Area: Thin film Compound Semiconductor PV.

PROPERTIES AND CHARACTERIZATION OF TIN SULFIDE THIN FILMS GROWN BY ATOMIC LAYER DEPOSITION

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Tin sulfides (SnS_x) have great potentials to provide high solar conversion efficiency because of an optical band gap of 1.0 to 1.5eV with p-type conductivity. Although ideal conversion efficiency of SnS-based solar cells is 32%, existing SnS solar cells has very low efficiency. Recently, atomic layer deposited SnSx showed highest efficiency. However, structural and optical properties of the films were not studied yet. We have prepared SnSx films by atomic layer deposition using metal-organic precursor and hydrogen sulfide (H_2S) at various substrate temperature. The deposited films were characterized by surface morphology, crystal structure and optical properties.