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Photoluminescence Study of GaAsBi Quantum Wells Grown on GaAs

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Abstract: Temperature and power dependent photoluminescence (PL) measurements are performed on a series of GaAsBi quantum well samples with varying Bi mole fractions. Compared to GaAs, the GaAsBi PL spectra are much broader and the shift in peak position with temperature is much weaker. At low temperature (~ 10 K) many of the GaAsBi samples exhibit anomalous behavior where small changes in temperature (~ 0.2 K) bring about large increases in the integrated PL intensity that usually coincide with relatively large shifts in the PL peak position. The increase in PL intensity can be as large as one order of magnitude. This effect is less pronounced when the pump power is reduced. These along with further PL studies will be presented.