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ANTIMONY-DOPED TIN OXIDE NANOSTRUCTURES PREPARED BY SOLGEL DIP COATING METHOD

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ABSTRACT
Tin oxide (SnO_2) thin films are widely used as a gas sensor that can change their resistance during interaction with molecular gases. One of the most important factors that influence the sensitivities of sensing material is its structural properties especially surface morphology. In this work, we present preparation and characterization of undoped and antimony-doped tin oxide ($Sb:SnO_2$) thin film nanostructures for gas sensing applications. The SnO_2 thin films were deposited by sol-gel dip coating method onto glass substrates and sintered at 500 ^oC in air. Sb dopant concentration was varied from 1 to 4 mol% to investigate the effect of doping on the electrical and sensing properties. The films were characterized by XRD, SEM and AFM. The SEM and AFM images of films showed a very smooth surface morphology with nanostructure grain size in the range of 37.6 to 56.3 nm. Sensing sensitivity of Sb:SnO2 films are much higher than undoped films.

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