Special Issue

High-Performance Nano-Thermoelectric Materials: Progress and Their Applications

Message from the Guest Editor

In recent years, thermoelectric (TE) materials have drawn tremendous interest from researchers due to their potential to provide alternative energy resources. The efficiency of TE materials is mostly reliant on one dimensionless parameter—the figure of merit (ZT)—which depends on temperature, the Seebeck coefficient (S), electrical conductivity (), and thermal conductivity (). One approach to enhance the value of ZT is to reduce thermal conductivity, which can be accomplished by reducing the dimensions of the materials, for example, nanoparticles, thin films, and nanowires. In addition, we seek to understand the pivotal role played by the interactions between charge carriers and phonons as they play a decisive role in electric and thermal transport in TE materials. This Special Issue aims to focus on the recent progress made with low-dimensional TE materials and on the use of methods for the exploration of TE properties at the nanoscale.

Guest Editor

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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