



Developments in Propulsion Systems, Advanced Fuels and Injection Systems

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Deadline for manuscript
submissions:

closed (30 December 2021)

Message from the Guest Editors

Towards more efficient and cleaner propulsion and land transportation, new gas turbines, liquid-rocket engines, and internal-combustion engines are being designed to operate at very high chamber pressure, often exceeding the injected fuel's critical pressure, or at superheated conditions. In this context, several new complexities are being faced. Real fluid thermodynamics cannot be neglected, as most of the injection processes are actually trans-critical or experiencing nucleation and flash atomization. New fuel mixtures and formulations derived from conventional sources, advanced biomasses processing (such as with ethanol, methanol), or in the form of short-chain synthetic e-fuels generated with renewable energy are also being extensively investigated. Many challenges are then related to acquiring new accurate data describing properties and behavior of these mixtures under a variety of conditions. In addition, fuel injection and mixing are of utmost importance in this scenario, as combustion control is achieved through the injector operation...





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