

OPTICAL INVESTIGATIONS OF ULTRA-SMALL
COLLOIDAL NANOPARTICLES AND
HETERONANOPARTICLES BASED
ON II–VI SEMICONDUCTORS

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S u m m a r y

Colloidal II–VI semiconductor nanoparticles (NPs) and core–shell NPs obtained by means of colloidal chemistry are studied by means of optical absorption, photoluminescence, and Raman scattering spectroscopy. The effects of the strong confinement of charge carriers and lattice vibrations in small (< 3 nm) NPs are considered. The influence of the passivating shell onto the electronic bandgap, photoluminescence spectrum, and phonon spectrum is established. The drastic differences in resonant Raman spectra of ultra-small (< 2 nm) nanoparticles are found, which are related to the strong spatial localization of vibrations, as well as to the structural rearrangement due to the surface effect.