

PHONON SPECTRA AND ELECTRON-PHONON  
INTERACTION IN A COMBINED CYLINDRICAL  
SEMICONDUCTOR NANOTUBE

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S u m m a r y

A theory of electron-phonon interaction in a combined cylindrical semiconductor nanotube has been developed in the framework of effective mass model for electrons and dielectric continuum one for phonons. Analytical expressions for Hamiltonians of electron interaction with confined and interface phonons have been derived in the secondary quantization representation for electron and phonon variables. Dependences of phonon energies and interface phonon polarization field potential on the axial quasi-momentum and the geometrical parameters of combined nanotube fabricated on the basis of GaAs and  $\text{Al}_{0.4}\text{Ga}_{0.6}\text{As}$  semiconductors have been studied.