



## Design Processes via Manipulation of Nanoparticles and Their Suitability for Gas Sensors

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### **Message from the Guest Editors**

Innovative developments in the nanotechnology field have helped nanomaterials to attain unique chemical and physical properties that are completely different from those of the bulk, all of which are known to play a key role in modifying the thermal and chemical properties of materials. Thus, nanoparticles are considered most appropriate for various specialist applications. Additionally, nanoparticles have a high surface area and surface-to-volume ratio because of their small particle size, and this provides an additional active site for electron transport, while enhanced defects lead to enhanced surface activity. Therefore, taking advantage of these unique properties enables the fabrication of extremely sensitive and stable gas sensors displaying rapid response–recovery times, and low power consumption. These properties are most crucial for sensor performance characteristics and must be considered when designing nanoparticles suitable for gas sensing. In fact, numerous approaches have been used to produce and stabilize metal nano-enabled particles in organic and aqueous media.





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