# High response and selective hydrogen sensing properties of NiO nanosheets structures

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The hydrogen gas is a renewable and environment-friendly energy source which is being used in the fuel cells, aerospace, automobiles, and power generators applications. Hence, hydrogen gas is potentially hazardous and its monitoring is extremely important. Major challenges for hydrogen gas sensors are a high response, good selectivity, low operating temperature, and low detection capacity. In present work, two dimensional (2-D) NiO nanostructure was synthesized using a simple chemical route. NiO sensor device was fabricated and hydrogen gas sensing properties were investigated. NiO sensor was revealed remarkable selectivity towards H2 gas. The lowest H2 detection limit of ZnO sensor was at 10 ppm with the response of 22 %, whereas 191 % gas response was recorded for 150 ppm at optimized temperature 250℃ with fast response time. Gas response as a function of operating temperatures as well as gas concentrations has tested along with good sensor stability. The transient gas response and selectivity studies were carried out and analyzed.