A Comparative Study on CdS Film Formation under Variable and Steady Bath-Temperature Conditions

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The deposition temperature of the bath in chemical-bath-deposited cadmium-sulfide thin films can directly affect the optical, electrical, structural as well as morphological properties of deposited thin films. The reporting work discusses the properties of chemical-bath-deposited cadmium-sulfide thin films deposited under steady chemical-bath temperature conditions at both 40 and 80°C and compares with films formed under variable bath-temperature conditions by varying the temperature of the chemical bath from 40 to 80°C and 80 to 40°C while depositing. The optical, electrical, structural, and morphological properties of the deposited films were examined by using ultraviolet-visible spectroscopy, photo-electrochemical cell, Mott-Schottky measurements, grazing incident *X*-ray diffractograms, scanning electron microscopy, and profilometry. According to the results, films deposited under steady chemical-bath temperature conditions show better optoelectronic properties compared to the rest, while films fabricated at 40°C are the best.

Keywords: CBD, CdS, bath temperature, variable bath temperature, steady bath temperature.

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