

## **Deposition and characterization of SnSe and CuInSe<sub>2</sub> thin films by thermal evaporation technique from synthesized SnSe and CuInSe<sub>2</sub> sources**

### **Abstract**

Tin selenide (SnSe) and copper indium diselenide (CuInSe<sub>2</sub>) compounds were synthesized by high temperature reaction method using combination of sealed ampoule (at relatively low pressure ~10<sup>-1</sup> Pa without inert gas) and heating at specific temperature profile in rocking furnace. Powder X-Ray diffraction analysis showed that the products involved only single phases of SnSe and of CuInSe<sub>2</sub> only. Using the reaction products as source materials, the SnSe and CuInSe<sub>2</sub> thin films were vacuum-deposited on glass substrates at room temperature. Structural, elemental, surface morphological and optical properties of the as-deposited films were studied by X-Ray diffraction (XRD), energy dispersive X-Ray (EDX) analysis, field emission scanning electron microscopy (FESEM) and UV-Vis-NIR spectroscopy. Single phase of SnSe and CuInSe<sub>2</sub> films were obtained by thermal evaporation technique from synthesized SnSe and CuInSe<sub>2</sub> compound without further treatment.

**Keyword:** CuInSe; SnSe; Solid state reaction; Source material; Thin films