# 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

Dr. Antonella Macagnano

CNR-Institute of Atmospheric Pollution Research, Via Salaria km 29,300, Monterotondo, 00015 Rome, Italy

## Deadline for manuscript submissions

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*Nanomaterials*
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
nanomaterials@mdpi.com

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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.

## Editor-in-Chief

Prof. Dr. Eugenia Valsami-Jones
School of Geography, Earth and Environmental Science, University of Birmingham, Birmingham B15 2TT, UK

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