Special Issue

Advances in Nuclear Thermal Hydraulics and Heat Transfer for Energy Systems

Message from the Guest Editors

This Special Issue aims at showcasing the latest developments in nuclear thermal hydraulic research that contribute to the advancement of next-generation energy systems. We welcome contributions related to reactor design and plant operation. Topics of interest include, but are not limited to, the following:

- Thermal hydraulic analysis of microreactors, SMRs, and other Gen-IV reactors (MSR, SFR, HTGR, etc.);
- Design and evaluation of passive safety systems for microreactors and SMRs;
- Heat transfer enhancement in advanced reactor systems;
- Transient and accident scenarios (e.g., LOCA, RIA) modelling in microreactors and SMRs;
- Coupled neutronics–thermal hydraulics simulations;
- Multiphase flow, instabilities, and supercritical flow modelling in advanced reactor systems;
- High-fidelity CFD and system-level simulations for nuclear applications;
- Experimental methods and integral test facilities for thermal hydraulic validation;
- Data-driven modelling, machine learning, and AI applications in nuclear thermal hydraulics;
- Heat exchanger and steam generator performance in advanced reactor designs;
- Thermal management in hybrid energy systems (e.g., energy storage, hydrogen production, and desalination).

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Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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