



Technical Meeting on the Application of Atom Trap Trace Analysis in Water Resource Management

IAEA Headquarters
Vienna, Austria

29 October - 1 November 2024

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Information Sheet

Introduction

Atom-Trap Trace Analysis (ATTA) is a technique that uses laser manipulation of neutral atoms to measure the relative abundance of extremely rare noble gas radioisotopes (Ar-39, Kr-81, and Kr-85), essential for dating water, ice, and materials with trapped gases. These isotopes' natural abundance is exceedingly low, requiring sensitivity to parts in 10^{17} . Initially demonstrated by physicists in the late 1990s, ATTA has continually advanced, with its applications in environmental science expanding accordingly. Experts in the development of the ATTA system, sampling methodologies, and environmental applications convene at workshops organized under the banner of Tracer Applications of Noble Gas Radionuclides in the Geosciences (TANGR). These workshops promote discussion and knowledge exchange on ATTA's progress and its growing application areas. Despite the postponement of a planned 2021 workshop due to COVID, the development and expansion of ATTA applications have persisted. The International Atomic Energy Agency (IAEA) has been advocating for the application of ATTA for groundwater dating since around 2010, aiming to improve water resource management for its Member States. This Technical Meeting on the Application of Atom Trap Trace Analysis in Water Resource Management will be a timely opportunity for the exchange of information and discussions within the TANGR community to ensure further improvement of this method which remains highly relevant and beneficial for water resource management.

Objectives

The objectives of the meeting are designed to enhance collaboration, innovation, and expansion in the ATTA community, with a focus on the following goals:

- Fostering exchange of ideas and needs - Encouraging dialogue among leading scientists and research groups involved in the development and operation of ATTA analysis, along with its applications in noble gas radioisotope studies within the geosciences.
- Promoting new collaborative projects - Facilitating the initiation of partnerships and projects to further refine and advance ATTA technology, tailored to the needs of its users.
- Identifying new application areas - Exploring and defining emerging fields and opportunities for ATTA analysis application, broadening its impact and utility.

Themes and Topics

This meeting will cover a broad range of themes and topics, highlighting the latest developments and applications of the ATTA method in various fields of study. The key areas of focus will include:

- Progress of the ATTA method: Analytics - Innovations and advancements in the analytical techniques of ATTA.
- Progress of the ATTA method: Sample handling - Enhancements in the methods and practices of sample collection and preparation.
- Applications in groundwater hydrology - Utilization of ATTA in understanding groundwater systems and dynamics.
- Applications in oceanography - Exploration of ocean currents and mixing processes through ATTA.
- Applications in glaciology and paleoclimatology - Insights into ice core analysis and historical climate patterns via ATTA.
- Other applications and perspectives - Emerging uses of ATTA in various scientific disciplines and future outlooks.

Expected Outputs

The expected outcomes of this meeting are set to significantly benefit the ATTA community and its related disciplines:

- A timely review on the current state of the ATTA method and its applications, reflecting recent advancements and broader usage.
- Publication of the meeting's proceedings, including an abstract booklet, providing a valuable compilation of the latest research insights.
- Plans for collaborative projects, fostering innovation and strengthening the community through shared knowledge and resources.
- The re-establishment of regular TANGR meetings, under the IAEA's organization, to maintain a continuous dialogue and integration within the broader isotope hydrology field.
- Drafting of the outcomes into a guiding document to shape the ongoing development of ATTA

Target Audience

The target audience for the meeting includes professionals and academics at the forefront of ATTA research and application, specifically:

- Leading scientists and PhD students of ATTA laboratories and ATTA users, experts in noble gas (radio)isotopes and cosmogenic nuclides.
- Representatives of the four operative ATTA labs: Argonne National Laboratory (USA), University of Science and Technology of China, University of Heidelberg (Germany), and University of Adelaide/CSIRO (Australia).
- Experts from low level counting laboratories.
- Counterparts interested in applying the ATTA method for their scientific research.

Working Language(s)

English

Structure

The structure of the meeting is designed to foster engagement, discussion, and tangible outcomes, focusing on the following elements:

- Keynotes and (oral and poster) presentations from participants - Sharing of insights and recent developments by leading experts and attendees.

- Discussion in smaller groups - Targeted conversations on the specific objectives of the meeting, allowing for in-depth exploration of themes.
- Drafting of meeting outcomes as a white paper - Collaborative synthesis of discussions and findings into a comprehensive document to guide future efforts.

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 or invited organization, participants are requested to submit their application via the InTouch+ platform (<https://intouchplus.iaea.org>) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **8 July 2024**, following the registration procedure in InTouch+:

1. Access the InTouch+ platform (<https://intouchplus.iaea.org>):

- Persons with an existing NUCLEUS account can sign in to the platform with their username and password;
- Persons without an existing NUCLEUS account can register [here](#).

2. Once signed in, prospective participants can use the InTouch+ platform to:

- Complete or update their personal details under ‘Complete Profile’ and upload the relevant supporting documents;
- Search for the relevant event under the ‘My Eligible Events’ tab;
- Select the Member State or invited organization they want to represent from the drop-down menu entitled ‘Designating Authority’ (if an invited organization is not listed, please contact InTouchPlus.Contact-Point@iaea.org);
- If applicable, indicate whether financial support is requested and complete the relevant information (this is not applicable to participants from invited organizations);
- Based on the data input, the InTouch+ platform will automatically generate the Participation Form (Form A) and/or the Grant Application Form (Form C);
- Submit their application.

Once submitted through the InTouch+ platform, the application, together with the auto-generated form(s), will be transmitted automatically to the required authority for approval. If approved, the application, together with the applicable form(s), will automatically be sent to the IAEA through the online platform.

NOTE: The application for financial support should be made, together with the submission of the application, by **8 July 2024**.

For additional information on how to apply for an event, please refer to the [InTouch+ Help](#) page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.

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

Participants are hereby informed that the personal data they submit will be processed in line with the

[Agency's Personal Data and Privacy Policy](#) and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. The IAEA may also use the contact details of Applicants to inform them of the IAEA's scientific and technical publications, or the latest employment opportunities and current open vacancies at the IAEA. These secondary purposes are consistent with the IAEA's mandate. Further information can be found in the [Data Processing Notice](#) concerning the IAEA InTouch+ platform.

Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made, together with the submission of the application, by **8 July 2024**.

Venue

The event will be held at the Vienna International Centre (VIC) where the IAEA's Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page:

<https://www.iaea.org/events>.

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

Organization

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/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/EVT2304307