# Special Issue

# Innovative Computational Approaches for Complex Multiphase Flow in Energy, Environment and Manufacturing

## Message from the Guest Editors

At present, the accurate prediction and optimization of complex multiphase flows—spanning gas–solid, liquid–solid, gas–liquid, and reactive systems—are critical to advancing energy, environmental, and manufacturing processes. These flows underpin technologies ranging from fluidized beds in bioenergy production and carbon capture systems to particle transport in mineral processing, advanced manufacturing, and large-scale chemical reactors. This Special Issue aims to showcase state-of-the-art computational strategies and modeling frameworks for tackling the challenges of complex multiphase flows, with an emphasis on innovations that bridge fundamental research and real industrial implementation. We invite contributions that advance numerical methods, propose novel hybrid modeling approaches, or demonstrate transformative applications in energy systems, environmental technologies, and manufacturing processes. Studies integrating high-fidelity simulations with experimental measurements, or coupling process models with optimization, scale-up, and techno-economic analyses, are particularly encouraged.

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## Deadline for manuscript submissions

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