

1. Record Nr.	UNINA9910877418803321
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Titolo	Raman spectroscopy for chemical analysis // by Richard L. McCreery
Pubbl/distr/stampa	New York, : John Wiley & Sons, 2000
ISBN	1-280-25274-X 9786610252749 0-470-34953-0 0-471-23187-8 0-471-72164-6
Descrizione fisica	1 online resource (451 p.)
Collana	Chemical analysis ; ; v. 157
Disciplina	543.08584 543/.08584
Soggetti	Raman spectroscopy Chemistry, Analytic
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"A Wiley-Interscience publication.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Raman Spectroscopy for Chemical Analysis; CONTENTS; PREFACE; ACKNOWLEDGMENTS; LIST OF SYMBOLS; CUMULATIVE LISTING OF VOLUMES IN SERIES; CHAPTER 1 INTRODUCTION AND SCOPE; 1.1. History Preceding 1986; 1.2. Technological Advances; 1.3. Comparison to FTIR and NIR Absorption; 1.4. Overview of the Book; CHAPTER 2 MAGNITUDE OF RAMAN SCATTERING; 2.1. Theoretical Overview; 2.2. Definition of Raman Cross Section; 2.3. Magnitude of Raman Cross Sections; 2.4. Raman Scattering Intensity; CHAPTER 3 COLLECTION AND DETECTION OF RAMAN SCATTERING; 3.1. Signal Magnitude and Collection Function 3.2. Instrumental Variables Comprising the Collection Function 3.3. Spectrometer Response Function; 3.4. Multiplex and Multichannel Spectrometers; CHAPTER 4 SIGNAL-TO-NOISE IN RAMAN SPECTROSCOPY; 4.1. Definition and Measurement of SNR; 4.2. Noise Sources; 4.3. Signal-to-Noise Ratio Expressions; 4.4. SNR Figure of Merit; 4.5. SNR and Detection Limits; 4.6. SNR for Multiplex Spectrometers; CHAPTER 5 INSTRUMENTATION OVERVIEW AND SPECTROMETER PERFORMANCE; 5.1. Major Spectrometer Components;

5.2. Laser Wavelength; 5.3. Dispersive vs. Nondispersive Spectrometers; 5.4. Performance Criteria 5.5. Samples for Spectrometer Evaluation CHAPTER 6 SAMPLING MODES IN RAMAN SPECTROSCOPY; 6.1. Sampling Overview; 6.2. Performance Criteria; 6.3. 180° Backscattering Geometry; 6.4. 90° Sampling Geometry; 6.5. Reducing the Laser Power Density at the Sample; 6.6. Path Length Enhancement; 6.7. Polarization Measurements; CHAPTER 7 LASERS FOR RAMAN SPECTROSCOPY; 7.1. Overview; 7.2. Ar+ and Kr+ Ion Lasers; 7.3. Helium-Neon Lasers; 7.4. Neodymium-YAG (Nd:YAG); 7.5. Diode Lasers; 7.6. Laser Wavelength Filtering; CHAPTER 8 DISPERSIVE RAMAN SPECTROMETERS; 8.1. Overview 8.2. Dispersive Spectrometer Configurations 8.3. Detector Considerations; 8.4. Single-Channel Detectors; 8.5. Multichannel Detectors and CCDs; 8.6. Recording Methods for Dispersive Spectrometers; 8.7. Examples of Dispersive Raman Applications; CHAPTER 9 NONDISPERSIVE RAMAN SPECTROMETERS; 9.1. Tunable Bandpass Filters; 9.2. Fourier Transform Raman Spectroscopy; 9.3. Multichannel Fourier Transform Raman Spectroscopy; 9.4. Extensions of FT-Raman for Longer Wavelength Operation; 9.5. FT-Raman Examples; CHAPTER 10 CALIBRATION AND VALIDATION; 10.1. Overview 10.2. Frequency and Raman Shift Calibration 10.3. Instrument Response Function Calibration; 10.4. Absolute Response Calibration; 10.5. Summary of Calibration and Validation Procedures; CHAPTER 11 RAMAN MICROSCOPY AND IMAGING; 11.1. Overview of Raman Microscopy; 11.2. Single-Point Raman Microspectroscopy; 11.3. Line Imaging; 11.4. Two-Dimensional Raman Imaging; CHAPTER 12 FIBER-OPTIC RAMAN SAMPLING; 12.1. Overview of Fiber-Optic Sampling; 12.2. Fiber-Optic Basics; 12.3. Fiber-Spectrometer Interface; 12.4. Fiber-Optic Probes; 12.5. Comparisons of Fiber-Optic Sampling Probes 12.6. Waveguide Sampling for Analytical Raman Spectroscopy

Sommario/riassunto

Owing to its unique combination of high information content and ease of use, Raman spectroscopy, which uses different vibrational energy levels to excite molecules (as opposed to light spectra), has attracted much attention over the past fifteen years. This book covers all aspects of modern Raman spectroscopy, including its growing use in both the laboratory and industrial analysis.
