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Photoluminescence characterization of InAs quantum dots grown on variable stoichiometry InxAlyGa1-x-yAs layers lattice-matched to InP[1] J.G. MENDOZA-ALVAREZ, Physics Dept. Cinvestav-IPN. Mexico, M.P. PIRES, S.M. LANDI, A.S. LOPES, P.L. SOUZA, LabSem-CETUC. PUC-Rio. Brasil — In order to improve the temperature characteristics of InAs quantum dots (QD's) for infrared photodetectos applications, we have grown InAs QD's on $In_xAl_yGa_{1-x-y}As$ layers lattice-matched to InP substrates. We have already reported that smaller dot sizes are obtained when the Al concentration increases, and that luminescence emission energies at the long wavelenghts of 2.1 μm could be obtained. In this work we present results on the photoluminescence (PL) characterization for a set of InAs QD's/ $In_xAl_yGa_{1-x-y}As$ for Al concentrations of 0, 5.8, 11, and 16.5%, changing the laser excitation power and the temperature in the range from 15K up to room temperature. From the analysis of the PL spectra we observe that at low temperatures the emission band is composed of two contributions around 0.63 and 0.67 eV which shifts to higher energies as the Al concentration increases. We discuss the nature of these transitions and their behaviour with the laser power and temperature.

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