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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 RDX at standoff distance

3. Spectroscopic focal-plane imaging of explosive materials at stand off distance 3.1. 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

Acknowledgement References; 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

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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