Special Issue

High Performance Materials and Devices in Nanophotonics

Message from the Guest Editors

Photon upconversion converts low-energy excitation into higher-energy emission, offering bright, spectrally sharp, and photostable signals. Lanthanide-doped nanocrystals have become a leading platform for this process, enabling efficient anti-Stokes emission through well-defined 4f energy levels. These nanoparticles now support a wide range of technologies—from deep-tissue imaging and ultrasensitive biosensing to optical security, displays, and data handling—and continue to gain importance as nanoscale synthesis and surface engineering advance. This Research Topic highlights recent progress in upconversion nanosystems. We welcome original research, mini-reviews, and full reviews covering materials design, synthesis, characterization, optical behavior, upconversion mechanisms, energy-transfer processes, and emerging applications of UCNPs. Contributions on related photon-upconversion materials and technologies are equally encouraged.

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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