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NANO STRUCTURED TIN OXIDE THIN FILM FOR GAS SENSING APPLICATIONS

Abstract

Tin Oxide (SnO2) polycrystalline thin film grown on glass substrate by sol-gel and spin coater techniques, followed by annealing inair at 400 Co, is used for testing a gas sensor to detect carbon dioxide (CO2) gas. It shows high sensitivity for various concentrations of CO2 gas. The structural, optical, electrical properties, scan electron microscope and X-ray diffraction of the prepared films were studied. The SnO2 thin film has optical transmission more than 70 percentage and its optical band gap is 3.7eV. The particle to particle contact shows the linearity behavior.The I-V characteristic curve in air and CO2 of the materials shows the Ohmic contact. The variation of the Sensor Resistance in air and in the presence of CO2 gas have been investigated in a different range of temperature .The variation of sensitivity with CO2 gas concentration is found to be linear.