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Changes in the density of nonradiative recombination centers in GaAs/AlGaAs quantum-well structures as a result of treatment in CF₄ plasma

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Abstract The effect of low-energy CF₄ plasma treatment on the stationary photoluminescence (PL) spectra and PL kinetics in GaAs/AlGaAs quantum-well (QW) structures is investigated. Intensity of the PL from QWs located deeper than the surface layer damaged by plasma treatment increases. It is established that this is accompanied by an increase in the PL decay time at temperatures above 30 K. It is shown that the density of nonradiative recombination centers in the QW located below the damaged surface layer decreases by a factor of 30 after 40-s exposure to plasma.

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