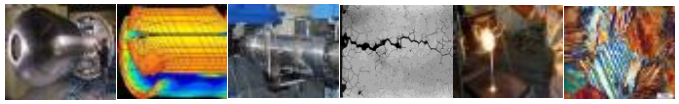


Keynote speakers

- Serge Bouffard, CEA Saclay (France)
- Maria José Caturla, University of Alicante (Spain)
- Fei Gao, University of Michigan (USA)
- Ian M. Robertson, University of Wisconsin-Madison (USA)

Lecture speakers

- Marie-France Barthe, CNRS-CEMHTI (France)
- Gilles Bignan, CEA Cadarache, JHR (France)
- Jean-Marc Delaye, CEA Marcoule (France)
- Arnaud Courcelle, CEA Saclay (France)
- Christian Grisolia, CEA Cadarache (France)
- Grzegorz Krzysztoszek, NCBJ (Poland)
- Florent Lebreton, CEA Marcoule (France)
- Laurence Lunéville, CEA Saclay (France)
- Jean-Paul Mardon, AREVA (France)
- Ghiath Monnet, EDF R&D (France)
- Yvette Ngono, CEA Saclay (France)
- Jean Noirot, CEA Cadarache (France)
- Stéphane Perrin, CEA Saclay (France)
- Catherine Sabathier, CEA Cadarache (France)
- Maxime Sauzay, (CEA Saclay (France)
- Frédéric Soisson, CEA Saclay (France)
- Roger Webb, University of Surrey (UK)
- Kazuhiro Yasuda, Kyushu University (Japan)

Registration deadline: October 2, 2015.

Language: English

Registration fees : Regular, 400 €; Students, 200 €,
Includes: attendance of the three days workshop, coffee-breaks, lunches, welcome cocktail, proceedings in the EPJ web of conferences, Jules Horowitz Reactor & LECA-STAR hot facility tour (limited participation).

Accommodation: Participants are invited to book their own accommodation. A list of hotels in the vicinity of CEA Cadarache and Aix-En-Provence is avalaible on the MINOS workshop page on the INSTN website.

MINOS

Scientific Committee

- **Jean-Luc Béchade, CEA Saclay (France)**
- **Lucile Beck, CEA Saclay (France)**
- **Philippe Bossis, CEA Saclay (France)**
- **Damien Féron, CEA Saclay (France)**
- **Muriel Ferry, CEA Saclay (France)**
- **Christian Grisolia, CEA Cadarache (France)**
- **Gérald Jomard, CEA Cadarache (France)**
- **Bernard Marini, CEA Saclay (France)**
- **Maylise Nastar, CEA Saclay (France)**
- **Jean Noirot, CEA Cadarache (France)**
- **Sylvain Peuget, CEA Marcoule (France)**
- **Sylvie Pillon, CEA Marcoule (France)**
- **Benoît Tanguy, CEA Saclay (France)**
- **Carole Valot, CEA Cadarache (France)**

Organizers

- **Christophe Gallé, CEA/MINOS, Saclay**
- **Constantin Meis, CEA/INSTN, Saclay**

Information

- 💻: http://www.materials.cea.fr/en/minos/

Secretary & registration

- 💻: mireille.cestrieres@cea.fr
  ☎: **+33 1 69 08 87 04** **FAX: +33 1 69 08 98 00**
- **Further information (registration form, access map, hotel list...) is available on the INSTN website: http://www-instn.cea.fr/**

Location

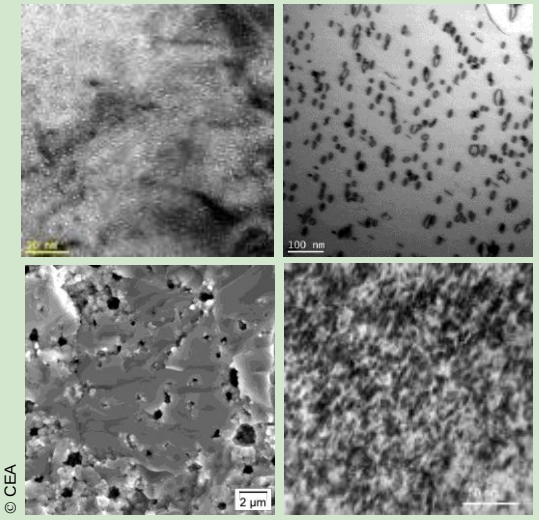
INSTN CEA Cadarache
13108 Saint-Paul-lez-Durance
France

MINOS

Centre of Excellence for
Nuclear Materials

2nd International Workshop

Irradiation of Nuclear Materials: Flux and Dose Effects



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November 4-6, 2015
CEA – INSTN Cadarache, France

MINOS

Innovation and Research for Nuclear Energy Materials

Scope and objective of the workshop

Created in 2011 by the Nuclear Energy Division of CEA, the French leader for research on materials for nuclear applications, the **MINOS Centre of Excellence for Nuclear Materials** sustains fundamental and applied research related to the behavior of nuclear materials and structures in severe environments. The main objectives of MINOS research are increasing the safety level and lifespan of current reactors, optimizing waste management, and developing new materials for generation IV systems, in particular fast neutron reactors. To accomplish these goals, it is essential to identify and understand the mechanisms of irradiation damage and to develop predictive models. These models are not only necessary to describe irradiation-induced microstructure evolution but also to predict the role of this microstructure in the evolution of the mechanical behavior and the material properties. In this domain, neutron irradiation is an important source of atomic-scale microstructural disorders (cascades) that generate a large number of structural defects (vacancies, loops, solute clusters, segregation, precipitates…). These defects could lead to various phenomena that affect the macroscopic physical and mechanical properties, such as hardening, embrittlement, swelling, creep, and cracking. These detrimental phenomena can reduce the efficiency and operability of nuclear power plant parts and components (i.e. fuel, claddings, internals, pressure vessels for PWR's).

MINOS intends to promote research on nuclear materials, to reinforce the visibility of CEA in this field, to identify new topics of research, and to contribute to training activities in materials science. To help achieve these objectives, MINOS organized an international workshop on "Materials Innovation for Nuclear Optimized Systems" in December 2012 and an international school on the "Modeling of Corrosion for Nuclear Reactors" in April 2014.

The 2015 MINOS international workshop on "Irradiation of Nuclear Material: Flux and Dose Effects" will provide the opportunity to address specific topics related to state-of-the-art research on the effects of irradiation on materials used in existing reactors and materials intended for future nuclear systems for fission or fusion. A large part of the workshop will be dedicated to structural materials (mainly metallic alloys) and fuels materials, but other materials, such as composites, nuclear glass, and polymers, will also be considered. Emphasis will be given to flux and dose effects. The workshop will consist of four sessions, and each one will combine keynotes by leading scientists and lectures by experts in materials science and nuclear engineering.

The workshop will be held at the National Institute for Nuclear Science & Technology (INSTN) in Cadarache, France. It is organized by the CEA Nuclear Energy Division with the support of the INSTN.

Wednesday Nov. 4th (a.m.): Session 1

- Welcome address (CEA, France)
- Opening address (CEA , France)

Irradiation Tools & Facilities

- **EMIR: the French Accelerator Network for Material Irradiation, Serge BOUFFARD, CEA Saclay (France)**
- The surrey Ion Beam Centre: Facilities and Applications for Industry and Academia, **Roger WEBB**, University of Surrey (UK)
- The Jules Horowitz Reactor Research Project: a New High Performance Material Testing Reactor Working as an International User Facility, **Gilles BIGNAN**, CEA Cadarache (France)
- The Characteristics and Irradiation Capabilities of MARIA Research Reactor in NCBJ Świerk**, Grzegorz KRZYSZTOSZEK**, NCBJ (Poland)
- Behavior of Tungsten Material Interacting with High Heat Flux Hydrogen Isotopes Plasma: from Laboratory to the WEST Tokamak, **Christian GRISOLIA,** CEA Cadarache (France)
- Discussion

Wednesday Nov. 4th (p.m.): Session 2

Primary Damage & Structural Defects

- **Modeling and Simulation of Primary Damage and Structural Defects Evolution in Ceramics, Metals and Alloys, Fei GAO, University of Michigan (USA)**
- DART, a BCA Code to Assess and Compare Primary Irradiation Damage in Nuclear Materials Submitted to Neutron and Ion Flux, **Laurence LUNEVILLE**, CEA Saclay (France)
- Chemical Modifications Induced by Ionizing Radiations on Polymers: the Specificity of Swift Heavy Ions, **Yvette NGONO**, CEA Saclay (France)
- Structure of Defects and Microstructure Evolution in Oxide Ceramics - Role of Electronic Excitation and Selective Displacement Damage, **Kazuhiro YASUDA**, Kyushu University (Japan)
- Irradiation Induced Phenomena in Nuclear Glass, **Jean-Marc DELAYE**, CEA Marcoule (France)
- Simulation of C-Component Dislocation Loops by Ions and Protons Irradiation. A Tool to Understand the Breakaway Growth of Recrys-tallized Zr-Based Alloys, **Jean-Paul MARDON**, AREVA (France)
- Discussion

Thursday Nov. 5th (a.m.): Session 3

Evolution & Characterization of the Microstructure

- **Microstructure Evolution in Fe and Fe-Cr Alloys with OKMC Methods, Maria José CATURLA, University of Alicante (Spain)**
- Atomistic Modelling of Segregation and Precipitation in Fe-Cr Alloys under Irradiation, **Frédéric SOISSON**, CEA Saclay (France)
- TEM Characterization of Fission Gases and Irradiation Defects in the Nuclear Fuels, **Catherine SABATHIER**, CEA Cadarache (France)
- Positron Annihilation Spectroscopy for Characterization of Irradiation Induced Vacancy Type Defects in Materials for Nuclear Fission & Fusion, **Mari-France BARTHE**, CNRS-CEMHTI (France)
- Alpha Self-Irradiation Effects on Structural Properties of $(U,Am)O_2$ Materials, **Florent LEBRETON,** CEA Marcoule (France)
- Discussion

Thursday Nov. 5th (p.m.): Session 4

Impact on Physical, Chemical, Mechanical Characteristics & Properties

- **Dislocation Grain Boundary Interactions in Irradiated Metals, Ian M. ROBERTSON, University of Wisconsin-Madison (USA)**
- Effects of Clear Bands on Intergranular Stresses and IASCC Early Damage, **Maxime SAUZAY**, CEA Saclay (France)
- Evolution under Irradiation of Optimized Austenitic Steel For Gen-IV Reactors. Impact on Fuel Cladding Properties and Performances, **Arnaud COURCELLE**, CEA Saclay (France)
- Multiscale Modeling of Radiation Hardening in RPV and Austenitic Stainless Steels: from the Atomic to the Continuum Scale, **Ghiath MONNET**, EDF R&D (France)
- High Burn-up Structure in Nuclear Fuel: Impact on Fuel Behavior, **Jean NOIROT**, CEA Cadarache (France)
- Influence of Irradiation on Stainless Steel Corrosion in PWR Primary Conditions, **Stéphane PERRIN** , CEA Saclay (France)
- Discussion
- Final address (CEA, France)

Friday Nov. 6th (a.m.)

JHR Reactor & LECA-STAR Hot Facility Tour

The **Jules Horowitz Reactor** is a new material testing reactor (MTR) currently under construction at the CEA Cadarache research center. It will be a major research facility dedicated to studies of materials and fuel behavior under irradiation.


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The **LECA-STAR facility** is a cutting-edge hot laboratory dedicated to destructive and non-destructive examination of irradiated fuel rods, fuel processing and reconditioning operations of irradiated fuels.


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