Special Issue

Numerical Modeling and Simulation of Multi-Phase Flows

Message from the Guest Editor

Multi-phase flows are characterized by two or more material interfaces, including those between continuous and dispersed phases of water, air and solid. Two typical flows can be identified—disperse flows and separated flows—the former being those consisting of finite particles, water drops, or air bubbles distributed within a continuous phase. The latter is defined as consisting of two or more continuous streams of immiscible phase, such as water and air, separated by interfaces. Multiphase flow behaviors are highly influenced by the complex interactions at material interfaces. Multi-phase flows can be described with governing equations in Eulerian–Eulerian, Eulerian–Lagrangian, or Lagrangian–Lagrangian form. Due to the presence of material interfaces and the associated complex interactions, the numerical modeling and simulation faces many challenges compared with that of traditional hydrodynamics, such as the accurate presentation and transport of material interfaces, physically sound interface interaction, reliable solutions for complex hydrodynamic problems, and high-performance computing. This Special Issue aims to address these challenges.

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In the context of global changes, the sustainable management of water cycles, going from global and regional water cycles to urban, industrial and agricultural water cycles, plays a very important role on the water resources and on their relationships with food, energy, biodiversity, ecosystem functioning and human health. *Water* invites authors to provide innovative original full articles, critical reviews and timely short communications and to propose special issues devoted to new technological and scientific domains and to interdisciplinary approaches of the water cycles. We ensure a critical review process and a quick turnaround between submission and final decision.

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