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Mechanism of recombination in InAs quantum dots in indirect bandgap AlGaAs matrices

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### Abstract

Photoluminescence kinetics in InAs quantum dots in indirect-gap AlGaAs matrixes has been studied. It has been found that the duration of the photoluminescence decay at low temperatures greatly decreases from milliseconds down to nanoseconds with decreasing the AlAs fraction in the AlGaAs matrix. The experimental results are interpreted in the framework of a model that takes into account exchange splitting of excitonic levels in the quantum dots and the deviation of its shape from spheroid. © 2005 American Institute of Physics.

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