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Special Issue Reprint

Thermal Fluid Dynamics and Control in Aerospace

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Thermal fluid dynamics and their control are critical scientific issues in the field of aerospace, especially for the propulsion system, in which the working medium is the thermal fluids. Flying higher, faster, and more efficiently has been continuously pursued by humanity, from first to last. Various novel aerospace propulsion systems have been developed in recent years. Thermal fluid dynamics and their efficient control are the key to enhancing the propulsion efficiency, controlling the combustion stability, reducing emissions, and expanding the operating boundaries of the engine. There is an urgent need to develop new thermal fluid theories and technologies, and reveal the coupling mechanisms of multiple physical fields. This reprint addresses the recent advances in thermal fluids, focusing on the shock/vortical flow in the high-speed inlet, flow control in the compressor/turbine, the atomization of liquid fuel and mixing the enhancement method in the combustor, the internal/external flow of the nozzle, as well as heat dissipation, etc.



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