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Accession number:20113814355957

Title:All-optical ultrafast polarization switching of terahertz radiation by impulsive molecular alignment

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Source title:Optics Letters

Abbreviated source title:Opt. Lett.

Volume:36

Issue:18

Issue date:September 15, 2011

Publication year:2011

Pages:3633-3635

Language:English

ISSN:01469592

E-ISSN:15394794

CODEN:OPLEDP

Document type: Journal article (JA)

Publisher:Optical Society of America, 2010 Massachusetts Avenue NW, Washington, DC 20036-1023, United States

Abstract:We experimentally demonstrate ultrafast polarization switching of terahertz (THz) radiation generated by dual-color driving pulses composed of orthogonally polarized fundamental and second-harmonic waves, which can be controlled by field-free molecular alignment in air by modulating the relative phase between the two field components as a transient dynamic wave plate. By fine-tuning the time delay to properly match the molecular alignment revivals, a significant polarization modulation of the THz radiation is observed and both linearly and elliptically polarized THz radiations can be obtained.

Number of references:14