

MINOS – Materials Innovation for Nuclear Optimized Systems 2012

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MINOS workshop: program

Wednesday, December 5, 2012

- 8:15 • Registration
- 9 :00 • Welcome address, **C. Gallé (MINOS)**, CEA Saclay (France)
- 9:05 • Opening address, **R. Baudrillart (DEN/Dir)**, CEA Saclay (France)

SESSION 1: MATERIALS INNOVATION FOR NEXT GENERATION NUCLEAR ENERGY, DEC. 5TH, (a.m.)

Chairman: S. J. Zinkle, Oak Ridge National Lab. (USA) – Co-Chairman: T. D’Aletto, CEA Cadarache (France)

- 9:20 • **Opportunities and Challenges for Materials Innovation in Nuclear Energy, S. J. Zinkle, Oak Ridge National Lab. (USA) 1**
- 10:00 • Relationship between Microstructure and Mechanical Properties in ODS Materials for Nuclear Applications, **Y. De Carlan**, CEA Saclay (France) 24
- 10:25 • Innovative SiCf/SiC Composite Materials for Fast Reactor Applications, **L. Chaffron**, CEA Saclay (France) 40
- 10:50 Morning Coffee Break
- 11:15 • New Textile Structures and Film Boiling Densification for SiC/SiC Components, **P. David**, CEA Le Ripault (France) 52
- 11:40 • Master of UPuC Carbide Fuel: from Raw Materials to Final Characteristics, **C. Duguay**, CEA Cadarache (France) 64
- 12:05 • Thermodynamic Modelling of Fuel Cells Compounds, **B. Sundman**, KTH (Sweden) & INSTN (France) 80
- 12:30 Lunch Break
- 14:00 • ANCRE Alliance: Roadmap for Nuclear Materials, **F. Touboul** CEA Saclay (France) 119

SESSION 2: IRRADIATION EFFECT, DEC. 5TH, (p.m.)

Chairman: W. J. Weber, Tennessee University (USA) – Co-Chairman: F. Willaime, CEA Saclay (France)

- 14:20 • **Irradiation Effects in Materials for Nuclear Applications, W. J. Weber, Tennessee University (USA) 130**
- 15:00 • CEA Charged Particle Irradiation Facilities for Nuclear Material Studies, **L. Beck**, CEA Saclay (France) 152
- 15:25 • Multiscale Modelling of Nuclear Fuels under Irradiation, **M. Freyss**, CEA Cadarache (France) 166
- 15:50 Afternoon Coffee Break
- 16:15 • Multiscale Modelling of Microstructure Evolution under Radiation Damage of Steels Based on Atomistic to Mesoscale Methods, **C. Domain**, EDF R&D (France) 180
- 16:40 • Cluster Dynamics Modelling of Cavity and Loop Microstructure under Irradiation, **T. Jourdan**, CEA Saclay (France) 197
- 17:05 • Phase and Microstructure Evolution under Irradiation: Design of Coarsening-Resistant nanostructures, **P. Bellon**, Illinois University (USA) 200
- 17:30 End of the First Day
- 18:30 Welcome Cocktail (La Rotonde CEA Saclay, 18h30 – 20h30)

MINOS workshop program (continue)

Thursday, December 6, 2012

SESSION 3: STRUCTURAL, MECHANICAL, CHEMICAL CHARACTERIZATION, DEC. 6TH, (a.m.)

Chairman: R. Konings, JRC-ITU & Delft University (Netherlands) – Co-Chairman: D. Féron, CEA Saclay (France)

- 9:00 • **Nuclear Reactor Fuels: Materials with Highly Complex Behaviour, R. Konings, JRC-ITU & Delft University (Netherlands) 212**
- 9:40 • Post-Irradiation Analysis of Fission Gases in Nuclear Fuels, **Ch. Valot**, CEA Cadarache (France) 215
- 10:05 • Impact of Fuel Assembly Transportation on Zirconium Alloys: toward a Mechanistic Understanding, **F. Onimus**, CEA Saclay (France) 228
- 10:30 Morning Coffee Break
- 10:55 • Materials Characterization by Tomographic Atom Probe (TAP), **P. Pareige**, Rouen University (France) 241
- 11:20 • Mechanical and Thermal Resistance of Multi-Material Components for ITER, **H. Burlet**, CEA Grenoble (France) 257
- 11:45 • New Characterizations at the MARS Beamline (SOLEIL Synchrotron Radiation), **J.-L. Bechade**, CEA Saclay (France) 270
- 12:10 Lunch Break

SESSION 4: NUCLEAR MATERIALS AGEING, DEC. 6TH, (p.m.)

Chairman: T. Shoji, Tohoku University (Japan) – Co-Chairman: B. Marini, CEA Saclay (France)

- 14:15 • **Materials Ageing Degradation Program in Japan and Proactive Ageing Management in NPP, T. Shoji, Tohoku University (Japan) 283**
- 14:55 • The irradiation-Assisted Stress Corrosion Cracking (IASCC) issue: some Examples of Studies Carried out at CEA, **B. Tanguy**, CEA Saclay (France) 328
- 15:20 • Stress Corrosion Cracking of Nickel Base Alloys and Stainless Steels in PWR Primary Water, **C. Guerre**, CEA Saclay (France) 344
- 15:45 • Thermal Ageing Effects: Examples on Materials of PWR and Preventive Measures in the Design of EPR, **F. Roch**, AREVA (France) 361
- 16:10 Afternoon Coffee Break
- 16:35 • Plasma Facing Components: Challenges for Nuclear Materials, **P. Magaud**, CEA Cadarache (France) 364
- 17:00 • Irradiation Resistance in a Fusion Environment: a Challenge for Structural Materials, **J. Henry**, CEA Saclay (France) 386
- 17:25 Break
- 17:45 • Closing Statements, **Y. Bréchet (CEA HC)**, CEA Saclay (France)
- 18:00 End of the Second Day

MINOS workshop programme (continue)

Friday, December 7, 2012

JANNUS-SACLAY FACILITY AND LTMEX LABORATORY VISITS, DEC. 7TH, (a.m.)

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| 8 :30 | • Meeting in front of the INSTN building and departure (by bus) to the main gate of CEA Saclay |
| 9:30 | • First group to visit JANNuS-Saclay facility and LTMEx laboratory |
| 10:30 | • Transportation |
| 10:45 | • Second group to visit JANNuS-Saclay facility and LTMEx laboratory |
| 11:45 | • End of visits and departure to the Rotonde for Lunch |
| 12:00 | Lunch Break |
| 13:30 | • End of MINOS Workshop |
| 13:45 | • Departure from INSTN (bus to RER train station, « Le Guichet ») |