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Physical Properties of Semiconductor Nanostructures and Devices

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

One of the most important materials recently used in optoelectronic devices, e.g., laser diodes, quantum light sources, and photodetectors, is the semiconductor nanostructure. It shows excellent properties as an optical emitter or absorber and the potential for mass production. A three-dimensionally confined quantum dot shows properties that are greatly attuned by the surrounding 'environment', e.g., doping, the local electric or strain field, or the band structure, which is promising for symmetric exciton or higher-order exciton formation, less dephasing or fast-decay emissions, and a high-sensitivity detection. With a quantum emitter, one of the major challenges is to build symmetric exciton with less barrier scattering and align the quantum dot to a nano-cavity (or static field) for optimal enhancement (or electric tuning). This can be achieved by optimizing the growth surface, cladding strain, junction field, epitaxial lift-off, and alignment technique.

In this Special Issue of *Nanomaterials*, we aim to present the current use of hybrid nanostructures in optoelectronics, and we invite contributions from leading groups in the field.

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Editor-in-Chief

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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.

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