

Foreword

Special Issue Featuring Selected Papers from the 14th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operation, and Safety (NUTHOS-14)

Guest Editors

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This special issue of *Nuclear Technology* contains nine full-length, peer-reviewed papers selected from the 14th International Topical Meeting on Nuclear Reactor Thermal Hydraulics, Operation, and Safety (NUTHOS-14), held August 25–28, 2024, in Vancouver, British Columbia, Canada. NUTHOS is a biennial international forum that brings together experts from around the world to discuss and advance the state of the art in nuclear reactor thermal hydraulics, operations, and safety. Established in 1984 and traditionally held in the Pacific region, the conference is widely recognized as one of the leading meetings for the global nuclear thermal hydraulics, operations, and safety community.

NUTHOS-14 marked the first edition of the series held in North America. The conference hosted over 250 participants and featured 200 papers organized into 52 technical sessions, along with six keynote lectures, five special sessions, two plenary sessions, and a student/early-career event. The program included a broad range of successful and engaging panels addressing topics of high relevance to the ongoing global growth in nuclear power. Papers covered subjects such as general thermal hydraulics, advanced modeling and experimental methods, plant operations, regulation, accident analysis, source-term evaluation, and the thermal hydraulics and safety of advanced reactors, as well as several focused special topics. The conference's six keynote presentations spanned these themes, with a strong emphasis on innovation and impact.

Following the conference, the NUTHOS-14 technical program committee faced the challenging task of down-selecting papers for inclusion in this special issue and

special issues in two other journals. This process combined the recommendations of reviewers and session chairs, resulting in the selection of the nine articles presented here. Together, they form a compelling collection of cutting-edge contributions in thermal hydraulics, operations, and safety research. The topics include experimental, computational, and analytical studies of thermal-hydraulic phenomena relevant to the practical application of nuclear science and technology, as well as novel AI and ML applications in nuclear energy. All the papers have been substantially revised and expanded beyond their original conference versions to include additional results and discussion. We expect readers will find these contributions both timely and valuable.

Finally, we would like to thank the reviewers who generously volunteered their time and expertise to support this special issue of *Nuclear Technology*. We also gratefully acknowledge Dr. Yassin Hassan, editor of *Nuclear Technology*, for his support of this effort, and Mr. David Strutz, of the American Nuclear Society staff, whose assistance was instrumental in ensuring the timely publication of this issue. Last, we extend our sincere appreciation to the authors and attendees of NUTHOS-14, whose contributions made the conference a resounding success.

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