Special Issue

Terahertz Metamaterials and Metasurfaces: Advances in Functional Materials and Devices

Message from the Guest Editors

Terahertz (THz) metamaterials and metasurfaces are rapidly advancing, enabling precise subwavelength control of amplitude, phase, polarization, and wavefronts to bridge the “THz gap.” Emerging functional media—including low-dimensional/topological materials, phase-change materials, ferroelectrics, liquid crystals, superconductors, high-index dielectrics, and III–V/Si platforms—are delivering compact, low-loss, highly tunable devices for 6G-class wireless links, real-time imaging/spectroscopy, nondestructive testing, security screening, and biomedicine. Demonstrated components include beam steerers, dynamic focusers, modulators, filters, perfect absorbers, meta-antennas, Huygens surfaces, reflectarrays/transmitarrays, holographic elements, near-field imagers, and compact spectrometers. High-sensitivity detection, loss mitigation, broadband dispersion engineering, fast/deep tuning, scalable uniform fabrication, CMOS compatibility, and system-level integration with sources, detectors, and control electronics remain key challenges.

Guest Editors

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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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