FOREWORD
NURETH-12 SPECIAL ISSUE

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This issue of *Nuclear Technology* is a special issue containing papers documenting information initially presented at the 12th International Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-12) that was held from September 30 through October 4, 2007, in Pittsburgh, Pennsylvania. The meeting was sponsored by the Pittsburgh Section and the Thermal Hydraulics Division of the American Nuclear Society with many cosponsoring organizations from the international community. The meeting provided a forum for thermal-hydraulics specialists to exchange information, present results from new work, review the state of the art, and discuss future direction and needs for further development of nuclear power plant design, analysis, and operation. At this very successful conference, there were 10 keynote papers, 2 plenary sessions, and over 200 general papers, presented by researchers representing 23 countries and covering a breadth of topics related to nuclear reactor thermal hydraulics and safety.

The papers included in this special issue were initially recommended by NURETH-12 session chairs and then screened by representatives from the technical program committee to obtain papers that describe key developments in nuclear thermal-hydraulics research from around the world. The authors were then invited to update their NURETH-12 papers and submit them for additional peer review for this special issue. The fact that many of these papers were initially presented in NURETH-12 keynote lectures and plenary sessions attests to the caliber of the authors contributing to this special issue.

Recent advances in reactor concepts and designs have brought new challenges in thermal-hydraulics research. Some of these challenges along with new findings are presented in papers published in this issue. They have been organized according to topics, highlighting research being performed in two-phase flow fundamentals, computational methods for thermal hydraulics, thermal hydraulics of advanced reactors, safety aspects of current reactor designs, and severe accidents. Significant technical findings presented herein range from improved understanding of multiphase heat transfer in severe accidents to simulation methods for an integrated hydrogen plant–nuclear reactor facility to advancements in computational methods for complex reactor scenarios.

We believe that these papers provide the community an overview of key developments in thermal-hydraulics research. We hope that you will find these papers interesting, stimulating, and useful.