


Temperature-dependent resonant Raman scattering study of core/shell nanocrystals

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Abstract. The results of a temperature-dependent resonant Raman scattering on optical phonons in colloidal 2-3 nm CdSe, CdSe/CdS and CdSe/ZnS nanocrystals in gelatin matrix are reported. Both the core- and shell-related phonon peaks reveal a common blue shift, narrowing and enhancement with lowering the temperature. Negligible temperature dependence of the electron-phonon coupling is deduced from a constant 2LO/LO intensity ratio. A narrowing of the core-related phonon peak upon passivation is assigned to a diminished scattering of the phonons at the core-shell interface, as compared to the free surface of CdSe NCs.