487.

Accession number:13137798

Title:Simultaneous determination of thickness and refractive index based on time-of-flight measurements of terahertz pulse

Authors:Hussain, B. (1); Ahmed, M. (1); Nawaz, M. (1); Saleem, M. (1); Razzaq, M. (1); Zia, M.A. (1); Igbal, M. (1)

Author affiliation:(1) Nat. Inst. of Lasers & amp; Optronics, Islamabad, Pakistan

Source title: Applied Optics

Abbreviated source title: Appl. Opt. (USA)

Volume:51

Issue:21

Publication date:20 July 2012

Pages:5326-30

Language:English

ISSN:1559-128X

CODEN:APOPAI

Document type:Journal article (JA)

Publisher: Optical Society of America

Country of publication:USA

Material Identity Number: AB31-2012-005

Abstract:We present a simple technique for simultaneous determination of thickness and refractive index of planeparallel samples in the terahertz radiation domain. The technique uses time-of-flight measurements of the terahertz pulse. It has been employed on nine different polymers and semiconductor materials, which are transparent for terahertz frequencies. Our results of thickness measurement are in good agreement with micrometer reading. The accuracy in the determination of refractive index is on the order of two decimal points.

Number of references:18

Inspec controlled terms:polymers - refractive index measurement - semiconductor materials - submillimetre wave measurement - terahertz spectroscopy - thickness measurement

Uncontrolled terms:thickness measurement - refractive index - time-of-flight measurements - terahertz pulse - plane parallel samples - terahertz radiation domain - micrometer reading

Inspec classification codes:A0760H Optical refractometry and reflectometry - A8170G Nondestructive testing: optical methods - A0630C Spatial variables measurement - B7310N Microwave measurement techniques - B7320C Spatial variables measurement - B7320P Optical variables measurement - B0590 Materials testing

Treatment:Experimental (EXP)

Discipline:Physics (A); Electrical/Electronic engineering (B) Database:Inspec