



Novel NO₂ gas sensor based on cuprous oxide thin films

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Abstract

In this paper we present the results concerning the characterization of cuprous oxide thin films fabricated by chemical deposition and rapid photothermal processing (RPP) method. The growth kinetic effects and influence of the RPP temperature on the chemical deposited cuprous oxide thin films microstructures were investigated by scanning electron microscopy and energy dispersive X-ray spectrometry. The effect of the electrical resistivity change of Cu₂O thin film layer in the presence of NO₂ is used for gas sensing measurements. Cuprous oxide layers are used as NO₂ gas sensitive material in a novel gas sensor element. It can be shown from experimental results that chemical bath deposition and rapid photothermal processing not only allows green materials preparation but also improves the performance and reliability over conventional methods of the production of sensors for continuous environmental monitoring.