

## **Microstructures Study on Cuprous Oxide Thin Films Deposited on Different Substrates by Using Sol-Gel Technique**

### Abstract

Cuprous oxide ( $\text{Cu}_2\text{O}$ ) thin films were formed onto three different substrates such as indium tin oxide (ITO) coated glass, titanium oxide ( $\text{TiO}_2$ ) and *n*-Si substrates by sol-gel spin coating technique. It was found that the formation mechanism of  $\text{Cu}_2\text{O}$  films onto different substrates lead to different microstructures. The films were characterized by field-emission scanning electron microscopy (FESEM). Based on the FESEM micrographs the grain shape of film prepared were different on ITO,  $\text{TiO}_2$  and *n*-Si substrate with 114 nm, 154 nm and 84 nm respectively. The results indicate that the choice of substrate strongly affect the film morphology, structural and optical properties. Keywords:  $\text{Cu}_2\text{O}$ , thin films, ITO, sol-gel, microstructures.

Keywords:  $\text{Cu}_2\text{O}$ , ITO, Microstructure, Sol-Gel (SG), Thin Film