Quantum confinement of excitons in wurtzite InP nanowires

ABSTRACT

Exciton resonances are observed in photocurrent spectra of 80 nm wurtzite InP nanowire devices at low temperatures, which correspond to transitions between the A, B, and C valence bands and the lower conduction band. Photocurrent spectra for 30 nm WZ nanowires exhibit shifts of the exciton resonances to higher energy, which are consistent with finite element calculations of wavefunctions of the confined electrons and holes for the various bands.

Keyword: Quantum confinement; Excitons; Wurtzite InP nanowires