



Foreword

Selected papers from the 18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-18)

Guest Editor

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Thermal hydraulics continues to be a crucial area of exploration when it comes to understanding the operation and behavior of nuclear systems. Because of the variety of present and future nuclear systems, thermal hydraulics encompasses the phenomena applicable to single- and multi-phase fluids as well as a number of fluid types, including gas, water, and liquid salts and metals. The field of thermal hydraulics includes the experimental exploration of these phenomena as well as the development of tools and techniques for this exploration. In recent years, the modeling of thermal-hydraulic phenomena has come to the forefront, and it is an active area of research involving multiscale, multidimensional and multiphysics simulation.

For this special issue of *Nuclear Science and Engineering*, 17 articles were selected from a large pool of quality papers that were submitted to the 18th International Topical Meeting on Nuclear Reactor Thermal Hydraulics (NURETH-18). In addition to this special issue, two more special issues are being published, in *Nuclear Engineering and Design* and *Nuclear Technology*, for other papers selected from the NURETH-18 proceedings.

The NURETH conference series, consisting of meetings held every other year, allows experts from all over the world the opportunity to discuss and explore the state of the art in nuclear reactor thermal hydraulics. It is the flagship meeting for the worldwide nuclear thermal hydraulics community.

NURETH-18 was held in Portland, Oregon, August 18–23, 2019. The meeting was sponsored by the American Nuclear Society and was cosponsored by a number of industrial, governmental, and educational

organizations. NURETH-18 had 156 sessions over four days. In total, 604 full papers were presented as part of the technical program, along with 3 panel sessions and 17 technical keynote addresses. Topics addressed during NURETH-18 included fundamental thermal hydraulics, computational thermal hydraulics, verification and validation, safety of existing reactors, severe accidents, and thermal hydraulics in advanced reactors. The program also included emerging topical areas of interest such as the thermal hydraulics of TREAT, fluid–structure interactions, the benchmark study of the accident at the Fukushima plant, and the thermal hydraulics of fluoride salt–cooled high-temperature reactors.

During the NURETH-18 paper review process, each manuscript was evaluated for quality and importance. During the meeting itself, each presentation was evaluated by the session chairs. Using these evaluations, the technical program committee selected a limited number of papers for archival publication in leading scientific journals. The author of each selected paper was then invited to update and submit their paper to one of these three journals, and submitted papers underwent additional peer review before publication.

This special issue of *Nuclear Science and Engineering* is the culmination of a tremendous effort put forward by a number of people over the past several years. We would like to thank the authors for conducting and presenting their inspirational research. We would like to thank the reviewers for their efforts at ensuring that the papers in this special issue are of the highest quality. We would like to thank the NURETH-18 technical program

committee, track and session organizers, reviewers, and volunteers. It goes without saying that the NURETH series could not happen and be such a tremendous success, meeting after meeting, without their effort and dedication. We would also like to thank Professor Michael Corradini, editor of

Nuclear Science and Engineering, for his support of NURETH and this special issue. A special thanks goes out to David Strutz, production editor at the American Nuclear Society, who has been an invaluable resource throughout the process of organizing this special issue.