

Special Issue

Dynamics, Instabilities, and Turbulence in Unsteady Combustion

Message from the Guest Editor

Combustion is key to energy conversion, propulsion, and power generation, but real-world combustion is often unsteady, impacting efficiency, stability, and emissions. Understanding these dynamics is crucial for progress.

This Special Issue seeks research and reviews on unsteady combustion mechanisms. It integrates theoretical, experimental, and computational studies to explore hydrodynamic instabilities, turbulence, and thermoacoustics. This interdisciplinary effort aims to improve combustion performance and control.

We invite original research, technical communications, and reviews on topics like flame–flow interactions, instabilities, turbulence–chemistry coupling, transient flame behavior, numerical simulations, diagnostics, data-driven approaches, reduced-order modeling, AI applications, and instability analysis. Contributions on flame stabilization and oscillation mitigation are especially encouraged.

Guest Editor

Dr. Xi Xia

Institute of Aerospace Propulsion, School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

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

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About the Journal

Message from the Editor-in-Chief

Fire is an international open-access journal about the science, policy, and technology of fires and how they interact with communities and the environment. *Fire* seeks to provide a forum to help the fire science community convey how we can live with fire in a changing world. *Fire* seeks submissions from interdisciplinary studies that take a pyrogeography perspective of fires occurring in natural, cultural, and industrial landscapes and how they interact with communities in the science-policy interface. *Fire's* Editorial Board are widely recognized international leaders. The journal emphasizes quality and innovation and has a rigorous peer-review process. I strongly recommend *Fire* for the rapid publication of your innovative research publications and case studies.

Editor-in-Chief

Dr. Grant Williamson

School of Biological Sciences, University of Tasmania, Private Bag 55,
Hobart, TAS 7001, Australia

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