Special Issue

Advances in Multi-Scale Methods in Fluid Mechanics for Bubble Columns and Fluidized Beds

Message from the Guest Editors

The multiphase reactors are the most important units in the chemical, biochemical, and petrochemical industries. Especially in the field of bubble column reactors, there are over 500 papers in the open literature about different aspects of hydrodynamics, mixing, and mass and heat transfer. These facilities are simple but very effective gas–liquid contactors. They are characterized with a complicated hydrodynamics, which implies the formation of various flow regimes.
Since the analogous description of the hydrodynamics of both bubble columns and fluidized beds is feasible, these multiphase reactors should be simultaneously investigated and their performance compared, with some analogies extracted. In both reactor types, advanced measurement techniques and new approaches for CFD simulations are frequently applied. In this Special Issue, manuscripts are solicited that focus on the advances on multi-scale methods in fluid mechanics of both reactor types. Especially welcome are articles that focus on the various modifications of both bubble columns (including slurry bubble columns) and fluidized beds.

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