Special Issue

Modeling and Analysis of Turbulent Premixed Combustion

Message from the Guest Editors

Modern combustion devices for power generation and propulsion need to be simultaneously energy-efficient and environmentally friendly. This has increased the importance of premixed combustion because thermal NOx formation can be controlled by homogeneously mixing fuel and oxidiser before the combustion process. Further, combustion often takes place in turbulent premixed combustion (TPC) mode, where the underlying flow is significantly affected by thermal expansion. This close coupling between fluid-dynamics and chemistry poses a major challenge in the simulation and modelling of TPC. These aspects become increasingly important in the presence of (i) thermo-diffusive instability in the case of alternative, lean high hydrogen content, fuels, and (ii) hydrodynamic instabilities which are more likely to occur under elevated pressures. All the aforementioned challenges make the analysis and modelling of TPC a topic of significant intellectual and industrial interest. We invite high-quality original analytical, experimental, numerical contributions, and technical reviews in the interest of contributing to the global challenges of energy economy and environmental safety.

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Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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