The Abdus Salam
International Centre for Theoretical Physics

United Nations
Educational, Scientific
and Cultural Organization

International Atomic
Energy Agency

# Workshop on
# "Modelling and Quality Control for Advanced and Innovative Fuel Technologies"
## 14 – 25 November 2005

*ICTP, 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 a Workshop on *"Modelling and Quality Control for Advanced and Innovative Fuel Technologies"*, to be held at the ICTP in Trieste, from 14 to 25 November 2005.

Nuclear fuel plays an essential role in ensuring the competitiveness of nuclear energy today and its acceptance by the public tomorrow. Nuclear fuel has evolved to meet various demands arising from enhancing safety, improving economy, protecting the environment and increasing proliferation resistance.

The purpose of the Workshop is to provide state-of-the-art information on currently operating and advanced and innovative reactors and their fuels. The main focus will be on the design, fabrication, quality control, performance modelling and irradiation behaviour of zirconium alloy clad, uranium oxide, mixed uranium plutonium oxide (MOX) and thoria–based mixed oxide fuels for water-cooled reactors. Conventional, advanced and innovative fuels for Light Water Reactors (LWR), Pressurized Heavy Water Reactors (PHWR) and advanced light and heavy water reactors will be covered. The technical scope of the Workshop includes design of fuel rod and fuel assembly, fuel fabrication, performance modelling, irradiation experience in test and commercial reactors and new approaches to QC of fuels. The Workshop will also address new technical developments for water-cooled reactors fuels, namely: high burn up fuels, MOX fuels utilization, thoria-based fuels, incineration of Minor Actinides (MA), etc. The objective of the Workshop is to familiarize the participants with the status of R&D activities in the area of fuel design, fabrication, characterization and QC, modelling, irradiation behaviour and post irradiation examination. The participants will be invited to make short presentations of their own research activity, and/or of topics of interest that emerged during the Workshop.

Scientists from all countries that are members of the United Nations, UNESCO or IAEA may attend the Workshop. They should hold an advanced degree in nuclear physics, nuclear engineering or related subjects, and preferably possess several years' professional experience in nuclear physics (related to nuclear structure and decay data). Although the main purpose of ICTP is to help scientists from developing nations through a programme of training activities within a framework of international cooperation, applicants from developed countries are also welcome to attend. As this activity will be conducted in English, participants must have an adequate working knowledge of this language.

As a rule, travel and subsistence expenses for participants should be borne by their home institutions. However, limited funds will be available to support **some** participants from developing countries. Such financial support will be available only to those who attend the entire activity. Thus, every effort should be made by candidates to secure support for their fare from their home countries. No registration fee is associated with attendance at the Workshop.

Application forms for the Workshop can be found on the Web server of ICTP at:
http://cdsagenda5.ictp.trieste.it/full_display.php?smr=0&ida=a04215

Background information on the IAEA Nuclear Fuel Cycle and Materials Section is available from:
*http://www.iaea.org/OurWork/ST/NE/NEFW/nfcms_home.html*

**The closing date for receipt of applications for participation is 15 August 2005.**

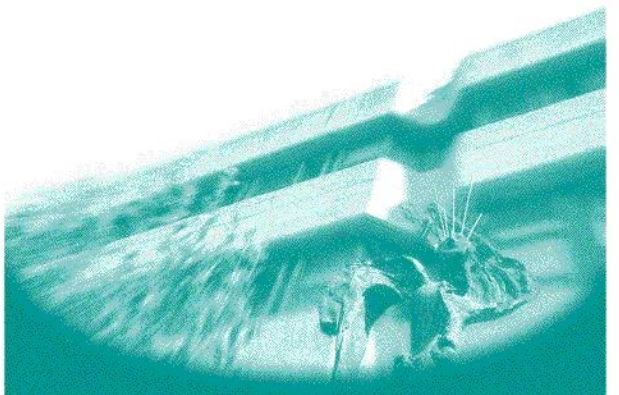
Those wishing to participate should fully complete and sign the "Request for Participation" form available from the ICTP WWW server and send by mail or FAX to:

Workshop on
"Modelling and Quality Control for Advanced and Innovative Fuel Technologies"
(c/o Elizabeth Brancaccio)
the Abdus Salam International Centre for Theoretical Physics
Strada Costiera 11
34014 Trieste, Italy

***If sending an application by e-mail: smr1683@ictp.it***
*(please save and send file attachments in PDF or RTF format)*

***Telephone: +39-040-2240284 Telefax: +39-040-224163***
***E-mail: smr1683@ictp.it***
***ICTP Home Page*: http://www.ictp.it/**

*July, 2005*



**DIRECTORS**

**C. Ganguly** (IAEA, Vienna)
**J. Killeen** (IAEA, Vienna)
**Y. Busurin** (IAEA, Vienna)

**LOCAL ORGANIZER**

**Brian Stewart** (Abdus Salam ICTP, Trieste)

**TOPICS**

Workshop structure – Three modules:

**Module I: Nuclear Power Reactors and Fuels**
- Reactor Systems
- Fuel Cycle Options
- INPRO and GIF
- Conventional, Advanced and Innovative Fuels

**Module II: Fuel Design, Fabrication, QC, Modelling, Irradiation -Testing & PIE**

- Fuel rod and assembly design
- Fabrication & QC of fuel pellets, rods and assembly
- Irradiation - testing in research and power reactors
- and
- results of post irradiation examination (PIE)
- Fuel modelling and different codes

**Module III: Advanced Fuel Management**

- Spent fuel management
- Use of plutonium and uranium-233 based fuels
- Proliferation-resistant fuels
- Minor Actinide Incineration

**APPLICATION DEADLINE**

**15 AUGUST 2005**