340. Title:Terahertz emission from InAs/GaAs quantum dot based photoconductive devices
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Abstract:We report terahertz (THz) generation from InAs/GaAs quantum-dot based photoconductive antennae with femtosecond optical excitation at 800 nm, with an estimated infrared-to-THz conversion efficiency of ∼0.9× 10-5. The quantum dots act as recombination centers for carriers generated in the GaAs layers within the structure. Photoreflective pump-probe measurements reveal a decrease in the carrier lifetime when a lateral voltage is applied. These antennae displayed resilience to Joule heating when operated at a field strength of 46 MV/m. The breakdown field of the devices was 48 MV/m, which is comparable to the breakdown field of bulk GaAs.