

# **International Conference on Research Reactors: Addressing Challenges and Opportunities to Ensure Effectiveness and Sustainability**

**Monday 25 November 2019 - Friday 29 November 2019**

**Buenos Aires, Argentina**

## **Topics**

The conference will consist of an opening plenary session, seven topical sessions, and a closing plenary session. In addition, a forum on IAEA activities and services for enhancing research reactor safety, security, and operation and maintenance as well as a forum on the utilization of high-power research reactors in materials testing are scheduled as conference side events.

In order to meet its objectives, the conference will feature:

- Presentations by the invited keynote speakers;
- Presentations to highlight specific areas within each topical session and stimulate discussion among conference participants; and
- Poster presentations that present state-of-the-art information and knowledge related to each of the topical areas.

While most papers will focus on one of the principal topical areas below, authors are encouraged to consider integration with the other areas as applicable.

The final programme and the Book of Extended Synopsis will be available upon registration at the conference.

## **Session 1: Utilization and Applications of Research Reactors**

This session will cover the following topics:

Challenges and opportunities in:

- o Production of medical and industrial radioisotopes
- o Neutron beam research
- o Neutron imaging
- o Irradiation services and products
- o Neutron activation analysis
- o Materials and fuel testing
- o Other applications, including new developments

Synergies and complementarities between utilization programmes of small and large research reactors

Utilization programmes for subcritical assemblies

Use of research reactors for education and training

Strategies for effective and sustainable utilization, including regional and international cooperation

Use of research reactors for the development of nuclear science and technology, including support for nuclear power

## **Session 2: Research Reactor Operation and Maintenance**

This session will cover the following topics:

Effective operation and maintenance programmes, including lessons learned and good practices

Ageing management programmes, including methods and techniques for in-service inspections

Experience with major repair, refurbishment, and upgrade projects

Programmes for long term operation

Experience and plans for core conversion projects

Management of the transition between operation and decommissioning

Member States' experiences with Operation and Maintenance Assessment for Research Reactors

(OMARR) missions

## Session 3: New Research Reactor Programmes

This session will cover the following topics:

Strategy for accessing research reactor facilities, including new builds

Development of sustainable national nuclear infrastructure for new research reactor programmes

Effective application of the IAEA's Milestones approach for new research reactor programmes.

Relevant topics include:

- o Assessment of needs, development of user community, stakeholder involvement and strategic planning

- o Assessment of the national nuclear infrastructure and experiences with the IAEA's Integrated Nuclear Infrastructure Review for Research Reactors (INIR-RR) missions

- o Safety and security considerations in different phases of a research reactor project

- o Feasibility studies for new research reactor programmes

- o Development of the functional and technical requirements for new research reactors

Status reports on new research reactor programmes in progress, experience and lessons learned

## Session 4: Safety of Research Reactors

This session will cover the following topics:

Effective application of the IAEA Code of Conduct on the Safety of Research Reactors

Experiences with application of the IAEA safety standards that are relevant to subcritical assemblies

Regulatory supervision of research reactors, including licensing and inspection programmes

Leadership and management for safety

Interaction of human, technological, and organizational factors

Training and qualification programmes

Implemented or planned upgrades identified through safety reassessments based on the lessons learned from the Fukushima-Daiichi accident

Safety and licensing documentation

Safety analysis approaches, methods, and computational tools

Ageing management and safety assessment for long term operation

Safety in utilization and modifications, including licensing of digital instrumentation and control systems

Operational radiation protection and waste management

Operating experience feedback

Periodic safety reviews

Member States' experiences with Integrated Safety Assessment of Research Reactors (INSARR) missions

## Session 5: Security of Research Reactors

This session will cover the following topics:

Effective use of the Integrated Nuclear Security Support Plan (INSSP) process

Experiences with application of the IAEA's Nuclear Security Recommendations on Radioactive Material and Associated Facilities (IAEA Nuclear Security Series No. 14):

- o Development of regulatory basis

- o Regulatory oversight

- o Processes for licensing, inspections and enforcement of the nuclear security regime

- o Risk based approach, including threat assessment, design basis threat, risk management, graded

approach and defence in depth

Implementing and sustaining research reactor facility security systems:

- o Experiences with planning, implementing and sustaining physical protection systems
- o Challenges of addressing emerging threats
- o Developing and maintaining security plans, including computer security
- o Response and mitigation strategies

Experiences with Integrated Physical Protection Advisory Service (IPPAS) missions.

## **Session 6: Research Reactor Fuel Management and Decommissioning**

This session will cover the following topics:

Fuel management experience, related issues and lessons learned in:

- o Qualification of new fuels for research reactors
- o Fuel performance
- o Fuel handling, including safety, security and operational performance of the facilities

Strategies for spent fuel management, including fuel take-back programmes

Decommissioning planning, including considerations during a facility's lifetime

Experiences with ongoing and recently completed decommissioning projects

## **Session 7: Common Management Considerations**

This session will cover the following topics:

Effective integrated management system, including quality assurance programmes

Safety and security culture

Conduct of self-assessments and follow-up actions

Development and use of performance indicators

Interface between nuclear safety and security

Use of a graded approach in application of common management considerations, including safety requirements and security recommendations

Human resources development, including competence management, training, and succession planning

Operating and experimental data management and preservation

Configuration management

Management of facilities in extended shutdown (safety, security, surveillance and maintenance)