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.

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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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