

Accession number:20125015781988

Title:Terahertz radiation for tomographic inspection

Authors:Recur, Benoit (1); Guillet, Jean-Paul (2); Bassel, Lena (2); Fragnol, Carole (2); Inka Manek-Honninger (2); Delagnes, Jean Christophe (2); Benharbone, William (2); Desbarats, Pascal (1); Domenger, Jean-Philippe (1); Mounaix, Patrick (2)

Author affiliation:(1) Universit  de Bordeaux, LaBRI, UMR5800 CNRS, F-33405 Talence, France; (2) Universit  de Bordeaux, LOMA, UMR5798 CNRS, F-33405 Talence, France

Corresponding author:Recur, B.(brecur@labri.fr)

Source title:Optical Engineering

Abbreviated source title:Opt Eng

Volume:51

Issue:9

Issue date:September 2012

Publication year:2012

Article number:091609

Language:English

ISSN:00913286

E-ISSN:15602303

CODEN:OPEGAR

Document type:Journal article (JA)

Publisher:SPIE, P.O. Box 10, Bellingham, WA 98227-0010, United States

Abstract:Three-dimensional (3-D) terahertz computed tomography has already been performed with three different reconstruction methods (standard back-projection algorithm and two iterative analyses) to reconstruct 3-D objects. A Gaussian beam model is developed according to the physical properties of terahertz waves such as the energy distribution within the propagation path. This model is included as a new convolution filter into the tomographic reconstruction methods in order to analyze the impact of a such effect and then to enhance quality and accuracy of the resulting images. We demonstrate the improvements of the optimized reconstructions for applied 3-D terahertz tomography.  copy; 2012 Society of Photo- Optical Instrumentation Engineers (SPIE).

Number of references:20

Main heading:Three dimensional

Controlled terms:Computerized tomography - Gaussian beams - Image reconstruction - Iterative methods - Terahertz waves - Tomography

Uncontrolled terms:Image reconstruction techniques - Scanners - Terahertz imaging - Three-dimensional image processing - Tomographic imaging

Classification code:921.6 Numerical Methods - 902.1 Engineering Graphics - 801 Chemistry - 746 Imaging Techniques - 741 Light, Optics and Optical Devices - 711 Electromagnetic Waves - 531 Metallurgy and Metallography

DOI:10.1117/1.OE.51.9.091609

Database:Compendex

Compilation and indexing terms, Copyright 2012 Elsevier Inc.