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Accession number:20121514940748

Title:Experimental investigation of Si-prism coupler THz-wave parametric oscillator

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Source title:Guangdianzi Jiguang/Journal of Optoelectronics Laser

Abbreviated source title:Guangdianzi Jiguang

Volume:23

Issue:3

Issue date:March 2012

Publication year:2012

Pages:425-428

Language:Chinese

ISSN:10050086

CODEN:GUJIE9

Document type:Journal article (JA)

Publisher:Board of Optronics Lasers, No. 47 Yang-Liu-Qing Ying-Jian Road, Tian-Jin City, 300380, China

Abstract:High-efficient THz-wave radiation is achieved from a Si-prism coupler THz-wave parametric oscillator via a block of MgO: LiNbO₃. The THz-wave radiation from 0.95 THz to 2.10 THz is obtained. The average power of THz-wave is 580 nW and the output energy of Stokes wave is 2.7 mJ at 1.8 THz when the pump energy is 101 mJ, corresponding to the THz-wave energy conversion efficiency of 5.74×10^{-7} . During the experiments, the first-order and the second-order Stokes waves are observed. The frequency shift of the first-order Stokes wave is equivalent to the frequency of the generated THz-wave.

Number of references:14

Main heading:Terahertz waves

Controlled terms:Conversion efficiency - Parametric oscillators - Prisms - Silicon - Wave energy conversion

Uncontrolled terms:Average power - Experimental investigations - First-order - First-order Stokes wave - Frequency shift - MgO - Non-collinear phase-matching - Output energy - Polaritons - Pump energies - Second-order stokes - Stokes wave - THz-wave

Classification code:525.5 Energy Conversion Issues - 615.6 Wave Energy - 711 Electromagnetic Waves - 712.1.1 Single Element Semiconducting Materials - 713.2 Oscillators - 741.3 Optical Devices and Systems

Database:Compendex

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