



## **SYNTHESIS, CHARACTERIZATION AND GAS SENSING PERFORMANCE OF SOL-GEL PREPARED NANOCRYSTALLINE SnO<sub>2</sub> THIN FILMS**

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**Abstract - Nanocrystalline SnO<sub>2</sub> thin films were successfully prepared using sol-gel dip coating technique. The starting precursor was used as tin chloride dihydrate (SnCl<sub>2</sub>·2H<sub>2</sub>O), ethanol and glycerin. As the prepared films were fired at 500°C. These films were characterized using XRD, FE-SEM and TEM to know crystal structure, surface morphology and microstructure property. Elemental composition was studied using energy dispersive spectrophotometer (EDAX). The H<sub>2</sub> gas sensing performance of nanocrystalline SnO<sub>2</sub> thin films were investigated and presented. It was found that the nanocrystalline SnO<sub>2</sub> thin films gives maximum gas response (S= 360) at 75 °C. The sensor shows fast speed of response ( $T_{Response} = 2$  s) and quick recover ( $T_{recover} = 8$  s).**

**Index terms: Sol-gel, nanocrystalline SnO<sub>2</sub>, thin films, H<sub>2</sub> gas sensor, fast response-recovery.**

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