

Effect of the Aluminum Fraction "X" on the Laser Wavelengths in GaAs/Al_xGa_{1-x}As Superlattices

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Abstract : In this paper, we study numerically the eigenstates existing in a GaAs/Al_xGa_{1-x}As superlattice with structural disorder in trimer height barrier (THB). Aluminium concentration x takes at random two different values, one of them appears only in triply and remains inferior to the second in the studied structure. In spite of the presence of disorder, the system exhibits two kinds of sets of propagating states lying below the barrier due to the characteristic structure of the superlattice. This result allows us to note the existence of a single laser emission in trimer and wavelengths are obtained in the mid-infrared.

Keywords : infrared (IR), laser emission, superlattice, trimer

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