

# **International Conference on Research Reactors: Safe Management and Effective Utilization**

**Monday, 16 November 2015 - Friday, 20 November 2015**

## **Scientific Programme**

The conference will have a number of technical sessions dealing with specific topical areas. Sessions are expected to include papers by invited speakers as well as contributions by participants.

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

The topical areas are grouped below under seven major headings:

## **Utilization and Applications of Research Reactors**

• Advances and challenges in: Production of radioisotopes, Research with neutron beams, Neutron imaging, Irradiation services and products, Neutron activation analysis, Material and fuel testing, Other applications • Utilization programmes for critical and subcritical facilities • Education and training programmes, including e-learning • Strategies for enhanced utilization and sustainability, including networking, coalitions, and regional and international cooperation • Role of research reactors in the development of nuclear science and technology programmes, including nuclear power programmes.

## **Research Reactor Operation and Maintenance**

• Operating experience and lessons learned • Ageing management, maintenance and recent major repair/refurbishment and upgrade projects • Fuel management experience, related issues and lessons learned: Fuel performance and corrosion issues, Qualification of new fuels for research reactors, Fuel storage and transportation • Member States' experience from Operation and Maintenance Assessment for Research Reactors (OMARR) missions • Recent core conversion programmes • Operational waste management and disposal.

## **New Research Reactor Projects**

• Strategy and rationale for new research reactor acquisitions in support of nuclear science and technology, including nuclear power programmes • Experience in the application of the IAEA-developed 'research reactor milestones' approach for new research reactor projects, with relevant topics including: Assessment of needs, development of users' community, stakeholder involvement and strategic planning, Development and assessment of the national infrastructure to support the first/a new research reactor in each of the project implementation phases, Safety considerations in different phases of a research reactor project, Preparation of the feasibility study for a new research reactor, including consideration of alternative neutron sources, Development of the technical requirements for the bidding process • Status reports on new research reactor projects in progress, including on relevant experience and lessons learned.

## **Safety of Research Reactors**

• Experience with the application of the Code of Conduct on the Safety of Research Reactors and the relevant IAEA safety standards • Lessons learned from safety assessments performed following the accident at the Fukushima Daiichi nuclear power plant • Operational safety issues and safety documents, including: Safety analysis methods and approaches, Safety of utilization, modifications and upgrades, Periodic safety reviews • Member States' experience from Integrated Safety

Assessment for Research Reactors (INSARR) missions • Regulatory oversight, including developing and maintaining regulatory capability • Reactor core safety calculations and measurements, including verification and validation of computer codes.

## **Security of Research Reactors**

• Experience with International Physical Protection Advisory Service (IPPAS) missions • Experience with implementation of IAEA Nuclear Security Series publications: National regulatory oversight by the competent authorities, Processes for licensing, inspections, compliance checking and enforcement of the nuclear security regime, Risk based approach, including threat assessment, design basis threat, risk management, graded approach and defense in depth, Transport security • Implementing and sustaining facility security systems: Threat assessment, Protection systems and security plans, including computer security, Response and mitigation strategies.

## **Research Reactor Spent Fuel Management and Decommissioning**

• Strategies for spent fuel disposal, including fuel return programmes • Strategies for decommissioning, including waste management and disposal • Management of the transition between definitive shutdown and decommissioning • Experience with ongoing and recently completed decommissioning projects.

## **Common Management Considerations for Research Reactors**

• Establishment and implementation of an integrated management system, including quality assurance programmes • Graded approach in application of management, technical and safety requirements • Management and verification of safety and security, including: Safety and security culture, Safety and security interfaces • Human resource development, competence management, training, and succession planning • Operating and/or experimental data management and preservation • Configuration and documentation management • Management of facilities in extended shutdown (safety, security, surveillance and maintenance).