

Phonons in semiconductor nanocrystals: structure probed by Raman spectroscopy

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Raman spectroscopy is a fast, sensitive, and non-destructive technique for exploring semiconductor nanocrystals fabricated by various methods. Selective probing of electronic and vibrational spectra of different parts of heterogeneous NCs such as core-shell systems by tuning the excitation wavelength in resonant Raman scattering is considered. The analysis of phonon spectra is applied for quantitative estimation of the strain in the core and shell as well as the degree of interface intermixing and checking the surface oxidation. Recent results in the field of surface- and tip-enhanced Raman spectroscopy and surface-enhanced infrared absorption are analysed showing the perspectives of Raman spectroscopy as a tool for investigation of single-nanocrystal phonon spectra.

Topics

Session A. Physics of condensed matter and spectroscopy

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