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Optimization of Optical Gain in Inx Ga1-xSb/GaSb unstrained quantum well structures for detection

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Abstract : In this paper we study the effects of In concentration, temperature, quantum well width and carrier density on optical gain for GaSb/In1-xGaxSb/GaSb untrained quantum well structures. This system was chosen as it is useful in infrared emission, finally, we introduce the optimum structure of quantum well to obtain the maximum optical gain, at room temperature and infrared emission particularly 2.3 (µm), for the use this structure in application of spectroscopic analysis of the gases specially CH4.

Keywords : Quantum well, In1-xGaxSb, optical gain, laser, Detection