

Special Issue

Next-Generation Wide Band Gap Device Architectures for Power Electronics and Renewable Energy Applications

Message from the Guest Editors

Wide band gap materials such as gallium nitride (GaN) and silicon carbide (SiC) are increasingly used to fabricate power electronics devices. They are well-suited for applications such as electric vehicles (EVs) and renewable energy systems like solar inverters. For example, GaN devices with a lateral architecture are currently the most commercially widespread. However, vertical architecture has also been studied for many years, and this can give gains in performance in terms of Ron for a given device size and voltage, but also in terms of trap suppression and failure modes. The piezoelectric properties of GaN can also be exploited to improve device performance in innovative ways. The scope of this Special Issue is to cover research that explores novel power electronics device architectures composed of wide-bandgap semiconductors. In particular, this issue focuses on the use of these devices in renewable energy applications and electric vehicles, where highly efficient as well as compact electrical energy conversion is desired.

Guest Editors

Dr. Julien Buckley

Dr. Matthew Charles

Dr. René Escoffier

Deadline for manuscript submissions

30 September 2025



Energies

an Open Access Journal
by MDPI

Impact Factor 3.2
CiteScore 7.3



mdpi.com/si/219073

Energies
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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)