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Raman scattering and time-resolved photoluminescence characterization of defects in GaAs/AlGaAs double heterostructures[1] ZEHRA CEVHER, Hunter College, City University of New York, PATRICK FOLKES, Army Research Laboratory, YUHANG REN, Hunter College, City University of New York, HUNTER COLLEGE, CUNY COLLABORATION, ARMY RESEARCH LABORATORY COLLABORATION — GaAs/AlGaAs heterostructures remain to be one of the most promising materials for the fabrication of photodetectors, semiconductor lasers, and photovoltaic devices. We used Raman scattering and time-resolved photoluminescence spectroscopy to study the structural defects of GaAs/AlGaAs double heterostructures grown with various As/Ga flux ratios and substrate temperatures. The optimized structure was obtained with the As/Ga flux ratio equal to 15 and the substrate temperature close to 595^{o}C. The high residual impurity of the AlGaAs layers was activated and elevated as the ratio was increased from 15 to 40. As the growth temperature was decreased from 595 to 550 ^{o}C, the layers became more defective. Moreover, we reveal that the defect levels were depressed by including a Bragg reflector layer.

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