

Thiourea Modified Cadmium Sulfide Film for Solar Cell Application

Authors : Rupali Mane

Abstract : Cadmium sulfide (Cds) thin films were chemically deposited at room temperature, from aqueous ammonia solution using CdCl_2 (Cadmium chloride) as a Cd^{2+} and $\text{CS}(\text{NH}_2)_2$ (Thiourea) as S^{2-} ion sources. 'as-deposited' films were uniform, well adherent to the glass substrate, secularly reflective and yellowish in color. The 'as-deposited' Cds layers grew with nano-crystalline in nature and exhibit cubic structure, with blue-shift in optical band gap. The films were annealed in air atmosphere for two hours at different temperatures and further characterized for compositional, structural, morphological and optical properties. The XRD and SEM studies clearly revealed the systematic changes in morphological and structural form of Cds films with an improvement in the crystal quality. The annealed films showed 'red-shift' in the optical spectra after thermal treatment. The Thiourea modified CdS film could be good to provide solar cell application.

Keywords : cadmium sulfide, thin films, nano-crystalline, XRD

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