Electron Collision Studies on Some Molecular Species in Edge Plasmas

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Collision processes in plasmas play a very important role in the dynamics and in determining the characteristics of the plasma. Collision processes may lead to the formation of new species in the plasma which can not only alter plasma characteristics but also affect the dynamics. In this talk we review our recent works on the electron collision with the BeO and BeN molecules and their ions BeO+ and BeN+. Beryllium is chosen to be the plasma facing material in ITER and JET. Oxygen can enter into the edge plasma either due to presence of trace gases in the fuel or in the case of a leak which allows entry of air. Nitrogen is also often used as an injected impurity to attenuate the heat load on plasma facing components. In both cases, interaction with the wall material with oxygen and nitrogen can lead to the formation of BeO, BeN and their positive ions. We have studied electron collision with BeO, BeN, BeO^+ [1,2,3] in the framework of the R-matrix method, which is now considered as a state of the art in electron molecule collision calculations. Calculations of electron collision with BeN^+ is underway and will be reported soon.

References

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