



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*

# **Technical Meeting on Developments in Non-Radiocarbon Accelerator Mass Spectrometry Techniques and Relevant Applications**

**Virtual Event**

**11–14 October 2021**

**Ref. No.: EVT1904256**

## **Information Sheet**

### **Introduction**

Accelerator Mass Spectrometry (AMS), initially developed at low-energy nuclear physics laboratories in the late 70s - beginning of 80s, has been proved to be not only an ultra-sensitive technique for counting individual atoms but also an accelerator-based method with a vast potential for analytical applications related to problems of modern society. Nowadays, AMS is used in archaeology, biomedicine applications, climate change studies, environmental monitoring, hydrology and oceanography, nuclear safeguards, forensics, and many other fields of increased societal and economical interest.

AMS is used to detect radionuclides and stable nuclides with very low concentrations, between  $10^{-12}$  and  $10^{-16}$ . In contrast to other methods, AMS requires much shorter measuring times, typically less than one hour, as well as much smaller amounts of samples, often at sub-milligram range. The most widely employed isotope is radiocarbon ( $^{14}\text{C}$ ), which used by at least 85% of the analyses performed in AMS laboratories. Besides radiocarbon, the use of other isotopes, such as  $^{10}\text{Be}$ ,  $^{26}\text{Al}$ ,  $^{36}\text{Cl}$ ,  $^{41}\text{Ca}$ ,  $^{129}\text{I}$ , or U and Pu isotopes is continuously increasing, due to their unique analytical capabilities for a wide spectrum of applications.

The present Technical Meeting on Developments in Non-Radiocarbon Accelerator Mass Spectrometry Techniques and Relevant Applications is driven by the need to promote the unique analytical capabilities of non-radiocarbon AMS, disseminate the relevant knowledge and expertise and advancing technologies

to IAEA Member States together with AMS's large potential for contributing to their socio-economic development.

## **Objectives**

The purpose of the event is to:

1. Review progress made on the technologies associated with the sample preparation and subsequent use in AMS of radioisotopes besides radiocarbon.
2. Review technological developments and achievements at AMS laboratories using radioisotopes besides radiocarbon.
3. Discuss current and emerging applications based on anthropogenic and cosmogenic radioisotopes apart from radiocarbon.
4. Record training needs in the field addressed by the Technical Meeting, especially for scientists from developing countries
5. Collect and evaluate scientific information for the preparation of an IAEA TECDOC, if required.
6. Identify special research and development topics of common interest for the participants to assess the need of initiating an IAEA Coordinated Research Project (CRP)

## **Target Audience**

This technical meeting is addressed to experts and stakeholders from IAEA Member States as well as scientists from industry

## **Working Language**

The working language of the meeting is English; no interpretation will be provided.

## **Expected Outputs**

1. Meeting report including recommendations on the meeting objectives.
2. Layout of an IAEA TECDOC tentatively entitled "Developments in Non-Radiocarbon Accelerator Mass Spectrometry Techniques and Relevant Applications"

## Meeting Structure

The meeting will start at 09:30 on **11 October 2021** and end by 16:30 on **14 October 2021**. It will feature invited and contributed oral papers presented in sessions devoted to special topics. At the beginning of the meeting, participants will elect a chairperson and a few rapporteurs who will take notes and coordinate the preparation of the draft meeting report.

Invited talks will be 35 minutes long followed by 5 minutes for discussion; contributed oral presentations will be 20 minutes long including 5 minutes for discussion. A summary session will provide the opportunity to review the progress reported at the meeting. Participants will then form working groups focusing on particular cases of interest and topics covered, in order to prepare the draft meeting report, which will be jointly reviewed and finalized by all participants before meeting closure.

Participants will be asked to contribute on voluntary basis to the publication of an IAEA TECDOC. For the preparation of the TECDOC, an editing committee to be coordinated by the Scientific Secretary of the meeting will be assigned by the participants. If agreed by the participants, a summary report of the meeting will be jointly prepared for submission to a scientific journal.

## Topics

A non-exhaustive list of topics to be covered by the Technical Meeting is given below:

- Advanced accelerator systems for AMS with radioisotopes besides radiocarbon
- New and advanced AMS techniques
- Advances in sample preparation methods
- Current and emerging non-radiocarbon AMS applications
- Analytical requirements in terms of sensitivity and measurement precision
- New and Future Facilities
- Networking

## Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State, participants are requested to send the **Participation Form (Form A)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by **6 September 2021**. Participants who are members of an organization invited to attend are requested to send the Participation Form (Form A) through their organization to the IAEA by above deadline.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and technical matters.

## Papers and Presentations

Participants who wish to give presentations are requested to submit an abstract of their work. The abstract will be reviewed as part of the selection process for presentations. The abstract should be in A4 page format, should extend to no more than 2 pages (including figures and tables) and should not exceed 1000 words (including author names, affiliations, and acknowledgments, if necessary). It should be sent electronically to Mr. Sotirios Charisopoulos, Scientific Secretary of the event (see contact details below), not later than **6 September 2021**. Authors will be notified of the acceptance of their proposed presentations by **20 September 2021**.

In addition, participants have to submit the abstract together with the **Participation Form (Form A)** and the attached **Form for Submission of a Paper (Form B)** to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than **6 September 2021**.

## Deadlines

6 September 2021	Deadline for submission of abstracts according to the instructions given above for paper selection
6 September 2021	Submission of Form A and Form B (if an abstract is to be presented) by the participant's Member State to the IAEA
20 September 2021	Notification of acceptance of contribution to participants sent by email
1 October 2021	Submission, by email, of invitation letters to participants
11 October 2021	Start of the Technical Meeting.

## IAEA Contacts

### Scientific Secretary:

#### Mr Sotirios Charisopoulos

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on other matters related to the event to the Administrative Secretary.

## **Event Web Page**

Please visit the following IAEA web page regularly for new information regarding this event:

[www.iaea.org/events/EVT1904256](http://www.iaea.org/events/EVT1904256)