

49. Study of Gas-Sensing Properties of Fe₂O₃ Nanoparticles

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ABSTRACT

The development of a low-cost and scalable gas sensor for the detection of toxic and flammable gases with fast response and high sensitivity is extremely important for monitoring environmental pollution. In this work, we introduce the method of co-precipitation for the preparation of scalable Fe₂O₃ nanoparticles for gas sensor applications. The gas sensing properties of the Fe₂O₃ nanoparticles (NPs) fabricated by co-precipitation method was studied. The performance of the NPs in the detection of toxic and flammable gases such as carbon dioxide, ammonia, liquefied petroleum gas, ethanol, and hydrogen was evaluated. The Fe₂O₃ NP-based gas sensors exhibited high sensitivity and a response time of less than a minute to analytic gases.