



20th International conference on Plasma-Facing materials and components for fusion applications

19-23 May, 2025, Ljubljana, Slovenia

Day 1: Monday 19th May

9:00	Registration	
10:00-12:00	Lab tour	
	Tutorial session	Chairs: Sabina Markelj and Petra Jenuš, JSI, Slovenia
14:00-14:55 (55 min)	Fundamentals of ion-solid interaction (from impact, erosion to damage creation)	Thomas Schwarz-Selinger (IPP)
14:55-15:50 (55 min)	Plasma-wall interaction in present and future fusion devices	Sebastijan Brezinsek (FZJ)
15:50-16:10	Coffee Break	
16:10-17:05 (55 min)	Materials for in-vessel components: progress and key challenges	Gerald Pintsuk (FZJ)
17:05-18:00 (55 min)	Current status and challenges of the development of plasma facing components for fusion devices	Rudi Neu (IPP)
19:30	Welcome reception	



Day 2: Tuesday 20th May

7:30-8:30	Registration	
8:30-9:00	Opening: Welcome	
Session 1	Topic: Fuel retention and removal	Chairs: Sebastijan Brezinsek and Jan Coenen, FZJ, Germany
9:00-9:30 (30 min)	I1: Progress in the understanding of fuel retention and inventory management in the full-tungsten ITER	Tom Wauters (ITER)
9:30-10:00 (30 min)	I2: First Demonstration of Laser Induced Breakdown Spectroscopy using Remote Handling for In-vessel Analysis of Tritiated and Activated JET Components	Jari Likonen (VTT, Finland)
10:00-10:25 (25 min)	O1: Chemical analysis by Laser Induced Breakdown Spectroscopy of the poloidal cross-section of the JET divertor after its last D-T experimental campaign	Salvatore Almaviva (ENEA, Italy)
10:25-10:50 (25 min)	O2: Depth-resolved deuterium retention profiles in displacement-damaged tungsten measured via laser-induced ablation quadrupole mass spectrometry	Christoph Kawan (FZJ, Germany)
10:50-11:15	Coffee Break	
Session 2	Topic: Erosion, re-deposition, mixing, and dust formation and Low-Z and liquid materials and	Chairs: Thomas Morgan, DIFFER, The Netherlands and Anna Widdowson, UKAEA, UK
11:15-11:45 (30 min)	I3: Erosion of thin boron films at the linear plasma device PSI-2 during deuterium discharges: atomic and molecular spectroscopy of boron	Marc Sackers (FZJ, Germany)
11:45-12:10 (25 min)	O3: Improved material mixing model in ERO2.0: nonlinear effect of boron concentration on tungsten sputtering and influx from mixed tungsten-boron surfaces	Henri Kumpulainen (FZJ, Germany)
12:10-12:35 (25 min)	O4: Deuterium retention in sputter-deposited W-B layers: Implantation and in-situ ion beam analysis during annealing	Daniel Gautam (Uppsala University, Sweden)
12:35-13:00 (25 min)	O5: Lifetimes of Boron layers on amorphous and crystalline tungsten under deuterium and impurity irradiation	Udo von Toussaint (MPG, Germany)
13:00-14:30	Lunch break	
Session 3	Topic: Neutron effects in plasma-facing materials	Chairs: Thomas Schwarz-Selinger, MPG, Germany and Guang-Hong Lu, Beihang University, China
14:30-15:00 (30 min)	I4: Neutron irradiation effects on PFC materials: overview of EUROfusion programme	Dmitry Terentyev (SCK-CEN, Belgium)
15:00-15:30 (30 min)	I5: Modelling high dose irradiation damage in tungsten	Max Boleininger (UKAEA, United Kingdom)
15:30-15:55 (25 min)	O6: Detection of defects and location of deuterium in displacement-damaged tungsten	Sabina Markelj (JSI, Slovenia)
15:55-16:20 (25 min)	O7: Influence of the Presence of Deuterium on Damage Evolution in Tungsten	Zeqing Shen (MPG, Germany)
16:20-16:30	Coffee Break	
16:30-18:30 (120 min)	Poster session 1 (with drinks)	



Day 3: Wednesday 21st May

8:00-8:30	Registration	
Session 4	Topic: Boronisation and wall conditioning techniques	Chairs: Marianne Richou, CEA, France and Takeshi Hirai, ITER
8:30-9:00 (30 min)	I6: Effect of spatially non-uniform boronization on plasma restart in the full W environment of WEST	Alberto Gallo (CEA, IRFM, France)
9:00-9:30 (30 min)	I7: Investigations on Boronization at tungsten ASDEX Upgrade	Volker Rohde (MPG, Germany)
9:30-9:55 (25 min)	O8: Analysis of Boron-Hydrogen Interactions and Deuterium Retention for Fusion Applications	Aleksandr Afonin (AMU, France)
9:55-10:20 (25 min)	O9: Sticking Coefficients of Boron Radicals	Matej Mayer (MPG, Germany)
10:20-10:50	Coffee Break	
Session 5	Topic: <i>Technology and qualification of plasma-facing components</i> Erosion, re-deposition, mixing, and dust formation	Chairs: Yasuhisa Oya, Shizuoka University and Daniel Primetzhofer, Uppsala University, Sweden
10:50-11:20 (30 min)	I8: First insights into runaway electron (RE) damage induced to the JET divertor	Ionut Jecu (UKAEA, United Kingdom)
11:20-11:50 (30 min)	I9: Overview of the results achieved from the characterization program of the WEST plasma facing components (2018-2024)	Mathilde Diez (CEA, IRFM, France)
11:50-12:15 (25 min)	O10: Erosion and redeposition patterns on divertor tiles after exposure in the first operation phase of WEST	Martin Balden (MPG, Germany)
12:15-12:40 (25 min)	O11: High heat flux testing of actively cooled graphite- and tungsten-armoured JT-60SA flat-tile divertor mock-ups	Daniel Dickes (MPG, Germany)
12:40-13:40	Lunch break	
13:40	Excursions	Wine tasting Bled Ljubljana – castle Ljubljana - boat



Day 4: Thursday 22nd May

8:00-8:30	Registration	
Session 6	Topic: Erosion, re-deposition, mixing, and dust formation	Chairs: Robert Kolasinski, Sandia National Laboratory, USA and Marianne Richou, CEA, France
8:30-9:00 (30 min)	I10: Measurements and modelling of charge-exchange neutral flux to the first wall on EAST	Rui Ding (IPP, HFIPS, China)
9:00-9:30 (30 min)	I11: Ion-solid interaction for light ions in plasma-facing materials: Experimental corrections and their effects on simulation-based sputter yields	Eduardo Pitthan (Uppsala University, Sweden)
9:30-9:55 (25 min)	O12: Modelling fuel retention in the W divertor during the D/H/D changeover experiment in WEST	Etienne Hodille (CEA, France)
9:55-10:20 (25 min)	O13: ERO2.0 study of erosion and deposition on ITER diagnostic mirrors assuming different material mixes	Sebastian Rode (FZJ, Germany)
10:20-10:50	Coffee Break	
Session 7	Topic: Tungsten, tungsten alloys, and advanced steels	Chairs: Yasuhisa Oya, Shizuoka University, Japan and Takeshi Hirai, ITER
10:50-11:20 (30 min)	I12: Tungsten Alloys with Enhanced Stability and Manufacturability Through Integrated Alloy Design and Microstructural Engineering	Jason Trelewicz (Stony Brook University, USA)
11:20-11:50 (30 min)	I13: Advanced Tungsten Based Materials for Plasma Facing Components	Shuhei Nogami (A.L.M.T. Corp., Japan)
11:50-12:15 (25 min)	O14: Recent development on upscaling functionally graded W/EUROFER coating for the DEMO First Wall application	Ashwini Kumar Mishra (KIT, Germany)
12:15-12:40 (25 min)	O15: Development and Testing of a Novel FAST-Diffusion Bonding Process for Joining Eurofer97 Steel to Tungsten in Plasma Facing Components	Daniel Wilkison (University of Oxford, United Kingdom)
12:40-14:20	Lunch break	
Session 8	Topic: Fuel retention and removal	Chairs: Thomas Schwarz-Selinger, MPG, Germany and Sebastijan Brezinsek, FZJ, Germany
14:20-14:50 (30 min)	I14: In-situ measurement of H,D,T retention in the JET tungsten divertor components - lessons learned for the ITER LID-QMS diagnostic	Miroslaw Zlobinski (FZJ, Germany)
14:50-15:20 (30 min)	I15: Femtosecond laser-induced ablation – quadrupole mass spectroscopy for depth- and lateral profiling of helium and hydrogen-isotopes in fusion materials	Steffen Mittelmann (MPG, Germany)
15:20-15:50 (30 min)	I16: Tritium containing plasma-facing materials from fusion reactors: research needs, capabilities and limitations in tritium studies	Miyuki Yajima (NIFS, Japan)
15:50-16:15 (25 min)	O16: Depth profiling of tritium in bulk tungsten divertor tiles from JET with metal walls: tritium quantification and surface decontamination	Yuji Torikai (Ibaraki University, Japan)
16:15-16:40 (25 min)	O17: Low Hydrogen Isotope Retention and High Irradiation Resistance in Columnar-Grained Tungsten Prepared via Chemical Vapor Deposition	Yue Yuan (Beihang University, China)
16:40-16:45	Coffee Break	
16:45-18:45 (120 min)	Poster session 2 (with drinks)	
19:45	Conference dinner	



Day 5: Friday 23rd May

Session 9	Topic: Tungsten, tungsten alloys and advanced steels Technology and qualification of plasma-facing components	Chairs: Guang-Hong Lu, Beihang University, China and Anna Widdowson, UKAEA, UK
9:00-9:25 (25 min)	O18: Response of fibre-reinforced tungsten composites exposed to ELM-like transient events	Tyler Ray (Purdue University, USA)
9:25-9:55 (30 min)	I17: Plasma facing and high heat flux material development and down-selection process within the European fusion materials program	Gerald Pintsuk (FZJ, Germany)
9:55-10:25 (30 min)	I18: Design development of inertially cooled tungsten first wall for Start of Research Operation	Lei Chen (ITER)
10:25-10:50 (25 min)	O19: CFETR and its PFMC progress	Jiangang Li (Institute of Plasma Physics, China)
10:50-11:15 (25 min)	O20: Overview of Advanced Plasma-Facing Materials Testing for Fusion Pilot Plants at DIII-D	Jonathan Coburn (Sandia National Laboratories, USA)
11:15-11:40	Coffee Break	
Session 10	Topic: Tungsten, tungsten alloys and advanced steels and neutron effects	Chairs: Robert Kolasinski, Sandia National Laboratory, USA and Thomas Morgan, DIFFER, The Netherlands
11:40-12:05 (25 min)	O21: Performance study of fully dense tungsten fiber-reinforced tungsten composites for plasma facing material	Juan Du (Southwestern Institute of Physics, China)
12:05-12:35 (30 min)	I19: Studying the influence of redeposited tungsten and EUROFER97 layers on deuterium retention in plasma-facing materials	Martina Fellingner (TU Wien, Austria)
12:35-13:05 (30 min)	I20: Molecular Dynamics Modeling and Experimental Assessment of Helium Bubble Growth, Surface Morphology Evolution, and Displacement Damage Effects in Multi-Component Alloys	Mary Alice Cusentino (Sandia National Laboratories, USA)
13:05-13:35 (30 min)	I21: Evolution and recovery of the irradiation-induced defect populations and thermal diffusivity in post self-ion irradiated, isochronal annealed tungsten	Brandon Schwendeman (UCSD, USA)
13:35-14:05 (30 min)	Closing	
	Adjourn	