Special Issue

Phase Change, Interphase Coupling, and Multiphase Transport in Porous Structures

Message from the Guest Editors

Multiphase flows and phase-change phenomena are often encountered in many engineering systems, such as CCUS (carbon capture, utilization and storage); the exploitation of oil, natural gas and other underground resources; the utilization of geothermal energy and hydrogen energy, etc. Multiphase flows refer to the interactive flow of distinct phases, and each phase discriminated by common interfaces in a channel represents a mass or volume of matter. Multiphase flows can occur in a single-component or multi-component systems. Possible phase combinations include:

- Solid–liquid–gas, where solid particles and gas bubbles are mostly dispersed in the liquid;
- Solid–gas, solid–liquid, and liquid–gas, where the volume fraction of one phase is relative to other results for different flow regimes;
- Phase change and miscibility phenomena involved in a combination of the above.
- Understanding the fundamentals and mechanisms of multiphase transport and phase-change phenomena is continuously needed to develop the relevant technology of engineering applications.

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