Special Issue

Spray Dynamics and Cooling

Message from the Guest Editors

The dynamics of sprays and cooling are pivotal in both natural and engineered processes such as spray cooling, combustion, additive manufacturing, anti-icing, and energy-based applications. The interaction of droplets with surrounding media governs the essential phenomena of heat transfer, mass transport, and fluid dynamics. A comprehensive understanding of complex droplet behavior—ranging from formation and deformation to coalescence and breakup—is crucial for optimizing the performance of spray-based systems. This Special Issue seeks to highlight the latest research on spray cooling fundamentals, droplet breakup and atomization, heat and mass transfer enhancement, and droplet–surface/film interactions from the microscale to the nanoscale. By providing a platform for innovative studies, this Special Issue aims to advance the development of efficient and sustainable spray cooling technologies, offering insights that can drive improvements in diverse engineering applications.

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