

Electrical Characteristics of SnS /ZnS Heterojunction

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Abstract : Thin sulphide (SnS) is a promising candidate for a low cost, no toxic solar cells absorber layer. In this paper thin films of SnS were prepared by spray pyrolysis onto glass and ZnS/FTO coated glass substrates at different substrate temperatures in the range 250-400°C. SnS were characterized with X-rays diffraction and scanning electron microscopy and UV visible transmittance. The electrical properties of SnS/ZnS heterojunctions were determined using recording their current-voltage I(V) and capacitance-voltage (C-V) characteristics at ambient and at different measurement temperatures from 28-94°C. The results analysis indicate that the saturation current varied from 0.68 to 2.8 μ A and series resistance from 191 to 800 Ω , The structures ideality factor is ranged from 1.37 to 2.7. The diffusion potential (Vd) was determined by the intercept of extrapolation of 1/C²-V curve to the abscise axis (V=0) we found Vd values ranged from 0.67 to 1.2 V.

Keywords : Tin sulfide; thin films; solar cell; spray pyrolysis; SnS/CdS Heterojunction.