

Special Issue

Hybrid and Functional Nanomaterials for Next-Generation Air Quality Monitoring

Message from the Guest Editor

This Special Issue aims to compile high-quality research on the design, synthesis, and application of hybrid and functional nanomaterials for the development of advanced gas sensors and air monitoring platforms. Topics of interest include, but are not limited to, the following:

- Nanostructured metal oxides, doped semiconductors, and heterojunctions;
- Metal-organic frameworks (MOFs) and covalent-organic frameworks (COFs) as sensing layers;
- Plasmonic and quantum dot-based nanostructures for optical sensing;
- Perovskite nanomaterials for gas and humidity detection;
- Composite polymers, molecularly imprinted polymers (MIPs) and biomimetic gas sensors;
- Hybrid photo- and electrochemical nanocomposites;
- Nanomaterials integrated with microelectronic or IoT systems;
- Smart sensing interfaces for wearable, portable or in situ applications;
- Sensor arrays, multivariate data analysis, and AI-enhanced signal processing;
- Real-world validation and long-term performance of nanomaterial-based sensors;
- Environmental toxicology and risk assessment of nanomaterials used in sensing;
- The integration of nanomaterial sensors into platforms for atmospheric modelling, digital twins, and early-warning systems.

Guest Editor

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About the Journal

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. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

Editor-in-Chief

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