Special Issue

Next-Generation Optoelectronic Nanomaterials: Designed Synthesis, Interface Control, and Device Innovations

Message from the Guest Editors

Nanomaterials have become a cornerstone of modern optoelectronics, driving transformative advances in photovoltaics, sensing, displays, and beyond. Over the past few decades, the emergence of nanomaterials—from quantum dots and two-dimensional nanosheets to other emerging systems (e.g., perovskites, MXenes, van der Waals heterostructures)—has unlocked unprecedented control over light–matter interactions at the nanoscale. These developments enable devices with higher efficiency, lower cost, and novel functionalities. However, challenges remain in scalable synthesis, material/device stability, degradation mechanisms, interface engineering, charge-transfer dynamics, and device integration.

Guest Editors

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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. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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