Special Issue

Trends and Perspectives in Nuclear Thermal Hydraulics and Nuclear Safety

Message from the Guest Editors

Significant advancements in nuclear thermal hydraulics and safety have been made in recent years by introducing novel computational techniques. These include the introduction of novel methodologies such as Computational Fluid Dynamics (CFD), uncertainty quantification, and artificial intelligence. CFD produces high-fidelity results that aid in understanding flow configuration and heat exchange, ultimately reducing safety margins. Uncertainty quantification has become increasingly important in evaluating the reliability of models and simulations. Artificial intelligence (AI) has emerged as a powerful tool in nuclear thermal hydraulics, enhancing predictive capabilities and optimizing reactor operations and safety assessments. Machine learning algorithms analyze vast datasets to improve simulation accuracy and the efficiency of reactor simulation tools. These tools have been successfully integrated into studies involving fission reactors in operation and development, as well as novel next-generation reactor designs with fission and fusion technologies.

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As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

Editor-in-Chief

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