Special Issue

Next-Generation Optoelectronic Nanomaterials and Devices

Message from the Guest Editors

The rapid advancement of optoelectronic materials and devices has transformed fields like energy harvesting, information processing, environmental monitoring, and healthcare. As the demand for efficient, versatile, and miniaturized devices grows, next-generation materials must address challenges in performance, scalability, and integration. This Special Issue highlights cutting-edge research on next-generation optoelectronic nanomaterials and devices, focusing on innovations in design, fabrication, and applications. Nanomaterials, with their unique optical, electrical, and mechanical properties, are central to future optoelectronic technologies. Quantum dots, 2D materials, organic–inorganic hybrids, and nanostructured semiconductors enable new possibilities for LEDs, solar cells, photodetectors, and lasers. However, integrating these materials requires overcoming challenges like material instability, processing, and commercialization. This Special Issue invites contributions exploring both fundamental and applied aspects of optoelectronic nanomaterials, including insights into design, synthesis, characterization, and integration into practical devices.

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

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