

PREPARATION AND SPECTROSCOPIC INVESTIGATION OF COLLOIDAL CdSe/CdS/ZnS CORE/MULTISHELL NANOSTRUCTURE

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TÓM TẮT:

Colloidal CdSe/CdS/ZnS core/multishell nanostructure with the different thicknesses of CdS and ZnS shell was prepared by chemical method using CdO and ZnO. The absorption, photoluminescence and Raman scattering spectra of CdSe core, CdSe/CdS core/shell and CdSe/CdS/ZnS core/multishell structure have been comparatively studied. The photoluminescence full width at half maximum of CdSe core is less than 20 nm, indicating the monodisperse colloidal CdSe nanocrystals. It was found that the reaction temperature needed for the formation of ZnS shell is higher than that for the growth of CdS shell. The strong increase in the emission intensity by successively coating the CdS and ZnS shell around the CdSe core has been discussed. The effect of shell thickness on the spectroscopic characteristics of CdSe/CdS/ZnS core/multishell nanostructure has been investigated.