

SO₂ Sensing Performance of Nanostructured CdSnO₃ Thin Films Prepared by Spray Pyrolysis Technique

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Abstract : The nanostructured thin films of CdSnO₃ are sensitive to change in their environment. CdSnO₃ is successfully used as gas sensor due to the dependence of the electrical conductivity on the ambient gas composition. Nanostructured CdSnO₃ thin films of different substrate temperature (300 °C, 350 °C, 400 °C and 450 °C) were deposited onto heated glass substrate by simple spray pyrolysis (SP) technique. Sensing elements of nanostructured CdSnO₃ were annealed at 500 °C for 1 hrs. Characterization includes a different analytical technique such as, X-ray diffractogram (XRD), energy dispersive X-ray analysis (EDAX), and Field emission scanning electron microscope (FE-SEM). The average grain size observed from XRD and FE-SEM was found to be less than 18.36 and 23 nm respectively. The films sprayed at substrate temperature for 400 °C was observed to be most sensitive ($S = 530$) to SO₂ for 500 ppm at 300 °C. The response and recovery time is 4 sec, 8 sec respectively.

Keywords : nanostructured CdSnO₃, spray pyrolysis, SO₂ gas sensing, quick response

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