



CALL FOR PAPERS Special Issue on Flow Physics of Supercritical Fluids in Engineering

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Special Issue on Flow Physics of Supercritical Fluids in Engineering

A supercritical fluid that is kept beyond its critical point in both temperature and pressure has excellent transport performance due to its high density, low viscosity, and better diffusion properties. Recently, supercritical-fluid applications have received extensive attention. For example, supercritical water is used in large thermal power generating sets; supercritical carbon dioxide (SCO₂) is used in highly-efficient compact power systems, such as concentrated solar power, nuclear power geothermal energy, or waste-heat utilization; and supercritical hydrocarbon fuel is used in the cooling of scramjets in hypersonic vehicles without adding weight. Supercritical flow characteristics, particularly for the region near the vicinity of the pseudo-critical point, need to be investigated and analyzed to better understand the interesting behavior of these flows, such as heat transfer deterioration and enhancement.

This Special Issue is dedicated to demonstrating recent advances in view of flow physics of supercritical fluids, especially for the fundamentals and applications of supercritical fluids in nuclear power, refrigeration, heat pump, and regenerative cooling systems. Papers must report on original research, including the most recent developments in the field, or offer perspectives on future prospects. All submissions are expected to have original ideas and new approaches.

Topic Areas

Potential topics include, but are not limited to:

- Advanced simulation methods for supercritical fluids such as Reynolds Averaged Navier-Stokes (RANS), Large Eddy Simulation (LES), Direct Numerical Simulation (DNS), Lattice Boltzmann Method (LBM), Direct Simulation Monte Carlo (DSMC), and Volume of Fluid (VOF)
- Advanced measurement techniques for supercritical fluids such as Particle Image Velocimetry (PIV), Laser Doppler Velocimetry (LDV), Thermo-chromic Liquid Crystals (TLC), and Temperature Sensitive Paint (TSP)
- Other topics related to multi-scale or multi-physics modeling, and simulation methods for supercritical fluids flow or/and heat transfer

Publication Target Dates

Paper submission deadline: **June 1, 2020**
Initial review completed: **October 1, 2020**
Special Issue publication date: **June 2021 (Target Date)**

Submission Instructions

Papers should be submitted electronically to the Journal at journaltool.asme.org. If you already have an account, log in as author and select **Submit Paper** at the bottom of the page. If you do not have an account, select **Submissions** and follow the steps. In either case, at the **Paper Submittal** page, select the [Journal of Fluids Engineering](#) and then select the Special Issue **Flow Physics of Supercritical Fluids in Engineering**. Papers received after the deadline or papers not selected for inclusion in the Special Issue may be accepted for publication in a regular issue.

Special Issue Guest Editors

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