EXCITONIC PARAMETERS OF $In_xGa_{1-x}As$–GaAs HETEROSTRUCTURES WITH QUANTUM WELLS AT LOW TEMPERATURES

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S u m m a r y

Characteristics of GaAs/$In_xGa_{1-x}As$/GaAs heterostructures with a single quantum well, which were obtained at various growth parameters, are evaluated according to the results of measurements of low-temperature photoluminescence (PL) spectra and their corresponding theoretical analysis. The experimentally obtained temperature dependences of the energy position of the PL band maximum, $h\nu_{\max}$, band half-width, W_0, and intensity, I, are examined. The values of energy of local phonons, $E_{\rm ph}$, exciton binding energy, $E_{\rm ex}$, and the Huang–Rhys factor, N, are determined. A comparison between the values obtained for those quantities and the growth parameters of considered specimens allowed us to assert that the highest-quality specimens are those that are characterized by low N values and one-mode phonon spectra.