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Data-Driven Modeling and Applications for Flow, Heat Transfer, and Combustion

Guest Editors:

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Deadline for manuscript submissions:
20 June 2026

Message from the Guest Editors

Dear Colleagues,

Data-driven methodologies have become a crucial tool for understanding flow dynamics, heat transfer phenomena, and reacting flows across various domains of applications. This Special Issue explores computational approaches and experimental diagnoses combined with machine learning methods for single- and multi-phase flows, heat and mass transfer processes, and reacting flows, with applications pertinent to combustion engines, turbomachinery, and power generation systems.

We invite original research articles, review articles, and technical notes that contribute to the advancement of knowledge in this interdisciplinary field.

Topics include, but are not limited to, the following:

- Data-driven turbulence modeling and closures;
- Data-driven models for turbulence/chemistry interaction;
- Data-driven models for mass and heat transfer processes;
- Machine learning for combustion chemistry acceleration;
- Machine learning for fluid dynamics data analysis;
- Machine learning for flow control and detection.

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Message from the Editor-in-Chief

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