

Special Issue

Photonics/Optoelectronics Properties and Applications of Two-Dimensional Heterostructures

Message from the Guest Editors

Two-dimensional heterostructures have garnered significant attention in photonics and optoelectronics due to their tunable bandgap and potential applications in optoelectronics. Researchers can create advanced devices with enhanced functionalities and performance by combining different two-dimensional materials or integrating them with zero-dimensional quantum dots, one-dimensional nanowires, or three-dimensional bulk materials possessing complementary optical and electronic characteristics. These heterostructures exhibit fascinating optical and electronic properties, such as adjustable photoresponse spectrum, strong light-matter interactions, and efficient charge transport. Recently, there has been a growing emphasis on utilizing two-dimensional heterostructures in various electrical and optoelectronic applications, including photodetectors, photodiodes, solar cells, transistors, and photonic integrated circuits. Exploring the photonics/optoelectronics properties and applications of two-dimensional heterostructures shows great promise for advancing next-generation optoelectronic technologies with improved performance and functionality.

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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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