Heterogeneous SnO2/ZnO nanoparticulate film: Facile synthesis and humidity sensing capability

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Abstract

Highly sensitive and extremely thin tin oxide/zinc oxide (SnO2/ZnO) heterojunction films were prepared via a two-step solution-based method for humidity-sensing application. The average diameters of the ZnO and SnO2 nanoparticles were 26 and 6 nm, respectively. The deposition of SnO2 for 3 min reduced film resistance from 6.74M Omega to 0.40M Omega. Remarkably, the humidity-sensing performance of the heterojunction sensors was critically dependent on deposition time, and sensors subjected to 3 min deposition exhibited the highest sensitivity (90.56) to humidity, which was significantly higher than that of bare ZnO. This study indicates that the use of SnO2/ZnO heterojunction has a great potential in humidity sensing applications.

Keywords

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