

Abstract Submitted
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Temperature dependence of the internal piezoelectric field in a single InGaAs strained quantum well¹ MATTHEWS JAMES, TONI SAUNCY, Angelo State University Department of Physics — In this work, the photoluminescence (PL) emission from a <111>-grown InGaAs/GaAs quantum wells which contains a strain-generated piezoelectric field in the quantum well active area has been investigated as a function of temperature over the range of 35K to 175K. At each temperature, changes to the PL spectrum as a function of incident excitation intensity were examined. The PL data indicated that the standard empirical models are inadequate for use in fitting the PL vs. T data and implying that the complications of strain and internal field must be included in understanding the emission temperature dependence. In order to experimentally determine the value of the internal field, the PL excitation intensity-dependence data full width at half maxima were examined. Using the relationship between potential difference, well width and the standard definition of the electric field, the internal field in this well was determined to vary from 36.7kV/cm(35K) to 11kV/cm(85K). This indicates that the electric field within the quantum well is not constant over this temperature range.

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