EFFECTS OF THE BARRIER HEIGHT ON OPTICAL ANISOTROPY OF (110)-ORIENTED STRAINED QUANTUM WELLS

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Abstract

We theoretically investigate the polarization anisotropies of the interband transitions in strained quantum wells (QWs) grown on (110)-oriented substrates. We adopt the six-band effective-mass theory in which the spin-orbit split-off (SO) bands are included. The polarization-dependent optical matrix elements at the Brillouin zone center in $Ga_xIn_{1-x}P/Al_{0.5}In_{0.5}P$ QWs having various well widths grown on (110)GaAs are calculated as functions of Ga content x. Furthermore, the calculation is performed assuming various barrier heights. In is shown that the SO band in the barrier layer has the critical influence on the behavior of the anisotropy of the optical matrix elements when the well width is narrow.