Second Research Coordination Meeting of IAEA
Coordinated Research Project

Plasma-Wall interaction with Reduced Activation Steel Surfaces in Fusion Devices

IAEA, Vienna, 16-18 October 2017

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Broad Objective

To enhance the knowledge base on erosion and tritium migration and retention processes in fusion-relevant (reduced activation, RAFM) steel surfaces

Goal

Increased confidence in assessments of the role of steel as a plasma-facing material in DEMO or a Fusion power plant

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Main topics

- Differential erosion of steel surfaces by exposure to fusion plasma
- Composition and microstructure of exposed steels
- Tritium retention and tritium migration in RAFM steels
- Effects of neutron irradiation and energetic particles

Schedule

- 1st RCM: Vienna, 9-11 December 2015
- **2nd RCM: Vienna, 16-18 October 2017**
- 3rd RCM: Q4 2018 or Q1 2019

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CRP Objectives

- Characterize the composition and microstructure of (reduced activation, RAFM) steel surfaces after differential erosion by exposure to fusion plasma
- Characterize plasma-material interaction properties for erosion, tritium retention and tritium migration in steel surfaces that are exposed to fusion plasma
- Investigate ways to mitigate tritium penetration and tritium retention in steel surfaces and to extract trapped tritium

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Meeting Schedule

Monday 16 October

- Presentations and related discussions

Tuesday 17 October

- am: Presentations and related discussions

- pm: Review of measurements and diagnostic capabilities related to the CRP’s goals

Wednesday 18 October

- am: Update of work plans, closing review

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Meeting Objectives

- Review work done by participants since previous meeting
- Identify uncertainties; what work is most needed?
  - Coordinated experiments on erosion, surface composition, differential sputtering?
  - Coordinated experiments on hydrogen retention and permeation?
  - Coordinated experiments on microstructure properties, annealing?
  - Exchange of samples; comparison of diagnostics?
- Discuss individual work plans

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Follow-up

Meeting Report

- Presentation summaries are requested from all participants
- Volunteers are invited to help with discussion summaries

Next Interactions

- 23rd PSI Meeting (Princeton, 18 – 22 June 2018)
- …