

**23th European Fusion Physics Workshop Draft Programme**

*“Structural, plasma facing and functional materials –
the path to DEMO and Fusion Power Plants”*

Sunday, November 29th, 2015

16:00 – 18:00 Registration

19:00 Welcome Reception (Hotel Golf)

Monday, November 30th, 2015

08:30 Welcome

Session 1 Plasma, diagnostics and H&CD requirements for functional materials, and state of art of FMs and issues

Chairperson: Rafael Vila (CIEMAT)

08:45 Introduction**09:00 Development of a conceptual design for DEMO**

Ronald Wenninger (EUROfusion)

09:30 Diagnostics and Control requirements for ITER and DEMO

Wolfgang Biel (FZJ)

10:00 Coffee Break**10:30 Current status and overview of functional materials**

Rafael Vila (CIEMAT)

11:00 Design and functional materials requirements for Heating Systems

Piergiorgio Sonato (ENEA)

11:30 Discussion**12:30 Lunch Break**



Session 2 **Structural – advanced steels, semi-empirical developments and thermo dynamical modelling & experiments**

Chairperson: *Jean Henry (CEA)*

- 14:00** **Introduction**
- 14:15** **Structural steels for DEMO and Fusion Power Plants: in-service conditions/loads and mechanical properties requirements**
Ermile Gaganidze (KIT)
- 14:45** **Thermodynamics models (computational thermodynamics): state of the art and use for steel development**
Caroline Toffolon (CEA)
- 15:15** **Development of advanced RAFM steels with improved high temperature mechanical properties, based on chemical composition tuning and thermomechanical treatments: strategy and first results**
Jean Henry (CEA)
- 15:45** **Coffee Break**
- 16:15** **A realistic application of ODS in fusion technology and possible alternative fabrication route: achievements and challenges**
Nerea Ordas (CEIT)
- 16:45** **Steel development for water-cooled components**
Jan Hoffmann (KIT)
- 17:15** **Discussion**
- 18:15** **End**

Tuesday, December 1st, 2015

Session 3 Cryogenic structural materials

Chairperson: Klaus-Peter Weiss (KIT)

- 08:45** Introduction
- 09:00** Material requirements of the cryogenic materials for fusion devices
Alfredo Portone (F4E)
- 09:30** Selection, development and assessment of materials and metallurgical processes for structural applications at cryogenic temperatures
Stefano Sgobba (CERN)
- 10:00** Coffee Break
- 10:30** Cryogenic structural materials issues coming from the structural assessment of superconducting magnet systems
Anatoly Panin (FZJ)
- 11:00** Specification needs and possibilities by material supplier
Matteo Valdiserri (SMST)
- 11:30** Discussion
- 12:30** Lunch Break

Session 4 Divertor Plasma Facing Component Design: Engineering design rules (EDDI), Materials properties (HHFM) and applications for DEMO and FPP

Chairperson: Saša Novak (Jožef Stefan Institute)

- 14:00** Introduction
- 14:15** Divertor design
Jeong-Ha You (IPP)
- 14:45** Overview on materials requirements and activities towards DEMO and current state of Heat Flux Materials
Michael Rieth (KIT) / Jochen Linke (FZJ)
- 15:15** Progress in W alloy development and mass fabrication
Steffen Antusch (KIT)
- 15:45** Coffee Break
- 16:15** Advanced plasma-facing materials and components
Jan Coenen (FZJ)
- 16:45** Neutron effects on Plasma Wall Interaction processes (erosion, fuel retention, material properties)
Bernhard Unterberg (FZJ)
- 17:15** Discussion
- 18:15** End
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- 20:00** Workshop Dinner (Grand Hotel Toplice)
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Wednesday, December 2nd, 2015

Session 5

Materials irradiation and Post Irradiation Experiments techniques and interpretation multi scale modelling

Chairperson: Chris Hardie (CCFE)

- 08:45** Introduction
- 09:00** Conventional Macro-Scale Testing practise and validation
Brad Wynne (U. Sheffield, CCFE)
- 09:30** DONES Sample Requirements
Marta Serrano Garcia (CIEMAT)
- 10:00** Coffee Break
- 10:30** Small specimen test technology (SSTT) for qualification of fusion structural materials
Michael Mahler (KIT)
- 11:00** Discrete dislocation plasticity modelling of Micro-Mechanical Deformation
Edmund Tarleton (U. Oxford)
- 11:30** Discussion
- 12:30** Lunch Break