

Special Issue

Advances in Combustion Processes: Fundamentals and Applications

Message from the Guest Editors

Combustion science remains a cornerstone of energy systems, industrial processes, and technological innovation, driving advancements from power generation to aerospace propulsion. While decarbonization efforts have spurred significant interest in alternative fuels, fossil fuels remain integral to global energy infrastructure. Their continued use necessitates innovations in cleaner combustion technologies, carbon capture, and emission mitigation. Concurrently, alternative fuels such as hydrogen, ammonia, biofuels, and metal powders offer pathways to reduce greenhouse gas emissions, but which require rigorous scientific validation to ensure scalability and safety. Topics of interest include, but are not limited to, the following:

- Fundamental Combustion Characterization;
- Reaction Kinetics and Mechanisms;
- Diagnostics and Modeling: in situ optical diagnostics, machine learning-enhanced simulations, and high-fidelity CFD.
- Combustion applications: experimental and computational research;
- Emission Control and Sustainability;
- Cross-Fuel Comparative Analysis.

Guest Editors

Dr. Xinlu Han
Dr. Zhongqian Ling
Dr. Dingkun Yuan

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Processes
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
processes@mdpi.com

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Editor-in-Chief

Prof. Dr. Giancarlo Cravotto

Department of Drug Science and Technology, University of Turin, Via P. Giuria 9, 10125 Turin, Italy

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