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International Atomic Energy Agency

Agence internationale de l'énergie atomique

Международное агентство по атомной энергии

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The Secretariat of the International Atomic Energy Agency (IAEA) presents its compliments to the IAEA's Member States and has the honour to draw their attention to the **Technical Meeting on the Technical Challenges and Advances in Fuel Fabrication for Water Reactors: Recent Experience and Future Prospects** (hereinafter referred to as "event") to be held in Chengdu, China from **8 to 11 November 2021**.

The purpose of the event is to exchange information on recent experience and ongoing and future activities in fuel fabrication technology. The event will support Member States in addressing technical challenges encountered when fabricating new/advanced fuels for water reactors.

The attached Information Sheet provides further details of the event.

The event will be held in English.

Member States are invited to designate one or more participants to represent the Government at this event. Member States are strongly encouraged to identify suitable women 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 at the time of designating the participant(s) using the attached Grant Application Form (Form C).

It should be noted that compensation is not payable by the IAEA for any damage to or loss of personal property. The IAEA also does not provide health insurance coverage for participants in IAEA events. Arrangements for private insurance coverage on an individual basis should therefore be made. The IAEA will, however, provide insurance coverage for accidents and illnesses that clearly result from any work performed for the IAEA.

Designations should be submitted to the IAEA through the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) not later than **30 August 2021** using the attached Participation Form (Form A). Completed and authorized Participation Forms should be sent either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Copies should be sent by email to the Scientific Secretary of the event, Mr Ki Seob Sim, Division of Nuclear Fuel Cycle and Waste Technology, Department of Nuclear Energy (Email: K.S.Sim@iaea.org), and to the Administrative Secretary, Ms Nisha Nath-Sirimalwatta (Email: N.Nath-Sirimalwatta@iaea.org). The Scientific Secretary of the event will liaise with the participants directly concerning further arrangements, including travel details, as appropriate, once the official designations have been received.

Should Governments wish, in addition, to appoint one or more observers to assist and advise the designated participants, they are kindly requested to inform the IAEA of the names and contact details of any such observers by the above date. In accordance with the established rules, Governments are expected to bear the cost of attendance of any observers they may send to IAEA events. Compensation is not payable by the IAEA for any damage to or loss of observers' personal property or for illness, injury or death occurring while travelling to or in connection with their attendance at IAEA events.

The Secretariat of the International Atomic Energy Agency avails itself of this opportunity to renew to the IAEA's Member States the assurances of its highest consideration.



2021-05-11

Enclosures: Information Sheet

Participation Form (Form A)

Form for Submission of a Paper (Form B)

Grant Application Form (Form C)



Technical Meeting on the Technical Challenges and Advances in Fuel Fabrication for Water Reactors: Recent Experience and Future Prospects

**Hosted by the
Government of China**

**through the
China Nuclear Energy Industry Corporation**

Chengdu, China

8–11 November 2021

Ref. No.: EVT1905298

Information Sheet

Introduction

For decades the IAEA has supported Member States in improving fuel fabrication technology and maintaining it in optimal state to produce reliable fuels for power reactors. In the early 1980's, the IAEA has collaborated with Member States to present guidebooks on quality control (QC) of power reactor fuels based on practical experience of nuclear fuel fabrication. Since 1980's, the IAEA has frequently organized Technical Meetings or equivalent to foster the exchange of information on advances in fabrication technology for power reactor fuels. The last Technical Meeting on this subject was held in 2010.

In the last decade, fuel communities in Member States have achieved several advancements in fuel fabrication technology for water cooled reactors to support reliability, economics and safety of power

reactor fuels, as demonstrated by automated processes, QA/QC technology improvements.

In the coming decade, more improvements are expected from the ongoing and future work, for example, deployment of High Assay Low Enriched Uranium (HALEU) fuel for light water reactors (LWRs), use of reprocessed uranium fuel in power reactors, adaptation of new technology (such as computer-aided technology, 3-D printing technology, Artificial Intelligence (AI) technology, Nano technology), deployment of fuels for future reactors (e.g. LWR-type small modular reactors, supercritical water reactors).

Parallely, maintaining a good expertise in fuel fabrication technology has become a critical issue because of staff ageing and loss of knowledge due to staffing natural reduction.

Recognizing the importance of these circumstances, several Member States recommended that IAEA provides a platform to facilitate the exchange of information on recent experience, and on-going and future activities in fuel fabrication technology.

Objectives

The purpose of the event is to exchange information on recent experience, and on-going and future activities in fuel fabrication technology. The event will support Member States in addressing technical challenges encountered when fabricating new/advanced fuels for water reactors.

Target Audience

The event is intended for staff members of nuclear fuel fabrication facilities, nuclear power plants, utilities, regulatory bodies and other organizations engaged in the design, operation and fabrication of power-reactor fuel. Participants should be actively involved in the subject of the event and have considerable experience of the relevant activities.

Working Language(s)

English.

Expected Outputs

The event will provide the basis for the preparation of a technical report (TECDOC) on “Technical Challenges and Advances in Fuel Fabrication for Water Reactors: Recent Experiences and Future Prospects”.

Structure

This event will comprise several technical sessions that cover the following seven topics:

- Powder and pellet,
- Fuel rod and assembly,
- QA/QC,
- Improvements of fabrication equipment and facilities,
- New type of fuel/material,
- Adaptation of new technology,
- Maintaining expertise.

Each technical session will include a group discussion to discuss specific issues related to the subject items of the session.

Topics

For each subject item listed above, the following topics or equivalent will be discussed:

- Powder and pellet, of which topics of interest can include:
 - New reconversion processes,
 - Improvements of UO_2 conversion process,
 - Doped pellets,
 - New or higher content of burnable absorbers,
 - Reprocessed uranium,
 - Thermal mixed oxide (MOX) fuel powder and pellets.
- Fuel rod and assembly, of which topics of interest can include:
 - Improvement of fuel assembly components,
 - Improvement of rod and assembly welding processes,
 - Thermal MOX fuel rod and assembly,
 - Reprocessed uranium fuel rods,
 - High Assay Low Enriched Uranium (HALEU) fuel.
- QA/QC, of which topics of interest can include:
 - Vision inspection system.
- Improvements of fabrication equipment and facilities, of which topics of interest can include:
 - Streamlining processes,
 - Waste management – recycling,
 - Improved equipment and facilities.

- New type fuel/material, of which topics of interest can include:
 - New materials for bundle fabrication (e.g. Be-replacement material for CANDU),
 - Fabrication of Advanced Technology Fuels (including Accident Tolerant Fuel, SiC fuel, Super-Critical Water Reactor (SCWR) fuel, Minor Actinides burning fuel, Inert Matrix Fuel (IMF), metallic fuel for water reactors).
- Adaptation of new technology, of which topics of interest can include:
 - Computer-aided technology,
 - 3-D printing, Nano technology,
 - Virtual reality,
 - Artificial intelligence (AI) technology.
- Maintaining expertise.

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 **30 August 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 the above deadline.

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

Papers and Presentations

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

Participants are expected to give presentations falling within the scope of topics listed above. Approximately 30 minutes will be allotted for each presentation, including floor discussion.

Participants who wish to give presentations are requested to submit an abstract of their presentation. The abstract will be reviewed as part of the selection process for presentations. The abstract should be in A4 page format, should be **more than one page and no more than three pages**. It should be sent electronically to Mr Ki Seob Sim, the Scientific Secretary of the event (see contact details below), not later than **15 September 2021**.

Participants have to submit the presentation slides together with the **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 Scientific Secretary of the event, not later than **15 October 2021**.

For this event, the submission of a full paper is not required.

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 Technical Meeting. 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 maximum 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)** by **30 August 2021**.

Visas

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

Local Arrangements

The event will be held in **Chengdu, China**. The event will start on Monday, **8 November 2021**, at 9.00 a.m. and end on Thursday, 11 November 2021, at 5.00 p.m. A technical tour to a nuclear fuel fabrication plant will be arranged during the event.

All the material for the event, including the agenda and information on the exact venue as well as local arrangements, will be sent to designated participants once the completed Participation Form (Form A) has been received.

Note that this event is intended to be a face-to-face meeting; in case the physical meeting is not possible due to COVID-19 pandemic situation, however, this event will be conducted as an online meeting using WebEx.

IAEA Contacts

Scientific Secretary:

Mr Ki Seob Sim

Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
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1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 21921

Fax: +43 1 26007

Email: K.S.Sim@iaea.org

Administrative Secretary:

Ms Nisha Nath-Sirimalwatta

Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 22767

Fax: +43 1 26007

Email: N.Nath-Sirimalwatta@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.

Participation Form

Technical Meeting on the Technical Challenges and Advances in Fuel Fabrication for Water Reactors: Recent Experience and Future Prospects

Chengdu, China

8–11 November 2021

To be completed by the participant and sent to the competent official 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 K.S.Sim@iaea.org and to the Administrative Secretary N.Nath-Sirimalwatta@iaea.org.

Please attach a passport copy or other document of identification (ID).

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: 30 August 2021

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 make a presentation? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Title:		

Form for Submission of a Paper

Technical Meeting on the Technical Challenges and Advances in Fuel Fabrication for Water Reactors: Recent Experience and Future Prospects

Chengdu, China

8–11 November 2021

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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: 15 October 2021

Title of the presentation:		
Family name(s) and first name(s) of 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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Please note: If granting the licence mentioned above, please supply any copyright acknowledgement text required.

Furthermore, I herewith declare:

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- that any permissions and rights to publish required for third-party content, including but not limited to figures and tables, have been obtained, that all published material is correctly referenced; and
- 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:

Grant Application Form

Technical Meeting on the Technical Challenges and Advances in Fuel Fabrication for Water Reactors: Recent Experience and Future Prospects

Chengdu, China

8–11 November 2021

To be completed by the applicant and sent to the competent official 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 K.S.Sim@iaea.org and to the Administrative Secretary N.Nath-Sirimalwatta@iaea.org.

Deadline for receipt by IAEA through official channels: 30 August 2021

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 _____