

Structural and optical investigations of cadmium sulfide nanostructures for optoelectronic applications

Abstract

Cadmium sulfide (CdS) nanostructures were deposited on glass substrates by sol-gel spin coating technique. X-Ray Diffraction (XRD) results have indicated that the formation of CdS has hexagonal structure. The lattice constants are investigated for CdS nanostructures deposited on glass substrates with different spin coating speeds. The thickness of CdS nanostructures as measured by the Atomic Force Microscopy (AFM) and found to be in the range of 150 nm and 10 nm at 1000 rpm and 5000 rpm spin coating speed, respectively. The transmissions of CdS nanostructures are investigated systematically by Ultra Violet (UV-vis) spectrophotometer. The measured values using XRD and Photoluminescence (PL) spectra and the calculated results by specific models of refractive index are in agreement with experimental data.