



Effect of Ammonia concentration on structural and optical properties of CdS thin films prepared by CBD method

**A. Angelin Prema^{1*}, R. John Xavier¹, P. Arockia Sahayaraj²,
C.Pragathiswaran², A. John Amalraj², V. Dharmalingam², A. Imayavalli²**

¹PG and Research Department of Physics, Periyar E.V.R College (Autonomous),
Tiruchirappalli - 620 023, Tamilnadu, India.

²PG and Research Department of Chemistry, Periyar E.V.R College (Autonomous),
Tiruchirappalli - 620 023, Tamilnadu, India.

Abstract : CdS thin films were prepared on micro glass substrates with chemical bath deposition methods for different concentration of Ammonia. The effects of Ammonia on the structural and optical properties of CdS films were examined using Scanning Electron Microscope (SEM), Atomic Force Microscope (AFM), Energy Dispersive X-ray Spectroscopy (EDAX) and Photoluminescence Analysis (PL). The SEM images shows particle size increases from 28.92 to 44.20 nm as the concentration of NH₃ increases. Also the results of the Atomic Force Microscope (AFM) the Root mean square and roughness of the CdS thin films was found to vary with the concentration of NH₃. The elemental composition analysis of the as deposited CdS thin film was investigated using EDAX with different concentration of ammonia for 2hr duration at 92⁰C without annealing. It was significant to note that films deposited at optimized preparative parameters are nearly stoichiometric with average atomic percentage of Cd:S = 53.34: 46.65. The estimated Cd to S ratio value is found to be 1.14. The Photoluminescence spectrum of CdS thin film shows that the intensity decreases as the concentration increases from 0.5, 1.0, 1.5, 2.0 N of NH₃. The emission energy (eV) slightly varies with the concentration of NH₃.

Keywords: CdS thin film, SEM, AFM, EDAX and PL.

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