



International Conference on
Fast Reactors and Related Fuel Cycles:
Next Generation Nuclear Systems for
Sustainable Development
(FR17)

**Yekaterinburg, Russian Federation
26–29 June 2017**

**Organized by the
International Atomic Energy Agency**

**Hosted by the
Government of the Russian Federation**

**through the
State Atomic Energy Corporation “Rosatom”**

Announcement and Call for Papers

A. Introduction

The first International Conference on Fast Reactors and Related Fuel Cycles (FR09) was held in Kyoto, Japan, in 2009 and was subtitled “Challenges and Opportunities”. The second conference (FR13) was held in Paris, France, in 2013 with the theme “Safe Technologies and Sustainable Scenarios” and was attended by some 700 experts from 27 countries and 4 international organizations representing different fields of fast reactor and related fuel cycle technologies. The International Atomic Energy Agency (IAEA) now proposes, almost four years later, to bring the fast reactor and related fuel cycle community together again. The Russian Federation’s State Atomic Energy Corporation “Rosatom” has proposed to host the conference in Yekaterinburg, Russian Federation. One of the main reasons for this proposed venue is that the sodium cooled fast reactor BN-800 was connected to the grid in December 2015 at the Beloyarsk nuclear power plant (NPP), which is located in the vicinity of Yekaterinburg. BN-800 is a successor of the BN-600 reactor that has been in operation at the Beloyarsk NPP since 1980.

The nuclear industry has from its inception recognized the important role of fast reactors and related fuel cycles in ensuring the long term sustainability of nuclear power. Fast reactors operated in a closed fuel cycle help to improve the utilization of resources — both fissile and fertile materials — used in nuclear fuels. This improvement is possible because fast reactors can breed fissile materials and, using modern fuel cycle technologies, recycle materials bred in these reactors. In this way, fast reactors and related fuel cycle technologies can make an enormous contribution to the sustainability of nuclear energy production. They have the potential to produce a hundred times more energy from natural uranium resources. At the same time, fast neutrons favour fission of heavy atoms, instead of capture, so they can also be used to transmute minor actinides, thereby reducing the demands on geological repositories for the final disposal of nuclear waste.

Many countries are actively developing reactor, coolant, fuel and fuel cycle technologies. Reactor technologies under development include sodium-, lead-, gas-, molten salt- and even supercritical water-cooled systems and technologies and accelerator-driven systems. In parallel, several demonstration projects, ranging from small to large scale, are under study or construction.

For such nuclear energy systems to become viable for industrial deployment in the coming decades, designers will have to increase their level of safety in order to gain public acceptance. Harmonization of safety standards at the international level could play a leading role in achieving these goals.

B. Purpose and Objectives

The purpose of the conference is to provide a forum to exchange information on national and international programmes, and more generally new developments and experience, in the field of fast reactors and related fuel cycle technologies. A first goal is to identify and discuss strategic and technical options that may have been proposed by individual countries or companies. Another goal is to promote the development of fast reactors and related fuel cycle technologies in a safe, proliferation resistant and cost-effective manner. A third goal is to identify gaps and key issues that need to be addressed in relation to the industrial deployment of fast reactors with a closed fuel cycle. A fourth goal is to engage young scientists and engineers in this field, in particular with regard to the development of innovative fast reactor concepts.

C. Topics

The IAEA welcomes high quality contributions, both academic and practice-based, that fall under the umbrella of the following topics:

1. National and multi-national strategies and programmes

2. Reactor concept designs

- System design
- Core design
- Design and qualification of components
- In-service inspection and repair, instrumentation

3. Operating and decommissioning experience

- Safety feedback
- Radiological impact

4. Safety and licensing

- Safety by design approaches, safety of equipment
- Harmonization of safety requirements and approaches
- Probabilistic and deterministic approaches and studies
- Severe accidents: analysis and simulation
- Special Session on Benchmark Analysis of an EBR-II Shutdown Heat Removal Test.

5. Fuel cycle options and processes

- Safety of processes and facilities
- Waste minimization
- Partitioning and transmutation

6. Fuels

- Driver fuels, minor actinide-bearing fuels and targets
- Design, manufacturing, thermo-physical properties, irradiation experiments and post-irradiation examinations
- Fuel Performance codes and simulations

7. Coolant technology and structural materials

- Qualification of materials for early deployment
- Innovative materials for improved performance

8. Experiments, tests and simulation

- Modelling, numerical simulation, verification and validation
- Recent experimental results and projects
- Fundamental issues
- Fast reactor plant simulators

9. Economics, performance and scenarios of industrial deployment

- Transition to fast reactors
- Management of materials
- Reliability, availability, public acceptance
- Business case for private and public investment
- Integration with other energy sources

10. Proliferation resistance and physical protection

11. Skills, capabilities, professional development, knowledge management, international networks

Furthermore, a panel session will be devoted to discussion on small and medium sized fast reactors.

D. Structure

The conference programme will consist of an opening plenary session, a general plenary session, several parallel technical sessions, a poster session, panel sessions, and a closing plenary session.

E. Contributed Papers and Posters

Concise papers on topics falling within the scope of the conference (see Section C) may be submitted as contributions to the conference. All papers, apart from invited papers, must present original work and must 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 browser-based file submission system (IAEA-INDICO). 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 P). The abstract **must** be submitted through this system by **30 September 2016**. No other form of submission will be accepted.

The abstract should not exceed 150 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 **30 September 2016**:

- 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 (see Section F).

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

Given the number of papers anticipated and the need to provide ample time for discussion, the number 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.

Authors will be notified in early November 2016 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 not exceeding **ten pages 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. 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 given in the abstract.

The deadline for electronic submission of the full papers as **word** files is **31 December 2016**. The IAEA will not accept papers submitted after the deadline.

The IAEA will dispatch notifications of its review of the full papers by 1 March 2017. The deadline for revised papers to be submitted through the IAEA-INDICO files submission system is **20 April 2017**.

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.

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.

F. Participation and Registration

All persons wishing to participate in the conference are requested to register **online in advance** through the conference web page (see Section P). **In addition**, they must send a completed

- Participation Form (Form A),
- Form for Submission of a Paper (Form B) (if applicable), and
- Grant Application Form (Form C) (if applicable),

as soon as possible to a competent official authority:

- Ministry of Foreign Affairs,
- Permanent Mission to the IAEA, or
- National Atomic Energy Authority,

or to one of the organizations invited to participate for subsequent transmission to the IAEA, via email to: Official.Mail@iaea.org.

A participant will be accepted only if the above documents are transmitted through the competent national authority of a Member State of the IAEA or by an organization invited to participate.

Participants whose official designations have been received by the IAEA will receive further information on the conference at least five months before the start of the conference. This information will also be made available on the conference web page (see Section P).

Please note however that there is no deadline for registration of participation.

G. 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 **30 September 2016**;
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**.

H. Distribution of Documents

A preliminary programme of the conference will be made available on the conference web page (see Section P) 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.

I. Exhibitions

Space will be available for displays/exhibits by commercial vendors during the conference. Interested exhibitors should contact the Local Organizing Committee by email as soon as possible:

Ms Ekaterina Aleksandrova

Information and Exhibition Centre for the Atomic Sector (Atomexpo)

Email: EMAleksandrova@atomexpo.com

Tel.: +7 499 922 89 95

J. Technical Tour

A technical tour to the Beloyarsk NPP will be organized for the conference participants. The tour participants will be able to visit the most powerful fast neutron reactors that are currently in operation: BN-600 and BN-800.

Venue:	Beloyarsk NPP
Date:	Friday, 30 June 2017
Fee:	Free of charge
Transportation:	Shuttle bus from the conference site
Registration deadline:	15 March 2017 (the number of participants is limited, on a first-come, first-served basis)
Information required to apply:	Copy of a passport
More information on the Beloyarsk NPP:	http://www.rosenergoatom.ru/wps/wcm/connect/rosenergoatom_copy/site_en/NPP/belnpp/

The contact point in the Local Organizing Committee for those interested in taking part in the technical tour is Mr Evgeny Shamin (Email: eashamin@rosatom.ru).

K. Working Language

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

L. Accommodation

Participants must make their own travel and accommodation arrangements. Detailed information on accommodation and other administrative matters will be sent directly to all designated participants approximately five months before the conference. This information will also be made available on the conference website, in due course.

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.

M. Visas

Designated participants who require a visa to enter the Russian Federation should submit the necessary application(s) to the nearest diplomatic or consular representative of the Russian Federation as early as possible, but at least one month before the start of the conference. An invitation letter from the local organizers will be required to accompany the visa application. Please see the “Visa Guidance” section to be made available soon on the IAEA conference web page (see Section P) for information on how to obtain such an invitation letter.

N. Key Deadlines and Dates

Submission of abstracts, including Forms A and B, through official channels to the IAEA	30 September 2016
Submission of Grant Application Form (Form C) through official channels	30 September 2016
Notification of acceptance of abstract	early November 2016
Electronic submission of full paper	31 December 2016
Notification of review of full paper, if applicable	1 March 2017
Deadline for request for visa letter to Mr Evgeny Shamin (eashamin@rosatom.ru) from the Local Organizing Committee	1 April 2017
Deadline for revised papers	20 April 2017

O. Conference Secretariat

General postal address and contact details of the IAEA:

International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600
Fax: +43 1 2600 2007
Email: Official.Mail@iaea.org

Scientific Secretariat:

Ms Amparo González-Espartero
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Tel.: +43 1 2600 22507

Mr Vladimir Kriventsev
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Department of Nuclear Energy
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Email address of the Scientific Secretariat: FR17.Contact-Point@iaea.org

Administration and organization:

Ms Martina Neuhold
Conference Services Section
Division of Conference and Document Services
Department of Management
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Tel.: +43 1 2600 21314
Email: m.neuhold@iaea.org

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

P. Conference Web Page

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

<http://www-pub.iaea.org/iaeameetings/50810/FR17>