Special Issue

Laser–Nanostructure Interactions: From Fundamentals to Applications

Message from the Guest Editor

Lasers are essential in nanotechnology, allowing precise control of nanostructures and driving advancements across scientific and engineering fields. Notably, pulsed fiber lasers with two-dimensional materials as saturable absorbers have transformed the domain, offering high peak power and narrow pulse widths for precision applications. Materials like graphene and transition metal dichalcogenides show enhanced performance, expanding their use in telecommunications and materials processing. Lasers also contribute significantly to nanostructured light emitters, such as quantum dots and quantum dashes, critical for high-performance photonic devices. The quantum phenomena at the nanoscale, enabled by lasers, support applications in quantum information systems and integrated photonic technologies. This Special Issue seeks to provide a platform for researchers to share their findings on laser–nanostructure interactions. We invite original research articles, reviews, and technical notes on topics from fundamental theories to applications in photonics, catalysis, and biosensing, fostering collaboration and advancing nanotechnology.

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.

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