Joint IAEA-National University of Singapore Workshop on the Safe Analysis of Heritage Objects and Materials Using Novel Accelerator-based Analytical Techniques

Hosted by the Government of Singapore

through the

National University of Singapore within the framework of the
IAEA-CIBA
(Centre for Ion Beam Applications) Collaborating Centre

19-23 May 2025

LT52 at Stephen Riady Centre NUS U Town, Singapore

Ref. No.: EVT2404474

Information Sheet

Introduction

In 2023, the International Atomic Energy Agency (IAEA) and the Centre for Ion Beam Applications (CIBA) at the National University of Singapore formalized a groundbreaking collaboration to enhance the application of accelerator science and technology across diverse fields. This partnership established the first IAEA Collaborating Centre in Singapore (IAEA CC), a milestone in regional scientific advancement.

One of the key topics of this Collaborating Centre is the development and implementation of best practices for innovative accelerator applications within the field of Heritage Sciences. This will be achieved through cutting-edge research on cultural heritage objects, complemented by regional collaborations and specialized workshops.

The upcoming Workshop represents a crucial component of this initiative, providing a comprehensive overview of the latest experimental advancements and methodologies to optimize best practices in accelerator-based heritage science. Key concepts related to risk assessment and safe analytical procedures will be discussed, fostering interdisciplinary dialogue among heritage science stakeholders.

Participants will also gain practical insights through visits and live demonstrations of experiments and data acquisition at premier facilities, including the Centre for Ion Beam Applications (CIBA), the Singapore Synchrotron Light Source (SSLS), the Heritage Conservation Centre (HCC), the Asian Civilisations Museum (ACM) and the Peranakan Museum (TPM).

A significant emphasis will be placed on enhancing awareness and engagement within the humanities field, fostering collaboration and knowledge sharing through ASEAN cooperation. This Workshop will be pivotal in advancing the application of accelerator technologies in Heritage Sciences, building a stronger, more interconnected community of experts across disciplines and regions.

Objectives

The main objective of the workshop is to advance the field of cultural heritage science by fostering collaboration, knowledge sharing, and the application of advanced accelerator-based techniques.

By bringing together scientists, heritage professionals, and policymakers, the workshop will explore innovative approaches for characterization and dating of cultural heritage artefacts to reveal their history and origin, manufacturing techniques, trading routes and societal context. Aspects of safe analysis will be discussed through case studies from various aspects as scientists' and curators' point of view. Key outcomes include the establishment of a strong network of experts, the development of interdisciplinary research collaborations, and the promotion of best practices in data management and sharing.

The workshop will also address ethical considerations, community engagement, and capacity building to ensure the sustainable and responsible use of advanced techniques in cultural heritage science. Hands-on demonstrations will be performed at an accelerator facilities (CIBA and SSLS) to present the capabilities of the accelerator based and related techniques and offer new avenues for future collaborations.

This workshop aims to focus on the following areas:

Network Building and Community Engagement

Foster collaboration: build a strong and vibrant network of experts, researchers, and cultural heritage professionals from the ASEAN region and beyond.

Interdisciplinary dialogue: encourage interdisciplinary discussions between scientists, heritage professionals, and policymakers to address complex challenges in cultural heritage preservation.

Discussing the modalities for analytical services and the modes of beamtime access to SSLS and CIBA.

Scientific and Technical Advancements

Accelerator-based techniques: explore the potential of advanced accelerator-based techniques for the characterization and dating of cultural heritage materials.

Safe analysis of cultural heritage objects: Discussion on non-destructive and minimally invasive techniques to minimize the impact of analysis on heritage objects.

Risk assessment and management strategies.

Case studies: Historical and Cultural Context of the Objects Being Studied

The origin and provenance of cultural objects.

The cultural significance of the objects to the communities they come from and the role of these objects in shaping human history and identity.

The importance of preserving cultural heritage for future generations and the role that science and technology can play in this process.

Policy and Capacity Building

Policy frameworks: discuss the development of supportive policies and regulations to promote the use of advanced techniques in cultural heritage research and conservation.

Capacity building: provide training and capacity-building opportunities for researchers, heritage professionals, and students in the ASEAN region.

Tours and Demonstrations at the Laboratories (HCC, ACM, TPM, CIBA, SSLS)

Expected Outputs

The workshop aims to advance the field of cultural heritage science by fostering collaboration, knowledge sharing, and the application of advanced accelerator-based techniques. By bringing together scientists, heritage professionals, and policymakers, the workshop will explore innovative approaches to characterisation and dating of cultural heritage materials through their characterisation and dating.

Key outcomes include the establishment of a strong network of experts, the development of interdisciplinary research collaborations, and the promotion of best practices in data management and sharing. The workshop will also address ethical considerations, community engagement, and capacity building to ensure the sustainable and responsible use of advanced techniques in cultural heritage science. Through hands-on demonstrations and case studies, participants will gain practical experience and insights into the latest methodologies and technologies.

Target Audience

This workshop is designed for research scientists who specialize in characterizing heritage objects and materials and for humanities professionals such as conservation scientists, archaeologists, palaeontologists, and museum scientists, data scientists and policy makers.

The focus is on building a strong and vibrant network of experts and cultural heritage professionals primarily from the ASEAN region who are or can be involved in the analysis of cultural heritage objects using the ion beam accelerators or synchrotron facilities. Relevant contributions from outside the Asian-Pacific region are also welcome especially if they are dealing with heritage objects and materials of the Asian-Pacific region or present best practices on the workshop topics.

Working Language(s)

The official language of the workshop is English (no interpretation will be provided).

Meeting structure

The meeting is an in-person meeting only and will be held on multiple sites: lectures will take place at LT52 Stephen Riady Centre NUS U Town. The meeting will also include hands-on demonstrations at the Singapore Synchrotron Light Source (SSLS), Centre of Ion Beam Applications (CIBA), both located on the National University of Singapore, Kent Ridge campus and the tour to the Asian Civilisations Museum (1 Empress Place, Singapore 179555), the Peranakan Museum (39 Armenian Street, Singapore 179941) and the Heritage Conservation Centre (32 Jurong Port Road, Singapore 619104).

The event will be structured around lectures by experts devoted to the topics mentioned below, working group discussions, and hands-on demonstrations at CIBA and SSLS.

A dedicated session to exchange ideas, sharing experiences and express recommendations will be organized at the end of the meeting.

It is expected that the meeting will start at 9 a.m. on 19 May 2025 and finish by 2 p.m. on 23 May 2025.

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 **31 March 2025**. 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 the above deadline.

Selected participants will be informed in due course on the procedures to be followed regarding 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.

Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed above.

All participants are required to provide an **abstract** on their contribution to the meeting strongly related to the topic of the event to be presented as an oral or poster presentation in **Form B** as part of their nomination. The abstract should be in A4 page format, should extend to no more than 1 page (including figures and tables) and should not exceed 500 words.

The abstract will be reviewed as part of the selection process, and nominations without abstract will not be considered. Authors will be notified by email by **11 April 2025** of the acceptance of their proposed presentations.

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 using the **Grant Application Form (Form C)** which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the **Participation Form (Form A), Abstract, and Abstract Submission Form (Form B)** by **31 March 2025.**

Visas

Participants who require a visa to enter Singapore should submit the necessary application as soon as possible to the nearest diplomatic or consular representative of Singapore.

Venue and accommodation

The event will be held at LT52 Stephen Riady Centre NUS U Town, Singapore.

Participants must make their own travel and accommodation arrangements. The Local organizers will provide a list of accommodation and logistics information to the selected participants.

More information will be available on the logistics, accommodation and venue on the workshop webpage.

Organization

Scientific Secretary

Ms Aliz Simon
Division of Physical and Chemical Sciences
Department of Nuclear Sciences and Applications International Atomic Energy Agency
Vienna International Centre PO Box 100 1400 Vienna AUSTRIA
Tel.: +43 1 2600 21706 Fax: +43 1 26007

Email: Aliz.Simon@iaea.org

Administrative Secretaries

Mr Ruben Gomez Zaragoza
Division of Physical and Chemical Sciences
Department of Nuclear Sciences and Applications International Atomic Energy Agency
Vienna International Centre PO Box 100 1400 Vienna AUSTRIA
Tel.: +43 1 2600 21706 Fax: +43 1 21656

Email: R.Gomez-Zaragoza@iaea.org

Ms Marion Linter
Division of Physical and Chemical Sciences
Department of Nuclear Sciences and Applications International Atomic Energy Agency
Vienna International Centre PO Box 100 1400 Vienna AUSTRIA
Tel.: +43 1 2600 21706 Fax: +43 1 25119

Email: M.Linter@iaea.org

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

Local Organizing Committee

Mr Mark B H Breese
Singapore Synchrotron Light Source
National University of Singapore
5 Research Link Singapore 117603
Tel.: +65 65167930
Email: slshead@nus.edu.sg

Ms Agnieszka Maria Banas
Singapore Synchrotron Light Source
National University of Singapore
5 Research Link Singapore 117603
Tel.: +65 65167005
Email: agnieszka@nus.edu.sg

Mr Krzysztof Banas
Singapore Synchrotron Light Source
National University of Singapore
5 Research Link Singapore 117603
Tel.: +65 65167837
Email: krzysztof@nus.edu.sg

Ms Ren Minqin
Centre for Ion Beam Applications
Department of Physics
National University of Singapore
2 Science Drive 3 S7-01-01 Singapore 117542
Email: phyrenmq@nus.edu.sg

Mr Thomas Osipowicz
Centre for Ion Beam Applications
Department of Physics
National University of Singapore
2 Science Drive 3 S7-01-01 Singapore 117542
Email: phyto@nus.edu.sg

Ms Swee Mun Lee
Heritage Conservation Centre
32 Jurong Port Road, Singapore 619104
Tel.: +65 69821191
Email: lee_swee_mun@nhb.gov.sg

Ms Lynn Chua
Heritage Conservation Centre
32 Jurong Port Road, Singapore 619104
Tel.: +65 69895433
Email: lynn_chua@nhb.gov.sg

Ms Kathleen Lau
Heritage Conservation Centre
32 Jurong Port Road, Singapore 619104
Tel.: +65 69821172
Email: kathleen_lau@nhb.gov.sg

Ms Ratnawati Erlimus
Asian Civilisations Museum and Peranakan Museum
1 Empress Place, Singapore 179555
Tel: +65 6982 1341
Email: ratnawati_erlimus@nhb.gov.sg

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Form A
EVT2404474

Participation Form

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Singapore, Singapore

19 to 23 May 2025

To be completed by the participant and sent to the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA) either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Please also send a copy by email to the Scientific Secretary Aliz.Simon@iaea.org and to the Administrative Secretaries R.Gomez-Zaragoza@iaea.org and M.Linter@iaea.org.

Participants who are members of an invited organization can submit this form to their organization for subsequent transmission to the IAEA.

Deadline for receipt by IAEA through official channels: 31 March 2025

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms
Institution:		
Full address:		
Tel. (Fax):		
Email:		
Nationality:	Representing following Member State/non-Member State/entity or invited organization:	
Do you intend to submit a paper? Yes ☐ No ☐ Would you prefer to present your paper as a poster? Yes ☐ No ☐ Title: I plan to attend virtually: Yes ☐ No ☐		

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.

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Form for Submission of a Paper

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Title of the paper:		
If applicable: Abstract ID in IAEA-INDICO:		
Family name(s) and first name(s) of all author(s) (same as in passport(s):	Scientific establishment(s) in which the work has been carried out	City/Country
1.		
2.		
3.		
Family name(s) and first name(s) of author presenting the paper (same as in passport):	Mr/Ms:	
Mailing address:		
Tel. (Fax):		
Email:		

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☐ that the material submitted to the IAEA does not contain any libellous or other unlawful statements and does not contain any materials that violate any personal or proprietary rights of any person or entity.

Date: **Signature of main author:**

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Form C
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Grant Application Form

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Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yy/mm/dd):	Nationality:	

1. Education (post-secondary):

Name and place of institution	Field of study	Diploma or Degree	Years attended from	to

2. Recent employment record (starting with your present post):

Name and place of employer/ organization	Title of your position	Type of work	Years worked from	to

3. Description of work performed over the last three years:

4. Institute's/Member State's programme in field of event:

Date: **Signature of applicant: _____**

Date: **Name, signature and stamp of Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority _____**