162. Accession number:12605051

Title:Substrate independence of THz vibrational modes of polycrystalline thin films of molecular solids in waveguide THz-TDS

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Source title: Journal of Applied Physics

Abbreviated source title: J. Appl. Phys. (USA)

Volume:111

Issue:2

Publication date:15 Jan. 2012

Pages:023105 (7 pp.)

Language:English

ISSN:0021-8979

CODEN:JAPIAU

Document type:Journal article (JA)

Publisher: American Institute of Physics

Country of publication:USA

Material Identity Number:DK28-2012-007

Abstract: The influence of the metal substrate on the measurement of high resolution THz vibrational modes of molecular solids with the waveguide THz-TDS technique is investigated. The sample film of salicylic acid is studied using waveguide THz-TDS on three different metal substrates and two-surface passivated substrates. The independence of the observed THz vibrational modes to the metal substrate is demonstrated. Independently, surface passivation is presented as a viable experimental addition to the waveguide THz-TDS technique to aid the characterization of samples with known reactivity to metal surfaces.

Number of references:23

Inspec controlled terms:aluminium - copper - gold - organic compounds - passivation - substrates - terahertz wave spectra - thin films - vibrational modes

Uncontrolled terms:salicylic acid films - surface passivation - waveguide THz-TDS method - molecular solids - polycrystalline thin films - high-resolution THz vibrational modes - metal substrate independence - Cu - Au - Al

Inspec classification codes:A7870G Microwave and radiofrequency interactions with condensed matter - A6320 Phonons and vibrations in crystal lattices - A8160B Surface treatment and degradation of metals and alloys - A7830 Infrared and Raman spectra and scattering (condensed matter) - A7865 Optical properties of thin films and low-dimensional structures - A6855 Thin film growth, structure, and epitaxy

Chemical indexing:Cu/sur Cu/el;Au/sur Au/el;Al/sur Al/el

Treatment:Experimental (EXP)

Discipline: Physics (A)

DOI:10.1063/1.3678000

Database:Inspec

IPC Code:C23F; C23GCopyright 2012, The Institution of Engineering and Technology