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# Structural and optoelectronic studies on Ag-CdS quantum dots

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In the present study, we have successfully deposited CdS quantum dot thin films and Ag doped CdS on a glass slide by simple and economical chemical bath deposition at room temperature. The X-ray diffraction method analysis reveals that CdS thin films exhibit hexagonal structure when compared with standard JCPDS data. The estimated average crystallite size of the quantum dots and resulted in the least crystallite size of ~9 nm. a comparison between the optical and electrical properties of the films before and after doping Ag was made through measuring and analyzing the curves for UV and I-V. From UV absorption spectra we observed that the samples exhibited a band edge near ~400 nm with a slight deviation with the presence of excitonic peak for both CdS and Ag doped CdS. The presence of excitonic peak may be referred to the formation of quantum dots. The calculated band gap energy of thin films was found to be 3.45 eV and 3.15 eV for both CdS and Ag doped CdS thin films respectively, where the optical absorption spectra of Ag doped CdS nanoparticles also exhibit shift with respect to that of CdS quantum dots thin films. The photosensitive of CdS thin films show an increase in photocurrent when Ag doped CdS.

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Topics

[Crystal structure](#), [Doping](#), [Photoconductivity](#), [Quantum dots](#), [Electrical properties and parameters](#), [Thin film deposition](#), [Nanoparticle](#), [Diffraction](#), [Absorption spectroscopy](#), [Transition metal chalcogenides](#)

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