Special Issue

Electro-Thermal Transport in Nanometer-Scale Semiconductor Devices

Message from the Guest Editor

Understanding thermal and electrical transport in complex nanostructures is crucial for the development of next-generation materials and devices. As the size of materials approaches the nanoscale, their physical properties, especially thermal and electrical transportation, begin to exhibit unique behaviors influenced by factors such as composition, structure, and temperature. Modeling and prediction are important tools for understanding the thermophysical properties of nanostructures. A variety of theoretical and computational techniques are employed to simulate and measure such properties at the nanoscale, aiding researchers and engineers in improving the performance of these materials under various conditions We are pleased to invite you to contribute original and review articles to this Special Issue regarding electro-thermal research on nanometric semiconductor devices. Potential topics include, but are not limited to, the following: electrical and thermal simulation, nanoscale characterization methods, thermal management for devices, energy conversion and storage, thermal boundary resistance modulation, and electro-thermal co-design.

Guest Editor

Dr. Mei Wu

National Engineering Research Center of Wide Band-Gap Semiconductor, Faculty of Integrated Circuit, Xidian University, Xi'an 710126, China

Deadline for manuscript submissions

20 February 2026

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 9.2
Indexed in PubMed

mdpi.com/si/247298

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

mdpi.com/journal/nanomaterials

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 9.2
Indexed in PubMed

mdpi.com/journal/nanomaterials

MDPI

About the Journal

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.

Editor-in-Chief

Prof. Dr. Eugenia Valsami-Jones
School of Geography, Earth and Environmental Science, University of Birmingham, Birmingham B15 2TT, UK

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), PubMed, PMC, CAPlus / SciFinder, Inspec, and other databases.

Journal Rank:

JCR - Q2 (Physics, Applied) / CiteScore - Q1 (General Chemical Engineering)