



Analysis of Optical Energy Band Gap of Aluminium Zinc Sulphide (Al_2ZnS_4) Ternary Thin Films Grown by Solution Growth Technique

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Aluminium Zinc Sulphide (Al_2ZnS_4) Ternary Thin Films were successfully grown on the substrates by Solution Growth Technique (SGT). The sources of Aluminium, Zinc and Sulphur ions are Aluminium Chloride, Zinc Sulphate, ethylenediamine tetraacetic acid (EDTA), concentrated ammonia solution and thiourea. The films were annealed at

300°C for 2 hours and characterized by UV-VIS-NIR Spectrophotometer in the wavelength range of 300nm-1000nm to determine the optical properties of the films. The optical transmittance was obtained directly by the Spectrophotometer. Other optical properties were determined by theoretical calculations. The average energy band gaps of the films grown at two different temperatures are 3.63 and 3.77eV for different dip times. The other optical properties have been reported. From the results, the wide direct energy band gap exhibited by the films reveals that the films are suitable materials as window layer in solar cells fabrication.

Key words: Transmittance, Band Gap, window Layer, Solar Cells, Thin Films.

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