Special Issue

Next-Generation Gas Sensors and Electrocatalytic Materials for Energy and Environmental Applications

Message from the Guest Editor

The rising demand for sustainable energy and environmental safety has driven rapid advancements in gas sensing and electrocatalytic technologies. Next-generation gas sensors and innovative electrocatalytic materials offer a promising approach to address critical issues such as air pollution, energy storage, and green fuel production. These sensors feature high sensitivity, selectivity, and real-time monitoring capabilities, using nanostructured materials such as metal oxides, 2D materials, and hybrid composites. Their ability to detect trace amounts of toxic gases, including NO2, CO, and VOCs, makes them crucial for industrial, automotive, and residential applications. This SI focuses on developing cutting-edge research and innovations in the design, synthesis, and application of novel materials that fulfill both gas sensing and electrocatalytic functions. It emphasizes multifunctional materials capable of operating under both ambient and extreme conditions, providing solutions for clean energy generation, environmental monitoring, and pollution control. The integration of AI and machine learning with sensor technology is also paving the way for smart, adaptive sensing platforms.

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Message from the Editor-in-Chief

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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