1. Record Nr. UNINA9910455870203321

Titolo	Spectral sensing research for surface and air monitoring in chemical, biological and radiological defense and security applications [[electronic resource] /] / editors, Jean-Marc Theriault, James O. Jensen
Pubbl/distr/stampa	New Jersey, : World Scientific, c2009
ISBN	1-282-76052-1 9786612760525 981-283-592-X
Descrizione fisica	1 online resource (545 p.)
Collana	Selected topics in electronics and systems ; ; v. 49
Altri autori (Persone)	TheriaultJean-Marc <1954-> JensenJames O
Disciplina	623.4/590287
Soggetti	Environmental monitoring - Remote sensing Radioactive pollution - Remote sensing Chemical detectors Chemical terrorism - Prevention Biological weapons - Remote sensing Spectrum analysis Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Select papers from the 2006 International Symposium on Spectral Sensing Research (2006 ISSSR)."--P. v.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	CONTENTS; Foreword; Surface Sensing & Monitoring Sessions; Infrared Spectral Signatures: Creation of Reference Data for Vapors and Liquids S. Sharpe, T. Johnson, R. Sams, J. Hylden, J. Kleimeyer and B. Rowland; 1. Introduction; 2. Experiment; 2.1. Data Acquisition parameters; 2.2. Sample cell construction; 2.3. Sample cell characterization; 3. Sample analysis; 4. Results; 5. Conclusion; 6. Acknowledgements; 7. References; Appendix A. Physical properties of CWAs; Appendix B. Real and imaginary refractive indices of CWAs Passive Standoff Detection of Surface Contaminants: A Novel Approach by Differential Polarization FTIR Spectrometry J.-M. Theriault, H. Lavoie, E. Puckrin and F. Bouffard1. Introduction; 2. Surface Radiance Phenomenology; 2.1. Modeling surface contaminant radiance:

Unpolarized case; 2.2. Modeling surface contaminant radiance: Polarized case; 3. Standoff Sensor and Field Experiment; 3.1. CATSI instrument; 3.2. SURFCON field experiment; 3.3. Example of results; 4. Experimental and Modeling Study; 5. Optimized Sensor Design for Differential FTIR Sensing; 6. Conclusion; References
Background Contributions in Direct and Differential Fourier Transform LWIR Measurements: A Comparative Analysis F. Bou.ard and J.-M. Theriault1. Introduction; 2. Experimental Setup; 3. Results; 3.1. Clustering; 3.2. Norm and spectral length; 3.3. Covariance; 3.4. Distribution of synthesis coefficients; 3.5. Background suppression; 4. Conclusion; References; Signal Processing of Multicomponent Raman Spectra of Particulate Matter J. Fochesatto and J. Sloan; 1. Introduction; 2. Experimental Setup; 3. Peak and Noise signals Removal from Raman Spectra; 3.1. Spike Removal in Raman Spectra
3.2. Noise Removal in Raman Spectra4. Baseline Reduction in Raman Spectra; 4.1. Baseline Reduction based on Polynomial Fitting; 5. Chemical Fingerprint Retrieval; 5.1. Chemical composition of aerosols during Pacific 2001 and ALERT 2002 experiments; 6. Discussion and Conclusions; 7. Acknowledgements; 8. References; Signature and Signal Generation Aspects of Explosive Detection Using Terahertz Time-Domain Spectroscopy R. Osiander, M. J. Fitch, M. Leahy-Hoppa, Y. Dikmelik and J. B. Spicer; 1. Introduction; 2. THz Spectroscopy for Explosives Detection: Background Information
3. THz Time-domain Transmission Spectroscopy of Explosives4. THz Time-Domain Reflection Spectroscopy; 5. Wave scattering from granular materials; 6. Conclusions; 7. Acknowledgments; References; Novel Application of Passive Stando. Radiometry for the Measurement of Explosives E. Puckrin, J.-M. Theriault, H. Lavoie, D. Dube and P. Brousseau; 1. Introduction; 2. Detection Principles and Phenomenology; 3. Measurement Approach; 3.1. Laboratory measurements; 3.2. Field measurements; 4. Results and Analysis; 4.1. Laboratory measurements of diffuse reflectance
4.2. Simulation of the passive standoff detection of solid explosive materials

Sommario/riassunto

This book provides unique perspectives on the state of the art in multispectral/hyperspectral techniques for early-warning monitoring against chemical, biological and radiological (CB&R) contamination of both surface (e.g. land) and air (e.g. atmospheric) environments through the presentation of a comprehensive survey of the novel spectroscopic methodologies and technologies that are emerging to address the CB&R defense and security challenges of the future. The technical content in this book lends itself to the non-traditional requirements for point and stand-off detection that have evolved out of the US joint services programs over many years. In particular, the scientific and technological work presented seeks to enable hyperspectral-based sensing and monitoring that is in real time and in-line; low in cost and labor requirements; and easy to support, maintain and use in military and security-relevant scenarios.--Publisher's description.