Efficient emission from InAlGaAs single quantum dots with low lattice misfit and AlGaAs indirect bandgap barrier

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http://przyrbwn.icm.edu.pl/APP/PDF/130/a130z5p19.pdf

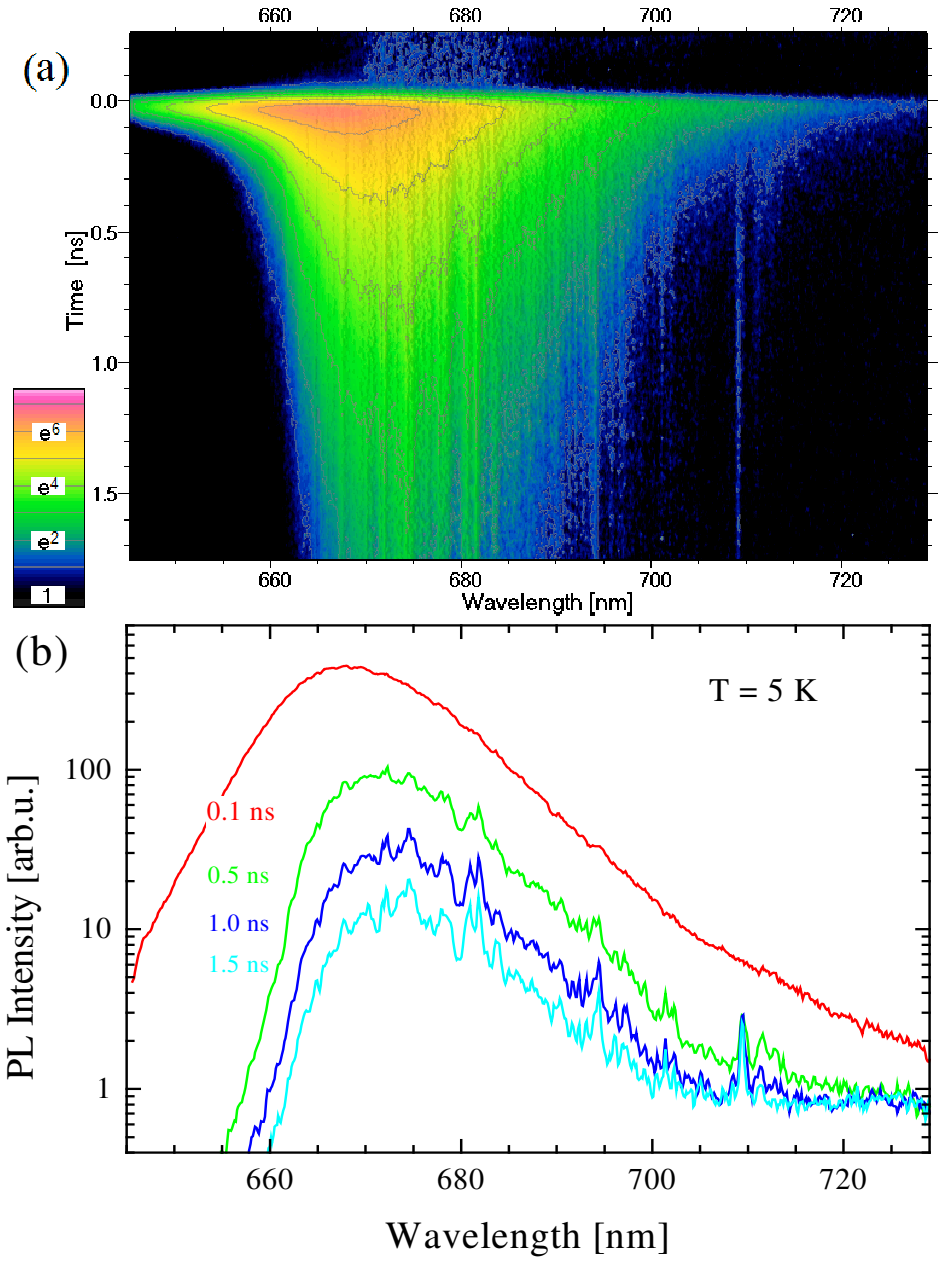

Fig. 4. Time-resolved micro-photoluminescence measurements for sample with $In_{0.40}Al_{0.45}Ga_{0.15}As$ single QDs. (a) Map of intensity. (b) Intensity at several delay times.

Interesting phenomena: A) Initial hot excitons (HX). B) Background dots (BQD) with lifetime weakly dependent on energy. C) Single QDs with lifetime dependent on energy.

Analysis of rise and decay rates shows that high energy SQDs ($\lambda < 690$ nm) are supplied by HX. Low energy SQDs ($\lambda > 690$ nm) are supplied by BQDs.