

# FOREWORD

## SPECIAL ISSUE ON THE 2008 INTERNATIONAL CONGRESS ON ADVANCES IN NUCLEAR POWER PLANTS

*Guest Editor*

SAMIM ANGHAIE

This issue of *Nuclear Technology* features selected papers from the 2008 International Congress on Advances in Nuclear Power Plants (ICAPP '08), an international embedded topical meeting held during the annual meeting of the American Nuclear Society in Anaheim, California, June 8–12, 2008. The ICAPP provided a forum for leaders of the nuclear industry to exchange information, present results from new work, review the state of the art, and discuss future directions and needs for the deployment of new nuclear power plant systems around the world. Nearly 400 papers and presentations were given in the course of about 90 plenary, panel, and paper sessions. The ICAPP '08 plenary sessions included 30 presentations in areas of planning new plant construction, regulatory programs and strategies for new reactor licensing, nuclear fuel cycle strategies and technology options, globalization of nuclear energy: challenges and opportunities, infrastructure issues, and new plant deployment—lesson learned.

The technical program covered major global developments and research initiatives in nuclear power that were divided into 13 technical tracks: 1. “Water-Cooled Reactor Programs and Issues,” with emphasis on evolutionary designs, innovative, passive, light and heavy water-cooled reactors; 2. “High-Temperature Gas-Cooled Reactors,” with emphasis on design and development issues for electric power generation and nonelectricity applications; 3. “LMFR and Longer Term Reactor Programs,” with emphasis on potential reactor designs with longer development time and reactor technologies with enhanced fuel cycle features; 4. “Operation, Performance and Reliability Management,” with emphasis on training, operational and mitigation costs, life cycle management, and risk-based maintenance; 5. “Plant Safety Assessment and Regulatory Issues,” with emphasis on transient and accident performance including LOCA and non-LOCA, severe accident analysis, and impact of risk informed changes; 6. “Thermal Hydraulic Analysis and Testing,” with emphasis on improved code development and qualification, computer code scaling applicability and uncertainty, and component and integral system tests; 7. “Fuel Cycle and Waste Management,” with emphasis on TRU separation processes, fuel and target design for transmutation, and transmutation performances; 8. “Materials and Structural Issues,” with emphasis on fuel, core, and reactor pressure vessel and internals structures and advanced materials issues; 9. “Nuclear Energy and Sustainability,” with emphasis on environmental impact of nuclear and alternative systems, and applications of advanced reactor designs to nonpower applications; 10. “Near Term Issues,” included general issues not directly related to plant designs but connected to various issues linked to the near-term deployment of new nuclear power plants; 11. “Reactor Physics and Analysis,” with emphasis on computer code capabilities for reactor physics analysis; 12. “Innovative and Space Reactor Systems,” with emphasis on advanced reactor concepts for nonbase load power generation; and 13. “Plant Licensing Issues,” with emphasis on advances made in reactor licensing and rulemaking, advanced reactor design certifications, combined license applications and review, and multinational design evaluation.

The papers included in this special issue were selected to include the most noteworthy advances and new information in nuclear power plant technology. The authors were then invited to update their embedded topical papers and submit them for additional peer review for this special edition.