Special Issue

Epitaxial Growth of III-Nitride Hetero- and Nanostructures

Message from the Guest Editors

Research on the epitaxial growth, design and fabrication of III-nitride wide-bandgap semiconductor hetero- and nanostructures is driving the development of next-generation power/RF electronics and optoelectronic devices. Advances in III-nitride hetero-/nanostructure growth techniques and design protocols promise new devices like photonic crystal nano-/micro-LEDs and lasers, AlGaN/GaN tunneling diodes, high-electron-mobility transistors (HEMTs) with regrown n+-GaN contacts, and multichannel GaN HEMTs. The recent emergence of scandium-doped aluminum nitride (Sc*x*Al1-*x*N), a relatively new member of the III-nitride family, provides the potential to boost the performance of GaN HEMTs and significantly broadens the application of III-nitrides to ferroelectric devices, RF filters and acoustic sensors. This Special Issue will address recent progress on the epitaxial growth, material characterization, structural design and engineering, and device applications of III-nitride hetero-/nanostructures, with an emphasis on Sc*x*Al1-*x*N hetero-/nanostructures.

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Deadline for manuscript submissions

29 August 2025

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 9.2
Indexed in PubMed

mdpi.com/si/206246

Nanomaterials
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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.

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