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Nonlinear and Quantum Optics with Nanostructures

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Message from the Guest Editors

Nonlinear optical interactions in nanostructures strongly depend on the near-field intensity and polarization pattern around the nanostructure and their clusters. Respectively, nonlinear optical response brings lots of information about the nanostructures and interplay of electric and magnetic contributions within the nanostructure to the exciting electromagnetic field. Then the whole arsenal of nonlinear optical methods can be employed to study these interactions and their dynamics with sub-nanometer space- and femtosecond time-resolution being empowered by Mie and plasmonic resonances as well as bound states in the continuum.

Interaction of the light with nanostructure(s) and, especially, with quantum emitters in the near-field of these structures when quantum features of light and of quantum emitter(s), as well as of the nanostructure(s) come into the play, requires an arsenal of quantum optics methods to study such systems.

This special issue aims to cover recent progress in both nonlinear and quantum optics studies of nanostructures (including their interactions with a few-level quantum emitters).

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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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