

“Materials and Systems for Safe Nuclear Energy”

Conference Scope

Nuclear power has been shown as a safe means of generating electricity by the evidence over six decades. The risk of accidents in nuclear power plants is continuously declining, due to the progress of advanced materials and safety systems, as well as the development of related maintenance technology.

The employment of new materials with resilience ability, which are promising for the application in the nuclear power plants, are expected to effectively improve the nuclear activities from the viewpoints of safety, efficiency and economic performance.

The importance of nuclear reactor safety systems has been even emphasized since the Fukushima nuclear disaster. In the post-Fukushima age, the enhancement of safety systems must be considered, in order to meet a higher standard of inherent safety and accident-resistant ability.

The maintenance technology for aging nuclear power plants has had great strides, as a result of the persistent study of aging phenomena, degradation evaluation, aging management and decommissioning technology. The maintenance of nuclear power plants has been a necessity of life extension, and thus become a common interest.

During ICMST-Shenzhen 2016 conference, materials and systems for safe nuclear energy, materials science for life extension, maintenance technology, risk assessment, aging effect, inspection and decommissioning will be discussed from these standpoints. Communication among nuclear research profession and industry community will be provided with a stage, and international cooperation is encouraged.

Indicative Keywords of Technical Areas

	Areas	Example of Keywords
1	<p>Reactor Materials for Reliable Nuclear Systems</p> <p>Papers on reactor materials (aspects of the entire fuel cycle) for improving the reliability of nuclear systems are solicited.</p>	<p>ATF, Corrosion Resistance, Neutron Embrittlement, SCC, High Temperature Performance, Electrochemical Protection, Molten Salt, SiC Coated, CFCs, and others</p>
2	<p>Corrosion, Fatigue and Failure Modes of Nuclear Materials</p> <p>Papers on corrosion, fatigue and failure modes of nuclear materials are solicited.</p>	<p>Stress Corrosion Cracking, Fatigue Life, Fracture, High-temperature Corrosion, Creep-fatigue, Stress Loading, Irradiation Swelling, Irradiation Growth, and others</p>
3	<p>Radiation Effects of Neutron and Charged Particles in Materials</p> <p>Papers on this area are solicited.</p>	<p>Radiation Damage, Radiation Enhanced Diffusion, Radiation Induced Segregation, Dislocation Microstructure, Radiation Induced Embrittlement, Radiation Induced Voids and Bubbles, Phase Stability, Hardening and Deformation, Creep and Growth, Environmentally Assisted Cracking, and others</p>
4	<p>Advanced Maintenance Technology in Sustainable Society</p> <p>Papers on this area in nuclear and non-nuclear industries are solicited.</p>	<p>Maintenance Optimization, Big Data Analysis for Maintenance, Condition Monitoring, Visualization of Maintenance Information, Risk-informed ISI, CBM, Vibration Analysis, Oil Analysis, Thermography, AE, Motor Analysis, MOV Analysis, Engine Analysis, and others</p>
5	<p>Safety Enhancement Program in the Post-Fukushima Age</p> <p>Papers on safety standards, strategy for emergency, emergency preparedness, etc. are solicited.</p>	<p>Measures against Severe Accident, Diverse and Flexible Coping Measures against Severe Accident (ex. NEI FLEX Strategies), Strategies to Enhance Safety, Portable Equipment for Emergency, External Events, Fire Protection, Operational Experiences, and others</p>
6	<p>Risk Assessment of Nuclear Power Plants</p> <p>Papers on the methods and index about the risk assessment of nuclear power plants are solicited.</p>	<p>Probabilistic Safety Assessment, Deterministic Analysis Methods, Systems Analysis, Core Melting, Accident Sequence Modelling, Containment Failure, Radioactive Releases, Source Distribution, Uncertainty Analysis, Sensitivity Analyses, Common Cause Failure, and others</p>

7	<p>Inspections of Nuclear Power Plants</p> <p>Papers on the inspections technologies and standards are solicited.</p>	<p>System Layout, Nondestructive Testing, Risk-informed, Magnetic Particle Testing, Penetrant Inspection, Ultrasonography, Radioactive Examination, Volumetric Inspection, Surface Inspection, ASME XI , RSE-M, CAN, and others</p>
8	<p>Maintenance and Repair Technology for Ageing Nuclear Plants</p> <p>Papers on any topics in maintenance technology for aging nuclear power plants such as mechanism of aging phenomena, degradation evaluation, aging management and so on are solicited.</p>	<p>Ageing Management, Technologies for Aging Degradation Evaluation, IGSCC, IASCC, PWSCC, Fatigue, Environmental Fatigue, FAC, LDI, Cable Insulation Degradation, Concrete Degradation, Irradiation Embrittlement, Thermal Ageing, Water Chemistry, and others</p>
9	<p>Decommissioning of Nuclear Power Plants</p> <p>Papers on technologies and field experiences applicable to plants in decommission are solicited.</p>	<p>Dismantling Technologies, Robot Technology, Field Experiences of Decommissioning, and others</p>
10	<p>Education and Training for Maintenance</p> <p>Papers on this area in nuclear and non-nuclear industries are solicited.</p>	<p>E&T for Maintenance, E&T for Severe Accident, E&T for Decommissioning, Human Resource Development, Maintenance Literacy, and others</p>
11	<p>Other Maintenance Related Issues</p> <p>Papers on this area issues in nuclear and non-nuclear industries are solicited.</p>	<p>Maintenance Cost, Cost Reduction, Availability, Regulations, Global Standards for Maintenance, O&M Codes, NDI, Public Communication, Safety Culture, Risk Communication, Information Technologies, and others</p>