

Ultrafast THz-control and probing of charge carrier dynamics in semiconductor nanostructures

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Abstract

Ultrafast terahertz (THz) electric fields are powerful tools for manipulating or probing charge carrier dynamics in a wide range of quantum-confined materials. In this contribution, we report a transient THz-induced luminescence enhancement, along with insights into charge carrier relaxation dynamics, using optical-pump THz-probe (OPTP) spectroscopy in semiconductor nanostructures. A deeper understanding of charge carrier dynamics via OPTP and control with THz fields could open new pathways for advanced optoelectronic applications.