

NO₂ Gas Sensor Using NiO Hierarchical Nanostructure/ Reduced Graphene Oxide – Based Hybrid At Low Temperature

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In our research, we present a preparation of hybrid structure composed of graphene and metal oxide – NiO for NO₂ sensor via a facile hydrothermal method with graphene oxide (GO) and NiCl₂ as the precursors. More specifically, metal oxide on graphene exhibits hierarchical nanostructure in which flower-like microspheres consist of 2D nanoplates nanobuilding blocks. The obtained NiO microspheres show high surface area which indicate a large fraction of atom on the surface. So the sensor is fabricated with hierarchical structure that has been potential for a high sensitivity at low temperature, high gas response, and fast recovery which are our contributions in this paper.. The morphology and surface properties are analyzed by FT-IR, Raman spectroscopy, XRD and SEM. Furthermore, selective detection of NO₂ is compared with other gases such as H₂, NH₃, and H₂S with same conditions.