

## Special Issue

# Advanced Multi-physics Modelling and Simulation for Nuclear Technology

### Message from the Guest Editors

The modelling and simulation of nuclear systems, with their complex geometry, coupling of various and different physics and scales, and increased safety and economic requirements, represent one of the key challenges for safer design development and operation in nuclear power plants. The design of a new reactor, whether fission or fusion, requires the development of new and better approaches to properly address the key issues of safe design and its optimization and understanding and enhance material behaviour predictions and understanding. Efficient and/or new multiscale/multiphysics modelling and high-performance computing and simulation tools are seen as necessary to predict complex nuclear system behaviour, accounting for the synergy between mechanical, thermal, chemical, and radioactive conditions during steady-state operation and transients. Submissions on the following topics are welcome:

- Multiscale/multiphysics M&S of fission and fusion nuclear systems;
- Design by analysis and safety analysis of NPPs (including SMRs);
- Material ageing and LTO assessments;
- Computational fluid dynamics and applications;

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### Guest Editors

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### Deadline for manuscript submissions

closed (30 September 2025)



## Energies

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### Editor-in-Chief

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