The Abdus Salam International Centre for Theoretical Physics

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United Nations Educational, Scientific and Cultural Organization

IAEA International Atomic Energy Agency

Joint ICTP-TWAS Workshop on Portable X-ray Analytical Instruments for Cultural Heritage

29 April - 3 May 2013

Trieste - Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP), and the Academy of Sciences for the Developing World (TWAS) will jointly organize, along with Elettra Sincrotrone Trieste S.C.p.A., **a *Workshop on Portable X-ray Analytical Instruments for Cultural Heritage*** to be held at ICTP from 29 April to 3 May 2013.

PURPOSE OF THE WORKSHOP

The purpose of the workshop is to train physicists and other scientists in X-ray Physics, Non-destructive Analytical Techniques, and State of the Art Instrumentation for the study and conservation of materials of interest to Cultural Heritage, Archaeology, Palaeoanthropology and Palaeontology.

Among several analysis techniques, X-ray based methods such as Radiography, Computed Micro-Tomography, Fluorescence and Diffraction have been widely used in the last years to characterize archaeological and artistic materials. Scientific investigations of cultural heritage materials have received an impressive impulse with the development of portable instruments that can perform non-invasively *in-situ* analyses.

This workshop will provide participants with theoretical and experimental background to carry out different X-ray based analyses. Participants will also learn how to meet specific requirements by designing their own instrumentation with commercial off-the-shelf devices. The workshop will also give participants hands-on experimental training with state of the art instrumentation and software present at the ICTP Multidisciplinary Laboratory, such as a computed X-ray microtomography system and portable systems based on X-ray fluorescence, X-ray diffraction and radiography. These instruments have been developed thanks to a grant of the Regione Friuli - Venezia Giulia.

The workshop is interdisciplinary in nature and it targets a wide audience of professionals related to X-ray physics, archaeology, paleoanthropology, geology, material sciences, etc. The workshop will also stimulate the formation of multidisciplinary teams to undertake complex research projects for cultural heritage aimed to the conservation, protection and valorization of precious cultural heritage objects present in developing countries.

PARTICIPATION

Scientists and students from all countries which are members of the United Nations, UNESCO or IAEA may attend the Workshop. As it will be conducted in English, participants should have an adequate working knowledge of this language. Although the main purpose of the Centre is to help research workers from developing countries, through a programme of training activities within a framework of international cooperation, students and post-doctoral scientists from advanced countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be borne by the home institution. Every effort should be made by candidates to secure support for their fare (or at least half-fare). However, limited funds are available for some participants who are nationals of, and working in, a developing country, and who are not more than 45 years old. Such support is available only for those who attend the entire activity. 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.trieste.it/full_display.php?ida=a12177
Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit online the application form **not later than 13 January 2013**. Recommendation letters are not mandatory, but may help you in the admission process.

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September 2012

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REGIONE AUTONOMA FRIULI VENEZIA GIULIA

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Topics to be covered will include:

- X-Ray Imaging Techniques
- X-Ray Fluorescence and Diffraction
- Computed X-Ray Micro-Tomography
- Advanced X-Ray Image Processing
- X-Ray Sources and Detectors
- Portable X-Ray Spectrometers for In-Situ Measurements
- Applications of X-Ray Micro-Imaging and Micro-Tomography in Culture Heritage
- Advance X-Ray Data Analysis

DEADLINE
for submitting applications

13 January 2013