

Interplay of factors affecting Raman scattering in cadmium chalcogenide nanocrystals in dielectric media

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Abstract. Micro-Raman spectra of CdS and CdSe nanocrystals embedded in different dielectric media (borosilicate glass, gelatin, polyacrylamide, polyvinyl alcohol) are studied. The observed Raman features are discussed with the account of confinement-related selection rules relaxation, scattering by surface phonons, and host matrix pressure. For nanocrystals grown in borosilicate glass a pronounced resonant dependence of surface phonon frequency on the excitation wavelength is observed. The effect of the excitation wavelength is much stronger than that of the nanocrystal size or the dielectric matrix type.
