

Nanoparticles of CuO thin films for room temperature NO₂ gas detection: Annealing time effect

In this work, the effect of annealing time on sensing properties of cupric oxide nanoparticles deposited on black silicon (CuO/BSi) as a gas sensor device was studied. CuO nanoparticles were prepared using pulsed laser ablation (PLA) beyond which, the prepared precursor was deposition using the spin coating deposition technique. The deposited CuO thin films were annealed in air for 1, 2, and 3 h at 400 °C. The influence of annealing time on the structural, morphological, and sensing performance at room temperature of prepared CuO/BSi was investigated in details. XRD patterns revealed nanocrystal of CuO with the crystallite size increased from 17 to 25 nm when that annealing time increased from 1 h to 3 h. The FESEM images revealed a nanostructured stone-like structure of different sizes. The average diameter increased with 1 h annealing time. The appearance of the porous surface of the annealed ...