

1. Record Nr.	UNINA9910810693403321
Titolo	Terahertz science and technology for military and security applications [[electronic resource] /] / editors, Dwight L. Woolard ... [et al.]
Pubbl/distr/stampa	Hackensack, NJ, : World Scientific, c2007
ISBN	1-281-91181-X 9786611911812 981-277-180-8
Descrizione fisica	1 online resource (261 p.)
Collana	Selected topics in electronics and systems ; ; v. 46
Altri autori (Persone)	WoolardDwight L
Disciplina	681/.2
Soggetti	Detectors Terahertz technology Submillimeter waves
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	CONTENTS; Foreword; Development of Computational Methodologies for the Prediction and Analysis of Solid-state Terahertz Spectra D. G. Allis and T. M. Korter; 1. Introduction; 2. Methods; 3. Results; 3.1. Adjustable Parameters in the DMof Code; 3.2. Intensity Calculations from Mulliken and Hirshfeld Charges; 3.3. A Review of the Functional Comparisons; 3.4. A Review of the Isolated-Molecule vs. Solid-State Normal Mode Frequencies; 3.5. Basis Set and Integration Grid Size Dependencies; 3.6. Analysis of the PHMX Calculations; 3.7. Analysis of the PETN I Calculations; 4. Discussion 4.1. Basis Set and Integration Grid Dependencies 4.2. Mulliken and Hirshfeld Charge Dependencies; 4.3. Timings; 5. Conclusions; 6. Acknowledgments; References; Fire Damage on Carbon Fiber Materials Characterized by THz Waves N . Karpowicz, D. Dawes, M. J . Perry and X.-C. Zhang; 1. Introduction; 2. Experimental Setups; 3. Continuous-wave imaging; 4. THz Time-Domain Spectroscopy Measurements; 5. Conclusion; 6. Acknowledgements; References; An Analysis of the THz Frequency Signatures in the Cellular Components of Biological Agents A. Bykhovski, T. Globus, T. Khromova, B. Gelmont and D. Woolard 1. Introduction 2. Theory; 2.1. Model description; 2.2. Simulation

results; 3. Materials and methods; 4. Experimental results; 4.1. THz characterization of E-coli 's transfer RNA diluted solutions.; 5. Experiment v theory; 6. Acknowledgments; References; Standoff Sensing and Imaging of Explosive Related Chemical and Bio-Chemical Materials Using THz-TDS H. Zhong, A . Redo-Sanchez and X.-C. Zhang; 1. Introduction; 2. Principle; 2.1. Standoff sensing of RDX; 2.1.1. Signature of RDX at close proximity; 2.1.2. Sensing of RDXat standoffdistance
 3. Spectroscopic focal-plane imaging of explosive materials at standoff distance3.1. Imaging results; 3.1.1. Optical and THz images; 3.1.2. Spectroscopic image; 3.1.3. Contrast of the image; 4. Conclusion; Acknowledgements; References; Fingerprinting Insulins in the Spectral Region from Mid-IR to THz R. Song, Y. J. Ding and Y. B. Zotova; 1. Introduction; 2. Sample Preparation and Experimental Setup; 3. Results and Discussions; 3.1. Absorption spectra in Mid-Infrared region; 3.2 Absorption spectrum in Fur-IWTHz transition region; 3.3 Absorption spectrum in THz region; 4. Conclusion
 AcknowledgementReferences; Ambient Air Used as the Nonlinear Media for THz Wave Generation X . Xie, J . Dai, M. Yamaguchi and X.-C. Zhang; 1. Introduction; 2. Experimental setup; 3. Measurement and experimental results; 4. Theoretical discussion; 5. Conclusion; References; Time Domain Terahertz Imaging of Threats in Luggage and Personnel D. Zimdars, J. White, G. Stuk, G. Sucha, G. Fichter and S. L. Williamson; 1. Introduction; 2. High Speed Time Domain Terahegez Imaging Test Bed; 3. Terahertz Transmission Imaging of Luggage Objects
 4 Car-Linear Terahertz Reflection Imaging of Luggage and Persowneii

Sommario/riassunto

The inherent advantages and potential payoffs of the terahertz (THz) regime for military and security applications serve as an important driver for interest in new THz-related science and technology. In particular, the very rapid growth in more recent years is arguably most closely linked to the potential payoffs of THz sensing and imaging (THz-S&I). This book presents some of the leading fundamental research efforts towards the realization of practical THz-S&I capabilities for military and security applications. Relevant subjects include theoretical prediction and/or measurement of THz spec