Special Issue

State-of-the-Art Nanostructured Photodetectors

Message from the Guest Editors

Recent advances in nanostructured photodetectors have opened up new avenues for high-performance optoelectronic devices. Photodetectors play a crucial role in imaging, sensing, and communication systems, and the integration of nanostructures has significantly enhanced their responsivity, speed, and spectral selectivity. Nanostructured materials, such as quantum dots, nanoparticles, nanowires, and two-dimensional materials, enable improved light absorption, carrier transport, and photoconductive gain through quantum confinement and surface engineering. Additionally, plasmonic nanostructures and metamaterials have been employed to enhance light–matter interactions, extending detection ranges to ultraviolet, visible, and infrared wavelengths. This Special Issue of *Nanomaterials* aims to highlight cutting-edge research on nanostructured photodetectors, bridging fundamental discoveries to technological innovations. We invite contributions addressing novel material designs, device engineering strategies, and mechanistic studies, as well as reviews that critically assess progress in the field.

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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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