

Special Issue on
**New Optoelectronic Materials with Tunable Nanosensing
Units in a Hierarchical Structure**

CALL FOR PAPERS

Recent developments in nanotechnology have enabled many unconventional applications, especially in optoelectronics, resulting in the emergence of new devices and technologies that can improve efficiency, speed, power optimization, and system compactness and enable new functionalities. There is an ever-increasing demand for improving optoelectronic performance, while its coupling with external optical, mechanical, chemical, and magnetic excitations, as well as the multi-field electro-opto-mechano-chemo-magnetic (EO-MCM) coupling, is becoming of increasing interest.

This special issue aims to better understand the mechanisms of constituent sensing units in a variety of hierarchical structures that can be implemented to improve the current performance of optoelectronic devices. We invite authors to submit theoretical and experimental research articles to present cutting-edge progress in understanding and utilizing various mechanisms of EO-MCM coupling in optoelectronics. The special issue focuses on the most recent advances related to new materials and device concepts, associated technologies, and their applications, in particular for the development of tunable nanostructure/nanomaterial-based optoelectronic devices and their applications, their tuning mechanism, device performance, and system integration. This issue also encourages review articles describing the current state-of-the-art of optoelectronic material research.

Potential topics include but are not limited to the following:

- ▶ Overview on new optoelectronic materials with tunable nanosensing units in various hierarchical structures for enhanced responses to mechanical, chemical, and magnetic stimuli
- ▶ Novel optoelectronic properties that are induced by nanostructures
- ▶ Behavior of excitons and their role in tuning the optoelectronic properties
- ▶ Applications in quantum information processing with engineered defect structures and relevant sensing physics
- ▶ Novel electronic structure-enabled device applications based on 2D materials and perovskite solar cells
- ▶ Engineer transport of electrons and phonons with novel hierarchical nanostructures

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/aoe/tnopum/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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