

Wednesday, June 20, 2012

Session I (8:30 AM – 9:25) PFC Opening Session & MASCO Continuation Chair: J. Brooks

Welcome Remarks (10 min.) Dick Majeski (PPPL)

PFC Steering Committee Chair Report (15 min.) Jeff Brooks (Purdue)

DOE Report - Pete Pappano (DOE) (15 min)

VLT Report – Stan Milora/Richard Nygren (15 min)

Session 2: (9:25 – 12:00) Joint PFC/MASCO Special Topic Session on PFC needs for FNSF and the JET ILW. Chair: Dick Majeski

Overview 1 – *The JET ITER-Like Wall Experiment* (20 min) Guy Matthews, UKAEA

Overview 2 – *Summary of the FESAC Materials Subcommittee Report* (20 min)
Steve Zinkle, ORNL

Break – 15 minutes (10:05 – 10:20)

Overview 3 - *Fusion Nuclear Science Facility (FNSF): status & PFC-specific issues* (20 min)
C. Kessel, PPPL

Overview 4 – *Recap of the MASCO meeting* (15 min) Rick Kurtz, PNNL

Overview 5 – *Tungsten Workshop Summary and Overview of Materials-related Tungsten Activities* (25 min)
Bob Odette

Overview 6 – *Research Activities in the PSI Science Center* (25 min)
Dennis Whyte

Discussion – (15 min)

Lunch – 12:00 – 1:00

Afternoon

Session 3: Tokamak Experiments (1:00 – 2:50)(**C. Wong/Dmitri Rudakov** Chair)

1. *Erosion/redeposition experiments on DIII-D and EAST* (20 min.) W.R. Wampler, SNL

2. *Discharge fueling with lithium wall operation of LTX* (15 min) Dick Majeski, PPPL

3. *Lithium research on NSTX - progress and plans* (20 min) Charles Skinner, PPPL

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| 4. <i>Overview of C-Mod PFC studies (20 min.)</i> | Graham Wright, MIT |
| 5. <i>DIII-D SOL group report (15 min.)</i> | Tony Leonard, GA |
| 6. <i>High-Z erosion and other recent DiMES experiments (20 min.)</i> | Dmitry Rudakov, GA |

Break – 10 min (2:50 – 3:00)

Session 4: Plasma Edge/PMI Modeling (T. Rognlien - Chair) (3:00– 5:15)

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| 1. <i>Analysis of PFC erosion experiments in DIII-D, and status of C-MOD and ITER analysis (18 min)</i> | J. Brooks, Purdue |
| 2. <i>Lithium as a radiative edge plasma component, snowflake ELM heat-flux mitigation, and modeling blob wall fluxes (18 min)</i> | T. Rognlien, LLNL |
| 3. <i>Modeling impurity reduction via divertor gas injection in NSTX (18 min)</i> | E. Meier, LLNL |
| 4. <i>Detail Modeling of Melt Layer Splashing and Erosion losses of PFC (18 min)</i> | G. Miloshevsky, Purdue |
| 5. <i>Comprehensive and Integrated modeling of plasma instability events (18 min)</i> | V. Sizyuk, Purdue |
| 6. <i>Kinetic Plasma - Neutral Simulations with XGC0 - DEGAS2 (18 min)</i> | D. Stotler, PPPL |
| 7. <i>Computational Studies of Thermoelectric MHD in Molten Lithium (18 min)</i> | D. Curreli, UIUC |

Wed. PM-Meeting Banquet - Salt Creek Inn (note change of venue) (6:30 PM)

Thursday, June 21

Session 5: Discussion (8:30 – 10:00): Liquid Metal PFC Research (**Dave Ruzic** Chair)

Break: 10:00 – 10:15

Session 6: PMI Laboratory Experiments (10:15 – 12:00) (**D. Buchenauer** Chair)

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| 1. <i>TMAP modelling of D release from Be codeposits (15 min)</i> | Matt Baldwin, UCSD |
| 2. <i>Isotope exchange work on W (15 min)</i> | Joe Barton, UCSD |

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| 4. <i>Hydrogen behavior in materials and on surfaces</i> (20 min) | Robert Kolasinski, SNL |
| 5. <i>SNL/CA collaborations</i> (10 min) | Dean Buchenauer, SNL |
| 6. <i>Flowing Lithium Divertors</i> (15 min) | David Ruzic, UIUC |
| 7. <i>Lithium's Effect on the Chemical Sputtering of Carbon</i> (15 min) | Daniel Andruczyk, UIUC |
| 8. <i>PFC activities in STAR</i> (15 min) | Masa Shimada, INL |

Session 7. POSTER SESSION (1:30 PM – 3:30 PM): SBIR/STTR- Progress reports on funded projects & selected student research (**D. Youchison** Chair)

Luna Innovations, Inc.

P1: Guoqing (Paul) Shen - "*Laser Vibrometer PFC Health Monitoring System*" Phase II

Materials and Systems Research, Inc.

P2: Joon-Ho Kho "*Advanced Method of Joining RAFM/ODS Steels for Fusion Reactors*" Phase-I

Mesocoat, Inc.

P3: Evelina Vogli – "*Fused Cu-based coatings for plasma facing components in fusion reactors*" Phase-I

Nanohmics, Inc.

P4: Tim Raines – "*Laser Cladding Modeling and Operation Applied to Plasma Facing Components*" Phase I STTR

Plasma Processes, Inc.

P5: Scott O'Dell - "*Tungsten Coatings for ICRF Antenna Materials*" Phase I

P6: Scott O'Dell - "*Electrochemically Formed Tungsten and Tungsten Alloy Heat Sinks*" Phase II

Questek Innovations LLC

P7: Art Counts – "*Computational Design of Tungsten Alloys with Improved Ductility and Fracture Toughness*" Phase I

TPL Inc.

P8: Doug Taylor – "*Explosive Bonding of Plasma Facing Components*" Phase I

Ultramet, Inc.

P9: Jim Selin – "*Robust Cellular Solid Breeder Material for Enhanced Tritium Production*" Phase I

P10: Jim Selin – "*Textured Tungsten Armor Coating for Fusion Energy Applications*" Phase I

P11: Jim Selin – "*Innovative Surfaces for Controlled Flow of Molten Lithium*" Phase II

P12: Jim Selin – "*Optimization and Simulated Testing of Flow Channel Inserts for Dual-Coolant ITER Test Blanket Modules*" Phase II

Student Posters

PPPL

P13: Matthew Lucia – "*Testing of lithium-filled dendritic surfaces for PFCs in LTX*"

P14: Dennis Boyle – "*Varying the pre-discharge lithium wall coatings to alter the characteristics of the ELM-free H-mode pedestal in NSTX*"

P15: John Rhoads – "*Experimental apparatus for investigating thermal transport in free-surface, MHD flow*"

P16: Angela Capece – "*Uptake and Retention of Residual Vacuum Gases in Lithium and Lithium Films*"

Session 8: Discussion 2 (3:30 – 5:00) -PFC Priorities, Planning, New Directions (**Rob Goldston** Chair)

Thursday PM PFC Steering Committee Dinner Meeting- Salt Creek Inn (7:05 PM) Note change in time

Friday, June 22

Session 9: PFC Steering Committee Report (J. Brooks et al.) 8:30-8:45 AM

Session 10: Heat Transfer and Fluid Flow (**R. Nygren** Chair) 8:45 – 9:30 AM

1. *Status of PMTF* (15 min.) R. Nygren, SNL
2. *Lithium Safety Awareness* (15 min.) R. Nygren, SNL
3. *Lithium systems design for LTX* (15 min.) R. Majeski, PPPL
4. *Status of UCLA R&D in Heat Transfer* (15 min.) N. Morley, UCLA

Session 11: ITER specific, and misc. presentations (**Russ Doerner** Chair) 9:45 – 11:05 AM

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| 1. <i>Development of Si-W transient tolerant PFM</i> (15 min.) | Clement Wong, GA |
| 2. <i>Sheath power transmission and Divertor probe analysis</i> (15 min.) | David Donovan, SNL |
| 3. <i>Beta backscattering and XRF</i> (15 min.) | Chris Chrobak, GA |
| 4. <i>Update on PFC and PMI testing possibilities in a Plasma Material Test Stand</i> (15 min.) | Juergen Rapp, ORNL |
| 5. <i>US PFC Test Facilities: List, Status, Capabilities</i> (20 min) | Dean Buchenauer, SNL |

Session 12: PFC All-topic Discussion/Wrap-Up (**J.P. Allain** Chair) 11:05 – noon

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| 12 a) Summary (2 viewgraphs max – 5 minutes each summary): | Session Chairs |
| <i>Summary of Session 2</i> | Dick Majeski, PPPL |
| <i>Summary of Session 3</i> | Clement Wong, GA |
| <i>Summary of Session 4</i> | Tom Rognlien, LLNL |
| <i>Summary of Session 5</i> | David Ruzic, UIUC |
| <i>Summary of Session 6</i> | Dean Buchenauer, SNL |
| <i>Summary of Session 7</i> | Dennis Youchison, SNL |
| <i>Summary of Session 8</i> | Rob Goldston, PPPL |

12 b) Discussions/Action-Items: All

12:00 Noon Adjourn

Afternoon: Tour of PPPL Facilities