

## Special Issue

# High-Speed Aerodynamics and High Energy and Efficiency Aerospace Propulsion System: Modeling and Optimization

### Message from the Guest Editor

High-speed wall-bounded flows play a key role in aerospace applications, such as unmanned supersonic/hypersonic vehicles, scramjets, advanced space aircraft, and propulsion systems. The development of an extremely thin boundary layer plus the abrupt changes in the wall on the freestream flow parameters result in high momentum/thermal gradients with a significant impact on the transport phenomena. Hypersonic flows are energetic and result in regions of high temperature, causing internal energy excitation and aerothermodynamics problems. The Special Issue is focused on documenting innovative developments in the fields of high-speed fluid dynamics related to external and internal fluid flows for aerospace applications and basic research. Suggested topics include (but are not fixed):

- Spatially developing turbulent boundary layer (SDTBL);
- Jet in crossflow problem (JICF);
- DNS/LES/RANS;
- High-speed aerodynamics of vehicles;
- Boundary layer transport phenomena;
- Shock wave boundary layer interactions (SWBLIs);
- Rarefied flows;
- Propulsion system analysis;
- Combustion modeling;
- Parallel and GPU programming in CFD;
- Coherent structure analysis.

---

### Guest Editor

Dr. Guillermo Araya

Computational Turbulence and Visualization Lab (CTV Lab), The University of Texas at San Antonio, Department of Mechanical Engineering, One UTSA Circle, San Antonio, TX 78249, USA

---

### Deadline for manuscript submissions

closed (31 March 2025)



## Energies

---

an Open Access Journal  
by MDPI

---

Impact Factor 3.2  
CiteScore 7.3



[mdpi.com/si/176323](https://mdpi.com/si/176323)

*Energies*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[energies@mdpi.com](mailto:energies@mdpi.com)

[mdpi.com/journal/  
energies](https://mdpi.com/journal/energies)





# Energies

---

an Open Access Journal  
by MDPI

---

Impact Factor 3.2  
CiteScore 7.3



[mdpi.com/journal/  
energies](https://mdpi.com/journal/energies)



## About the Journal

### Message from the Editor-in-Chief

*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.

---

### Editor-in-Chief

Prof. Dr. Enrico Sciubba  
Department of Mechanical and Industrial Engineering, University  
Niccolò Cusano, 00166 Roma, Italy

---

### Author Benefits

#### Open Access:

free for readers, with article processing charges (APC) paid by authors or their institutions.

#### High Visibility:

indexed within Scopus, SCIE (Web of Science), Ei Compendex, RePEc, Inspec, CAPlus / SciFinder, and other databases.

#### Journal Rank:

CiteScore - Q1 (Control and Optimization)