

399

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Title:Broadband terahertz ultrasonic transducer based on a laser-driven piezoelectric semiconductor superlattice

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Abstract:Spectral characteristics of laser-generated acoustic waves in an InGaN/GaN superlattice structure are studied at room temperature. Acoustic vibrations in the structure are excited with a femtosecond laser pulse and detected via transmission of a delayed probe pulse. Seven acoustic modes of the superlattice are detected, with frequencies spanning a range from 0.36 to 2.5 THz. Acoustic waves up to ~ 2 THz in frequency are not significantly attenuated within the transducer which indicates excellent interface quality of the superlattice. The findings hold promise for broadband THz acoustic spectroscopy.

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