**Influence of thermal processing rate on the structural and morphological properties of Cu2SnS3(CTS) prepared using solid state reaction technique**

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**Abstract:**

The copper tin sulfide Cu2SnS3 (CTS) is a p-type direct band gap material; its elements are non-toxic and earth-abundant. It can be used in photo thermal conversion of solar energy and as selective radiation filters on architectural windows. The CTS compound was synthesized by solid state reaction method. The influence of soaking time on the structural and morphological properties ofthese films are investigated. X-Ray diffraction analysis of these compounds prepared with varying the soaking time at 9000C are found to exhibit tetragonal CTS phase with preferred orientation (1 1 2), (2 2 0) and (3 1 2).The XRD pattern showed that prepared samples do not contain any secondary phases.The grain size calculated using Debye-Scherer’s formula was found to be in the range of 34nm-46nm. The chemical composition of the compound estimated using Energy dispersive spectroscopy showed Cu/Sn atomic ratio in the range 0.9 to 1.10.

Keywords: XRD, EDS, Cu2SnS3 and Solar absorber material