

1. Record Nr.	UNINA9910784643303321
Autore	Ferraro John R. <1918->
Titolo	Introductory Raman spectroscopy [[electronic resource] /] / John R. Ferraro, Kazua Nakamoto, Chris W. Brown
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Academic Press, c2003
ISBN	1-281-03663-3 9786611036638 0-08-050912-6
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (449 p.)
Altri autori (Persone)	NakamotoKazuo <1922-> BrownChris W
Disciplina	535.8/46
Soggetti	Raman spectroscopy
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 and index.
Nota di contenuto	Front Cover; Introductory Raman Spectroscopy; Copyright Page; Contents; Preface to the Second Edition; Acknowledgments; Preface to the First Edition; Acknowledgments; Chapter 1. Basic Theory; 1.1. Historical Background of Raman Spectroscopy; 1.2. Energy Units and Molecular Spectra; 1.3. Vibration of a Diatomic Molecule; 1.4 Origin of Raman Spectra; 1.5. Factors Determining Vibrational Frequencies; 1.6. Vibrations of Polyatomic Molecules; 1.7. Selection Rules for Infrared and Raman Spectra; 1.8. Raman versus Infrared Spectroscopy; 1.9. Depolarization Ratios; 1.10. The Concept of Symmetry 1.11. Point Symmetry Elements1.12. The Character Table; 1.13. Classification of Normal Vibrations by Symmetry; 1.14. Symmetry Selection Rules; 1.15. Resonance Raman Spectra; 1.16. Space Group Symmetry; 1.17. Normal Vibrations in a Crystal; 1.18. Selection Rules for Solids (Factor Group); 1.19. Polarized Raman Spectra of Single Crystals; 1.20. Normal Coordinate Analysis; 1.21. Band Assignments and Isotope Shifts; References; General References; Chapter 2. Instrumentation and Experimental Technoques; 2.1. Major Components; 2.2. Excitation Sources; 2.3. Sample Illumination 2.4. Wavelength Selectors2.5. Detection; 2.6. Instrument Calibration; 2.7. Sampling Techniques; 2.8. Fluorescence Problems; 2.9. Raman Difference Spectroscopy; 2.10. Miniature Raman Spectrometers;

References; General References; Chapter 3. Special Techniques; 3.1. High-Pressure Raman Spectroscopy; 3.2. Raman Microscopy; 3.3. Surface-Enhanced Raman Spectroscopy (SERS); 3.4. Raman Spectroelectrochemistry; 3.5. Time-Resolved Raman (TR2) Spectroscopy; 3.6. Matrix-Isolation Raman Spectroscopy; 3.7. 2D Correlation Raman Spectroscopy; 3.8. Raman Imaging Spectrometry 3.9. Nonlinear Raman SpectroscopyReferences; Chapter 4. Materials Applications; 4.1. Applications to Structural Chemistry; 4.2. Solid State Applications; References; Chapter 5. Analytical Chemistry; 5.1. Preprocessing Spectra; 5.2. Full-Spectra Processing Methods; 5.3. Quantitative Analysis; 5.4. Spectral Searches; 5.5. Discriminant Analysis; References; Chapter 6. Biochemical and Medical Applications; 6.1 Biochemical Applications; 6.2. Medical Applications; References; Chapter 7. Industrial, Environmental and Other Applications; 7.1. Industrial Applications; 7.2. Environmental Applications 7.3. Other ApplicationsReferences; Appendices; Index

Sommario/riassunto

This second edition of Introductory Raman Spectroscopy serves as a guide to newcomers who wish to become acquainted with this dynamic technique. Written by three acknowledged experts this title uses examples to illustrate the usefulness of the technique of Raman spectroscopy in such diverse areas as forensic science, biochemistry, medical, pharmaceutical prescription and illicit drugs. The technique also has many uses in industry. Updated Applications chapter. Demonstrated the versatility and utility of Raman spectroscopy in problem solving in science. Serves as an excellent ref
