



The Abdus Salam
International Centre for Theoretical Physics



Joint ICTP/IAEA Advanced Workshop on Multi-Scale Modelling for Characterization and Basic Understanding of Radiation Damage Mechanisms in Materials

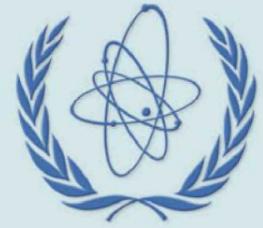
12 – 23 April 2010
Miramare – Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste, Italy), in cooperation with the International Atomic Energy Agency (IAEA, Vienna, Austria), is organizing an Advanced Workshop on Multi-Scale Modelling for Characterization and Basic Understanding of Radiation Damage Mechanisms in Materials, to take place in Trieste from 12 to 23 April 2010.

The objective of this Workshop is to provide knowledge transfer and understanding of the theory and practical application of multi-scale modelling for structural materials being used, and planned to be used, in the nuclear industry. The Workshop's outcome is intended to increase the awareness of, and make more widely available, essential knowledge of basic physical processes in materials under irradiation, their characterisation, modelling and computer simulation techniques. This Workshop targets researchers with a demonstrated interest in advanced nuclear techniques and radiation materials science seeking further professional and career development.

The design and engineering of new materials with improved properties and performance, which are resistant against degradation processes like radiation, corrosion, cyclic loading, etc, is increasingly being supported by theoretical calculations and computer simulations. This approach is considered to be of high importance in radiation materials science as the cost and time involved with high dose neutron irradiation experiments on test samples is prohibitive. Predictive computer modelling backed up by experimental validation and benchmarking, is the principal motivation for developing a multi-scale approach that spans time scales ranging from picoseconds to years and length scales ranging from nanometres to metres.

in cooperation with



IAEA
International Atomic Energy Agency

COURSE CONTENT

This Workshop is primarily focused on basic theories and computation tools which are needed for modelling of physical properties and radiation effects at different levels in the multi-scale approach. The workshop will include the implementation of multi-scale models for different materials and in different irradiation conditions. Specific topics include:

- Overview of theories applicable for characterisation of properties at various time and dimensional scales
- Degradation mechanisms of material microstructures and properties
- Implementation of physical models into computer codes for physical properties characterisation and simulation of behaviour under irradiation
- Advanced principles and tools for experimental validation and benchmarking of multi-scale models
- Application of multi-scale modelling approach to studies of radiation effects in selected materials and model alloys

PROGRAMME

The programme will consist of lectures, tutorials and computer demonstrations. Participants are encouraged to present their work in a Poster session to be held during the first week of the Workshop. The poster subjects will be considered in the selection process of candidates and authors of best posters will be invited to give a brief oral presentation of their work.

PARTICIPATION

Post-graduate students and scientists from all countries who are members of the United Nations, UNESCO or IAEA may attend. They should hold a university degree or equivalent Master's degree/diploma in physics, engineering, material science or other related subjects. The Workshop will be conducted in English and participants must therefore have adequate language knowledge. Although the main purpose of the Centre is to help researchers from developing countries, graduate students and post-doctoral scientists from developed countries would equally benefit from the Workshop and are encouraged to apply.

As a rule, travel and daily subsistence expenses of participants are borne by their home institutions; limited funds are, however, available for those participants, who are nationals of, and working in a developing country, and who are not more than 45 years old – this support is available only to those attending the entire activity. Every effort should be made by candidates to secure support for their travel fare (or at least part of the fare). There is no registration fee to be paid.

HOW TO APPLY FOR PARTICIPATION

The application form can be accessed at the activity website
http://cdsagenda5.ictp.it/full_display.php?id=a09140.

Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form **before 1 December 2009**.

SECRETARIAT:

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LOCAL ORGANIZER

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DEADLINE

for requesting participation

1 December 2009