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Self-assembled (In,Ga)As Quantum Posts on GaAs. JUN HE, University of California, Santa Barbara(UCSB), Department of Materials, Santa Barbara, CA 93106 USA, HUBERT KRENNER, UCSB, Department of Materials, Santa Barbara, CA 93106 USA, CRAIG PRYOR, University of Iowa, Department of Physics and Astronomy, Iowa City, IA 52242 USA, JINGPIN ZHANG, YUAN WU, UCSB, Department of Materials, Santa Barbara, CA 93106 USA, DAN ALLEN, CHRIS MORRIS, MARK SHERWIN, UCSB, Department of Physics, Santa Barbara, CA 93106 USA, PIERRE PETROFF, UCSB, Department of Materials, Santa Barbara, CA 93106 USA — We demonstrate a method for the MBE growth of height controlled (In,Ga)As quantum posts (QPs). Its main axis is along the growth direction. they are dislocation free and have a dimensions $\approx$ 20nm and 40nm. From EDX measurements, The $Ga_{.55}In_{.45}As$ QPs are embedded laterally in a $Ga_{.9}In_{.1}As$ layer. We have computed the electron and hole levels using an 8 bands, stain dependent, k.p effective mass model. Comparison of calculated single particle electron and hole levels with the observed micro-PL spectra single QPs indicates that electrons are spread over the entire QP whereas holes are localized near the seed QD.
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