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国际原子能机构

International Atomic Energy Agency

Agence internationale de l'énergie atomique

Международное агентство по атомной энергии

Organismo Internacional de Energía Atómica

Vienna International Centre, PO Box 100, 1400 Vienna, Austria

Phone: (+43 1) 2600 • Fax: (+43 1) 26007

Email: [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org) • Internet: <https://www.iaea.org>

In reply please refer to: **EVT2100352**

Dial directly to extension: (+43 1) 2600-21921

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 Design, Fabrication and Irradiation Behaviour of Small Modular Reactor Fuels** (hereinafter referred to as "event") to be held virtually via Cisco WebEx from **18 to 22 October 2021**.

The purpose of the event is to exchange information on recent experiences as well as ongoing and future improvements in the design, fabrication and irradiation behaviour of small modular reactor fuels.

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.

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 June 2021** using the attached Participation Form (Form A). Completed and authorized Participation Forms should be sent either by email to: [Official.Mail@iaea.org](mailto: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](mailto:K.S.Sim@iaea.org)), and to the Administrative Secretary, Ms Nisha Nath-Sirimalwatta (Email: [N.Nath-Sirimalwatta@iaea.org](mailto:N.Nath-Sirimalwatta@iaea.org)). The Scientific Secretary of the event will liaise with the participants directly concerning further arrangements, 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.

The IAEA takes no responsibility for, and the provider of the virtual meeting services has represented and warranted that the Services shall not contain, and that no end user shall receive from the software used to hold the virtual meeting, any virus, worm, trap door, back door, timer, clock, counter or other limiting routine, instruction or design, or other malicious, illicit or similar unrequested code, including surveillance software or routines which may, or is designed to, permit access by any person, or on its own, to erase, or otherwise harm or modify any data or any system, server, facility or other infrastructure of any end user (collectively, a "Disabling Code").

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.



2021-05-27

Enclosures:       Information Sheet  
                          Participation Form (Form A)  
                          Form for Submission of a Paper (Form B)



# **Technical Meeting on the Design, Fabrication and Irradiation Behaviour of Small Modular Reactor Fuels**

**Virtual Event**

**18–22 October 2021**

**Ref. No.: EVT2100352**

## **Information Sheet**

### **Introduction**

There is an ongoing interest from Member States in the deployment of Small Modular Reactors (SMRs). SMR development is driven mainly by taking account of economic benefits from modularity and low capital investment, siting flexibility and great efficiency being coupled with other energy sources as well as enhanced safety and security.

There are more than 50 SMR designs and concepts worldwide, ranging from scaled down versions of existing nuclear reactor designs to entirely new Generation IV designs. Most of them are in various developmental stages and some are already deployed. As a consequence, SMR fuels have also been developed with various designs and concepts. In general, they are grouped into:

- Fuels for water-cooled SMRs,
- Fuels for high temperature gas-cooled SMRs,
- Fuels for fast SMRs (that include sodium-cooled, lead-cooled, gas-cooled reactors), and
- Fuels for Molten Salt Reactors.

Regardless of their designs and concepts, all SMR fuels are essentially designed to allow for high burnup and long fuel cycles.

Experience with conventional fuels used in power reactors can provide a great support to some SMR fuel designs including water-cooled reactor fuels, high temperature gas-cooled reactor fuels. For most SMR fuel designs, however, they are at early stage on development curve and need much more work

till implementation in the reactor.

There have been no fora organized to exchange information on the design, fabrication, operation and post irradiation examinations of SMR fuels. The IAEA intends to organize a Technical Meeting in 2021 to facilitate the exchange of information on all aspects of SMR fuels.

## **Objectives**

The purpose of the event is to exchange information on recent experiences as well as ongoing and future improvements in the design, fabrication and irradiation behaviour of small modular reactor fuels.

## **Target Audience**

The event is intended for staff members of nuclear fuel research organizations, nuclear power plants, utilities, regulatory bodies, universities and other organizations engaged in the design, operation and fabrication of existing and innovative power-reactor fuels. 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 preparing a report compiling presentations and discussions of the event, recommendations for future activities to support the development and qualification of SMR fuels.

## **Structure**

This event will comprise five main technical sessions as follows:

1. Fuels for water-cooled SMRs,
2. Fuels for high temperature gas-cooled SMRs,
3. Fuels for fast SMRs,
4. Fuels for Molten Salt SMRs,
5. Panel discussions on special issues.

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

## Topics

Under Technical Sessions 1 through 4, the following topics can be discussed:

- Design,
- Fabrication,
- Material properties,
- In-reactor and out-reactor tests,
- Irradiation performance analyses,
- Fuel modelling and computer code developments,
- Post irradiation examinations,
- National or international programmes for development,
- Fuel cycle strategies, their assessment tools,
- Sample packaging and irradiated material disposition,
- Transportation logistics and improvements.

Under Technical Session 5, the following topics can be discussed:

- Review of draft TECDOC on “Coated Particle Fuels for High Temperature Gas-Cooled, Small Modular Reactors – Technical Challenges and Future Prospects”,
- Technical challenges that may be encountered in deploying water-cooled SMR fuels,
- Future prospect for the development of innovative SMR fuels,
- IAEA’s role in dealing with technical challenges and future prospect of SMR fuel deployment.

## Participation and Registration

All persons wishing to participate in this virtual 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 June 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

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 **30 July 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 **30 August 2020**.

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

## Additional Information

The TM will be conducted via online meeting using WebEx. The agenda and link to access the online meeting will be sent to the designated participants before the event.

## 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  
PO Box 100  
1400 VIENNA  
AUSTRIA

Tel.: +43 1 2600 21921

Fax: +43 1 26007

Email: [K.S.Sim@iaea.org](mailto: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](mailto: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 Design, Fabrication and Irradiation Behaviour of Small Modular Reactor Fuels

**Virtual Event**

**18–22 October 2021**

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](mailto: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](mailto:K.S.Sim@iaea.org) and to the Administrative Secretary [N.Nath-Sirimalwatta@iaea.org](mailto:N.Nath-Sirimalwatta@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: 30 June 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:	
If/as applicable: 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 Design, Fabrication and Irradiation Behaviour of Small Modular Reactor Fuels

### Virtual Event

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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: 30 August 2021**

Title of the presentation:		
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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**Date:**

**Signature of main author:**