Special Issue

Nanomaterials for Optoelectronic Devices: Synthesis, Properties, and Applications

Message from the Guest Editor

The rapid advancement of nanomaterials has opened new opportunities in optoelectronic technologies, enabling major improvements in efficiency, tunability, and integration. These developments have expanded the scope of devices such as photodetectors, solar cells, LEDs, lasers, and optical sensors. This Special Issue aims to highlight innovative approaches that connect fundamental research with real-world device technologies. We invites original research articles, review papers, theoretical studies, and perspectives on the synthesis, characterization, and application of advanced nanomaterials—including quantum dots, nanocrystals, 2D materials, and hybrid heterostructures. We welcome submissions on scalable fabrication techniques, surface and interface engineering, charge transport, exciton dynamics, and light–matter interaction. Studies addressing challenges such as long-term stability, eco-friendly processing, and large-scale integration are strongly encouraged. We also invite work on light-driven photocatalysis, photoelectrochemical systems, bio-integrated optoelectronics, neuromorphic devices, and nanophotonics for quantum sensing and communication.

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.

Editor-in-Chief

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