Excitation $300-4500 \text{ eV}$ Ionization $300-4500 \text{ eV}$

589. M. J. Berger, J. W. Motz

X-rays from thick tungsten targets irradiated by 500-50 keV electrons. Nucl. Instrum. Methods Phys. Res. B 226, 327 (2004)

$\mathbf{e} + \mathbf{W}$	Ionization	50-500  keV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A}\mathbf{u}$	Ionization	50-500  keV	$\mathrm{Th}$

590.	. K. M. Aggarwal, F. P. Keenan Electron impact excitation of Mo XXXIV. Phys. Scr. 69, 176 (2004)			
	$\mathbf{e} + \mathbf{M}\mathbf{o}^{33+}$	Excitation	Undef.	Th
591.	G. Purohit, R. Choubisa, Spin asymmetry in (e, versely polarized elect Phys. Scr. 69, 208 (2004)	V. Patidar, K. K. Sud 2e) processes on Li, Be ⁺ , rons.	$B^{2+}$ and $C^{3+}$ targets by trans-	
	e + Li	Ionization	55-113  eV	Th
	$\mathbf{e} + \mathbf{B}\mathbf{e}^+$	Ionization	$55-113 { m eV}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{B}^{2+}$	Ionization	55-113  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{C}^{3+}$	Ionization	$55-113 \mathrm{~eV}$	Th
592.	K. M. Aggarwal, F. P. Ke Electron impact excita Phys. Scr. 69, 385 (2004)	enan tion of C IV.		
	$\mathbf{e} + \mathbf{C}^{3+}$	Excitation	10-70  eV	Th
593.	W. Vanroose, Z. Zhang, C <b>Threshold vibrational</b> Phys. Rev. Lett. 92, 0532	C. W. McCurdy, T. N. Rescign excitation of $CO_2$ by slow 201 (2004)	electrons.	
	$e + CO_2$	Excitation	0.2- $1.2  eV$	$\mathrm{Th}$
594.	P. L. Bartlett, A. T. Stell <b>Threshold behavior of</b> Phys. Rev. Lett. 93, 2332	oovics e-H ionizing collisions. 201 (2004)		
	e + H	Ionization	0-0.1 a.u.	$\mathrm{Th}$
595.	V. Stary, J. Zemek Low energy electron e Surf. Sci. 566-568, 1206 (	lastic reflection from solid 2004)	surfaces.	
	e + Si	Elastic Scattering	$0.2-20 \mathrm{keV}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{C}\mathbf{u}$	Elastic Scattering	0.2-20  keV	Th
	e + Au	Elastic Scattering	0.2-20  keV	Th
596.	D. A. Horner, C. W. McC Electron-impact excita Phys. Rev. A 71, 010701	Curdy, T. N. Rescigno <b>tion autoionization of heli</b> (2005)	um in the S-wave limit.	
	e + He	Angular Scattering	37-45  eV	$\mathrm{Th}$
	$e + He^*$	Angular Scattering	37-45  eV	Th
	e + He	Excitation	37-45 eV	$\mathrm{Th}$
	$e + He^*$	Excitation	37-45  eV	$\mathrm{Th}$
	e + He	Ionization	37-45  eV	Th
	$e + He^*$	Ionization	37-45  eV	Th
597.	O. Kamalou, JY. Chesne F. Fremont <b>Evidence for interferen</b> by energetic electron i	el, D. Martina, J. Hanssen, C. nce effects in both slow and mpact.	R. Stia, O. A. Fojon, R. D. Rivarola, d fast electron emission from $D_2$	

Phys. Rev. A 71, 010702 (2005)

$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	2.4  keV	E/T
$\mathbf{e} + \mathbf{D}_2$	Angular Scattering	2.4  keV	E/T
$\mathbf{e} + \mathbf{H}_2$	Ionization	2.4  keV	E/T
$\mathbf{e} + \mathbf{D}_2$	Ionization	2.4  keV	E/T

## 598. D. A. Horner, C. W. McCurdy, T. N. Rescigno

Electron-helium scattering in the S-wave model using exterior complex scaling. Phys. Rev. A 71, 012701 (2005)

e + He	Angular Scattering	1-30  eV	$\mathrm{Th}$
$e + He^*$	Angular Scattering	1-30  eV	$\mathrm{Th}$
e + He	Excitation	1-30  eV	$\mathrm{Th}$
$e + He^*$	Excitation	1-30  eV	$\mathrm{Th}$
e + He	Ionization	1-30  eV	$\mathrm{Th}$
$e + He^*$	Ionization	1-30  eV	$\mathrm{Th}$

#### 599. T. M. Miller, A. A. Viggiano

Electron attachment and detachment:  $C_6F_5Cl$ ,  $C_6F_5Br$ , and  $C_6F_5I$  and the electron affinity of  $C_6F_5Cl$ . Phys. Rev. A 71, 012702 (2005)

$\mathbf{e} + \mathbf{C}_6 \mathbf{F}_5 \mathbf{Cl}$	Attachment	$300-550 {\rm K}$	E/T
$\mathbf{e} + \mathbf{C}_6 \mathbf{F}_5 \mathbf{Br}$	Attachment	$300-550 \mathrm{~K}$	E/T
$\mathbf{e} + \mathbf{C}_6 \mathbf{F}_5 \mathbf{I}$	Attachment	$300-550 {\rm K}$	E/T

600. J. Boemmels, K. Franz, T. H. Hoffmann, A. Gopalan, O. Zatsarinny, K. Bartschat, M.-W. Ruf, H. Hotop Low-lying resonances in electron-neon scattering: Measurements at 4-meV resolution and comparison with theory.

Phys. Rev. A 71, 012704 (2005)

$\mathbf{e} + \mathbf{N}\mathbf{e}$	Angular Scattering	16-19 eV	E/T
e + Ne	Excitation	16-19  eV	E/T

601. B. M. Nestmann, S.V.K. Kumar, S. D. Peyerimhoff Contribution of Feshbach resonance to the 1.3-eV dissociative-electron-attachment cross section of ozone. Phys. Rev. A 71, 012705 (2005)

$\mathbf{e} + \mathbf{O}_3$	Attachment	0-10  eV	Th
$\mathbf{e} + \mathbf{O}_3$	Dissociation	0-10  eV	Th

602. S. D. Loch, M. Witthoeft, M. S. Pindzola, I. Bray, D. V. Fursa, M. Fogle, R. Schuch, P. Glans, C. P. Ballance, D. C. Griffin Influence of long-lived metastable levels on the electron-impact single ionization of  $C^{2+}$ .

Phys. Rev. A 71, 012716 (2005)

$\mathbf{e} + \mathbf{C}^{2+}$	Ionization	40-400  eV	Th
$\mathbf{e} + \mathbf{C}^{2+*}$	Ionization	40-400  eV	Th

# 603. S. d'A. Sanchez, A. R. Lopes, M.H.F. Bettega, M.A.P. Lima, L. G. Ferreira Polarization effects in the elastic scattering of low-energy electrons by $C_3H_4$ isomers.

Phys. Rev. A 71, 062702 (2005)

$\mathbf{e} + \mathbf{C}_3 \mathbf{H}_4$	Elastic Scattering	1-10  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_3 \mathbf{H}_4$	Angular Scattering	1-10 eV	Th

604.	M. A. Khakoo, P. V. <b>Differential cross</b> ${}^{3}\Pi_{g}$ , <b>W</b> ${}^{3}\Delta_{u}$ , $B^{\ell}$ ${}^{3}\Sigma$ Phys. Rev. A 71, 06	Johnson, I. Ozkay, P. Yan, S. Traj sections for the electron impa- $u^{-}$ , $A^{\ell \ 1}\Sigma_{u}^{-}$ , $\mathbf{a}^{\ 1}\Pi_{g}$ , $\mathbf{w}^{\ 1}\Delta_{u}$ , and 2703 (2005)	mar, I. Kanik act excitation of the A ${}^{3}\Sigma_{u}$ C ${}^{3}\Pi_{u}$ states of $N_{2}$ .	$^+, \ {f B}$
	$\begin{array}{l} \mathbf{e} + \mathbf{N}_2 \\ \mathbf{e} + \mathbf{N}_2 \end{array}$	Angular Scattering Excitation	10-100 eV 10-100 eV	$\begin{array}{c} \text{Exp} \\ \text{Exp} \end{array}$
605.	Y. Attaourti, S. Taj, Semirelativistic m 71, 062705 (2005)	B. Manaut odel for ionization of atomic h	ydrogen by electron impact	
	e + H e + H	Angular Scattering Ionization	$\begin{array}{c} 250\text{-}25,\!000 \text{ eV} \\ 250\text{-}25,\!000 \text{ eV} \end{array}$	Th Th
606.	V. Horvat, R. L. Wa L x rays emitted f Phys. Rev. A 71, 06	tson, J. M. Blackadar, A. N. Perun <b>rom multiply ionized holmium</b> 2709 (2005)	nal, Y. Peng a <b>atoms.</b>	
	e + Ho e + Ho	Fluorescence Ionization	$0.01-6 { m MeV/u}$ $0.01-6 { m MeV/u}$	$\operatorname{Exp}$
607.	N. B. Avdonina, D. Minima in general to the high-energy Phys. Rev. A 71, 06	Fursa, A. Z. Msezane, R. H. Pratt ized oscillator strengths of ator v limit. 2711 (2005)	nic transitions and the appro	oach
	e + Ba e + Ba	Angular Scattering Excitation	0.1-30 a.u. 0.1-30 a.u.	${ m Th}$ Th
608.	ZS. Yuan, LF. Zh Inner-shell excitat resolution. Phys. Rev. A 71, 06	u, XJ. Liu, WB. Li, HD. Cheng cions of krypton 3d investigate 4701 (2005)	g, JM. Sun, KZ. Xu ed by electron impact with	high
	e + Kr e + Kr	Angular Scattering Excitation	$2.5 { m keV}$ $2.5 { m keV}$	Exp Exp
609.	X. Urbain, N. Djurio Andersen Storage ring study	e, C. P. Safvan, M. J. Jensen, H. B y of the dissociative recombina	B. Pedersen, L. Vejby Sogaard, I tion of $He_2^+$ .	L. H.
	J. Phys. B 38, 43 (20	005)		
	$\mathbf{e} + \mathbf{H}\mathbf{e}_2^+ \\ \mathbf{e} + \mathbf{H}\mathbf{e}_2^+$	Dissociation Recombination	0.001-20  eV 0.001-20  eV	$\operatorname{Exp}$
610.	N. Lahmidi, B. Joula Dissociative simple electron impact. J. Phys. B 38, 51 (20	akian le ionization of two active ele 205)	ctron diatomic systems by	fast
	$\mathbf{e} + \mathbf{H}_2$	Dissociation	4087  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{L} \mathbf{\tilde{i}}_2$	Dissociation	$4087~{\rm eV}$	Th
	$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	$4087~{\rm eV}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{L} \mathbf{i}_2$	Angular Scattering	$4087~{\rm eV}$	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}_2$	Ionization	4087 eV	$\frac{\mathrm{Th}}{\mathrm{T}}$
	$\mathbf{e} + \mathbf{L} \mathbf{i}_2$	Ionization	4087  eV	$\mathrm{Th}$

611.	B. M. Nestmann, V. H Total cross sections ${}^{2}A_{2}$ Feshbach reson J. Phys. B 38, 75 (200	Brems, A. Dora, S. Kumar s for dissociative electron atta ance. 05)	achment to ozone caused by t	the
	$\mathbf{e} + \mathbf{O}_3$ $\mathbf{e} + \mathbf{O}_3$	Attachment Dissociation	0-5 eV 0-5 eV	${ m Th}$ ${ m Th}$
612.	<ul> <li>P. L. Bartlett, A. T. S.</li> <li>H(2p) excitation by</li> <li>J. Phys. B 38, L95 (20)</li> </ul>	Stelbovics, G. M. Lee, I. Bray y <b>54.4 eV electrons.</b> 005)		
	e + H e + H	Angular Scattering Excitation	$\begin{array}{c} 54.4 \ \mathrm{eV} \\ 54.4 \ \mathrm{eV} \end{array}$	${ m Th}$ ${ m Th}$
613.	J.B.A. Mitchell, O. N L. H. Andersen, A. I. <b>Dissociative recom</b> J. Phys. B 38, 693 (20	ovotny, G. Angelova, J. L. LeGar Florescu-Mitchell, A. E. Orel bination of rare gas hydride id 005)	rrec, C. Rebrion-Rowe, A. Svends	sen,
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Dissociation Recombination	$\begin{array}{c} 0.0130 \ \mathrm{eV} \\ 0.0130 \ \mathrm{eV} \end{array}$	E/T E/T
614.	C. Szmytkowski, A. D Electron scattering J. Phys. B 38, 745 (20	pomaracka, P. Mozejko, E. Ptasins by sulfur tetrafluoride $(SF_4)$ 005)	ka-Denga, S. Kwitnewski molecules.	
	$\mathbf{e} + \mathbf{SF}_4 \\ \mathbf{e} + \mathbf{SF}_4$	Elastic Scattering Ionization	0.1-370 eV 0.1-370 eV	$\begin{array}{c} Exp\\ Exp \end{array}$
615.	S. Proctor, M. A. Kha Electron impact ex J. Phys. B 38, 929 (20	akoo <b>citation of argon and kryptor</b> 005)	a: Improved r-ratios.	
	e + Ar	Angular Scattering	13.5-30  eV	Exp
	e + Kr	Angular Scattering	13.5-30  eV	Exp
	e + Ar	Excitation	13.5-30  eV	$\operatorname{Exp}$
	e + Kr	Excitation	13.5-30  eV	Exp
616.	C. Vallance, P. W. Ha Corrigendum: Corr lated using the BEI J. Phys. B 38, 1077 (2	rland rections to electron impact io 3 model for molecules contain 2005)	nization efficiency curves cale ing third and fourth row ator	cu- ns.
	$\mathbf{e} + \mathbf{B}\mathbf{r}_2$	Ionization	10-300 eV	E/T
	$\mathbf{e} + \mathbf{CS}_2$	Ionization	$10-300 {\rm ~eV}$	É/T
	$\mathbf{e} + \mathbf{CCl}_4$	Ionization	10-300  eV	É/T
	$\mathbf{e} + \mathbf{SF}_6$	Ionization	10-300  eV	E/T
	e + OCS	Ionization	10-300  eV	E/T
	$\mathbf{e} + \mathbf{CHCl}_3$	Ionization	10-300  eV	E/T
	$e + CH_3Cl$	Ionization	10-300 eV	E/T
	$\mathbf{e} + \mathbf{CF}_3 \mathbf{Br}$	Ionization	10-300  eV	E/T
	$\mathbf{e} + \mathbf{CF}_2\mathbf{Cl}_2$	lonization	10-300 eV	E/T
	$\mathbf{e} + \mathbf{C}_2 \mathbf{H}_5 \mathbf{C} \mathbf{I}$	Ionization	10-300 eV	E/T
	$e + C_3H_7Cl$	Ionization	10-300 eV	E/T
	$\mathbf{e} + \mathbf{C}_4 \mathbf{H}_9 \mathbf{C} \mathbf{I}$	Ionization	10-300 eV	E/T
	$\mathbf{e} + \mathbf{C}_2 \mathbf{C} \mathbf{I}_4$	Ionization	10-300 eV	E/T

$\mathbf{e} + \mathbf{C}_2 \mathbf{Cl}_6$	Ionization	10-300  eV	E/T
$e + CH_3Cl_2$	Ionization	10-300  eV	É/T
$e + CH_2Br_2$	Ionization	10-300  eV	É/T
$e + CF_2Br_2$	Ionization	10-300  eV	É/T
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4 \mathbf{B} \mathbf{r}_2$	Ionization	10-300  eV	É/T
$e + CH_2ClCCl_3$	Ionization	10-300  eV	É/T
$e + CH_2ClCH_2Cl$	Ionization	10-300  eV	É/T
$e + CH_2ClCNCl_2$	Ionization	10-300  eV	É/T
$e + CH_3CCl_3$	Ionization	10-300  eV	É/T
$e + CHCl_2CCl_3$	Ionization	10-300  eV	É/T
$e + CHCl_2CH_3$	Ionization	10-300  eV	É/T
$e + CHCl_2CHCl_2$	Ionization	10-300  eV	É/T
e + CHClCHCl	Ionization	10-300  eV	É/T
$e + CHClCCl_2$	Ionization	10-300  eV	E/T
• 4			/

617. D. C. Griffin, C. P. Ballance, M. S. Pindzola, F. Robicheaux, S. D. Loch, J. A. Ludlow, M. Witthoeft, J. Colgan, C. J. Fontes, D. R. Schultz

The validity of classical trajectory and perturbative quantal methods for electronimpact ionization from excited states in H-like ions.

J. Phys. B 38, L199 (2005)

e + H	Ionization	$2-400   \mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}^*$	Ionization	2-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+}$	Ionization	$2-400   \mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{L} \mathbf{i}^{2+*}$	Ionization	2-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}^{4+}$	Ionization	2-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}^{4+*}$	Ionization	$2-400   \mathrm{eV}$	$\mathrm{Th}$

#### 618. A. J. Murray

(e, 2e) studies of <i>H</i>	$I_2$ in the	intermediate	energy	regime.
J. Phys. B 38, 1999 (	2005)			

$\mathbf{e} + \mathbf{H}_2$	Angular Scattering	25.3-55.3  eV	E/T
$\mathbf{e} + \mathbf{H}_2$	Ionization	25.3-55.3  eV	E/T

619. J. Jacobi, H. Knopp, S. Schippers, W. Shi, A. Mueller
Multiple ionization of Sc⁺ - ions by electron impact.
J. Phys. B 38, 2015 (2005)

$\mathbf{e} + \mathbf{S}\mathbf{c}^+$	Ionization	$30 \ \mathrm{eV}$	Exp
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620. B. M. McLaughlin, A. Hibbert, M. P. Scott, C. J. Noble, V. M. Burke, P. G. Burke
Electron impact excitation of Fe-peak elements: Forbidden transitions in the 3d⁵
manifold of Fe IV.
J. Phys. B 38, 2029 (2005)

$\mathbf{e} + \mathbf{F} \mathbf{e}^{3+}$	Excitation	$2x10^3 - 2x10^6$ K	$\mathrm{Th}$

621. J. Colgan, M. S. Pindzola, N. R. Badnell

Erratum: Dielectronic recombination data for dynamic finite-density plasmas. V. The lithium isoelectronic sequence. Astron. Astrophys. 429, 369 (2005)

e + Li Z= ?-?	Recombination	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Cl}^{14+}$	Recombination	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{17+}$	Recombination	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N}\mathbf{i}^{25+}$	Recombination	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{27+}$	Recombination	Undef.	$\mathrm{Th}$

622.	M. C. Chidichimo, G. Del Z Atomic data from the Ir for the n=2,3,4 configur Astron. Astrophys. 430, 33	anna, H. E. Mason, N. R. Badnel on Project. LVI. Electron exc ations. 1 (2005)	l, J. A. Tully, K. A. Berrington citation of Be-like Fe XXIII	
	$\mathbf{e} + \mathbf{F}\mathbf{e}^{22+}$	Excitation	0.0-100.0 Ry	$\mathrm{Th}$
623.	K. M. Aggarwal, F. P. Keer <b>Electron impact excitati</b> Astron. Astrophys. 432, 115	nan, S. J. Rose on of Al XIII: A relativistic a 51 (2005)	approach.	
	$\mathbf{e} + \mathbf{A} \mathbf{l}^{12+}$	Excitation	170-300 Ry	Th
624.	N. J. Wilson, K. L. Bell, C. <b>Effective collision streng</b> Astron. Astrophys. 432, 73	E. Hudson ths for electron impact excita 1 (2005)	ation of C II.	
	$e + C^+$	Excitation	$3.0\text{-}5.5 \log \mathrm{T(k)}$	Th
625.	Z. Altun, A. Yumak, N. R. Erratum: Dielectronic of VI. The boron isoelectron Astron. Astrophys. 433, 394	Badnell, J. P. Colgan, M. S. Pind recombination data for dynas onic sequence. 5 (2005)	lzola mic finite-density plasmas.	
	$\mathbf{e} + \mathbf{N}\mathbf{e}^{5+}$	Recombination	Undef.	$\mathrm{Th}$
	$e + Na^{6+}$	Recombination	Undef.	Th
	e + Mg'	Recombination	Undef.	Th
626.	P. J. Storey, G. Del Zanna, Atomic data from the Ir Astron. Astrophys. 433, 71	H. E. Mason, C. J. Zeippen on Project. LVIII. Electron in 7 (2005)	mpact excitation of Fe XII.	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{11+}$	Excitation	0-10.0 Ry	Th
627.	M. Melendez, M. A. Bautist Atomic data from the Ir strengths within the $3d^7$ Astron. Astrophys. 436, 112	a on project. LVII. Radiative tr configuration of Ni IV. 23 (2005)	ransition rates and collision	
	$\mathbf{e} + \mathbf{N}\mathbf{i}^{3+}$	Excitation	0.0-2.0 Ry	$\mathrm{Th}$
628.	C. E. Hudson, K. L. Bell Fine structure effective Al III.	collision strengths for the ele	ectron impact excitation of	
	Astron. Astrophys. 436, 113	31 (2005)		
	$\mathbf{e} + \mathbf{Al}^{2+}$	Excitation	$3.6-5.6 \log_{10} T(k)$	$\mathrm{Th}$
629.	S. Boehm, A. Mueller, S. Sc Experimental N V and N coefficients.	chippers, W. Shi, M. Fogle, P. Gla Ne VIII low-temperature diele	ans, R. Schuch, H. Danared ectronic recombination rate	
	Astron. Astrophys. 437, 11	51(2005)		
	$\mathbf{e} + \mathbf{N}^{4+}$ $\mathbf{e} + \mathbf{N}\mathbf{e}^{7+}$	Recombination Recombination	0.0-15.0  eV 0.0-15.0  eV	${ m E/T} { m E/T}$

630.	O. Zatsarinny, T. W. G Savin Erratum. Dielectron II. The oxygen isoele Astron. Astrophys. 438	orczyca, K. T. Korista, J. Fu, I nic recombination data for ectronic sequence. 8, 743 (2005)	N. R. Badnell, W. Mitthumsiri, D. W.	
	e + O Z = ?-?	Recombination	Undef.	$\mathrm{Th}$
631.	H. Chen, P. Beiersdorf Kilbourne, F. S. Porter <b>Excitation cross sect</b> $Fe^{23+}$ . Astrophys. J., Part 1 6	Fer, J. H. Scofield, G. V. Brow, M. F. Gu, S. M. Kahn tion measurement for n=3 18, 1086 (2005)	vn, K. R. Boyce, R. L. Kelley, C. A. to $n=2$ line emission in $Fe^{20+}$ to	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{20+}$	Excitation	2.1- $3.0  keV$	E/T
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{21+}$	Excitation	2.1-3.0  keV	E/T
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{22+}$	Excitation	$2.1-3.0 { m keV}$	E/T
	$\mathbf{e} + \mathbf{F}\mathbf{e}^{23+}$	Excitation	2.1- $3.0  keV$	E/T
632.	N. C. Pyper, M. Kamp Symmetry properties ment of electron-imp Phys. Rev. A 71, 05270	p, C. T. Whelan s of the S matrix in a fully pact ionization. 01 (2005)	relativistic distorted-wave treat-	
	$\mathbf{e} + \mathbf{U}^{91+}$	Ionization	100-500  keV	$\mathrm{Th}$
633.	J. F. Williams, R. W. v Krypton fine structu Phys. Rev. A 71, 05270 e + Kr	van Boeyen, S. Samarin <b>ure n perpendicular-plane e</b> 09 (2005) Ionization	electron-impact ionization. 20-450 eV	Exp
634.	R. Srivastava, A. D. Sta Inelastic electron sca Phys. Rev. A 71, 0527	auffer attering from excited bariu 15 (2005)	m atoms.	
	$e + Ba^*$	De-excitation	20-40  eV	E/T
	$e + Ba^*$	Angular Scattering	20-40  eV	E/T
	$e + Ba^*$	Excitation	20-40  eV	E/T
635.	A. T. Stelbovics, I. Bra Electron-impact ioni Phys. Rev. A 71, 0527	y, D. V. Fursa, K. Bartschat ization of helium for equal- 16 (2005)	energy-sharing kinematics.	
	e + He	Ionization	$64.6~{ m eV}$	$\mathrm{E}/\mathrm{T}$
636.	V. Jonauskas, F. P. Kee Rose, G. J. Ferland, P. <b>Relativistic analogue</b> J. Phys. B 38, L79 (200	enan, R. Kisielius, P.A.M. van H. Norrington es of nonrelativistic integra 05)	Hoof, M. E. Foord, R. F. Heeter, S. J. ls in R-matrix calculations.	
	$e + C^{2+}$	Excitation	0-150 By	$\mathbf{T}\mathbf{h}$
	$e + Fe^{22+}$	Excitation	0-150 Ry	Th
	$\mathbf{e} + \mathbf{W}^{70+}$	Excitation	0-150 Ry	Th
637.	V. P. Shevelko, H. Taw Semiempirical formulight positive ions.	ara, F. Scheuermann, B. Fabia 1 <b>1ae for electron-impact d</b> o	n, A. Mueller, E. Salzborn puble-ionization cross sections of	

light positive ions. J. Phys. B 38, 525 (2005)

[+	Ionization	E ; 50 threshold	E/T
$[e^+$	Ionization	$E \downarrow 50$ threshold	E/T
$\mathbf{i}^+$	Ionization	$E \downarrow 50$ threshold	E/T
$\mathbf{e}^+$	Ionization	E + 50 threshold	E/T
+	Ionization	E + 50 threshold	E/T
;+	Ionization	$E \downarrow 50$ threshold	E/T
l+	Ionization	E; 50 threshold	E/T
+	Ionization	E; 50 threshold	E/T
+	Ionization	E; 50 threshold	E/T
$\mathbf{Ie}^+$	Ionization	E; 50 threshold	E/T
$\mathbf{a}^+$	Ionization	E; 50 threshold	E/T
$\mathbf{fg}^+$	Ionization	E; 50 threshold	E/T
$\mathbf{l}^+$	Ionization	E; 50 threshold	E/T
i ⁺	Ionization	E; 50 threshold	E/T
+	Ionization	E; 50 threshold	E/T
+	Ionization	E; 50 threshold	E/T
2 <b>1</b> +	Ionization	E; 50 threshold	E/T
$\mathbf{r}^+$	Ionization	E; 50 threshold	E/T
<u>[</u> +	Ionization	E; 50 threshold	E/T
$a^+$	Ionization	E; 50 threshold	E/T
$\mathbf{c}^+$	Ionization	E; 50 threshold	E/T
$\mathbf{i}^+$	Ionization	E; 50 threshold	E/T
r+	Ionization	E; 50 threshold	E/T
$2r^+$	Ionization	$E \downarrow 50$ threshold	E/T
$\mathbf{In}^+$	Ionization	E ; 50 threshold	E/T
$\mathbf{e}^+$	Ionization	E; 50 threshold	E/T
L	Ionization	E ; 50 threshold	E/T
L	Ionization	E; 50 threshold	

638. S. W. Rachedi, M. K. Inal, J. Dubau

Density dependence of the polarization of the 2  ${}^{3}P_{1}$  -; 1  ${}^{1}S_{0}$  intercombination line emitted by helium-like neon excited by an electron beam. J. Phys. B 38, 547 (2005)

$\mathbf{e} + \mathbf{N}\mathbf{e}^{8+}$	Fluorescence	925-1905  eV	Th
$\mathbf{e} + \mathbf{N}\mathbf{e}^{8+}$	Excitation	$925\text{-}1905\;\mathrm{eV}$	Th

639. H. Fukuzawa, T. Odagiri, T. Nakazato, M. Murata, H. Miyagi, N. Kouchi Doubly excited states of methane produced by photon and electron interactions. J. Phys. B 38, 565 (2005)

$e + CH_4$	Excitation	18-51  eV; 80  eV	Exp
			-

640. J. D. Gorfinkiel, J. Tennyson

Electron impact ionization of small molecules at intermediate energies: The molecular R-matrix with pseudostates method. J. Phys. B 38, 1607 (2005)

$\mathbf{e} + \mathbf{H}_2$	Excitation	15-45  eV	E/T
$\mathbf{e} + \mathbf{H}_3^+$	Excitation	15-45  eV	E/T
$\mathbf{e} + \mathbf{H}_2$	Ionization	15-45  eV	E/T
$\mathbf{e} + \mathbf{H}_3^+$	Ionization	15-45  eV	E/T

641. E. M. Bahati, R. D. Thomas, C. R. Vane, M. E. Bannister
Electron-impact dissociation of D¹³CO⁺ molecular ions to ¹³CO⁺ ions.
J. Phys. B 38, 1645 (2005)

$e + HCO^+$	Dissociation	3-200  eV	E/T
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	$e + DCO^+$	Dissociation	3-200  eV	E/T
	$e + HCO^+$	Excitation	3-200  eV	E/T
	$e + DCO^+$	Excitation	3-200  eV	E/T
642.	K. A. Berrington, C. The agreement of peak elements: An J. Phys. B 38, 1667 (2010)	P. Ballance, D. C. Griffin, N. R. I Breit-Pauli and Dirac R-ma $Fe^{14+}$ case study. 2005)	Badnell trix collision strengths for	r iron
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{14+}$	Excitation	$0-8x10^6~{\rm K}$	$\mathrm{Th}$
643.	M. Allan Excitation of the f threshold. J. Phys. B 38, 1679 (2014)	<b>our fundamental vibrations</b>	of $CH_4$ by electron impact	; near
	$\mathbf{e} + \mathbf{CH}_4$	Excitation	0.1-1.5  eV	E/T
644.	J. J. Jureta <b>The threshold elec</b> Eur. Phys. J. D 32, 3	tron impact spectrum of $H_2O$ 19 (2005)		
	$e + H_0O$	Excitation	5-14 eV	Exp
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$ $\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Ionization	5-14 eV	Exp
645.	L. E. Machado, L. M. Elastic and rotation low- and intermedi Eur. Phys. J. D 33, 1	Brescansin, I. Iga, MT. Lee nal excitation cross-sections for ate-energy ranges. 93 (2005)	or electron-water collisions	in the
	$e + H_2O$	Elastic Scattering	2-500  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Angular Scattering	2-500  eV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Excitation	2-500  eV	$\mathrm{Th}$
646.	P. Mandelbaum, M. C Excitation-autoion Eur. Phys. J. D 33, 2	Cohen, J. L. Schwob, A. Bar-Shale ization cross-sections and rate 13 (2005)	om e coefficients for Ge-like io:	ns.

e + Ge Z= ?-?	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{K} \mathbf{r}^{4+}$	Excitation	0.1-10 ionized energy	Th
$e + Rb^{5+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{Sr}^{6+}$	Excitation	0.1-10 ionized energy	Th
$e + Y^{7+}$	Excitation	0.1-10 ionized energy	Th
$e + Zr^{8+}$	Excitation	0.1-10 ionized energy	Th
$e + Nb^{9+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{Mo}^{10+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{T} \mathbf{c}^{11+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{R}\mathbf{u}^{12+}$	Excitation	0.1-10 ionized energy	Th
$e + Rh^{13+}$	Excitation	0.1-10 ionized energy	Th
$e + Pd^{14+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{A} \mathbf{g}^{15+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{C} \mathbf{d}^{16+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{In}^{17+}$	Excitation	0.1-10 ionized energy	Th
$e + Sn^{18+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{S} \mathbf{b}^{19+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{T} \mathbf{e}^{20+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{I}^{21+}$	Excitation	0.1-10 ionized energy	Th

$\mathbf{e} + \mathbf{X} \mathbf{e}^{22+}$	Excitation	0.1-10 ionized energy	Th
$e + Cs^{23+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{B}\mathbf{a}^{24+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{L} \mathbf{a}^{25+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{C}\mathbf{e}^{26+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{P} \mathbf{r}^{27+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{N} \mathbf{d}^{28+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$e + Pm^{29+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Sm}^{30+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{E}\mathbf{u}^{31+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{G} \mathbf{d}^{32+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T} \mathbf{b}^{33+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{D} \mathbf{y}^{34+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$e + Ho^{35+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{E} \mathbf{r}^{36+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T}\mathbf{m}^{37+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{Y} \mathbf{b}^{38+}$	Excitation	0.1-10 ionized energy	Th
$e + Lu^{39+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{H} \mathbf{f}^{40+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{T} \mathbf{a}^{41+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{W}^{42+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{R}\mathbf{e}^{43+}$	Excitation	0.1-10 ionized energy	Th
$e + Os^{44+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{Ir}^{45+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{P} \mathbf{t}^{46+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{u}^{47+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H} \mathbf{g}^{48+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Tl}^{49+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{P} \mathbf{b}^{50+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Bi}^{51+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Po}^{52+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$e + At^{53+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$e + Rn^{54+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$e + Fr^{55+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{R} \mathbf{a}^{56+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{c}^{57+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$\mathbf{e} + \mathbf{T} \mathbf{h}^{58+}$	Excitation	0.1-10 ionized energy	Th
$\mathbf{e} + \mathbf{P} \mathbf{a}^{59+}$	Excitation	0.1-10 ionized energy	$\mathrm{Th}$
$e + U^{60+}$	Excitation	0.1-10 ionized energy	Th

647. A. Petrignani, W. J. van der Zande, P. C. Cosby, F. Hellberg, R. D. Thomas, M. Larsson Vibrationally resolved rate coefficients and branching fractions in the dissociative recombination of  $O_2^+$ .

J. Chem. Phys. 122, 014302 (2005)

$\mathbf{e} + \mathbf{O}_2^+$	Dissociation	$0.0-0.4 \mathrm{~eV}$	Exp
$\mathbf{e} + \mathbf{O}_2^+$	Recombination	$0.0-0.4 \mathrm{~eV}$	Exp

648. O. Zatsarinny, K. Bartschat, L. Bandurina, V. Gedeon Electron-impact excitation of carbon. Phys. Rev. A 71, 042702 (2005)

e + C Excitation $0-00 eV$

649. E. D. Emmons, A. Aguilar, M. F. Gharaibeh, S.W.J. Scully, R. A. Phaneuf, A.L.D. Kilcoyne, A. S. Schlachter, I. Alvarez, C. Cisneros, G. Hinojosa
Photoionization and electron-impact ionization of Xe³⁺. Phys. Rev. A 71, 042704 (2005)

	$\mathbf{e} + \mathbf{X} \mathbf{e}^{3+}$	Ionization	$37.5\text{-}115\;\mathrm{eV}$	$\operatorname{Exp}$
650.	H. Zhang, Y. Li, J. Yan, J. <b>Dielectronic recombinat</b> <b>in Co-like Pd ions.</b> Phys. Rev. A 71, 042705 (2	Wang ion processes through doubly 2005)	v excited states (4141',4151')	
	$\mathbf{e} + \mathbf{P} \mathbf{d}^{19+}$	Recombination	$0.1 - 10^4 \text{ eV}$	Th
651.	B. Manaut, S. Taj, Y. Atta Mott scattering of polar Phys. Rev. A 71, 043401 (2	ourti <b>·ized electrons in a strong las</b> e 2005)	er field.	
	$\mathbf{e} + \mathbf{A}$ $\mathbf{e} + \mathbf{A}$	Elastic Scattering Angular Scattering	$\begin{array}{c} 1.01\text{-}5 \ \gamma \\ 1.01\text{-}5 \ \gamma \end{array}$	Th Th
652.	J. Z. Kaminski, F. Ehlotzky <b>Time-frequency analysis</b> <b>pulses.</b> Phys. Rev. A 71, 043402 (2	s of x-ray generation by rec	combination in short laser	
	e + H	Recombination	1000  eV	Th
653.	M. Stevenson, G. J. Leighte Experimental and theor ric geometry. J. Phys. B 38, 433 (2005)	on, A. Crowe, K. Bartschat, O. K. etical (e,2e) studies of argon (	Vorov, D. H. Madison <b>3p) ionization in asymmet-</b>	
	e + Ar e + Ar	Angular Scattering Ionization	200 eV 200 eV	${ m E/T} { m E/T}$
654.	O. Peyrusse, C. Bauche-Arr Calculation of the charge J. Phys. B 38, L137 (2005)	noult, J. Bauche e state distribution of a highly	ionized coronal Au plasma.	
	$\mathbf{e} + \mathbf{A}\mathbf{u}^{46+}$ $\mathbf{e} + \mathbf{A}\mathbf{u}^{46+}$	Recombination Ionization	2500 eV 2500 eV	Th Th
655.	<ul> <li>B. A. deHarak, Z. Chen, D.</li> <li>Experimental and theor</li> <li>cross section.</li> <li>J. Phys. B 38, L145 (2005)</li> </ul>	H. Madison, N.L.S. Martin retical momentum transfer de	ependence of the He (e,2e)	
	e + He e + He	Angular Scattering Ionization	488 eV 488 eV	${ m E/T} { m E/T}$
656.	J.B.A. Mitchell, O. Novotn Stolyarov, M. S. Child, A. S <b>Dissociative recombinat</b> J. Phys. B 38, L175 (2005)	y, J. L. LeGarrec, A. Florescu-Mit Svendsen, M. A. El Ghazaly, L. H ion of rare gas hydride ions: 1	tchell, C. Rebrion-Rowe, A. V. . Andersen <b>II.</b> ArH ⁺ .	
	$egin{array}{lll} {f e} + {f Ar} {f H}^+ \ {f e} + {f Ar} {f H}^+ \ {f e} + {f Ar} {f H}^+ \ {f e} + {f Ar} {f H}^+ \end{array}$	Dissociation Recombination Excitation	0-33 eV 0-33 eV 0-33 eV	Exp Exp Exp
657.	S. Elazzouzi, C. Dal Cappe Double ionization of he incident energy.	llo, A. Lahmam-Bennani, F. Cato lium by electron impact: Ar	ire 1gular distributions at low	

J. Phys. B 38, 1391 (2005)

	e + He e + He	Angular Scattering Ionization	601 eV 601 eV	E/T E/T
658.	O. Novotny, J.B.A. Mitchell Svendsen, M. A. El Ghazaly D. Thomas, V. Zhaunerchyk Larsson	I, J. L. LeGarrec, A. I. Florescu-I , L. H. Andersen, A. Ehlerding, A , W. D. Geppert, H. Montaigne, N	Mitchell, C. Rebrion-Rowe, A. A. A. Viggiano, F. Hellberg, R. M. Kaminska, F. Osterdahl, M.	
	J. Phys. B 38, 1471 (2005)	ination of fluorocarbon ions:	<b>II.</b> <i>CF</i> ⁺⁺ .	
	$egin{array}{lll} {f e} + {f C}{f F}^+ \ {f e} + {f C}{f F}^+ \ {f e} + {f C}{f F}^+ \end{array}$	Dissociation Recombination Excitation	0-12.5 eV 0-12.5 eV 0-12.5 eV	Exp Exp Exp
659.	J. R. Goetz, M. Walter, J. S <b>The effect of dynamical</b> s J. Phys. B 38, 1569 (2005)	. Briggs screening on helium (e,3e) di	fferential cross-sections.	
	e + He e + He	Angular Scattering Ionization	2000 eV 2000 eV	$_{\mathrm{Th}}^{\mathrm{Th}}$
660.	Y. Itikawa, N. Mason Cross sections for electro J. Phys. Chem. Ref. Data 3	onic collisions with water mole 4, 1 (2005)	lecules.	
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Electron Collisions	Undef.	$\mathrm{E/T}$
661.	Y. Tohyama, T. Nagata Electron impact emissio condition. J. Phys. Soc. Japan 74, 326	<b>n of</b> $N_2 \ 2P(\nu',\nu'')$ <b>bands stu</b> (2005)	died under single-collision	
	$\mathbf{e} + \mathbf{N}_2$	Excitation	Undef.	Exp
662.	C. O. Reinhold, J. Burgdorf Collisional decoherence i Nucl. Instrum. Methods Physics	er, F. B. Dunning i <b>n very-high-n Rydberg atom</b> ys. Res. B 233, 48 (2005)	s.	
	$egin{array}{c} \mathbf{K} + \mathbf{X}\mathbf{e} \ \mathbf{e} + \mathbf{X}\mathbf{e} \end{array}$	Excitation Excitation	Undef. Undef.	Th Th
663.	A. Mueller <b>Many-electron phenome</b> Nucl. Instrum. Methods Phy	na in the ionization of ions. ys. Res. B 233, 141 (2005)		
ac. :	$e + H^{-}$ e + H e + He $e + He^{+}$ $e + Li^{+}$ $e + B^{4+}$	Ionization Ionization Ionization Ionization Ionization	$2x10^{-3} - 10^{6} \text{ keV}$ $2x10^{-3} - 10^{6} \text{ keV}$	E/T E/T E/T E/T E/T
664.	<b>Description of the electro</b> <b>method.</b> Nucl. Instrum. Methods Phy	on-hydrogen collision by the <b>C</b> ys. Res. B 233, 172 (2005)	Coulomb Fourier transform	
	e + H	Electron Collisions	Undef.	Th

665.	<ol> <li>F. F. Chipev, I. V. Chernyshova, J. E. Kontros, O. B. Shpenik Near threshold electron impact ionization cross-section for tellurium atoms. Nucl. Instrum. Methods Phys. Res. B 233, 232 (2005)</li> </ol>			
	e + Te	Ionization	6-18 eV	Exp
666.	A. Gomonai, E. Ov <b>Peculiarities of t</b> Nucl. Instrum. Me	vcharenko, A. Imre, Yu. Hutych <b>he electron-impact excitation of</b> thods Phys. Res. B 233, 250 (2005)	single-charged indium ion.	
	$e + In^+$	Excitation	7-300 eV	Exp
667.	F. Jarai-Szabo, L. Correlation effection charged projecti Nucl. Instrum. Me	Nagy, S. Fritzsche cts for double K-shell vacancy le impact. thods Phys. Res. B 233, 276 (2005)	production in lithium by fast	
	e + Li	Excitation	60-95 MeV/u; 0.1-5.0 keV	Th Th
668.	M. J. Evrij, A. A., Resonance excitationization. Nucl. Instrum. Me	Jr. Borovik, L. L. Shimon, J. E. Koration of the $3p^6-subshell$ in potast thods Phys. Res. B 233, 280 (2005)	ntros, A. A. Borovik sium: Contribution to the single	
	e + K	Ionization	$18.7\text{-}24.4\;\mathrm{eV}$	Exp
669.	A. N. Zavilopulo, F Ionization of wat old. Nucl. Instrum. Me	F. F. Chipev, O. B. Shpenik er and carbon dioxide molecules thods Phys. Res. B 233, 298 (2005)	by electron impact near thresh-	
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Dissociation	7-35  eV	Exp
	e + CO	Dissociation	7-35 eV	Exp
	$e + H_2O e + CO$	Ionization	7-35 eV 7-35 eV	Exp Exp
670.	K. Tokesi, L. Gulya <b>Single ionization</b> Nucl. Instrum. Me	as, B. Paripas, Gy. Vikor, G. Vitez of Ar(2p) by antiproton and electron thods Phys. Res. B 233, 324 (2005)	ectron impact.	
	e + Ar e + Ar	Angular Scattering Ionization	$\begin{array}{c} 2 \ \mathrm{keV} \\ 2 \ \mathrm{keV} \end{array}$	${ m Th}$ ${ m Th}$
671.	M. J. May, P. Bei Fournier, M. F. Gu <b>Measurement of</b> <b>like gold.</b> Nucl. Instrum. Me	ersdorfer, N. Jordan, J. H. Scofield , G. V. Brown, F. S. Porter, R. Kell electron impact collisional excita- thods Phys. Res. B 235, 231 (2005)	, K. J. Reed, S. B. Hansen, K. B. ey, C. A. Kilbourne, K. R. Boyce ation cross sections of Ni to Ga-	
	$\mathbf{e} + \mathbf{A} \mathbf{u}^{50+}$	Excitation	$2.9$ - $5.5 \mathrm{keV}$	Exp
672.	S. Nakazaki, A. Oh Collision strengt	usaki, E. Kimura, K. A. Berrington, I hs and rate coefficients for excit	P. H. Norrington ation of He-like ions by electron	

impact. Nucl. Instrum. Methods Phys. Res. B 235, 245 (2005)

$\mathbf{e} + \mathbf{S}^{14+}$	Excitation	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{16+}$	Excitation	Undef.	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{a}^{18+}$	Excitation	Undef.	$\mathrm{Th}$

#### 673. T. Kai, S. Nakazaki, K. A. Berrington

Polarization of radiation emitted from He-like ions following electron impact. Nucl. Instrum. Methods Phys. Res. B 235, 249 (2005)

$e + Be^{2+}$	Excitation	$10^3 - 10^5 \text{ eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}^{4+}$	Excitation	$10^3 - 10^5 \text{ eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{O}^{6+}$	Excitation	$10^3 - 10^5 \text{ eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Cl}^{15+}$	Excitation	$10^3 - 10^5 \text{ eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{24+}$	Excitation	$10^3 - 10^5 \text{ eV}$	$\mathrm{Th}$
$e + Kr^{34+}$	Excitation	$10^3 - 10^5 \text{ eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{X} \mathbf{e}^{52+}$	Excitation	$10^3 - 10^5 { m eV}$	$\mathrm{Th}$

#### 674. A. Kupliauskiene

Investigation of fluorescence radiation following radiative recombination of ions and electrons.

Nucl. Instrum. Methods Phys. Res. B 235, 252 (2005)

$e + He^{2+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F}^{9+}$	Recombination	0-400  eV	$\mathrm{Th}$
$e + Na^+$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{g}^{2+}$	Recombination	0-400  eV	$\mathrm{Th}$
$e + Al^{3+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A}\mathbf{r}^{8+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{18+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{16+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{20+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{X} \mathbf{e}^{54+}$	Recombination	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{H}\mathbf{e}^{2+}$	Excitation	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F}^{9+}$	Excitation	0-400  eV	$\mathrm{Th}$
$e + Na^+$	Excitation	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{M} \mathbf{g}^{2+}$	Excitation	0-400  eV	$\mathrm{Th}$
$e + Al^{3+}$	Excitation	0-400  eV	$\mathrm{Th}$
$e + Ar^{8+}$	Excitation	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A} \mathbf{r}^{18+}$	Excitation	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{F} \mathbf{e}^{16+}$	Excitation	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Z} \mathbf{n}^{20+}$	Excitation	0-400  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{X} \mathbf{e}^{54+}$	Excitation	0-400  eV	Th

675. H. Watanabe, A. P. Kavanagh, H. Kuramoto, Y. M. Li, N. Nakamura, S. Ohtani, B. E. O'Rourke, A. Sato, H. Tawara, X. M. Tong, F. J. Currell
Dielectronic recombination of hydrogen-like ions. Nucl. Instrum. Methods Phys. Res. B 235, 261 (2005)

$\mathbf{e} + \mathbf{T}\mathbf{i}^{21+}$	Recombination	3-5  keV	Exp

676. S. Schippers, G. Gwinner, C. Brandau, S. Boehm, M. Grieser, S. Kieslich, H. Knopp, A. Mueller, R. Repnow, D. Schwalm, A. Wolf
Hyperfine quenching of resonances in dielectronic recombination of zinc-like Pt⁴⁸⁺.
Nucl. Instrum. Methods Phys. Res. B 235, 265 (2005)

	$\mathbf{e} + \mathbf{P} \mathbf{t}^{48+}$	Recombination	$0-69  \mathrm{eV}$	Exp
--	--------------------------------------------	---------------	---------------------	-----

677.	A. N. Artemyev, A. E. Klas Stoehlker, V. A. Yerokhin Negative-continuum diel heavy ions. Nucl. Instrum. Methods Ph	mikov, T. Beier, J. Eichler, C. Ko lectronic recombination into ys. Res. B 235, 270 (2005)	ozhuharov, V. M. Shabaev, T. low-lying bound states of	
	$\mathbf{e} + \mathbf{P}\mathbf{b}^{82+}$ $\mathbf{e} + \mathbf{U}^{92+}$	Recombination Recombination	1000-3000 keV 1000-3000 keV	Th Th
678.	A. Surzhykov, S. Fritzsche, Polarization and alignme tive electron capture. Nucl. Instrum. Methods Ph	WD. Sepp, Th. Stoehlker, A. Or ent transfer in heavy hydroge ys. Res. B 235, 276 (2005)	rsic Muthig n-like ions following radia-	
	$e + U^{91+}$	Recombination	100-600 $\mathrm{MeV/u}$	$\mathrm{Th}$
679.	G. Bednarz, A. Warczak, D. C. Kozhuharov, D. Liesen, F <b>Charge state dependence</b> Nucl. Instrum. Methods Ph	Sierpowski, T. Stoehlker, S. Hagm P. H. Mokler, X. Ma, Z. Stachura e <b>of L-REC into highly charg</b> ys. Res. B 235, 280 (2005)	ann, F. Bosch, A. Gumberidze, ed U-ions.	
	$e + U^{89+}$	Recombination	$216~{\rm MeV/u}$	$\mathrm{Th}$
	$e + U^{90+}$	Recombination	216 MeV/u	Th
	$e + 0^{-1}$	Recombination	216 MeV/U	1 n
680.	A. E. Klasnikov, V. M. Shal Polarization effects in rac ion. Nucl. Instrum. Methods Ph	baev, A. N. Artemyev, A. V. Kov liative recombination of an ele ys. Res. B 235, 284 (2005)	tun, T. Stoehlker ectron with a highly charged	
	$e + U^{91+}$	Recombination	365-1458 $\rm MeV/u$	$\mathrm{Th}$
681.	M. Hoerndl, S. Yoshida, K. <b>Enhancement of low ene</b> <b>fluence of transient field</b> Nucl. Instrum. Methods Ph	Tokesi, J. Burgdorfer <b>rgy electron-ion recombinati</b> <b>effects.</b> ys. Res. B 235, 290 (2005)	on in a magnetic field: In-	
	$\mathbf{e} + \mathbf{C}^{6+}$	Recombination	Undef.	Exp
682.	K. M. Aggarwal, F. P. Keen <b>Electron impact excitation</b> Phys. Scr. 70, 222 (2005)	an on of O VI.		
	$e + O^{5+}$	Excitation	8-64 Ry	$\mathrm{Th}$
683.	L. K. Jha, B. N. Roy <b>Double ionization of sing</b> Phys. Scr. 71, 185 (2005)	ly and doubly charged titaniu	m ions by electron impact.	
	$egin{array}{lll} {f e} + {f Ti}^+ \ {f e} + {f Ti}^{2+} \end{array}$	Ionization Ionization	50-1000 eV 50-1000 eV	${ m E/T} { m E/T}$
684.	K. M. Aggarwal, F. P. Keen Radiative rates, collision in Mo XXXIV. Phys. Scr. 71, 251 (2005)	an strengths and effective collision	on strengths for transitions	
	$e + Mo^{33+}$	Excitation	Undef.	Th

685.	<ul> <li>5. C. E. Hudson, K. L. Bell</li> <li>Calculated rate coefficients for the electron impact excitation of singly ionized nitrogen.</li> <li>Phys. Scr. 71, 268 (2005)</li> </ul>			
	$\mathbf{e} + \mathbf{N}^+$	Ionization	2-12 eV	$\mathrm{Th}$
686.	K. M. Aggarwal, F. H Rose <b>Radiative rates, co</b> in <b>Gd XXXVII.</b> Phys. Scr. 71, 356 (2)	P. Keenan, R. Kisielius, P. H. Nor Ilision strengths and effective 005)	rington, R. E. King, G. J. Pert, collision strengths for transit	S. J. ions
	$\mathbf{e} + \mathbf{G} \mathbf{d}^{36+}$	Excitation	Undef.	Th
687.	R. O. Jung, T. E. Ste Electron-impact ex Phys. Rev. Lett. 94,	one, J. B. Boffard, L. W. Anderson actitation out of the metastabl 163202 (2005)	n, C. C. Lin e levels of krypton.	
	$\mathbf{e} + \mathbf{K}\mathbf{r}$ $\mathbf{e} + \mathbf{K}\mathbf{r}^*$	Excitation Excitation	0-10 eV 0-10 eV	Exp Exp
688.	M. Takahashi, N. Wa Observation of mo cidence study of <i>H</i> Phys. Rev. Lett. 94,	tanabe, Y. Khajuria, Y. Udagawa lecular frame (e,2e) cross sect ⁷ 2• 213202 (2005)	a, J. H. Eland tion: An (e,2e + M) triple c	coin-
	$\begin{array}{l} \mathbf{e} + \mathbf{H}_2 \\ \mathbf{e} + \mathbf{H}_2 \end{array}$	Angular Scattering Ionization	$\begin{array}{c} 1200  \mathrm{eV} \\ 1200  \mathrm{eV} \end{array}$	Exp Exp
689.	K. M. Aggarwal, F. H Effective collision a Vacuum 439, 1215 (2	P. Keenan strengths for transitions in Fe 005)	• X.	
	$\mathbf{e} + \mathbf{F} \mathbf{e}^{9+}$	Excitation	$0.0\text{-}210.0 \mathrm{Ry}$	Th
690.	K. M. Aggarwal, F. H Electron impact ex Astron. Astrophys. 4	P. Keenan <b>(citation of Ar XVII.</b> 41, 831 (2005)		
	$\mathbf{e} + \mathbf{A} \mathbf{r}^{16+}$	Excitation	0-580 Ry	$\mathrm{Th}$
691.	S. J. Smith, N. Djuri Measurement of a transition in $O^{+4}$ . Astron. Astrophys. 6	c, J. A. Lozano, K. A. Berrington bsolute cross sections for exc 30, 1213 (2005)	, A. Chutjian itation of the $2s^2 {}^1S$ -; 2s2p	${}^{1}P^{0}$
	$\mathbf{e} + \mathbf{O}^{4+}$	Excitation	17.6-30.0  eV	Exp
692.	J. D. Gorfinkiel, A. F Electron-molecule method. Eur. Phys. J. D 35, 2	Yaure, S. Taioli, C. Piccarreta, G. Collisions at low and intermed 231 (2005)	Halmova, J. Tennyson liate energies using the R-ma	atrix
	$e + H_2O \\ e + H_2O \\ e + H_2O \\ e + H_2O \\ e + H_2$	Dissociation Elastic Scattering Angular Scattering Ionization	0-30 eV 0-30 eV 0-30 eV 0-30 eV	Th Th Th Th

693.	3. G. Sakhelashvili, A. Dorn, C. Hoehr, J. Ullrich, A. S. Kheifets, J. Lower, K. Bartschat Triple coincidence (e,γ 2e) experiment for simultaneous electron impact ioniza- tion excitation of helium. Phys. Rev. Lett. 95, 033201 (2005)			
	e + He	Excitation	500  eV	Exp
	e + He	Ionization	500  eV	Exp
694.	I. I. Fabrikant, H. Hotop, M. Elastic scattering, vibration $SF_6$ scattering: Experiment Phys. Rev. A 71, 022712 (2)	1. Allan tional excitation, and attachm nent and effective range theor 2005)	nent in low-energy $electron-$	
	$\mathbf{e} + \mathbf{SF}_6$	Attachment	$0.01\text{-}0.6\;\mathrm{eV}$	Th
	$\mathbf{e} + \mathbf{SF}_6$ $\mathbf{e} + \mathbf{SF}_6$	Elastic Scattering Excitation	0.01-0.6 eV 0.01-0.6 eV	Th Th
695.	<ul> <li>O. Zatsarinny, K. Bartschat</li> <li>Benchmark calculations</li> <li>Phys. Rev. A 71, 022716 (2</li> <li>e + Zn</li> </ul>	for electron collisions with z 2005) Elastic Scattering	inc atoms. 3-50 eV	Th
	e + Zn	Excitation	3-50  eV	Th
696. 697.	<ul> <li>A. A. Borovik, A. N. Grum</li> <li>Electron impact excitat</li> <li>sium.</li> <li>J. Phys. B 38, 1081 (2005)</li> <li>e + K</li> <li>O. K. Vorov, K. Bartschat</li> <li>Model sensitivity of the</li> <li>J. Phys. B 38, 1189 (2005)</li> </ul>	-Grzhimailo, K. Bartschat, O. Za ion of the $(3p^54s^2)^2P_{3/2,1/2}$ at Excitation oretical results for ionization	tsammy utoionizing states in potas- 29-500 eV -excitation of helium.	Exp
	e + He e + He	Excitation Ionization	20-800 eV 20-800 eV	Th Th
698.	<ul> <li>E. Bahati, H. Cherkani-Has</li> <li>I. Noselidze</li> <li>On the behaviour of the mediate energies.</li> <li>J. Phys. B 38, 1261 (2005)</li> </ul>	ssani, P. Defrance, J. J. Jureta, T e (e,3e) total cross section for	^a . Kereselidze, Z. Machavariani, <b>r helium at high and inter-</b>	
	e + He	Ionization	70-3000  eV	$\mathrm{E}/\mathrm{T}$
699.	SM. Li, J. Berakdar, ST. Laser-assisted (e,2e) rea J. Phys. B 38, 1291 (2005)	. Zhang, J. Chen action in one-electron atoms a	and ions.	
	e + H	Ionization	150-500 $eV$	$\mathrm{Th}$
700.	L. Q. Chen, X. J. Chen, X. Triple differential cross ionization. J. Phys. B 38, 1371 (2005)	J. Wu, X. Shan, K. Z. Xu sections of $Li^+$ (1s ² ) and K	$^+$ $(3p^6)$ for electron-impact	

e + He	Ionization	1000  eV	$\mathrm{Th}$
$e + Li^+$	Ionization	$1000 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Ar}$	Ionization	$1000 { m eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{K}^+$	Ionization	1000  eV	$\mathrm{Th}$

701. L. Nagy, F. Jarai-Szabo, S. Fritzsche

Ionization-excitation of lithium by fast charged projectiles.

J. Phys. B 38, 141 (2005)

e + Li	Excitation	6-20 v (a.u.)	$\mathrm{Th}$
e + Li	Ionization	6-20 v (a.u.)	$\mathrm{Th}$

702. B. K. Antony, K. N. Joshipura, N. J. Mason

Total and ionization cross sections of electron scattering by fluorocarbons. J. Phys. B 38, 189 (2005)

$\mathbf{e} + \mathbf{CF}_4$	Elastic Scattering	20-5000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_{3}\mathbf{I}$	Elastic Scattering	20-5000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_6$	Elastic Scattering	20-5000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_3 \mathbf{F}_8$	Elastic Scattering	20-5000  eV	$\mathrm{Th}$
$e + CF_3$	Elastic Scattering	20-5000  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Elastic Scattering	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_2$	Elastic Scattering	20-5000  eV	$\mathrm{Th}$
e + CF	Elastic Scattering	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_4$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{F}_3 \mathbf{I}$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_6$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_3 \mathbf{F}_8$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$e + CF_3$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_2$	Excitation	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
e + CF	Excitation	20-5000  eV	Th
$\mathbf{e} + \mathbf{CF}_4$	Ionization	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{C} \mathbf{F}_3 \mathbf{I}$	Ionization	20-5000  eV	Th
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_6$	Ionization	20-5000  eV	Th
$\mathbf{e} + \mathbf{C}_3 \mathbf{F}_8$	Ionization	20-5000  eV	Th
$e + CF_3$	Ionization	20-5000  eV	Th
$\mathbf{e} + \mathbf{C}_2 \mathbf{F}_4$	Ionization	$20\text{-}5000~\mathrm{eV}$	$\mathrm{Th}$
$\mathbf{e} + \mathbf{CF}_2$	Ionization	20-5000  eV	$\mathrm{Th}$
e + CF	Ionization	20-5000  eV	$\mathrm{Th}$

703. T. A. Field, A. E. Slattery, D. J. Adams, D. D. Morrison Experimental observation of dissociative electron attachment to  $S_2O$  and  $S_2O_2$ with a new spectrometer for unstable molecules. J. Phys. B 38, 255 (2005)

$\mathbf{e} + \mathbf{S}_2 \mathbf{O}$	Attachment	0-14  eV	Exp
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}_2$	Attachment	0-14  eV	Exp
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}$	Dissociation	0-14  eV	Exp
$\mathbf{e} + \mathbf{S}_2 \mathbf{O}_2$	Dissociation	0-14  eV	Exp

704. L.-L. Lan, Z.-P. Zhong, L.-F. Zhu, X.-J. Liu, Z.-S. Yuan, J.-M. Sun, K.-Z. Xu Superexcited states of oxygen studied by fast-electron impact. Phys. Rev. A 71, 032704 (2005)

$\mathbf{e} + \mathbf{O}_2$	Angular Scattering	2500  eV	$\operatorname{Exp}$
$\mathbf{e} + \mathbf{O}_2$	Excitation	2500  eV	$\operatorname{Exp}$

705.	H. M. Al-Khateeb, I Angular moment sively excited arg Phys. Rev. A 71, 03	B. G. Birdsey, T. J. Gay um partitioning and the subsho on ions. 32707 (2005)	ell multipole moments in imp	oul-
	e + Ar	Excitation	0-200  eV	Exp
706.	R. K. Chauhan, M. Triple differential cium at low energy Phys. Rev. A 71, 03	K. Srivastava, R. Srivastava l cross sections of coplanar syn gies. 32708 (2005)	nmetric (e,2e) processes on o	cal-
	e + Ca e + Ca	Angular Scattering Ionization	10-70 eV 10-70 eV	Th Th
	0   04			
101.	Datz, A. Petrignani Three-body frage dissociative recom Phys. Rev. A 71, 03	, W. J. van der Zande <b>nentation dynamics of amidog</b> <b>nbination.</b> 32711 (2005)	gen and methylene radicals	via
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}^+$	Dissociation	$0 \mathrm{eV}$	Exp
	$\mathbf{e} + \mathbf{C}\mathbf{H}_2^+$	Dissociation	$0 \mathrm{eV}$	Exp
	$\mathbf{e} + \mathbf{N}\mathbf{H}_2^+$	Dissociation	$0  \mathrm{eV}$	Exp
	$e + H_2 \tilde{O^+}$	Angular Scattering	0  eV	Exp
	$e + CH_{2}^{+}$	Angular Scattering	0  eV	Exp
	$e + NH_{e}^{+}$	Angular Scattering	0 eV	Exp
	$\mathbf{c} + \mathbf{H}_2$ $\mathbf{c} + \mathbf{H}_2 \mathbf{O}^+$	Becombination		Exp
	$e + \Pi_2 O$	Recombination		Exp
	$\mathbf{e} + \mathbf{OH}_2^+$ $\mathbf{e} + \mathbf{NH}_2^+$	Recombination	0  eV 0  eV	Exp
708.	HD. Cheng, LF. Selectivity in vale impact. Phys. Rev. A 71, 03 e + Ne e + Ar	Zhu, XJ. Liu, ZS. Yuan, WB. L nce excitation processes of nob 32714 (2005) Excitation Excitation	i, KZ. Xu le atoms studied by fast electr 2500 eV 2500 eV	ron E/T E/T
	e + Kr	Excitation	2500 eV	Б/Т Е/Т
709.	M. A. Uddin, A.K.F Computation of e Phys. Rev. A 71, 05	F. Haque, M. M. Billah, A. K. Basal electron-impact K-shell ionization 32715 (2005)	k, K. R. Karim, B. C. Saha on cross sections of atoms.	
	e + C	Ionization	U.1-10,000 keV	Th
	e + Ar	Ionization	0.1-10,000 keV	Th
	e + Ti	Ionization	0.1-10,000 keV	Th
	e + Cr	Ionization	0.1-10,000  keV	Th
	e + Ni	Ionization	0.1-10,000  keV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{G}\mathbf{e}$	Ionization	0.1-10,000  keV	$\mathrm{Th}$
	$\mathbf{e} + \mathbf{A}\mathbf{g}$	Ionization	$0.1-10,000 { m ~keV}$	$\mathrm{Th}$
	e + Sn	Ionization	$0.1-10,000 { m ~keV}$	$\mathrm{Th}$

^{710.} C. Makochekanwa, O. Sueoka, M. Kimura, M. Kitajima, H. Tanaka Electron and positron scattering from perfluorocyclobutane  $(c-C_4F_8)$  molecules. Phys. Rev. A 71, 032717 (2005)

$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Dissociation	0.8-600  eV	Exp
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Elastic Scattering	$0.8-600 \mathrm{~eV}$	Exp
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Angular Scattering	$0.8-600 \mathrm{~eV}$	Exp
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Excitation	$0.8-600 \mathrm{~eV}$	Exp
$\mathbf{e} + \mathbf{C}_4 \mathbf{F}_8$	Ionization	$0.8-600 \mathrm{~eV}$	Exp

711. K. Bartschat

Direct ionization of heavy noble gases by positron impact. Phys. Rev. A 71, 032718 (2005)

$\mathbf{e} + \mathbf{Ar}$	Ionization	10-100  eV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{Ar}^*$	Ionization	10-100  eV	$\mathrm{Th}$

712. P. Limao-Vieira, F. Blanco, J. C. Oller, A. Munoz, J. M. Perez, M. Vinodkumar, G. Garcia, N. J. Mason

Electron scattering cross sections for  $SF_6$  and  $SF_5CF_3$  at intermediate and high energies (100-10000 eV).

Phys. Rev. A 71, 032720 (2005)

$\mathbf{e} + \mathbf{SF}_6$	Dissociation	1-10,000  eV	E/T
$e + SF_5CF_3$	Dissociation	1-10,000  eV	E/T
$\mathbf{e} + \mathbf{SF}_6$	Elastic Scattering	1-10,000  eV	E/T
$\mathbf{e} + \mathbf{SF}_5 \mathbf{CF}_3$	Elastic Scattering	1-10,000  eV	E/T
$\mathbf{e} + \mathbf{SF}_6$	Excitation	1-10,000  eV	E/T
$e + SF_5CF_3$	Excitation	1-10,000  eV	E/T
$\mathbf{e} + \mathbf{SF}_6$	Ionization	1-10,000  eV	$\dot{E}/T$
$\mathbf{e} + \mathbf{SF}_5 \mathbf{CF}_3$	Ionization	1-10,000  eV	E/T

713. E. S. Shuman, T. F. Gallagher
Resonant enhancement of dielectronic recombination by a high-frequency microwave field.
Phys. Rev. A 71, 033415 (2005)

$e + Ba^+$	Dissociation	$0-31 \mathrm{V/cm}$	Exp
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714. A.C.F. Santos, A. Hasan, R. D. DuBois
Doubly differential cross sections for single and multiple ionization of Ne by electron impact.
Phys. Rev. A 71, 034701 (2005)

e + Ne	Angular Scattering	750  eV	$\operatorname{Exp}$
e + Ne	Ionization	750  eV	$\operatorname{Exp}$

## 3.2.3 Heavy Particles Collisions

715. K. Enomoto, K. Hirano, M. Kumakura, Y. Takahashi, T. Yabuzaki Emission spectra of alkali-metal (k, Na, Li) – He exciplexes in cold helium gas. Phys. Rev. A 69, 012501 (2004)

Li + He	Interaction Potentials	Undef.	$\mathrm{Th}$
Na + He	Interaction Potentials	Undef.	$\mathrm{Th}$
K + He	Interaction Potentials	Undef.	$\mathrm{Th}$

^{716.} T. Kiljunen, L. Lehtovaara, H. Kunttu, J. Eloranta Solvation of triplet Rydberg states of molecular hydrogen in superfluid helium. Phys. Rev. A 69, 012506 (2004)

H + H	Interaction Potentials	Undef.	$\mathrm{Th}$
$H^* + H$	Interaction Potentials	Undef.	$\mathrm{Th}$
$He + H_2$	Interaction Potentials	Undef.	$\mathrm{Th}$
$\mathrm{He}+\mathrm{H_2}^*$	Interaction Potentials	Undef.	$\mathrm{Th}$

717. N. Stolterfoht, B. Sulik, B. Skogvall, J. Y. Chesnel, F. Fremont, D. Hennecart, A. Cassimi, L. Adoui, S. Hossain, J. A. Tanis
Frequency doubling of interference structures in electron emission interferences from H₂ by 68-MeV/u Kr³³⁺ impact. Phys. Rev. A 69, 012701 (2004)

$Kr^{33+} + H_2$	Ionization	$68 { m MeV/u}$	E/T
4			/

718. F. Zappa, G. Jalbert, L.F.S. Coelho, A. B. Rocha, S. D. Magalhaes, N. V. de Castro Faria Absolute electron detachment cross sections of atomic anions of the second and third periods incident on noble gases. Phys. Rev. A 69, 012703 (2004)

$C^- + He$	Interaction Potentials	2.25-56.25  keV/u	E/T
C + He	Interaction Potentials	2.25-56.25  keV/u	E/T
$\rm Li^- + He$	Detachment	2.25-56.25  keV/u	E/T
$Li^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$Li^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$B^- + He$	Detachment	2.25-56.25  keV/u	E/T
$B^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$B^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$\rm C^- + He$	Detachment	2.25-56.25  keV/u	E/T
$C^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$C^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$O^- + He$	Detachment	2.25-56.25  keV/u	E/T
$O^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$O^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$F^- + He$	Detachment	2.25-56.25  keV/u	E/T
$F^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$F^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$Na^- + He$	Detachment	2.25-56.25  keV/u	E/T
$Na^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$Na^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$Al^- + He$	Detachment	2.25-56.25  keV/u	E/T
$Al^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$Al^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$\mathrm{Si}^- + \mathrm{He}$	Detachment	2.25-56.25  keV/u	E/T
$Si^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$\mathrm{Si}^- + \mathrm{Ar}$	Detachment	2.25-56.25  keV/u	E/T
$S^- + He$	Detachment	2.25-56.25  keV/u	E/T
$S^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$S^- + Ar$	Detachment	2.25-56.25  keV/u	E/T
$\mathrm{Cl}^- + \mathrm{He}$	Detachment	2.25-56.25  keV/u	E/T
$Cl^- + Ne$	Detachment	2.25-56.25  keV/u	E/T
$\mathrm{Cl}^- + \mathrm{Ar}$	Detachment	2.25-56.25  keV/u	E/T

719. L. F. Errea, L. Fernandez, A. Macias, L. Mendez, I. Rabadan, A. Riera Single and double electron capture in  $N^{5+} + H_2$  collisions at low impact energies. Phys. Rev. A 69, 012705 (2004)

$\mathbf{N}^{5+} + \mathbf{H}_2$	Charge Transfer	0.2-10  keV/u	Th
$\mathbf{N}^{5+} + \mathbf{H}_2$	Interaction Potentials	0.2-10  keV/u	$\mathrm{Th}$

720. V. P. Mogendorff, E.J.D. Vredenbregt, B. J. Verhaar, H.C.W. Beijerinck Metastable neon collisions: Anisotropy and scattering length. Phys. Rev. A 69, 012706 (2004)

Ne + Ne	Elastic Scattering	Undef.	$\mathrm{Th}$
$Ne^* + Ne$	Elastic Scattering	Undef.	$\mathrm{Th}$
$Ne^* + Ne^*$	Elastic Scattering	Undef.	$\mathrm{Th}$
Ne + Ne	Interaction Potentials	Undef.	$\mathrm{Th}$
$Ne^* + Ne$	Interaction Potentials	Undef.	$\mathrm{Th}$
$Ne^* + Ne^*$	Interaction Potentials	Undef.	$\mathrm{Th}$

721. T. Kirchner, M. Horbatsch, M. Keim, H. J. Ludde State-selective electron-capture calculations for p-Ar collisions in an independent many-electron model. Phys. Rev. A 69, 012708 (2004)

$\mathbf{H}^{+} + \mathbf{Ar}$ Cha	arge Transfer	1-200  keV/u	Th
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722. M. Kajita

#### **Cold collisions between boson or fermion molecules.** Phys. Rev. A 69, 012709 (2004)

OCS + OCS	Elastic Scattering	$10^{-8} - 10^{-6} \text{ K}$	$\mathrm{Th}$
$CH_3Cl + CH_3Cl$	Elastic Scattering	$10^{-8} - 10^{-6} \text{ K}$	Th
OCS + OCS	Excitation	$10^{-8} - 10^{-6} \text{ K}$	$\mathrm{Th}$
$CH_3Cl + CH_3Cl$	Excitation	$10^{-8} - 10^{-6} \text{ K}$	Th

723. M. Pichler, W. C. Stwalley, R. Beuc, G. Pichler

Formation of ul state. Phys. Rev. A 69,	tracold $Cs_2$ molecules throug 013403 (2004)	gh the double-minimum $Cs_2$ 3	$^{1}\Sigma_{u}^{+}$
Cs + Cs	Association	100 $\mu$ k	$\mathrm{Th}$
724. O. Docenko, M. T	amanis, R. Ferber, A. Pashov, H	Knoeckel, E. Tiemann	

Potential of the ground state of NaRb. Phys. Rev. A 69, 042503 (2004)

Na + Rb	Interaction Potentials	Undef.	E/T

725. Y. Fukuyama, Y. Moriwaki, Y. Matsuo
Laser-induced fluorescence spectra of Ba⁺*-He exciplexes produced in cold He gas.
Phys. Rev. A 69, 042505 (2004)

$\mathrm{Ba^{+}+He}$	Interaction Potentials	3-30 K	Exp
$\mathrm{Ba^{+*}} + \mathrm{He}$	Interaction Potentials	3-30 K	$\operatorname{Exp}$

726. J. Koperski, M. Czajkowski

Electronic structure of the CdKr lowest Rydberg state determined from laserexcitation spectra using supersonic beam and double optical resonance methods. Phys. Rev. A 69, 042509 (2004)

Undef.	E/T
	Undef.

727. A.C.F. Santos, R. D. DuBois
Scaling laws for single and multiple electron loss from projectiles in collisions with a many-electron target. Phys. Rev. A 69, 042709 (2004) A + Ar

728. T. G. Winter

Ionization, excitation, and electron transfer in MeV-energy collisions between light nuclei and  $C^{5+}(1s)$  ions studied with a Sturmian basis. Phys. Rev. A 69, 042711 (2004)

$\mathbf{C}^{5+} + \mathbf{H}^+$	Charge Transfer	$1-24 { m MeV/amu}$	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{H}\mathbf{e}^{2+}$	Charge Transfer	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{L}\mathbf{i}^{3+}$	Charge Transfer	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{B}\mathbf{e}^{4+}$	Charge Transfer	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{H}^+$	Excitation	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{H}\mathbf{e}^{2+}$	Excitation	1-24  MeV/amu	$\mathrm{Th}$
$C^{5+} + Li^{3+}$	Excitation	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{B}\mathbf{e}^{4+}$	Excitation	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{H}^+$	Ionization	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{H}\mathbf{e}^{2+}$	Ionization	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{L}\mathbf{i}^{3+}$	Ionization	1-24  MeV/amu	$\mathrm{Th}$
$\mathbf{C}^{5+} + \mathbf{B}\mathbf{e}^{4+}$	Ionization	1-24  MeV/amu	$\mathrm{Th}$

729.	A. V. Eletskii, M. Capitelli, R. Celiberto, A. Laricchiuta
	Resonant charge exchange and relevant transport cross sections for excited states
	of oxygen and nitrogen atoms.
	Phys. Rev. A 69, 042718 (2004)

$N^+ + N$	Charge Transfer	0.1-10  eV	Th
$O^+ + O$	Charge Transfer	0.1-10 eV	Th

730. I. Ben-Itzhak, O. Herber, I. Gertner, A. Bar-David, B. Rosner
Reexamining if long-lived N⁻ anions are produced in fast dissociative electron-capture collisions.
Phys. Rev. A 69, 052701 (2004)

$N_2^+ + Ar$	Dissociation	$0.9 { m MeV}$	Exp
$N_2^+ + Ar$	Charge Transfer	$0.9 { m MeV}$	Exp

731.	R. Rejoub, M. E. Bannister, Stancil Electron capture by $Ne^{3-}$ Phys. Rev. A 69, 052704 (20)	C. C. Havener, D. W. Savin, C. ⁺ ions from atomic hydrogen. 004)	J. Verzani, J. G. Wang, P. C.	
	$Ne^{3+} + H$	Charge Transfer	$0.1\text{-}2000 \; \mathrm{eV/u}$	E/T
732.	K. Tilford, M. Hoster, P. M. Cold collisions involving Phys. Rev. A 69, 052705 (20	Florian, R. C. Forrey rotationally hot oxygen mole 004)	cules.	
	$He + O_2$	De-excitation	$10^{-4} - 10^2 \text{ K}$	$\mathrm{Th}$

733. E. Edgu-Fry, A. Wech, J. Stuhlman, T. G. Lee, C. D. Lin, C. L. Cocke
Cold-target recoil-ion momentum spectroscopy studies of capture from atomic and molecular hydrogen by O⁸⁺ and Ar⁸⁺.
Phys. Rev. A 69, 052714 (2004)

$O^{8+} + H$	Charge Transfer	0.3-0.95 a.u.	E/T
$\mathbf{O}^{8+} + \mathbf{H}_2$	Charge Transfer	0.3-0.95 a.u.	E/T
$Ar^{8+} + H$	Charge Transfer	0.3-0.95 a.u.	E/T
$\mathbf{Ar}^{8+} + \mathbf{H}_2$	Charge Transfer	0.3-0.95 a.u.	E/T

734. H. Gao, V.H.S. Kwong Single- and double-electron-capture collision of  $C^{q+}$  (q=3,4) with CO at keV energies. Phys. Rev. A 69, 052715 (2004)  $C^{3+} + CO$ Charge Transfer 0.5 keV/uExp  $C^{4+} + CO$ Charge Transfer 0.5 keV/uExp

735. E. P. Benis, T.J.M. Zouros, T. W. Gorczyca, A. D. Gonzalez, P. Richard Elastic resonant and nonresonant differential scattering of quasifree electrons from  $B^{4+}(1s)$  and  $B^{3+}(1s^2)$  ions. Phys. Rev. A 69, 052718 (2004)

$\mathbf{B}^{3+} + \mathbf{H}_2$	Ionization	$3.1-7.5 { m MeV}$	E/T
$\mathbf{B}^{4+} + \mathbf{H}_2$	Ionization	$3.1-7.5 { m MeV}$	E/T

#### 736. R. Valero, G.-J. Kroes

Role of CO vibration in the complex-forming  $OH+CO_{i}H+CO_{2}$  reaction. Phys. Rev. A 70, 040701 (2004)

OH + CO	Association	$0.1-0.8 \mathrm{~eV}$	$\mathrm{Th}$
OH + CO	Interchange reaction	0.1-0.8  eV	$\mathrm{Th}$

737. B. G. Lindsay, W. S. Yu, K. F. McDonald, R. F. Stebbings Electron capture and loss by kilo-electron-volt oxygen atoms in collisions with He,  $H_2$ ,  $N_2$ , and  $O_2$ . F

Phys. Rev. A 70, 042701 (2	2004)
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O + He	Charge Transfer	1-5  keV	Exp
$\mathbf{O} + \mathbf{H}_2$	Charge Transfer	1-5  keV	Exp
$\mathbf{O} + \mathbf{N}_2$	Charge Transfer	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{O}_2$	Charge Transfer	1-5  keV	$\operatorname{Exp}$
O + He	Total Scattering	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{H}_2$	Total Scattering	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{N}_2$	Total Scattering	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{O}_2$	Total Scattering	1-5  keV	$\operatorname{Exp}$
O + He	Ionization	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{H}_2$	Ionization	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{N}_2$	Ionization	1-5  keV	$\operatorname{Exp}$
$\mathbf{O} + \mathbf{O}_2$	Ionization	1-5  keV	Exp

738. A. L. Landers, E. Wells, T. Osipov, K. D. Carnes, A. S. Alnaser, J. A. Tanis, J. H. McGuire, I. Ben-Itzhak, C. L. Cocke

Interference effects in double ionization of spatially aligned hydrogen molecules by fast highly charged ions.

Phys. Rev. A 70, 042702 (2004)

$\mathbf{F}^{8+} + \mathbf{H}_2$	Total Scattering	$19 \mathrm{MeV}$	E/T
$\mathbf{F}^{8+} + \mathbf{D}_2$	Total Scattering	$19 \mathrm{MeV}$	E/T
$\mathbf{F}^{8+} + \mathbf{H}_2$	Ionization	$19 \mathrm{MeV}$	E/T
$\mathbf{F}^{8+} + \mathbf{D}_2$	Ionization	$19 { m MeV}$	E/T

739. R. Cabrera-Trujillo, Y. Oehrn, E. Deumens, J. R. Stabin, B. G. Lindsay Absolute differential and total cross sections for direct and charge-transfer scattering of keV protons by  $O_2$ . Phys. Rev. A 70, 042705 (2004)

$\mathbf{H}^+ + \mathbf{O}_2$	Elastic Scattering	$0.5-25.0 \mathrm{keV}$	E/T
$\mathbf{H}^+ + \mathbf{O}_2$	Charge Transfer	$0.5-25.0 \mathrm{keV}$	E/T
$\mathbf{H}^+ + \mathbf{O}_2$	Total Scattering	$0.5-25.0 \mathrm{keV}$	E/T

740. P. S. Krstic, J. H. Macek, S. Yu. Ovchinnikov, D. R. Schultz
Analysis of structures in the cross sections for elastic scattering and spin exchange in low-energy H⁺ + H collisions.
Phys. Rev. A 70, 042711 (2004)

Elastic Scattering	$10^{-4} - 100 \text{ eV}$	$\mathrm{Th}$
Charge Transfer	$10^{-4} - 100 \text{ eV}$	$\mathrm{Th}$
Interaction Potentials	$10^{-4} - 100 \text{ eV}$	$\mathrm{Th}$
Total Scattering	$10^{-4} - 100 \text{ eV}$	$\mathrm{Th}$
	Elastic Scattering Charge Transfer Interaction Potentials Total Scattering	Elastic Scattering $10^{-4} - 100 \text{ eV}$ Charge Transfer $10^{-4} - 100 \text{ eV}$ Interaction Potentials $10^{-4} - 100 \text{ eV}$ Total Scattering $10^{-4} - 100 \text{ eV}$

#### 741. K. Ishii, A. Itoh, K. Okuno

Electron-capture cross sections of multiply charged slow ions of carbon, nitrogen, and oxygen in He.

Phys. Rev. A 70, 042716 (2004)

$\mathbf{C}^{2+}$ + He	Charge Transfer	2-10,800  eV	Exp
$C^{3+} + He$	Charge Transfer	2-10,800  eV	Exp
$\mathbf{C}^{4+} + \mathbf{He}$	Charge Transfer	2-10,800  eV	Exp
$\mathbf{C}^{5+} + \mathbf{He}$	Charge Transfer	2-10,800  eV	Exp
$C^{6+} + He$	Charge Transfer	2-10,800  eV	Exp
$N^{2+} + He$	Charge Transfer	2-10,800  eV	Exp
$N^{3+} + He$	Charge Transfer	2-10,800  eV	Exp
$N^{4+} + He$	Charge Transfer	2-10,800  eV	Exp
$N^{5+} + He$	Charge Transfer	2-10,800  eV	Exp
$N^{6+} + He$	Charge Transfer	2-10,800  eV	Exp
$O^{2+} + He$	Charge Transfer	2-10,800  eV	Exp
$O^{3+} + He$	Charge Transfer	2-10,800  eV	Exp
$O^{4+} + He$	Charge Transfer	2-10,800  eV	Exp
$\mathbf{O}^{5+} + \mathbf{He}$	Charge Transfer	2-10,800  eV	Exp
$\mathbf{O}^{6+} + \mathbf{He}$	Charge Transfer	2-10,800  eV	Exp

# 742. S. Knoop, R. Morgenstern, R. Hoekstra

Direct observation of pure one-electron capture from the target inner shell in low-energy p+Na collisions.

Phys. Rev. A 70, 050702 (2004)

$H^+ + Na$	Charge Transfer	4-25  keV	E/T
$ m H^+ + Na$	Ionization	4-25  keV	E/T

E/T

E/T

# 743. O. Furuhashi, T. Kinugawa, T. Hirayama, T. Koizumi, C. Yamada, S. Ohtani Double-charge-transfer spectroscopy of O₂²⁺: Band analyses of low-lying repulsive states. Phys. Rev. A 70, 052501 (2004)

 $\mathbf{H}^+$  +  $\mathbf{O}_2$ Charge Transfer1.5 keV $\mathbf{H}^+$  +  $\mathbf{O}_2$ Ionization1.5 keV

 $H^+ + O_2$  Ionization 1.5 keV 744. J. H. Macek, S. Yu. Ovchinnikov Energy and angular distributions of electrons elected from starrighted

Energy and angular distributions of electrons ejected from atomic hydrogen by low-energy proton impact. Phys. Rev. A 70, 052702 (2004)

$\mathbf{H}^+ + \mathbf{H}_2$ Ionization 5 keV	E/T
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745.	A. Andalkar, M. Iinuma, J. W. Smit, E. N. Fortson Measurement of the collisional self-broadening of the cesium $6S_{1/2}$ -; $5D_{3/2}$ (689- nm) electric quadrupole transition. Phys. Rev. A 70, 052703 (2004)				
	Cs + Cs	Line Broadening	$220\text{-}370~\mathrm{deg}~\mathrm{C}$	Exp	
746.	T. Kusakabe, L. Pichl Isotope effect in ch and $D_2$ molecules. Phys. Rev. A 70, 052'	, R. J. Buenker, M. Kimura, H. Ta arge-transfer collisions of slow 710 (2004)	awara y $H^+$ and $D^+$ ions with $H_2$ , HD	),	
	$\mathbf{H}^+ + \mathbf{H}_2$	Charge Transfer	0.18- $1.0  keV/u$	E/T	
	$\mathrm{H^{+} + HD}$	Charge Transfer	0.18-1.0  keV/u	E/T	
	$\mathbf{H}^+ + \mathbf{D}_2$	Charge Transfer	0.18-1.0  keV/u	E/T	
	$\mathbf{D}^+ + \mathbf{H}_2$	Charge Transfer	$0.18-1.0 \; { m keV/u}$	E/T	
	$\mathrm{D^{+}+HD}$	Charge Transfer	0.18- $1.0  keV/u$	E/T	
	$\mathbf{D}^+ + \mathbf{D}_2$	Charge Transfer	0.18- $1.0  keV/u$	E/T	
(4(.	L. F. Errea, C. Illesca: Accuracy of the cla $Li^{3+}$ and $Ne^{10+} + 1$ Phys. Rev. A 70, 052	s, L. Mendez, B. Pons, A. Riera, J ssical trajectory Monte Carlo H(1s) collisions. 713 (2004)	method for electron capture is	n	
	$Li^{3+} + H$	Charge Transfer	0-5 V (a.u.)	E/T	
	$Ne^{10+} + H$	Charge Transfer	0-5 V (a.u.)	E/T	
748.	S. O. Adamson, A. I. The application of lations of predissoc J. Phys. B 36, 3731 (2	Dement'ev, V. V. Maleev stabilization and exterior com iation resonances in the hydro 2003)	nplex scaling methods to calcu ogen molecule.	<b>L-</b>	
	H + H	Interaction Potentials	1-5 A	Th	
749.	M. F. Ciappina, W. R <b>Post-prior discrepa</b> <b>approximation for i</b> J. Phys. B 36, 3775 (2	. Cravero, C. R. Garibotti incies in the continuum distr ion-helium ionization. 2003)	orted wave-eikonal initial stat	e	
	$C^{6+} + He$	Total Scattering	1-25 MeV/11	Th	
	$F^{9+} + He$	Total Scattering	1-25  MeV/u	Th	
	$Ne^{10+} + He$	Total Scattering	1-25  MeV/u	Th	
	$Mo^{40+} + He$	Total Scattering	1-25  MeV/u	Th	
	$C^{6+} + He$	Ionization	1-25  MeV/m	Th	
	$F^{9+} + He$	Ionization	1-25  MeV/m	Th	
	$Ne^{10+} + He$	Ionization	1-25 MeV/u	Th	
	$Mo^{40+} + He$	Ionization	1-25  MeV/u 1-25  MeV/u	Th	
750.	J. M. Sanders, S. L. V Electron capture by with hydrocarbon a J. Phys. B 36, 3835 (2	Yarghese, C. H. Fleming, G. A. Soc y protons and electron loss fro and hydrogen molecules in the 2003)	osai om hydrogen atoms in collision e 60-120 keV energy range.	s	
	$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$ $\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Charge Transfer	60-120 keV 60-120 keV	Exp E-m	
	$\mathbf{H} + \mathbf{U}_2 \mathbf{H}_2$	Unarge Transfer	00-120 KeV	тлр	

·	0		1
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Charge Transfer	60-120  keV	Exp
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_6$	Charge Transfer	60-120  keV	Exp

Charge Transfer	60-120  keV	Exp
Charge Transfer	60-120  keV	Exp
Ionization	60-120  keV	Exp
Ionization	60-120  keV	Exp
Ionization	60-120  keV	$\operatorname{Exp}$
	Charge Transfer Charge Transfer Ionization Ionization Ionization Ionization Ionization	Charge Transfer60-120 keVCharge Transfer60-120 keVIonization60-120 keVIonization60-120 keVIonization60-120 keVIonization60-120 keVIonization60-120 keVIonization60-120 keVIonization60-120 keVIonization60-120 keV

751. S. Tsurubuchi, K. Motohashi

 $Cs^+ + Cs$ 

Energy-gain-characterized 3D momentum-imaging spectroscopy of  $N^+$  ions produced in  $Ar^{q+}$  (q=3, 8, 9, 11 and 12) collisions with  $N_2$  moleclues. J. Phys. B 36, 3847 (2003)

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{3+} + N_2$	Dissociation	8  keV	Exp
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{8+} + N_2$	Dissociation	8  keV	Exp
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{9+} + N_2$	Dissociation	8  keV	Exp
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{11+} + N_2$	Dissociation	8  keV	Exp
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{12+} + N_2$	Dissociation	8  keV	Exp
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{3+} + N_2$	Charge Transfer	8  keV	Exp
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$Ar^{8+} + N_2$	Charge Transfer	8  keV	Exp
$\begin{array}{ccccccc} \mathbf{Ar}^{11+} + \mathbf{N}_2 & \text{Charge Transfer} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Charge Transfer} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{3+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{8+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{9+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{11+} + \mathbf{N} & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \end{array}$	$Ar^{9+} + N_2$	Charge Transfer	8  keV	$\operatorname{Exp}$
$\begin{array}{cccc} \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Charge Transfer} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{3+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{8+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{9+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{11+} + \mathbf{N} & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \end{array}$	$Ar^{11+} + N_2$	Charge Transfer	8  keV	Exp
$\begin{array}{cccc} \mathbf{Ar}^{3+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{8+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{9+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{11+} + \mathbf{N} & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \end{array}$	$Ar^{12+} + N_2$	Charge Transfer	8  keV	Exp
$\begin{array}{cccc} \mathbf{Ar}^{8+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{9+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{11+} + \mathbf{N} & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \text{keV} & \text{Exp} \end{array}$	$Ar^{3+} + N_2$	Ionization	8  keV	Exp
$\begin{array}{ccc} \mathbf{Ar}^{9+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \mathrm{keV} & \mathrm{Exp} \\ \mathbf{Ar}^{11+} + \mathbf{N} & \text{Ionization} & 8 \ \mathrm{keV} & \mathrm{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Ionization} & 8 \ \mathrm{keV} & \mathrm{Exp} \end{array}$	$Ar^{8+} + N_2$	Ionization	8  keV	Exp
$ \begin{array}{ccc} \mathbf{Ar}^{11+} + \mathbf{N} & \text{Ionization} & 8 \text{ keV} & \text{Exp} \\ \mathbf{Ar}^{12+} + \mathbf{N}_2 & \text{Ionization} & 8 \text{ keV} & \text{Exp} \end{array} $	$Ar^{9+} + N_2$	Ionization	8  keV	Exp
$Ar^{12+} + N_2$ Ionization 8 keV Exp	$Ar^{11+} + N$	Ionization	8  keV	Exp
	$\mathbf{Ar}^{12+} + \mathbf{N}_2$	Ionization	8  keV	Exp

752. V. A. Vorontsov, M. Born, I. F. Shaikhislamov, B. N. Chichkov, B. Wellegehausen Charge-transfer pumping for XUV lasers. J. Phys. B 36, 3865 (2003)

	$C^{4+} + H$	Charge Transfer	Undef.	Exp
753.	M. Aymar, S. Azizi, O. Du Model-potential calcular $RbCs^+$ ions. J. Phys. B 36, 4799 (2003)	lieu tions for ground and excited	$\Sigma$ states of $Rb_2^+$ , $Cs_2^+$ and	
	$Rb^+ + Rb$	Interaction Potentials	5-35 a.u.	$\mathrm{Th}$
	$\mathrm{Rb^{+}}+\mathrm{Cs}$	Interaction Potentials	5-35 a.u.	$\mathrm{Th}$
	$Cs^+ + Rb$	Interaction Potentials	5-35 a.u.	$\mathrm{Th}$

754. S. Martinez, G. Bernardi, P. Focke, A. D. Gonzalez, S. Suarez  $H_2$  dissociation by  $H^+$  and  $He^{2+}$  projectiles at intermediate energies. J. Phys. B 36, 4813 (2003)

Interaction Potentials

$\mathbf{H}^+ + \mathbf{H}_2$	Dissociation	25-100  keV/u	Exp
$\mathrm{He}^{2+} + \mathrm{H}_2$	Dissociation	25-100  keV/u	Exp
$\mathbf{H}^+ + \mathbf{H}_2$	Total Scattering	25-100  keV/u	Exp
$\mathrm{He}^{2+} + \mathrm{H}_2$	Total Scattering	25-100  keV/u	Exp

5-35 a.u.

 $\mathrm{Th}$ 

755. M. Busch, R. Drozdowski, Th. Ludwig, G. von Oppen Paul-trap resonance in He⁺ – He collisions.
J. Phys. B 36, 4849 (2003)

	$\mathrm{He^{+}+He}$	Excitation	30-50  keV	Exp
756.	J. T. Pottage, D. R. Fl <b>The torsional excita</b> J. Phys. B 37, 165 (200	ower, S. L. Davis tion of methanol by helium. )4)		
	$He + CH_3OH$	Excitation	$20-500 \ cm^{-1}$	Th
757.	V. P. Shevelko, O. Rost <b>The target-density</b> e J. Phys. B 37, 201 (200	mej, H. Tawara, I. Yu. Tolstikhin effect in electron-capture proc 04)	a cesses.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Charge Transfer Charge Transfer Charge Transfer Excitation Excitation	$1 - 10^5 \text{ keV/u}$ $1 - 10^5 \text{ keV/u}$ $1 - 10^5 \text{ keV/u}$ $1 - 10^5 \text{ keV/u}$ $1 - 10^5 \text{ keV/u}$	Th Th Th Th
	$egin{array}{l} \mathbf{Ni}^{28+}+\mathbf{SiO}_2\ \mathbf{C}^{6+}+\mathbf{Cs}\ \mathbf{O}^{7+}+\mathbf{He}\ \mathbf{Ni}^{28+}+\mathbf{SiO}_2 \end{array}$	Excitation Ionization Ionization Ionization	$\begin{array}{l} 1 - 10^{5} \ \mathrm{keV/u} \\ 1 - 10^{5} \ \mathrm{keV/u} \end{array}$	Th Th Th Th
758.	A. S. Dickinson, F. X. <b>Scattering lengths fo</b> J. Phys. B 37, 587 (200	Gadea, T. Leininger or spin-polarized metastable 1 )4)	helium-3 and helium-4.	
	He + He	Elastic Scattering	Very low	Th
759.	M. Hochlaf Ab initio investigati lower than 10 eV. J. Phys. B 37, 595 (200 S ⁺ + CS	ons of the unimolecular deca	y of $CS_2^+$ for internal ene	rgies Th
	$CS^+ + S$	Interaction Potentials	0-10 eV	Th
760.	B. Kerkeni, P. S. Barkl Collisional broadenin J. Phys. B 37, 677 (200	em, A. Spielfiedel, N. Feautrier n <b>g of Mg, Sr, Ca and Na reso</b> n )4)	nance lines by atomic hydro	ogen.
	$egin{array}{l} { m Na} + { m H} \ { m Mg} + { m H} \ { m Sr} + { m H} \ { m Na} + { m H} \ { m Mg} + { m H} \ { m Mg} + { m H} \ { m Sr} + { m H} \end{array}$	Line Broadening Line Broadening Line Broadening Interaction Potentials Interaction Potentials Interaction Potentials	0-20,000 K 0-20,000 K 0-20,000 K 0-20,000 K 0-20,000 K	$\begin{array}{c} Th\\ Th\\ Th\\ Th\\ Th\\ Th\\ Th\end{array}$
761.	JY. Zhang, ZC. Yan Long-range interacti J. Phys. B 37, 723 (200	ions for hydrogen molecular i 94)	ons.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Elastic Scattering Elastic Scattering Elastic Scattering Elastic Scattering Elastic Scattering Elastic Scattering	Very low Very low Very low Very low Very low	Th Th Th Th Th

$\mathrm{HD^{+} + HD^{+}}$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathrm{HD^{+}} + \mathrm{HT^{+}}$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathrm{HD^{+}} + \mathrm{DT^{+}}$	Elastic Scattering	Very low	$\mathrm{Th}$
$HT^+ + HT^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$HT^+ + DT^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{D}^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{T}^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{D}_2{}^+ + \mathbf{D}_2{}^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{D}_2^+ + \mathbf{D}\mathbf{T}^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$D_2^+ + T_2^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathrm{DT^{+}} + \mathrm{DT^{+}}$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{T}_2^+ + \mathbf{H}\mathbf{D}^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{T}_{2}^{+} + \mathbf{H}\mathbf{T}^{+}$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{T}_{2}^{+} + \mathbf{DT}^{+}$	Elastic Scattering	Very low	$\mathrm{Th}$
${f T_2}^+ + {f T_2}^+$	Elastic Scattering	Very low	$\mathrm{Th}$
$\mathbf{H}_{2}{}^{+}+\mathbf{H}_{2}{}^{+}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{H}\mathbf{D}^{+}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{H}\mathbf{T}^{+}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{H}_{2}{}^{+}+\mathbf{D}_{2}{}^{+}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{DT}^{+}$	Interaction Potentials	Very low	$\mathrm{Th}$
$H_2^+ + T_2^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathrm{HD^{+} + HD^{+}}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathrm{HD^{+}} + \mathrm{HT^{+}}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathrm{HD^{+}} + \mathrm{DT^{+}}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathrm{HT^{+}} + \mathrm{HT^{+}}$	Interaction Potentials	Very low	$\mathrm{Th}$
$HT^+ + DT^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{D}^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{D}_2^+ + \mathbf{H}\mathbf{T}^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{D}_2{}^+ + \mathbf{D}_2{}^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{D}_2{}^+ + \mathbf{D}\mathbf{T}^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$D_2^+ + T_2^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$DT^+ + DT^+$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{T}_{2}^{+} + \mathbf{H}\mathbf{D}^{+}$	Interaction Potentials	Very low	$\mathrm{Th}$
$\mathbf{T}_{2}^{+} + \mathbf{H}\mathbf{T}^{+}$	Interaction Potentials	Very low	Th
$\mathbf{T}_{2}^{+} + \mathbf{D}\mathbf{T}^{+}$	Interaction Potentials	Very low	Th
$T_2^+ + T_2^+$	Interaction Potentials	Very low	$\mathrm{Th}$

# 762. P. N. Abufager, A. E. Martinez, R. D. Rivarola, P. D. Fainstein CDW-EIS model for single-electron capture in ion-atom collisions involving multielectronic targets.

J. Phys. B 37, 817 (2004)

$H^+ + He$	Charge Transfer	$40-9000 {\rm ~keV}$	$\mathrm{Th}$
$H^+ + Ne$	Charge Transfer	40-9000  keV	$\mathrm{Th}$
$H^+ + Ar$	Charge Transfer	40-9000  keV	$\mathrm{Th}$
$He^{2+} + He$	Charge Transfer	40-9000  keV	$\mathrm{Th}$
$He^{2+} + Ne$	Charge Transfer	40-9000  keV	$\mathrm{Th}$
$Li^{3+} + Ne$	Charge Transfer	40-9000  keV	$\mathrm{Th}$

763. D. Fischer, M. Schulz, R. Moshammer, J. Ullrich

Comparative study of single and double ionization of helium by ion impact. J. Phys. B 37, 1103 (2004)

$\mathrm{H^{+}$ + He	Ionization	$6 { m MeV}$	Exp
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764. F. Marchal, P. Berejny, N. Sewraj, Y. Salamero, P. Millet Energy transfers in Kr-Xe mixtures following selective multiphotonic excitation of  $Kr({}^{3}P_{1})$ . Temporal analysis in Kr-Xe mixtures. J. Phys. B 37, 1279 (2004)

Kr + Xe	Energy Transfer	120-376 nm	$\operatorname{Exp}$
$Kr^* + Xe$	Energy Transfer	120-376 nm	Exp

765. Z. D. Pesic, J.-Y. Chesnel, R. Hellhammer, B. Sulik, N. Stolterfoht Fragmentation of  $H_2O$  molecules following the interaction with slow, highly charged Ne ions.

J. Phys. B 37, 1405 (2004)

$\mathrm{Ne^{+}} + \mathrm{H_{2}O}$	Dissociation	2-9  keV	Exp
$Ne^{3+} + H_2O$	Dissociation	2-9  keV	Exp
$Ne^{5+} + H_2O$	Dissociation	2-9  keV	Exp
$\mathrm{Ne}^{7+} + \mathrm{H}_2\mathrm{O}$	Dissociation	2-9  keV	Exp
$Ne^{9+} + H_2O$	Dissociation	2-9  keV	Exp
$\mathrm{Ne^+} + \mathrm{H_2O}$	Charge Transfer	2-9  keV	Exp
$Ne^{3+} + H_2O$	Charge Transfer	2-9  keV	Exp
$Ne^{5+} + H_2O$	Charge Transfer	2-9  keV	Exp
$Ne^{7+} + H_2O$	Charge Transfer	2-9  keV	Exp
$Ne^{9+} + H_2O$	Charge Transfer	2-9  keV	Exp
$Ne^+ + H_2O$	Total Scattering	2-9  keV	Exp
$Ne^{3+} + H_2O$	Total Scattering	2-9  keV	Exp
$Ne^{5+} + H_2O$	Total Scattering	2-9  keV	Exp
$\mathrm{Ne}^{7+} + \mathrm{H}_2\mathrm{O}$	Total Scattering	2-9  keV	Exp
$Ne^{9+} + H_2O$	Total Scattering	2-9  keV	Exp

766. A. Hasan, N. V. Maydanyuk, B. Fendler, A. Voitkiv, B. Najjari, M. Schulz Three-dimensional fully differential single ionization cross sections for 75 keV p + He collisions.

J. Phys. B 37, 1923 (2004)

$H^+ + He$	Total Scattering	75  keV	E/T
$H^+ + He$	Ionization	75  keV	E/T

767. A. L. Godunov, C. T. Whelan, H.R.J. Walters
Fully differential cross sections for transfer ionization – a sensitive probe of high level correlation effects in atoms.
J. Phys. B 37, L201 (2004)

$\mathrm{H^{+}+He}$	Charge Transfer	400-1200  keV	$\mathrm{Th}$
$\mathrm{H^{+} + He}$	Total Scattering	400-1200  keV	$\mathrm{Th}$
$\mathrm{H^{+} + He}$	Ionization	400-1200  keV	$\mathrm{Th}$

768. N. Vinci, J. Tennyson

Continuum states of  $CO^+$ .

J. Phys. B 37, 2011 (2004)

$C^{2+} + O$	Interaction Potentials	Undef.	$\mathrm{Th}$
$O^{2+} + C$	Interaction Potentials	Undef.	$\mathrm{Th}$

769. M. F. Ciappina, W. R. Cravero, C. R. Garibotti Influence of initial state distortion in ion-atom collisions.

J. Phys. B 37, 2057 (2004)

$H^+ + He$	Total Scattering	0.1- $1.5  MeV/amu$	$\mathrm{Th}$
$O^{8+} + He$	Total Scattering	0.1- $1.5  MeV/amu$	$\mathrm{Th}$

	${f F^{9+}} + {f He} \ {f H^+} + {f He} \ {f O^{8+}} + {f He} \ {f F^{9+}} + {f He} \ {f F^{9+}} + {f He}$	Total Scattering Ionization Ionization Ionization	0.1-1.5 MeV/amu 0.1-1.5 MeV/amu 0.1-1.5 MeV/amu 0.1-1.5 MeV/amu	${f Th}\ {f Th}\ {f Th}\ {f Th}\ {f Th}$
770.	S. E. Nielsen, T. H. R Electron transfer fr $+ Na^+$ angular diff J. Phys. B 37, 2119 (2)	od, J. Salgado, D. Dowek, J. C. Ho com optically prepared states: erential scattering. 2004)	buver, J. W. Thomsen, N. Anderse $He^+$ + Na(3 2P ) -; He(2 $^{1,3}P$	en P)
	$\mathrm{He^{+}+Na}$	Charge Transfer	$1 {\rm ~keV}$	E/T
	$\mathrm{He^{+}}$ + $\mathrm{Na^{*}}$	Charge Transfer	$1 \ \mathrm{keV}$	E/T
	$\mathrm{He^+} + \mathrm{Na}$ $\mathrm{He^+} + \mathrm{Na^*}$	Total Scattering Total Scattering	1 keV 1 keV	E/T E/T
771.	P. S. Krstic Coupled channel re J. Phys. B 37, L217 (1	epresentation of the advanced a 2004)	adiabatic approach.	L/ 1
	$\mathrm{He}^{2+} + \mathrm{H}$	Charge Transfer	10-406 $\mathrm{eV/u}$	$\mathrm{E}/\mathrm{T}$
772.	T. Kirchner, M. Horb Coupled mean-field $He^+ - Ar$ collisions. J. Phys. B 37, 2379 (2	atsch, H. J. Ludde I description of electron remov 2004)	val processes in $He^+ - Ne$ an	d
	$egin{array}{ll} { m He^+} + { m Ne} \ { m He^+} + { m Ar} \end{array}$	Ionization Ionization	10-1000  keV/amu 10-1000  keV/amu	E/T E/T
773.	F. Lique, WU. L. To Quantum non-adia line perturbed by I J. Phys. B 37, 3021 (2)	chang-Brillet, A. Spielfiedel, N. Fear batic study of the quasi-molec H. 2004)	utrier cular satellites of the Lyman	α
	H + H	Line Broadening	$5000-25,000 { m K}$	$\mathrm{Th}$
774.	J.H.D. Eland, M. Hoch <b>Photo double ioniz</b> J. Phys. B 37, 3197 (2	hlaf, G. C. King, P. S. Kreynin, R. J ation spectra of CO: Comparis 2004)	J. LeRoy, I. R. McNab, JM. Robb son of theory with experiment	be t.
	C + O	Interaction Potentials	40-50  eV	E/T
	$C^+ + O^+$	Interaction Potentials	40-50  eV	E/T
	$C^{2+} + O$	Interaction Potentials	$40-50   \mathrm{eV}$	E/T
	$O^{2+} + C$	Interaction Potentials	40-50  eV	E/T
775.	S. Madzunkov, D. Fry Multiple electron c in collisions with H J. Phys. B 37, 3239 (2	, R. Schuch apture and photon emission of a and Xe. 2004)	slow highly charged $Ta^{q+}$ ion	IS
	$Ta^{41+} + He$	Charge Transfer	0.3 a.u.	Exp
	$Ta^{41+} + Xe$	Charge Transfer	0.3 a.u.	Exp
	$Ta^{42+} + He$	Charge Transfer	0.3 a.u.	Exp
	$Ta^{42+} + Xe^{-42+}$	Charge Transfer	0.3 a.u.	Exp
	$Ta^{43+} + He$	Charge Transfer	0.3 a.u.	Exp
	$Ta^{-} + Xe$ $Ta^{4+} + U$	Charge Transfer	0.3 a.u.	Exp E
	$1a^{} + ne$	Unarge Transfer	0.5 a.u.	LXD

Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
Charge Transfer	0.3 a.u.	Exp
	Charge Transfer Charge Transfer	Charge Transfer0.3 a.u.Charge Transfer0.3 a.u.

#### 776. E. Ghanbari Adivi, M. A. Bolorizadeh

Faddeev treatment of single-electron capture by protons in collision with manyelectron atoms.

J. Phys. B 37, 3321 (2004)

$\mathrm{H^{+} + He}$	Charge Transfer	$0.293-7.42 { m MeV}$	$\mathrm{Th}$
$H^+ + Ne$	Charge Transfer	$0.293-7.42 { m MeV}$	$\mathrm{Th}$
$H^+ + Ar$	Charge Transfer	$0.293-7.42 { m MeV}$	$\mathrm{Th}$
$\mathrm{H^{+} + He}$	Total Scattering	$0.293-7.42 { m MeV}$	$\mathrm{Th}$
$H^+ + Ne$	Total Scattering	$0.293-7.42 { m MeV}$	$\mathrm{Th}$
$H^+ + Ar$	Total Scattering	$0.293-7.42 { m ~MeV}$	$\mathrm{Th}$

#### 777. A. B. Voitkiv, B. Najjari

Two-centre dielectronic interaction in mutually ionizing projectile-target collisions at relativistic energies.

J. Phys. B 37, 3339 (2004)

$H + He^+ Z = ?-?$	Total Scattering	0.1-1000  GeV/u	Th
$He + He^+ Z= ?-?$	Total Scattering	0.1-1000  GeV/u	$\mathrm{Th}$
$He^+ + H$	Total Scattering	$0.1-1000 { m ~GeV/u}$	$\mathrm{Th}$
$H + He^+ Z = ?-?$	Ionization	0.1-1000 GeV/u	$\mathrm{Th}$
$He + He^+ Z = ?-?$	Ionization	0.1-1000 GeV/u	$\mathrm{Th}$
$He^+ + H$	Ionization	0.1-1000  GeV/u	$\mathrm{Th}$

#### 778. S. Chattopadhyay, K. K. Das

Multireference configuration interaction study of the low-lying electronic states of  $SiS^+$ .

J. Phys. B 37, 3355 (2004)

$S^{+} + S^{+}$	Si Interaction	n Potentials Und	ef. Th
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779. C. Figl, J. Grosser, O. Hoffmann, F. Rebentrost
 Repulsive K Ar potentials from differential optical collisions.
 J. Phys. B 37, 3369 (2004)

K + Ar	Interaction Potentials	$220-720 \ cm^{-1}$	Exp
K + Ar	Total Scattering	$220-720 \ cm^{-1}$	Exp
K + Ar	Excitation	$220-720 \ cm^{-1}$	$\operatorname{Exp}$

780. M. Cacciatore, A. Kurnosov, A. Napartovich, S. Shnyrev
Vibrational energy exchanges between N₂ and strongly excited CO molecules: Their role in vibrational kinetics.
J. Phys. B 37, 3379 (2004)

$N_2 + CO$	De-excitation	$100-500 { m K}$	$\mathrm{Th}$
$\mathbf{N}_2 + \mathbf{CO}^*$	De-excitation	$100-500 { m K}$	$\mathrm{Th}$
$N_2 + CO$	Energy Transfer	$100-500 { m K}$	$\mathrm{Th}$
$\mathbf{N}_2 + \mathbf{CO}^*$	Energy Transfer	$100-500 { m K}$	$\mathrm{Th}$
$N_2 + CO$	Excitation	$100-500 { m K}$	$\mathrm{Th}$
$\mathbf{N}_2 + \mathbf{CO}^*$	Excitation	$100-500 { m K}$	$\mathrm{Th}$

781. L. F. Errea, C. Illescas, L. Mendez, B. Pons, A. Riera, J. Suarez Classical and semi-classical treatments of Li³⁺, Ne¹⁰⁺ + H(1s) collisions. J. Phys. B 37, 4323 (2004)

$Li^{3+} + H$	Charge Transfer	1-400  keV/u	$\mathrm{Th}$
$Ne^{10+} + H$	Charge Transfer	1-400  keV/u	$\mathrm{Th}$
$Li^{3+} + H$	Ionization	1-400  keV/u	$\mathrm{Th}$
$Ne^{10+} + H$	Ionization	1-400  keV/u	$\mathrm{Th}$

782. L. U. Ancarani, M. C. Chidichimo
Partial wave completion technique for scattering amplitudes in Coulomb dipole excitation.
J. Phys. B 37, 4339 (2004)

783. H. A. Sakaue, A. Danjo, K. Hosaka, D. Kato, M. Kimura, A. Matsumoto, N. Nakamura, S. Ohtani, M. Sakurai, H. Tawara, I. Yamada, M. Yoshino Electron transfer and decay processes of highly charged iodine ions.

J. Phys. B 37, 403 (2004)

$\mathbf{I}^{10+} + \mathbf{Ne}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{10+} + \mathbf{Ar}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{10+} + \mathbf{Kr}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{10+} + \mathbf{Xe}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{15+} + \mathbf{Ne}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{15+} + \mathbf{Ar}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{15+} + \mathbf{Kr}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{15+} + \mathbf{Xe}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{20+} + \mathbf{Ne}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{20+} + \mathbf{Ar}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{20+} + \mathbf{Kr}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{20+} + \mathbf{Xe}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{25+} + \mathbf{Ne}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{25+} + \mathbf{Ar}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{25+} + \mathbf{Kr}$	Charge Transfer	1.52  keV	Exp
$\mathbf{I}^{25+} + \mathbf{Xe}$	Charge Transfer	1.52  keV	Exp
	-		-

784. S. Chattopadhyay, P. Ghosh, U. S. Mahapatra

Applications of size-consistent state-specific multi-reference coupled cluster (SS-MRCC) theory to study the potential energy curves of some interesting molecular systems.

J. Phys. B 37, 495 (2004)

Li + Li	Interaction Potentials	Undef.	$\mathrm{Th}$	
$O^+ + H$	Interaction Potentials	Undef.	$\mathrm{Th}$	
Na + Na	Interaction Potentials	Undef.	$\mathrm{Th}$	
Cs + Cs	Interaction Potentials	Undef.	Th	
785.	M. Foster, D. H. Madisc Ullrich <b>Fully differential cros</b> J. Phys. B 37, 1565 (200	on, J. L. Peacher, M. Schulz, S. Jo ss sections for $C^{6+}$ single ion 04)	ones, D. Fischer, R. Moshammer,	J.
------	-----------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------	----------------------------------------
	$\mathbf{C}^{6+} + \mathbf{He}$	Ionization	$2 { m MeV/u}$	Exp
786.	F. A. Rajgara, M. Krish Coulombic and non-( J. Phys. B 37, 1699 (200	mamurthy, D. Mathur, T. Nishid Coulombic fragmentation of 1 04)	e, H. Shiromaru, N. Kobayashi highly charged benzene.	
	$egin{array}{lll} \mathbf{Ar}^{8+} + \mathbf{C}_6\mathbf{H}_6 \ \mathbf{Ar}^{8+} + \mathbf{C}_6\mathbf{H}_6 \end{array}$	Dissociation Ionization	120 keV 120 keV	Exp Exp
787.	M. J. Roberts <b>Two-body off-shell e</b> for atomic ionization J. Phys. B 37, 2869 (200	ffects in the second-order F processes. 04)	addeev-Watson approximation	on
	$H^+ + H$	Ionization	$200~{\rm eV};1~{\rm MeV}$	$\mathrm{Th}$
788.	M. Busch, R. Drozdows Anticrossing spectros J. Phys. B 37, 2903 (200	ki, Th. Ludwig, G. von Oppen scopy of He atoms excited by 04)	y 30-300 keV $He^+$ impact.	
	$\mathrm{He^{+}+He}$	Excitation	$30-300 \mathrm{keV}$	Exp
789.	G. Veshapidze, M. Nomu Coplanar dissociation J. Phys. B 37, 2969 (200	ura, T. Nishide, F. A. Rajgara, H. <b>n of ethylene and benzene by</b> 04)	Shiromaru, Y. Achiba, N. Kobaya v collision with $Ar^{8+}$ .	shi
	$egin{array}{lll} \mathbf{Ar}^{8+} + \mathbf{C}_2 \mathbf{H}_4 \ \mathbf{Ar}^{8+} + \mathbf{C}_6 \mathbf{H}_6 \end{array}$	Dissociation Dissociation	120 keV 120 keV	Exp Exp
790.	J. Carbonell, R. Lazaus Relativistic and QEI molecular ion. J. Phys. B 37, 2997 (200	kas, V. I. Korobov O corrections to the $2p\sigma_u(\nu=$ 04)	1) vibrational state of the $H$	2+
	$\mathbf{H}^+ + \mathbf{H}$	Interaction Potentials	$10^{-9}$ a.u.	$\mathrm{Th}$
791.	M. Schulz, R. Moshamn <b>Two-particle versus</b> <b>ion impact.</b> J. Phys. B 37, 4055 (200	ner, D. Fischer, J. Ullrich three-particle interactions in 04)	single ionization of helium	by
	$f C^{6+} + f He \ Au^{24+} + f He \ Au^{53+} + f He \ C^{6+} + f He \ Au^{24+} + f He \ Au^{24+} + f He \ Au^{53+} + f He$	Total Scattering Total Scattering Total Scattering Ionization Ionization Ionization	3.6-100 MeV 3.6-100 MeV 3.6-100 MeV 3.6-100 MeV 3.6-100 MeV 3.6-100 MeV	Exp Exp Exp Exp Exp Exp
792.	T. Spranger, T. Kirchne	er		

T. Spranger, T. Kirchner Auger-like processes in multiple ionization of noble gas atoms by protons. J. Phys. B 37, 4159 (2004)

	$egin{array}{ll} { m H}^+ + { m Ne} \ { m H}^+ + { m Ar} \end{array}$	Ionization Ionization	5-10,000 keV 5-10,000 keV	$_{\mathrm{Th}}$
793.	<ul> <li>A. B. Voitkiv, B. Najjari, I</li> <li>Three-body quantum of impact.</li> <li>J. Phys. B 37, L365 (2004)</li> </ul>	R. Moshammer, M. Schulz, J. A Aynamics of helium single	Ullrich ionization by 1 GeV/u $U^{92+}$	
	$\mathbf{U}^{92+}+\mathbf{He}\ \mathbf{U}^{92+}+\mathbf{He}$	Total Scattering Ionization	1 GeV/amu 1 GeV/amu	Exp Exp
794.	T. C. Scott, M. Aubert-Free Asymptotically exact ca diatomic ions with the J. Phys. B 37, 4451 (2004)	econ, G. Hadinger, D. Andrae, alculation of the exchange surface integral method.	J. Grotendorst, J. D., III Morgan energies of one-active-electron	
	$Cs^+ + Cs$	Interaction Potentials	Undef.	$\mathrm{Th}$
795.	A. A. Mihajlov, Lj. M. Ign The rate coefficients fo atoms H*(n) with H(1s J. Phys. B 37, 4493 (2004)	jatovic, Z. Djuric, N. N. Ljepo r the processes of (n-n')-m ) atoms.	jevic nixing in collisions of Rydberg	
	H + H	Energy Transfer	$3x10^3 - 7x10^3$ K	$\mathrm{Th}$
	$H^* + H$	Energy Transfer	$3x10^3 - 7x10^3$ K	Th
796.	<ul> <li>R. E. Olson, R. L. Watson</li> <li>Projectile electron loss</li> <li>Ar.</li> <li>J. Phys. B 37, 4539 (2004)</li> </ul>	, V. Horvat, A. N. Perumal, Y and capture in MeV/u coll	. Peng, Th. Stoehlker lisions of $U^{28+}$ with $H_2$ , $N_2$ and	
	$\mathbf{U}^{28+} + \mathbf{Ar}$	Charge Transfer	150 MeV/amu	E/T
	$\mathbf{U}^{28+} + \mathbf{H}_2$	Charge Transfer	$150 { m MeV/amu}$	$\dot{E}/T$
	$\mathbf{U}^{28+}+\mathbf{N}_2$	Charge Transfer	$150 { m MeV/amu}$	E/T
	$U^{28+} + Ar$	Ionization	$150 { m MeV/amu}$	E/T
	$\mathbf{U}^{28+}+\mathbf{H}_2$	Ionization	$150 { m MeV/amu}$	E/T
	$\mathbf{U}^{28+}+\mathbf{N}_2$	Ionization	$150 { m MeV/amu}$	E/T
797.	T. J. Beams, G. Peach, I. I Ultracold atomic collision tion losses and applicat J. Phys. B 37, 4561 (2004)	3. Whittingham ons in tight harmonic trap ion to metastable helium a	s: perturbation theory, ioniza- atoms.	
	He + He	Association	Undef.	Th
	$He^* + He^*$	Association	Undef.	Th
	He + He	Ionization	Undef.	Th
	$He^* + He^*$	Ionization	Undef.	$\mathrm{Th}$
798.	M. Nimura, M. Hasuo, T. J. Measurement of depola sions at low temperature J. Phys. B 37, 4647 (2004)	Fujimoto rization of neon excited at re.	oms due to helium atom colli-	
	Ne + He	De-excitation	17-300 K	Exp
	$Ne^* + He$	De-excitation	17-300 K	Exp
	Ne + He	Excitation	17-300 K	Exp
	$Ne^* + He$	Excitation	17-300 K	Exp
	-			-

799.	D. Vrinceanu, S. Kotochigov <b>Pressure broadening and</b> Phys. Rev. A 69, 022714 (20	a, H. R. Sadeghpour shift of $\text{He}(2 \ ^{3}P_{0,1,2}) - He(2 \ 004)$	$^{3}S$ ) lines.	
	$\mathrm{He} + \mathrm{He}$ $\mathrm{He} + \mathrm{He}$	Line Broadening Energy Transfer	310 K 310 K	Th Th
800.	M. Kemmann, I. Mistrik, S. <b>Near-threshold photoass</b> Phys. Rev. A 69, 022715 (20	Nussmann, H. Helm, C. J. Willia ociation of ${}^{87}Rb_2$ .	ams, P. S. Julienne	
	Rb + Rb	Association	Undef.	Exp
801.	Z. Pavlovic, B. O. Roos, R. Collisional properties of Phys. Rev. A 69, 030701(R)	Cote, H. R. Sadeghpour trapped cold chromium atom (2004)	15.	
	$\mathbf{Cr} + \mathbf{Cr}$ $\mathbf{Cr} + \mathbf{Cr}$	Elastic Scattering Interaction Potentials	$10^{-12}$ a.u. $10^{-12}$ a.u.	Th Th
802.	T. Majima, Y. Nakai, H. Tsu Correlation between mul collisions: Evidence for fi Phys. Rev. A 69, 031202(R)	uchida, A. Itoh tiple ionization and fragment ragmentation induced by inte (2004)	ation of $C_{60}$ in 2-MeV $Si^{2+}$ ernal excitation.	
	${f Si^{2+}+C_{60}\ Si^{2+}+C_{60}}$	Dissociation Ionization	2 MeV 2 MeV	Exp Exp
803.	J. Leonard, A. P. Mosk, M. Analysis of photoassociat Phys. Rev. A 69, 032702 (20	Walhout, P. van der Straten, M. 5 cion spectra for giant helium 204)	Leduc, C. Cohen-Tannoudji dimers.	
	$\mathrm{He} + \mathrm{He}$ $\mathrm{He} + \mathrm{He}$	Association Interaction Potentials	2-30 μ K 2-30 μ K	Th Th
804.	P. Cacciani, J. Cosleou, F. H. Nuclear spin conversion i field: Intramolecular mag Phys. Rev. A 69, 032704 (20	ferlemont, M. Khelkhal, J. Lecoir in the gaseous phase in the p gnetic interactions and the ro 004)	atre presence of a static electric ple of collisions.	
	$\mathbf{C}\mathbf{H}_{3}\mathbf{F}+\mathbf{C}\mathbf{H}_{3}\mathbf{F}$	Energy Transfer	0-17,000  V/cm	$\mathrm{E}/\mathrm{T}$
805.	M. Erhard, H. Schmaljohann Measurement of a mixed Phys. Rev. A 69, 032705 (20	n, J. Kronjaeger, K. Bongs, K. Se - <b>spin-channel Feshbach reson</b> 004)	ngstock nance in $^{87}Rb$ .	
	Rb + Rb	Elastic Scattering	300 K	Exp
806.	V. S. Melezhik, J. S. Cohen, Stripping and excitation quantum time-dependent Phys. Rev. A 69, 032709 (20	CY. Hu in collisions between p and t approach with semiclassical 004)	$He^+(n_i3)$ calculated by a trajectories.	
	$egin{array}{lll} { m H}^+ + { m He}^+ \ { m H}^+ + { m He}^+ st \ { m H}^+ + { m He}^+ \ { m H}^+ + { m He}^+ \end{array}$	Excitation Excitation Ionization Ionization	0.5-2000 keV 0.5-2000 keV 0.5-2000 keV 0.5-2000 keV	Th Th Th Th

807.	7. Y. Susuki, KI. Nishioka, M. Maehara, J. Hyoi, T. Ikeda, K. Katsura Effect of exit surface on neutral fraction in mega-electron-volt hydrogen beams transmitted through aluminum epitaxial foils under a planar channeling condi- tion. Phys. Rev. A 69, 032710 (2004)			
	Phys. Rev. A 69, 032	2710 (2004)		
	$H^+ + Al$	Charge Transfer	$0.3\text{-}0.6~\mathrm{MeV}$	Exp
808.	A. K. Gupta, G. Arav <b>Probing potential</b> Phys. Rev. A 69, 035	vind, M. Krishnamurthy energy curves of $C_2^-$ by transle 5201 (2004)	ational energy spectrometry.	
	$Ar + C_2^-$	Dissociation	15  keV	E/T
	$\mathbf{Ar} + \mathbf{C}_2^{-}$	Interaction Potentials	15  keV	$\dot{\mathrm{E/T}}$
809.	TG. Lee, M. Hesse, Charge transfer in keV/amu. Phys. Rev. A 70, 012	AT. Le, C. D. Lin a slow collisions of $O^{8+}$ and $Z_{702}$ (2004)	$Ar^{8+}$ ions with H(1s) below 2	
	$O^{8+} + H$	Charge Transfer	1-2000 eV/u	$\mathrm{Th}$
	$\mathbf{Ar}^{8+} + \mathbf{H}$	Charge Transfer	1-2000  eV/u	Th
	$O^{8+} + H$	Interaction Potentials	1-2000  eV/u	Th
	$Ar^{8+} + H$	Interaction Potentials	1-2000  eV/u	$\mathrm{Th}$
811	He + He He* + He*	Elastic Scattering Elastic Scattering	0.001-2  mk 0.001-2  mk	Th Th
011.	Ionization of Ar by Phys. Rev. A 70, 022	v energetic proton impact. 2704 (2004)		
	$H^+ + Ar$	Ionization	$10-5000 \mathrm{keV}$	$\mathrm{Th}$
812.	P. Barragan, L. F. Er State-selective elec with H(1s). Phys. Rev. A 70, 022	rea, L. Mendez, A. Macias, I. Raba atron capture in collisions of gr 2707 (2004)	adan, A. Riera round and metastable $N^{2+}$ ions	
	$\mathbf{N}^{2+} + \mathbf{H}$	Charge Transfer	$2x10^{-3} - 300 \text{ keV}$	$\mathrm{Th}$
813.	S. Hayakawa, K. Kad Double- and single aration of direct do Phys. Rev. A 70, 022	omura, M. Kimura, C. M. Dutta -electron transfer in $H^+$ + K co puble transfer and two-step suc 708 (2004)	ollisions from 0.3 to 4 keV: Sep- cessive single-electron transfer.	
	$H^+ + K$	Charge Transfer	$0.3-4 \mathrm{keV}$	Exp
814.	T. Niederhausen, B. I Circular dichroism	Feuerstein, U. Thumm in laser-assisted proton-hydro	gen collisions.	

Phys. Rev. A 70, 023408 (2004)

	$egin{array}{lll} \mathbf{H}^+ &+ &\mathbf{H} \ \mathbf{H}^+ &+ &\mathbf{H} \end{array}$	Charge Transfer Ionization	$2 { m keV}$ $2 { m keV}$	${ m Th}$ ${ m Th}$
815.	V. Milosavljevic, S. Dje Electron and ion con J. Phys. B 37, 2713 (20	enize, M. S. Dimitrijevic <b>ntributions to the Ne I spe</b> 004)	ctral line broadening.	
	$\mathbf{H}^{+} + \mathbf{Ne}$	Line Broadening	$1000-50,000 {\rm K}$	$\mathrm{Th}$
816.	M. Foster, D. H. Madis <b>Highly charged part</b> J. Phys. B 37, 3797 (20	son, J. L. Peacher, J. Ullrich sicle impact ionization of He	е.	
	${f Au^{24+}} + {f He} \ {f Au^{53+}} + {f He} \ {f Au^{24+}} + {f He} \ {f Au^{24+}} + {f He} \ {f Au^{53+}} \ {f Au^{53$	Total Scattering Total Scattering Ionization Ionization	3.6 MeV/u 3.6 MeV/u 3.6 MeV/u 3.6 MeV/u	E/T E/T E/T E/T
817.	R. O. Barrachina, M. Z Young's interference J. Phys. B 37, 3847 (20	Zitnik effect in the autoionization 004)	of atoms colliding with molect	ıles.
	$egin{array}{lll} \mathbf{H}\mathbf{e}^{2+} &+ \mathbf{H}_2 \ \mathbf{H}\mathbf{e}^{2+} &+ \mathbf{H}_2 \ \mathbf{H}\mathbf{e}^{2+} &+ \mathbf{H}_2 \end{array}$	Charge Transfer Total Scattering Ionization	25  m ~keV/u 25  m ~keV/u 25  m ~keV/u	${ m Th}\ { m Th}\ { m Th}$
818.	J. Fiol, R. E. Olson <b>Three- and four-boo</b> J. Phys. B 37, 3947 (20	ly dynamics in fast heavy id 004)	on-atom ionization.	
	$egin{array}{lll} {f Au}^{53+} + {f He} \ {f Au}^{53+} + {f He} \end{array}$	Total Scattering Ionization	$3.6 { m ~MeV/u}$ $3.6 { m ~MeV/u}$	${ m Th}$ Th
819.	T. Minami, C. O. Rein Coherence paramete calculated using a h J. Phys. B 37, 4025 (20	hold, D. R. Schultz, M. S. Pind ers for charge transfer in c ybrid numerical approach. 004)	zola collisions of protons with heli	um
	$\mathrm{H^{+}+He}$	Charge Transfer	$20\text{-}200~\mathrm{keV}$	$\mathrm{Th}$
820.	D. W. Savin Rate coefficients for astrophysical implic Astrophys. J., Part 1 5	<b>r</b> $D(1s) + H^+$ ;-; $D^+ + 3$ ations. 66, 599 (2002)	${ m H}(1{ m s})$ charge transfer and so	ome
	$egin{array}{lll} \mathbf{H}^+ + \mathbf{H} \ \mathbf{D} + \mathbf{H}^+ \ \mathbf{D}^+ + \mathbf{H} \end{array}$	Charge Transfer Charge Transfer Charge Transfer	1-200,000 K 1-200,000 K 1-200,000 K	${ m Th}\ { m Th}\ { m Th}$
821.	L. B. Zhao, P. C. Stan Zygelman, M. Kimura, <b>Radiative charge tra</b> Astrophys. J. 615, 1065	acil, J. P. Gu, HP. Liebermann A. Dalgarno ansfer in collisions of O with 3 (2004)	n, Y. Li, P. Funke, R. J. Buenker h $He^+$ .	, B.
	$\mathrm{He^{+}}$ + O	Charge Transfer	0.0001- $3.0000  eV$	$\mathrm{Th}$

822. O. Asvany, S. Schlemmer, D. Gerlich

Deuteration of  $CH_n^+$  (n = 3-5) in collisions with HD measured in a low-temperature ion trap.

Astrophys. J., Part 1 617, 685 (2004)

$\mathrm{CH}_{3}{}^{+} + \mathrm{H}_{2}$	Interchange reaction	$15 \mathrm{K}$	Exp
$\mathrm{CH}_{3}^{+} + \mathrm{HD}$	Interchange reaction	$15 \mathrm{K}$	Exp
$\mathbf{CH}_4^+ + \mathbf{H}_2$	Interchange reaction	$15 \mathrm{K}$	Exp
$\mathrm{CH}_4{}^+ + \mathrm{HD}$	Interchange reaction	15 K	Exp
$\mathrm{CH}_{5}{}^{+} + \mathrm{H}_{2}$	Interchange reaction	15 K	Exp
$\mathrm{CH}_{5}^{+} + \mathrm{HD}$	Interchange reaction	$15 \mathrm{K}$	Exp

823. N. F. Allard, J. F. Kielkopf, G. Hebrard, J. M. Peek Theoretical study of the Lyman  $\gamma$  line profile of atomic hydrogen perturbed by collisions with protons - Lyman  $\gamma$  line profile. Eur. Phys. J. D 29, 7 (2004)

$\mathrm{H^{+}} + \mathrm{H}$	Line Broadening	$20,000-25,000 \deg K$	Th

824. M. Purkait

Double electron capture cross-sections of the ground state in the collisions of  $He^{2+}$  and  $Li^{3+}$  with He.

Eur. Phys. J. D 30, 11 (2004)

$\mathrm{He}^{2+} + \mathrm{He}$	Charge Transfer	60-200  keV/amu	Th
$\mathrm{Li}^{3+} + \mathrm{He}$	Charge Transfer	60-200  keV/amu	$\mathrm{Th}$

825. E. M. Staicu-Casagrande, T. Nzeyimana, E. A. Naji, N. de Ruette, B. Fabre, A. Le Padellec, X. Urbain

Abstraction a	and insertic	on mechanism	is in reactive	collisions of $H_2^+$	and $D_2^+$	$\mathbf{with}$
<i>O</i> ⁻ .						

Eur. Phys. J. D 31, 469 (2004)

$\mathbf{H}_{2}^{+} + \mathbf{O}^{-}$	Interchange reaction	$10 { m MeV}$	Exp
$\mathbf{D}_2{}^+ + \mathbf{O}{}^-$	Interchange reaction	$10 { m MeV}$	Exp

826. A. E. Pomerantz, F. Ausfelder, R. N. Zare, S. C. Althorpe, F. J. Aoiz, L. Banares, J. F. Castillo

Disagreement between theory and experiment in the simplest chemical reaction: Collision energy dependent rotational distributions for  $H + D_2$  -; HD ( $\nu' = 3,j'$ ) + D.

J. Chem. Phys. 120, 3244 (2004)

$\mathbf{H} + \mathbf{H}_2$	Interchange reaction	1.49-1.85  eV	E/T
$H + D_2$	Interchange reaction	1.49-1.85  eV	$\mathrm{E}/\mathrm{T}$

827. F. Ausfelder, A. E. Pomerantz, R. N. Zare, S. C. Althorpe, F. J. Aoiz, L. Banares, J. F. Castillo

Collision energy dependence of the HD ( $\nu' = 2$ ) product rotational distribution of the H +  $D_2$  reaction in the range 1.30-1.89 eV. J. Chem. Phys. 120, 3255 (2004)

$H + H_2$	Interchange reaction	1.30-1.89 eV	E/T
$H + D_2$	Interchange reaction	1.30-1.89 eV	E/T

828. M. Baunstein, S. Adler-Golden, B. Maiti, G. C. Schatz
Quantum and classical studies of the O(³P) + H₂(v-0-3, j=0) -; OH + H reaction using benchmark potential surfaces.
J. Chem. Phys. 120, 4316 (2004)

	$\mathbf{O} + \mathbf{H}_2$	Interchange reaction	0-30  kcal/mole	$\mathrm{Th}$
829.	R. Martinez, J. Milla <b>Ab initio analytica</b> <b>the</b> $O^+$ ( ⁴ S) + $H_2$ ( J. Chem. Phys. 120,	an, M. Gonzalez al potential energy surface and qu $(X^{1}\Sigma_{g}^{+})$ -; $OH^{+} (X^{3}\Sigma^{-}) + H(^{2}S)$ , 4705 (2004)	uasiclassical trajectory study reaction and isotopic varia	y of nts.
	$\mathbf{O}^+ + \mathbf{H}_2$	Interchange reaction	$0.3 { m eV}$	$\mathrm{Th}$
830.	H. Teitelbaum, P.J.S. Calculation of the a function of temp J. Chem. Phys. 120,	S.B. Caridade, A.J.C. Varandas rate constant for state-selected perature and pressure. , 10483 (2004)	recombination of $\mathbf{H} + O_2(v)$	) as
	$\mathbf{H} + \mathbf{O}_2$	Interchange reaction	$300-10,000 {\rm K}$	$\mathrm{Th}$
831.	T.J.D. Kumar, S. Ku Vibrationally inels culations with exp J. Chem. Phys. 121,	umar astic collisions in $H^+$ + CO sys periments. , 191 (2004)	tem: Comparing quantum o	cal-
	$H^+ + CO$	Excitation	0-140  eV	$\mathrm{Th}$
832.	P. B. Armentrout, F Probes of spin co retical studies of t J. Chem. Phys. 121,	X. Li nservation in heavy metal reactive the reactions of $Re^+$ with $H_2$ , $D_2$ , 248 (2004)	tions: Experimental and th ₂ , and HD.	leo-
	$\mathrm{Re}^+ + \mathrm{H}_2$	Interchange reaction	0-8 eV	E/T
	$egin{array}{c} { m Re}^+ + { m HD} \ { m Re}^+ + { m D}_2 \end{array}$	Interchange reaction Interchange reaction	0-8  eV 0-8  eV	$\stackrel{'}{\rm E/T}$ ${\rm E/T}$
833.	S. Y. Lin, H. Guo <b>Reactions of</b> $C({}^{1}D$ J. Chem. Phys. 121,	) with $H_2$ and its deuterated ison, 1285 (2004)	topomers, a wave packet stu	ıdy.
	$\mathbf{C} + \mathbf{H}_2$	Interchange reaction	$0-0.5 \ \mathrm{eV}$	$\mathrm{Th}$
	C + HD	Interchange reaction	$0-0.5 \ \mathrm{eV}$	Th
	$\mathbf{C} + \mathbf{D}_2$	Interchange reaction	0-0.5  eV	Th
834.	M. H. Alexander, E. <b>Product multiplet</b> J. Chem. Phys. 121,	J. Rackham, D. E. Manolopoulos <b>branching in the</b> $O(^{1}D) + H_{2}$ - , 5221 (2004)	$\partial OH(^{2}\Pi) + H$ reaction.	
	$\mathbf{O} + \mathbf{H}_2$	Interchange reaction	$0.1 \mathrm{~eV}$	$\mathrm{Th}$
835.	M. Sabido, J. de And Electronic excitat ${}^{1}S_{0}$ ) atoms and $Rl$ J. Chem. Phys. 121,	dres, J. Sogas, J. M. Lucas, M. Albe ion and charge transfer process $b^+({}^1S_0)$ ions in the 0.07-4.00 keV , 5284 (2004)	rti, J. M. Bofill, A. Aguilar ses in collisions between M ⁷ energy range.	g(3
	$\mathrm{Rb^{+}+Mg}$	Charge Transfer	0-4000  eV	Exp
836.	N. Balakrishnan <b>Quantum calculat</b> J. Chem. Phys. 121,	ions of the $O({}^{3}P) + H_{2}$ -; OH + , 6346 (2004)	- H reaction.	
	$\mathbf{O} + \mathbf{H}_2$	Interchange reaction	0-1.0  eV	$\mathrm{Th}$

837.	A. E. Pomerantz, F. Ausfe Rabanos, F. J. Aoiz, L. Ba <b>Rovibrational product</b> J. Chem. Phys. 121, 6587	elder, R. N. Zare, J. C. Juanes- nares, J. F. Castillo state distribution for inelast (2004)	Marcos, S. C. Althorpe, V. Saez tic $\mathbf{H} + D_2$ collisions.	
	$\begin{array}{l} \mathbf{H}+\mathbf{H}_2\\ \mathbf{H}+\mathbf{D}_2 \end{array}$	Excitation Excitation	$\begin{array}{c} 1.5 \ \mathrm{eV} \\ 1.5 \ \mathrm{eV} \end{array}$	$\begin{array}{c} Exp\\ Exp \end{array}$
838.	R. Padmanaban, S. Mahap Quantum wave-packet and thermal rate const J. Chem. Phys. 121, 7681	patra dynamics of H + HLi scatt ant. (2004)	ering: Reaction cross section	
	H + LiH	Interchange reaction	$0.0-1.0 \mathrm{~eV}$	Th
839.	M. Brouard, I. Burak, S. M Product spin-orbit stat straction reactions. J. Chem. Phys. 121, 10420	Marinakis, L. Rubio Lago, P. Ta are resolved dynamics of the 5 (2004)	mpkins, C. Vallance $\mathbf{H} + H_2O$ and $\mathbf{H} + D_2O$ ab-	
	$\begin{array}{l} \mathbf{H} + \mathbf{H}_2 \mathbf{O} \\ \mathbf{H} + \mathbf{D}_2 \mathbf{O} \end{array}$	Interchange reaction Interchange reaction	$\begin{array}{c} 1.2\text{-}2.5 \ \mathrm{eV} \\ 1.2\text{-}2.5 \ \mathrm{eV} \end{array}$	Exp Exp
840.	R. A. Sultanov, N. Balakri Isotope branching and J. Chem. Phys. 121, 11038	shnan tunneling in $O({}^{3}P)$ + HD -; B(2004)	OH + D; OD + H reactions.	
	$egin{array}{lll} \mathbf{O}+\mathbf{H}_2 \ \mathbf{O}+\mathbf{H}\mathbf{D} \ \mathbf{O}+\mathbf{D}_2 \end{array}$	Interchange reaction Interchange reaction Interchange reaction	$\begin{array}{c} 0.0\text{-}2.0 \ \mathrm{eV} \\ 0.0\text{-}2.0 \ \mathrm{eV} \\ 0.0\text{-}2.0 \ \mathrm{eV} \end{array}$	Th Th Th
841.	G. E. Moyano, D. Pearson Interpolated potential of H and $H_3^+$ , and D and J. Chem. Phys. 121, 12396	M. A. Collins energy surfaces and dynamic $H_3^+$ . 5 (2004)	cs for atom exchange between	
	$\mathbf{H}_{3}^{+} + \mathbf{H}$ $\mathbf{H}_{3}^{+} + \mathbf{D}$	Interchange reaction Interchange reaction	1.0-20.0  kJ/mol 1.0-20.0  kJ/mol	Th Th
842.	L. Pichl, S. Zou, M. Kimur Total, partial, and diffe collisions in the energy J. Phys. Chem. Ref. Data	ra, I. Murakami, T. Kato rential ionization cross secti region of 0.1-10 keV/u. 33, 1031 (2004)	ons in proton-hydrogen atom	
	$egin{array}{ll} \mathrm{H}^+ &+ \mathrm{H} \ \mathrm{H}^+ &+ \mathrm{H} \end{array}$	Total Scattering Ionization	0.1-10 keV/u 0.1-10 keV/u	E/T E/T
843.	Y. C. Yu, K. M. Chen <b>M X-ray production in</b> Nucl. Instrum. Methods P	Nd, Gd, Ho and Lu by 1-6 hys. Res. B 219-220, 284 (2004	$\mathbf{MeV} \ \mathbf{lithium} \ \mathbf{ions.}$	
	$Li^+ + Nd$	Excitation	1-6 MeV	Exd
	$Li^+ + Gd$	Excitation	1-6 MeV	Exp
	$Li^+ + Ho$	Excitation	$1-6 { m MeV}$	Exp
	$Li^+ + Lu$	Excitation	1-6 MeV	Exp
	$Li^+ + Nd$	Ionization	1-6 MeV	Exp E
	$Li^+ + Ga$ $Li^+ + Ho$	Ionization	1-0 MeV 1-6 MeV	Exp Exp
	$Li^+ + Lu$	Ionization	1-6 MeV	Exp

#### 844. M. Lugo-Licona, J. Miranda

L-Shell X-ray production cross-sections by impact of 5.0 to 7.5 MeV  ${}^{10}B^{2+}$  ions on selected rare earth elements.

Nucl. Instrum. Methods Phys. Res. B 219-220, 289 (2004)

$\mathbf{B}^{2+} + \mathbf{Ce}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Nd}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Sm}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Eu}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Gd}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{D}\mathbf{y}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Ho}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Y}\mathbf{b}$	Excitation	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Ce}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Nd}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Sm}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Eu}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Gd}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{D}\mathbf{y}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Ho}$	Ionization	$5-7 { m MeV}$	Exp
$\mathbf{B}^{2+} + \mathbf{Y}\mathbf{b}$	Ionization	$5-7 { m MeV}$	Exp

845. J. F. Browning, J. C. Banks, W. R. Wampler, B. L. Doyle

Cross-sections for the elastic recoil of hydrogen isotopes for high energy helium ions.

Nucl. Instrum. Methods Phys. Res. B 219-220, 317 (2004)

$\mathrm{He^{+}} + \mathrm{H}$	Elastic Scattering	9-11.6  MeV	Exp
$\mathrm{He^{+}} + \mathrm{D}$	Elastic Scattering	9-11.6  MeV	Exp
$\mathrm{He^{+}}+\mathrm{T}$	Elastic Scattering	$9\text{-}11.6 \mathrm{MeV}$	Exp
$\mathrm{He^{+}} + \mathrm{H}$	Total Scattering	$9\text{-}11.6 \mathrm{MeV}$	Exp
$\mathrm{He^{+}} + \mathrm{D}$	Total Scattering	$9\text{-}11.6 \mathrm{MeV}$	Exp
$\mathrm{He^{+}}+\mathrm{T}$	Total Scattering	$9\text{-}11.6 \mathrm{MeV}$	Exp

846. H. Suno, S. N. Rai, H.-P. Liebermann, R. J. Buenker, M. Kimura, R. K. Janev Elastic and inelastic processes in  $H^+ + CH_2$  collisions between 0.5 and 1.5 keV. Phys. Rev. A 70, 032703 (2004)

$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_2$	Elastic Scattering	0.5-1.5  keV	$\mathrm{Th}$
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_2$	Charge Transfer	$0.5-1.5 \mathrm{keV}$	$\mathrm{Th}$
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_2$	Interaction Potentials	0.5- $1.5  keV$	$\mathrm{Th}$
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_2$	Total Scattering	$0.5-1.5 \mathrm{~keV}$	Th

847. H. Nguyen, R. Bredy, H. A. Camp, T. Awata, B. D. DePaola Differential charge-transfer cross sections for systems with energetically degenerate or near-degenerate channels. Phys. Rev. A 70, 032704 (2004)

$Li^+ + Rb$	Charge Transfer	$7 { m keV}$	Exp
$\mathrm{K^{+}}+\mathrm{Rb}$	Charge Transfer	$7 \ \mathrm{keV}$	Exp
$\mathrm{Rb^{+}+Rb}$	Charge Transfer	$7 \ \mathrm{keV}$	Exp
$Li^+ + Rb$	Total Scattering	$7 \ \mathrm{keV}$	Exp
$\mathrm{K^{+}+Rb}$	Total Scattering	$7 \ \mathrm{keV}$	Exp
$\mathrm{Rb^{+}+Rb}$	Total Scattering	$7 \ \mathrm{keV}$	Exp

848. P. M. Florian, M. Hoster, R. C. Forrey

Rotational relaxation in ultracold CO + He collisions. Phys. Rev. A 70, 032709 (2004)

He + CO	De-excitation	0-30 K	$\mathrm{Th}$
He + CO	Excitation	0-30 K	Th

849. R. D. DuBois, A.C.F. Santos, Th. Stoehlker, F. Bosch, A. Brauning-Demian, A. Gumberidze, S. Hagmann, C. Kozhuharov, R. Mann, A. Orsic Muthig, U. Spillmann, S. Tachenov, W. Bart, L. Dahl, B. Franzke, J. Glatz, L. Groening, S. Richter, D. Wilms, K. Ullmann, O. Jagutzki

Electron loss from 1.4-MeV/u  $U^{4,6,10+}$  ions colliding with Ne,  $N_2$ , and Ar targets. Phys. Rev. A 70, 032712 (2004)

$U^{4+} + Ne$	Ionization	$1.4 { m MeV/u}$	Exp
$U^{4+} + Ar$	Ionization	1.4  MeV/u	Exp
$\mathbf{U}^{4+} + \mathbf{N}_2$	Ionization	1.4  MeV/u	Exp
$U^{6+} + Ne$	Ionization	1.4  MeV/u	Exp
$U^{6+} + Ar$	Ionization	1.4  MeV/u	Exp
$\mathbf{U}^{6+} + \mathbf{N}_2$	Ionization	1.4  MeV/u	Exp
$\mathbf{U}^{10+} + \mathbf{Ne}$	Ionization	1.4  MeV/u	Exp
$\mathbf{U}^{10+} + \mathbf{Ar}$	Ionization	1.4  MeV/u	Exp
$\mathbf{U}^{10+} + \mathbf{N}_2$	Ionization	1.4  MeV/u	Exp

850. J. Caillat, A. Dubois, I. Sundvor, J.-P. Hansen Classical and semiclassical calculations of electron transfer cross sections in keVenergy ion-molecule collisions. Phys. Rev. A 70, 032715 (2004)

$\mathrm{He}^{2+} + \mathrm{H}_2^+$	Charge Transfer	0.2-1.5 V a.u.	$\mathrm{Th}$
$\mathbf{Ar}^{2+} + \mathbf{H}_2^+$	Charge Transfer	0.2-1.5 V a.u.	$\mathrm{Th}$
$\mathrm{He}^{2+} + \mathrm{H}_2^+$	Total Scattering	0.2-1.5 V a.u.	$\mathrm{Th}$
$\mathbf{Ar}^{2+} + \mathbf{H}_2^+$	Total Scattering	0.2-1.5 V a.u.	$\mathrm{Th}$

851. J. F. Reading, J. Fu, M. J. Fitzpatrick Finite-Hilbert-basis-set calculations for the angular distribution of ionized electrons produced in p+H impact at 20 keV. Phys. Rev. A 70, 032718 (2004)

$H^+$ +	- H	Ionization	20  keV	Th
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852. M. E. Galassi, R. D. Rivarola, P. D. Fainstein

Multicenter character in single-electron emission from  $H_2$  molecules by ion impact.

Phys. Rev. A 70, 032721 (2004)

$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	$0.114-68 { m MeV/u}$	Th
$\mathbf{Kr}^{33+} + \mathbf{H}_2$	Ionization	$0.114-68 { m MeV/u}$	$\mathrm{Th}$
$\mathbf{Kr}^{34+} + \mathbf{H}_2$	Ionization	$0.114-68 { m MeV/u}$	$\mathrm{Th}$

853. C. Zhu, A. Dalgarno, S. G. Porsev, A. Derevianko Dipole polarizabilities of excited alkali-metal atoms and long-range interactions of ground- and excited-state alkali-metal atoms with helium atoms. Phys. Rev. A 70, 032722 (2004)

Na + He	Interaction Potentials	Low energy	Th
$\mathbf{K} + \mathbf{He}$	Interaction Potentials	Low energy	$\mathrm{Th}$
Rb + He	Interaction Potentials	Low energy	$\mathrm{Th}$

854. D. Aumiler, T. Ban, G. Pichler

High-resolution measurements of the pressure broadening and shift of the rubidium 5  ${}^{2}S_{1/2} - 6^{2}P_{3/2}$  line by argon and helium. Phys. Rev. A 70, 032723 (2004)

	$f Rb + He \ Rb + Ar$	Line Broadening Line Broadening	10 torr 10 torr	Exp Exp
855.	E. Luc-Koenig, R. Kosloff, F Photoassociation of cold culations and analysis of Phys. Rev. A 70, 033414 (20	Y. Masnou-Seeuws, M. Vatasescu atoms with chirped laser pu the adiabatic transfer within 004)	lses: Time-dependent cal- a two-state model.	
	Cs + Cs	Association	54 $\mu$ k	Th
856.	F. Zappa, A.L.F. de Barros Faria <b>Ionization of helium by i</b> Phys. Rev. A 70, 034701 (20	, L.F.S. Coelho, G. Jalbert, S. D mpact of negative B, O, and 004)	. Magalhaes, N. V. de Castro <b>F ions.</b>	
	$\mathrm{B}^- + \mathrm{He}$	Ionization	1.1-1.9 V a.u.	Exp
	$O^- + He$	Ionization	1.1-1.9 V a.u.	Exp
	$F^- + He$	Ionization	1.1-1.9 V a.u.	Exp
857.	M. M. Cassar, G.W.F. Drak <b>High precision variationa</b> J. Phys. B 37, 2485 (2004)	e al calculations for $H_2^+$ .		
	$H^+ + H$	Interaction Potentials	Undef.	Th
858.	A. A. Mihajlov, A. M. Ermo Radiative charge exchan	laev, Lj. M. Ignjatovic, N. M. Sal ge in ion-atom collisions at in	kan atermediate impact veloci-	

Radiative charge exchange in ion-atom collisions at intermediate impact velocities: Spectral characteristics and possibilities of experimental studies. J. Phys. B 37, 3563 (2004)

$H^+ + H$	Charge Transfer	50  keV	$\mathrm{Th}$
$He^+ + H$	Charge Transfer	50  keV	$\mathrm{Th}$
$H^+ + H$	Excitation	50  keV	$\mathrm{Th}$
$He^+ + H$	Excitation	50  keV	Th

859. F.A.U. Thiel, L. Thiel, A. J. Yencha, M.-W. Ruf, W. Meyer, H. Hotop Experimental and theoretical electron energy spectra due to ionizing collisions of metastable Ar*(³P₂), Ar*(³P₀) and Kr*(³P₀) atoms with ground-state Hg atoms. J. Phys. B 37, 3691 (2004)

Interaction Potentials	$0-250 { m ~MeV}$	E/T
Interaction Potentials	$0-250 { m ~MeV}$	E/T
Interaction Potentials	$0-250 { m ~MeV}$	E/T
Interaction Potentials	$0-250 { m ~MeV}$	E/T
Ionization	$0-250 { m ~MeV}$	E/T
Ionization	$0-250 { m ~MeV}$	E/T
Ionization	$0-250 { m ~MeV}$	E/T
Ionization	$0-250 {\rm ~MeV}$	E/T
	Interaction Potentials Interaction Potentials Interaction Potentials Interaction Potentials Ionization Ionization Ionization Ionization	Interaction Potentials0-250 MeVInteraction Potentials0-250 MeVInteraction Potentials0-250 MeVInteraction Potentials0-250 MeVIonization0-250 MeVIonization0-250 MeVIonization0-250 MeVIonization0-250 MeVIonization0-250 MeVIonization0-250 MeV

860. J. Bradley, R.J.S. Lee, M. McCartney, D.S.F. Crothers

Multi-ionization of helium and lithium using the independent electron and independent event models with intrinsic CDW.

J. Phys. B 37, 3723 (2004)

$H^+ + He$	Ionization	50-1000  keV/u	$\mathrm{Th}$
$H^+ + Li$	Ionization	50-1000  keV/u	$\mathrm{Th}$
$He^{2+} + He$	Ionization	50-1000  keV/u	$\mathrm{Th}$
$He^{2+} + Li$	Ionization	50-1000  keV/u	$\mathrm{Th}$

861.	B. J. Killian, R. Cabrer <b>Resonant charge tra</b> J. Phys. B 37, 4733 (20	ra-Trujillo, E. Deumens, Y. Oehrm <b>nsfer between</b> $H^+$ and <b>H from</b> 004)	n 1 to 5000 eV.	
	$H + H^+$	Charge Transfer	1-5000  eV	Th
	$H + H^+$	Total Scattering	1-5000  eV	Th
862.	A. B. Voitkiv, B. Najja Ionization of helium eikonal approximatio J. Phys. B 37, 4831 (20	ri <b>by relativistic highly charg</b> <b>on.</b> 004)	red ions within the symmetry	tric
	$U^{92+} + He$	Ionization	$1 \mathrm{GeV}$	$\mathrm{Th}$
863.	CN. Liu, AT. Le, C. Charge transfer in si Phys. Rev. A 68, 06270	D. Lin low collisions of $C^{4+}$ with H b 02 (2003)	pelow 1 keV/amu.	
	$C^{4+} + H$	Charge Transfer	$10^{-3} - 10^3 \text{ eV/u}$	Th
	$\mathbf{C}^{4+} + \mathbf{H}$	Interaction Potentials	$10^{-3} - 10^3 \text{ eV/u}$	Th
864.	A. K. Belyaev, P. S. Ba <b>Cross sections for lo</b> Phys. Rev. A 68, 06270	urklem w-energy inelastic H + Li col 03 (2003)	lisions.	
	Li + H	Excitation	Undef.	$\mathrm{Th}$
	$Li^* + H$	Excitation	Undef.	$\mathrm{Th}$
865.	M. Telmini, C. Jungen <b>R-matrix implement</b> <b>ular hydrogen.</b> Phys. Rev. A 68, 06270	ation giving well-behaved qua	ntum defect matrices of mo	lec-
	H + H	Interaction Potentials	Undef.	$\mathrm{Th}$
866.	J. Mitroy, M.W.J. Bron Dispersion coefficien earth-metal atoms. Phys. Rev. A 68, 06271	nley ts for H and He interactions 10 (2003)	with alkali-metal and alkali	ne-
	H + Li	Interaction Potentials	Undef.	Th
	H + Na H + K	Interaction Potentials	Undef.	Th
	H + K H + Dh	Interaction Potentials	Undef.	Th
	H + RD $H_0 + I$	Interaction Potentials	Undef. Undef	1 fi Th
	He + Ne	Interaction Potentials	Undef	111 Th
	He + K	Interaction Potentials	Undef.	Th
	He + Rb	Interaction Potentials	Undef.	Th
867.	H. Martinez, F. B. You <b>Collision-induced dis</b> Phys. Rev. A 69, 06270	sif ssociation and dissociative caj 01 (2004)	pture of $H_2^+$ in Ar and Kr.	
	$\mathbf{H}_{2}^{+} + \mathbf{Ar}$	Dissociation	1-5  keV	Exp
	$egin{array}{lll} {f H_2}^+ + {f Ar} \ {f H_2}^+ + {f Kr} \end{array}$	Dissociation Dissociation	$1-5 \mathrm{keV}$ $1-5 \mathrm{keV}$	Exp Exp
	$egin{array}{lll} \mathbf{H}_2^+ + \mathbf{Ar} \ \mathbf{H}_2^+ + \mathbf{Kr} \ \mathbf{H}_2^+ + \mathbf{Ar} \end{array}$	Dissociation Dissociation Charge Transfer	1-5 keV 1-5 keV 1-5 keV	Exp Exp Exp

868.	J. G. Wang, P. C. Stancil, A. R. Turner, D. L. Cooper Vibrationally resolved charge transfer of $O^{3+}$ with molecular hydrogen. Phys. Rev. A 69, 062702 (2004)			
	$\mathbf{O}^{3+}+\mathbf{H}_2\ \mathbf{O}^{3+}+\mathbf{H}_2$	Charge Transfer Interaction Potentials	$\begin{array}{c} 0.1-10^{4}~{\rm eV/u} \\ 0.1-10^{4}~{\rm eV/u} \end{array}$	${ m Th}$ Th
869.	AT. Le, C. D. Lin, E Comparison of hyp methods for ion-at Phys. Rev. A 69, 062	L. F. Errea, L. Mendez, A. Riera, B erspherical versus common-rea om collisions at low energies. 2703 (2004)	. Pons ction-coordinate close-couplin	g
	$\mathrm{He}^{2+} + \mathrm{H}$	Charge Transfer	20-1600  eV	$\mathrm{Th}$
870.	L. Toth, S. Ricz, E. T. Experimental stud satellite Auger dec Phys. Rev. A 69, 062	Takacs, B. Sulik, J. Vegh, I. Kadar y of coherence and correlation i ay. 2708 (2004)	n the anisotropy of Ne KL-LL	L
	$\mathrm{H^{+}}$ + Ne	Total Scattering	$700-2000 \; \rm keV$	Exp
	$He^+ + Ne$	Total Scattering	700-2000  keV	Exp
	$H^+ + Ne$	Excitation	700-2000  keV	Exp
	$He^+ + Ne$	Excitation	$700-2000 {\rm ~keV}$	Exp
	$H^+ + Ne$	Ionization	700-2000  keV	Exp
	$\mathrm{He^{+} + Ne}$	Ionization	$700\text{-}2000~\mathrm{keV}$	Exp
871.	Z. Zhang, W. Vanroo Low-energy electro shape resonances i Phys. Rev. A 69, 062	se, C. W. McCurdy, A. E. Orel, T. on scattering of NO: Ab initio a n the local complex potential r 2711 (2004)	N. Rescigno nalysis of the ${}^{2}\Sigma^{-}$ , ${}^{1}\Delta$ , and ${}^{1}\Sigma$ nodel.	+
	N + O	Interaction Potentials	0-2  eV	$\mathrm{Th}$
872.	L. Pichl, Y. Li, HP. Electron capture a Phys. Rev. A 69, 062	Liebermann, R. J. Buenker, M. Kin nd excitation in collisions of O 2715 (2004)	mura $^{+}(^{4}S,^{2}D,^{2}P)$ with $H_{2}$ molecules	5.
	$O^+ \perp H_{-}$	Charge Transfor	$50 - 2x 10^5 \text{ oV/m}$	$\mathbf{T}\mathbf{h}$
	$\mathbf{O}^+ \mathbf{I} \mathbf{I}_2$ $\mathbf{O}^+ \mathbf{I} \mathbf{I}_2$	Charge Transfer	$50 - 2x 10^{-6} eV/u$ $50 - 2x 10^{5} eV/u$	1 11 Th
	$\mathbf{O}^+ \mathbf{H}_2$ $\mathbf{O}^+ \mathbf{H}_2$	Interaction Potentials	$50 - 2x 10^{-5} \text{ eV/u}$	1 11 Th
	$\mathbf{O}^+ \mathbf{H}_2$ $\mathbf{O}^+ \mathbf{H}_2$	Interaction Detentials	$50 - 2x 10^{\circ} eV/u$ $50 - 2x 10^{\circ} eV/u$	111 Th
	$\mathbf{O}^+ + \mathbf{n}_2$ $\mathbf{O}^+ + \mathbf{H}_2$	Excitation	$50 - 2x 10^{5} \text{ eV}/\text{u}$ $50 - 2x 10^{5} \text{ eV}/\text{u}$	111 Th
	$O^+ + \Pi_2$ $O^{+*} + \Pi$	Excitation	50 - 2x 10  eV/u 50 $- 2x 10^5 \text{ eV}/\text{u}$	111 Th
	$\mathbf{O}^+ + \mathbf{n}_2$	Excitation	$30 - 2x10^{-1} eV/U$	111
873.	G. M. Siguad, M. M. Cavalcanti, E. C. Mo	Sant-Anna, H. Luna, A.C.F. Santo ntenegro	os, C. McGrath, M. B. Shah, E. C	j.

Multiple ionization of noble gases by swift  $H_2^+$  ions in breakup and nonbreakup collisions. Phys. Rev. A 69, 062718 (2004)

${ m H}_2{}^+ + { m He}$	Ionization	$1.0 { m MeV/u}$	Exp
$\mathbf{H}_{2}^{+} + \mathbf{Ne}$	Ionization	$1.0 \ \mathrm{MeV/u}$	Exp
$\mathbf{H}_{2}^{+} + \mathbf{Ar}$	Ionization	$1.0 { m MeV/u}$	Exp
${ m H_2^+}+{ m Kr}$	Ionization	$1.0 \ { m MeV/u}$	Exp
$\mathbf{H}_{2}{}^{+}+\mathbf{X}\mathbf{e}$	Ionization	$1.0 \ \mathrm{MeV/u}$	Exp

874.	T. Kirchner			
	Laser-field-induced mo	difications of electron-tra	ansfer processes in ion-atom col-	
	lisions.			
	Phys. Rev. A 69, 063412 (2004)			
	$\mathrm{He}^{2+} + \mathrm{H}$	Charge Transfer	$0.1-10 \; {\rm keV/u}$	$^{\mathrm{Th}}$

875. O. Busic, N. Gruen, W. Scheid

Calculations for electron transitions on a three-dimensional lattice in relativistic heavy-ion collisions.

Phys. Rev. A 70, 062707 (2004)

$U^{91+} + U^{79+}$	Charge Transfer	$466-930 { m MeV/u}$	Th
$U^{92+} + U^{79+}$	Charge Transfer	$466-930 \mathrm{MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{91+}$	Charge Transfer	$466-930 \mathrm{MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{92+}$	Charge Transfer	$466-930 { m MeV/u}$	$\mathrm{Th}$
$U^{91+} + U^{79+}$	Excitation	$466-930 \mathrm{MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{79+}$	Excitation	$466-930 \mathrm{MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{91+}$	Excitation	$466-930 { m MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{92+}$	Excitation	$466-930 { m MeV/u}$	$\mathrm{Th}$
$U^{91+} + U^{79+}$	Ionization	$466-930 { m MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{79+}$	Ionization	$466-930 { m MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{91+}$	Ionization	$466\text{-}930~\mathrm{MeV/u}$	$\mathrm{Th}$
$U^{92+} + U^{92+}$	Ionization	$466\text{-}930~\mathrm{MeV/u}$	$\mathrm{Th}$

876. M. F. Ciappina, W. R. Cravero, C. R. Garibotti Influence of the electron binding energy in the distortion of the initial state in ion-atom collisions.

Phys. Rev. A 70, 062713 (2004)

$\rm H^+$ + He	Total Scattering	50-1500  keV	Th
$He^{2+} + He$	Total Scattering	50-1500  keV	$\mathrm{Th}$
$\mathbf{F}^{9+} + \mathbf{He}$	Total Scattering	50-1500  keV	$\mathrm{Th}$
$\mathrm{H^{+}+He}$	Ionization	50-1500  keV	$\mathrm{Th}$
$He^{2+} + He$	Ionization	50-1500  keV	$\mathrm{Th}$
$\mathbf{F}^{9+} + \mathbf{He}$	Ionization	50-1500  keV	$\mathrm{Th}$

877. F. Gobet, S. Eden, B. Coupier, J. Tabet, B. Farizon, M. Farizon, M. J. Gaillard, M. Carre, S. Ouaskit, T. D. Maerk, P. Scheier Ionization of water by (20-150)-keV protons: Separation of direct-ionization and electron-capture processes.

Phys. Rev. A 70, 062716 (2004)

$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Dissociation	20-150  keV	Exp
$\mathrm{H^{+}+H_{2}O}$	Ionization	20-150  keV	$\operatorname{Exp}$

878. G. Lapicki, G.A.V. Ramana Murty, G. J. Naga Raju, B. Seetharami Reddy, S. Bhuloka Reddy, V. Vijayan
Effects of multiple ionization and intrashell coupling in L-subshell ionization by heavy ions.
Phys. Rev. A 70, 062718 (2004)

$C^{3+} + Re$	Ionization	$4-8 {\rm MeV}$	Exp
$C^{3+} + Pt$	Ionization	$4-8 {\rm ~MeV}$	Exp
$C^{3+} + Au$	Ionization	$4-8 {\rm ~MeV}$	Exp

879. M. Kobal, M. Ravcic, M. Budnar, J.-Cl. Dousse, Y.-P. Maillard, O. Mauron, P.-A. Raboud, K. Toekesi

Double-K-shell ionization of Mg and Si induced in collisions with C and Ne ions. Phys. Rev. A 70, 062720 (2004)

Charge Transfer	$34-50 { m MeV}$	Exp
Charge Transfer	$34-50 { m MeV}$	Exp
Charge Transfer	$34-50 { m MeV}$	Exp
Charge Transfer	$34-50 { m MeV}$	Exp
Ionization	$34-50 { m MeV}$	Exp
Ionization	$34-50 { m MeV}$	Exp
Ionization	$34-50 { m MeV}$	Exp
Ionization	$34-50 { m MeV}$	Exp
	Charge Transfer Charge Transfer Charge Transfer Charge Transfer Ionization Ionization Ionization Ionization	Charge Transfer34-50 MeVCharge Transfer34-50 MeVCharge Transfer34-50 MeVCharge Transfer34-50 MeVIonization34-50 MeVIonization34-50 MeVIonization34-50 MeVIonization34-50 MeVIonization34-50 MeVIonization34-50 MeVIonization34-50 MeV

#### 880. M. M. Li, D. J. O'Connor, H. Timmers

A study of the charge state approach to the stopping power of MeV B, N and O ions in carbon.

Nucl. Instrum. Methods Phys. Res. B 222, 11 (2004)

$\mathbf{B}^{3+} + \mathbf{C}$	Charge Transfer	$5-70 { m MeV}$	Th
$\mathbf{B}^{4+} + \mathbf{C}$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$\mathbf{B}^{5+} + \mathbf{C}$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$N^{5+} + C$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$N^{6+} + C$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$N^{7+} + C$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$O^{6+} + C$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$O^{7+} + C$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$
$O^{8+} + C$	Charge Transfer	$5-70 { m MeV}$	$\mathrm{Th}$

881. U. Haellsten, O. Solin

A method for calculating the energy distribution and yield of electrons ejected by protons in nitrogen gas targets.

Nucl. Instrum. Methods Phys. Res. B 222, 421 (2004)

$\mathbf{H}^+ + \mathbf{N}_2$ Ionization	$4.3 { m MeV}$	$\mathrm{Th}$
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882. X. Cai, D. Yu, R. Lu, Z. Cao, W. Yang, C. Shao, X. Chen, X. Ma Binding energy enhancement in the isocharge sequence of ions in collisions with Ne.

Nucl. Instrum. Methods Phys. Res. B 225, 185 (2004)

$\mathbf{C}^{4+}$ , N			Б
$C^{+} + Ne$	Charge Transfer	25 KeV	Exp
$\mathbf{C}^{5+}$ + Ne	Charge Transfer	25  keV	Exp
$\mathbf{C}^{6+} + \mathbf{Ne}$	Charge Transfer	25  keV	Exp
$N^{4+} + Ne$	Charge Transfer	25  keV	Exp
$N^{5+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$N^{6+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$O^{4+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$O^{5+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$O^{6+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$Ne^{4+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$Ne^{5+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$Ne^{6+} + Ne$	Charge Transfer	$25 { m ~keV}$	Exp
$C^{4+} + Ne$	Ionization	$25 { m ~keV}$	Exp
$C^{5+} + Ne$	Ionization	$25 { m ~keV}$	Exp
$\mathbf{C}^{6+} + \mathbf{Ne}$	Ionization	25  keV	Exp
$N^{4+} + Ne$	Ionization	25  keV	Exp

$\mathbf{N}^{5+} + \mathbf{Ne}$	Ionization	25  keV	Exp
$N^{6+} + Ne$	Ionization	25  keV	Exp
$\mathbf{O}^{4+} + \mathbf{Ne}$	Ionization	25  keV	Exp
$\mathbf{O}^{5+} + \mathbf{Ne}$	Ionization	25  keV	Exp
$O^{6+} + Ne$	Ionization	25  keV	$\operatorname{Exp}$
$Ne^{4+} + Ne$	Ionization	25  keV	$\operatorname{Exp}$
$Ne^{5+} + Ne$	Ionization	25  keV	Exp
$Ne^{6+} + Ne$	Ionization	$25 { m ~keV}$	Exp

883. R. Dey, A. C. Roy

**Projectile angular distribution in the single ionization of He by proton impact.** Nucl. Instrum. Methods Phys. Res. B 225, 207 (2004)

$H^+ + He$	Total Scattering	50-150  keV	$\mathrm{Th}$
$H^+ + He$	Ionization	50-150  keV	$\mathrm{Th}$

884.	I. S. Dmitriev, Ya. A. Teplova, Yu. A. Fainerg, Yu. A. Belkova
	Formation of metastable states of light ions in ion-atom collisions.
	Phys. Scr. 68, 383 (2003)

$Li^+ + H$	Charge Transfer	Undef.	E/T
$\mathrm{Li^{+} + He}$	Charge Transfer	Undef.	E/T
$Li^+ + Li$	Charge Transfer	Undef.	E/T
$Li^+ + B$	Charge Transfer	Undef.	E/T
$Li^+ + N$	Charge Transfer	Undef.	E/T
$Li^+ + Ne$	Charge Transfer	Undef.	E/T
$Li^+ + Ar$	Charge Transfer	Undef.	E/T
$Be^{2+} + H$	Charge Transfer	Undef.	E/T
$Be^{2+} + He$	Charge Transfer	Undef.	E/T
$\mathrm{Be}^{2+} + \mathrm{Li}$	Charge Transfer	Undef.	E/T
$Be^{2+} + B$	Charge Transfer	Undef.	E/T
$Be^{2+} + N$	Charge Transfer	Undef.	E/T
$Be^{2+} + Ne$	Charge Transfer	Undef.	E/T
$Be^{2+} + Ar$	Charge Transfer	Undef.	E/T
$B^{3+} + H$	Charge Transfer	Undef.	E/T
$B^{3+} + He$	Charge Transfer	Undef.	E/T
$B^{3+} + Li$	Charge Transfer	Undef.	E/T
$B^{3+} + B$	Charge Transfer	Undef.	E/T
$B^{3+} + N$	Charge Transfer	Undef.	E/T
$B^{3+} + Ne$	Charge Transfer	Undef.	E/T
$\mathbf{B}^{3+} + \mathbf{Ar}$	Charge Transfer	Undef.	E/T
$\mathbf{N}^{5+} + \mathbf{H}$	Charge Transfer	Undef.	E/T
$\mathbf{N}^{5+} + \mathbf{He}$	Charge Transfer	Undef.	E/T
$\mathbf{N}^{5+} + \mathbf{L}\mathbf{i}$	Charge Transfer	Undef.	E/T
$N^{5+} + B$	Charge Transfer	Undef.	E/T
$\mathbf{N}^{5+} + \mathbf{N}$	Charge Transfer	Undef.	E/T
$N^{5+} + Ne$	Charge Transfer	Undef.	E/T
$N^{5+} + Ar$	Charge Transfer	Undef.	E/T

885. J. A. Tanis, A. L. Landers, D. J. Pole, A. S. Alnaser, S. Hossain, T. Kirchner Evidence for Pauli exchange leading to excited-state enhancement in electron transfer.

Phys. Rev. Lett. 92, 133201 (2004)

$\mathbf{F}^{7+} + \mathbf{He}$	Charge Transfer	$1.1 \ {\rm MeV/u}$	Exp
$\mathbf{F}^{7+} + \mathbf{Ne}$	Charge Transfer	$1.1 \ \mathrm{MeV/u}$	Exp
$\mathbf{F}^{8+} + \mathbf{He}$	Charge Transfer	$1.1 \ \mathrm{MeV/u}$	Exp

$\mathbf{F}^{8+} + \mathbf{Ne}$	Charge Transfer	1.1  MeV/u	$\operatorname{Exp}$
$\mathbf{F}^{7+} + \mathbf{He}$	Excitation	1.1  MeV/u	Exp
$\mathbf{F}^{7+} + \mathbf{Ne}$	Excitation	1.1  MeV/u	Exp
$\mathbf{F}^{8+} + \mathbf{He}$	Excitation	1.1  MeV/u	Exp
$\mathbf{F}^{8+} + \mathbf{Ne}$	Excitation	1.1  MeV/u	Exp

886. D. Misra, U. Kadhane, Y. P. Singh, L. C. Tribedi, P. D. Fainstein, P. Richard Interference effect in electron emission in heavy ion collisions with  $H_2$  detected by comparison with the measured electron spectrum from atomic hydrogen. Phys. Rev. Lett. 92, 153201 (2004)

$\mathbf{C}^{6+} + \mathbf{H}_2$	Total Scattering	0-14 a.u.	$\mathrm{Th}$
$\mathbf{F}^{9+} + \mathbf{H}_2$	Total Scattering	0-14 a.u.	$\mathrm{Th}$
$\mathbf{C}^{6+} + \mathbf{H}_2$	Ionization	0-14 a.u.	$\mathrm{Th}$
$\mathbf{F}^{9+} + \mathbf{H}_2$	Ionization	0-14 a.u.	$\mathrm{Th}$

887. C. Dimopoulou, R. Moshammer, D. Fischer, C. Hoehr, A. Dorn, P. D. Fainstein, J. R. Crespo, L. Urrutia, C. D. Schroeter, H. Kollmus, R. Mann, S. Hagmann, J. Ullrich
Breakup of H₂ in singly ionizing collisions with fast protons: Channel-selective low-energy electron spectra.
Phys. Rev. Lett. 93, 123203 (2004)

888. C. M. Laperle, J. E. Mann, T. G. Clements, R. E. Continetti Three-body dissociation dynamics of the low-lying Rydberg states of H₃ and D₃. Phys. Rev. Lett. 93, 153202 (2004)

$H_3^+ + Cs$	Dissociation	12  keV	Exp
$\mathbf{D}_3^+ + \mathbf{Cs}$	Dissociation	12  keV	Exp
${ m H_3^+}+{ m Cs}$	Charge Transfer	12  keV	Exp
$\mathbf{D}_3^+ + \mathbf{Cs}$	Charge Transfer	12  keV	Exp

889. J. H. Macek, P. S. Krstic, S. Yu. Ovchinnikov Regge oscillations in integral cross sections for proton impact on atomic hydrogen. Phys. Rev. Lett. 93, 183203 (2004)

$\mathbf{H}^+ + \mathbf{H}$ Elastic Scattering 0.01-1 eV	Th
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890. T. Burnus, M.A.L. Marques, E.K.U. Gross Time-dependent electron localization function. Phys. Rev. A 71, 010501 (2005)

$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Dissociation	$2 { m keV}$	Th

891. A. Zaitsevskii, E. A. Pazyuk, A. V. Stolyarov, O. Docenko, I. Klincare, O. Nikolayeva, M. Auzinsh, M. Tamanis, R. Ferber
Permanent electric dipoles and Λ – doubling constants in the lowest ¹Π states of RbCs.
Phys. Rev. A 71, 012510 (2005)

$\mathbf{Rb} + \mathbf{Cs}$ Interaction Potentials	Undef.	Th
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892. P. S. Vinitsky, Yu. V. Popov, O. Chuluunbaatar Fast proton-hydrogen charge exchange reaction at small scattering angles. Phys. Rev. A 71, 012706 (2005)

$H^+ + H$	Charge Transfer	$2.8-5 { m MeV}$	$\mathrm{Th}$
$H^+ + H$	Total Scattering	$2.8-5 { m MeV}$	$\mathrm{Th}$

893. D. Hennecart, J. Pascale

Classical approach to  $H_2^+ - H(1s)$  collisions. Phys. Rev. A 71, 012710 (2005)

$\mathbf{H}_{2}^{+} + \mathbf{H}$	Dissociation	$2.5-1000 { m keV}$	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Charge Transfer	$2.5-1000 \mathrm{keV}$	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Excitation	$2.5-1000 \mathrm{keV}$	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Ionization	2.5-1000  keV	$\mathrm{Th}$

894. A. Marks, A. P. Hickman, A. D. Streater, J. Huennekens
Thermalization of fast cesium 5D_{3/2} atoms in collisions with ground-state cesium atoms.
Phys. Rev. A 71, 012711 (2005)

Cs + Cs	Energy Transfer	Undef.	E/T
$Cs^* + Cs$	Energy Transfer	Undef.	E/T

895. C. Chin, P. S. Julienne Radio-frequency transitions on weakly bound ultracold molecules. Phys. Rev. A 71, 012713 (2005)

Li + Li	Elastic Scattering	$10^{-12} \text{ K}$	$\mathrm{Th}$
•	0		

896. S. Bhattacharya, N. C. Deb, K. Roy, S. Sahoo, D.S.F. Crothers Shifting of the electron-capture-to-the-continuum peak in proton-helium collisions at 10 and 20 keV. Phys. Rev. A 71, 012714 (2005)

$\mathrm{H^{+}} + \mathrm{He}$	Ionization	10-20  keV	$\mathrm{Th}$
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897. M. A. Gearba, R. A. Komara, S. R. Lundeen, C. W. Fehrenbach, B. D. DePaola Stark-induced x-ray emission from H-like and He-like Rydberg ions. Phys. Rev. A 71, 013424 (2005)

Charge Transfer	$10-17 \mathrm{~keV}$	Exp
Charge Transfer	10-17  keV	Exp
Charge Transfer	10-17  keV	$\operatorname{Exp}$
Charge Transfer	10-17  keV	$\operatorname{Exp}$
Fluorescence	10-17  keV	$\operatorname{Exp}$
Fluorescence	10-17  keV	$\operatorname{Exp}$
Fluorescence	$10-17 \mathrm{~keV}$	Exp
Fluorescence	10-17  keV	Exp
	Charge Transfer Charge Transfer Charge Transfer Charge Transfer Fluorescence Fluorescence Fluorescence Fluorescence	Charge Transfer10-17 keVCharge Transfer10-17 keVCharge Transfer10-17 keVCharge Transfer10-17 keVFluorescence10-17 keVFluorescence10-17 keVFluorescence10-17 keVFluorescence10-17 keVFluorescence10-17 keVFluorescence10-17 keVFluorescence10-17 keV

898. L. B. Zhao, P. C. Stancil, H.-P. Liebermann, P. Funke, R. J. Buenker Charge transfer between O⁺ ions and helium. Phys. Rev. A 71, 060701 (2005)

$O^+ + He$	Charge Transfer	0.5-10  keV	Th
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899. M. Nakamura, A. Ichimura Analysis of gross vibrational-rotational energy-loss spectra in  $Li^+ - N_2$  collisions with the hard-potential model. Phys. Rev. A 71, 062701 (2005)

	$Li^+ + N_2$	Energy Transfer	8-100  eV	$\mathrm{Th}$
	$\mathbf{L}\mathbf{i}^+ + \mathbf{N}_2$	Interaction Potentials	8-100  eV	Th
	${f Li^+}+{f N}_2$	Total Scattering	8-100 eV	$\mathrm{Th}$
000	W T Zomko P Coto W	C. Stwallow		
900.	W. I. Zemke, R. Cole, W.			
	Analysis of the $\alpha$ $^{\circ}\Sigma^{+}$ st			
	Phys. Rev. A 71, 062706 (2	2005)		
	K + Rb	Interaction Potentials	10-30 a.u.	Th
901.	C. Y. Lin, P. C. Stancil, J.	P. Gu. R. J. Buenker, M. Kimura		
	Electron capture in colli	sions of $N^+$ with H and $H^+$ v	vith N.	
	Phys. Rev. A 71, 062708 (2	2005)		
	$H^+ \perp N$	Charge Transfer	$10^{-4} - 10^3  \mathrm{eV/u}$	$\mathbf{T}\mathbf{h}$
	$N^+ + H$	Charge Transfer	$10^{-4} - 10^3 \text{ eV/u}$	Th
			10 10 0074	111
902.	V. Horvat, R. L. Watson, J	. M. Blackadar, A. N. Perumal, Y	. Peng	
	L x rays emitted from n	nultiply ionized holmium ator	ns.	
	Phys. Rev. A 71, 062709 (2	2005)		
	$C^{2+} + Ho$	Fluorescence	0.01-6 MeV/u	Exp
	$Ne^{3+} + Ho$	Fluorescence	0.01-6  MeV/u	Exp
	$Ar^{6+} + Ho$	Fluorescence	0.01-6  MeV/u	Exp
	$\mathbf{Kr}^{12+} + \mathbf{Ho}$	Fluorescence	0.01-6  MeV/u	Exp
	$Xe^{18+} + Ho$	Fluorescence	0.01-6  MeV/u	Exp
	$C^{2+} + H_0$	Ionization	0.01-6  MeV/u	Exp
	$Ne^{3+} + Ho$	Ionization	0.01-6  MeV/u	Exp
	$Ar^{6+} + Ho$	Ionization	0.01-6  MeV/u	Exp
	$Kr^{12+} + Ho$	Ionization	0.01-6  MeV/u	Exp
	$Xe^{18+} + Ho$	Ionization	0.01-6  MeV/u	Exp
903.	L. Sarkadi, R. O. Barrachin Divergency problem of trajectory Monte Carlo Phys. Rev. A 71, 062712 (2	a the electron capture to the simulation and experimental 2005)	continuum cusp: Classical data.	
	$H^+ + H_P$	Charge Transfer	20 keV	$\mathbf{T}\mathbf{h}$
	$H^+ + He$	Ionization	20  keV	Th
904.	L. B. Zhao, P. C. Stancil, J Electron capture in colli Phys. Rev. A 71, 062713 (2	P. Gu, HP. Liebermann, P. Fursions of S with $H^+$ .	ıke, R. J. Buenker, M. Kimura	
	<b>v</b> , (	,		
	$H^+ + S$	Charge Transfer	$10^{-4} - 10^4 \text{ eV/u}$	Th
	$\mathrm{H^{+}}+\mathrm{S}$	Interaction Potentials	$10^{-4} - 10^4 \text{ eV/u}$	Th
905.	H. Nguyen, R. Bredy, T. G. Entropy lowering in ion- Phys. Rev. A 71, 062714 (2	Lee, H. A. Camp, T. Awata, B. F. <b>atom collisions.</b> 2005)	D. DePaola	
	$Bh^+ + Bh$	Charge Transfer	7 keV	Evn
	$Rb^+ + Rb$	Interaction Potentials	7 keV	Exp
				Бур
906.	P. N. Abufager, P. D. Fains Single electron capture mediate and high collisie J. Phys. B 38, 11 (2005)	tein, A. E. Martinez, R. D. Rivard differential cross section in <i>H</i> on energies.	bla ⁺ + He collisions at inter-	

$H^+ + He$	Charge Transfer	$200-7400 {\rm ~keV}$	$\mathrm{Th}$
$\mathbf{H}^+ + \mathbf{He}$	Total Scattering	$200-7400 {\rm ~keV}$	$\mathrm{Th}$

907.	A. Grimpe, C. Figl, J. Grosser, O. Hoffmann, F. Rebentrost
	Oscillatory differential cross sections for $Li + He$ , $Ne$ , $H_2$ and $D_2$ optical collisions.
	J. Phys. B 38, 135 (2005)

Li + He	Total Scattering	1750-3050  m/s	E/T
Li + Ne	Total Scattering	1750-3050  m/s	E/T
$Li + H_2$	Total Scattering	1750-3050  m/s	E/T
$Li + D_2$	Total Scattering	1750-3050  m/s	E/T
Li + He	Excitation	1750-3050  m/s	E/T
Li + Ne	Excitation	1750-3050  m/s	E/T
$Li + H_2$	Excitation	1750-3050  m/s	E/T
$Li + D_2$	Excitation	1750-3050  m/s	E/T

908. J.B.A. Mitchell, O. Novotny, G. Angelova, J. L. LeGarrec, C. Rebrion-Rowe, A. Svendsen, L. H. Andersen, A. I. Florescu-Mitchell, A. E. Orel
Discretistication recombination of many network indications. L. N. 114

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Dissociative recombination of rare gas hydride ions: I. NeH^+. J. Phys. B 38, 693 (2005)
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H + Ne	Interaction Potentials	0.01-30  eV	E/T
$H^+ + Ne$	Interaction Potentials	0.01-30  eV	E/T

# 909. A. B. Voitkiv, B. Najjari, J. Ullrich Four-body quantum dynamics of helium double ionization by relativistic highly charged ion impact. J. Phys. B 38, L107 (2005)

$\mathbf{U}^{92+} + \mathbf{He}$	Total Scattering	1 GeV/u	$\mathrm{Th}$
$\mathbf{U}^{92+} + \mathbf{He}$	Ionization	1 GeV/u	$\mathrm{Th}$

910. A. Rentenier, P. Moretto-Capelle, D. Bordenave-Montesquieu, A. Bordenave-Montesquieu Analysis of fragment size distributions in collisions of monocharged ions with the  $C_{60}$  molecule.

J. Phys. B 38, 789 (2005)

${ m H}^+ + { m C}_{60}$	Dissociation	2-130  keV	Exp
${ m H}_2{}^+ + { m C}_{60}$	Dissociation	2-130  keV	Exp
${ m H_3}^+ + { m C}_{60}$	Dissociation	2-130  keV	$\operatorname{Exp}$
$\mathbf{H}^+ + \mathbf{C}_{60}$	Ionization	2-130  keV	$\operatorname{Exp}$
$\mathbf{H}_{2}{}^{+}+\mathbf{C}_{60}$	Ionization	2-130  keV	$\operatorname{Exp}$
${ m H_3}^+ + { m C}_{60}$	Ionization	2-130  keV	$\operatorname{Exp}$

911. I. F. Barna, K. Tokesi, J. Burgdorfer

Single and double ionization of helium in heavy-ion impact. J. Phys. B 38, 1001 (2005)

$He^{2+} + He$	Ionization	$0.19$ - $2.31 { m MeV/u}$	$\mathrm{Th}$
$Li^{2+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$
$\mathbf{B}^{5+} + \mathbf{He}$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$
$C^{6+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$
$O^{4+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$
$O^{5+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	Th
$O^{6+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$
$O^{7+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$
$O^{8+} + He$	Ionization	$0.19$ - $2.31 \mathrm{MeV/u}$	$\mathrm{Th}$

912. D. Bordenave-Montesquieu, A. Bordenave-Montesquieu, A. Rentenier, P. Moretto-Capelle Asymmetric fission and evaporation of  $C_{60}^{r+}$  (r=2-4) fullerene ions in  $ion - C_{60}$ collisions: III. Universal behaviour of fission.

J. Phys. B 38, 1037 (2005)

$\mathbf{H}^+ + \mathbf{C}_{60}$	Dissociation	1-130  keV	Exp
$\mathrm{He^{+}}+\mathrm{C}_{60}$	Dissociation	1-130  keV	Exp
${ m H}_2{}^+ + { m C}_{60}$	Dissociation	1-130  keV	Exp
$H_3^+ + C_{60}$	Dissociation	1-130  keV	Exp
$H^+ + C_{60}$	Ionization	1-130  keV	Exp
$\mathrm{He^{+}}$ + $\mathrm{C}_{60}$	Ionization	1-130  keV	Exp
${ m H}_2{}^+ + { m C}_{60}$	Ionization	1-130  keV	Exp
$H_3^+ + C_{60}$	Ionization	1-130  keV	Exp

#### 913. E. A. Solov'ev

The advanced adiabatic approach and inelastic transitions via hidden crossings. J. Phys. B 38, R153 (2005)

$He^{2+} + H$	Heavy Particle Collisions	1-15  keV/u	E/T
$He^{2+} + H$	Charge Transfer	1-15  keV/u	E/T

914. M. Cherid, M. B. Afra, M. D. Khodja

Interaction of excited	He and	Ne rare	gas metastable	e atoms v	with the	$CHF_2Cl$
molecule.						
/						

J. Phys. B 38, 1833 (2005)

$He + CHF_2Cl$	Dissociation	500 K	Exp
$He^* + CHF_2Cl$	Dissociation	500 K	Exp
$Ne + CHF_2Cl$	Dissociation	500 K	Exp
$Ne^* + CHF_2Cl$	Dissociation	500 K	Exp
$He + CHF_2Cl$	Ionization	500 K	Exp
$He^* + CHF_2Cl$	Ionization	500 K	Exp
$Ne + CHF_2Cl$	Ionization	500 K	Exp
$Ne^* + CHF_2Cl$	Ionization	500 K	Exp

## 915. M. Walter

Fragmentation of s Rydberg states in  $H_3$  molecules.

J. Phys. B 38, 1845 (2005)

H + H + H	Interaction Potentials	Undef.	$\mathrm{Th}$
$H + H_2$	Interaction Potentials	Undef.	$\mathrm{Th}$

916. B. G. Lindsay, W. S. Yu, R. F. Stebbings

Electron transfer in collisions of keV hydrogen atoms and ions with methane. J. Phys. B 38, 1977 (2005)

$H + CH_4$	Charge Transfer	0.5-5  keV	Exp
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Charge Transfer	0.5-5  keV	Exp
$\mathbf{H} + \mathbf{CH}_4$	Total Scattering	0.5-5  keV	$\operatorname{Exp}$
$\mathbf{H}^+ + \mathbf{C}\mathbf{H}_4$	Total Scattering	0.5-5  keV	Exp

917. S. Knoop, R. E. Olson, H. Ott, V. G. Hasan, R. Morgenstern, R. Hoekstra Single ionization and electron capture in  $He^{2+}$  + Na collisions. J. Phys. B 38, 1987 (2005)

$He^{2+} + Na$	Charge Transfer	2-13  keV/u	E/T
$He^{2+} + Na$	Ionization	2-13  keV/u	E/T

918. C. Reese, T. Stoecklin, A. Voronin, J. C. Rayez Rotational excitation and de-excitation of HF molecules by He atoms. Astron. Astrophys. 430, 1139 (2005)				
	He + HF	Excitation	$10^{-6} - 10^3 \text{ K}$	$\mathrm{Th}$
919.	C. Zhu, J. F. Babb, A Theoretical study atoms. Phys. Rev. A 71, 052	A. Dalgarno of pressure broadening of lit 2710 (2005)	hium resonance lines by heliu	m
	Li + He	Line Broadening	200-3000 K	E/T
920.	A. L. Godunov, C. T R. Doerner, O. Jagut <b>Transfer ionization</b> <b>detected in the pla</b> Phys. Rev. A 71, 052	^c . Whelan, H.R.J. Walters, V. S. zki, L.Ph.H. Schmidt, J. Titze, H <b>process</b> $\mathbf{p}+\mathbf{H}$ -; $H^0 + He^{2+}$ <b>me perpendicular to the incid</b> 2712 (2005)	Schipakov, M. Schoeffler, V. Merge. Schmidt-Boecking $+ e^-$ with the ejected electro lent beam direction.	əl, on
	$egin{array}{ll} \mathrm{H}^+ +\mathrm{He} \ \mathrm{H}^+ +\mathrm{He} \end{array}$	Charge Transfer Ionization	630 keV 630 keV	E/T E/T
921.	L. G. Marcassa, A. L Colliding atomic p Phys. Rev. A 71, 054	. de Oliveira, M. Weidmueller, V. air distribution in an ultralor 1701 (2005)	S. Bagnato ag-range Rydberg potential.	
	Rb + Rb	Interaction Potentials	200 $\mu$ k	E/T
922.	C. Dimopoulou, R. M. Lopez-Urrutia, C. D. Dissociative ionization frame electron emit J. Phys. B 38, 593 (2)	oshammer, D. Fischer, P. D. Fains Schroeter, H. Kollmus, R. Mann, tion of $H_2$ by fast protons: The ission. 005)	tein, C. Hoehr, A. Dorn, J. R. Cresp S. Hagmann, J. Ullrich ree-body break-up and molecula	90 <b>ar-</b>
	$egin{array}{lll} \mathbf{H}^+ + \mathbf{H}_2 \ \mathbf{H}^+ + \mathbf{H}_2 \end{array}$	Dissociation Ionization	6 MeV 6 MeV	E/T E/T
923.	J. Bradley, S.F.C. O' Multi-state CDW J. Phys. B 38, 1695 (	Rourke, D.S.F. Crothers approximation to electron cap 2005)	pture during slow p-H collision	s.
	$\mathbf{H}^+ + \mathbf{H}$	Charge Transfer	5-100  keV	E/T
924.	A. B. Voitkiv Resonance effects atoms. J. Phys. B 38, 1773 (	in projectile-electron loss in r 2005)	elativistic collisions with excite	ed
	$Be^{3+} + H$	Ionization	$1\text{-}100~\mathrm{GeV/u}$	$\mathrm{Th}$
925.	K. Miculis, I. I. Beter Collisional and the nP and nD states J. Phys. B 38, 1811 (	rov, N. N. Bezuglov, I. I. Ryabtser rmal ionization of sodium Ry with $n = 5-25$ . 2005)	v, D. B. Tretyakov, A. N. Kluchare adberg atoms: II. Theory for n	v S,
	${f Na+Na} {f Na^*+Na}$	Ionization Ionization	360-1100  m/sec 360-1100  m/sec	E/T E/T

a	Ionization	360-1100  m/sec	E/T
Na	Ionization	360-1100  m/sec	E/T

926.	G. Barinovs, M. C. van I Fine-structure excitat Astrophys. J., Part 1 620	Hemert, R. Krems, A. Dalgarno Sion of $C^+$ and $Si^+$ by atom 0, 537 (2005)	ic hydrogen.	
	$\mathbf{C^+} + \mathbf{H} \\ \mathbf{Si^+} + \mathbf{H}$	Excitation Excitation	15-2000 eV 15-2000 eV	Th Th
927.	A. E. Glassgold, P. S. Ku $H^+$ + H scattering ar Astrophys. J., Part 1 62	estic, D. R. Schultz ad ambipolar diffusion heat 1, 808 (2005)	ing.	
	$H^+ + H$	Elastic Scattering	$10^{-4} - 10^2 \text{ eV}$	$\mathrm{Th}$
928.	B. Zygelman Hyperfine level-chang dark age universe. Astrophys. J., Part 1 622	ging collisions of hydrogen 2, 1356 (2005)	atoms and tomography of the	
	H + H	Excitation	1-300 K	$\mathrm{Th}$
929.	C. M. Andreazza, E. P. I Formation of SO, SO ⁺ Astrophys. J., Part 1 624	Marinho ⁺, <b>and</b> S ₂ <b>by radiative assoc</b> 4, 1121 (2005)	iation.	
	S + O	Association	300-14,000 T(k)	Th
	$\mathbf{S} + \mathbf{S}$	Association	300-14,000 T(k)	Th
	$\tilde{\mathbf{S}}^+ + \mathbf{O}$	Association	300-14,000 T(k)	Th
930.	H. Luna, C. McGrath, M Dissociative charge ex ergetic ion interaction Astrophys. J., Part 1 623	I. B. Shah, R. E. Johnson, M. L <b>cchange and ionization of</b> <i>C</i> <b>is in Europa's oxygen atmo</b> 8, 1086 (2005)	iu, C. J. Latimer, E. C. Montenegro $D_2$ by fast $H^+$ and $O^+$ ions: En- sphere and neutral torus.	
	$\mathbf{H}^+ + \mathbf{O}_2$	Charge Transfer	10-100 keV	Exp
	$0^{+} + 0_{2}^{-}$	Charge Transfer	10-100  keV	Exp
	$H^+ + O_2$	Ionization	$10-100 {\rm ~keV}$	Exp
	$\mathbf{O}^+ + \mathbf{O}_2$	Ionization	10-100  keV	Exp
931.	R. A. Sultanov, N. Balak Oxygen chemistry in to of $H_2$ in the $O({}^3P) + H$ Astrophys. J., Part 1 629	Trishnan The interstellar medium: Th $H_2$ reaction. $\theta_1$ 305 (2005)	e effect of vibrational excitation	
	$\mathrm{O}+\mathrm{H}_2$	Interchange reaction	100-4000 K	Th
932.	TG. Lee, C. Rochow, R A. Dalgarno, G. J. Ferlar Close-coupling calcula collisions with $H_2$ : A J. Chem. Phys. 122, 024	Martin, T. K. Clark, R. C. Fo nd ations of low-energy inelast comparative study of two p 307 (2005)	rrey, N. Balakrishnan, P. C. Stancil, fic and elastic processes in ${}^{4}He$ potential energy surfaces.	
	$He + H_2$	Interchange reaction	$10^{-8} - 10^4 \ cm^{-1}$	Th
933.	A. N. Panda, N. Sathyan <b>Time-dependent quar</b> $-i$ $HeH^+$ + H reaction J. Chem. Phys. 122, 054	nurthy ntum mechanical wave pack n. 304 (2005)	et study of the He + $H_2^+$ (v,j)	

	${ m H_2^+}+{ m He}$	Interchange reaction	1.0  eV	$\mathrm{Th}$
934.	M. Bartolomei, M. I. Hernar Wave packet dynamics of energy surface on different J. Chem. Phys. 122, 063405	andez, J. Campos-Martinez of $H_2(v_1=8-14) + H_2(v_2=0-2)$ ent reactive and dissociative p (2005)	: The role of the potential processes.	
	$\mathbf{H}_2 + \mathbf{H}_2$	Interchange reaction	$5.0 \mathrm{eV}$	$\mathrm{Th}$
935.	S. Y. Lin, H. Guo Quantum statistical and $H_2$ , HD, and $D_2$ . J. Chem. Phys. 122, 074304	wave packet studies of insert	ion reactions of $S(^1D)$ with	
	$\mathbf{S} + \mathbf{H}_2$	Interchange reaction	0-0.5  eV	Th
	S + HD	Interchange reaction	0-0.5 eV	Th
	$\mathbf{S} + \mathbf{D}_2$	Interchange reaction	0-0.5 eV	Th
936.	Y. Zheng Quantum transition stat J. Chem. Phys. 122, 094316	e theory for the full three-dir (2005)	nensional $\mathbf{H} + H_2$ reaction.	
	$\mathbf{H} + \mathbf{H}_2$	Interchange reaction	300-1500 K	$\mathrm{Th}$
937.	L. Adam, W. Hack, H. Zhu, <b>Experimental and theore</b> $N(^4S) + H_2 (X^1\Sigma_g^+)$ . J. Chem. Phys. 122, 114301	ZW. Qu, T. Schinke etical investigation of the read (2005)	tion $NH(X^3\Sigma^-) + H(^2S)$ -:	
	H + NH	Interchange reaction	300-3000 K	$\mathrm{E}/\mathrm{T}$
938.	L. Yu. Rusin, M. B. Sevryu. Comparison of experime $\mathbf{F} + H_2$ reaction with ex J. Chem. Phys. 122, 134314	k, J. P. Toennies ntal time-of-flight spectra of act quantum mechanical calc (2005)	the HF products from the ulations.	
	$\mathbf{F} + \mathbf{H}_2$	Interchange reaction	69-81 MeV	E/T
	$\mathbf{F} + \mathbf{D}_2$	Interchange reaction	69-81 MeV	E/T
939.	P. F. Weck, N. Balakrishnar Quantum dynamics of th J. Chem. Phys. 122, 154309	e Li + HF -; H + LiF reaction $(2005)$	n at ultralow temperatures.	
	Li + HF	Interchange reaction	$10^{-7} - 10^{-1} \text{ eV}$	$\mathrm{Th}$
940.	X. N. Tang, H. Xu, T. Zhan Levandier A pulsed-field ionization $H_2^+(X, \nu^+ = 0\text{-}15, N^+ =$ J. Chem. Phys. 122, 164301	ng, Y. Hou, C. Chang, C. Y. Ng, <b>photoelectron secondary ion</b> <b>1) + He proton transfer rea</b> (2005)	Y. Chiu, R. A. Dressler, D. J. n coincidence study of the action.	
	${ m H_2}^+ + { m He}$	Interchange reaction	$0.6\text{-}3.1\;\mathrm{eV}$	$\mathrm{E}/\mathrm{T}$
941.	E. I. Dashevskaya, I. Litvin, Rates of complex format	E. E. Nikitin, J. Troe ion in collisions of rotational	ly excited homonuclear di-	

atoms with ions at very low temperatures: Application to hydrogen isotopes and hydrogen-containing ions. J. Chem. Phys. 122, 184311 (2005)

$\mathbf{H}_2 + \mathbf{H}_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	Th
$\mathbf{H}_2 + \mathbf{H}_3{}^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{H}\mathbf{D}^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{H}_2 \mathbf{D}^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{H} \mathbf{D}_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{D}_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{D}_3^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{C}\mathbf{H}_3^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2 + \mathbf{C}_2 \mathbf{H}_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	Th
$\mathbf{H}_{2}^{+} + \mathbf{H}_{2}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	Th
$H_2^+ + HD$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\overline{\mathbf{H}_2^+} + \mathbf{D}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$H_3^+ + H_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$H_3^+ + HD$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$H_{3}^{+} + D_{2}$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + H_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + H_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + HD^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + H_2D^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + HD_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + D_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	Th
$HD + D_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + CH_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD + C_2H_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$HD^+ + H_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th
$\mathrm{HD^{+} + HD}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathrm{HD^{+}}+\mathrm{D}_{2}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}_2\mathbf{D}^+ + \mathbf{H}_2$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathrm{H}_{2}\mathrm{D}^{+}+\mathrm{H}\mathrm{D}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathrm{H}_2\mathrm{D}^+ + \mathrm{D}_2$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	Th
$\mathrm{HD}_{2}^{+} + \mathrm{H}_{2}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	Th
$\mathrm{HD}_{2}^{+} + \mathrm{HD}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{H}\mathbf{D}_{2}^{+}$ + $\mathbf{D}_{2}$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{H}_2^+$	Interchange reaction	$1.0\text{-}15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{H}_3^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{H}\mathbf{D}^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{H}_2 \mathbf{D}^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{H} \mathbf{D}_2^+$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{D}_2^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	$\mathrm{Th}$
$D_2 + D_3^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ {\rm K}$	Th
$\mathbf{D}_2 + \mathbf{C}\mathbf{H}_3^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ {\rm K}$	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{C}_2 \mathbf{H}_2^+$	Interchange reaction	$1.0-15.0\ 10^{-3}\ {\rm K}$	Th
$D_2^+ + H_2$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th
$D_2^+ + HD$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th
$D_2^+ + D_2$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th
$D_3^+ + H_2$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th
$D_3^+ + HD$	Interchange reaction	$1.0-15.0\ 10^{-3}\ \mathrm{K}$	Th
$\mathbf{D}_3$ + $\mathbf{D}_2$	Interchange reaction	$1.0-15.0 \ 10^{-3} \ \mathrm{K}$	Th
$\mathbf{U}\mathbf{H}_3 + \mathbf{H}_2$	Interchange reaction	1.0-15.0 10 ⁻³ K	Th
$\mathbf{U}\mathbf{H}_{3}$ + HD	Interchange reaction	$1.0-15.0\ 10^{-3}\ K$	Th
$\mathbf{O}\mathbf{n}_3 + \mathbf{D}_2$	Interchange reaction	1.0-15.0 10 ° K	Th
$\mathbf{U}_2\mathbf{\Pi}_2$ + $\mathbf{\Pi}_2$ $\mathbf{C}_1\mathbf{\Pi}_2$ + $\mathbf{U}_2$	Interchange reaction	1.0-15.0 10 $\sim$ K 1.0.15.0 10 $-3$ V	Th Th
$C_2 H_2^+ + HD$	Interchange reaction	$1.0-10.0 10^{-5} \text{ K}$ 1.0.15.0.10 ⁻³ V	1 n TL
$\mathbf{U}_2\mathbf{H}_2^+ + \mathbf{D}_2^-$	interchange reaction	1.0-10.0 10 ⁻⁵ K	1 1

942. J. C. Juanes-Marcos, S. C. Althorpe Geometric phase effects in the H +  $H_2$  reaction: Quantum wave-packet calcula-

	tions of integral and diffe J. Chem. Phys. 122, 204324	erential cross sections. (2005)		
	$H + H_2$	Interchange reaction	$0.0-3.0 \mathrm{~eV}$	Th
943.	TS. Chu, X. Zhang, KL. J <b>A quantum wave-packet</b> ${}^{1}D_{2}$ ) + $H_{2}$ reaction. J. Chem. Phys. 122, 214301	Han study of intersystem crossin (2005)	ng effects in the $O({}^{3}P_{2,1,0},$	
	$\mathrm{O}+\mathrm{H}_2$	Interchange reaction	0.0-2.0  eV	$\mathrm{Th}$
944.	<ul><li>P. Defazio, C. Petrongolo, P</li><li>Product distributions, ra</li><li>J. Chem. Phys. 122, 214303</li></ul>	. Gamallo, M. Gonzalez <b>te constants, and mechanism</b> (2005)	as of $LiH + H$ reactions.	
	LiH + H	Interchange reaction	0.0-3.0  eV	$\mathrm{Th}$
945.	F. Mrugala, W. P. Kraemer <b>Radiative association of</b> J. Chem. Phys. 122, 224321	$He^+$ with $H_2$ at temperatures (2005)	s below 100 K.	
	$egin{array}{lll} {f He^+} + {f H_2} \ {f He^+} + {f H_2} \end{array}$	Association Interchange reaction	0.0-100.0 K 0.0-100.0 K	${ m E/T} { m E/T}$
946.	N. Balucani, G. Capozza, E. S. Lezana, E. J. Rackham, L. F. <b>Dynamics of the</b> $C(^{1}D)$ + <b>experiments with quasicl</b> J. Chem. Phys. 122, 234309	Segoloni, A. Russo, R. Bobbenkam Banares, F. J. Aoiz - D ₂ reaction: A comparison assical trajectory and accura (2005)	ap, P. Casavecchia, T. Gonzalez- of crossed molecular-beam te statistical calculations.	
	$egin{array}{lll} {f C} + {f H}_2 \ {f C} + {f D}_2 \end{array}$	Interchange reaction Interchange reaction	15.5  kJ/mole 15.5  kJ/mole	${ m E/T}$ ${ m E/T}$
947.	P. F. Weck, N. Balakrishnan Heavy atom tunneling in J. Chem. Phys. 122, 234310	a chemical reactions: Study o (2005)	f H + LiF collisions.	
	H + LiF	Interchange reaction	0.0-100.0 K	Th
948.	R. Bobbenkamp, A. Paladini HJ. Werner Effect of rotational energy experimental and computer J. Chem. Phys. 122, 244304	i, A. Russo, H. J. Loesch, M. Men gy on the reaction Li + HF tational study. (2005)	endez, E. Verdasco, F. J. Aoiz, $(\nu = 0,j)$ -; LiF + H: An	
	Li + HF	Interchange reaction	$97\text{-}363~\mathrm{MeV}$	Exp
949.	TS. Shu, RF. Lu, KL. H A time-dependent wave- = 0-2, 4, 6; j = 1 + He J. Chem. Phys. 122, 244322	tan, X. N. Tang, HF. Xu, C. Y. packet quantum scattering st - $i HeH^+ + H.$ (2005)	$\mathrm{Ng}$ udy of the reaction ${H_2}^+$ (v	
	${ m H_2}^+ + { m He}$	Interchange reaction	$0.0\text{-}2.4\;\mathrm{eV}$	$\mathrm{Th}$
950.	A. E. Gorodetsky, R. Kh. Z. A. N. Makhankov, I. V. Maz <b>Increased recombination</b> J. Nucl. Mater. 337-339, 892	alavutdinov, A. P. Zakharov, S. F zul, G. Federici of $CH_3$ radicals on stainless 2 (2005)	P. Vnukov, I. G. Varshavskaya, steel.	

$CH_3 + H$	Interchange reaction
	filled offatige feacefoil

Undef.

Exp

951. J. Mitroy, M.W.J. Bromley

Higher-order $C_n$ dispersion coefficients for the alkali-metal a	atoms.
Phys. Rev. A 71, 042701 (2005)	

H + H	Interaction Potentials	Undef.	Th
H + Li	Interaction Potentials	Undef.	Th
H + Na	Interaction Potentials	Undef.	Th
H + K	Interaction Potentials	Undef.	Th
H + Rb	Interaction Potentials	Undef.	Th
Li + H	Interaction Potentials	Undef.	$\mathrm{Th}$
Li + Li	Interaction Potentials	Undef.	Th
Li + Na	Interaction Potentials	Undef.	Th
Li + K	Interaction Potentials	Undef.	Th
Li + Rb	Interaction Potentials	Undef.	Th
Na + H	Interaction Potentials	Undef.	Th
Na + Li	Interaction Potentials	Undef.	Th
Na + Na	Interaction Potentials	Undef.	Th
Na + K	Interaction Potentials	Undef.	Th
Na + Rb	Interaction Potentials	Undef.	Th
K + H	Interaction Potentials	Undef.	Th
K + Li	Interaction Potentials	Undef.	Th
K + Na	Interaction Potentials	Undef.	Th
K + K	Interaction Potentials	Undef.	Th
K + Rb	Interaction Potentials	Undef.	Th
Rb + H	Interaction Potentials	Undef.	Th
Rb + Li	Interaction Potentials	Undef.	Th
Rb + Na	Interaction Potentials	Undef.	Th
Rb + K	Interaction Potentials	Undef.	Th
Rb + Rb	Interaction Potentials	Undef.	$\mathrm{Th}$

952. F. Fremont, D. Martina, O. Kamalou, P. Sobocinski, J.-Y. Chesnel, I. R. McNab, F. R. Bennett

Proton emission following multiple electron capture in slow  $N^{7+}$  + HCl collisions. Phys. Rev. A 71, 042706 (2005)

$N^{7+} + HCl$	Dissociation	$98 { m keV}$	Exp
$N^{7+} + HCl$	Charge Transfer	$98 { m keV}$	Exp
$N^{7+} + HCl$	Total Scattering	$98 { m keV}$	Exp

953. C. C. Havener, R. Rejoub, P. S. Krstic, A.C.H. Smith

Charge transfer in low-energy collisions of  $He^{2+}$  with atomic hydrogen. Phys. Rev. A 71, 042707 (2005)

$He^{2+} + H$	Charge Transfer	10-3000  eV/u	E/T
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954. A. O. Caride, G. L. Klimchitskaya, V. M. Mostepanenko, S. I. Zanette Dependences of the van der Waals atom-wall interaction on atomic and material properties. Phys. Rev. A 71, 042901 (2005)

He + Au	Interaction Potentials	Undef.	$\mathrm{Th}$
$He + SiO_2$	Interaction Potentials	Undef.	$\mathrm{Th}$
$He^* + Au$	Interaction Potentials	Undef.	$\mathrm{Th}$
$He^* + SiO_2$	Interaction Potentials	Undef.	$\mathrm{Th}$
Na + Au	Interaction Potentials	Undef.	$\mathrm{Th}$
$Na + SiO_2$	Interaction Potentials	Undef.	Th

955. R. Cabrera-Trujillo, J. R. Sabin, E. Deumens, Y. Ohrn Prediction of the energy dependence of molecular fragmentation cross sections for collisions of swift protons with ethane and acetylene. Phys. Rev. A 71, 044702 (2005)				ns
	$\mathrm{H^{+}+C_{2}H_{2}}$	Dissociation	0.01-10 keV	Th
	$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_6$	Dissociation	0.01-10  keV	Th
956.	P. D. Fainstein, L. Gulyas <b>Three- and four-body</b> $Au^{53+}$ ions. J. Phys. B 38, 317 (2005)	s dynamics in single ionizat	ion of He by swift highly charge	эd
	$Au^{53+} + He$	Total Scattering	$3.6 { m MeV/u}$	$\mathrm{Th}$
	$Au^{53+} + He$	Ionization	$3.6 { m ~MeV/u}$	$\mathrm{Th}$
957.	L. Machin, E. Roueff Rotational excitation a helium. J. Phys. B 38, 1519 (2005	and de-excitation of inters	stellar ammonia in collisions wit	th
	$He + NH_3$	Energy Transfer	5-300 K	$\mathrm{Th}$
	$He + NH_3$	Excitation	5-300 K	Th
958.	I. D. Kaganovich, E. A. St L. Grisham, R. L. Watson	cartsev, R. C. Davidson, S. R. n, V. Horvat, K. E. Zaharakis	. Kecskemeti, A. Bin-Nun, D. Muelle s, Y. Peng	er,

Ionization cross-sections for ion-atom collisions in high-energy ion beams. Nucl. Instrum. Methods Phys. Res. A 544, 91 (2005)

$H^- + N$	Detachment	3-38  MeV/amu	E/T
$\mathbf{H}^- + \mathbf{N}^{7+}$	Detachment	3-38  MeV/amu	E/T
$I^- + N$	Detachment	3-38  MeV/amu	E/T
$I^- + N^{7+}$	Detachment	3-38  MeV/amu	E/T
$H^+ + H$	Ionization	3-38  MeV/amu	E/T
$\mathrm{He^{+} + He}$	Ionization	3-38  MeV/amu	E/T
$\mathrm{He^{+}}+\mathrm{Ar}$	Ionization	3-38  MeV/amu	E/T
$\mathrm{He^{+}} + \mathrm{Xe}$	Ionization	3-38  MeV/amu	E/T
$\mathrm{He^{+}}$ + $\mathrm{N}_{2}$	Ionization	3-38  MeV/amu	E/T
$He^{2+} + H$	Ionization	3-38  MeV/amu	E/T
$Li^{3+} + H$	Ionization	3-38  MeV/amu	E/T
$\mathbf{C}^{6+} + \mathbf{H}$	Ionization	3-38  MeV/amu	E/T
$Ar^{6+} + He$	Ionization	3-38  MeV/amu	E/T
$Ar^{6+} + Ar$	Ionization	3-38  MeV/amu	E/T
$Ar^{6+} + Xe$	Ionization	3-38  MeV/amu	E/T
$\mathbf{Ar}^{6+} + \mathbf{N}_2$	Ionization	3-38  MeV/amu	E/T
$Ar^{8+} + He$	Ionization	3-38  MeV/amu	E/T
$Ar^{8+} + Ar$	Ionization	3-38  MeV/amu	E/T
$Ar^{8+} + Xe$	Ionization	3-38  MeV/amu	E/T
$Ar^{8+} + N_2$	Ionization	3-38  MeV/amu	E/T
$\mathbf{Kr}^{7+} + \mathbf{N}_2$	Ionization	3-38  MeV/amu	E/T
$\mathbf{X}\mathbf{e}^{11+} + \mathbf{N}_2$	Ionization	3-38  MeV/amu	E/T
$Cs^+ + N$	Ionization	3-38  MeV/amu	$\dot{E}/T$
$Cs^+ + N^{7+}$	Ionization	3-38  MeV/amu	É/T
		,	

^{959.} R. E. Olson, R. L. Watson, V. Horvat, K. E. Zaharakis, R. D. DuBois, Th. Stoehlker Electron stripping cross-sections for fast, low charge state uranium ions. Nucl. Instrum. Methods Phys. Res. A 544, 333 (2005)

$\mathbf{U}^{10+} + \mathbf{Ar}$	Ionization	1-200  MeV/amu	$\mathrm{Th}$
$\mathbf{U}^{10+} + \mathbf{H}_2$	Ionization	1-200  MeV/amu	$\mathrm{Th}$
$\mathbf{U}^{10+} + \mathbf{N}_2$	Ionization	1-200  MeV/amu	$\mathrm{Th}$
$\mathbf{U}^{28+} + \mathbf{Ar}$	Ionization	1-200  MeV/amu	$\mathrm{Th}$
$\mathbf{U}^{28+} + \mathbf{H}_2$	Ionization	1-200  MeV/amu	$\mathrm{Th}$
$U^{28+} + N_2$	Ionization	1-200  MeV/amu	$\mathrm{Th}$

960. A. N. Perumal, V. Horvat, R. L. Watson, Y. Peng, K. S. Fruchey Cross sections for charge change in argon and equilibrium charge states of 3.5 MeV/amu uranium ions passing through argon and carbon targets. Nucl. Instrum. Methods Phys. Res. B 227, 251 (2005)

$\mathbf{U}^{28+} + \mathbf{Ar}$	Charge Transfer	$3.5 \; \mathrm{MeV/amu}$	Exp
$\mathbf{U}^{31+} + \mathbf{Ar}$	Charge Transfer	3.5  MeV/amu	Exp
$U^{33+} + Ar$	Charge Transfer	$3.5 \ \mathrm{MeV}/\mathrm{amu}$	Exp
$U^{39+} + Ar$	Charge Transfer	$3.5 \ \mathrm{MeV}/\mathrm{amu}$	Exp
$\mathbf{U}^{42+} + \mathbf{Ar}$	Charge Transfer	3.5  MeV/amu	Exp
$\mathbf{U}^{52+} + \mathbf{Ar}$	Charge Transfer	3.5  MeV/amu	Exp
$\mathbf{U}^{28+} + \mathbf{Ar}$	Ionization	3.5  MeV/amu	Exp
$\mathbf{U}^{31+} + \mathbf{Ar}$	Ionization	3.5  MeV/amu	Exp
$\mathbf{U}^{33+} + \mathbf{Ar}$	Ionization	3.5  MeV/amu	Exp
$U^{39+} + Ar$	Ionization	3.5  MeV/amu	Exp
$\mathbf{U}^{42+} + \mathbf{Ar}$	Ionization	3.5  MeV/amu	Exp
$\mathbf{U}^{52+} + \mathbf{Ar}$	Ionization	3.5  MeV/amu	Exp

961. Y. Huang, S. Wu, E. Yang, M. Gao, X. Zhang, G. Li, F. Lu Single and double electron detachment cross sections for C⁻ incident on helium. Nucl. Instrum. Methods Phys. Res. B 229, 46 (2005)

$H^- + He$	Detachment	4-30 keV	$\operatorname{Exp}$
$C^- + He$	Detachment	4-30  keV	$\operatorname{Exp}$

962. M. A. Reis, P. C. Chaves, J. C. Soares Particle induced X-ray emission – relative yield ion energy dependence, an IBA chemical speciation method. Nucl. Instrum. Methods Phys. Res. B 229, 413 (2005)

$\mathbf{H}^+ + \mathbf{W}$	Ionization	$1.7-5 { m MeV}$	Exp
$He^{2+} + W$	Ionization	$1.7-5 { m MeV}$	Exp

## 963. T. Okazawa, Y. Hoshino, T. Nishimura, K. Umezawa, S. Nakanishi, Y. Kido Dynamic response of target electrons upon low and medium energy ion impact. Nucl. Instrum. Methods Phys. Res. B 230, 31 (2005)

$\mathrm{He^{+}}$ + Ni	Elastic Scattering	2-3  keV	$\mathrm{Th}$
$\mathrm{He^{+}}$ + Sb	Elastic Scattering	2-3  keV	$\mathrm{Th}$
$\mathrm{He^{+}} + \mathrm{Hf}$	Elastic Scattering	2-3  keV	$\mathrm{Th}$
$Ne^+ + Ni$	Elastic Scattering	2-3  keV	$\mathrm{Th}$
${ m Ne^+}+{ m Sb}$	Elastic Scattering	2-3  keV	$\mathrm{Th}$
$Ne^+ + Hf$	Elastic Scattering	2-3  keV	$\mathrm{Th}$
$\mathrm{He^{+}}$ + Ni	Total Scattering	2-3  keV	$\mathrm{Th}$
$\mathrm{He^{+}}$ + Sb	Total Scattering	2-3  keV	$\mathrm{Th}$
$\mathrm{He^{+}} + \mathrm{Hf}$	Total Scattering	2-3  keV	$\mathrm{Th}$
$Ne^+ + Ni$	Total Scattering	2-3  keV	$\mathrm{Th}$
$Ne^+ + Sb$	Total Scattering	2-3  keV	$\mathrm{Th}$
$Ne^+ + Hf$	Total Scattering	2-3  keV	$\mathrm{Th}$

964.	H. Schmidt-Boecking, Doerner, O. Jagutzki, Cederquist, Y. Demko Many-particle fragginsight into the work Nucl. Instrum. Method	M. S. Schoeffler, T. Jahnke, A M. Hattass, Th. Weber, E. W w, C. Whelan, A. Godunov, J. V mentation processes in atom rld of correlation. ods Phys. Res. B 233, 3 (2005)	A. Czasch, V. Mergel, L. Schmidt, Veigold, H. T. Schmidt, R. Schuch, Walters <b>nic and molecular physics</b> – <b>n</b>	R. H. ew
	$egin{array}{ll} \mathrm{H}^+ \ + \ \mathrm{He} \ \mathrm{H}^+ \ + \ \mathrm{He} \end{array}$	Charge Transfer Ionization	630 keV 630 keV	E/T $E/T$
965.	R. E. Olson, J. Fiol, J Dynamics of collision Nucl. Instrum. Metho	. Perez, P. Beiersdorfer ons revealed by classical me ds Phys. Res. B 233, 12 (2005)	thods.	
	$egin{array}{lll} {f Au}^{53+} + {f He} \ {f Au}^{53+} + {f He} \end{array}$	Total Scattering Ionization	3.6 MeV/amu 3.6 MeV/amu	${ m Th}$ ${ m Th}$
966.	G. Lanzano, E. De Fi Giustolisi, A. Pagano <b>Fast electron produ</b> <b>MeV/u) with foils</b> Nucl. Instrum. Metho	lippo, H. Rothard, C. Volant, A action in collisions of swift of solids. ads Phys. Res. B 233, 31 (2005)	A. Anzalone, N. Arena, M. Geraci, heavy ions (20 MeV/u ; E ; 1	F. .00
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Ionization Ionization Ionization Ionization Ionization	45 MeV/u 45 MeV/u 45 MeV/u 45 MeV/u 45 MeV/u	Exp Exp Exp Exp Exp Exp
967.	H. T. Schmidt, A. Far Cederquist, C. L. Coc <b>Transfer ionization</b> Nucl. Instrum. Metho	rdi, J. Jensen, P. Reinhed, R. S ke in $\mathbf{p}$ + He collisions. ds Phys. Res. B 233, 43 (2005)	chuch, K. Stochkel, H. Zettergren,	Н.
	$egin{array}{ll} \mathrm{H}^+ +\mathrm{He} \ \mathrm{H}^+ +\mathrm{He} \end{array}$	Charge Transfer Ionization	1.4-5.8 MeV 1.4-5.8 MeV	$\operatorname{Exp}$
968.	C. O. Reinhold, J. Bu Collisional decoher Nucl. Instrum. Metho	rgdorfer, F. B. Dunning ence in very-high-n Rydberg ds Phys. Res. B 233, 48 (2005)	g atoms.	
	$\mathbf{K} + \mathbf{X}\mathbf{e}$	De-excitation	Undef.	$\mathrm{Th}$
969.	A. Mueller Many-electron pher Nucl. Instrum. Metho	nomena in the ionization of ods Phys. Res. B 233, 141 (2005	ions.	
	$egin{array}{ll} \mathrm{H}^+ +\mathrm{H}\ \mathrm{H}^+ +\mathrm{He} \end{array}$	Ionization Ionization	$2x10^{-3} - 10^6 \text{ keV}$ $2x10^{-3} - 10^6 \text{ keV}$	E/T $E/T$
	$He^{2+} + H$	Ionization	$2x10^{-3} - 10^{6} \text{ keV}$	É/T
	$He^{2+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T
	$N^{7+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T
	$O^{8+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T
	$Ne^{10+} + He$	Ionization	$2x10^{-3} - 10^{6}$ keV	E/T
	$S^{13+} + He$	Ionization	$2x10^{-3} - 10^6 \text{ keV}$	E/T
	$Ni^{28+} + He$	Ionization	$2x10^{-3} - 10^{6}$ keV	E/T
	$\mathrm{Kr}^{34+} + \mathrm{He}$	lonization	$2x10^{-3} - 10^{\circ}$ keV	E/T
	$\mathbf{X}\mathbf{e}^{44+} + \mathbf{H}\mathbf{e}$	Ionization	$2x10^{-3} - 10^{\circ} \text{ keV}$	E/T
	$\cup$ + He	Ionization	$2x10^{-9} - 10^{9} \text{ keV}$	E/T

970.	A. B. Voitkiv <b>Projectile-electron loss</b> Nucl. Instrum. Methods I	in collisions with hydrogen at Phys. Res. B 233, 157 (2005)	relativistic impact energies.	
	$O^{7+} + H$	Ionization	$0.1\text{-}1000~\mathrm{GeV/u}$	$\mathrm{Th}$
971.	T.J.M. Zouros, E. P. Beni T. Morishita Investigation of triply zero-degree Auger pro- Nucl. Instrum. Methods F	s, M. Zamkov, C. D. Lin, T. G. Le excited states of Li-like ions in jectile-electron spectroscopy. Phys. Res. B 233, 161 (2005)	e, P. Richard, T. W. Gorczyca, a fast ion-atom collisions by	
	$\mathbf{B}^{2+} + \mathbf{H}_2$	Ionization	$16 { m MeV}$	E/T
	$\mathbf{C}^{4+} + \mathbf{H}_2$	Ionization	$16 { m MeV}$	E/T
	$\mathbf{N}^{5+} + \mathbf{H}_2$	Ionization	$16 { m MeV}$	É/T
	$\mathbf{O}^{6+} + \mathbf{H}_2$	Ionization	$16 { m MeV}$	É/T
	$\mathbf{F}^{9+} + \mathbf{Ar}$	Ionization	$16 { m MeV}$	É/T
	$\mathbf{F}^{9+} + \mathbf{Kr}$	Ionization	$16 { m MeV}$	$\dot{E}/T$
972.	I. F. Barna, A. C. Gagyi-I Singly differential elect protons. Nucl. Instrum. Methods H	Palffy, L. Gulyas, K. Tokesi, J. Bur tron emission cross sections f Phys. Res. B 233, 176 (2005)	gdorfer for ionization of helium by	Th
	$H^+ + He$	Ionization	0.3-1.5 MeV	Th
	Fragmentation pattern ions. Nucl. Instrum. Methods I $H^+ + CH_4$ $He^+ + CH_4$ $Xe^{21+} + CH_4$ $H^+ + CH_4$ $He^+ + CH_4$ $He^+ + CH_4$ $Xe^{21+} + CH_4$	s of multiply ionized hydrocar Phys. Res. B 233, 182 (2005) Dissociation Dissociation Ionization Ionization Ionization Ionization	bons in collisions with swift $20x10^{-6} - 500 \text{ MeV}$ $20x10^{-6} - 500 \text{ MeV}$	Exp Exp Exp Exp Exp Exp
974.	K. Tokesi, B. Sulik, N. Sto Fermi-shuttle type mut Nucl. Instrum. Methods I $N^+ + Ar$	blterfoht <b>Itiple electron scattering in ato</b> Phys. Res. B 233, 187 (2005) Total Scattering	omic collisions. 1-50 keV/u	Th
	$N^+ + Ar$	Ionization	1-50  keV/u	$\mathrm{Th}$
975.	S. Hossain, N. Stolterfoht, Coherent two-center el Nucl. Instrum. Methods I	J. A. Tanis lectron emission from static an Phys. Res. B 233, 201 (2005)	d transient molecules.	
	$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	$1-5 {\rm ~MeV}$	$\mathrm{E}/\mathrm{T}$
976.	P. Sobocinski, Z. D. Pesic Sulik <b>Fragmentation of</b> $H_2O$ Nucl. Instrum. Methods H	c, R. Hellhammer, N. Stolterfoht, molecules following interaction Phys. Res. B 233, 207 (2005)	JY. Chesnel, S. Legendre, B. n with slow $He^{2+}$ ions.	
	$\mathbf{u}_{\mathbf{a}}^{2+} + \mathbf{u}_{\mathbf{a}}$	Diggoniation	1 5 looV	<b>F</b>
	$ne^{-1} + n_2 U$	Dissociation	1-0 KeV	Exp E
	$ne^{-} + h_2 U$	Unarge Transfer	1-0 KeV 1 5 heV	Exp E-
	$\mathbf{n}\mathbf{e}$ + $\mathbf{n}_20$	IOHIZATION	1-0 KeV	ъхр

977. M. Kavcic, M. Kobal, M. Budnar, J.-Cl. Dousse, K. Tokesi Double 1s shell ionization of Si induced in collisions with protons and heavy ions. Nucl. Instrum. Methods Phys. Res. B 233, 235 (2005)

$H^+ + Si$	Ionization	$2-50 { m MeV}$	Exp
$C^{2+} + Si$	Ionization	$2-50 { m MeV}$	Exp
$Ne^{3+} + Si$	Ionization	$2-50 { m MeV}$	Exp

978. M. Keim, A. Achenbach, H. J. Luedde, T. Kirchner

Time-dependent density functional theory calculations for collisions of bare ions with helium.

Nucl. Instrum. Methods Phys. Res. B 233, 240 (2005)

$\mathrm{H^{+}+He}$	Charge Transfer	$1 - 4x10^3 { m keV}$	$\mathrm{Th}$
$He^{2+} + He$	Charge Transfer	$1 - 4x10^3 { m keV}$	$\mathrm{Th}$
$H^+ + He$	Ionization	$1 - 4x10^3 { m keV}$	$\mathrm{Th}$
$He^{2+} + He$	Ionization	$1 - 4x10^3 { m keV}$	$\mathrm{Th}$

979. P. N. Abufager, A. E. Martinez, R. D. Rivarola, P. D. Fainstein Single electron capture in ion-atom collisions involving multielectronic targets. Nucl. Instrum. Methods Phys. Res. B 233, 255 (2005)

$H^+ + Ne$	Charge Transfer	$10^2 - 5000 \text{ keV}$	$\mathrm{Th}$
$H^+ + Ar$	Charge Transfer	$10^2 - 5000 \text{ keV}$	Th

980. K. Tokesi

Double electron excitation of helium by charged particle impact.

Nucl. Instrum. Methods Phys. Res. B 233, 266 (2005)

$H^+ + He$	Excitation	$0.25-5 { m MeV}$	$\mathrm{Th}$

981. F. Jarai-Szabo, L. Nagy, S. Fritzsche Correlation effects for double K-shell vacancy production in lithium by fast charged projectile impact.

Nucl. Instrum. Methods Phys. Res. B 233, 276 (2005)

$Ar^{13+} + Li$	Excitation	60-95  MeV/u; 0.1-5.0  keV	Th
$Kr^{34+} + Li$	Excitation	60-95  MeV/u; 0.1-5.0  keV	Th
$Ar^{13+} + Li$	Ionization	60-95  MeV/u; 0.1-5.0  keV	Th
$Kr^{34+} + Li$	Ionization	60-95  MeV/u; 0.1-5.0  keV	Th

982. I. Ben-Itzhak, A. Max Sayler, M. Leonard, J. W. Maseberg, D. Hathiramani, E. Wells, M. A. Smith, J. Xia, P. Wang, K. D. Carnes, B. D. Esry

Bond rearrangement caused by sudden single and multiple ionization of water molecules.

Nucl. Instrum. Methods Phys. Res. B 233, 284 (2005)

$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathrm{H^{+}} + \mathrm{D_{2}O}$	Dissociation	1  MeV/u	Exp
$\mathbf{F}^{4+} + \mathbf{H}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathbf{F}^{4+} + \mathbf{D}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathbf{F}^{7+} + \mathbf{H}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathbf{F}^{7+} + \mathbf{D}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathbf{F}^{9+} + \mathbf{H}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathbf{F}^{9+} + \mathbf{D}_2 \mathbf{O}$	Dissociation	1  MeV/u	Exp
$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Ionization	1  MeV/u	Exp
$\mathrm{H^{+}} + \mathrm{D_{2}O}$	Ionization	$1 { m MeV/u}$	Exp

	$\mathbf{F}^{4+} + \mathbf{H}_2 \mathbf{O}$	Ionization	$1 { m MeV/u}$	Exp
	$\mathbf{F}^{4+}_{-+} + \mathbf{D}_2 \mathbf{O}$	Ionization	$1 { m MeV/u}$	Exp
	$\mathbf{F}^{7+} + \mathbf{H}_2\mathbf{O}$	Ionization	1  MeV/u	Exp
	$\mathbf{F}^{\prime +} + \mathbf{D}_2 \mathbf{O}$	Ionization	1 MeV/u	Exp
	$\mathbf{F}^{9+} + \mathbf{H}_2\mathbf{O}$ $\mathbf{F}^{9+} + \mathbf{D}_2\mathbf{O}$	Ionization	1  MeV/u	Exp
	$\mathbf{F}^{++} + \mathbf{D}_2 \mathbf{O}$	Iomzation	1 Wev/u	Exp
983.	K. Pora, L. Nagy Interference effects Nucl. Instrum. Metho	in the differential ionization ds Phys. Res. B 233, 293 (2005	cross-section of $H_2$ by $H^+$ impart $)$	act.
	$\mathbf{H}^+ + \mathbf{H}_2$	Ionization	$1-5 {\rm ~MeV}$	$\mathrm{Th}$
984.	A. Kahoul, M. Nekab L1, L2 and L3 subs protons of 0.5 to 3. Nucl. Instrum. Metho	hell ionization cross sections 0 MeV. ds Phys. Res. B 234, 412 (2005	for elements with 71 ; Z ; 80	for
	$\mathrm{H^{+}}$ + Ta	Ionization	$0.5$ - $3.0 { m MeV}$	E/T
	$H^+ + Au$	Ionization	$0.5$ - $3.0 { m MeV}$	$\mathbf{E}' \mathbf{T}$
985.	F. Afaneh, R. Doerner <b>Experimental inves</b> Nucl. Instrum. Metho	r, L.Ph.H. Schmidt, H. Schmidt- tigation of the ionization dy ds Phys. Res. B 234, 431 (2005	Boecking mamics in slow $p - H_2$ collision )	15.
	$\mathbf{H}^+ + \mathbf{H}_2$	Charge Transfer	15  keV	Exp
	$\mathrm{H^{+}}+\mathrm{H_{2}}$	Ionization	15  keV	Exp
986.	M. Schulz, R. Moshan Fully differential sin ion impact. Nucl. Instrum. Metho	nmer, A. Voitkiv, B. Najjari, J. ngle ionization cross section ods Phys. Res. B 235, 296 (2005	Ullrich s of helium by relativistic hea )	wy-
	$\mathbf{U}^{92+} + \mathbf{He}$	Ionization	$1 { m GeV/amu}$	Exp
987.	I. Fijal, M. Jaskola, A Pajek, J. Semaniak, W Coupling and bind silicon and sulphur Nucl. Instrum. Metho	A. Korman, D. Banas, J. Brazie V. Kretschmer, D. Trautmann, T ing effects in L-shell ionizations. ds Phys. Res. B 235, 301 (2005)	wicz, M. Czarnota, U. Majewska, F. Mukoyama <b>tion of heavy atoms by oxyg</b> )	м. gen,
	$O^+ \perp Au$	Ionization	0.3-5.0  MeV/amu	E/T
	$\mathbf{Si}^+ + \mathbf{Au}$	Ionization	0.3-5.0  MeV/amu	E/T
	$S^+ + Au$	Ionization	$0.3-5.0 \mathrm{MeV/amu}$	$\mathbf{E}' \mathbf{T}$
988.	P. D. Fainstein, L. Gu <b>Theoretical study of</b> <b>He by swift highly</b> Nucl. Instrum. Metho	lyas of the Bethe surface in non- charged ions. Ids Phys. Res. B 235, 306 (2005	-perturbative single ionization	n of
	$\mathrm{H^{+} + He}$	Total Scattering	$3.6 { m MeV/u}$	$\mathrm{Th}$
	$\mathbf{F}\mathbf{e}^{26+} + \mathbf{H}\mathbf{e}$	Total Scattering	$3.6~{ m MeV}/{ m u}$	Th
	$Au^{53+} + He$	Total Scattering	3.6  MeV/u	Th
	$H^+ + He$	Ionization	3.6 MeV/u	Th
	$\mathbf{F}\mathbf{e}^{20+} + \mathbf{H}\mathbf{e}$	Ionization	3.6 MeV/u 2.6 MeV/u	՝Th ԾՆ
	$Au^{-} + He$	IOIIIZATIOII	a.o mev/u	T U

989. P. Verma, P. H. Mokler, A. Brauning-Demian, H. Brauning, E. Berdermann, S. Chatterjee, A. Gumberidze, S. Hagmann, C. Kozhuharov, A. Orsic-Muthig, R. Reuschl, M. Schoeffler, U. Spillmann, Th. Stoehlker, Z. Stachura, S. Tashenov, M. A. Wahab Charge exchange and X-ray emission in 70 MeV/u Bi-Au collisions. Nucl. Instrum. Methods Phys. Res. B 235, 309 (2005)

$Bi^{82+} + Au$	Charge Transfer	70  MeV/u	Exp
$Bi^{82+} + Au$	Excitation	70  MeV/u	Exp

990. L. F. Errea, C. Illescas, L. Mendez, B. Pons, A. Riera, J. Suarez Classical and semiclassical treatments of highly charged ions + H(1s) collisions. Nucl. Instrum. Methods Phys. Res. B 235, 315 (2005)

Charge Transfer	1-500  eV	$\mathrm{Th}$
Charge Transfer	1-500  eV	$\mathrm{Th}$
Excitation	1-500  eV	$\mathrm{Th}$
Excitation	1-500  eV	$\mathrm{Th}$
	Charge Transfer Charge Transfer Excitation Excitation	Charge Transfer1-500 eVCharge Transfer1-500 eVExcitation1-500 eVExcitation1-500 eV

991. A. V. Selin, A. M. Ermolaev
Ionization of light atoms by ultra-fast ions.
Nucl. Instrum. Methods Phys. Res. B 235, 321 (2005)

$\mathbf{U}^{92+} + \mathbf{He}$	Ionization	Undef.	Exp
•			1

992. D. Banas, Th. Stoehlker, D. C. Ionescu, H. F. Beyer, F. Bosch, A. Brauning-Demian, A. Gumberidze, S. Hagmann, C. Kozhuharov, X. Ma, P. H. Mokler, R. Mann, D. Sierpowski, S. Tachenov, Z. Stachura, A. Warczak

X-ray emission studies in relativistic collisions of Li-like uranium ions with gaseous target.

Nucl. Instrum. Methods Phys. Res. B 235, 326 (2005)

$\mathbf{U}^{89+} + \mathbf{N}_2$	Charge Transfer	397  MeV/u	Exp
$\mathbf{U}^{89+} + \mathbf{N}_2$	Excitation	397  MeV/u	Exp

993. H. Tanuma, H. Ohashi, E. Shibuya, N. Kobayashi, T. Okuno, S. Fujioka, H. Nishimura, K. Nishihara

EUV emission spectra from excited multiply charged xenon ions produced in charge-transfer collisions.

Nucl. Instrum. Methods Phys. Res. B 235, 331 (2005)

$Xe^{9+} + He$	Charge Transfer	180-340  keV	Exp
$\mathbf{X}\mathbf{e}^{10+} + \mathbf{H}\mathbf{e}$	Charge Transfer	180-340  keV	Exp
$Xe^{11+} + He$	Charge Transfer	180-340  keV	Exp
$\mathbf{X}\mathbf{e}^{12+} + \mathbf{H}\mathbf{e}$	Charge Transfer	180-340  keV	Exp
$Xe^{13+} + He$	Charge Transfer	180-340  keV	Exp
$\mathbf{X}\mathbf{e}^{14+} + \mathbf{H}\mathbf{e}$	Charge Transfer	180-340  keV	Exp
$Xe^{15+} + He$	Charge Transfer	180-340  keV	$\operatorname{Exp}$
$Xe^{16+} + He$	Charge Transfer	180-340  keV	$\operatorname{Exp}$
$Xe^{17+} + He$	Charge Transfer	180-340  keV	$\operatorname{Exp}$
$Xe^{9+} + He$	Excitation	180-340  keV	$\operatorname{Exp}$
$Xe^{10+} + He$	Excitation	180-340  keV	$\operatorname{Exp}$
$Xe^{11+} + He$	Excitation	180-340  keV	$\operatorname{Exp}$
$Xe^{12+} + He$	Excitation	180-340  keV	$\operatorname{Exp}$
$Xe^{13+} + He$	Excitation	180-340  keV	$\operatorname{Exp}$
$\mathbf{X}\mathbf{e}^{14+} + \mathbf{H}\mathbf{e}$	Excitation	180-340  keV	$\operatorname{Exp}$
$\mathrm{Xe}^{15+} + \mathrm{He}$	Excitation	180-340  keV	$\operatorname{Exp}$
$\mathrm{Xe}^{16+} + \mathrm{He}$	Excitation	180-340  keV	$\operatorname{Exp}$
$Xe^{17+} + He$	Excitation	180-340  keV	Exp

994. M. Janowicz, K. Slabkowska, P. Matuszak, M. Polasik Semi-classical approaches to the ion-atom scattering. Nucl. Instrum. Methods Phys. Res. B 235, 337 (2005)

$\mathbf{S}^{16+} + \mathbf{H}$	Charge Transfer	$0-120 { m MeV}$	$\operatorname{Exp}$
$\mathbf{S}^{16+} + \mathbf{H}$	Ionization	$0-120 { m MeV}$	$\operatorname{Exp}$

995. C. Ciortea, I. Piticu, D. Fluerasu, D. E. Dumitriu, A. Enulescu, M. M. Gugiu, A. T. Radu, L. C. Penescu
K-shell ionization in (0.2-1.75) MeV/u Fe, Co + Cr and Fe + Cu collisions.

Nucl. Instrum. Methods Phys. Res. B 235, 342 (2005)

$Fe^+ + Co$	Ionization	$0.2 -1.75 { m MeV/u}$	Exp
$Fe^+ + Cu$	Ionization	$0.2$ - $1.75 \mathrm{MeV/u}$	$\operatorname{Exp}$
$Co^+ + Co$	Ionization	$0.2$ - $1.75 \mathrm{MeV/u}$	$\operatorname{Exp}$
$\mathrm{Co}^+ + \mathrm{Cu}$	Ionization	$0.2$ - $1.75 \mathrm{MeV/u}$	Exp

996. M. Hoshino, T. Kambara, Y. Kanai, R. Schuch, Y. Yamazaki Multi-electron processes in large-angle scattering between slow  $Ne^{q+}$  (q = 1, 2 and 3) and Ar.

Nucl. Instrum. Methods Phys. Res. B 235, 347 (2005)

$Ne^+ + Ar$	Charge Transfer	$5 { m keV}$	Exp
$Ne^{2+} + Ar$	Charge Transfer	5  keV	Exp
$Ne^{3+} + Ar$	Charge Transfer	5  keV	Exp
$Ne^+ + Ar$	Total Scattering	5  keV	Exp
$Ne^{2+} + Ar$	Total Scattering	5  keV	Exp
$Ne^{3+} + Ar$	Total Scattering	5  keV	$\operatorname{Exp}$
$\mathrm{Ne^{+}}+\mathrm{Ar}$	Ionization	5  keV	$\operatorname{Exp}$
$Ne^{2+} + Ar$	Ionization	5  keV	$\operatorname{Exp}$
$Ne^{3+} + Ar$	Ionization	5  keV	Exp

997. T. Kaneyasu, T. Azuma, K. Okuno

Collision dynamics of MCI-molecule systems studied by multi-coincidence technique.

Nucl. Instrum. Methods Phys. Res. B 235, 352 (2005)

$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Dissociation	19-200  eV/u	Exp
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Charge Transfer	19-200  eV/u	Exp
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Ionization	19-200  eV/u	$\operatorname{Exp}$

998. D. Bodewits, A.G.G.M. Tielens, R. Morgenstern, R. Hoekstra Fingerprints of charge exchange between  $He^{2+}$  and water molecules. Nucl. Instrum. Methods Phys. Res. B 235, 358 (2005)

$He^{2+} + H_2O$	Charge Transfer	6-48  keV	Exp
$He^{2+} + H_2O$	Excitation	6-48  keV	Exp

999. L. F. Errea, A. Macias, L. Mendez, I. Rabadan, A. Riera Charge transfer in  $H_2^+$  - H(1s) collisions. Nucl. Instrum. Methods Phys. Res. B 235, 362 (2005)

$\mathbf{H}_{2}^{+} + \mathbf{H}$	Charge Transfer	0.4-50  keV	$\mathrm{Th}$
$\mathbf{H}_{2}^{+} + \mathbf{H}$	Excitation	0.4-50  keV	$\mathrm{Th}$

1000. A. Gojska, D. Chmielewska, J. Rzadkiewicz, Z. Sujkowski, T. Adachi, H. Fujita, Y. Fujita, K. Hara, Y. Haruyama, J. Kamiya, H. Ogawa, M. Saito, Y. Shimizu, Y. Shimbara, M. Tanaka, H. P. Yoshida, I. Katayama
Charge exchange processes for semi-relativistic helium ions (β = 0.51) in solid gold.
Nucl. Instrum. Methods Phys. Res. B 235, 368 (2005)

$He^{2+} + Au$	Charge Transfer	$1.5 \ \mathrm{MeV/amu}$	Exp
$\mathrm{He^{+}}+\mathrm{Au}$	Ionization	1.5 MeV/amu	Exp

1001. B. Zarour, C. Champion, J. Hanssen, B. Lasri Charge transfer and dissociation of  $H_2$  molecule in slow collisions with  $C^{4+}$  ions. Nucl. Instrum. Methods Phys. Res. B 235, 374 (2005)

$\mathbf{C}^{4+} + \mathbf{H}_2$	Dissociation	$0.1-4.67 \mathrm{keV/amu}$	$\mathrm{Th}$
$\mathbf{C}^{4+} + \mathbf{H}_2$	Charge Transfer	0.1-4.67  keV/amu	Th

1002. T. Ohyama-Yamaguchi, A. Ichimura

# Near-site far-site charge asymmetry in diatomic Coulomb fragmentation with slow highly charged ions.

Nucl. Instrum. Methods Phys. Res. B 235, 382 (2005)

$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Dissociation	Undef.	$\mathrm{Th}$
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Charge Transfer	Undef.	$\mathrm{Th}$
$\mathbf{Kr}^{8+} + \mathbf{N}_2$	Ionization	Undef.	$\mathrm{Th}$

1003. X. L. Zhu, X. Ma, B. Wei, H. P. Liu, Z. L. Wang, S. Sha, W. T. Feng, S. P. Cao, D. B. Qian, B. Li, L. F. Chen

Dissociation and fragmentation of  $N_2$  molecules by slow highly charged ions. Nucl. Instrum. Methods Phys. Res. B 235, 387 (2005)

$\mathbf{X}\mathbf{e}^{17+} + \mathbf{N}_2$	Dissociation	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{18+} + \mathbf{N}_2$	Dissociation	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{20+} + \mathbf{N}_2$	Dissociation	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{21+} + \mathbf{N}_2$	Dissociation	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{17+} + \mathbf{N}_2$	Charge Transfer	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{18+} + \mathbf{N}_2$	Charge Transfer	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{20+} + \mathbf{N}_2$	Charge Transfer	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{21+} + \mathbf{N}_2$	Charge Transfer	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{17+} + \mathbf{N}_2$	Ionization	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{18+} + \mathbf{N}_2$	Ionization	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{20+} + \mathbf{N}_2$	Ionization	340-420  keV	Exp
$\mathbf{X}\mathbf{e}^{21+} + \mathbf{N}_2$	Ionization	340-420  keV	$\operatorname{Exp}$

# 1004. T. Ricsoka, Gy. Vikor, Sz. Nagy, K. Tokesi, Z. Berenyi, B. Paripas, N. Stolterfoht, B. Sulik Accelerating multiple scattering of the emitted electrons in collisions of ions with atoms and molecules.

Nucl. Instrum. Methods Phys. Res. B 235, 397 (2005)

$N^+ + Ne$	Total Scattering	$700\text{-}1500~\mathrm{keV}$	Exp
$N^+ + Ar$	Total Scattering	$700-1500 { m ~keV}$	$\operatorname{Exp}$
$\mathbf{N}^+ + \mathbf{N}_2$	Total Scattering	$700-1500 { m ~keV}$	$\operatorname{Exp}$
$N^+ + Ne$	Ionization	$700-1500 { m keV}$	$\operatorname{Exp}$
$N^+ + Ar$	Ionization	$700-1500 { m keV}$	$\operatorname{Exp}$
$\mathbf{N}^+$ + $\mathbf{N}_2$	Ionization	$700\text{-}1500~\mathrm{keV}$	Exp
1005. A. Le Padellec Partial near threshold cross sections for the associative ionization to form  $CO^+$ ,  $NO^+$  and  $O_2^+$ . Phys. Scr. 71, 621 (2005)

C + O	Association	Undef.	$\mathrm{Th}$
N + O	Association	Undef.	$\mathrm{Th}$
0 + 0	Association	Undef.	Th

1006. H. Luna, E. C. Montenegro

Fragmentation of water by heavy ions.

Phys.	Rev.	Lett.	94,	043201	(2005)	)
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$\mathbf{C}^{3+} + \mathbf{H}_2 \mathbf{O}$	Dissociation	60-350  keV/amu	Exp
$\mathbf{C}^{4+} + \mathbf{H}_2 \mathbf{O}$	Dissociation	60-350  keV/amu	Exp
$\mathbf{C}^{3+} + \mathbf{H}_2 \mathbf{O}$	Charge Transfer	60-350  keV/amu	Exp
$\mathbf{C}^{4+} + \mathbf{H}_2 \mathbf{O}$	Charge Transfer	60-350  keV/amu	Exp
$\mathbf{C}^{3+} + \mathbf{H}_2 \mathbf{O}$	Ionization	60-350  keV/amu	Exp
$C^{4+} + H_2O$	Ionization	60-350  keV/amu	Exp

1007. B. Yang, P. C. Stancil

A close-coupling study	of	vibrational-rotational	quenching	of	$\mathbf{CO}$	by	collision
with hydrogen atoms.							

J. Chem. Phys. 123, 094308 (2005)

Η -	⊢ CO	Energy Transfer	$10^{-6} - 1500 \ cm^{-1}$	Th
			= 0 0 0 0 0 0 0	

1008. M. Sabido, J. de Andres, J. Sogas, J. M. Lucas, M. Alberti, J. M. Bofill, A. Aguilar Inelastic electronic excitation and electron transfer processes in collisions between Mg(3  ${}^{1}S_{9}$ ) atoms and  $K^{+}({}^{1}S_{0})$  ions studied by crossed beams in the 0.10-3.80-keV energy range.

J. Chem. Phys. 123, 124314 (2005)

1009. A. T. Hasan

Experimental study of single- and double-electron-capture by Ne ions from He gas.

Eur. Phys. J. D 35, 461 (2005)

$Ne^{2+} + He$	Charge Transfer	600-1000  eV/q	Exp
$Ne^{3+} + He$	Charge Transfer	600-1000  eV/q	Exp
$Ne^{4+} + He$	Charge Transfer	600-1000  eV/q	Exp
$Ne^{5+} + He$	Charge Transfer	600-1000  eV/q	Exp
$Ne^{6+} + He$	Charge Transfer	600-1000  eV/q	Exp

1010. N. V. Maydanyuk, A. Hasan, M. Foster, B. Tooke, E. Nanni, D. H. Madison, M. Schulz Projectile-residual-target-ion scattering after single ionization of helium by slow proton impact.

Phys. Rev. Lett. 94, 243201 (2005)

$H^+ + He$	Total Scattering	75  keV	Exp
$H^+ + He$	Ionization	75  keV	$\operatorname{Exp}$

### 1011. K. Koszinowski, N. T. Goldberg, A. E. Pomerantz, R. N. Zare Collision-energy dependence of HD ( $\nu' = 1, j'$ ) product rotational distributions for the $H + D_2$ reaction. J. Chem. Phys. 123, 054306 (2005)

	$egin{array}{l} \mathbf{H} + \mathbf{H}_2 \ \mathbf{H} + \mathbf{D}_2 \end{array}$	Interchange reaction Interchange reaction	$\begin{array}{c} 1.43\text{-}2.55 \ \mathrm{eV} \\ 1.43\text{-}2.55 \ \mathrm{eV} \end{array}$	E/T E/T
1012.	H. Song, D. Dai, G. Wu, Yang, R. T. Skodje Chemical reaction dyr parison of molecular-b HD + D(n') reaction. J. Chem. Phys. 123, 0743	C. C. Wang, S. A. Harich, M. namics of Rydberg atoms w peam and classical trajector 814 (2005)	Y. Hayes, X. Wang, D. Gerlich, X. vith neutral molecules: A com- cy results for the $H(n) + D_2$ -:	
	$egin{array}{l} \mathbf{H} + \mathbf{H}_2 \ \mathbf{H} + \mathbf{D}_2 \end{array}$	Interchange reaction Interchange reaction	$\begin{array}{c} 0.124\text{-}1.024~\text{eV} \\ 0.124\text{-}1.024~\text{eV} \end{array}$	${ m Th}$ Th
1013.	A. Devdariani, T. M. Kere <b>Dipole transition-matr</b> Phys. Rev. A 71, 022512	selidze, I. L. Noselidze, E. Dalin ix elements of the one-elect (2005)	nier, P. Sauvan, P. Angelo, R. Schott ron heterodiatomic quasimolecu	les.
	$\mathrm{He^+}$ + $\mathrm{H^+}$	Interaction Potentials	Undef.	$\mathrm{Th}$
1014.	B. Seredyuk, R. W. McC A.G.G.M. Tielens, P. Sob Haija, E. Y. Kamber Charge exchange and $H_2O$ molecules. Phys. Rev. A 71, 022705	Cullough, H. Tawara, H. B. G ocinski, D. Pesic, R. Hellhamm dissociative processes in co (2005)	ilbody, D. Bodewits, R. Hoekstra, er, B. Sulik, N. Stolterfoht, O. Abu- bilisions of slow $He^{2+}$ ions with	
	$\begin{array}{l} \mathrm{He}^{2+} + \mathrm{H}_2\mathrm{O} \\ \mathrm{He}^{2+} + \mathrm{H}_2\mathrm{O} \end{array}$	Dissociation Charge Transfer	1.025-12 keV/u 1.025-12 keV/u	E/T E/T
1015.	N. C. Bacalis, A. Metropo Description of the lower ab initio configuration Phys. Rev. A 71, 022707	bulos, D. A. Papaconstantopou est-energy surface of the Cl -interaction total energies b (2005)	los H + O system: Interpolation of by a tight-binding Hamiltonian.	
	CH + O	Interaction Potentials	Undef.	$\mathrm{Th}$
1016.	B. Seredyuk, R. W. McCo Collision mechanisms hydrocarbons. Phys. Rev. A 71, 022713	ullough, H. B. Gilbody in one-electron capture b (2005)	y $He^{2+}$ ions in collisions with	
	$egin{array}{lll} \mathbf{H}\mathbf{e}^{2+} + \mathbf{C}\mathbf{H}_4 \ \mathbf{H}\mathbf{e}^{2+} + \mathbf{C}_2\mathbf{H}_4 \ \mathbf{H}\mathbf{e}^{2+} + \mathbf{C}_2\mathbf{H}_6 \end{array}$	Charge Transfer Charge Transfer Charge Transfer	$\begin{array}{c} 200\text{-}2000~\text{eV/u} \\ 200\text{-}2000~\text{eV/u} \\ 200\text{-}2000~\text{eV/u} \end{array}$	Exp Exp Exp
1017.	I. I. Ryabtsev, D. B. Tret Collisional and therma nS and nD atoms with J. Phys. B 38, S17 (2005)	yakov, I. I. Beterov, N. N. Beze al ionization of sodium Ryc n n = 8-20.	1glov, K. Miculis, A. Ekers Iberg atoms: I. Experiment for	
	Na + Na Na + Na	Association Ionization	300 K 300 K	E/T E/T
1018.	E. Favilla, S. Barsanti, P. Rydberg levels popular	Bicchi tion via energy pooling colli	sions in resonantly laser excited	·

**dense In vapour.** J. Phys. B 38, S37 (2005)

	$egin{array}{llllllllllllllllllllllllllllllllllll$	Line Broadening De-excitation Energy Transfer Energy Transfer Fluorescence Excitation Excitation	950 K 950 K 950 K 950 K 950 K 950 K	Exp Exp Exp Exp Exp Exp
1019.	M. R. Flannery, D. Vrince Long-range interaction J. Phys. B 38, S279 (2005	anu, V. N. Ostrovsky <b>between polar Rydberg at</b> )	toms.	
	$\mathrm{H} + \mathrm{H}$ $\mathrm{He} + \mathrm{He}$	Interaction Potentials Interaction Potentials	Undef. Undef.	Th Th
1020.	K. Singer, J. Stanojevic, M Long-range interaction ns, np-np and nd-nd as J. Phys. B 38, S295 (2005	1. Weidemueller, R. Cote s between alkali Rydberg a symptotes. )	tom pairs correlated to the ns-	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Interaction Potentials Interaction Potentials Interaction Potentials Interaction Potentials Interaction Potentials	Undef. Undef. Undef. Undef. Undef.	Th Th Th Th Th
1021.	T. G. Walker, M. Saffman Zeros of Rydberg-Ryd J. Phys. B 38, S309 (2005	berg Foster interactions.		
1022.	Rb + Rb M. Schoeffler, A. L. Godu R. Doerner, O. Jagutzki, I Revealing the effect of A coincidence study of J. Phys. B 38, L123 (2005)	Interaction Potentials nov, C. T. Whelan, H.R.J. W Z.Ph.H. Schmidt, J. Titze, E. V angular correlation in the the transfer ionization pro )	Undef. alters, V. S. Schipakov, V. Mergel, Neigold, H. Schmidt-Boecking ground-state He wavefunction: ocess.	$\rm E/T$
	$egin{array}{ll} \mathrm{H}^+ + \mathrm{He} \ \mathrm{H}^+ + \mathrm{He} \end{array}$	Charge Transfer Ionization	630 keV 630 keV	E/T E/T
1023.	J.M.H. Lo, M. Klobusowsl Effects of confinement J. Phys. B 38, 1143 (2005)	ki, D. Bielinska-Waz, G.H.F. D on the Rydberg molecule 1 )	viercksen, E.W.S. Schreiner NeH.	
	Ne + H	Interaction Potentials	Undef.	$\mathrm{Th}$
1024.	M. Lehner, R. Xu, M. Jun <b>The emission spectrum</b> J. Phys. B 38, 1235 (2005	gen <b>of the Li(2p)</b> $He_2$ :1 ² $\Pi_u$ exc )	iplex.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	De-excitation Interaction Potentials Excitation	Undef. Undef. Undef.	Th Th Th
1025.	T. Kaneyasu, T. Azuma, I Collision dynamics of technique. J. Phys. B 38, 1341 (2005)	K. Okuno <b>the</b> $Kr^{8+} + N_2$ <b>system</b> s ⁻	tudied by a multi-coincidence	

	$\mathbf{Kr}^{8+}$ + $\mathbf{N}_2$	Charge Transfer	9.5-171  ev/u	Exp
1026.	M. Schulz, D. Fischer, Electron-electron c helium by proton i J. Phys. B 38, 1363 (2	, R. Moshammer, J. Ullrich orrelations and dipole select mpact. 2005)	tion rules in double ionizatio	n of
	$\mathrm{H^{+}} + \mathrm{He}$	Ionization	$6 { m MeV}$	Exp
1027.	F. Alvarado, R. Hoeks Experimental obser J. Phys. B 38, L55 (2	stra, R. Morgenstern, T. Schlath rvation of reduced electronic 005)	oelter stopping in photo-excited C	60•
	$\mathrm{He^+}$ + $\mathrm{C}_{60}$	Dissociation	0.26 v (a.u.)	Exp
1028.	L. Nagy, F. Jarai-Szal Ionization-excitatio J. Phys. B 38, 141 (20	bo, S. Fritzsche on of lithium by fast charged 005)	projectiles.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Excitation Ionization	6-20 v (a.u.) 6-20 v (a.u.)	Th Th
1029.	B. G. Lindsay, W. S. Cross sections for $H^+$ with CO and C Phys. Rev. A 71, 032	Yu, R. F. Stebbings charge-changing processes in O ₂ . 705 (2005)	nvolving kilo-electron-volt H	and
	H + CO	Charge Transfer	1-5  keV	Exp
	$H + CO_2$	Charge Transfer	1-5  keV	Exp
	$\mathbf{H} + \mathbf{N}_2$ $\mathbf{H} + \mathbf{N}_2$	Charge Transfer	1-5 keV	Exp
	$H^+ + CO$	Charge Transfer	1-5 keV	Exp
	$H^+ + CO_2$	Charge Transfer	1.5  keV	Exp
	$H + CO_2$	Total Scattoring	1.5  keV	Exp
	H + CO	Total Scattering	1.5  keV	Exp
	$\mathbf{H} + \mathbf{N}_2$ $\mathbf{H} + \mathbf{N}_2$	Total Scattering	1.5  keV	Exp
	$\mathbf{H}^+ + \mathbf{CO}$	Total Scattering	1-5  keV	Exp
	$H^+ + CO$	Total Scattering	1-5  KeV	Exp
	$\mathbf{H} + \mathbf{CO}_2$	Ionization	1-5  KeV	Exp
	H + CO	Ionization	1-5  KeV	Exp
	$\mathbf{H} + \mathbf{O}_2$ $\mathbf{H} + \mathbf{N}$	Ionization	1-5  KeV	Exp
	$\mathbf{n} + \mathbf{n}_2$ $\mathbf{u}^+ + \mathbf{c}\mathbf{o}$		1-5  KeV	Exp
	$H^+ + CO$ $H^+ + CO$	Ionization	1-5  keV 1.5  keV	Exp
	$\mathbf{n}^+ + \mathbf{C}\mathbf{O}_2$	Iomzation	1-5 Kev	Exp
1030.	J. Bradley, S.F.C. O'I Total and single di fully orthonormal of Phys. Rev. A 71, 032	Rourke, D.S.F. Crothers fferential cross sections for s continuum-distorted-wave ba 706 (2005)	simple resonant collisions usi asis.	ng a
	$\mathbf{H}^+ \perp \mathbf{H}$	Charge Transfor	$0.01_{25} \text{ keV}/\text{u}$	$\mathbf{T}\mathbf{b}$
	$H_0^+ \perp H_0$	Charge Transfer	0.01-20  KeV/u 0.01-25  keV/u	111 Th
	$H^+ \perp H$	Total Scattoring	0.01-25  keV/u	111 Th
	$H_{P}^{+} \perp H_{P}$	Total Scattering	0.01-25  keV/u 0.01-25  keV/u	111 Th
	10   110	TOTAL DEALINING	0.01-20 KUV/U	111

1031. J. Mitroy, M.W.J. Bromley

Higher-order  $C_n$  dispersion coefficients for hydrogen. Phys. Rev. A 71, 032709 (2005)

H + H	Elastic Scattering	Ultralow	$\mathrm{Th}$
H + H	Interaction Potentials	Ultralow	$\mathrm{Th}$

1032. R. Suzuki, S. N. Rai, H.-P. Liebermann, R. J. Buenker, L. Pichl, M. Kimura Elastic and electron-capture processes in  $H^+ + C_2H_4$  collisions below the 10-keV regime.

Phys. Rev. A 71, 032710 (2005)

$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Elastic Scattering	0.1-10  keV	$\mathrm{Th}$
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Charge Transfer	0.1-10  keV	$\mathrm{Th}$
$\mathbf{H}^+ + \mathbf{C}_2 \mathbf{H}_4$	Interaction Potentials	0.1-10  keV	$\mathrm{Th}$

1033. J.-Y. Zhang, Z.-C. Yan, D. Vrinceanu, H. R. Sadeghpour Anisotropic van der Waals coefficients for He(1¹S) – He(2³P). Phys. Rev. A 71, 032712 (2005)

He + He	Elastic Scattering	Ultralow	$\mathrm{Th}$
$He + He^*$	Elastic Scattering	Ultralow	$\mathrm{Th}$
He + He	Interaction Potentials	Ultralow	$\mathrm{Th}$
$He + He^*$	Interaction Potentials	Ultralow	$\mathrm{Th}$

1034. G. Quemener, P. Honvault, J.-M. Launay, P. Soldan, D. E. Potter, J. M. Hutson Ultracold quantum dynamics: Spin-polarized K + K₂ collisions with three identical bosons or fermions. Phys. Rev. A 71, 032722 (2005)

$\mathbf{K} + \mathbf{K}_2$	Elastic Scattering	$10^{-9} - 10^{-2} \text{ K}$	Th
$\mathbf{K} + \mathbf{K}_2$	Interaction Potentials	$10^{-9} - 10^{-2} \text{ K}$	$\mathrm{Th}$
$\mathbf{K} + \mathbf{K}_2$	Total Scattering	$10^{-9} - 10^{-2} \text{ K}$	$\mathrm{Th}$

1035. M. S. Gravielle, J. E. Miraglia

Interference effects in electron capture from insulator surfaces.

Phys. Rev. A 71, 032901 (2005)

$\mathbf{H}^+ + \mathbf{LiF}$ Charge Transfer 100 ke	V Th
------------------------------------------------------	------

1036. S. Diaz-Tendero, P.-A. Hervieux, M. Alcami, F. Martin Statistical fragmentation of small neutral carbon clusters. Phys. Rev. A 71, 033202 (2005)

${f C_5}^+ + {f He}$	Dissociation	9-60  eV	Exp
${ m C_7}^+ + { m He}$	Dissociation	9-60  eV	Exp
${f C_9}^++{f He}$	Dissociation	9-60  eV	Exp
$\mathbf{C}_5{}^+ + \mathbf{He}$	Charge Transfer	9-60  eV	Exp
$\mathrm{C}_7{}^+ + \mathrm{He}$	Charge Transfer	9-60  eV	Exp
$\mathbf{C}_9^+ + \mathbf{He}$	Charge Transfer	9-60  eV	Exp

1037. C. C. Havener, R. Rejoub, C. R. Vane, H. F. Krause, D. W. Savin, M. Schnell, J. G. Wang, P. C. Stancil

Electron capture by  $Ne^{4+}$  ions from atomic hydrogen. Phys. Rev. A 71, 034702 (2005)

$Ne^{4+} + H$ Cha	rge Transfer	0.1-1006  eV/u	E/T
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## **3.3 Surface Interactions**

1038.	M. N. Faraggi, M. S. Gravie Quantum-mechanical mo Phys. Rev. A 69, 042901 (2	elle, V. M. Silkin odel for valence-electron emiss 004)	sion from metal surfaces.	
	$H^+ + Al$	Secondary Electron Emission	100  keV	Th
1039.	M. S. Gravielle, J. E. Mirag Angular dependence of sions. Phys. Rev. A 69, 042902 (2	lia, G. G. Otero, E. A. Sanchez, C electron emission induced by 004)	). Grizzi y <b>grazing-ion-surface colli-</b>	
	$H^+ + Al$	Secondary Electron Emission	100  keV	$\mathrm{E}/\mathrm{T}$
1040.	S. Ninomiya, C. Imada, M. Secondary-ion emission f heavy-ion bombardment Phys. Rev. A 70, 042903 (2	Nagai, Y. Nakata, N. Imanishi from III-V semiconductive ma 004)	aterials under MeV-energy	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering Sputtering	0.5-5.0 MeV 0.5-5.0 MeV 0.5-5.0 MeV	Exp Exp Exp
1041.	R. K. Yadav, R. Shanker Energy and angular dist 8-keV electrons with a t Phys. Rev. A 70, 052901 (2	ributions of backscattered elec hick tungsten target. 004)	ctrons from the collision of	
	e + W	Reflection	8 keV	$\mathrm{E}/\mathrm{T}$
1042.	J. Bastiaansen, V. Philipsen Influence of the atomic s Phys. Rev. A 70, 052902 (2	a, P. Lievens, R. E. Silverans, E. V structure on the quantum star 004)	Vandeweert te of sputtered Ir atoms.	
	$\mathrm{He^{+}+Ir}$	Sputtering	2  keV	$\mathrm{E}/\mathrm{T}$
1043.	H. Chakraborty, T. Niederh Resonant neutralization and ion trajectory. Phys. Rev. A 70, 052903 (2	ausen, U. Thumm of H ⁻ near Cu surfaces: Effec 004)	ts of the surface symmetry	
	$H^- + Cu$	Neutraliz., Ioniz., Dissoc.	50  eV	Th
1044.	Y. Morishita, R. Hutton, H. Masuda, M. Sekiguchi, F. B Direct observation of the to slow highly charged in Phys. Rev. A 70, 012902 (2)	A. Torii, K. Komaki, T. Brage, K . Rosmej, Y. Yamazaki e initial-state distribution of th ons interacting with a metal s 004)	X. Ando, K. Ishii, Y. Kanai, H. ne first electron transferred surface.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Reflection Reflection Reflection Reflection	0.88-2 keV/u 0.88-2 keV/u 0.88-2 keV/u 0.88-2 keV/u 0.88-2 keV/u	E/T E/T E/T E/T E/T

^{1045.} K. Kimura, T. Tsujioka, S. Tanaka, A. Nakamoto, K. Nakajima, M. Suzuki Auger neutralization rate for slow  $Ar^+$  ions in front of KCl(001). Phys. Rev. A 70, 022901 (2004)

	$f Ar^+ + KCl \ Ar^+ + KCl$	Secondary Electron Emission Neutraliz., Ioniz., Dissoc.	5-15 keV 5-15 keV	$\begin{array}{c} Exp\\ Exp \end{array}$
1046.	B. Lin, H. G. Berry, T. Shi $1s2s2p^23p$ $^6L - 1s2p^33p$ 6H J. Phys. B 37, 2797 (2004)	bata, A. E. Livingston, HP. Gar. ^P transitions in O IV, F V and	nir, T. Bastin, J. Desequelles d Ne VI.	
	$O^+ + C$	Surface Interactions	1.5-4.0 MeV	E/T
	$Ne^+ + C$	Surface Interactions	$1.5-4.0 \mathrm{MeV}$	E/T
	$HF^+ + C$	Surface Interactions	$1.5\text{-}4.0~\mathrm{MeV}$	$\mathbf{E'}/\mathbf{T}$
1047.	K. Franzreb, R. C., Jr. Sol Formation of doubly po sputtering of an Mo me J. Chem. Phys. 120, 7983	pers, J. Loerincik, P. Williams sitively charged diatomic ions etal surface. (2004)	of $Mo_2^{2+}$ produced by $Ar^+$	
	$\mathrm{Mo_2}^+ + \mathrm{Ar}$	Neutraliz., Ioniz., Dissoc.	$8 { m keV}$	Exp
1048.	R. G. Mccaulay-Newcomber W erosion due to low er J. Nucl. Mater. 327, 114 (2	A. A. Haasz, C. H. Wu, J. W. D nergy $O^+$ and $D^+$ impact. 2004)	Davis	
	$Ar^+ + W$	Chemical Reactions	0.15-10 keV	Exp
	$\mathbf{H}_{3}^{+} + \mathbf{W}$	Chemical Reactions	$0.15-10 { m keV}$	Exp
	$\mathbf{D}_{3}^{+} + \mathbf{W}$	Chemical Reactions	$0.15-10 { m keV}$	Exp
	$\mathbf{O}_2^+ + \mathbf{W}$	Chemical Reactions	$0.15-10 { m keV}$	Exp
	$\tilde{Ar^+} + W$	Sputtering	$0.15-10 { m keV}$	Exp
	$\mathbf{H}_{3}^{+} + \mathbf{W}$	Sputtering	$0.15-10 \ \text{keV}$	Exp
	$\mathbf{D}_{3}^{+} + \mathbf{W}$	Sputtering	$0.15-10 \ \text{keV}$	Exp
	$\mathbf{O}_2^+ + \mathbf{W}$	Sputtering	0.15-10 keV	Exp
1049.	W. Eckstein, J. Roth, W. M Sputtering mechanisms J. Nucl. Mater. 328, 55 (20	Nagel, R. Dohmen near the threshold energy. 004)		
	$Li^+ + Li$	Sputtering	5-35 eV	Th
	$\mathbf{C}^+ + \mathbf{C}$	Sputtering	5-35 eV	Th
	$Si^+ + Si$	Sputtering	5-35 eV	Th
	$Cu^+ + Cu$	Sputtering	5-35  eV	Th
	$Au^+ + Au$	Sputtering	5-35  eV	$\mathrm{Th}$
1050.	Y. Yamauchi, T. Yamada, Deuterium retention in J. Nucl. Mater. 329-333, 39	Y. Hirohata, T. Hino, T. Muroga V-4Cr-4Ti alloy after deuteri 97 (2004)	ium ion irradiation.	
	H ⁺ ⊥ ጥነ	Tranning Detranning	1.7  keV	Evn
	$H^+ + V$	Trapping, Detrapping	1.7 keV	Evn
	$H^+ + C_r$	Trapping, Detrapping	1.7 keV	Evn
	$D^+ + Ti$	Trapping, Detrapping	1.7 keV	Evn
	$\mathbf{D}^+ + \mathbf{V}$	Trapping, Detrapping	1.7 keV	Evn
	$\mathbf{D}^+ + \mathbf{Cr}$	Trapping, Detrapping	1.7 keV	Exp
1051.	M. Tokitani, M. Miyamoto	, K. Tokunaga, H. Iwakiri, T. Fuji	iwara, N. Yoshida	

Desorption of helium from austenitic stainless steel heavily bombarded by low energy He ions.

J. Nucl. Mater. 329-333, 761 (2004)

$\mathrm{He^{+}}$ + Fe	Trapping, Detrapping	2  keV	Exp
$\mathrm{He^{+}}$ + SS	Trapping, Detrapping	$2 { m keV}$	$\operatorname{Exp}$

1052. J. Roth, C. Hopf

Sticking coefficient and surface loss probability of eroded species during bombardment of carbon with deuterium.

J. Nucl. Mater. 334, 97 (2004)

Adsorption Desorption	0.045.3.0 keV	Fvn
Ausorption, Desorption	0.040-0.0 KeV	Бур
Adsorption, Desorption	0.045-3.0  keV	Exp
Sputtering	$0.045-3.0 { m keV}$	Exp
Sputtering	$0.045-3.0 { m keV}$	Exp
Sputtering	$0.045\text{-}3.0\;\mathrm{keV}$	Exp
	Adsorption, Desorption Adsorption, Desorption Sputtering Sputtering Sputtering	Adsorption, Desorption0.045-3.0 keVAdsorption, Desorption0.045-3.0 keVSputtering0.045-3.0 keVSputtering0.045-3.0 keVSputtering0.045-3.0 keVSputtering0.045-3.0 keV

1053. Z. Chaoui, N. Bouarissa

Positron and electron backscattering from elemental solids in the 1-10 keV energy range.

J. Phys. Condens. Matter 16, 799 (2004)

e + Al	Secondary Electron Emission	1-10  keV	$\mathrm{Th}$
e + Cu	Secondary Electron Emission	1-10  keV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{A}\mathbf{g}$	Secondary Electron Emission	1-10  keV	$\mathrm{Th}$
e + Au	Secondary Electron Emission	1-10  keV	$\mathrm{Th}$

1054. R. A. Trasca, N. Ferralis, R. D. Diehl, M. W. Cole

The adsorption of Xe and Ar on quasicrystalline Al-Ni-Co.

J. Phys. Condens. Matter 16, S2911 (2004)

Ar + Al	Adsorption, Desorption	$300 \deg K$	E/T
Ar + Co	Adsorption, Desorption	$300 \deg K$	E/T
Ar + Ni	Adsorption, Desorption	$300 \deg K$	E/T
Xe + Al	Adsorption, Desorption	$300 \deg K$	E/T
Xe + Co	Adsorption, Desorption	$300 \deg K$	E/T
Xe + Ni	Adsorption, Desorption	$300 \deg K$	E/T

#### 1055. I. Moroz, H. Ambaye, J. R. Manson

Molecule scattering from insulator and metal surfaces.

J. Phys. Condens. Matter 16, S2953 (2004)

$\mathbf{CH}_4 + \mathbf{LiF}$	Reflection	$90-500 { m MeV}$	$\mathrm{Th}$
$O_2 + Al$	Reflection	$90-500 { m MeV}$	$\mathrm{Th}$

1056. P. Rajasekar, E. B. Kadossov, N. F. Materer
Ion-bombardment induced light emission from Se(100) surfaces under continuous silane exposures.
J. Vac. Sci. Technol. A 22, 2083 (2004)

$Ar^+ + Si$ Sputtering	1-5  keV	Exp
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1057. M. H. Shapiro, P. Lu
The influence of the ion-atom potential on molecular dynamics simulations of sputtering.
Nucl. Instrum. Methods Phys. Res. B 215, 326 (2004)

 $Ar^+ + Cu$  Sputtering 1-100 eV Th

1058. J. Vukanic, R. Simovic

Scaling properties in single collision model of light ion reflection. Nucl. Instrum. Methods Phys. Res. B 215, 337 (2004)

$H^+ + Al$	Reflection	1-100  keV	Th
$H^+ + Fe$	Reflection	1-100  keV	Th
$H^+ + Cu$	Reflection	1-100  keV	Th
$\mathrm{H^{+}}+\mathrm{Ag}$	Reflection	1-100  keV	$\mathrm{Th}$
$H^+ + Au$	Reflection	1-100  keV	Th
$\rm H^+ + Pb$	Reflection	1-100  keV	Th
$\mathrm{He^{+}}$ + Al	Reflection	1-100  keV	Th
$\mathrm{He^{+}}$ + Fe	Reflection	1-100  keV	Th
$\mathrm{He^{+}+Cu}$	Reflection	1-100  keV	Th
$\mathrm{He^{+}}+\mathrm{Ag}$	Reflection	1-100  keV	Th
$\mathrm{He^{+}} + \mathrm{Au}$	Reflection	1-100  keV	Th
$\mathrm{He^{+}} + \mathrm{Pb}$	Reflection	1-100  keV	Th
$D^+ + Al$	Reflection	1-100  keV	Th
$D^+ + Fe$	Reflection	1-100  keV	Th
$\mathrm{D^{+}+Cu}$	Reflection	1-100  keV	Th
$\mathrm{D^{+}+Ag}$	Reflection	1-100  keV	Th
$D^+ + Au$	Reflection	1-100  keV	Th
$\mathrm{D^{+}+Pb}$	Reflection	1-100  keV	Th
$T^+ + Al$	Reflection	1-100  keV	Th
$T^+ + Fe$	Reflection	1-100  keV	Th
$T^+ + Cu$	Reflection	1-100  keV	Th
$\mathrm{T^{+}}+\mathrm{Ag}$	Reflection	1-100  keV	Th
$T^+ + Au$	Reflection	1-100  keV	Th
$T^+ + Pb$	Reflection	1-100  keV	Th
- ,			

### 1059. M. Stepanova, S. K. Dew

Anisotropic energies of sputtered atoms under oblique ion incidence. Nucl. Instrum. Methods Phys. Res. B 215, 357 (2004)

$Ar^+ + Si$	Sputtering	400  eV	Th
$Ar^+ + Cu$	Sputtering	400  eV	$\mathrm{Th}$
$Ar^+ + W$	Sputtering	400  eV	$\mathrm{Th}$

1060. A. Tolstogouzov, S. Daolio, C. Pagura

MARISS study on ion yields of  $Ne^+$  scattered from III-V compound semiconductors.

Nucl. Instrum. Methods Phys. Res. B 217, 246 (2004)

${ m Ne^+}+{ m Ga}$	Reflection	0.6-1.6  keV	Exp
$\mathrm{Ne^{+}+In}$	Reflection	0.6-1.6  keV	Exp
${ m Ne^+}+{ m GaAs}$	Reflection	0.6-1.6  keV	Exp
${ m Ne^+} + { m InP}$	Reflection	0.6-1.6  keV	Exp
${ m Ne^+}+{ m GaP}$	Reflection	0.6-1.6  keV	Exp
${ m Ne^+} + { m InAs}$	Reflection	0.6-1.6  keV	Exp

1061. M. H. Shapiro, T. A. Tombrello

Temporal development of sputtered atom distributions from Au(111) targets following bombardment with 100 keV/atom  $Au_2$  ions. Nucl. Instrum. Methods Phys. Res. B 217, 253 (2004)

$Au_2^+ + Au$ Sputtering 200 keV	Th
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## 1062. I. V. Veryovkin, S. F. Belykh, A. Adriaens, F. Adams Sputtering with polyatomic ions: Revisiting kinetic energy distributions of secondary ions.

Nucl. Instrum. Methods Phys. Res. B 219-220, 215 (2004)

$Au^+ + Ta$	Sputtering	6-18  keV	Exp
$\mathrm{Au_2}^+ + \mathrm{Ta}$	Sputtering	6-18  keV	$\operatorname{Exp}$
$\mathrm{Au_3}^+ + \mathrm{Ta}$	Sputtering	6-18  keV	Exp

1063. S. F. Belykh, V. V. Palitsin, A. Adriaens, F. Adams
 Non-additivity of multiply charged ion emission from Si and Al produced by molecular projectiles.

Nucl. Instrum. Methods Phys. Res. B 219-220, 278  $\left(2004\right)$ 

$Cu^- + Al$	Sputtering	9-18 keV	Exp
$Cu^- + Si$	Sputtering	9-18 keV	Exp
$Au^- + Al$	Sputtering	9-18  keV	$\operatorname{Exp}$
$Au^- + Si$	Sputtering	9-18 keV	Exp
$Cu_2^- + Al$	Sputtering	9-18 keV	Exp
$\mathbf{Cu}_2^- + \mathbf{Si}$	Sputtering	9-18 keV	Exp
$Au_2^- + Al$	Sputtering	9-18 keV	Exp
$\mathbf{Au}_2^- + \mathbf{Si}$	Sputtering	9-18 keV	$\operatorname{Exp}$

1064. D. B. Rebuli, E. Sideras-Haddad, S. H. Connell Emission of electrons from diamond surfaces induced by MeV ions.

Nucl. Instrum. Methods Phys. Res. B 219-220, 299 (2004)

$H^+ + C$	Secondary Electron Emission	$1-10 {\rm MeV}$	Exp
$C^+ + C$	Secondary Electron Emission	$1-10 {\rm ~MeV}$	Exp
$Si^+ + C$	Secondary Electron Emission	1-10 MeV	Exp

1065. W. M. Arnoldbik, N. Tomozeiu, F.H.P.M. Habraken
Desorption of O₂ from SiO₂ films during irradiation of SiO₂ with MeV/a.m.u.
heavy ions.
Nucl. Instrum. Methods Phys. Res. B 219-220, 312 (2004)

$Cu^+ + SiO_{-}$	Desori	ption 50 MeV	Z Exp
	L CDOI	00 110	

1066. C. S. Lee, Y. C. Liu, Y. H. Chen, R. Wu, W.-H. Ip, T. S. Yih, S. Lee Mass analysis of sputtered particles induced by Ar bombardment of two iced targets, H₂O and CO₂. Nucl. Instrum. Methods Phys. Res. B 219-220, 323 (2004)

$Ar^+ + H_2O$	Sputtering	15  keV	Exp
$Ar^+ + CO_2$	Sputtering	15  keV	Exp

1067. P. Rossi, D. K. Brice, C. H. Seager, F. D. McDaniel, G. Vizkelethy, B. L. Doyle Ion beam induced luminescence of doped yttrium compounds. Nucl. Instrum. Methods Phys. Res. B 219-220, 327 (2004)

$\mathbf{H}^+ + \mathbf{Y}_2 \mathbf{O}_3$	Surface Interactions	$3-50 {\rm ~MeV}$	Exp
$\mathbf{H}^+ + \mathbf{Y}_2 \mathbf{SiO}_5$	Surface Interactions	$3-50 { m MeV}$	Exp
$\mathbf{C}^+ + \mathbf{Y}_2 \mathbf{O}_3$	Surface Interactions	$3-50 { m MeV}$	Exp
$\mathbf{C}^+ + \mathbf{Y}_2 \mathbf{SiO}_5$	Surface Interactions	$3-50 { m MeV}$	Exp
$\mathbf{C}\mathbf{u}^+ + \mathbf{Y}_2\mathbf{O}_3$	Surface Interactions	$3-50 { m MeV}$	Exp
$Cu^+ + Y_2SiO_5$	Surface Interactions	$3-50 { m MeV}$	$\operatorname{Exp}$

1068. K. Nakajima, Y. Okura, M. Suzuki, K. Kimura Charge-state distribution of 400 keV He ions scattered from solid surfaces. Nucl. Instrum. Methods Phys. Res. B 219-220, 514 (2004)

$\mathrm{He^{+}} + \mathrm{Si}$	Reflection	400  keV	Exp
$\mathrm{He^{+}}+\mathrm{Ag}$	Reflection	400  keV	Exp
$\mathrm{He^{+}}$ + $\mathrm{SiO}_{2}$	Reflection	400  keV	Exp

1069.	HI. Lee, D. W. Moon, H. C. Shin, S. K. Oh, H. J. Kang <b>The surface transient effect in the Si sputtering yield by low energy</b> $O_2^+$ and $Ar^+$ <b>ion bombardments.</b> Nucl. Instrum. Methods Phys. Res. B 219-220, 959 (2004)					
	$f Ar^+ + Si \ O_2^+ + Si$	Sputtering Sputtering	0.5 keV 0.5 keV	Exp Exp		
1070.	<ul> <li>S. Ghosh, D. K. Avasthi, A. Tripathi, D. Kabiraj, S. Singh, D. S. Misra Electronic sputtering of carbon allotropes. Nucl. Instrum. Methods Phys. Res. B 219-220, 973 (2004)</li> </ul>					
	$Au^{15+} + C$	Sputtering	$200 {\rm ~MeV}$	Exp		
1071.	F. Barrue, M. Chevallier, I Cassimi, H. Rothard, M. To Giot, W. Mittig, S. Pita, P. Electron emission induce Phys. Rev. A 70, 032902 (2010)	D. Dauvergne, R. Kirsch, JC. bulemonde, C. Cohen, A. L'Hoir, Roussel-Chomaz, A. Billebaud ed by fast heavy ions in a thir 004)	Poizat, C. Ray, L. Adoui, A. D. Vernhet, C. Demonchy, L. n silicon crystal.			
	$\mathbf{Pb}^{56+} + \mathbf{Si}$	Secondary Electron Emission	$29~{\rm MeV/u}$	Exp		
1072.	T. Bernhard, Z. L. Fang, H. <b>Ion-induced low-energy</b> Phys. Rev. A 69, 060901 (2)	Winter electron diffraction. 004)				
	$egin{array}{ll} \mathrm{H}^+ + \mathrm{Cu} \ \mathrm{He}^+ + \mathrm{Cu} \end{array}$	Secondary Electron Emission Secondary Electron Emission	$\begin{array}{c} 25 \ \mathrm{keV} \\ 25 \ \mathrm{keV} \end{array}$	Exp Exp		
1073.	J. Braziewicz, U. Majewska, Czarnacki, S. Chojnacki, W. Dynamics of formation of foil. Phys. Rev. A 69, 062705 (2)	K. Slabkowska, M. Polasik, I. Fij . Kretschmer of <b>K-hole fractions of sulfur</b> ( 004)	al, M. Jaskola, A. Korman, W. projectiles inside a carbon			
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	65-122 MeV 65-122 MeV	Exp Exp		
1074.	L. Lammich, H. Buhr, H. Ku Strasser, D. Zajfman, Z. Vag Coulomb-explosion imag distribution. Phys. Rev. A 69, 062904 (20	reckel, S. Krohn, M. Lange, D. Sc ger, I. Abril, S. Heredia-Avalos, R ing of $CH_2^+$ : Target-polarizat 004)	hwalm, R. Wester, A. Wolf, D. a. Garcia-Molina tion effects and bond-angle			
	$\mathrm{CH}_{2}^{+}+\mathrm{C}$	Neutraliz., Ioniz., Dissoc.	$6.7 { m MeV}$	Exp		
1075.	<ul> <li>A. Brunelle, S. Della-Negra</li> <li>Trends to a semi-empirical model for cluster induced metal sputtering.</li> <li>Nucl. Instrum. Methods Phys. Res. B 222, 68 (2004)</li> </ul>					
	$egin{array}{lll} {f Au^+} + {f Ag} \ {f Au^+} + {f Au} \end{array}$	Sputtering Sputtering	300-1400  keV 300-1400  keV	Th Th		
1076.	H. Rothard Electron ejection by heav matter. Nucl. Instrum. Methods Ph	yy particles as precursor of tra ys. Res. B 225, 27 (2004)	ack formation in condensed			

$H^+ + Au$	Surface Interactions	0.8-45  MeV/u	E/T
$Ni^{28+} + C$	Surface Interactions	0.8-45  MeV/u	E/T
$Ni^{28+} + Au$	Surface Interactions	0.8-45  MeV/u	E/T
$\mathbf{H}_{2}{}^{+} + \mathbf{A}\mathbf{u}$	Surface Interactions	0.8-45  MeV/u	E/T
$H^+ + Au$	Secondary Electron Emission	0.8-45  MeV/u	E/T
$Ni^{28+} + C$	Secondary Electron Emission	$0.8-45 { m MeV/u}$	E/T
$Ni^{28+} + Au$	Secondary Electron Emission	$0.8-45 { m MeV/u}$	E/T
$\mathbf{H}_{2}^{+} + \mathbf{A}\mathbf{u}$	Secondary Electron Emission	0.8-45  MeV/u	E/T

1077. K. Czerski, G. Schiwietz, M. Roth, F. Staufenbiel, P. Grande, S. R. Bhattacharyya Non-equilibrium emission of secondary ions from BeO films sputtered by swift gold ions.

Nucl. Instrum. Methods Phys. Res. B 225, 72 (2004)

$Au^{26+} + BeO$	Sputtering	1.8  MeV/u	Exp
$\mathrm{Au}^{41+} + \mathrm{BeO}$	Sputtering	1.8  MeV/u	Exp

1078. T. Jalowy, L. S. Farenzena, M. Hattass, E. F. da Silveira, H. Schmidt-Boecking, K. O. Groeneveld

Analysis of the projectile track charging by  $H^+$  secondary ion velocity distribution measurements.

Nucl. Instrum. Methods Phys. Res. B 225, 78 (2004)

Ar + Al	Sputtering	$25 { m ~KeV/u}$	Exp
Ar + Au	Sputtering	$25 { m ~KeV/u}$	$\operatorname{Exp}$
$Ar + Al_2O_3$	Sputtering	$25 { m ~KeV/u}$	$\operatorname{Exp}$
Ar + LiF	Sputtering	$25 { m ~KeV/u}$	Exp

1079. M. A. Karolewski

Classical dynamics simulation of the fluence dependence of sputtering properties for the 2 keV Cu -i Cu(100) system.

Nucl. Instrum. Methods Phys. Res. B 225, 217 (2004)

$\mathbf{Cu}^+$ -	+ Cu	Sputtering	2  keV
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Th

1080. M. C. Moore, N. Kalyanasundaram, J. B. Freund, H. T. Johnson Structural and sputtering effects of medium energy ion bombardment of silicon. Nucl. Instrum. Methods Phys. Res. B 225, 241 (2004)

$Ar^+ + Si$ Sputtering	500-700 $eV$	$\mathrm{Th}$
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1081. A. Duvenbeck, F. Sroubek, Z. Sroubek, A. Wucher Computer simulation of low-energy electronic excitations in atomic collision cascades. Nucl. Instrum. Methods Phys. Res. B 225, 464 (2004)

Ag + Ag Surface Interactions 5 keV Th

1082. S. Ghalab, A. Wucher
Cluster formation at metal surfaces under bombardment with SF_m⁺ (m=1,,5) and Ar⁺ projectiles.
Nucl. Instrum. Methods Phys. Res. B 226, 264 (2004)

$\mathrm{Ar^{+}+In}$	Sputtering	10  keV	Exp
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1083. M. J. Berger, J. W. Motz X-rays from thick tungsten targets irradiated by 500-50 keV electrons. Nucl. Instrum. Methods Phys. Res. B 226, 327 (2004)

	e + W	Reflection	50-500  keV	Th
1084.	P. R. Watson, W. Lovelalnd Changes in surface comp irradiation. Nucl. Instrum. Methods Ph	, P. M. Zielinski, K. E. Gregorich position and morphology of <i>U1</i> ys. Res. B 226, 543 (2004)	, H. Nitsche $F_4$ targets during heavy ion	
	$\mathbf{Cl}^+ + \mathbf{UF}_4$	Chemical Reactions	$195 { m MeV}$	Exp
1085.	F. Krok, J. J. Kolodziej, B. Desorption and surface of alkali halides. Nucl. Instrum. Methods Ph	Such, P. Czuba, P. Piatkowski, P. topography changes induced ys. Res. B 226, 601 (2004)	. Struski, M. Szymonski by $He^+$ ion bombardment	
	$egin{array}{l} { m He^+} + { m KBr} \ { m He^+} + { m RbI} \end{array}$	Sputtering Sputtering	5 keV 5 keV	Exp Exp
1086.	Y. T. Matulevich, P. A. Zeij Electron emission from deposited on a Mo subst Phys. Rev. B 69, 245414 (20	lmans van Emmichoven low-energy $Xe^+$ ions interact grate. 004)	ing with a MgO thin film	
	$Xe^+ + MgO$	Secondary Electron Emission	47  eV	Exp
1087.	J. Powers, J. R. Manson <b>Temperature-dependent</b> Phys. Rev. B 70, 115413 (20	scattering of hyperthermal e	nergy $K^+$ ions.	
	$\mathrm{K}^+ + \mathrm{Cu}$	Reflection	50-154  eV	$\mathrm{Th}$
1088.	S. Sarkar, P. Chakraborty, H Energetics of $MCs_n^+$ mo Phys. Rev. B 70, 195427 (20	H. Gnaser elecular ions emitted from $Cs^{-1}$ 004)	⁺ irradiated surfaces.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering Sputtering	1-5 keV 1-5 keV 1-5 keV	Exp Exp Exp
1089.	E. D. German, A. M. Kuzne Predicting the kinetics of on metal surfaces in gas molecular oxygen dissoct Surf. Sci. 554, 170 (2004)	etsov, M. Scheintuch of the dissociative adsorption s phase and solution II. Nur iative adsorption on the Pd(1	of homonuclear molecules nerical calculations of the 11) surface.	
	$O_2 + Pd$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$
1090.	SY. Ohno, K. Yagyuu, K. Dissociation preference Cu(001) surface. Surf. Sci. 554, 183 (2004)	Nakasuji, F. Komori of oxygen molecules on an	inhomogeneously strained	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Adsorption, Desorption Neutraliz., Ioniz., Dissoc.	300 deg K 300 deg K	Exp Exp
1091.	P.A.W. van der Heide Secondary ion formation $SiO_2$ with $Cs^+$ . Surf. Sci. 555, 193 (2004)	n/survival during the initial s	tages of sputtering Si and	

	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering	1 keV 1 keV	Exp Exp
1092.	J. C. Lancaster, F. J. Kontu Dynamics of temporary Al(100)/K surface. Surf. Sci. 555, L133 (2004)	r, G. K. Walters, F. B. Dunning negative ion formation in Ha	$e^+$ ion neutralization at an	
	$egin{array}{lll} { m He}^+ + { m Al} \ { m He}^+ + { m Al} \end{array}$	Reflection Neutraliz., Ioniz., Dissoc.	60 eV 60 eV	Exp Exp
1093.	S. Hashimoto, A. Tanaka, A Formulation for XPS spe of sputtering time. Surf. Sci. 556, 22 (2004)	. Murata, T. Sakurada ctral change of oxides by ion l	bombardment as a function	
	$Ar^+ + TiO_2$	Chemical Reactions	2  keV	Exp
1094.	G. Volpilhac, A. Salin Dissociative adsorption of Surf. Sci. 556, 129 (2004)	of $N_2$ on the W(100) surface.		
	$egin{array}{lll} {f N}_2 + {f W} \ {f N}_2 + {f W} \end{array} \ {f N}_2 + {f W} \end{array}$	Adsorption, Desorption Neutraliz., Ioniz., Dissoc.	Undef. Undef.	$_{\mathrm{Th}}$
1095.	T. Jalowy, L. S. Farenzena, Groeneveld <b>Molecular secondary ion</b> Surf. Sci. 557, 91 (2004)	C. R. Ponciano, H. Schmidt-Boe emission from binary collisio	ecking, E. F. da Silveira, K. O.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering	1 MeV 1 MeV	Exp Exp
1096.	C. Corriol, G. R. Darling Molecular trapping in th Surf. Sci. 557, L156 (2004)	e dissociation dynamics of N	$T_2  { m on}  { m W}(110).$	
	$egin{array}{lll} {f N}_2 + {f W} \ {f N}_2 + {f W} \end{array}$	Adsorption, Desorption Neutraliz., Ioniz., Dissoc.	Undef. Undef.	$_{\mathrm{Th}}^{\mathrm{Th}}$
1097.	M. Boyukata, Z. B. Guvenc Molecule-surface interact on rigid low index Ni sur Surf. Sci. 562, 183 (2004)	ion: Dissociative chemisorpt	ion of a $D_2(\nu=0,j=0)$ molecule	
	$egin{array}{lll} \mathbf{H}_2 + \mathbf{Ni} \ \mathbf{D}_2 + \mathbf{Ni} \ \mathbf{H}_2 + \mathbf{Ni} \ \mathbf{D}_2 + \mathbf{Ni} \ \mathbf{D}_2 + \mathbf{Ni} \end{array}$	Adsorption, Desorption Adsorption, Desorption Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	0-1.0 eV 0-1.0 eV 0-1.0 eV 0-1.0 eV	Th Th Th Th
1098.	XQ. Gong, R. Raval, P. Hu CO dissociation and O re Surf. Sci. 562, 247 (2004)	a emoval on Co(0001): A densi	ty functional theory study.	
	CO + Co CO + Co CO + Co	Adsorption, Desorption Desorption Neutraliz., Ioniz., Dissoc.	Undef. Undef. Undef.	Th Th Th

1099. K. Nobuhara, H. Kasai, W. A. Dino, H. Nakanishi  $H_2$  dissociative adsorption on Mg, Ti, Ni, Pd and La surfaces. Surf. Sci. 566-568, 703 (2004)

Adsorption, Desorption	Undef.	$\mathrm{Th}$
Adsorption, Desorption	Undef.	Th
Adsorption, Desorption	Undef.	Th
Adsorption, Desorption	Undef.	$\mathrm{Th}$
Adsorption, Desorption	Undef.	$\mathrm{Th}$
Neutraliz., Ioniz., Dissoc.	Undef.	Th
Neutraliz., Ioniz., Dissoc.	Undef.	Th
Neutraliz., Ioniz., Dissoc.	Undef.	Th
Neutraliz., Ioniz., Dissoc.	Undef.	Th
Neutraliz., Ioniz., Dissoc.	Undef.	Th
	Adsorption, Desorption Adsorption, Desorption Adsorption, Desorption Adsorption, Desorption Adsorption, Desorption Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	Adsorption, DesorptionUndef.Adsorption, DesorptionUndef.Adsorption, DesorptionUndef.Adsorption, DesorptionUndef.Adsorption, DesorptionUndef.Adsorption, DesorptionUndef.Neutraliz., Ioniz., Dissoc.Undef.Neutraliz., Ioniz., Dissoc.Undef.

1100. S. Ogura, K. Fukutani, M. Wilde, M. Matsumoto, T. Okano, M. Okada, T. Kasai, W. A. Dino

Hydrogen adsorption on Ag and Au monolayers grown on Pt(111). Surf. Sci. 566-568, 755 (2004)

H + Ag	Adsorption, Desorption	Undef.	E/T
H + Pt	Adsorption, Desorption	Undef.	E/T
H + Au	Adsorption, Desorption	Undef.	E/T
$H_2 + Ag$	Adsorption, Desorption	Undef.	É/T
$H_2 + Pt$	Adsorption, Desorption	Undef.	É/T
$H_2 + Au$	Adsorption, Desorption	Undef.	É/T
H + Ag	Neutraliz., Ioniz., Dissoc.	Undef.	E/T
H + Pt	Neutraliz., Ioniz., Dissoc.	Undef.	E/T
H + Au	Neutraliz., Ioniz., Dissoc.	Undef.	É/T
$H_2 + Ag$	Neutraliz., Ioniz., Dissoc.	Undef.	É/T
$\mathbf{H}_2 + \mathbf{Pt}$	Neutraliz., Ioniz., Dissoc.	Undef.	E/T
$H_2 + Au$	Neutraliz., Ioniz., Dissoc.	Undef.	E/T

1101. D. M. Bird, M. Persson, J. R. Trail, S. Holloway

Dynamics of the spin transition in the adsorption of hydrogen atoms on metals. Surf. Sci. 566-568, 761 (2004)

H + Cu	Adsorption, Desorption	Undef.	Th
1102. N. Tsuboi, H. Okuyar Adsorption of hydr Surf. Sci. 566-568, 77	na, T. Aruga rogen on the Pd(100)-p(2x2)-p4 7 (2004)	$g - Pd_3Ti$ surface.	
$H_2 + Ti$	Adsorption, Desorption	Undef.	Exp
$H_2 + Pd$	Adsorption, Desorption	Undef.	Exp
$H_2 + Ti$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp
$H_2 + Pd$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp
1103. V. Stary, J. Zemek			
Low energy electro	n elastic reflection from solid su	rfaces.	

Surf. Sci. 566-568, 1206 (2004)

e + Al	Reflection	0.2-20  keV	$\mathrm{Th}$
e + Si	Reflection	0.2-20  keV	$\mathrm{Th}$
e + Cu	Reflection	0.2-20  keV	$\mathrm{Th}$
e + Au	Reflection	0.2-20  keV	$\mathrm{Th}$
$\mathbf{e} + \mathbf{SiO}_2$	Reflection	0.2-20  keV	$\mathrm{Th}$

1104.	V. M. Collado, L. S. Farenzena, C. R. Ponciano, E. F. da Silveira, K. Wien Ion desorption from frozen $H_2O$ irradiated by MeV heavy ions. Surf. Sci. 569, 149 (2004)				
	$egin{array}{lll} \mathbf{N}^+ &+ \mathbf{H}_2 \mathbf{O} \ \mathbf{N}^+ &+ \mathbf{H}_2 \mathbf{O} \end{array}$	Desorption Sputtering	$0.13-0.85 { m MeV}$ $0.13-0.85 { m MeV}$	$\begin{array}{c} Exp\\ Exp \end{array}$	
1105.	S. Jequier, H. Jouin, C. Ha Simulations of electron Surf. Sci. 570, 189 (2004)	rel, F. A. Gutierrez transfer in grazing incidence	ion-surface collisions.		
	$\mathrm{He} + \mathrm{Al} \ \mathrm{He^+} + \mathrm{Al}$	Sputtering Sputtering	2.3 keV 2.3 keV	Th Th	
1106.	A. Guttler, T. Zecho, J. Ku Adsorption of D(H) ato Surf. Sci. 570, 218 (2004)	ppers ms on Ar ion bombarded (00	01) graphite surfaces.		
	H + C D + C	Adsorption, Desorption Adsorption, Desorption	2000 deg K 2000 deg K	$\begin{array}{c} Exp\\ Exp \end{array}$	
1107.	M. Lischka, C. Mosch, A. C CO and hydrogen adsor Surf. Sci. 570, 227 (2004)	bross ption on Pd(210).			
	$f H_2 + Pd \ CO + Pd f $	Adsorption, Desorption Adsorption, Desorption	Undef. Undef.	Th Th	
1108.	P. Riccardi, M. Ishimoto, P Ion-induced electron em Surf. Sci. 571, L305 (2004)	Barone, R. A. Baragiola A Bission from MgO by exciton	decay into vacuum.		
	$\mathrm{He^{+}+MgO}$	Secondary Electron Emission	0.1-4.0 keV	Exp	
	$Ne^+ + MgO$	Secondary Electron Emission	0.1-4.0  keV	Exp	
	$rac{\mathrm{Na^{+}}+\mathrm{MgO}}{\mathrm{Ar^{+}}+\mathrm{MgO}}$	Secondary Electron Emission Secondary Electron Emission	0.1-4.0  keV 0.1-4.0  keV	Exp Exp	
1109.	J. Zemek, P. Jiricek, K. Ole <b>Photoelectron escape fr</b> Surf. Sci. 572, 93 (2004)	ejnik om iron oxide.			
	$egin{array}{l} \mathbf{h} u + \mathbf{Fe}_2\mathbf{O}_3 \ \mathbf{h} u + \mathbf{FeO} \end{array}$	Secondary Electron Emission Secondary Electron Emission	1.5 keV 1.5 keV	Exp Exp	
1110.	K. Franzreb, J. Loerincik, H Quantitative study of or bombardment of a silico Surf. Sci. 573, 291 (2004)	P. Williams $xygen enhancement of sputter on surface with O_2 flood.$	red ion yields. I. Argon ion		
	$f Ar^+ + Si \ O_2^+ + Si$	Sputtering Sputtering	4.4-17 keV 4.4-17 keV	Exp Exp	
1111.	J. K. Vincent, R. A. Olsen, <b>Dissociative chemisorpt</b>	G. J. Kroes, E. J. Baerends ion of $H_2$ on $Pt(111)$ : Isotoj	pe effect and effects of the		

rotational distribution and energy dispersion. Surf. Sci. 573, 433 (2004)

$H_2 + Pt$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$
$\mathbf{D}_2 + \mathbf{Pt}$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$

### 1112. J. Burgdorfer, L. Wirtz, C. O. Reinhold, C. Lemell

Multi-electron dynamics for neutralization of highly charged ions near surfaces. Vacuum 73, 3 (2004)

$Ne^{10+} + LiF$	Reflection	Undef.	$\mathrm{Th}$
$Ne^{10+} + LiF$	Neutraliz., Ioniz., Dissoc.	Undef.	$\mathrm{Th}$

1113. J. A. Yarmoff, Y. Yang, G. F. Liu, X. Chen, Z. Sroubek

Charge exchange in low-energy ion-surface scattering.

Vacuum 73, 25 (2004)

$Li^+ + Fe$	Reflection	200-3500  eV	Exp
$Li^+ + Cs$	Reflection	200-3500  eV	Exp
$Li^+ + I$	Reflection	200-3500  eV	Exp
$Na^+ + Au$	Reflection	200-3500  eV	Exp
$Al^+ + Al$	Reflection	200-3500  eV	Exp
$Li^+ + Fe$	Neutraliz., Ioniz., Dissoc.	$200\text{-}3500\;\mathrm{eV}$	Exp
$Li^+ + Cs$	Neutraliz., Ioniz., Dissoc.	$200\text{-}3500\;\mathrm{eV}$	Exp
$Li^+ + I$	Neutraliz., Ioniz., Dissoc.	$200\text{-}3500\;\mathrm{eV}$	Exp
$Na^+ + Au$	Neutraliz., Ioniz., Dissoc.	$200\text{-}3500\;\mathrm{eV}$	Exp
$Al^+ + Al$	Neutraliz., Ioniz., Dissoc.	$200\text{-}3500\;\mathrm{eV}$	$\operatorname{Exp}$

1114. G. V. Adamov, V. M. Bukhanov, J. S. Colligon, K. F. Minnebaev, A. A. Nasretdinov, L. B. Shelyakin, V. E. Yurasova, E. Yu. Zykova
Secondary ion emission of Fe-Ni alloys in the temperature range including the Curie point.
Vacuum 73, 47 (2004)

$Ar^+ + Fe$	Sputtering	10  keV	Exp
$Ar^+ + Ni$	Sputtering	10  keV	Exp

1115. K. Kimura, S. Usui, T. Tsujioka, S. Tanaka, K. Nakajima, M. Suzuki Effects of surface track potential on secondary electron emission and surface stopping power. Vacuum 72, 50 (2004)

Vacuum 73, 59 (2004)

Reflection	0.5  MeV/u	$\operatorname{Exp}$
Reflection	$0.5 { m MeV/u}$	$\operatorname{Exp}$
Reflection	$0.5 { m MeV/u}$	$\operatorname{Exp}$
Reflection	$0.5 { m MeV/u}$	$\operatorname{Exp}$
Secondary Electron Emission	$0.5 \ { m MeV/u}$	Exp
Secondary Electron Emission	$0.5 \ { m MeV/u}$	Exp
Secondary Electron Emission	$0.5 \ { m MeV/u}$	Exp
Secondary Electron Emission	$0.5 { m MeV/u}$	$\operatorname{Exp}$
	Reflection Reflection Reflection Reflection Secondary Electron Emission Secondary Electron Emission Secondary Electron Emission	Reflection0.5 MeV/uReflection0.5 MeV/uReflection0.5 MeV/uReflection0.5 MeV/uSecondary Electron Emission0.5 MeV/u

1116. A. M. Borisov, E. S. Mashkova, A. S. Nemov

Angular and temperature dependences of ion-induced electron emission of polycrystalline graphite.

Vacuum 73, 65 (2004)

$Ar^+ + C$	Secondary Electron Emission	30  keV	Exp
$\mathbf{N}_{2}^{+} + \mathbf{C}$	Secondary Electron Emission	30  keV	Exp

1117. S. Ninomiya, N. Imanishi

Material dependence of electronic sputtering induced by MeV-energy heavy ions. Vacuum 73, 79 (2004)

	$Si^+ + Al$	Sputtering	$0.5-5.0 { m MeV}$	Exp
	$Si^+ + Si$	Sputtering	$0.5-5.0 { m MeV}$	Exp
	$Si^+ + Al_2O_3$	Sputtering	$0.5-5.0 { m MeV}$	Exp
	$Si^+ + SiO_2$	Sputtering	$0.5-5.0 { m MeV}$	Exp
	${f Si^+}+{f Ga}{f As}$	Sputtering	$0.5-5.0 { m MeV}$	Exp
	$Si^+ + InSb$	Sputtering	$0.5-5.0 { m MeV}$	Exp
	$Si^+ + GaP$	Sputtering	0.5-5.0 MeV	Exp
	$Si^+ + GaSb$	Sputtering	0.5-5.0 MeV	Exp
1118.	W. Soszka, NT.H. Kir Quasi-single scatteri Vacuum 74, 253 (2004)	n-Ngan, A. Kozlowski ng of low-energy $Ne^+$ ions from	the $Fe_3O_4$ surfaces.	
	$Ne^+ + Fe_2O_3$	Sputtering	4-8 keV	Exp
1119.	T. Nakano, T. Fujimoto Measurement of surf coefficient of MgO fi Vacuum 74, 595 (2004)	o, S. Baba face roughness and ion-induced s lms prepared by high-pressure s	secondary electron emission putter deposition.	
	$Ar^+ + MgO$	Secondary Electron Emission	$1 \ \mathrm{keV}$	Exp
1120.	A. Sindona, R. A. Bara Many-body shake-up Phys. Rev. A 71, 05290	giola, G. Falcone, A. Oliva, P. Riccar o in Auger neutralization of slow 03 (2005)	rdi $x Ar^+$ ions at Al surfaces.	
	$Ar^+ + Al$	Secondary Electron Emission	130-430  eV	$\mathrm{E/T}$
1121.	J. P. Allain, J. N. Brood Model development and sputtered $Li^+$ tr J. Nucl. Mater. 337-339	ks, D. A. Alman, L. E. Gonzalez and analysis of temperature-de cansport for tokamak plasma-fac 9, 94 (2005)	pendent lithium sputtering ing applications.	
	$Li^+ + Li$	Reflection	$10 - 10^3 \text{ eV}$	Th
	$\rm H^+ + Li$	Sputtering	$10 - 10^3 \text{ eV}$	Th
	$\mathrm{D^{+}+Li}$	Sputtering	$10 - 10^3 \text{ eV}$	$\mathrm{Th}$
1122.	R. Bastasz, J. A. Whale <b>Recoil energy distrik</b> J. Nucl. Mater. 337-339	ey <b>oution of hydrogen isotopes adso</b> 9, 544 (2005)	orbed on tungsten.	
	H + W	Beflection	3 keV	$\mathbf{T}\mathbf{h}$
	$\mathbf{D} + \mathbf{W}$	Reflection	3 keV	Th
1123.	M. Warrier, R. Schneide Multi-scale modeling J. Nucl. Mater. 337-339	er, E. Salonen, K. Nordlund g of hydrogen isotope transport 9, 580 (2005)	in porous graphite.	
	H + C	Trapping, Detrapping	Undef.	$\mathrm{Th}$
	$\mathbf{D} + \mathbf{C}$	Trapping, Detrapping	Undef.	$\mathrm{Th}$
1124.	Y. Oya, Y. Onishi, H. H Dynamic hydrogen i TDS technique. J. Nucl. Mater. 337-339	Kodama, K. Okuno, S. Tanaka sotope behavior and its chemica 9, 595 (2005)	l states in SiC by XPS and	
	H_+ ⊥ SC	Transing Detransing	1 keV	Fur
	$\mathbf{D}_2^+ + \mathbf{SiC}$ $\mathbf{D}_2^+ + \mathbf{SiC}$	Trapping, Detrapping Trapping, Detrapping	1 keV	Exp Exp

1125.	R. A. Causey, C. L. Kunz, Deuterium retention a charge. J. Nucl. Mater. 337-339, 6	D. F. Cowgill nd release from molybdenur 600 (2005)	n exposed to a Penning dis-	
	$egin{array}{lll} \mathbf{H}_2^+ + \mathbf{Mo} \ \mathbf{D}_2^+ + \mathbf{Mo} \end{array}$	Trapping, Detrapping Trapping, Detrapping	1.2  keV 1.2  keV	Exp Exp
1126.	V. Kh. Alimov, J. Roth, M Depth distribution of depths of several micro J. Nucl. Mater. 337-339, 6	4. Mayer deuterium in single- and po meters. 519 (2005)	lycrystalline tungsten up to	
	$egin{array}{lll} \mathrm{H}^+ + \mathrm{W} \ \mathrm{D}^+ + \mathrm{W} \end{array}$	Trapping, Detrapping Trapping, Detrapping	200 eV 200 eV	Exp Exp
1127.	M. Poon, R. G. Macaulay- Effects of background single crystal tungsten J. Nucl. Mater. 337-339, 6	Newcombe, J. W. Davis, A. A. H gas impurities during $D^+$ is 29 (2005)	laasz rradiation on D trapping in	
	$egin{array}{lll} { m H}^+ + { m W} \ { m D}^+ + { m W} \end{array}$	Trapping, Detrapping Trapping, Detrapping	500 eV 500 eV	Exp Exp
1128.	H. Kodama, M. Oyaidzu, J. Noda, K. Okuno Helium irradiation effection coating film by J. Nucl. Mater. 337-339, 6	A. Yoshikawa, H. Kimura, Y. Oy ects on retention behavior of PCVD. 549 (2005)	ra, M. Matsuyama, A. Sagara, N. of deuterium implanted into	
	$\begin{array}{l} \mathbf{H_2^+} + \mathbf{B} \\ \mathbf{D_2^+} + \mathbf{B} \end{array}$	Trapping, Detrapping Trapping, Detrapping	1 keV 1 keV	Exp Exp
1129.	R. G. Macaulay-Newcomb Low-energy tritium ion J. Nucl. Mater. 337-339, 8	e, A. A. Haasz, J. W. Davis a erosion of graphite. 557 (2005)		
	$egin{array}{ll} {f H}^+ + {f C} \ {f T}^+ + {f C} \ {f H}^+ + {f C} \ {f H}^+ + {f C} \ {f T}^+ + {f C} \end{array}$	Chemical Reactions Chemical Reactions Sputtering Sputtering	150-1500 eV 150-1500 eV 150-1500 eV 150-1500 eV	Exp Exp Exp Exp
1130.	R. P. Doerner, M. J. Bald High temperature eros J. Nucl. Mater. 337-339, 8	win, S. I. Krasheninnikov, K. Sch ion of beryllium. 377 (2005)	nmid	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Surface Interactions Surface Interactions Surface Interactions Surface Interactions Sputtering Sputtering Sputtering Sputtering Sputtering	Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef.	Exp Exp Exp Exp Exp Exp Exp
1131.	A. E. Gorodetsky, R. Kh.	Zalavutdinov, A. P. Zakharov, S	. P. Vnukov, I. G. Varshavskaya,	

A. N. Makhankov, I. V. Mazul, G. Federici Increased recombination of  $CH_3$  radicals on stainless steel.

	$egin{array}{lll} {f CH}_3 + {f Fe} \ {f CH}_3 + {f SS} \end{array}$	Adsorption, Desorption Adsorption, Desorption	Undef. Undef.	$\begin{array}{c} Exp\\ Exp \end{array}$
1132.	F. W. Meyer, H. F. Kra Measurements of che J. Nucl. Mater. 337-339	use, L. I. Vergara mical erosion of ATJ graphit , 922 (2005)	ie by low energy $D_2^+$ impact.	
	$egin{array}{lll} \mathbf{H}_2^+ + \mathbf{C} \ \mathbf{D}_2^+ + \mathbf{C} \end{array}$	Sputtering Sputtering	30-125 eV/amu 30-125 eV/amu	Exp Exp
1133.	D. Nishijima, T. Sugimo Characteristic change energy helium plasm J. Nucl. Mater. 337-339	oto, H. Iwakiri, M. Y. Ye, N. Ohn es of deuterium retention on a pre-exposure. 9 927 (2005)	o, N. Yoshida, S. Takamura tungsten surfaces due to low-	
	$\mathbf{H}_{2}^{+}+\mathbf{W} \\ \mathbf{D}_{2}^{+}+\mathbf{W}$	Trapping, Detrapping Trapping, Detrapping	80 eV 80 eV	Exp Exp
1134.	Y. Nobuta, Y. Yamauch Masuzaki, T. Ozaki, N. <b>Energy and fluence</b> d J. Nucl. Mater. 337-339	i, Y. Hirohata, T. Hino, N. Ashi Noda, A. Komori, O. Motojima, lependences of helium retent 932 (2005)	kawa, K. Nishimura, A. Sagara, S. LHD Experimental Group ion in stainless steel.	
	$\mathrm{He^{+}}$ + Fe $\mathrm{He^{+}}$ + SS	Trapping, Detrapping Trapping, Detrapping	200-1400 eV 200-1400 eV	Exp Exp
1135.	H. Yamaoka, Y. Matsun Angular resolved ene polycrystalline Mo su J. Nucl. Mater. 337-339	noto, M. Nishiura, K. Nishimura, ergy distributions of low ener urface. 9, 942 (2005)	M. Sasao, M. Wada rgy light ions reflected from a	
	$H + M_0$	Reflection	1-3 keV	Evn
	$H^+ + M_0$	Reflection	1-3  keV	Exp
	He + Mo	Reflection	1-3  keV	Exp
	$He^+ + Mo$	Reflection	1-3  keV	Exp
	$\mathbf{O} + \mathbf{Mo}$	Reflection	1-3  keV	Exp
	$\mathbf{O}^+ + \mathbf{Mo}$	Reflection	1-3  keV	Exp
	$H_2 + Mo$	Reflection	1-3  keV	Exp
	$\mathbf{H}_{2}^{+} + \mathbf{Mo}$	Reflection	1-3  keV	Exp
	$H_3 + Mo$	Reflection	1-3  keV	Exp
	$\mathbf{H}_{3}^{+} + \mathbf{Mo}$	Reflection	$1-3 \mathrm{keV}$	Exp
1136.	I. Bizyukov, K. Krieger, Formation of D inven ment of tungsten this J. Nucl. Mater. 337-339	N. Azarenkov, S. Levchuk, Ch. 1 atories and structural modific n films. 9, 965 (2005)	Linsmeier ations by deuterium bombard-	
	TT _ · · ···	<b>G</b>		
	$\mathbf{H}_{3}^{+} + \mathbf{W}$	Sputtering	9 keV	Exp
	$\mathbf{D}_{3^{+}} + \mathbf{W}$	Sputtering	9 keV	Exp
	$\mathbf{H}_{3}^{\top} + \mathbf{W}$	Trapping, Detrapping	9 keV	Exp
	$\mathbf{D} + \mathbf{v} \mathbf{v}$			

1137. J. Roth, A. Kirschner, W. Bohmeyer, S. Brezinsek, A. Cambe, E. Casarotto, R. Doerner, E. Gauthier, G. Federici, S. Higashijima, J. Hogan, A. Kallenbach, H. Kubo, J. M. Layet, T. Nakano, V. Philipps, A. Pospieszczyk, R. Preuss, R. Pugno, R. Ruggieri, B. Schweer, G. Sergienko, M. Stamp

Flux dependence of carbon erosion and implication for ITER.

J. Nucl. Mater. 337-339, 970 (2005)

	$egin{array}{l} \mathrm{H} + \mathrm{C} \ \mathrm{H}^+ + \mathrm{C} \ \mathrm{D} + \mathrm{C} \ \mathrm{D}^+ + \mathrm{C} \end{array}$	Sputtering Sputtering Sputtering Sputtering	30 keV 30 keV 30 keV 30 keV	Exp Exp Exp Exp
1138.	T. Ono, Y. Aoki, T. K An extended formu irradiated by light J. Nucl. Mater. 337-3	Kawamura, T. Kenmotsu, Y. Yama la for the energy spectrum of s ions. 39, 975 (2005)	amura sputtered atoms from a ma	terial
	$egin{array}{ll} \mathbf{H}^+ + \mathbf{Fe} \ \mathbf{He}^+ + \mathbf{Fe} \ \mathbf{D}^+ + \mathbf{Fe} \ \mathbf{T}^+ + \mathbf{Fe} \end{array}$	Sputtering Sputtering Sputtering Sputtering	$\begin{array}{c} 0.05\text{-}1.0 \ \mathrm{keV} \\ 0.05\text{-}1.0 \ \mathrm{keV} \\ 0.05\text{-}1.0 \ \mathrm{keV} \\ 0.05\text{-}1.0 \ \mathrm{keV} \end{array}$	Exp Exp Exp Exp
1139.	M. Balden, E. de Juar <b>Deuterium-induced</b> J. Nucl. Mater. 337-3	n Pardo, I. Quintana, B. Cieciwa, <b>chemical erosion of carbon-n</b> 39, 980 (2005)	J. Roth netal layers.	
	$\begin{array}{l} \mathbf{H_{3}}^{+} + \mathbf{C} \\ \mathbf{D_{3}}^{+} + \mathbf{C} \end{array}$	Sputtering Sputtering	90 eV 90 eV	$\begin{array}{c} Exp\\ Exp \end{array}$
1140.	P. Starke, U. Fantz, M Investigations of ch low pressure plasm J. Nucl. Mater. 337-3	I. Balden emical erosion of carbon mater as. 39, 1005 (2005)	rials in hydrogen and deute	erium
	$egin{array}{ll} \mathbf{H}^+ + \mathbf{C} \ \mathbf{H}_2^+ + \mathbf{C} \ \mathbf{H}_3^+ + \mathbf{C} \end{array}$	Sputtering Sputtering Sputtering	15-30 eV 15-30 eV 15-30 eV	$\begin{array}{c} Exp\\ Exp\\ Exp\end{array}$
1141.	M. D. Coventry, D. N Incident-mass depe- liquid metals. J. Nucl. Mater. 337-3	. Ruzic endence of temperature-enha 39, 1015 (2005)	nced ion-induced sputteri	ng in
	$rac{Ne^+ + Sn}{Ar^+ + Sn}$	Sputtering Sputtering	$0.5{-}1.0 { m ~keV}$ $0.5{-}1.0 { m ~keV}$	
1142.	E. Vietzke, V. Philipp Investigation of the ation. J. Nucl. Mater. 337-3	s e <b>high temperature erosion of</b> 39, 1024 (2005)	nickel under 5 keV neon i	rradi-
	$Ne^+ + Ni$	Sputtering	$5 { m keV}$	Exp
1143.	A. O. Caride, G. L. K Dependences of the properties. Phys. Rev. A 71, 042	limchitskaya, V. M. Mostepanenko e <b>van der Waals atom-wall inte</b> 901 (2005)	o, S. I. Zanette eraction on atomic and ma	terial
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Surface Interactions Surface Interactions Surface Interactions Surface Interactions Surface Interactions Surface Interactions	Undef. Undef. Undef. Undef. Undef. Undef.	$\begin{array}{c} Th \\ Th \\ Th \\ Th \\ Th \\ Th \\ Th \end{array}$

1144.	J.	Rosen,	Κ.	Larsson,	J.	М.	Sc	hneid	ler
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Ab initio molecular dynamics study of hydrogen removal by ion-surface interactions.

J. Phys. Condens. Matter 17, L137 (2005)

$Al^+ + (OH)_3/Al$	Chemical Reactions	0-3.5  eV	Th
$Al^+ + (OH)_3/Al$	Desorption	0-3.5  eV	Th

1145. C. Hopf, W. Jacob

Bombardment of graphite with hydrogen isotopes: A model for the energy dependence of the chemical sputtering yield.

J. Nucl. Mater. 342, 141 (2005)

$H^+ + C$	Reflection	10-10,000  eV	$\mathrm{Th}$
$D^+ + C$	Reflection	10-10,000  eV	$\mathrm{Th}$
$T^+ + C$	Reflection	10-10,000  eV	$\mathrm{Th}$
$H^+ + C$	Sputtering	10-10,000  eV	$\mathrm{Th}$
$D^+ + C$	Sputtering	10-10,000  eV	$\mathrm{Th}$
$T^+ + C$	Sputtering	$10-10,000 {\rm ~eV}$	$\mathrm{Th}$

1146. A. W. Molvik, M. K. Covo, F. M. Bieniosek, R. H. Cohen, A. Faltens, A. Friedman, S. M. Lund, L. Prost, P. A. Seidl

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Experimental studies of electrons in a heavy-ion beam.
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Nucl. Instrum. Methods Phys. Res. A 544, 194 (2005)

$K^+ + Fe$	Desorption	$1 { m MeV}$	Exp
$K^+ + SS$	Desorption	$1 { m MeV}$	Exp
$K^+ + Fe$	Secondary Electron Emission	$1 { m MeV}$	Exp
$K^+ + SS$	Secondary Electron Emission	$1 { m MeV}$	Exp

1147. P. H. Stoltz, S. A. Veitzer, R. H. Cohen, A. W. Molvik, J.-L. Vay Energy loss, range, and electron yield comparisons of the CRANGE ion-material interaction code. Nucl. Instrum. Methods Phys. Res. A 544, 502 (2005)

$H^+ + Au$	Secondary Electron Emission	1-200  MeV/amu	Th
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1148. G. V. Kornich, G. Betz, V. Zaporojtchenko, A. I. Bazhin, F. Faupel Molecular dynamics simulations of low energy ion sputtering of copper nanodimensional clusters on graphite substrates. Nucl. Instrum. Methods Phys. Res. B 227, 261 (2005)

$Ar^+ + C$	Reflection	200  eV	Th
$Ar^+ + Cu$	Reflection	200  eV	$\mathrm{Th}$
$Ar^+ + C$	Sputtering	200  eV	$\mathrm{Th}$
$Ar^+ + Cu$	Sputtering	200  eV	Th

Exp

1149. D. Ohsawa, H. Kawauchi, M. Hirabayashi, Y. Okada, T. Honma, A. Higashi, S. Amano, Y. Hashimoto, F. Soga, Y. Sato
An apparatus for measuring the energy and angular distribution of secondary electrons emitted from water vapor by fast heavy-ion impact. Nucl. Instrum. Methods Phys. Res. B 227, 431 (2005)
He²⁺ + H₂O Reflection 6 MeV/u

1150. S. Zimmermann, H. M. Urbassek

Sputtering of Au(111) by 64 keV/atom Au clusters. Nucl. Instrum. Methods Phys. Res. B 228, 75 (2005)

	$Au^+ + Au$	Sputtering	64  keV	$\mathrm{Th}$
1151.	A. Duvenbeck, M. Lindenbl Self sputtering yields of Nucl. Instrum. Methods Ph	att, A. Wucher silver under bombardment w nys. Res. B 228, 170 (2005)	ith polyatomic projectiles.	
	$\mathrm{Ag}^{+} + \mathrm{Ag}$	Sputtering	2  keV	Th
1152.	P. Traeskelin, K. Nordlund, <b>He, Ne, Ar-bombardme</b> Nucl. Instrum. Methods Ph	J. Keinonen <b>nt of carbon first wall structu</b> nys. Res. B 228, 319 (2005)	ires.	
	$H^+ + C$	Sputtering	5-10 eV	Th
	$He^+ + C$	Sputtering	5-10 eV	Th
	$Ne^+ + C$	Sputtering	5-10 eV	Th
	$Ar^+ + C$	Sputtering	5-10 eV	$\mathrm{Th}$
	$H^+ + C$	Trapping, Detrapping	5-10 eV	Th
1153.	R. Smith, D. Ramasawmy, <b>A molecular dynamics r</b> Nucl. Instrum. Methods Ph	S. D. Kenny nodel for the Coulomb explos nys. Res. B 228, 330 (2005)	ion.	
	$Ar^+ + NaCl$	Sputtering	$1 \mathrm{keV}$	Th
1154.	M. Dapor Monte Carlo simulation carbon films deposited o energy. Nucl. Instrum. Methods Ph	n of electron depth distribut: n aluminium as a function of in nys. Res. B 228, 337 (2005)	ion and backscattering for ncidence angle and primary	
	e + C	Reflection	$10-10^4 \text{ eV}$	$\mathrm{Th}$
1155.	T. Kenmotsu, Y. Yamamur Simulation studies on sp Nucl. Instrum. Methods Ph	a, T. Muramoto, N. Hirotani <b>Duttering in rough surface.</b> nys. Res. B 228, 369 (2005)		
	$H^+ + M_0$	Sputtering	2 keV	$\mathbf{T}\mathbf{h}$
	$D^+ + Mo$	Sputtering	2  keV	Th
1156.	M. Ullrich, A. Burenkov, H Ion sputtering at grazin Nucl. Instrum. Methods Ph	. Ryssel <b>g incidence for SIMS-analysis</b> ays. Res. B 228, 373 (2005)	5.	
	$O^+ + Si$	Sputtering	5-15  keV	Th
	$Cs^+ + Si$	Sputtering	5-15  keV	Th
1157.	P.A.W. van der Heide Secondary ion emission irradiation. Nucl. Instrum. Methods Ph	from Ti, V, Cu, Ag and Au nys. Res. B 229, 35 (2005)	1 surfaces under KeV $Cs^+$	
	$Cs^+ + Ti$	Sputtering	1 keV	Evn
	$Cs^+ + V$	Sputtering	1 keV	Exp Evp
	Cs + Cu	Sputtering	1 keV	Exp
	$Cs^+ + Ag$	Sputtering	1 keV	Exp
	$Cs^+ + Au$	Sputtering	1 keV	Exp
		<b>1</b> 0		1/

1158.	<ul> <li>M. P. Seah</li> <li>An accurate semi-empirical equation for sputtering yields, II: for neon, argon and xenon ions.</li> </ul>				
	Nucl. Instrum. Methods Ph	ys. Res. B 229, 348 (2005)			
	$Ne^+ + PERT$ $Ar^+ + PERT$ $Ne^+ + DEDT$	Sputtering Sputtering	$250 - 10^4 \text{ eV}$ $250 - 10^4 \text{ eV}$ $250 - 10^4 \text{ eV}$	Th Th Th	
	$Xe^+ + PERT$	Sputtering	$250 - 10^4 \text{ eV}$	Th	
1159.	M. A. Reis, P. C. Chaves, J. Particle induced X-ray e chemical speciation methods Ph Nucl. Instrum. Methods Ph	C. Soares mission – relative yield ion es hod. ys. Res. B 229, 413 (2005)	nergy dependence, an IBA		
	$f H^+ + W \ He^{2+} + W$	Surface Interactions Surface Interactions	1.7-5 MeV 1.7-5 MeV	Exp Exp	
1160.	J. I. Juaristi <b>Energy loss of ions inter</b> Nucl. Instrum. Methods Ph	acting with metal surfaces. ys. Res. B 230, 148 (2005)			
	$H^+ + Al$	Reflection	710  keV	$\mathrm{Th}$	
1161.	YH. Song, YN. Wang, Z. <b>Theoretical study of swift</b> <b>under glancing angle of</b> Nucl. Instrum. Methods Ph	L. Miskovic ft molecular ions specularly re incidence. ys. Res. B 230, 158 (2005)	eflected from solid surfaces		
	$\frac{\mathbf{N}_2^+ + \mathbf{C}}{\mathbf{N}_2^+ + \mathbf{C}}$	Reflection Neutraliz., Ioniz., Dissoc.	Undef. Undef.	Th Th	
1162.	A. Hidouche, A. C. Chami, <b>Specular reflection mode</b> <b>energy.</b> Nucl. Instrum. Methods Ph	Y. Boudouma, M. Boudjema, C. el study of the image effect in ys. Res. B 230, 178 (2005)	Benazeth $He^+/a$ :Si scattering at low		
	$He^+ + Si$	Reflection	4  keV	$\mathrm{E}/\mathrm{T}$	
1163.	A. Sindona, R. A. Baragiola Broadening effects in Au Nucl. Instrum. Methods Ph	, S. Maletta, G. Falcone, A. Oliva <b>ger neutralization of 130-430</b> ys. Res. B 230, 298 (2005)	a, P. Riccardi eV $Ar^+$ ions at Al surfaces.		
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Secondary Electron Emission Neutraliz., Ioniz., Dissoc.	130-430 eV 130-430 eV	Exp Exp	
1164.	S. Wethekam, G. Adamov, I Neutralization of keV J Al(111) surface. Nucl. Instrum. Methods Ph	H. Winter $Ne^+$ and $Ar^+$ ions during gr ys. Res. B 230, 305 (2005)	razing scattering from an		
	Ne + Al	Reflection	1.5- $7.5  keV$	Exp	
	$Ne^+ + Al$	Reflection	1.5-7.5 keV	Exp E-	
	$\mathbf{Ar}$ + $\mathbf{AI}$	Renection	1. <b>ə</b> - <i>(</i> . <b>ə</b> KeV	Exp	
1165	A. R. Canario, Yu. Bandou	rine, O. Grizzi, J. Lugo, L. Guille	mot. V. A. Esaulov		

1165. A. R. Canario, Yu. Bandourine, O. Grizzi, J. Lugo, L. Guillemot, V. A. Esaulov  $He^+$  scattering on a  $TiO_2(110)$  surface. Nucl. Instrum. Methods Phys. Res. B 230, 311 (2005)

	$\mathrm{He^+} + \mathrm{TiO}_2 \ \mathrm{He^+} + \mathrm{TiO}_2$	Reflection Neutraliz., Ioniz., Dissoc.	1-4 keV 1-4 keV	Exp Exp
1166.	N. Nieuwjaer, C. Benazeth, Charge transfer in graz faces: Velocity effects. Nucl. Instrum. Methods P.	P. Benoit-Cattin, P. Cafarelli, M ing scattering on clean and ox hys. Res. B 230, 317 (2005)	. Richard-Viard xygen covered Cu(110) sur-	
	${f Li^++Cu} {f Na^++Cu}$	Reflection Reflection	$\begin{array}{l} 4 \hspace{0.1cm} \mathrm{keV} \\ 4 \hspace{0.1cm} \mathrm{keV} \end{array}$	Exp Exp
1167.	J. Sjakste, A. G. Borisov, J Resonant charge transfe on the Cs/Cu(111) surf Nucl. Instrum. Methods P	. P. Gauyacq er in back-scattering of H-ato ace. hys. Res. B 230, 323 (2005)	ms from the Cs adsorbates	
	$egin{array}{l} \mathrm{H} + \mathrm{Cu} \ \mathrm{H} + \mathrm{Cs} \end{array}$	Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	2.5 eV 2.5 eV	Th Th
1168.	J. A. Scheer, M. Wieser, P. J. Nemanich, M. Schleberg <b>High negative ion yield</b> Nucl. Instrum. Methods P.	Wurz, P. Bochsler, E. Hertzberg, er <b>from light molecule scatterin</b> hys. Res. B 230, 330 (2005)	S. A. Fuselier, F. A. Koeck, R. g.	
	$\mathbf{H}_{2}^{+}+\mathbf{C} \\ \mathbf{O}_{2}^{+}+\mathbf{C}$	Reflection Reflection	0.19-2.4  keV 0.19-2.4  keV	Exp Exp
1169.	L. Pasquali, S. Nannarone <b>Metastable He deexcita</b> Nucl. Instrum. Methods P.	tion at semiconductor interfa hys. Res. B 230, 340 (2005)	ces.	
	$egin{array}{lll} { m He} + { m Si} \ { m He} + { m Er} \ { m He} + { m Yb} \ { m He} + { m GaAs} \ { m He} + { m CaF}_2 \end{array}$	Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	300 deg K 300 deg K 300 deg K 300 deg K 300 deg K	Exp Exp Exp Exp Exp
1170.	M. Unipan, D.F.A. Winters Surface spin polarizatio Nucl. Instrum. Methods P.	s, A. Robin, R. Morgenstern, R. H <b>n in Fe(110) and Ni(110).</b> hys. Res. B 230, 356 (2005)	loekstra	
	$He^+ + Fe$ $He^+ + Ni$ $He^{2+} + Fe$ $He^{2+} + Ni$ $He^+ + Fe$ $He^+ + Ni$ $He^{2+} + Fe$ $He^{2+} + Fe$ $He^{2+} + Ni$	Reflection Reflection Reflection Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	<ul> <li>6-20 keV</li> </ul>	Exp Exp Exp Exp Exp Exp Exp
1171.	P. Rousseau, M. Gugiu, H. Neutralization of noble double-electron capture Nucl. Instrum. Methods P.	Khemliche, P. Roncin <b>gas ions on ionic insulators</b> hys. Res. B 230, 361 (2005)	: Auger neutralization or	

$He^+ + LiF$	Reflection	$0.5-1.0 \mathrm{keV}$	Exp
$F^+ + LiF$	Reflection	0.5-1.0  keV	Exp

$Ne^+ + LiF$	Reflection	$0.5-1.0 \mathrm{keV}$	Exp
${ m Ar^+} + { m NaCl}$	Reflection	$0.5-1.0 \mathrm{keV}$	Exp
${ m Kr^+} + { m NaCl}$	Reflection	$0.5-1.0 \mathrm{keV}$	Exp
${ m He^+}+{ m LiF}$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 \mathrm{keV}$	Exp
$F^+ + LiF$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 \mathrm{keV}$	Exp
${ m Ne^+}+{ m LiF}$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 \mathrm{keV}$	Exp
${ m Ar^+} + { m NaCl}$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 \mathrm{keV}$	Exp
$\mathrm{Kr^{+}+NaCl}$	Neutraliz., Ioniz., Dissoc.	$0.5-1.0 \mathrm{keV}$	$\operatorname{Exp}$

1172. T. Tsujioka, S. Tanaka, A. Nakamoto, K. Nakajima, M. Suzuki, K. Kimura Neutralization rate for slow Ar⁺ ions in front of KCl(001). Nucl. Instrum. Methods Phys. Res. B 230, 369 (2005)

Ar + KCl	Reflection	5  keV	Exp
$Ar^+ + KCl$	Reflection	5  keV	Exp
$Ar^{2+} + KCl$	Reflection	5  keV	Exp
Ar + KCl	Neutraliz., Ioniz., Dissoc.	5  keV	Exp
$Ar^+ + KCl$	Neutraliz., Ioniz., Dissoc.	5  keV	Exp
$Ar^{2+} + KCl$	Neutraliz., Ioniz., Dissoc.	$5 {\rm ~keV}$	Exp

### 1173. K. Morita, H. Gridneva

Effect of Auger neutralization on yields of He ions backscattered and alkali ions sputtered from the surface of alkali halides by keV He ion impact. Nucl. Instrum. Methods Phys. Res. B 230, 373 (2005)

$\mathrm{He^{+}+LiF}$	Reflection	3  keV	Exp
$\mathrm{He^{+}+LiF}$	Sputtering	3  keV	Exp

### 1174. L. I. Vergara, F. W. Meyer, H. F. Krause

## Path dependence of the charge state distributions of low-energy $F^{q+}$ ions backscattered from RbI (100).

Nucl. Instrum. Methods Phys. Res. B 230, 379 (2005)

$\mathbf{F}^{2+} + \mathbf{RbI}$	Reflection	4.2  keV	Exp
$\mathbf{F}^{7+} + \mathbf{RbI}$	Reflection	4.2  keV	Exp

1175.	M. Draxler, S. N. Markin, M. Kolibal, S. Prusa, T. Sikola, P. Bauer
	High resolution time-of-flight low energy ion scattering.
	Nucl. Instrum. Methods Phys. Res. B 230, 398 (2005)

$11e^{-} + Cu$ Reflection $3 \text{ KeV}$ $12\text{ KeV}$
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1176. H. Rothard, G. Lanzano, E. De Filippo, C. Volant Fermi shuttle acceleration in atomic collisions: The case of ion induced electron emission.
Nucl. Instrum. Methods Phys. Res. B 220, 410 (2005)

Nucl. Instrum. Methods Phys. Res. B 230, 419 (2005)

$C^+ + Au$	Secondary Electron Emission	14-95  MeV/amu	Exp
$Ar^+ + Au$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp
$Ni^+ + C$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp
$Ni^+ + Al$	Secondary Electron Emission	14-95  MeV/amu	Exp
$Ni^+ + Ni$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp
$Ni^+ + Ag$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp
$Ni^+ + Au$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp
$Au^+ + Au$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp
$Pb^+ + Au$	Secondary Electron Emission	$14-95 \ \mathrm{MeV/amu}$	Exp

1177.	M. Commisso, A. Bonanno, Oliva, A., M. Camarca, F. Xu, P. Riccardi, R. A. Baragiola Plasmon excitation and electron promotion in the interaction of slow $Na^+$ ions with Al surfaces. Nucl. Instrum. Methods Phys. Res. B 230, 438 (2005)			
	$Na^+ + Al$	Secondary Electron Emission	800  eV	Exp
1178.	A. M. Borisov, E. S. Mashko <b>Ion-induced electron emi</b> Nucl. Instrum. Methods Phy	ova, A. S. Nemov, E. S. Parilis Assion – monitoring the struct ys. Res. B 230, 443 (2005)	ure transitions in graphite.	
	$Ar^+ + C$	Secondary Electron Emission	30  keV	Exp
1179.	P. Riccardi, P. Barone, A. Bonanno, Oliva, A., P. Vetro, M. Ishimoto, R. A. Baragiola Kinetic electron emission in the interactions of slow ions with MgO surfaces. Nucl. Instrum. Methods Phys. Res. B 230, 455 (2005)			
	$egin{array}{lll} { m He^+} + { m MgO} \ { m Ne^+} + { m MgO} \ { m Na^+} + { m MgO} \ { m Ar^+} + { m MgO} \end{array}$	Secondary Electron Emission Secondary Electron Emission Secondary Electron Emission Secondary Electron Emission	0-3000 eV 0-3000 eV 0-3000 eV 0-3000 eV	Exp Exp Exp Exp
1180.	N. Pauly, A. Dubus, M. Roe Electron emission induce of charge changing proce Nucl. Instrum. Methods Physics	esler, H. Rothard, A. Clouvas, C. 2 ed by $H^+$ and $H^0$ incident on the sesses. ys. Res. B 230, 460 (2005)	Potiriadis Hin carbon foils: Influence	
	$egin{array}{l} \mathrm{H} + \mathrm{C} \ \mathrm{H}^+ + \mathrm{C} \end{array}$	Secondary Electron Emission Secondary Electron Emission	25-5000 keV 25-5000 keV	Th Th
1181.	<ol> <li>C. Potiriadis, A. Clouvas, H. Rothard, N. Pauly, A. Dubus, M. Roesler Influence of the target thickness on the backward and forward electron emission characteristics induced by protons incident on thin carbon foils. Nucl. Instrum. Methods Phys. Res. B 230, 466 (2005)</li> </ol>			
	$H^+ + C$	Secondary Electron Emission	2-7 MeV	Exp
1182.	<ol> <li>S. Ninomiya, C. Imada, M. Nagai, Y. Nakata, T. Aoki, J. Matsuo, N. Imanishi Total sputtering yields of solids under MeV-energy Si ion bombardment. Nucl. Instrum. Methods Phys. Res. B 230, 483 (2005)</li> </ol>			
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering	0.5-5.0 MeV 0.5-5.0 MeV	Exp Exp
1183.	3. Y. Nakata, S. Ninomiya, C. Imada, M. Nagai, T. Aoki, J. Matsuo, N. Imanishi Secondary neutral and ionized particle measurements under MeV-energy ion bombardment. Nucl. Instrum. Methods Phys. Res. B 230, 489 (2005)			
	${ m Si^+}+{ m InSb}$	Sputtering	$3 { m MeV}$	Exp
1184.	N. Matsunami, O. Fukuoka, A multi-exciton model for Nucl. Instrum. Methods Physics	T. Shimura, M. Sataka, S. Okaya or the electronic sputtering of ys. Res. B 230, 507 (2005)	su f oxides.	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering Sputtering Sputtering Sputtering Sputtering	60-200 MeV 60-200 MeV 60-200 MeV 60-200 MeV 60-200 MeV 60-200 MeV	E/T E/T E/T E/T E/T E/T

1185.	<ol> <li>A. A. Dzhurakhalov, S. E. Rahmatov, I. D. Yadgarov</li> <li>Low-energy ion scattering and sputtering at grazing ion bombardment of clean and oxygen covered Ag(110) surface.</li> <li>Nucl. Instrum. Methods Phys. Res. B 230, 560 (2005)</li> </ol>			
	$egin{array}{l} \mathbf{N^+} + \mathbf{Ag} \ \mathbf{Ne^+} + \mathbf{Ag} \ \mathbf{N^+} + \mathbf{Ag} \ \mathbf{Ne^+} + \mathbf{Ag} \ \mathbf{Ne^+} + \mathbf{Ag} \end{array}$	Reflection Reflection Sputtering Sputtering	2 keV 2 keV 2 keV 2 keV	Exp Exp Exp Exp
1186.	PG. Fournier, A. Nourtier Angular distribution of beryllium under a kryp Nucl. Instrum. Methods P.	r, V. I. Shulga, M. Ait El Fquih sputtered particles and surfa ton beam at various incidence hys. Res. B 230, 577 (2005)	ce morphology: The case of es.	
	$\mathrm{Kr}^+ + \mathrm{Be}$	Sputtering	5  keV	Exp
1187.	N. N. Andrianova, A. M. B <b>The effect of microrelie</b> <b>Cu sputtering yield.</b> Nucl. Instrum. Methods P.	orisov, E. S. Mashkova, A. S. Ner f evolution on the angular de hys. Res. B 230, 583 (2005)	mov, V. I. Shulga pendence of polycrystalline	
	$Ar^+ + Cu$	Sputtering	30  keV	Exp
1188.	M. Unipan, A. Robin, D.F. <b>Transfer of spin polariz</b> Nucl. Instrum. Methods P.	A. Winters, R. Morgenstern, R. H ation in ion-surface scattering hys. Res. B 232, 1 (2005)	Hoekstra g.	
	$He^+ + Ni$	Reflection	0.1-20  keV	Exp
	$He^{2+} + Ni$	Reflection	0.1-20 keV	Exp
	$He^{2+} + Ni$ $He^{2+} + Ni$	Neutraliz., Ioniz., Dissoc. Neutraliz., Ioniz., Dissoc.	0.1-20  keV 0.1-20  keV	Exp Exp
1189.	T. Bernhard, H. Winter Effect of ion beam irra spin-polarized electrons Nucl. Instrum. Methods P	diation on studies of surface from a thin Co film on Cu(0 hys. Res. B 232, 16 (2005)	e magnetism via capture of 001).	
	$\mathrm{He^{+}+Co}\ \mathrm{He^{+}+Co}$	Reflection Neutraliz., Ioniz., Dissoc.	$\begin{array}{l} 25  \mathrm{keV} \\ 25  \mathrm{keV} \end{array}$	Exp Exp
1190.	I. K. Gainullin, E. Yu. Usn Electron exchange betw observation. Nucl. Instrum. Methods P.	nan, I. F. Urazgil'din <b>veen hydrogen ion and thin</b> hys. Res. B 232, 22 (2005)	disk: Quantum-size effect	
	$egin{array}{ll} \mathrm{H}^- + \mathrm{Al} \ \mathrm{H}^- + \mathrm{Al} \end{array}$	Reflection Neutraliz., Ioniz., Dissoc.	Undef. Undef.	Th Th
1191.	T. Kravchuk, V. A. Esaulor $He^+$ scattering on clean Nucl. Instrum. Methods P.	v, A. Hoffman, R. C. Monreal and oxygen covered Al(111) hys. Res. B 232, 27 (2005)		
	He + Al	Reflection	$0.5-4.0 \mathrm{keV}$	Exp
	He + Ag	Reflection	0.5-4.0 keV	Exp
	$He^+ + Al$ $He^+ + A\pi$	Reflection	0.5-4.0  keV	Exp E
	ne + Ag He + Al	nellection Neutraliz Ioniz Dissoc	0.5-4.0 KeV 0.5-4.0 keV	Exp Exp
	He + Ag	Neutraliz., Ioniz., Dissoc.	0.5-4.0 keV	Exp
	$He^+ + Al$	Neutraliz., Ioniz., Dissoc.	0.5-4.0  keV	Exp
	$\mathrm{He^{+}}+\mathrm{Ag}$	Neutraliz., Ioniz., Dissoc.	$0.5-4.0 \mathrm{keV}$	Exp

1192.	<ol> <li>V. H. Ponce, L. F. de Ferrariis, O. Grizzi, M. L. Martiarena, E. A. Sanchez Forward electron emission in grazing ion-surface collisions. Nucl. Instrum. Methods Phys. Res. B 232, 37 (2005)</li> </ol>			
	$H^+ + Al$	Secondary Electron Emission	75-100 keV	Exp
	$H^+ + Si$	Secondary Electron Emission	75-100  keV	Exp
	$ m H^+ + LiF$	Secondary Electron Emission	75-100  keV	Exp
1193.	S. Lederer, H. Winter, HP Electron emission for g Nucl. Instrum. Methods F	. Winter grazing impact of keV He atom Phys. Res. B 232, 47 (2005)	ns on an Al(111) surface.	
	He + Al	Secondary Electron Emission	12  keV	Exp
1194.	I. Aldazabal, M. S. Gravie Role of projectile char liding with LiF(001). Nucl. Instrum. Methods F	lle, J. E. Miraglia, A. Arnau, V. H ge state in convoy electron en Phys. Res. B 232, 53 (2005)	I. Ponce nission by fast protons col-	
	$H^+ + LiF$	Secondary Electron Emission	Undef.	Th
1195.	T. Ikari, N. Uchino, S. N. Nishigaki Influences of the incide a Cs-covered Si(100) su Nucl. Instrum. Methods F	lishioka, H. Fujiwaki, K. Yamada ent He* velocity on metastable irface. Phys. Res. B 232, 88 (2005)	, A. Watanabe, M. Naitoh, S. e de-excitation processes at	
	He + Si	Secondary Electron Emission	0-100  eV	Exp
	He + Cs	Secondary Electron Emission	0-100 eV	Exp
	He + Si He + Cs	Neutraliz, Ioniz, Dissoc. Neutraliz, Ioniz, Dissoc	0-100 eV 0-100 eV	Exp Exp
1196.	SI. Kitazawa, S. Yamame <b>Radiation-induced lum</b> <b>ation.</b> Nucl. Instrum. Methods F	oto, M. Asano, Y. Saitoh, S. Ishiya inescence from sol-gel anatase Phys. Res. B 232, 94 (2005)	ama e $TiO_2$ by 10 keV $O^+$ irradi-	
	$\mathbf{O}^+ + \mathbf{TiO}_2$	Surface Interactions	10  keV	Exp
1197.	R. Souda <b>TOF-SIMS analysis of</b> Nucl. Instrum. Methods F	ion-water interactions. Phys. Res. B 232, 125 (2005)		
	$\mathrm{H^{+}} + \mathrm{H_{2}O}$	Sputtering	1.5  keV	Exp
	$\mathrm{He^{+}}+\mathrm{H_{2}O}$	Sputtering	1.5  keV	Exp
	$Ar^+ + H_2O$	Sputtering	1.5  keV	Exp
1198.	S. Sarkar, P. Chakraborty Instantaneous surface sion under varying Cs Nucl. Instrum. Methods F	work function dependence of a environments. Phys. Res. B 232, 153 (2005)	$MCs_n^+$ molecular ion emis-	
	$Cs^+ + Al$	Sputtering	1-5  keV	Exp
1199.	S. Tsurubuchi, T. Nimura Survival coefficient of ( Nucl. Instrum. Methods F	$Ga(5s^2S_{1/2})$ sputtered from a G Phys. Res. B 232, 159 (2005)	GaAs surface.	

$Ar^+ + GaAs$	Neutraliz., Ioniz., Dissoc.	10-70  keV	Exp
$Ar^+ + GaAs$	Sputtering	10-70  keV	Exp

1200. M. Akiyoshi, H. Sakamoto, R. Haraguchi, K. Moritani, I. Takagi, H. Moriyama TOF measurement of electron volt energy hydrogen atoms reflected by stainlesssteel surface.

Nucl. Instrum. Methods Phys. Res. B 232, 173 (2005)

H + Fe	Reflection	$12,000 \deg K$	Exp
H + SS	Reflection	$12,000 \deg K$	Exp

1201. N. Okabayashi, K. Komaki, Y. Yamazaki

# Potential sputtering and kinetic sputtering from a water adsorbed Si(100) surface with slow highly charged ions.

Nucl. Instrum. Methods Phys. Res. B 232, 244 (2005)

$Ar^{4+} + Si$	Sputtering	$1.2-3.2 \mathrm{keV}$	Exp
$Ar^{4+} + H_2O$	Sputtering	$1.2-3.2 \mathrm{keV}$	Exp
$Ar^{5+} + Si$	Sputtering	1.2-3.2  keV	Exp
$Ar^{5+} + H_2O$	Sputtering	$1.2-3.2 \mathrm{keV}$	Exp
$Ar^{6+} + Si$	Sputtering	1.2-3.2  keV	Exp
$Ar^{6+} + H_2O$	Sputtering	1.2-3.2  keV	Exp
$Ar^{7+} + Si$	Sputtering	1.2-3.2  keV	Exp
$Ar^{7+} + H_2O$	Sputtering	1.2-3.2  keV	Exp
$Ar^{8+} + Si$	Sputtering	1.2-3.2  keV	Exp
$Ar^{8+} + H_2O$	Sputtering	$1.2-3.2 \mathrm{keV}$	Exp

1202. M. Tona, K. Nagata, S. Takahashi, N. Nakamura, N. Yoshiyasu, M. Sakurai, C. Yamada, S. Ohtani

Secondary ion emission from solid surfaces irradiated with highly charged ions. Nucl. Instrum. Methods Phys. Res. B 232, 249 (2005)

$Xe^{29+} + C$	Sputtering	$10^5 \text{ eV}$	Exp
$Xe^{44+} + C$	Sputtering	$10^5 \text{ eV}$	Exp

1203. K. Motohashi, S. Tsurubuchi, A. Koukitu

Momentum-imaging spectroscopy of secondary ions from GaN and SiC surfaces collided with highly charged ions at grazing angle. Nucl. Instrum. Methods Phys. Res. B 232, 254 (2005)

Sputtering	$7.5-35 \mathrm{keV}$	Exp
Sputtering	7.5-35  keV	Exp
Sputtering	7.5-35  keV	Exp
Sputtering	$7.5-35 \mathrm{keV}$	Exp
Sputtering	7.5-35  keV	$\operatorname{Exp}$
	Sputtering Sputtering Sputtering Sputtering Sputtering Sputtering Sputtering Sputtering	Sputtering $7.5-35 \text{ keV}$

 M. Draxler, P. Zeppenfeld, R. Beikler, E. Taglauer, P. Bauer Ion and neutral scattering spectra in LEIS. Nucl. Instrum. Methods Phys. Res. B 232, 266 (2005)

1205. I. Takagi, N. Matsubara, M. Akiyoshi, K. Moritani, T. Sasaki, H. Moriyama Deuterium trapping near vanadium surface bombarded with hydrogen ions. Nucl. Instrum. Methods Phys. Res. B 232, 327 (2005)

$\mathbf{H}^+ + \mathbf{V}$	Trapping, Detrapping	$300 \deg K$	Exp
$\mathbf{D}^+ + \mathbf{V}$	Trapping, Detrapping	$300 \deg K$	Exp

1206. G. Lanzano, E. De Filippo, H. Rothard, C. Volant, A. Anzalone, N. Arena, M. Geraci, F. Giustolisi, A. Pagano

Fast electron production in collisions of swift heavy ions (20 MeV/u ; E ; 100 MeV/u) with foils of solids.

Nucl. Instrum. Methods Phys. Res. B 233, 31 (2005)

$Ni^{19+} + C$	Secondary Electron Emission	45  MeV/u	Exp
$Ni^{19+} + Al$	Secondary Electron Emission	45  MeV/u	Exp
$Ni^{19+} + Ni$	Secondary Electron Emission	45  MeV/u	Exp
$Ni^{19+} + Ag$	Secondary Electron Emission	45  MeV/u	Exp
$Ni^{19+} + Au$	Secondary Electron Emission	45  MeV/u	Exp
$Ni^{19+} + Bi$	Secondary Electron Emission	45  MeV/u	Exp

1207. F. Aumayr, HP. Winter

Inelastic interactions of slow ions and atoms with surfaces.

Nucl. Instrum. Methods Phys. Res. B 233, 111 (2005)

H + Al	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$
H + LiF	Secondary Electron Emission	2-4000  keV	Th
$Ne^+ + Au$	Secondary Electron Emission	2-4000  keV	Th
$Ne^{2+} + Au$	Secondary Electron Emission	$2-4000 {\rm ~keV}$	Th
$Ne^{3+} + Au$	Secondary Electron Emission	$2-4000 {\rm ~keV}$	Th
$Ne^{4+} + Au$	Secondary Electron Emission	$2-4000 {\rm ~keV}$	Th
$Ne^{5+} + Au$	Secondary Electron Emission	$2-4000 {\rm ~keV}$	Th
$Ne^{6+} + Au$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$
$Ne^{7+} + Au$	Secondary Electron Emission	$2-4000 {\rm ~keV}$	Th
$Ne^{8+} + Au$	Secondary Electron Emission	2-4000  keV	Th
$Ne^{9+} + Au$	Secondary Electron Emission	2-4000  keV	Th
$Ar^+ + LiF$	Secondary Electron Emission	2-4000  keV	Th
$Ar^{4+} + LiF$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$
$Ar^{8+} + LiF$	Secondary Electron Emission	2-4000  keV	Th
$Ar^{11+} + LiF$	Secondary Electron Emission	2-4000  keV	Th
$Ar^{14+} + LiF$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$
$\mathbf{X}\mathbf{e}^{9+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	$\mathrm{Th}$
$\mathbf{X}\mathbf{e}^{14+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	Th
$\mathbf{Xe}^{19+} + \mathbf{Al}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	Th
$\mathbf{Xe}^{25+} + \mathbf{Al}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	Th
$\mathbf{Xe}^{28+} + \mathbf{Al}_2\mathbf{O}_3$	Secondary Electron Emission	2-4000  keV	Th
$\mathbf{H}_{2}^{+} + \mathbf{C}$	Secondary Electron Emission	2-4000  keV	Th
H + Al	Sputtering	2-4000  keV	Th
H + LiF	Sputtering	2-4000  keV	Th
$Ne^+ + Au$	Sputtering	2-4000  keV	Th
$Ne^{2+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{3+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{4+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{5+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{6+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{7+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{8+} + Au$	Sputtering	2-4000  keV	Th
$Ne^{9+} + Au$	Sputtering	2-4000  keV	Th
$Ar^+ + LiF$	Sputtering	2-4000  keV	Th
$Ar^{4+} + LiF$	Sputtering	2-4000  keV	Th
$Ar^{s+} + LiF$	Sputtering	2-4000  keV	Th
$Ar^{11+} + LiF$	Sputtering	2-4000 keV	Th

	$\mathbf{Ar}^{14+} + \mathbf{LiF}$ $\mathbf{Xe}^{9+} + \mathbf{Al}_2\mathbf{O}_3$ $\mathbf{Xe}^{14+} + \mathbf{Al}_2\mathbf{O}_3$	Sputtering Sputtering	2-4000 keV 2-4000 keV	Th Th
	$\mathbf{X}\mathbf{e}^{14+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$ $\mathbf{X}\mathbf{e}^{19+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$ $\mathbf{X}\mathbf{e}^{25+} + \mathbf{A}\mathbf{l}_2\mathbf{O}_3$	Sputtering Sputtering Sputtering	2-4000 keV 2-4000 keV 2-4000 keV	Th Th Th
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Sputtering Sputtering	2-4000 keV 2-4000 keV	Th Th
1208.	X. W. Zhou, H.N.G. Wa Low energy sputterin Nucl. Instrum. Methods	dley, S. Sainathan <b>g of nickel by normally inciden</b> Phys. Res. B 234, 441 (2005)	t xenon ions.	
	$Xe^+ + Ni$	Sputtering	50-1000 $eV$	$\mathrm{E}/\mathrm{T}$
1209.	C. Lemell, XM. Tong, Electron emission fro Nucl. Instrum. Methods	K. Toekesi, L. Wirtz, J. Burgdorfer <b>m surfaces induced by HCI and</b> Phys. Res. B 235, 425 (2005)	l lasers.	
	$\mathbf{N}^{6+} + \mathbf{Fe}$	Secondary Electron Emission	0-500  eV	Th
1210.	N. Okabayashi, K. Koma Energy- and angular-o surface with slow hig Nucl. Instrum. Methods	aki, Y. Yamazaki distributions of $F^+$ ions emitted hly charged ions. Phys. Res. B 235, 438 (2005)	from a F-terminated Si(100)	
	$egin{array}{lll} {f Ar}^{5+} + {f F} \ {f Ar}^{5+} + {f Si} \end{array}$	Sputtering Sputtering	3.9 keV 3.9 keV	$\begin{array}{c} Exp\\ Exp \end{array}$
1211.	N. V. Novikov, Ya. A. T <b>Reflection of nitrogen</b> Nucl. Instrum. Methods	Peplova, Yu. A. Fainberg, V. S. Kuli a ions from copper surface: Exp Phys. Res. B 235, 448 (2005)	kauskas periment and calculations.	
	$N^+ + Cu$	Reflection	300  keV	$\mathrm{E}/\mathrm{T}$
1212.	S. Takahashi, M. Tona, I Ohtani <b>Observation of surfa</b>	K. Nagata, N. Yoshiyasu, N. Nakam	ura, M. Sakurai, C. Yamada, S. particle emission in HCI-	
	surface interaction. Nucl. Instrum. Methods	Phys. Res. B 235, 456 (2005)		
	$Xe^{29+} + Si$	Sputtering	150  keV	Exp
	$egin{array}{lll} {f Xe}^{44+}+{f Si}\ {f Xe}^{50+}+{f Si} \end{array}$	Sputtering Sputtering	150 keV 150 keV	Exp Exp
1213.	P. Rajasekar, A. Lennar Ion-bombardment in germane exposures. Nucl. Instrum. Methods	t, N. F. Materer luced light emission from Si(100 Phys. Res. B 237, 485 (2005)	)) surfaces under continuous	
	$f Ar^+ + Si \ Ar^+ + GeH_2$	Sputtering Sputtering	1-5 keV 1-5 keV	$\begin{array}{c} Exp\\ Exp \end{array}$
1214.	Y. Metulevich, S. Ledere Near-threshold emiss from an Al(111) surfa	er, H. Winter ion of electrons during grazing ace.	scattering of keV Ne atoms	

Phys. Rev. B 71, 033405 (2005)

$Ne^+ + Al$	Reflection	2-30  keV	Exp
$Ne^+ + Al$	Secondary Electron Emission	2-30  keV	Exp

1215. J. Cazaux, Y. Bozhko, N. Hilleret

Electron-induced secondary electron emission yield from condensed rare gases: Ne, Ar, Kr, and Xe.

Phys. Rev. B 71, 035419 (2005)

e + Ne	Secondary Electron Emission	$0.05-3.0 { m keV}$	Exp
$\mathbf{e} + \mathbf{Ar}$	Secondary Electron Emission	0.05- $3.0  keV$	Exp
e + Kr	Secondary Electron Emission	0.05- $3.0  keV$	Exp
e + Xe	Secondary Electron Emission	$0.05-3.0 { m keV}$	Exp

1216. W.S.M. Werner

**Trajectory reversal approach for electron backscattering from solid surfaces.** Phys. Rev. B 71, 115415 (2005)

Reflection	$50 - 10^4 {\rm eV}$	$\mathrm{Th}$
Reflection	$50 - 10^4 {\rm eV}$	$\mathrm{Th}$
Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$
Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$
Reflection	$50 - 10^4 \text{ eV}$	$\mathrm{Th}$
	Reflection Reflection Reflection Reflection	Reflection $50 - 10^4 \text{ eV}$

1217. A. R. Canario, A. G. Borisov, J. P. Gauyacq, V. A. Esaulov Nonadiabatic effects in atom-surface charge transfer. Phys. Rev. B 71, 121401 (2005)

LI + Ag Reflection $100-2000  eV$ E	$\mathbf{Li}$	$^{+}$ + Ag	Reflection	100-2000  eV	E	1/T
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1218. S. Bouneau, S. Della-Negra, D. Jacquet, Y. Le Beyec, M. Pautrat, M. H. Shapiro, T. A. Tombrello
Measurement of energy and angular distributions of secondary ions in the sputtering of gold by swift Au_n clusters: Study of emission mechanisms.
Phys. Rev. B 71, 174110 (2005)

$Au^+ + Au$	Sputtering	200  keV	Exp
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1219. A. Hellman, B. Razaznejad, B. I. Lundqvist

Trends in sticking and adsorption of diatomic molecules on the Al(111) surface. Phys. Rev. B 71, 205424 (2005)

CO + Al	Adsorption, Desorption	0-1.2  eV	Exp
$N_2 + Al$	Adsorption, Desorption	0-1.2  eV	Exp
NO + Al	Adsorption, Desorption	0-1.2  eV	Exp
$O_2 + Al$	Adsorption, Desorption	0-1.2  eV	Exp
$\mathbf{F}_2 + \mathbf{Al}$	Adsorption, Desorption	0-1.2  eV	Exp

1220. T. Bernhard, H. Winter

Monitoring growth of ultrathin films via ion-induced electron emission. Phys. Rev. B 71, 24140 (2005)

$H^+ + Co$	Reflection	25  keV	Exp
$\mathrm{H^{+}}+\mathrm{Cu}$	Reflection	25  keV	$\operatorname{Exp}$
$\mathrm{He^{+}+Co}$	Reflection	25  keV	$\operatorname{Exp}$
$\mathrm{He^{+}}+\mathrm{Cu}$	Reflection	$25 { m keV}$	Exp
$N^+ + Co$	Reflection	25  keV	Exp
$N^+ + Cu$	Reflection	25  keV	Exp

	$\mathrm{H^{+}+Co}$	Secondary Electron Emission	25  keV	Exp
	$\mathbf{H}^{+} + \mathbf{Cu}$	Secondary Electron Emission	25  keV	$\operatorname{Exp}$
	$\mathrm{He^{+}+Co}$	Secondary Electron Emission	25  keV	Exp
	$\mathrm{He^+} + \mathrm{Cu}$	Secondary Electron Emission	25  keV	Exp
	N' + Co $N^+ + Cv$	Secondary Electron Emission	25 keV 25 heV	Exp
	$N^+ + Cu$	Secondary Electron Emission	20 Ke v	схр
1221.	X. Chen, Z. Sroubek, Ionization of Al rec Phys. Rev. B 71, 2454	J. A. Yarmoff coiled and sputtered from Al(100) 412 (2005)		
	$Xe^+ + Al$	Sputtering	2-5  keV	$\mathrm{E}/\mathrm{T}$
1222.	D. Valdes, E. C. Gold Linear combination rate of $He^+$ on Al(2 Phys. Rev. B 71, 2454	berg, J. M. Blanco, R. C. Monreal n of atomic orbitals calculation o 111), (100), and (110) surfaces. 417 (2005)	f the Auger neutralization	
	$\mathrm{He^{+}}+\mathrm{Al}$	Reflection	100-1000  eV	$\mathrm{Th}$
	$He^+ + Al$	Neutraliz., Ioniz., Dissoc.	100-1000 eV	Th
1223.	C. Diaz, M. F. Somers Quantum and class incidence. Phys. Rev. B 72, 0354	s, G. J. Kroes, H. F. Busnengo, A. Sali sical dynamics of $H_2$ scattering f 401 (2005)	in, F. Martin rom Pd(111) at off-normal	
	$\mathbf{H}_2 + \mathbf{Pd}$	Reflection	$140\text{-}230~\mathrm{MeV}$	$\mathrm{Th}$
	$\mathbf{H}_2 + \mathbf{Pd}$	Neutraliz., Ioniz., Dissoc.	$140\text{-}230~\mathrm{MeV}$	$\mathrm{Th}$
1224.	J. Herring-Captain, G Low-energy (5-250 from low-temperat Phys. Rev. B 72, 0354	A. Grieves, A. Alexandrov, M. T. Sie eV) electron-stimulated desorption ure water ice surfaces. 431 (2005)	eger, H. Chen, T. M. Orlando n of $H^+$ , $H_2^+$ , and $H^+(H_2O)_n$	
	$\mathbf{e} + \mathbf{H}_2 \mathbf{O}$	Sputtering	5-250  eV	$\mathrm{E/T}$
1225.	J. O. Lugo, E. C. Gold Charge exchange in surfaces I. Experim Phys. Rev. B 72, 0354	dberg, E. A. Sanchez, O. Grizzi n <b>3-30 keV</b> H ⁺ scattering off clean nental study. 432 (2005)	a and $AlF_3$ – covered Al(111)	
	$H^+ + Al$	Reflection	3-30  keV	Exp
	$\mathbf{H}^+ + \mathbf{AlF}_3$	Reflection	3-30  keV	Exp
1226.	J. O. Lugo, E. C. Gol Charge exchange in surfaces II. Theore Phys. Rev. B 72, 0354	dberg, E. A. Sanchez, O. Grizzi <b>a 3-30 keV</b> H ⁺ scattering off clean tical study. 433 (2005)	a and $AlF_3 - covered$ Al(111)	
	$H^+ + Al$	Reflection	$3-30 \ \mathrm{keV}$	$\mathrm{Th}$
	$\mathbf{H}^+ + \mathbf{AlF}_3$	Reflection	3-30  keV	$\mathrm{Th}$
1227.	N. Bajales, S. Montor Identification of me Surf. Sci. 579, 97 (200	o, E. C. Goldberg, R. A. Baragiola, J. echanisms of ion induced electron 05)	Ferron emission by factor analysis.	
	$Li^+ + Al$	Secondary Electron Emission	1-5  keV	E/T
	$\overline{\mathbf{Ar}^+} + \overline{\mathbf{Al}}$	Secondary Electron Emission	1-5 keV	$\tilde{E}/T$

1228. M. Portail, J. B. Faure, T. Angot, J. M. Layet Electronic modifications and surface reactivity of an ion bombarded graphite surface.

Surf. Sci. 581, 24 (2005)

$Ar^+ + C$	Chemical Reactions	$0.3-5.0 \mathrm{keV}$	Exp
${ m H_2^+}+{ m C}$	Chemical Reactions	$0.3-5.0 \mathrm{keV}$	Exp
$\mathbf{D}_2^+ + \mathbf{C}$	Chemical Reactions	$0.3-5.0 \mathrm{~keV}$	Exp

1229. A. Lafosse, D. Caceres, M. Bertin, A. Hoffman, R. Azria Role of electronic band structure and resonances on electron-scattering. The case of the hydrogenated polycrystalline diamond. Surf. Sci. 587, 134 (2005)

e + H	Reflection	3-17  eV	$\operatorname{Exp}$
e + C	Reflection	3-17  eV	$\operatorname{Exp}$
e + D	Reflection	3-17  eV	Exp

1230. R. A. Vidal, B. D. Teolis, R. A. Baragiola Angular dependence of the sputtering yield of water ice by 100 keV proton bombardment. Surf. Sci. 588, 1 (2005)

	$\mathbf{H}^+ + \mathbf{H}_2 \mathbf{O}$	Sputtering	100  keV	Exp
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1231. M. Kurahashi, Y. Yamauchi Effects of adsorbate-induced states on the metastable He atom scattering from water- and benzene-adsorbed Cu(100). Surf. Sci. 590, 21 (2005)

He + Cu	Neutraliz., Ioniz., Dissoc.	Undef.	Exp
$He + H_2O$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp
$He + C_6H_6$	Neutraliz., Ioniz., Dissoc.	Undef.	Exp

1232. M. S. Gravielle, J. E. Miraglia

Interference effects in electron capture from insulator surfaces. Phys. Rev. A 71, 032901 (2005)

$H^+ + LiF$	Reflection	100  keV	Th
$H^+ + LiF$	Neutraliz., Ioniz., Dissoc.	100  keV	Th

#### Plasma Theory, Models 3.4

1233. H. Paul, A. Schinner

Judging the reliability of stopping power tables and programs for protons and alpha particles using statistical methods. Nucl. Instrum. Methods Phys. Res. B 227, 461 (2005)

 $H^+ + A + LiB$  $He^{2+} + A + L$ 

ק	Plasma Theory, Models	$10^{-6} - 10^3 \text{ MeV/u}$	E/T
ίF	Plasma Theory, Models	$10^{-6} - 10^3 \text{ MeV/u}$	E/T

### 3.5 Data Collection, Bibliographic and Progress Report

### 1234. Y. Itikawa

Vibrational excitation of polyatomic molecules by electron collisions.

J. Phys. B 37, R1 (2004)

Data Collection, Bibliography	$0.1-15 \ eV$	E/T
Data Collection, Bibliography	$0.1-15 \ eV$	E/T
Data Collection, Bibliography	$0.1-15 \ eV$	E/T
Data Collection, Bibliography	0.1-15  eV	E/T
	Data Collection, Bibliography Data Collection, Bibliography Data Collection, Bibliography Data Collection, Bibliography	Data Collection, Bibliography0.1-15 eVData Collection, Bibliography0.1-15 eVData Collection, Bibliography0.1-15 eVData Collection, Bibliography0.1-15 eV

1235. F. L. Schoier, F.F.S. van der Tak, E. F. van Dishoeck, J. H. Black An atomic and molecular database for analysis of submillimetre line observations. Astron. Astrophys. 432, 369 (2005)

$\mathbf{CO} + \mathbf{H}_2 + \mathbf{LiF}$	Data Collection, Bibliography	Undef.	E/T
$\mathbf{SO}_2 + \mathbf{H}_2 + \mathbf{LiF}$	Data Collection, Bibliography	Undef.	E/T
$\mathbf{CS} + \mathbf{H}_2 + \mathbf{LiF}$	Data Collection, Bibliography	Undef.	E/T
$\mathrm{HCO^{+}}$ + $\mathrm{H}_{2}$ + $\mathrm{LiF}$	Data Collection, Bibliography	Undef.	E/T
$HCN + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T
$HNC + H_2 + LiF$	Data Collection, Bibliography	Undef.	E/T
${f SiO}+{f H}_2+{f LiF}$	Data Collection, Bibliography	Undef.	E/T
$\mathbf{N}_{2}\mathbf{H}^{+}$ + $\mathbf{H}_{2}$ + $\mathbf{LiF}$	Data Collection, Bibliography	Undef.	E/T
${f SiS}+{f H}_2+{f LiF}$	Data Collection, Bibliography	Undef.	E/T
$\mathrm{HCS^{+}}$ + $\mathrm{H}_{2}$ + $\mathrm{LiF}$	Data Collection, Bibliography	Undef.	E/T

1236. R. P. Bauman, R. L. Porter, G. J. Ferland, K. B. MacAdam J-resolved He I emission predictions in the low-density limit. Astrophys. J., Part 1 628, 541 (2005)

$e + He^+ + LiF$	Data Collection, Bibliography	Undef. T	'n
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1237. H. Paul, A. Schinner

Judging the reliability of stopping power tables and programs for protons and alpha particles using statistical methods.

Nucl. Instrum. Methods Phys. Res. B 227, 461 (2005)

$\mathrm{H^{+}}$ + A + LiF	Data Collection, Bibliography	$10^{-6} - 10^3 \text{ MeV/u}$	E/T
$He^{2+} + A + LiF$	Data Collection, Bibliography	$10^{-6} - 10^3 { m MeV/u}$	E/T

## 3.6 Fusion Research of General Interest

1238. T. Andersen

Atomic negative ions: Structure, dynamics and collisions. Phys. Rep. 394, 157 (2004)

## 3.7 Particle Beam-Matter Interactions

 1239. G. A. Bocan, J. E. Miraglia
 Excitation of two interacting electrons as a plasmon-decay mechanism in protonaluminum collisions.
 Phys. Rev. A 69, 012901 (2004)
1240. A. F. Lifschitz, N. R. Arista

Effective charge and the mean charge of swift ions in solids. Phys. Rev. A 69, 012902 (2004)

$ m H^+ + C + LiF$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
$He^{2+} + C + LiF$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
$Li^{3+} + C + LiF$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
$\mathbf{Cl}^{17+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
$\mathrm{Br}^{35+}+\mathrm{C}+\mathrm{LiF}$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
$\mathbf{I}^{53+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
$\mathbf{U}^{92+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	1-10  MeV/u	$\mathrm{Th}$
A + LiF	Part. Beam-Matter Interaction	1-10  MeV/u	Th

1241. V. P. Shevelko, O. Rosmej, H. Tawara, I. Yu. Tolstikhina The target-density effect in electron-capture processes. J. Phys. B 37, 201 (2004)

$C^{6+} + Cs + LiF$	Part. Beam-Matter Interaction	$1 - 10^5 {\rm ~keV/u}$	Th
$O^{7+} + He + LiF$	Part. Beam-Matter Interaction	$1 - 10^5 {\rm ~keV/u}$	Th
$Ni^{28+} + SiO_2 + LiF$	Part. Beam-Matter Interaction	$1 - 10^5 {\rm ~keV/u}$	Th

1242. Y. Susuki, K.-I. Nishioka, M. Maehara, J. Hyoi, T. Ikeda, K. Katsura Effect of exit surface on neutral fraction in mega-electron-volt hydrogen beams transmitted through aluminum epitaxial foils under a planar channeling condition.

Phys. Rev. A 69, 032710 (2004)

$H^+ + Al + LiF$ Part. Beam-Matter Interaction 0.3-0.6 MeV	Exp
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1243. L. Weissman, D. A. Davieas, P. A. Lofy, D. J. Morrissey
Stopping energetic heavy ions in one-bar helium: Narrow incident momentum distributions.
Nucl. Instrum. Methods Phys. Res. A 522, 213 (2004)

${ m Ar^+ + He + LiF}$	Part. Beam-Matter Interaction	100-150 MeV/amu	Exp
$Ca^+ + He + LiF$	Part. Beam-Matter Interaction	100-150  MeV/amu	Exp
${ m Ge^+}+{ m He}+{ m LiF}$	Part. Beam-Matter Interaction	100-150  MeV/amu	Exp
$ m Kr^+ + He + LiF$	Part. Beam-Matter Interaction	100-150 MeV/amu	Exp
${ m Xe^+ + He + LiF}$	Part. Beam-Matter Interaction	100-150 $MeV/amu$	Exp

## 1244. P. K. Diwan, S. Kumar

Electronic stopping power of elemental and complex targets for heavy ions from  $_{3}Li$  to  $_{29}Cu$  at low energies: An extended approach. Nucl. Instrum. Methods Phys. Res. B 215, 27 (2004)

$Li^+ + C + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Li^+ + Al + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Li^+ + Si + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Li^+ + Ni + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Li^+ + Ag + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Li^+ + Ta + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Li^+ + Au + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$B^+ + C + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$B^+ + Al + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$B^+ + Si + LiF$	Part. Beam-Matter Interaction	$0.2$ - $1.0 \mathrm{MeV/u}$	E/T

 $\mathrm{Th}$ 

$\mathrm{B^{+}+Ni+LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$B^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$B^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$B^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$C^+ + C + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$C^+ + Al + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$\mathrm{C^{+}+Si+LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$C^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$C^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$C^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$C^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T
$N^+ + C + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T
$N^+ + Al + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$N^+ + Si + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T
$N^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$N^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0  MeV'/u	É/T
$N^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$N^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$O^+ + C + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$O^+ + Al + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$O^+ + Si + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$O^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$O^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$O^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$O^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$\mathbf{F}^+ + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$\mathbf{F}^+ + \mathbf{Al} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$\mathbf{F}^+ + \mathbf{Si} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$\mathbf{F}^+ + \mathbf{Ni} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$\mathbf{F}^+ + \mathbf{Ag} + \mathbf{LiF}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$F^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$\mathbf{F}^+ + \mathbf{A}\mathbf{u} + \mathbf{L}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E'/T
$Mg^+ + C + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$Mg^+ + Al + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$Mg^+ + Si + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$Mg^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$Mg^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	É/T
$Mg^+ + Ta + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$Mg^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$Al^{+} + C + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T
$Al^+ + Al + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$Al^+ + Si + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E/T}$
$Al^+ + Ni + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	$\dot{E}/T$
$Al^+ + Ag + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T
$Al^+ + Ta + LiF$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$Al^+ + Au + LiF$	Part. Beam-Matter Interaction	0.2-1.0 MeV/u	E/T
$\mathrm{Cl}^+ + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T
$\mathrm{Cl^{+}} + \mathrm{Al} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$0.2-1.0 { m MeV/u}$	E/T
$\mathrm{Cl}^+ + \mathrm{Si} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T
$\mathrm{Cl}^+ + \mathrm{Ni} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.2-1.0  MeV/u	E/T
$\mathrm{Cl}^+ + \mathrm{Ag} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T
$\mathrm{Cl^{+}}$ + Ta + LiF	Part. Beam-Matter Interaction	0.2- $1.0  MeV/u$	E/T
$\mathrm{Cl^{+} + Au + LiF}$	Part. Beam-Matter Interaction	0.2- $1.0  MeV/u$	$\dot{E/T}$

1245. T.D.M. Weijers, B. C. Duck, D. J. O'Connor

The development of a stopping power predictor for ions with energies of 0.1-1.0 MeV/u in elemental targets.

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$\mathrm{He} + \mathrm{He} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$\mathrm{He} + \mathrm{Li} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
He + N + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
He + S + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
He + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Be + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$\mathrm{Be} + \mathrm{O} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$\rm C + He + LiF$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$\rm C + Li + LiF$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Be + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
C + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + N + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + F + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Ne + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Na + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Mg + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + AI + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Si + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + CI + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + K + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Ca + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Sc + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Ti + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Cr + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Mn + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Fe + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Cu + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Ge + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
C + Br + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	In
C + Kr + LiF	Part. Beam-Matter Interaction	0.1 - 1.0  MeV/u	In Th
Ne + N + LiF	Part. Beam-Matter Interaction	0.1 - 1.0  MeV/u	T II TI
AI + D + LIF	Part. Deam-Matter Interaction	0.1 - 1.0  MeV/u	111 Th
AI + D + LIF	Part. Deam-Matter Interaction	0.1-1.0  MeV/u	111 Th
AI + C + LIF	Part Deam Matter Interaction	$0.1 \pm 1.0 \text{ MeV}/\text{u}$	тп ТЪ
AI + II + LIF	Part Boam Matter Interaction	$0.1 \pm 1.0 \text{ MeV}/\text{u}$	Th
AI + F + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th
AI + I + LiF	Part Beam-Matter Interaction	$0.1-1.0 \text{ MeV}/\mu$	Th
Al + Na + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th
AI + AI + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Si + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Cl + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Ar + LiF	Part Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Ti + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Cu + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Ge + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Br + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Al + Kr + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Si + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Si + Be + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Si + B + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV}'/{ m u}$	Th
Si + C + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV'/u$	$\mathrm{Th}$

Si + N + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + O + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Si + F + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Si + Na + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + Mg + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + Al + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + Si + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + P + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + Cl + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + Mn + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Si + Fe + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Ar + Li + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Ar + Be + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Ar + N + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Ar + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ar + S + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ar + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ti + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ti + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ti + O + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$T_1 + F + L_1F$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ti + Mg + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ti + Al + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$T_1 + S_1 + L_1F$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
$T_1 + S + L_1F$ $T_2^2 + C_1^2 + L_2^2F$	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
T1 + CI + LIF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	
11 + Ar + Lir T: $T: + T: + L:r$	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	
11 + 11 + LIF T; $U_n + I;F$	Part. Deam-Matter Interaction	0.1-1.0  MeV/u	1 II Th
II + Kr + Lir $F_2 + H_2 + Lir$	Part. Deam-Matter Interaction	0.1-1.0  MeV/u	1 II Th
$\mathbf{Fe} + \mathbf{He} + \mathbf{LH}$	Part Boom Matter Interaction	0.1-1.0  MeV/u	III Th
$Fe + M\sigma + LiF$	Part Ream-Matter Interaction	0.1-1.0  MeV/u	Th
Fe + Al + LiF	Part Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Fe + Si + LiF	Part Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Fe + S + LiF	Part Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Fe + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ni + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Ni + B + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Ni + C + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	$\mathrm{Th}$
Ni + N + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m ~MeV/u}$	Th
Ni + O + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Ni + F + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Ni + Ne + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	$\mathrm{Th}$
Ni + Cl + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Ni + Ar + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Ni + Kr + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Cu + Li + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Cu + B + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Cu + C + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Cu + N + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Cu + O + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Cu + Mg + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Cu + Al + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Cu + Si + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Cu + S + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Cu + Cl + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th
Cu + Ar + LiF	Part. Beam-Matter Interaction	0.1-1.0 MeV/u	Th

Cu + Ti + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Cu + Fe + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Cu + Ni + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Cu + Cu + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Cu + Br + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ge + C + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Ge + O + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Ge + Mg + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	$\mathrm{Th}$
Ge + Si + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
Ge + P + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
Ge + Cl + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	$\mathrm{Th}$
Kr + N + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
Kr + S + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
m Zr + Si + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
m Zr + Kr + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
Mo + Mg + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Mo + Si + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Pd + Li + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Ag + Li + LiF	Part.	Beam-Matter Inter	raction	$0.1-1.0 { m MeV/u}$	$\mathrm{Th}$
Ag + B + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ag + C + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	Th
Ag + N + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ag + O + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ag + F + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ag + Ne + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	Th
Ag + Mg + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ag + Al + LiF	Part.	Beam-Matter Inter	raction	0.1- $1.0  MeV/u$	$\mathrm{Th}$
Ag + Si + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	$\mathrm{Th}$
Ag + S + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	$\mathrm{Th}$
Ag + Cl + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	Th
Ag + Ar + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ag + Ti + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ag + Ni + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ag + Cu + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ag + Ge + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ag + Br + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ag + Kr + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	
Ag + U + LiF	Part.	Beam-Matter Intel	raction	0.1-1.0  MeV/u	
SII + LI + LIF	Part.	Deam-Matter Inter	raction	0.1-1.0  MeV/u	1 II Th
Sn + O + LiF	Part.	Deam-Matter Inter	raction	0.1-1.0  MeV/u	1 II Th
SII + AI + LIF SII + T; + I;F	Fait.	Beam Matter Inter	raction	0.1-1.0  MeV/u	
SII + II + LIF $X_0 + N + LiF$	Part	Beam-Matter Inter	raction	0.1-1.0  MeV/u	Th
$X_0 + X_0 + LiF$	Part	Beam-Matter Inter	raction	0.1-1.0  MeV/u	Th
Gd + Li + LiF	Part	Beam-Matter Inter	raction	0.1-1.0  MeV/u	Th
Gd + B + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Gd + C + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	Th
Gd + O + LiF	Part	Beam-Matter Inter	raction	0.1 - 1.0  MeV/u	Th
$L_{II} + L_{I} + L_{I}F$	Part.	Beam-Matter Inter	raction	0.1-1.0  MeV/u	Th
Ta + Li + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/11	Th
Ta + C + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ta + N + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Ta + O + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
W + Mg + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
W + Si + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th
Pt + Mg + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	$\mathrm{Th}$
Pt + Si + LiF	Part.	Beam-Matter Inter	raction	0.1-1.0 MeV/u	Th

Au + Li + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + B + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + C + LiF	Part. Beam-Matter Interaction	$0.1-1.0 \; { m MeV/u}$	Th
Au + N + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + O + LiF	Part. Beam-Matter Interaction	0.1-1.0  MeV/u	Th
Au + F + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + Na + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + Mg + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + Al + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + Si + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + S + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + Cl + LiF	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
Au + Ar + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Au + Ti + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Au + Cu + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Au + Br + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Au + Kr + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
Pb + Ti + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
U + Ar + LiF	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$H_2 + He + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$H_2 + S + LiF$	Part. Beam-Matter Interaction	$0.1-1.0 { m MeV/u}$	Th
$H_2 + Cl + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$N_2 + He + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$N_2 + S + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$N_2 + Cl + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$N_2 + Ar + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th
$A^+ + A + LiF$	Part. Beam-Matter Interaction	0.1- $1.0  MeV/u$	Th

## 1246. Y. Zhang, W. J. Weber, H. J. Whitlow Electronic stopping powers for heavy ions in silicon. Nucl. Instrum. Methods Phys. Res. B 215, 48 (2004)

${ m Be^+}+{ m Si}+{ m LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	Exp
$\mathrm{B^{+}+Si+LiF}$	Part. Beam-Matter Interaction	100-700 keV/u	Exp
$C^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$N^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$O^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$\mathbf{F}^+ + \mathbf{Si} + \mathbf{LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	Exp
$\mathrm{Mg^{+}+Si+LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$Al^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
${ m Si^+}+{ m Si}+{ m LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$Cr^+ + Si + LiF$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
${ m Mn^+ + Si + LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
${ m Fe^+}+{ m Si}+{ m LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$\mathrm{Co^{+}}$ + $\mathrm{Si}$ + $\mathrm{LiF}$	Part. Beam-Matter Interaction	100-700  keV/u	$\operatorname{Exp}$
$Cu^+ + Si + LiF$	Part. Beam-Matter Interaction	$100-700 \ {\rm keV/u}$	Exp

1247. V. Cobut, L. Cirioni, J. P. Patau

Accurate transport simulation of electron tracks in the energy range 1 keV-4 MeV.

Nucl. Instrum. Methods Phys. Res. B 215, 57 (2004)

e + Al + LiF	Part. Beam-Matter Interaction	1-4000  keV	Th
e + Si + LiF	Part. Beam-Matter Interaction	$1-4000 {\rm ~keV}$	$\mathrm{Th}$

1248. W. N. Lennard, H. Xia, J. K. Kim

Revisiting the stopping powers of Si and  $SiO_2$  for  4He  ions: 0.5-2.0 MeV. Nucl. Instrum. Methods Phys. Res. B 215, 297 (2004)

	$egin{array}{lll} {f He^+ + Si + LiF} \ {f He^+ + SiO_2 + LiF} \end{array}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	$0.5-2.0 { m MeV}$ $0.5-2.0 { m MeV}$	Th Th
1249.	U. Greife, S. Bishop, L. Buch D. Gigliotti, D. Hunter, D. A W. Liu, A. Olin, D. Ottewell Energy loss around the hydrogen gas. Nucl. Instrum. Methods Physics	hmann, M. L. Chatterjee, A. A. C A. Hutcheon, A. Hussein, C. C. Je I, J. Rogers, C. Wrede <b>stopping power maximum o</b> ys. Res. B 217, 1 (2004)	Chen, J. M. D'Auria, S. Engel, wett, A. M. Laird, M. Lamey, f Ne, Mg and Na ions in	
	$egin{array}{lll} {f Ne^++H_2+LiF}\ {f Na^++H_2+LiF}\ {f Mg^++H_2+LiF} \end{array}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction	200-1150 keV/u 200-1150 keV/u 200-1150 keV/u	E/T E/T E/T
1250.	P. Hu, J. Zhang, Q. Jin, L. S <b>Proton elastic scattering</b> <b>laboratory angle of 1151</b> Nucl. Instrum. Methods Phys.	Shi, Z. Zhou cross sections of titanium fr deg. ys. Res. B 217, 551 (2004)	om 1.0 to 3.0 MeV at the	
	$H^+ + Ti + LiF$	Part. Beam-Matter Interaction	1-3 MeV	Exp
1251.	M. Tosaki, D. Ohsawa, Y. Is <b>Experimental energy stra</b> Nucl. Instrum. Methods Phy	ozumi <b>aggling of protons in inhomog</b> ys. Res. B 219-220, 241 (2004)	geneous materials.	
	$\mathrm{H^{+}+C+LiF}$	Part. Beam-Matter Interaction	$5.5 { m MeV}$	Exp
1252.	L. L. Araujo, M. Behar, P. I. <b>Random energy loss and</b> Nucl. Instrum. Methods Phy	J. Grande, J. F. Dias straggling study of ${}^{9}Be$ ions ys. Res. B 219-220, 246 (2004)	in silicon.	
	$\mathrm{Be^{+}+Si+LiF}$	Part. Beam-Matter Interaction	500-7000 $\rm keV$	Exp
1253.	J. Y. Hsu, Y. C. Yu, J. H. L Energy loss of He, Li and Nucl. Instrum. Methods Physics	iang, K. M. Chen, H. Niu <b>d B isotopes with MeV energ</b> ys. Res. B 219-220, 251 (2004)	ies in Au.	
	$He^+ + \Delta u + LiF$	Part Beam-Matter Interaction	1-6 MeV	Evn
	$Li^+ + Au + LiF$	Part. Beam-Matter Interaction	1-6 MeV	Exp
	$B^+ + Au + LiF$	Part. Beam-Matter Interaction	$1-6 { m MeV}$	Exp
1254.	Y. Zhang, W. J. Weber Studies of electronic stop Nucl. Instrum. Methods Phy	pping powers using time of flig ys. Res. B 219-220, 256 (2004)	ght spectrometry.	
	$He^+ + C + LiF$	Part Beam-Matter Interaction	2-10 MeV	Evn
	$He^+ + Si + LiF$	Part. Beam-Matter Interaction	2-10 MeV	Exp
	$O^+ + C + LiF$	Part. Beam-Matter Interaction	2-10 MeV	Exp
	$O^+ + Si + LiF$	Part. Beam-Matter Interaction	2-10  MeV	Exp
	$Al^+ + C + LiF$	Part. Beam-Matter Interaction	$2-10 {\rm ~MeV}$	Exp
	$Al^+ + Si + LiF$	Part. Beam-Matter Interaction	2-10 MeV	Exp
1255.	H. Timmers, K. Strenstroem Energy loss measuremen on a PIN diode. Nucl. Instrum. Methods Phy	, M. Graczyk, H. J. Whitlow ts for mass-14 ions using a pa ys. Res. B 219-220, 263 (2004)	atterned stopping medium	

	$\mathbf{C^+} + \mathbf{Au} + \mathbf{LiF}$ $\mathbf{N^+} + \mathbf{Au} + \mathbf{LiF}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	6-10 MeV 6-10 MeV	
1256.	C. Pascual-Izarra, M. Bianco N. Afonso <b>Continuous stopping pow</b>	oni, N. P. Barradas, A. Climent-F ver curves of $Al_2O_3$ for 0.2-2.5	ont, G. Garcia, J. Gonzalo, C. 5 MeV He ions.	
	Nucl. Instrum. Methods Phy $He^+ + Al_2O_3 + LiF$	Part. Beam-Matter Interaction	$0.2\text{-}2.5~\mathrm{MeV}$	Exp
1257.	M. Nigam, J. L. Duggan, M. Matteson, F. D. McDaniel Stopping power of thin C. Nucl. Instrum. Methods Phy	<ul> <li>M. El Bouanani, C. Yang, G. V.</li> <li>GaAs films for Si and P ions.</li> <li>ys. Res. B 219-220, 273 (2004)</li> </ul>	Ravi Prasad, E. D. Sosa, S.	I
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	3 MeV 3 MeV	Exp
1258.	M. D. Barriga-Carrasco, R. C Simulation of the energy ions transmitted through Phys. Rev. A 70, 032901 (20	Garcia-Molina 7 <b>spectra of original versus r</b> 1 <b>thin foils.</b> 004)	ecombined $H_2^+$ molecular	
	$\mathrm{H_2^+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$0.025\text{-}19.193 \; \mathrm{MeV}$	$\mathrm{Th}$
1259.	L. L. Araujo, P. L. Grande, I Electronic energy loss of Phys. Rev. A 70, 032903 (20	M. Behar, J. F. Dias, A. F. Lifsch channeled ions: The giant Ba 004)	itz, N. R. Arista, G. Schiwietz arkas effect.	
	$\mathrm{Be} + \mathrm{Si} + \mathrm{LiF}$ $\mathrm{B} + \mathrm{Si} + \mathrm{LiF}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	$0.100-1 { m MeV/u}$ $0.100-1 { m MeV/u}$	Exp
1260.	S. V. Stepanov, V. M. Byaka Energy loss rate and the Nucl. Instrum. Methods Phy	ov rmalization of subionizing po ys. Res. B 221, 235 (2004)	sitrons and electrons.	
	$\mathrm{e} + \mathrm{H}_2\mathrm{O} + \mathrm{LiF} \ \mathrm{e} + \mathrm{D}_2\mathrm{O} + \mathrm{LiF}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	0.01-100  eV 0.01-100  eV	$_{\mathrm{Th}}$
1261.	J. E. Valdes, C. Parra, J. Dia	az-Valdes, C. D. Denton, C. Agur	to, F. Ortega, N. R. Arista, P.	
	<b>Experimental energy loss</b> Phys. Rev. A 68, 064901 (20	s of slow $H^+$ and $H_2^+$ in chan $003)$	neling conditions.	
	$egin{array}{lll} \mathbf{H}^+ + \mathbf{A}\mathbf{u} + \mathbf{L}\mathbf{i}\mathbf{F} \ \mathbf{H}_2^+ + \mathbf{A}\mathbf{u} + \mathbf{L}\mathbf{i}\mathbf{F} \end{array}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	1-7.5 keV/u 1-7.5 keV/u	$\operatorname{Exp}$
1262.	G. H. Lantschner, J. C. Eck J.H.R. dos Santos, M. Behar <b>Energy loss of helium ior</b> Phys. Rev. A 69, 062903 (20	ardt, A. F. Lifschitz, N. R. Arista , J. F. Dias, P. L. Grande, C. C. <b>as in zinc.</b> 004)	a, L. L. Araujo, P. F. Duarte, Montanari, J. E. Miraglia	
	$\mathrm{He^{+}} + \mathrm{Zn} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$37.5-1750 \ \mathrm{keV/u}$	Exp
1263.	M. M. Li, D. J. O'Connor, H A study of the charge stations in carbon. Nucl. Instrum. Methods Physical Science	I. Timmers ate approach to the stopping p ys. Res. B 222, 11 (2004)	power of MeV B, N and O	

	$egin{array}{llllllllllllllllllllllllllllllllllll$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction	5-70 MeV 5-70 MeV 5-70 MeV	Th Th Th
1264.	Z. Tan, Y. Xia, M. Zhao, X. Electron stopping power energy range of 20-10,00 Nucl. Instrum. Methods Physics	Liu, FX. Li, B. Huang, Y. Ji r and mean free path in org 0 eV. ys. Res. B 222, 27 (2004)	canic compounds over the	
	$e + H_2O + LiF$	Part. Beam-Matter Interaction	0-10 keV	Exp
1265.	S. A. Cruz <b>Pressure effects on the s</b> Nucl. Instrum. Methods Phy	topping and range of heavy id ys. Res. B 222, 411 (2004)	ons.	
	$egin{array}{lll} {f He^+} + {f H_2O} + {f LiF} \ {f He^+} + {f CH_4} + {f LiF} \ {f Li^+} + {f H_2O} + {f LiF} \ {f Li^+} + {f CH_4} + {f LiF} \ {f Li^+} + {f CH_4} + {f LiF} \end{array}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction	10-400 keV 10-400 keV 10-400 keV 10-400 keV	Th Th Th Th
1266.	U. Haellsten, O. Solin A method for calculating by protons in nitrogen g Nucl. Instrum. Methods Physics	g the energy distribution and as targets. ys. Res. B 222, 421 (2004)	yield of electrons ejected	
	$\mathrm{H^{+}}+\mathrm{N}_{2}+\mathrm{LiF}$	Part. Beam-Matter Interaction	4.3 MeV	Th
1267.	J. M. Corstens, W. Knulst, An efficient method for thin foils and multilayers Nucl. Instrum. Methods Physics	O. J. Luiten, M. J. van der Wiel calculating plural scattering s. ys. Res. B 222, 437 (2004)	of relativistic electrons in	
	e + C + LiF e + Al + LiF	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	10 MeV 10 MeV	Th Th
1268.	C. Pascual-Izarra, G. Garcia <b>An efficient method for s</b> Nucl. Instrum. Methods Physics	stopping force determination. ys. Res. B 225, 383 (2004)		
	$\mathrm{He^{+}}+\mathrm{Al_{2}O_{3}}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$50-10^4~{\rm keV}$	$\mathrm{E}/\mathrm{T}$
1269.	Y. Sato, T. Miyoshi, T. Mur Penetration of 4.3 and 6 foils. Nucl. Instrum. Methods Phy	<ul> <li>sakami, K. Noda, V. P. Shevelko, J.</li> <li><b>3.0 MeV/u highly charged, h</b></li> <li>ys. Res. B 225, 439 (2004)</li> </ul>	H. Tawara eavy ions through carbon	
	${f C}^{2+} + {f C} + {f LiF} \ {f Ne}^{4+} + {f C} + {f LiF} \ {f Mg}^{5+} + {f C} + {f LiF} \ {f Si}^{5+} + {f C} + {f LiF} \ {f Ar}^{8+} + {f C} + {f LiF} \ {f Ca}^{6+} + {f C} + {f LiF} \ {f Fe}^{9+} + {f C} + {f LiF} \ {f Fe}^{9+} + {f C} + {f LiF} \ {f Cu}^{10+} + {f C} + {f LiF} \ {f Kr}^{13+} + {f C} + {f LiF} \ {f Kr}^{13+} + {f C} + {f LiF}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u 4.3-6.0 MeV/u	Exp Exp Exp Exp Exp Exp Exp Exp

1270. S. Damache, S. Ouichaoui, A. Belhout, A. Medouni, I. Toumert Stopping of 236 keV-3.019 MeV protons in mylar and polypropylene films. Nucl. Instrum. Methods Phys. Res. B 225, 449 (2004)

$ m H^+ + C + LiF$	Part. Beam-Matter Interaction	352-3000  keV	Exp
$\mathrm{H^{+}}$ + O + LiF	Part. Beam-Matter Interaction	352-3000  keV	Exp

1271. K.-M. Wang, B.-R. Shi, N. Cue, D.-Y. Shen, F. Chen, X.-L. Wang, F. Lu Depth profiles of MeV heavy ions implanted into Si and lithium triborate. Nucl. Instrum. Methods Phys. Res. B 225, 503 (2004)

$ m Ni^+ + Si + LiF$	Part. Beam-Matter Interaction	1-2  MeV	E/T
${ m Ni^+}+{ m LiB_3O_5}+{ m LiF}$	Part. Beam-Matter Interaction	1-2  MeV	E/T
${ m Cu^+}+{ m Si}+{ m LiF}$	Part. Beam-Matter Interaction	1-2  MeV	E/T
$\mathrm{Cu^{+}+LiB_{3}O_{5}+LiF}$	Part. Beam-Matter Interaction	1-2  MeV	E/T

1272. M. J. Berger, J. W. Motz

X-rays from thick tungsten targets irradiated by 500-50 keV electrons. Nucl. Instrum. Methods Phys. Res. B 226, 327 (2004)

$\mathbf{e} + \mathbf{W} + \mathbf{LiF}$ Part. Beam-Matter Interaction	50-500 keV	$\mathrm{Th}$
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1273. H. Paul, A. Schinner

Does the result of a stopping power measurement depend on the method used? Phys. Scr. 69, C41 (2004)

$\mathrm{N^{+} + Be + LiF}$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + C + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Al + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Si + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Ti + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp
$N^+ + Fe + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Ni + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Cu + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Ge + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Mo + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Ag + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp
$N^+ + Sn + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Gd + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + W + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Au + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	$\operatorname{Exp}$
$N^+ + Pb + LiF$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp
$\mathrm{Mg^{+}} + \mathrm{Au} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$10^{-3} - 10 \text{ MeV/u}$	Exp

1274. Y. Zhang, W. J. Weber, C. M. Wang

Electronic stopping powers in silicon carbide.

Phys. Rev. B 69, 205201 (2004)

$He^+ + SiC + LiF$	Part Beam-Matter Interaction	700-18 000 keV	E/T
$Be^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000 keV	E/T
$B^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000  keV	É/T
$C^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000  keV	E/T
$N^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000  keV	E/T
$O^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000  keV	E/T
$F^+ + SiC + LiF$	Part. Beam-Matter Interaction	700-18,000  keV	E/T
$\mathrm{Mg^{+}+SiC+LiF}$	Part. Beam-Matter Interaction	700-18,000  keV	E/T
$Al^+ + SiC + LiF$	Part. Beam-Matter Interaction	$700-18,000 { m ~keV}$	E/T
$Si^+ + SiC + LiF$	Part. Beam-Matter Interaction	$700-18,000 {\rm ~keV}$	E/T
$\mathrm{Cr}^+ + \mathrm{SiC} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$700-18,000 {\rm ~keV}$	E/T
$Mn^+ + SiC + LiF$	Part. Beam-Matter Interaction	$700-18,000 {\rm ~keV}$	E/T
${ m Fe^+}+{ m SiC}+{ m LiF}$	Part. Beam-Matter Interaction	$700-18,000 {\rm ~keV}$	E/T

	$egin{array}{llllllllllllllllllllllllllllllllllll$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction Part. Beam-Matter Interaction	700-18,000 keV 700-18,000 keV 700-18,000 keV 700-18,000 keV 700-18,000 keV	E/T E/T E/T E/T E/T
1275.	R. Cabrera-Trujillo, J. R. S Stopping of swift antipr Phys. Rev. A 71, 012901 (2	abin, Y. Oehrn, E. Deumens otons by hydrogen atoms and 2005)	the Barkas correction.	
	$H^+ + H + LiF$	Part. Beam-Matter Interaction	1-1000 keV	Th
1276.	K. Zhao, Z. Wu Regionally specific hype of surfaces. Phys. Rev. A 71, 012902 (2	erfine polarization of Rb atoms	in the vicinity ( $10^{-5}$ cm)	
	Rb + Si + LiF	Part. Beam-Matter Interaction	Undef.	Exp
1277.	V. Kh. Alimov, J. Roth, M Depth distribution of d depths of several micron J. Nucl. Mater. 337-339, 62	. Mayer leuterium in single- and polyo neters. 19 (2005)	crystalline tungsten up to	
	$\mathrm{H^{+}} + \mathrm{W} + \mathrm{LiF}$	Part. Beam-Matter Interaction	200 eV	Exp
	$\mathrm{D^{+}+W+LiF}$	Part. Beam-Matter Interaction	200  eV	Exp
1210.	Bombardment of graph pendence of the chemic J. Nucl. Mater. 342, 141 (2	ite with hydrogen isotopes: A al sputtering yield. 2005)	model for the energy de-	
	$\mathbf{H}^{+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	10-10,000  eV	$\mathrm{Th}$
	$\mathbf{D}^+ + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	10-10,000  eV	Th
	$\mathrm{T^{+}+C+LiF}$	Part. Beam-Matter Interaction	10-10,000  eV	$\mathrm{Th}$
1279.	Y. Oguri, J. Hasegawa, J. H Stopping of low-energy Nucl. Instrum. Methods Pl	Kaneko, M. Ogawa, K. Horioka highly charged ions in dense p nys. Res. A 544, 76 (2005)	olasmas.	
	$\mathrm{Nb}^{5+} + \mathrm{H}^+ + \mathrm{LiF}$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T
	$Nb^{5+} + e + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T
	$Nb^{10+} + H^+ + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T
	$Nb^{10+} + e + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T
	$ND^{10'} + H' + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T E/T
	$\mathbf{N}\mathbf{D}^{20+} + \mathbf{e} + \mathbf{L}\mathbf{i}\mathbf{F}$ $\mathbf{N}\mathbf{b}^{20+} + \mathbf{H}^{+} + \mathbf{I}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	10-50  keV/amu	E/I E/T
	$\mathbf{N}\mathbf{D}^{0+} + \mathbf{D}^{+} + \mathbf{L}\mathbf{I}\mathbf{F}$ $\mathbf{N}\mathbf{b}^{20+} + \mathbf{a} + \mathbf{L}\mathbf{I}\mathbf{F}$	Part. Beam Matter Interaction	10-50  keV/amu	Е/ 1 F/T
	$\mathbf{N}\mathbf{D}^{-+} \mathbf{P} \mathbf{H}^{+} \mathbf{H}^{+} \mathbf{H}^{+} \mathbf{H}^{+}$	Part Beam-Matter Interaction	10-50  keV/amu	E/T
	$Nb^{25+} + e + LiF$	Part Beam-Matter Interaction	10-50  keV/amu	E/T
	$Nb^{30+} + H^+ + LiF$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T
	$Nb^{30+} + e + LiF$	Part. Beam-Matter Interaction	10-50  keV'amu	E/T
	$\mathbf{N}\mathbf{b}^{35+} + \mathbf{H}^+ + \mathbf{L}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	10-50  keV/amu	É/T
	$Nb^{35+} + e + LiF$	Part. Beam-Matter Interaction	$10-50 \ \mathrm{keV/amu}$	E/T
	$\mathbf{N}\mathbf{b}^{40+} + \mathbf{H}^+ + \mathbf{L}\mathbf{i}\mathbf{F}$	Part. Beam-Matter Interaction	$10-50 \ \mathrm{keV/amu}$	E/T
	$\mathbf{Nb}^{40+} + \mathbf{e} + \mathbf{LiF}$	Part. Beam-Matter Interaction	10-50  keV/amu	E/T

1280. P. H. Stoltz, S. A. Veitzer, R. H. Cohen, A. W. Molvik, J.-L. Vay Energy loss, range, and electron yield comparisons of the CRANGE ion-material interaction code. Nucl. Instrum. Methods Phys. Res. A 544, 502 (2005)

${ m He^+} + { m Ar} + { m LiF}$	Part. Beam-Matter Interaction	1-200  MeV/amu	$\mathrm{Th}$
$\mathrm{K^{+}+Fe}$ + $\mathrm{LiF}$	Part. Beam-Matter Interaction	1-200  MeV/amu	Th
$ m K^+ + SS + LiF$	Part. Beam-Matter Interaction	1-200  MeV/amu	Th

1281. A. N. Perumal, V. Horvat, R. L. Watson, Y. Peng, K. S. Fruchey
 Cross sections for charge change in argon and equilibrium charge states of 3.5
 MeV/amu uranium ions passing through argon and carbon targets.
 Nucl. Instrum. Methods Phys. Res. B 227, 251 (2005)
 U²⁸⁺ + C + LiF Part. Beam-Matter Interaction 3.5 MeV/amu Exp
 U²⁸⁺ + Ar + LiF Part. Beam-Matter Interaction 3.5 MeV/amu Exp

1282. G. V. Kornich, G. Betz, V. Zaporojtchenko, A. I. Bazhin, F. Faupel<br/>Molecular dynamics simulations of low energy ion sputtering of copper nano-<br/>dimensional clusters on graphite substrates.<br/>Nucl. Instrum. Methods Phys. Res. B 227, 261 (2005)Sector (2005) $Ar^+ + C + LiF$ Part. Beam-Matter Interaction<br/>Part. Beam-Matter Interaction<br/>200 eVTh<br/>Th $Ar^+ + Cu + LiF$ Part. Beam-Matter Interaction<br/>200 eVTh

1283. H. B. Nersisyan, A. K. Das Proton and antiproton energy losses in a solid target: An exact trial potential approach. Nucl. Instrum. Methods Phys. Res. B 227, 455 (2005)

$H^+ + Al + LiF$ Part. Beam-Matter Interaction 1-1000 keV	Th
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1284. H. Paul, A. Schinner Judging the reliability of stopping power tables and programs for protons and alpha particles using statistical methods. Nucl. Instrum. Methods Phys. Res. B 227, 461 (2005)

$\mathrm{H^{+}} + \mathrm{A} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$10^{-6} - 10^3 \text{ MeV/u}$	E/T
$He^{2+} + A + LiF$	Part. Beam-Matter Interaction	$10^{-6} - 10^3 \text{ MeV/u}$	E/T

1285. N. K. Skobelev, R. Kalpakchieva, R. A. Astabatyan, J. Vincour, A. A. Kulko, S. P. Lobastov, S. M. Lukyanov, E. R. Markaryan, V. A. Maslov, Yu. E. Penionzhkevich, Yu. G. Sobolev, V. Yu. Ugryumov
Exit charge-state distributions of 242.8 MeV and 264.5 MeV ⁴⁸Ca ions incident on carbon and gold foils. Nucl. Instrum. Methods Phys. Res. B 227, 471 (2005)

$Ca^+ + C + LiF$ Part. Beam-Matter Interaction	$242\text{-}264~\mathrm{MeV}$	Exp
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1286. Y. Zhang, W. J. Weber, A. Razpet, G. Possnert Electronic stopping powers for He, Be and F ions in Au. Nucl. Instrum. Methods Phys. Res. B 227, 479 (2005)

$\mathrm{He^{+}} + \mathrm{Au} + \mathrm{LiF}$	Part. Beam-Matter Interaction	0-600  keV/u	Exp
${ m Be^+} + { m Au} + { m LiF}$	Part. Beam-Matter Interaction	0-600  keV/u	Exp
$F^+ + Au + LiF$	Part. Beam-Matter Interaction	0-600  keV/u	$\operatorname{Exp}$

1287.	C. Anders, H. M. Urbassek <b>Cluster-size dependence</b> Nucl. Instrum. Methods Ph	<b>of ranges of 100 eV/atom</b> <i>Au</i> ys. Res. B 228, 57 (2005)	$n_n$ clusters.	
	$f Au^+ + C + LiF \ Au^+ + Ar + LiF$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	100 eV 100 eV	Th Th
	$Au^+ + Au + LiF$	Part. Beam-Matter Interaction	100  eV	$\mathrm{Th}$
1288.	WF. Tsai, J. H. Liang, J. A <b>A study of high-tempera</b> Nucl. Instrum. Methods Ph	J. Kai, G. L. Kulcinski ature implantation of <b>72</b> keV ys. Res. B 228, 151 (2005)	copper ions into nickel.	
	$Cu^+ + Ni + LiF$	Part. Beam-Matter Interaction	72  keV	$\mathrm{E}/\mathrm{T}$
1289.	L. R. Corrales, A. Chartier, Excess kinetic energy di Nucl. Instrum. Methods Ph	R. Devanathan ssipation in materials. ys. Res. B 228, 274 (2005)		
	$Cu^+ + Cu + LiF$	Part. Beam-Matter Interaction	1  keV	$\mathrm{Th}$
	$\mathrm{Cu}^+ + \mathrm{Zr} + \mathrm{LiF}$	Part. Beam-Matter Interaction	1 keV	Th
	$\mathrm{Zr}^+ + \mathrm{Cu} + \mathrm{LiF}$	Part. Beam-Matter Interaction	1 keV	Th
	$\mathbf{Zr}^{+} + \mathbf{Zr} + \mathbf{LiF}^{+}$	Part. Beam-Matter Interaction	1 keV	Th
1290.	M. Dapor Monte Carlo simulation carbon films deposited or energy. Nucl. Instrum. Methods Ph	of electron depth distributi n aluminium as a function of ir ys. Res. B 228, 337 (2005)	on and backscattering for acidence angle and primary	
	e + C + LiF	Part. Beam-Matter Interaction	$10-10^4~{\rm eV}$	Th
1291.	<ul> <li>D. Emfietzoglou, G. Papam</li> <li>M. Moscovitch</li> <li>A Monte-Carlo study of the condensed phase.</li> <li>Nucl. Instrum. Methods Ph</li> </ul>	ichael, I. Androulidakis, K. Kara Sub-keV electron transport ys. Res. B 228, 341 (2005)	va, K. Kostarelos, A. Pathak, in water: The influence of	
	$e + H_2O + LiF$	Part. Beam-Matter Interaction	0.1-1.0 keV	$\mathrm{Th}$
1292.	P. Sigmund, A. Sharma, A. <b>Valence structure effects</b> Nucl. Instrum. Methods Ph	Schinner, A. Fettouhi s <b>in the stopping of swift ions</b> ys. Res. B 230, 1 (2005)		
	$\mathrm{H^{+}}+\mathrm{A}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.5-1.0 { m MeV}$	$\mathrm{Th}$
	$\mathrm{He^{+}}+\mathrm{A}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.5\text{-}1.0\;\mathrm{MeV}$	$\mathrm{Th}$
	$\mathrm{Pb^{+}}+\mathrm{A}+\mathrm{LiF}$	Part. Beam-Matter Interaction	$0.5-1.0 { m MeV}$	$\mathrm{Th}$
1293.	M. Seliger, C. O. Reinhold, <b>Non-unitary master equ</b> Nucl. Instrum. Methods Ph	T. Minami, J. Burgdorfer ation for the internal state of ys. Res. B 230, 7 (2005)	ions traversing solids.	
	$\mathrm{Kr}^{35+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$
1294.	C. D. Denton, J. Diaz-Valde <b>Recombination of</b> $H_2^+$ m Nucl. Instrum. Methods Ph	es, J. E. Valdes, P. Vargas, N. R. A nolecules in channeling condit ys. Res. B 230, 36 (2005)	Arista ions.	
	$\mathbf{H}_{2}^{+} + \mathbf{A}\mathbf{u} + \mathbf{LiF}$	Part. Beam-Matter Interaction	12.5  keV	Exp

1295. R. Garcia-Molina, I. Abril, S. Heredia-Avalos, L. Lammich, H. Buhr, H. Kreckel, S. Krohn, D. Strasser, R. Wester, A. Wolf, D. Zajfman, D. Schwalm
Wake effects in the evolution of fast molecular ions through thin foils. Nucl. Instrum. Methods Phys. Res. B 230, 41 (2005)

$\mathrm{H^{+}+C+LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$
$\mathbf{C}^{4+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$
${ m H_2^+}+{ m C}+{ m LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$
$\mathrm{HD^{+}} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$
$\mathrm{CH}_{2}^{+} + \mathrm{C} + \mathrm{LiF}$	Part. Beam-Matter Interaction	Undef.	$\mathrm{Th}$

1296. C. D. Archubi, C. D. Denton, J. C. Eckardt, G. H. Lantschner, N. R. Arista, J. E. Valdes, J. Ferron
Angular dispersion of protons passing through thin metallic films.
Nucl. Instrum. Methods Phys. Res. B 230, 53 (2005)
H⁺ + Al + LiF Part. Beam-Matter Interaction 10 keV Exp
1297. M. Tosaki, D. Ohsawa, Y. Isozumi
An experimental evaluation of spatial distribution for deeply penetrating protons in carbon material.

Nucl. Instrum. Methods Phys. Res. B 230, 59 (2005)

$$\mathbf{H}^+ + \mathbf{C} + \mathbf{LiF}$$
 Part. Beam-Matter Interaction 5.5 MeV Exp

1298. M. Imai, M. Sataka, K. Kawatsura, K. Takahiro, K. Komaki, H. Shibata, H. Sugai, K. Nishio Charge state distribution and its equilibration of 2 MeV/u sulfur ions passing through carbon foils.

Nucl. Instrum. Methods Phys. Res. B 230, 63 (2005)

${f S}^{6+}+{f C}+{f LiF}$	Part. Beam-Matter Interaction	2  MeV/u	Exp
$\mathbf{S}^{10+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	2  MeV/u	Exp
$S^{11+} + C + LiF$	Part. Beam-Matter Interaction	2  MeV/u	Exp
$\mathbf{S}^{13+} + \mathbf{C} + \mathbf{LiF}$	Part. Beam-Matter Interaction	2  MeV/u	Exp

 1299. D. Emfietzoglou, A. Pathak, M. Moscovitch Modeling the energy and momentum dependent loss function of the valence shells of liquid water. Nucl. Instrum. Methods Phys. Res. B 230, 77 (2005)

$$\mathbf{H}^+ + \mathbf{H}_2\mathbf{O} + \mathbf{LiF}$$
 Part. Beam-Matter Interaction Undef. Th

1300. C. Kondo, Y. Takabayashi, T. Muranaka, S. Masugi, T. Azuma, K. Komaki, A. Hatakeyama, Y. Yamazaki, E. Takada, T. Murakami
X-ray yields from high-energy heavy ions channeled through a crystal: Their crystal thickness and projectile dependences.
Nucl. Instrum. Methods Phys. Res. B 230, 85 (2005)

$\mathrm{Ar}^{17+} + \mathrm{Si} + \mathrm{LiF}$	Part. Beam-Matter Interaction	$400 { m MeV/u}$	Exp
$\mathrm{Fe}^{24+} + \mathrm{Si} + \mathrm{LiF}$	Part. Beam-Matter Interaction	400  MeV/u	Exp
$\mathrm{Kr}^{35+}+\mathrm{Si}+\mathrm{LiF}$	Part. Beam-Matter Interaction	400  MeV/u	Exp

1301. S. Heredia-Avalos, J. C. Moreno-Marin, I. Abril, R. Garcia-Molina Energy loss of H⁺ and He⁺ in the semiconductors GaAs, ZnSe, InP and SiC. Nucl. Instrum. Methods Phys. Res. B 230, 118 (2005)

$ m H^+ + SiC + LiF$	Part. Beam-Matter Interaction	10-3000 keV/u	Th
$ m H^+ + ZnSe + LiF$	Part. Beam-Matter Interaction	10-3000 keV/u	$\mathrm{Th}$
$ m H^+ + GaAs + LiF$	Part. Beam-Matter Interaction	10-3000 keV/u	$\mathrm{Th}$
$ m H^+ + InP + LiF$	Part. Beam-Matter Interaction	10-3000 keV/u	$\mathrm{Th}$
${ m He^+}+{ m SiC}+{ m LiF}$	Part. Beam-Matter Interaction	10-3000 keV/u	$\mathrm{Th}$
${ m He^+} + { m ZnSe} + { m LiF}$	Part. Beam-Matter Interaction	10-3000 keV/u	$\mathrm{Th}$
${ m He^+}+{ m GaAs}+{ m LiF}$	Part. Beam-Matter Interaction	10-3000 keV/u	$\mathrm{Th}$
${ m He^+} + { m InP} + { m LiF}$	Part. Beam-Matter Interaction	10-3000  keV/u	$\mathrm{Th}$
J. I. Juaristi <b>Energy loss of ions inter</b> Nucl. Instrum. Methods Ph	acting with metal surfaces. ys. Res. B 230, 148 (2005)		
$\mathrm{H^{+}}+\mathrm{Al}+\mathrm{LiF}$	Part. Beam-Matter Interaction	710  keV	$\mathrm{Th}$
$A^+ + Al + LiF$	Part. Beam-Matter Interaction	710  keV	$\mathrm{Th}$
A. Chiba, Y. Saitoh, S. Taji Measurement of carbon luminance plate. Nucl. Instrum. Methods Ph	ma <b>cluster charge state passing</b> ys. Res. B 232, 32 (2005)	through thin foils using a	
$\mathrm{C^{+}+C+LiF}$	Part. Beam-Matter Interaction	1 MeV	Exp
P. Verma, P. H. Mokler, A. A. Gumberidze, S. Hagman U. Spillmann, Th. Stoehlker <b>Charge exchange and X-</b> Nucl. Instrum. Methods Ph	Brauning-Demian, H. Brauning, J. n, C. Kozhuharov, A. Orsic-Muth , Z. Stachura, S. Tashenov, M. A. ray emission in 70 MeV/u Bi	E. Berdermann, S. Chatterjee, hig, R. Reuschl, M. Schoeffler, . Wahab <b>-Au collisions.</b>	

Nucl. Instrum. Methods Phys. Res. B 235, 309 (2005)

1302.

1303.

1304.

$Bi^{82+} + Au + LiF$ Part. Beam-Matter Interaction 70 MeV/	'u Exp
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1305. J. Braziewicz, U. Majewska, M. Polasik, K. Slabkowska, I. Fijal, M. Jaskola, A. Korman, W. Kretschmer Sulphur ion charge states inside solids from low-resolution K X-ray spectra.

Nucl. Instrum. Methods Phys. Res. B 235, 403 (2005)

$S^+ + C + LiF$	Part. Beam-Matter Interaction	$9.6-32 { m MeV}$	$\operatorname{Exp}$
$S^+ + Al + LiF$	Part. Beam-Matter Interaction	$9.6-32 { m MeV}$	Exp
$S^+ + Ti + LiF$	Part. Beam-Matter Interaction	$9.6-32 { m MeV}$	Exp
$S^+ + Fe + LiF$	Part. Beam-Matter Interaction	$9.6-32 { m MeV}$	Exp

1306. V. U. Nazarov, J. M. Pitarke, C. S. Kim, Y. Takada Time-dependent density-functional theory for the stopping power of an interacting electron gas for slow ions. Phys. Rev. B 71, 121106 (2005)

A + C + LiF	Part. Beam-Matter Interaction	Undef.	Th
A + Al + LiF	Part. Beam-Matter Interaction	Undef.	Th
A + Au + LiF	Part. Beam-Matter Interaction	Undef.	Th

1307. B. Pawlowski, M. Petrascu, J. Czerbniak, D. Pantelica, M. Moneta Experimental results for change of H and Li ions stopping in metal foils with temperature. Vacuum 78, 439 (2005)

$ m H^+ + Ni + LiF$	Part. Beam-Matter Interaction	$1.8-14 { m MeV}$	Exp
$Li^+ + Ni + LiF$	Part. Beam-Matter Interaction	$1.8-14 { m MeV}$	Exp

1308.	<ul> <li>M. Moneta, B. Pawlowski</li> <li>Ion stopping cross-section at ferro-paramagnetic phase transition.</li> <li>Vacuum 78, 467 (2005)</li> </ul>			
	$egin{array}{ll} \mathrm{H}^+ + \mathrm{Ni} + \mathrm{LiF} \ \mathrm{Li}^+ + \mathrm{Ni} + \mathrm{LiF} \end{array}$	Part. Beam-Matter Interaction Part. Beam-Matter Interaction	2 MeV/amu 2 MeV/amu	E/T E/T
	3.8 Interaction	s of Atomic Particles	with Fields	
1309.	F. Robicheaux, J. D. Hans <b>Three-body recombina</b> Phys. Rev. A 69, 010701 (	tion for protons moving in a st (2004)	trong magnetic field.	
	e + H + LiF	Atom Field Interaction	4-16 K	Th
1310.	M. Pichler, W. C. Stwalley Formation of ultracold state.	$V_7$ , R. Beuc, G. Pichler $Cs_2$ molecules through the do	puble-minimum $Cs_2$ 3 ${}^1\Sigma_u^+$	
	Phys. Rev. A 69, 013403 (	(2004)		_
	Cs + Cs + LiF	Atom Field Interaction	$100 \ \mu \ k$	Th
1311.	S. X. Hu, L. A. Collins <b>Redistributing populat</b> Phys. Rev. A 69, 041402 (	ions of Rydberg atoms with ha (2004)	alf-cycle pulses.	
	$egin{array}{ll} { m H} + { m LiF} \ { m H}^* + { m LiF} \end{array}$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th
1312.	C. Ticknor, C. A. Regal, I Multiplet structure of Phys. Rev. A 69, 042712 (	D. S. Jin, J. L. Bohn Feshbach resonances in nonzer (2004)	o partial waves.	
	$f Rb+K+LiF \ Rb+Rb+LiF$	Atom Field Interaction Atom Field Interaction	$10^{-9} - 10^{-5}$ K $10^{-9} - 10^{-5}$ K	Th Th
1313.	C. Figueira de Morisson F Electron-electron dyna Phys. Rev. A 69, 043405 (	aria, H. Schomerus, X. Liu, W. Bee mics in laser-induced nonseque (2004)	cker ential double ionization.	
	Ne + LiF	Atom Field Interaction	$1.5 \mathrm{~eV}$	Th
1314.	D. Sugny, A. Keller, O. At <b>Time-dependent unitar</b> <b>orientation.</b> Phys. Rev. A 69, 043407 (	(2004) (2004) Daems, S. Guerin, H. R.	Jauslin ense laser-driven molecular	
	LiCl + LiF	Atom Field Interaction	Undef.	Th
1315.	I. Bersons, R. Veilande Analytical investigation cycle pulses. Phys. Rev. A 69, 043408 (	n of one-dimensional Rydberg a	atoms interacting with half-	
	$f Rb+LiF \ Rb^*+LiF$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th

1316. T. Otobe, K. Yabana, J.-I. Iwata

**First-principles calculations for the tunnel ionization rate of atoms and molecules.** Phys. Rev. A 69, 053404 (2004)

	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction Atom Field Interaction Atom Field Interaction Atom Field Interaction	$\begin{array}{l} 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \\ 4x10^{13}-1.3x10^{14} \ \mathrm{w}/cm^2 \end{array}$	E/T E/T E/T E/T E/T
1317.	A. V. Turbiner, J. C. Lope $H_2^+$ ion in a strong may Phys. Rev. A 69, 053413 (	z Vieyra gnetic field: Lowest excited 2004)	states.	
	${ m H_2^+}+{ m LiF}$	Atom Field Interaction	$10^9 - 10^{13} \text{ G}$	E/T
1318.	S. Bivona, R. Burlon, G. F Collisions of helium wi magnetic fields. Phys. Rev. A 70, 042715 (	Perrante, C. Leone th Rydberg atoms in the p 2004)	resence of static electric and	
	$egin{array}{ll} { m He} + { m H} + { m LiF} \ { m He} + { m H}^* + { m LiF} \end{array}$	Atom Field Interaction Atom Field Interaction	$10^5 \mathrm{~cm/s}$ $10^5 \mathrm{~cm/s}$	Th Th
1319.	C. Figueira de Morisson Fa Classical and quantum- with few-cycle laser pu Phys. Rev. A 70, 043406 (	aria, X. Liu, A. Sanpera, M. Lev mechanical treatments of no lses. 2004)	wenstein onsequential double ionization	
	Ne + LiF	Atom Field Interaction	1.55  eV	Th
1320.	K. A. Mitchell, J. P. Hand <b>Analysis of chaos-induc</b> Phys. Rev. A 70, 043407 (	ley, B. Tighe, A. Flower, J. B. I ed pulse trains in the ioniza 2004)	Delos ation of hydrogen.	
	$f H + LiF \ H^* + LiF$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	${ m Th}$ ${ m Th}$
1321.	I. Lesanovsky, J. Schmiedn <b>Rydberg atoms in a ma</b> Phys. Rev. A 70, 043409 (	nayer, P. Schmelcher agnetic guide. 2004)		
	$f H + LiF \ H^* + LiF$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th
1322.	M. L. Du Closed-orbit theory for Phys. Rev. A 70, 055402 (	photodetachment of $H^-$ in 2004)	a sef.	
	$egin{array}{ll} \mathbf{H}^- + \mathbf{LiF} \ \mathbf{h} u + \mathbf{H}^- + \mathbf{LiF} \end{array}$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th
1323.	T. Sako, G.H.F. Diercksen			

Confined quantum systems: Dipole polarizability of the two-electron quantum dot, the hydrogen negative ion and the helium atom. J. Phys. B 36, 3743 (2003)

	${f H^-}+{f LiF}$ He + LiF	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th
1324.	V. A. Vorontsov, M. Born, Charge-transfer pumpin J. Phys. B 36, 3865 (2003)	I. F. Shaikhislamov, B. N. Chiong for XUV lasers.	chkov, B. Wellegehausen	
	$C^{4+} + H + LiF$	Atom Field Interaction	Undef.	Exp
1325.	P. M. Koch, S. A. Zelazny, <b>Dependence on relative</b> J. Phys. B 36, 4755 (2003)	L. Sirko phase for bichromatically of	driven atoms.	
	$f H + LiF \ He + LiF$	Atom Field Interaction Atom Field Interaction	16-54  V/cm 16-54  V/cm	Th Th
1326.	M. Busch, R. Drozdowski, <b>Paul-trap resonance in</b> J. Phys. B 36, 4849 (2003)	Th. Ludwig, G. von Oppen $He^+ - He$ collisions.		
	$\mathrm{He^{+}+He}+\mathrm{LiF}$	Atom Field Interaction	30-50  keV	Exp
1327.	M. L. Keeler, H. Flores-Rue Scaled-energy spectrosc J. Phys. B 37, 809 (2004)	eda, J. D. Wright, T. J. Morga: opy of argon atoms in an e	n lectric field.	
	$f Ar + LiF \ Ar^* + LiF$	Atom Field Interaction Atom Field Interaction	$33,466-33,677\ cm^{-1}$ $33,466-33,677\ cm^{-1}$	${ m E/T} { m E/T}$
1328.	K. M. Dunseath, M. Terao- Scattering of low-energy J. Phys. B 37, 1305 (2004)	Dunseath 7 <b>electrons by helium in a</b> (	$CO_2$ laser field.	
	$e + CO_2 + LiF$	Atom Field Interaction	1-8 eV	$\mathrm{Th}$
1329.	S. F. Dyubko, V. A. Efreme Microwave spectroscopy hensive quantum-defect J. Phys. B 37, 1967 (2004)	by, V. G. Gerasimov, K. B. Ma $\ell$ of Al I atoms in $\ell = 0$ to analysis.	ocAdam o 4 Rydberg states: Compre-	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction	1 MHz 1 MHz	$\begin{array}{c} Exp\\ Exp \end{array}$
1330.	<ul> <li>A. De Michele, G. Carelli, J.</li> <li>A new pulsed CO₂ laser</li> <li>the 10P and 10HP lines</li> <li>J. Phys. B 37, 1979 (2004)</li> </ul>	A. Moretti, F. Strumia, D. Pere yielding new FIR laser li	eira nes from $CH_3OD$ pumped by	
	$ m CH_3OH + LiF  m CH_3OD + LiF$	Atom Field Interaction Atom Field Interaction	10.4-11.2 $\mu$ m 10.4-11.2 $\mu$ m	Exp Exp
1331.	X. Guan, B. Li, K. T. Tayle Corrigendum: Strong p ion [J. Phys. B 36, 3569 J. Phys. B 37, 1985 (2004)	or arallel magnetic field effect 0 (2003)].	ts on the hydrogen molecular	
	$\mathbf{H_{2}^{+}+LiF}$	Atom Field Interaction	$10^4 - 10^6 {\rm T}$	$\mathrm{Th}$

1332.	T. K. Kjeldsen, L. B. Madse Strong-field ionization of tion and tunnelling theor J. Phys. B 37, 2033 (2004)	n $N_2$ : Length and velocity gau ry.	ge strong-field approxima-	
	$N_2 + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$
1333.	A. Heinrich, M. Lewenstein, Nonsequential double ion J. Phys. B 37, 2087 (2004)	A. Sanpera nization of helium in low-freq	uency laser fields.	
	He + LiF	Atom Field Interaction	780 nm	$\mathrm{Th}$
1334.	C. Stubbins, K. Das, Y. Shif <b>Low-lying energy levels o</b> J. Phys. B 37, 2201 (2004)	eraw of the hydrogen atom in a str	ong magnetic field.	
	H + LiF	Atom Field Interaction	Undef.	Th
1335.	R. D. Benguria, R. Brumme $H_2^+$ in a strong magnetic J. Phys. B 37, 2311 (2004)	lhuis, P. Duclos, S. Perez-Oyarzu c field described via a solvabl	n e model.	
	$\mathbf{H_{2}^{+}+LiF}$	Atom Field Interaction	$10^{10} - 10^{14}$ gauss	$\mathrm{Th}$
1336.	A. Chattopadhyay, C. Sinha Laser assisted excitation J. Phys. B 37, 3283 (2004)	in electron-hydrogen-like ion	collisions.	
	$\mathrm{e} + \mathrm{He^+}$ Z= ?-? + LiF $\mathrm{e} + \mathrm{He^+}$ + LiF	Atom Field Interaction Atom Field Interaction	<ul><li>2-30 excitation threshold units</li><li>2-30 excitation threshold units</li></ul>	Th Th
1337.	C. Figl, J. Grosser, O. Hoffn <b>Repulsive K Ar potentia</b> J. Phys. B 37, 3369 (2004)	nann, F. Rebentrost ls from differential optical co	llisions.	
	K + Ar + LiF	Atom Field Interaction	220-720 $cm^{-1}$	Exp
1338.	<ul> <li>B. Paripas, G. Vitez, Gy. V. Aksela</li> <li>Angular dependence of the L-MM Auger transitions</li> <li>J. Phys. B 37, 4507 (2004)</li> </ul>	ikor, K. Tokesi, A. Calo, R. Sand the PCI line shape for phot	ari, M. Huttula, S. Aksela, H. oionized Ne K-LL and Ar	
	${f Ne} + {f LiF} {f Ar} + {f LiF}$	Atom Field Interaction Atom Field Interaction	320-1200 eV 320-1200 eV	m E/T $ m E/T$
1339.	T. J. Beams, G. Peach, I. B. Ultracold atomic collision tion losses and applicatic J. Phys. B 37, 4561 (2004)	Whittingham ns in tight harmonic traps: point to metastable helium atom	erturbation theory, ioniza- ns.	
	$\mathrm{He} + \mathrm{He} + \mathrm{LiF} \ \mathrm{He}^* + \mathrm{He}^* + \mathrm{LiF}$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th
1340.	A. Poszwa, A. Rutkowski Hydrogen atom in a stro lying excited states.	ong magnetic field. II. Relat	ivistic corrections for low-	

Phys. Rev. A 69, 023403 (2004)

	H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$
1341.	A. K. Langworthy, D. M. Pe <b>Zeeman transition streng</b> Phys. Rev. A 69, 025401 (20	endergrast, J. N. Yukich gths in photodetachment from 004)	m $O^-$ and $S^-$ .	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction	$\begin{array}{c} 11,70016,700\ cm^{-1}\\ 11,70016,700\ cm^{-1} \end{array}$	E/T E/T
1342.	D. Fregenal, E. Horsdal-Ped Multiphoton intrashell r width. Phys. Rev. A 69, 031401(R)	ersen, L. B. Madsen, M. Forre, J. esonances in Rydberg atoms ) (2004)	P. Hansen, V. N. Ostrovsky <b>Bloch-Siegert shifts and</b>	
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction	0-370 MHz 0-370 MHz	Exp Exp
1343.	P. Cacciani, J. Cosleou, F. H Nuclear spin conversion field: Intramolecular may Phys. Rev. A 69, 032704 (20	Herlemont, M. Khelkhal, J. Lecoir in the gaseous phase in the p gnetic interactions and the re 2004)	ntre presence of a static electric ple of collisions.	
	$\mathbf{CH}_{3}\mathbf{F} + \mathbf{CH}_{3}\mathbf{F} + \mathbf{LiF}$	Atom Field Interaction	$0-17,000 \; V/cm$	$\mathrm{E}/\mathrm{T}$
1344.	M. Erhard, H. Schmaljohann Measurement of a mixed Phys. Rev. A 69, 032705 (20	n, J. Kronjaeger, K. Bongs, K. Se I <b>-spin-channel Feshbach resor</b> 004)	engstock nance in ⁸⁷ Rb.	
	Rb + Rb + LiF	Atom Field Interaction	300 K	Exp
1345.	T. Niederhausen, B. Feuerste Circular dichroism in las Phys. Rev. A 70, 023408 (20	ein, U. Thumm er-assisted proton-hydrogen 004)	collisions.	
	$\mathbf{H}^+ + \mathbf{H} + \mathbf{LiF}$	Atom Field Interaction	2  keV	$\mathrm{Th}$
1346.	Yu. E. Lozovik, S. Yu. Volk Hydrogen atom moving a Phys. Rev. A 70, 023410 (20	ov across a magnetic field. 004)		
	H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$
1347.	OA. Al-Hujaj, P. Schmelch Beryllium in strong mag Phys. Rev. A 70, 023411 (20	er <b>netic fields.</b> 004)		
	Be + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$
1348.	<ul> <li>A. B. Voitkiv, N. Gruen, J.</li> <li>Compton scattering by electromagnetic field.</li> <li>J. Phys. B 37, 2641 (2004)</li> </ul>	Ullrich a bound electron in the pr	resence of a low-frequency	
	$h\nu + H + LiF$	Atom Field Interaction	20  keV	$\operatorname{Th}$
1349.	E. Costa i Bricha, C.L.S. Le Multiphoton ionization of theory. J. Phys. B 37, 2755 (2004)	wis, H. W. van der Hart of $Ar^{7+}$ in two-colour laser fiel	lds using R-matrix Floquet	

	$Ar^{7+} + LiF$	Atom Field Interaction	52.5-54  eV	$\mathrm{Th}$
1350.	I. Maruyama, T. Sako, K. Ya <b>Time-dependent nuclear</b> <b>quet approach.</b> J. Phys. B 37, 3919 (2004)	amanouchi wavepacket dynamics of $H_2$	⁺ by quasi-stationary Flo-	
	${ m H_2^+}+{ m LiF}$	Atom Field Interaction	800-1200 nm	$\mathrm{Th}$
1351.	N. Milovanovic, M. S. Dimit Importance of collisions III. Astron. Astrophys. 417, 375	rijevic, L. C. Popovic, Z. Simic with charged particles for st (2004)	tellar UV line shapes: Cd	
	$Cd^{2+} + LiF$	Atom Field Interaction	$5000-60,000 { m K}$	Th
1352.	A. Lesage, R. Redon Stark widths of faint Si I Astron. Astrophys. 418, 765	I lines. (2004)		
	$Si^+ + LiF$	Atom Field Interaction	11,000 K	Exp
1353.	A. Sreckovic, S. Bukvic, S. E Stark broadening parame Astron. Astrophys. 420, 769	Djenize, M. S. Dimitrijevic eters in singly and doubly ior (2004)	nized fluorine spectra.	
	$f F^++LiF \ F^{2+}+LiF$	Atom Field Interaction Atom Field Interaction	30,400-33,600 K 30,400-33,600 K	$\begin{array}{c} Exp\\ Exp \end{array}$
1354.	N. Ben Nessib, M. S. Dimitr Stark broadening of the stark Astron. Astrophys. 423, 397	ijevic, S. Sahal-Brechot four times ionized silicon spe (2004)	ectral lines.	
	${f Si}^{4+}+{f LiF}$	Atom Field Interaction	$50,000-500,000 {\rm K}$	Th
1355.	S. Djenize, S. Bukvic, A. Sre <b>Stark broadening and tra</b> Astron. Astrophys. 425, 361	ckovic ansition probability ratios in (2004)	the Mg I spectrum.	
	Mg + LiF	Atom Field Interaction	520-285 nm	Exp
1356.	M. S. Dimitrijevic, M. Dacic Stark broadening of Ga I Astron. Astrophys. 425, 114	, Z. Cvetkovic, Z. Simic <b>spectral lines.</b> 7 (2004)		
	Ga + LiF	Atom Field Interaction	250,000-2,000 Å	Th
1357.	C. Chin, V. Vuletic, A. J. Ko Precision Feshbach spect Phys. Rev. A 70, 032701 (20	erman, S. Chu, E. Tiesinga, P. J. roscopy of ultracold $Cs_2$ .	Leo, C. J. Williams	
	Cs + Cs + LiF	Atom Field Interaction	0-20 mT	$\mathrm{E}/\mathrm{T}$
1358.	C. O. Reinhold, W. Zhao, J. O J. Burgdorfer <b>Response of highly polar</b> Phys. Rev. A 70, 033402 (20	C. Lancaster, F. B. Dunning, E. Pe ized Rydberg states to trains 104)	ersson, D. G. Arbo, S. Yoshida, s of half-cycle pulses.	

	H + LiF	Atom Field Interaction	Half cycle pulse	E/T
	$H^* + LiF$	Atom Field Interaction	Half cycle pulse	E/T
	Na + LiF $Na^* + LiF$	Atom Field Interaction	Half cycle pulse	E/T F/T
	Na + LIF	Atom Fleid Interaction	man cycle pulse	$\mathbf{E}/1$
1359.	X. Guan, Y. Zhang Influence of an added strength spectra. Phys. Rev. A 70, 033409	parallel electric field on dia	amagnetic hydrogen oscillator	
	H + LiF	Atom Field Interaction	$10^8 \mathrm{~V/m}$	$\mathrm{Th}$
1360.	OA. Al-Hujaj, P. Schmel Lithium in strong mag Phys. Rev. A 70, 033411	cher netic fields. (2004)		
	Li + LiF	Atom Field Interaction	0-10 $\gamma$ a.u.	$\mathrm{Th}$
1361.	J. Chen, R. Ma, X. Li, H. Coulomb explosion of J J. Phys. B 37, 2501 (2004)	Ren, H. Yang, Q. Gong propane in intense femtosec )	ond laser fields.	
	$C_3H_8 + LiF$	Atom Field Interaction	800 nm	Exp
1362.	A. A. Khusivadze, I. I. Fal Static electric-field effe region. Phys. Rev. A 68, 063405 (	orikant, U. Thumm ects in the photodetachmer (2003)	at of $Cs^-$ at the 3P resonance	
	$\mathrm{Cs^-} + \mathrm{LiF}$	Atom Field Interaction	0-0.04  eV	$\mathrm{Th}$
1363.	Y. Attaourti, S. Taj Relativistic electronic of electron impact. Phys. Rev. A 69, 063411 (	dressing in laser-assisted ion (2004)	ization of atomic hydrogen by	
	e + H + LiF	Atom Field Interaction	575-1350  eV	Th
1364.	T. Kirchner Laser-field-induced mo lisions. Phys. Rev. A 69, 063412 (	difications of electron-trans	fer processes in ion-atom col-	
	$He^{2+} + H + LiF$	Atom Field Interaction	0.1-10  keV/u	Th
1365.	K. I. Dimitriou, D. G. Ark Origin of the double-pe of hydrogen atoms driv Phys. Rev. A 70, 061401	oo, S. Yoshida, E. Persson, J. B eak structure in the momen yen by strong laser fields. (2004)	urgdorfer tum distribution of ionization	
	H + LiF	Atom Field Interaction	0.05 a.u.	$\mathrm{Th}$
1366.	M. L. Bajema, R. R. Jone Femtosecond laser cont ization. Phys. Rev. A 70, 062722 (	s, T. F. Gallagher <b>rol of the angular distributi</b> (2004)	on of electrons due to autoion-	

	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction	393 nm 393 nm	Exp Exp
1367.	G. G. Paulus, F. Grasbon, H Interference effects in ab Phys. Scr. 68, C118 (2003)	I. Walther ove-threshold ionization.		
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction Atom Field Interaction	Undef. Undef. Undef.	E/T E/T E/T
1368.	T. Nakajima, G. Buica Modification of the pho continuum structure. Phys. Rev. A 71, 013413 (20	otoelectron angular distribut	ion through laser-induced	
	K + LiF	Atom Field Interaction	Few eV	$\mathrm{Th}$
1369.	M. A. Gearba, R. A. Komar Stark-induced x-ray emis Phys. Rev. A 71, 013424 (20	a, S. R. Lundeen, C. W. Fehrenba ssion from H-like and He-like 005)	ach, B. D. DePaola <b>Rydberg ions.</b>	
	$Ne^{10+} + LiF$	Atom Field Interaction	$10-17 \mathrm{keV}$	Exp
	$\mathbf{Si}^{13+} + \mathbf{LiF}$	Atom Field Interaction	10-17 keV	Exp
	$Si^{14+} + LiF$ $Ar^{17+} + LiF$	Atom Field Interaction	10-17 keV 10-17 keV	Exp Exp
1370.	A. Godone, D. Calonico, F. Stark-shift measurement Phys. Rev. A 71, 063401 (20 Cs + LiF	Levi, S. Micalizio, C. Calosso of the ${}^{2}S_{1/2}$ , F=3 -; F=4 hy 2005) Atom Field Interaction	perfine transition of ¹³³ Cs. Undef.	Exp
1371.	A. Grimpe, C. Figl, J. Gross Oscillatory differential cr J. Phys. B 38, 135 (2005)	ser, O. Hoffmann, F. Rebentrost $oss sections for Li + He, Ne, H$	$H_2$ and $D_2$ optical collisions.	
	Li + He + LiF	Atom Field Interaction	1750-3050  m/s	E/T
	Li + Ne + LiF	Atom Field Interaction	1750-3050  m/s	E/T
	$Li + H_2 + LiF$ $Li + D_2 + LiF$	Atom Field Interaction	1750-3050 m/s	E/T F/T
1372.	M. Ivkovic, N. Ben Nessib, I Stark broadening of 3s ³ isoelectronic sequences of J. Phys. B 38, 715 (2005)	N. Konjevic $P^0 - 3p \ ^3D$ and $3p \ ^3D - 3d \ ^3F$ f ions revisited.	⁹⁰ transitions along carbon	
	$N^+ + LiF$	Atom Field Interaction	1453-5681 $\mathring{A}$	E/T
	$\mathbf{O}^{2+} + \mathbf{LiF}$	Atom Field Interaction	1453-5681 Å	$\dot{\rm E/T}$
	$\mathbf{F}^{3+} + \mathbf{LiF}$	Atom Field Interaction	1453-5681 Å	E/T
	$Ne^{4+} + LiF$	Atom Field Interaction	1453-5681 A	E/T
1373.	E. A. Solov'ev <b>The advanced adiabatic</b> J. Phys. B 38, R153 (2005)	approach and inelastic transi	tions via hidden crossings.	
	$H_2O + LiF$	Atom Field Interaction	1-15  keV/u	$\mathrm{E}/\mathrm{T}$

1374. V. N. Ostrovsky, J. B. Greenwood

High harmonic generation by halogen anions and noble gas atoms in a laser field. J. Phys. B 38, 1867 (2005)

	$f F^- + LiF Ne + LiF$	Atom Field Interaction Atom Field Interaction	$\begin{array}{l} 5x10^{12}-2x10^4 \ {\rm W}/cm^2\\ 5x10^{12}-2x10^4 \ {\rm W}/cm^2 \end{array}$	Th Th
	$Cl^- + LiF$	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	$\mathrm{Th}$
	Ar + LiF	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	Th
	$Br^- + LiF$	Atom Field Interaction	$5x10^{12} - 2x10^4 \text{ W/cm}^2$	Th
	Kr + LiF	Atom Field Interaction	$5x10^{12} - 2x10^{1} \text{ W}/cm^{2}$	Th Th
	$\mathbf{I} + \mathbf{L}\mathbf{I}\mathbf{F}$ $\mathbf{X}_{0} + \mathbf{L}\mathbf{i}\mathbf{F}$	Atom Field Interaction	$5x10^{12} - 2x10^{1} \text{ W}/cm^{2}$ $5x10^{12} - 2x10^{4} \text{ W}/cm^{2}$	1 n Th
	Ae + Lir	Atom Fleid Interaction	5x10 = 2x10  W/cm	111
1375.	A. de Kertanguy, N. Feautric Quantum unified theory a Astron. Astrophys. 432, 113	er, O. Motapon applied to $Ly\beta$ , $Ly\gamma$ and $Ly\delta$ ele 1 (2005)	ectronic Stark broadening.	
	H + LiF	Atom Field Interaction	Undef.	$\mathrm{Th}$
1376.	W. F. Mahmoudi, N. Ben Ne Modified semiempirical en tral lines. Astron. Astrophys. 434, 773	essib, M. S. Dmitrijevic lectron width calculations of s (2005)	ingly-ionized oxygen spec-	
	$O^+ + LiF$	Atom Field Interaction	$5000-80,000 {\rm K}$	$\mathrm{Th}$
1377.	P. S. Barklem, J. Aspelund-J <b>The broadening of Fe II</b> Astron. Astrophys. 435, 373	Johansson lines by neutral hydrogen col (2005)	lisions.	
	$Fe^+ + LiF$	Atom Field Interaction	900 Å	$\mathrm{Th}$
1378.	M. S. Dimitrijevic, T. Ryabe On the influence of Stark Astron. Astrophys. 435, 119	hikova, L. C. Popovic, D. Shulya <b>broadening on Cr I lines in</b> 1 (2005)	k, S. Khan stellar atmospheres.	
	Cr + LiF	Atom Field Interaction	$2500-50,000 { m K}$	Th
1379.	E. Vliegen, F. Merkt On the electrostatic decel dependent inhomogeneou J. Phys. B 38, 1623 (2005)	leration of argon atoms in hig 1s electric fields.	h Rydberg states by time-	
	Ar + LiF	Atom Field Interaction	400  v/cm	$\mathrm{E/T}$
1380.	S. Gilb, V. Nestorov, S. R. L Kr (n=5-10,s,d,g) electro the ac-Stark shift during Phys. Rev. A 71, 042709 (20	eone, J. C. Keske, L. Nugent-Gla nic wave packets: Electron ti wave-packet preparation. 005)	ndorf, E. R. Grant me-of-flight resolution and	
	Kr + LiF	Atom Field Interaction	270 nm	Exp
1381.	B. Manaut, S. Taj, Y. Attao Mott scattering of polari Phys. Rev. A 71, 043401 (20	urti <b>zed electrons in a strong lase</b> 105)	r field.	

1382.	J. Z. Kaminski, F. Ehlotzky <b>Time-frequency analysis</b> <b>pulses.</b> Phys. Rev. A 71, 043402 (2	s of x-ray generation by re	combination in short laser	
	e + H + LiF	Atom Field Interaction	1000  eV	Th
1383.	F. F. Guimaraes, V. Kimber Phase-sensitive x-ray ab Phys. Rev. A 71, 043407 (2	erg, V. C. Felicissimo, F. Gel'muk psorption driven by strong in 2005)	chanov, A. Cesar, H. Agren frared fields.	
	NO + LiF	Atom Field Interaction	530-536 $eV$	$\mathrm{Th}$
1384.	X. M. Tong, Z. X. Zhao, A. Post ionization alignme intense laser field. J. Phys. B 38, 333 (2005)	S. Alnaser, S. Voss, C. L. Cocke ent of the fragmentation of	, C. D. Lin molecules in an ultrashort	
	$\mathbf{O}_2 + \mathbf{LiF}$	Atom Field Interaction	$1\text{-}5.6~10^{14}~\mathrm{W}/cm^2$	Th
1385.	<ul><li>A. DiChiara, S. Palaniyapp</li><li>Cross-shell multielectro</li><li>J. Phys. B 38, L183 (2005)</li></ul>	an, A. F. Falkowski, E. L. Huskin n ionization of xenon by an u	ns, B. C. Walker Iltrastrong field.	
	Xe + LiF	Atom Field Interaction	$10^{16}-10^{18}~{\rm W}/cm^2$	Exp
1386.	V. N. Ostrovsky Second-order effects for netic fields and instabili J. Phys. B 38, 1483 (2005)	the hydrogen atom in perp ty of classical electron trajec	endicular electric and mag- ctories.	
	$f H + LiF \ H^* + LiF$	Atom Field Interaction Atom Field Interaction	Undef. Undef.	Th Th
1387.	M. Suresh, J. McKenna, B. A. Bryan, W. R. Newell, E. <b>Multiple ionization of ic</b> Nucl. Instrum. Methods Pl	Srigengan, I. D. Williams, E.M. J. Divall, C. J. Hooker, A. J. La ons and atoms by intense ultrays. Res. B 235, 216 (2005)	L. English, S. L. Stebbings, W. angley rafast laser pulses.	
	Ne + LiF	Atom Field Interaction	790 nm	Exp
	$egin{array}{llllllllllllllllllllllllllllllllllll$	Atom Field Interaction Atom Field Interaction	790 nm 790 nm	Exp Exp
1388.	H. Shimada, Y. Nakai, H. G <b>Recoil-ion momentum s</b> <b>intense (</b> $10^{16}$ W $cm^{-2}$ ) Nucl. Instrum. Methods Pl	Dyama, K. Ando, T. Kambara, A pectroscopy of multiply charged laser light. nys. Res. B 235, 221 (2005)	. Hatakeyama, Y. Yamazaki ged argon ions produced by	
	Ar + LiF	Atom Field Interaction	775 nm	Exp
1389.	Z. Simic, M. S. Dimitrijević Stark broadening of Cd Astron. Astrophys. 441, 39	e, N. Milovanovic, S. Sahal-Brech I spectral lines. 1 (2005)	ot	
	Cd + LiF	Atom Field Interaction	Undef.	Th
1390.	C. C. Chirila, R. M. Potvlid Low-order above-thresh Phys. Rev. A 71, 021402 (2	ege old ionization in intense few- 2005)	cycle laser pulses.	

	H + LiF	Atom Field Interaction	$10^{16}~{\rm W}/cm^2$	Th
1391.	E. Baldit, S. Saugout, C. Co <b>Coulomb explosion of</b> $N_2$ Phys. Rev. A 71, 021403 (20	ornaggia g <b>using intense 10- and 40-fs l</b> 2005)	aser pulses.	
	$N_2 + LiF$	Atom Field Interaction	$10^{14} - 10^{16} \ \mathrm{W}/cm^2$	Exp
1392.	<ul> <li>V. E. Chernov, D. L. Dorofeev, I. Yu. Kretinin, B. A. Zon</li> <li>Method of the reduced-added Green function in the calculation of atomic polar- izabilities.</li> <li>Phys. Rev. A 71, 022505 (2005)</li> </ul>			
	$\begin{array}{l} \mathrm{He} + \mathrm{LiF} \\ \mathrm{Li} + \mathrm{LiF} \\ \mathrm{Be} + \mathrm{LiF} \\ \mathrm{C} + \mathrm{LiF} \\ \mathrm{C} + \mathrm{LiF} \\ \mathrm{N} + \mathrm{LiF} \\ \mathrm{O} + \mathrm{LiF} \\ \mathrm{F} + \mathrm{LiF} \\ \mathrm{Ne} + \mathrm{LiF} \\ \mathrm{Na} + \mathrm{LiF} \\ \mathrm{Mg} + \mathrm{LiF} \\ \mathrm{Al} + \mathrm{LiF} \\ \mathrm{Si} + \mathrm{LiF} \\ \mathrm{Si} + \mathrm{LiF} \\ \mathrm{S} + \mathrm{LiF} \\ \mathrm{S} + \mathrm{LiF} \\ \mathrm{Ca} + \mathrm{LiF} \\ \mathrm{Ca} + \mathrm{LiF} \\ \mathrm{Ge} + \mathrm{LiF} \\ \mathrm{Kr} + \mathrm{LiF} \end{array}$	Atom Field Interaction Atom Field Interaction	Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef. Undef.	Th Th Th Th Th Th Th Th Th Th Th Th Th T
1393.	Tc + LiF C. Ticknor, J. L. Bohn	Atom Field Interaction	Undef.	Th
	Phys. Rev. A 71, 022709 (20	005)	molecules.	
	OH + OH + LiF	Atom Field Interaction	1 mK	Th
1394.	A. Penttila, S. Heinasmaki, Effects of electron correl in atomic manganese. Phys. Rev. A 71, 022715 (20	M. Harkoma, S. Fritzsche, R. San ation on the decay process for 005)	kari, S. Aksela, H. Aksela llowing <b>3p photoionization</b>	
	Mn + LiF	Atom Field Interaction	120  eV	Exp
1395.	<ul> <li>E. Favilla, S. Barsanti, P. Bi</li> <li>Rydberg levels populatio</li> <li>dense In vapour.</li> <li>J. Phys. B 38, S37 (2005)</li> </ul>	acchi n via energy pooling collisions	in resonantly laser excited	
	In + In + LiF	Atom Field Interaction	950 K	Exp
1396.	JP. Connerade, S. D. Hoga Experimental investigati	n, A. M. Abdulla on of atoms in crossed electri	c and magnetic fields.	

J. Phys. B 38, S141 (2005)

	Ba + LiF	Atom Field Interaction	Undef.	Exp
1397.	S. Kawai, C. Jaffe, T. Uzer Ionization transition sta fields. J. Phys. B 38, S261 (2005)	tes of the hydrogen molecula	ar ion in external electric	
	$H_2 + LiF$	Atom Field Interaction	Undef.	$\mathrm{Th}$
1398.	S. Jovicevic, M. Ivkovic, R. 2 On the Stark broadening imation. J. Phys. B 38, 1249 (2005)	Zikic, N. Konjevic of Ne I lines and quasi-static	versus ion impact approx-	
	$egin{array}{ll} { m H} + { m LiF} \ { m He} + { m LiF} \ { m Ne} + { m LiF} \end{array}$	Atom Field Interaction Atom Field Interaction Atom Field Interaction	33,000 K 33,000 K 33,000 K	Exp Exp Exp
1399.	SM. Li, J. Berakdar, ST. <b>Laser-assisted (e,2e) read</b> J. Phys. B 38, 1291 (2005)	Zhang, J. Chen ction in one-electron atoms ar	nd ions.	
	e + H + LiF	Atom Field Interaction	150-500 ${\rm eV}$	$\mathrm{Th}$
1400.	E. S. Shuman, T. F. Gallagh Resonant enhancement of crowave field. Phys. Rev. A 71, 033415 (20	er of dielectronic recombination 005)	by a high-frequency mi-	
	$\mathrm{e} + \mathrm{Ba^+} + \mathrm{LiF}$	Atom Field Interaction	$0-31 \mathrm{V/cm}$	Exp

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