

## The Optical Properties of CdS and Conjugated Cadmium Sulphide-Cowpea Chlorotic Mottle Virus

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**Abstract :** Cadmium Sulphide (CdS) from group II-IV quantum dots with good optical properties was successfully synthesized by using the simple colloidal method. Capping them with ligand Polyethylinamine (PEI) alters the surface defect of CdS while, thioglycolic acid (TGA) was added to the reaction as a stabilizer. Due to their cytotoxicity, we decided to conjugate them with the protein cage nanoparticles. In this research, we used capsid of Cowpea Chlorotic Mottle Virus (CCMV) to package the CdS because they have the potential to serve in drug delivery, cell targeting and imaging. Adding Sodium Hydroxide (NaOH) changes the pH of the systems hence the isoelectric charge is adjusted. We have characterized and studied the morphology and the optical properties of CdS and CdS-CCMV by transmitted electron microscopic (TEM), UV-Vis spectroscopy, photoluminescence spectroscopy, UV lamp and Fourier transform infrared spectroscopy (FTIR), respectively. The results obtained suggest that the protein cage nanoparticles do not affect the optical properties of CdS.

**Keywords :** cadmium sulphide, cowpea chlorotic mottle virus, protein cage nanoparticles, quantum dots

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