Special Issue

Advanced Nano–Bio Interfaces: Smart Materials for Sensing, Therapy and Optoelectronic Applications

Message from the Guest Editor

Advanced nano–bio interface materials connect nanotechnology with biological systems, facilitating advancements in sensing, therapy, and optoelectronics. In the field of sensing, they improve the sensitivity of techniques for detecting biomarkers, viruses, or toxins. For therapeutic applications, functionalized nanoparticles allow for targeted drug delivery, photothermal ablation, or gene editing with minimal unintended effects. In optoelectronics, biohybrid systems combine photosynthetic proteins or neurons with semiconductors to facilitate light-harvesting or neuromorphic computing. Future research will focus on dynamic interfaces that respond to physiological signals and AI-designed nanomaterials for personalized medicine. For this Special Issue, we welcome contributions on, but not limited to, the following topics:

- The design and targeted regulation of intelligent nano-drugs
- The design and preparation of novel nano-imaging probes
- The detection of biomarkers in nanomaterials
- Microfluidic nano-biosensors
- The principles and methods of nano–biological interface regulation based on machine learning
- The mechanoregulation of cellular behaviors via stiffness-gradient hydrogel interfaces

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Sensors is a leading journal devoted to fast publication of the latest achievements of technological developments and scientific research in the huge area of physical, chemical and biochemical sensors, including remote sensing and sensor networks. Both experimental and theoretical papers are published, including all aspects of sensor design, technology, proof of concept and application. Sensors organizes Special Issues devoted to specific sensing areas and applications each year.

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