



Advances in Multiphase Flow Simulation with Machine Learning

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Message from the Guest Editors

Dear Colleagues,

E-fuels (such as hydrogen, ammonia and methanol) have been identified to replace fossil fuels and promote carbon-free transport and decentralized power generation with gas turbines, for example. This is why multiphase computational fluid dynamics (CFD) simulation is a hot topic in many research laboratories and industry today. These developments will require precise answers to several open questions of a fundamental scientific nature. For this, fast, robust and accurate CFD models are needed to go beyond academic simulations and reduce the time and cost of developing cutting-edge technologies capable of combating global warming. However, multi-dimensional numerical simulation is generally computationally expensive and can require significant memory capacity, for example, to store the physical properties of the e-fuels over a wide range of pressures, temperatures and compositions. The aim of this Special Issue is to demonstrate the efficiency and robustness of CFD simulation when the numerical solver is coupled with an artificial intelligence method, such as deep learning.

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