Highly sensitive porous 3D structured NO_2 sensor composed of 1D ZnO nanorod and 2D NiO nanosheet

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The porous 3D hybrid structures composed of n-type 1D ZnO nanorods (NRs) and p-type 2D NiO nanosheets (NSs) with different NiO growth time were fabricated using low-cost and facile hydrothermal methods and used to detect the toxic gas such as nitrogen oxide (NO_2) which has a characteristic sharp, biting odor and is regarded as a prominent air pollutant. Due to the charge transfer between two nanostructures as well as increased adsorption sites formed by large area 2D NiO NSs and electron depleted p-n junctions, the NiO NSs/ZnO NRs hybrid structures exhibited improved NO_2 sensing properties.