

## Special Issue on Subsurface Flow Modeling for Energy Harvest and Carbon Storage

### Introduction of the S.I.

The modern society still heavily depends on the subsurface energy recovery, including oil, gas, coal and geothermal systems. Meanwhile, the subsurface formations can serve as reservoirs for storing energy produced from green, clean and renewable sources such as wind and solar, geothermal and hydrogen and it could provide safe, long-term storage for captured greenhouse gases. However, it is challenging to fully understand the complexities of the subsurface formations. Thus, the subsurface engineering field demands a greater understanding of the subsurface formations in all of its complexity. The greater understanding will improve the ability to control and manipulate the subsurface formations in ways that will maximize energy harvest and minimize environmental footprints. In this special issue, we invite high-quality submissions on the following topics but not limited to:

- Challenges and solutions for subsurface formation characterization and modeling
- Artificial intelligence and Internet-of-Things (IoT) in subsurface energy systems
- Energy storage in subsurface formations
- Reactive multiphase flows in nanoporous rocks
- Advanced modeling of chemical-mechanical coupling of fluid flow in rocks
- Advanced imaging technologies and their application for rock characterization
- Advance computational methods for geomechanics modeling
- Atomic-scale fluid-rock interactions, such as sorption and diffusion
- Carbon storage in subsurface formations (coal, oil and gas, brine formations)
- Utilization of subsurface for energy transition
- Socio-economic issues (e.g., inequality) for subsurface engineering

This special issue is based on the Minisymposia MS 06-A “Physics of multiphase flow in diverse porous media” on InterPore2023.

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**Submission**

Submit your manuscript to the journal's Editorial Manager website at [editorialmanager.com/coal](http://editorialmanager.com/coal) and select the special issue "Subsurface Flow Modeling for Energy Harvest and Carbon Storage".

**Important dates**

Manuscript submission deadline: October 31, 2023

If you have any questions, please contact the Managing Editor, Wanjie Wang at [jcst@chinacs.org.cn](mailto:jcst@chinacs.org.cn) or [wangwanjie@chinacs.org.cn](mailto:wangwanjie@chinacs.org.cn).