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Trademarks; References; 4 INFRARED SPECTROSCOPY OF BIOFLUIDS IN CLINICAL CHEMISTRY AND MEDICAL DIAGNOSTICS; 4.1 Introduction; 4.2 Vibrational Spectroscopy of Biofluids
4.3 Quantification (Regression) and Diagnostic (Classification) Approaches4.4 Quantitative Biofluid Analysis; 4.5 Diagnostic Biofluid Tests; 4.6 Veterinary Applications; 4.7 Microfluidics and IR Spectroscopy of Biofluids; 4.8 Concluding Remarks; References; 5 RAMAN SPECTROSCOPY OF BIOFLUIDS; 5.1 Introduction; 5.2 Background Fluorescence; 5.3 The Putative Drawback of a Low Signal-to-Noise-Ratio; 5.4 Spectroscopy of Blood and Its Derivates; 5.5 In Vitro Raman Spectroscopy of Serum for Laboratory Diagnostics: A Case Study; 5.6 Raman Spectroscopy of Body Fluids In Vivo
5.7 Raman Spectroscopy of Other Body Fluids5.8 Summary; Acknowledgments; References; 6 VIBRATIONAL MICROSPECTROSCOPY OF CELLS AND TISSUES; 6.1 Introduction; 6.2 Infrared Histopathology: IR Microspectroscopic Mapping of Tissues; 6.3 Vibrational Cytology: IR and Raman Spectroscopy of Eukaryotic Cells; 6.4 Concluding Remarks; Acknowledgments; References; 7 RESONANCE RAMAN MICROSPECTROSCOPY AND IMAGING OF HEMOPROTEINS IN SINGLE LEUKOCYTES; 7.1 Hemoproteins; 7.2 Raman Microspectroscopy; 7.3 Outline of This Chapter; 7.4 Instrumentation and Spectral Data Analysis
7.5 Resonance Raman Microspectroscopy on Neutrophilic Granulocytes7.6 Resonance Raman Microscopy on Neutrophilic Granulocytes; 7.7 Photobleaching and Light-Induced Cell Damage in Resonance Raman Microspectroscopy; 7.8 Concluding Remarks; Acknowledgments; References; 8 RESONANT RAMAN SCATTERING OF HEME MOLECULES IN CELLS AND IN THE SOLID STATE; 8.1 Introduction; 8.2 Electronic Structure of Heme Moieties; 8.3 Resonance Raman Spectroscopy; 8.4 Resonance Raman Spectroscopy of Hemes in Cells and the Solid State
8.5 Resonance Raman of Heme Derivatives Using Near-Infrared Excitation in the Solid State

Sommario/riassunto

This comprehensive overview of biomedical applications of vibrational spectroscopy focuses on methodologies that are most relevant to biodiagnostics. After a few introductory chapters that summarize the current status of the field, the reference covers current spectroscopic applications; new spectroscopic directions; and study design and the analysis of vibrational spectral fingerprints from complex biological and clinical samples . With chapters contributed by leading international experts, Biomedical Vibrational Spectroscopy is a core resource.