Special Issue

Flow and Heat Transfer in Gas-Cooled Nuclear Reactors

Message from the Guest Editor

Dear Colleague, Gas-cooled reactors have promising applications in electricity generation, cogeneration, and industrial process heat. Two of six Gen IV nuclear systems candidates are gas-cooled reactors, i.e., very high-temperature reactors and gas-cooled fast reactors. Smaller-scale gas-cooled reactors can be deployed in remote areas or in space as electricity or power suppliers. Gas flow and heat transfer are fundamental to the thermal hydraulic design and safety analysis of gas-cooled reactors. New gas coolants, such as helium–xenon mixtures and supercritical carbon dioxide, need to be investigated for their thermal properties, as do turbulence models in novel gas-cooled nuclear systems. The complex geometries of reactor cores make it difficult to identify flow and heat transfer features. High-temperature operation conditions highlight the effect of thermal radiation, combined with conduction and convection, in gas flow and heat transfer. A deeper understanding of gas flow and heat transfer is necessary in order to promote gas-cooled nuclear reactors among designers, regulators, and investors.

Guest Editor

Dr. Jun Sun

Institute of Nuclear and New Energy Technology, Tsinghua University, Beijing 100084, China

Deadline for manuscript submissions

closed (28 February 2025)

Energies

an Open Access Journal by MDPI

Impact Factor 3.9
CiteScore 8.3

mdpi.com/si/194794

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

mdpi.com/journal/energies

Energies

an Open Access Journal by MDPI

Impact Factor 3.9
CiteScore 8.3

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)