

676

Accession Number

12378507

Author

Zhao Chen. Xibin Zhou. Werley CA. Nelson KA.

Author Unabbreviated

Werley Christopher A.; Nelson Keith A.

Author/Editor Affiliation

Zhao Chen. Xibin Zhou. Werley CA. Nelson KA. : Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

Title

Generation of high power tunable multicycle terahertz pulses

Source

Applied Physics Letters, vol.99, no.7, 15 Aug. 2011, 071102 (3 pp.). Publisher: American Institute of Physics, USA.

Abstract

We demonstrate generation of high-power, multicycle, and frequency-tunable terahertz pulses with microjoule energies by tilting the intensity front of a quasi-sinusoidal intensity-modulated optical waveform. The spatiotemporally shaped waveform undergoes difference-frequency mixing in lithium niobate, generating a THz phonon-polariton wave whose electromagnetic component is coupled out to free space. The narrowband THz spectrum is tunable between 0.3-1.3 THz, with adjustable bandwidths generally less than 0.1 THz. At 10 Hz and 1 kHz repetition rates, 10 J and 1 J THz pulse energies are achieved, respectively, over a broad frequency range. (24 References).