Special Issue

Numerical Simulation and Application of Flow in Porous Media

Message from the Guest Editors

Topics include, but are not limited to:

- Advanced Numerical Methods: Novel discretization schemes (Finite Volume, Finite Element, Lattice Boltzmann, Smoothed Particle Hydrodynamics, Pore Network Modeling), multiscale and multiphysics coupling strategies, high-performance computing applications, machine learning-enhanced simulations, uncertainty quantification, and model reduction techniques specific to porous media flow.
- Fundamental Flow Physics Modeling: Simulation of single-phase and multiphase flow, non-Newtonian fluid flow, reactive transport, coupled thermo-hydro-mechanical-chemical processes, flow in fractured and deformable porous media, and micro-scale (pore-scale) to macro-scale (continuum-scale) bridging.
- Innovative Applications: Case studies and simulations addressing critical challenges in energy resources (oil/gas recovery, CO2 sequestration, geothermal, hydrogen storage), water resources management (contaminant transport, saltwater intrusion, managed aquifer recharge), environmental engineering (soil remediation, landfill design), materials science, biomedical engineering and emerging technologies

Guest Editors

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