



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

**International Conference on
Fast Reactors and Related Fuel Cycles:
Sustainable Clean Energy for the Future
(FR22)**

Beijing, China

25–28 April 2022

Organized by the
International Atomic Energy Agency (IAEA)

Hosted by the
Government of People's Republic of China

through the
China Institute of Atomic Energy (CIAE)

Announcement and Call for Papers

A. Introduction

The International Atomic Energy Agency (IAEA) once again brings together the fast reactor and related fuel cycle community by organizing the International Conference on Fast Reactors and Related Fuel Cycles: Sustainable Clean Energy for the Future (FR22). The FR22 Conference will be hosted by the People's Republic of China via the China Institute for Atomic Energy (CIAE) in Beijing. This conference is a follow-up of the previous successful IAEA Conferences FR09 (Kyoto, 2009), FR13 (Paris, 2013), and FR17 (Yekaterinburg, 2017). The last Conference, FR17, was attended by almost 600 participants from 27 countries and six international organizations, delivering 240 oral and 200 poster presentations on different fields of fast reactor and related fuel cycle technologies.

The importance of fast reactors and related fuel cycles in ensuring the long-term sustainability of nuclear power has been largely recognized for a long time by the nuclear community. Fast reactors are nuclear reactors that offer several key advantages over traditional thermal reactors in terms of sustainability. When operated in a fully closed fuel cycle, fast reactors have the potential to extract 60-70 times more energy from uranium than existing thermal reactors and contribute to a significant reduction in the burden of high-level wastes.

At present, many countries are actively developing reactor, coolant, fuel and fuel cycle technologies. Fast reactor technologies include sodium, lead, lead-bismuth eutectic, gas, molten salt and supercritical water-cooled systems, as well as hybrids, such as accelerator driven systems. Several demonstration projects, ranging from small to large scale, are under study, design and construction. There are international and national efforts dedicated to developing and demonstrating suitable fuels and fuel cycles for the different fast reactor technologies.

For energy systems based on fast reactors to become viable for industrial deployment in the coming decades, designers will have to further increase the level of safety and economic competitiveness.

At FR22, a "Young Generation Event" will be organised to engage young generation in innovative fast neutron systems development. It will be a great opportunity for young academicians and professionals to participate and present their ideas and to have a forum of discussion for potential synergisms and collaborations.

B. Purpose

The purpose of the event is to provide a forum to exchange information on national and international programmes, and more generally new developments and experiences, in the field of fast reactors and related fuel and fuel cycle technologies. The first objective is to identify and discuss strategic and technical options, including potential capabilities in mitigation of climate change while reducing the amount of highly radioactive nuclear waste. The second objective is to promote the development of fast reactors and related fuel cycle technologies in a safe, proliferation-resistant and cost-effective manner.

The third objective is to identify gaps and key issues that need to be addressed in relation to the industrial deployment of these nuclear power technologies. The fourth objective is to engage young scientists and engineers in this field, in particular with regard to the development of innovative fast reactor concepts.

C. Format and Topics

The conference programme will include plenary and parallel sessions, poster sessions, panel discussions and a Young Generation Event.

The IAEA welcomes high quality contributions that fall under the umbrella of the nine topics listed below:

Track 1. Innovative fast reactor designs

- Basic reactor and core designs
- SFR design features
- LFR design features
- ADS design features
- Fast neutron microreactors
- Other fast reactor designs
- System and component design and qualification

Track 2. Fast reactor safety

- Safety by design approaches, passive safety systems
- Harmonization of safety requirements
- Core disruptive accidents
- Probabilistic safety assessment
- Special Session on IAEA CRP “Modelling and Simulation of Source Term for SFR under Hypothetical Severe Accident”
- Special Session on IAEA CRP “Benchmark Analysis of FFTF Loss of Flow Without Scram Test”

Track 3. Fuels, fuel cycles and waste management

- Development of innovative fuels: Design, manufacturing, thermo-physical properties, irradiation experiments and post irradiation examinations of advanced fuels
- Fuel performance
- Closing the fuel cycle (actinides multirecycling, P&T, etc.)
 - Reprocessing and partitioning
 - Waste minimization and approaches to manage generated waste
- Safety of processes and facilities

Track 4. Fast reactor materials (coolants, structures) and components

- Advances in coolant technology
- Innovative structural materials
- Component technology

Track 5. Test facilities and experiments

- Experimental facilities under design, construction or operation
- Experimental tests and results
- Remaining gaps and needs

Track 6. Modelling, simulations and digitalization

- Neutronics simulations

- Advances in fast reactor thermal hydraulics
- Coupled and multiphysics simulations
- Verification and validation
- Uncertainty and sensitivity analysis
- Digitalization of reactor models
- Special Session on IAEA CRP “Neutronics Benchmark of CEFR Start-Up Tests”

Track 7. Sustainability: Economics, environment and proliferation

- Sustainability of innovative fast neutron systems
- Public support
- Integration with other energy sources (hybrid energy systems)
- Non-proliferation issues and safeguard-by-design concepts

Track 8. Commissioning, Operation and Decommissioning

- Commissioning and operation of SFRs
- In-service inspection and repair, instrumentation
- Decommissioning (including management of waste arising from decommissioning)

Track 9. Education, professional development and knowledge management

- Education and training: national and international programmes
- Knowledge preservation and transfer
- Projects on international collaboration, mobility and capacity building
- Basic principles simulators for educational purposes

D. Contributed Papers and Posters

Papers on issues falling within the topics outlined in Section C above may be submitted as contributions to the conference. All papers, apart from invited papers, must present original work and should not have been published elsewhere.

E.1. Submission of abstracts

Anyone wishing to present a paper at the conference — either orally or in the form of a poster — must submit an abstract **in electronic format** through the conference’s web-based file submission system (IAEA-INDICO: <https://conferences.iaea.org/event/218/>). Paper copies cannot be accepted.

Instructions on how to upload the abstract to IAEA-INDICO will be available on the conference web page (see Section M). The abstract must be submitted through this system by **11 October 2020**. No other form of submission will be accepted.

The abstract should not exceed **400 words**. The abstract must be in English and give sufficient information on the contents of the proposed paper to enable the Paper Selection Committee to evaluate it. Introductory and general matters should not be included. Please see the sample abstract on the conference web page.

In addition, authors must electronically submit the following two forms to their appropriate governmental authority (see Section F) for transmission to the IAEA. These forms must be received by the IAEA no later than **10 December 2021**:

- Participation Form (Form A)

- Form for Submission of a Paper (Form B)

IMPORTANT: The electronically received abstract will be considered by the Programme Committee only if these two forms have been received by the IAEA through the established official channels.

E.2. Acceptance of papers for oral presentation and poster presentation

This is a plenary technical sessions conference, so no parallel technical sessions will be organized. For this reason, the number of contributions that can be accepted for oral presentation is limited. Authors who prefer to present their papers as posters are requested to indicate this preference on Form A and in INDICO, at the time of abstract submission.

Authors will be notified by **2 November 2020** as to whether their papers have been accepted for presentation at the conference, either orally or as a poster.

E.3. Submission of Full Papers

Authors of accepted abstracts will be requested to submit a full paper in Word format, about **five to ten pages maximum in length**. A compilation of full papers (in electronic form) will be made available to participants at registration.

Full papers must also be submitted through the IAEA-INDICO file submission system in Word format. Submitting the paper in the indicated electronic format is mandatory. Specifications for the layout and electronic format of the contributed papers and for the preparation of posters will be made available on the conference web page.

The IAEA reserves the right to exclude papers that do not comply with its quality standards and/or that do not apply to one of the topics outlined in Section C above and/or that do not meet the expectations based on the information in the abstract.

The deadline for electronic submission of the full papers as Word files is **30 April 2021**. The IAEA will not accept papers submitted after the deadline.

The IAEA will dispatch notifications of its review of the full papers by **15 July 2021**. The deadline for revised papers to be submitted through the IAEA-INDICO files submission system is **30 September 2021**.

IMPORTANT: The system for electronic submission of papers, IAEA-INDICO, is the sole mechanism for submission of contributed papers. Authors are encouraged to submit papers as early as possible. The IAEA will not accept papers submitted through email.

E.4. Conference Proceedings

The proceedings containing summaries of the plenary and technical sessions as well as full papers presented at the conference will be published by the IAEA as soon as possible after the conference. Copies of the proceedings can be ordered, at a special discounted price, during or after the conference.

E. Participation and Registration

All persons wishing to participate in the event must be designated by an IAEA Member State or should be member of an organization that has been invited to attend. The list of IAEA Member States and invited organizations is available on the event web page (see Section M).

Registration through InTouch+:

1. Access the InTouch+ web page (<https://intouchplus.iaea.org>):
 - Participants with an existing NUCLEUS account can [sign in here](#) with their username and password;
 - Participants without an existing NUCLEUS account can [register here](#).
2. Once signed in, participants can use the InTouch+ platform to:
 - Complete or update their personal details under 'Basic Profile' (if no financial support is requested) or under 'Complete Profile' (if financial support is requested) and upload the relevant supporting documents;
 - Search for the relevant event (EVT2001728) 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 Conference.Contact-Point@iaea.org);
 - If applicable, indicate whether a paper is being submitted and complete the relevant information;
 - If applicable, indicate whether financial support is requested and complete the relevant information; (this is not applicable to participants from invited organizations);
 - Submit their application.

Once submitted through InTouch+, the application will be transmitted automatically to the required authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority). If approved the application will automatically be sent to the IAEA.

NOTE: Should participants wish to submit a paper or request financial support, the application needs to be submitted by the specified deadlines (see section K).

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.

If it is not possible to submit your application through the InTouch+ platform, participants are requested to contact the IAEA's Conference Services Section via e-mail: Conference.Contact-Point@iaea.org.

F. 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 conference. The IAEA has, however, limited funds at its disposal to help cover the cost of attendance of certain participants. Such assistance may be offered upon specific request to normally one participant per country provided that, in the IAEA's view, the participant on whose behalf assistance is requested will make an important contribution to the conference.

If governments wish to apply for a grant on behalf of one of their specialists, they should address specific requests to the IAEA to this effect. Governments should ensure that applications for grants are:

1. Submitted by **31 August 2021**;
2. Accompanied by a duly completed Grant Application Form (Form C) signed and stamped by the Ministry of Foreign Affairs or the National Atomic Energy Authority; and
3. Accompanied by a completed Participation Form (Form A).

Applications that do not comply with the above conditions cannot be considered.

Approved grants will be issued in the form of a lump sum payment that usually covers only part of the cost of attendance.

G. Distribution of Documents

A preliminary programme of the conference will be made available on the conference web page (see Section M) before the start of the conference and the final programme will be distributed at the conference during on-site registration. It is intended that full papers will be **distributed in a compiled electronic format (unedited) free of charge to all participants upon registration**. Questions relating to the contributed papers can be raised at the appropriate technical session or panel discussion.

H. Working Language

The working language of the conference will be English. All communications and papers must be sent to the IAEA in English.

I. Accommodation

Participants must make their own travel and accommodation arrangements. Detailed information on accommodations and other administrative matters will be sent directly to all designated participants approximately five months before the conference.

Please note that the IAEA is not in a position to assist participants with hotel bookings, nor can the IAEA assume responsibility for paying cancellation fees or for re-bookings and no-shows.

J. Visas

Designated participants who require a visa to enter China should submit the necessary application to the nearest diplomatic or consular representative of China at least four weeks before they travel to China.

K. Key Deadlines and Dates

Submission of abstracts	11 October 2020
Submission of Forms A and B, through official channels to the IAEA	10 December 2021
Submission of Grant Application Form (Form C) through official channels	31 August 2021
Notification of acceptance of abstract	2 November 2020
Electronic submission of full paper	30 April 2021
Notification of review of full paper, if applicable	15 July 2021
Deadline for revised papers	30 September 2021

L. Conference Secretariat

General postal address and contact details of the IAEA:

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries and correspondence on administrative matters to the Conference Services Section.

M. Conference Web Page

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

<https://www.iaea.org/events/fr22>