

Influence of Cu-precursor on the morphology and composition of Cu_{2-x}S thin films obtained by chemical spray pyrolysis

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Abstract. Thin films of Cu_{2-x}S were deposited at 260 °C onto TCO ($\text{SnO}_2:\text{F}$) glass substrates from aqueous solutions with molar ratio $\text{Cu}:\text{S} = 1:3$ by spray pyrolysis technique. Thiourea was used as Sulfur precursor and CuCl_2 , respectively $\text{Cu}(\text{CH}_3\text{COO})_2$ acted as Copper precursor. The morphological and the structural characterization of the as-deposited films have been carried out by scanning electron microscopy (SEM) and X-ray diffraction (XRD). Thin, homogenous and relatively uniform films of Cu_2S (chalcocite, JCPDS 84-0206) were deposited from the solutions containing CuCl_2 and thiourea, while porous, inhomogeneous and non-uniform films of $\text{Cu}_{1.8}\text{S}$ (digenite, JCPDS 26-0476) were obtained when $\text{Cu}(\text{CH}_3\text{COO})_2$ was used as cationic precursor

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