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摘要: Using time resolved photoluminescence (PL) quenching measurements, we investigated inplane carrier transfer in InAs/GaAs self-assembled quantum dots (QDs). THz pulses from a free-electron laser tuned to the intersublevel transition energy were used to excite carriers to higher levels causing quenching in the PL. These carriers could either fall back to the lower energy states and recombine or get transferred to adjacent QDs. The relaxation of the carriers was directly reflected in the recovery of the PL signal. Comparing measurements from two samples, we found that the redistribution of carriers into the neighbouring QDs is the dominant mechanism of carrier relaxation. The data were fitted using a rate equation model to estimate the PL recovery time which we attribute to the interdot carrier transfer time. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3701578]
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