

International Atomic Energy Agency

Regional Training Course for End-users in Nuclear Techniques for the Analysis of Ceramic Objects

PROSPECTUS

- Project Number & Title:** RER/0/039 - Extending and Diversifying the Application of Nuclear Technology in Cultural Heritage
- Place (City, Country):** Tirana, Albania
- Dates:** 26 -30 May 2014
- Deadline for Nominations:** 7 April 2014
- Organizers:** The International Atomic Energy Agency (IAEA) in collaboration with the Government of Albania through the Centre of Applied Nuclear Physics
- Host Country Organizer:** Mr Nikolla Civici
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- Language:** English
- Purpose:** The purpose of the training course is to provide participants with technical knowledge and practical demonstrations of advanced nuclear techniques applied for the analysis of ceramic cultural heritage objects. The underlying principles, advantages and limitations as well as selected applications will be presented. Emphasis will be on X-ray fluorescence (XRF), TXRF micro XRF, portable XRF spectrometers, *in situ* characterization of Cultural Heritage (CH) objects, Raman spectroscopy, Fourier Transform Infrared Spectroscopy (FTIR) including data analysis and data interpretation.
- Expected Output(s):** The expected outputs of the training course are:
- Increased knowledge on the advantages and limitations of advanced nuclear and related analytical techniques in the field ceramic CH objects analysis.
 - Increased technical skills on analytical techniques, and associated

- instrumentation, applied for the characterization of CH objects;
- Increased knowledge on supportive role of analytical techniques in the conservation of CH objects;
- Increased knowledge on data analysis and data interpretation ;
- Improved ability to formulate new proposals for the applications of analytical techniques in support of the cultural heritage community.

Scope and Nature:

The training course will include presentations, lectures and practical demonstrations covering the topics related to the use of analytical techniques for compositional analysis of ceramic CH objects, with emphasis on:

- X-ray fluorescence analysis;
- Micro X-ray fluorescence analysis;
- Total reflection X-ray fluorescence;
- Portable XRF spectrometers;
- *In situ* characterization of CH objects;
- Ion beam analysis;
- Raman and FTIR spectroscopy;
- Data analysis and data interpretation.

The lectures will be supplemented by the relevant demonstrations and experiments in the analytical laboratories and cultural heritage sites.

It is expected that the participants will present their own experience (ca. 5 min. each) on the applications of analytical techniques for characterization of CH ceramic objects.

Background Information:

Previous TC projects (RER/8/015 "Using Nuclear Techniques for the Characterization and Preservation of Cultural Heritage (CH) Artefacts in the European Region", 2009-2011, and RER/0/034 "Enhancing the Characterization, Preservation and Protection of Cultural Heritage Artefacts"(2012-2013) demonstrated that nuclear techniques are exceptionally suitable for non-destructive characterization of cultural heritage artefacts, in support of their conservation/restoration, as well as for their preservation through the use of radiation treatment.

Building on such achievements, project RER/0/039 was designed, *inter alia*, to expand capacity of cultural heritage-related organizations for characterization / preservation of objects. In particular, this Regional Training Course is designed to raise awareness of end-users in the Region about the potential of nuclear technology for the analysis of ceramic CH objects, while fostering fruitful cooperation among nuclear research institutes and CH institutions (including museums, galleries, *etc.*).

Participation:

The training course is open to 30 participants.

The target countries are: Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Greece, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Malta, Montenegro, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Serbia,

Slovakia, Slovenia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

Participants' Qualifications: The participants should be conservation specialists working in laboratories attached to museums, art galleries, *etc.* Applications from *Junior Professionals* are encouraged.

Nomination Procedure: Nominations should be submitted to the IAEA online through the Technical Cooperation Department's InTouch system (<http://intouch.iaea.org>). Should this not be possible, nominations may be submitted on the standard IAEA Application Form for Training Courses (available on the IAEA website: <http://www.iaea.org/>). Completed forms should be endorsed by relevant national authorities and returned to the Agency through the official channels, i.e. the designated National Liaison Office for IAEA Matters.

The completed nomination forms should be sent to the Programme Management Officer for this project, Ms Alessia Rodriguez y Baena, through IAEA Official Fax (+43-1-26007) or E-Mail (Official.Mail@iaea.org), not later than 7 April 2014. Nominations received after this date or which have not been routed through the established official channels cannot be considered.

Administrative and Financial Arrangements: Nominating Governments will be informed in due course of the names of the candidates who have been selected and will, at that time, be given full details of the procedures to be followed with regard to administrative and financial matters.

Selected participants from countries eligible to receive technical assistance will be provided with a round trip economy class air ticket from their home countries to Tirana, Albania, and a stipend sufficient to cover the cost of their accommodation, food, and minor incidentals. Shipment of accumulated training course materials to the participants' home countries is not the responsibility of the IAEA.

The organizers of the training course do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the training course, and it is clearly understood that each Government, in nominating participants, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.