Biomolecular Nmr Spectroscopy Volume 3 Advances In Biomedical Spectroscopy

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Fundamentals of Protein NMR Spectroscopy

Recent Developments in Biomolecular NMR

Nuclear Magnetic Resonance

Encyclopedia of Spectroscopy and Spectrometry

Spectroscopy of Biological Molecules

This comprehensive book presents a modern concept in biophysics based on recently published research. It highlights various aspects of the biophysical fundamentals and techniques that are currently used to study different physical properties of biomolecules, and relates the biological phenomenon with the underlying physical concepts. The content is divided into nine chapters summarizing the structural details of proteins, including recently discovered novel folds, higher order structures of nucleic acids, as well as lipids and the physical forces governing the macromolecular interactions which are essential for the various biological processes. It also provides insights into the recent advances in biophysical techniques including Hydrogen Deuteron Exchange with Mass Spectrometry (HDX-MS), Small angle X-ray scattering (SAXS), and Cryo Electron Microscopy (cryo EM), supplemented with interesting experimental data. It is a valuable reference resource for anyone with a desire to gain a better understanding of the fundamentals of biophysical concepts and techniques of important biomolecules.
Biophysical Approaches to Translational Control of Gene Expression

Now in its 43rd volume, the Specialist Periodical Report in Nuclear Magnetic Resonance presents comprehensive and critical reviews of the recent literature, providing the reader with an informed summary of the field from invited authors. Several chapters in this volume are devoted to biochemistry, focusing on carbohydrates, lipids, and proteins and nucleic acids; Malcolm Prior also presents a chapter examining the theoretical literature of NMR in living systems and Cynthia Jameson reviews the theoretical and physical aspects of nuclear shielding, while Jaroslaw Jazwinski examines the theoretical aspects of spin-spin couplings. The lead volume editor, Krystyna Kamienska-Trela, presents a chapter on the applications of spin-spin couplings. Anyone wishing to update themselves on the recent and hottest developments in NMR will benefit from this volume, which deserves a place in any library or NMR facility. Purchasers of the print edition can register for free access to the electronic edition by returning the enclosed registration card.

Nuclear Magnetic Resonance

NMR spectroscopy has undergone a revolution in recent years with the advent of several new methods overcoming the problems of sensitivity and resolution. Recent developments in biotechnology have made it easier and economical to introduce $^{13}$C, $^{15}$N and $^{2}$H into proteins and nucleic acids. At the same time, there has been an explosion in the number of NMR experiments that utilize such isotope labeled samples. Thus, a combination of isotopic labeling and multidimensional, multinuclear NMR has opened up new avenues for structural studies of proteins, nucleic acids and their complexes. This book will focus on recent developments in isotopic labeling methods for structural studies of small molecules, peptides, proteins and nucleic acids. The aim of the book is to serve as a compendium of isotope labeling for the biomolecular NMR community providing comprehensive coverage of the existing methods and latest developments along with protocols and practical hints on the various experimental aspects. The book will cover a wide range of topics in isotope labeling under one title including emerging areas of metabolonomics and solid state NMR.

Pocket Guide to Biomolecular NMR

Isotope Labeling of Biomolecules – Labeling Methods, the latest volume of the Methods in Enzymology series contains comprehensive information on stable isotope labeling methods and applications for biomolecules. Contains contributions from leading authorities in the field of isotope labeling of biomolecules. Informs and updates on the latest developments in the field. Provides comprehensive information on stable isotope labeling methods and applications for biomolecules.

Annual Reports on NMR Spectroscopy

Applications of NMR Spectroscopy is a book series devoted to publishing the latest advances in the applications of nuclear magnetic resonance (NMR) spectroscopy in various fields of organic chemistry, biochemistry, health and agriculture. The seventh volume of the series features six reviews focusing on NMR spectroscopic techniques for studying structures of protein complexes, metabolic profiling of gut bacteria, lipid digestion, lung disorders, and early cancer diagnosis, respectively.

Multinuclear Solid-State Nuclear Magnetic Resonance of Inorganic Materials

During teaching NMR to students and researchers, we felt the need for a text-book which can cover modern trends in the application of NMR to biological systems. This book covers the entire area of NMR in Biological Sciences (Biomolecules, cells and tissues, animals, plants and drug design). As well as being useful to researchers, this is an excellent book for teaching a course on NMR in Biological Systems.

Isotope Labeling of Biomolecules – Labeling Methods

NMR is one of the most powerful methods for imaging of biomolecules. This book is the ultimate NMR guide for researchers in the biomedical community and gives not only background and practical tips but also a forward looking view on the future of NMR in systems biology.

NMR of Biomolecules

Edited by leading biological NMR spectroscopists, this book will cover the new developments that have occurred in biomolecular NMR over the last few years.

Wiley Encyclopedia of Chemical Biology, Volume 3

Protein NMR Spectroscopy: Principles and Practice combines a comprehensive theoretical treatment of high resolution NMR spectroscopy with an extensive exposition of the experimental techniques applicable to proteins and other biological macromolecules. Beginning with simple theoretical models and experimental techniques, Protein NMR Spectroscopy: Principles and Practice develops the complete repertoire of theoretical principals and experimental practices necessary for understanding and implementing the most sophisticated NMR experiments. Protein NMR Spectroscopy: Principles and Practice is written as a graduate-level textbook and will be of particular interest to biochemists, chemists, biophysicists, and structural biologists who utilize NMR spectroscopy as a research tool or who wish to remain abreast of the latest developments in this increasingly important area. * Special Features: * First book to combine detailed NMR theory discussions with experimental applications to biomolecules. * All the theory required to understand these experiments and others. * Easy to follow progression from a fundamental level to an advanced level. * Theory of NMR and practical applications for biomolecular investigations presented. * Theory applied to very practical situations. * Comprehensive treatment of different "levels" of theory from simple ideas to density matrix analysis and operator practices. * Comprehensive description of multi-dimensional NMR experiments as applied to unlabeled, $^{15}$N-labeled and doubly ($^{13}$C/$^{15}$N) labeled proteins.
Nuclear magnetic resonance (NMR) is an analytical tool used by chemists and physicists to study the structure and dynamics of molecules. In recent years, no other technique has grown to such importance as applications of NMR spectroscopy in biological and biochemical systems. This text is comprised of eight chapters; the first of which gives an overview of NMR spectroscopy and its use in studies of biological systems. The n methods in NMR; the mechanisms of NMR relaxation; chemical and paramagnetic shifts; spin-spin splitting; the use of NMR in investigations of biopolymers and biomolecular interactions; and molecular dynamics are discussed, and each chapter is written by one or more leading authorities with extensive experience in the field.

Applications of NMR Spectroscopy; Vol. 6

This book provides an introduction to the important methods of chiroptical spectroscopy in general, and circular dichroism (CD) in particular, which are increasingly important in all areas of chemistry, biochemistry, and structural biology. The book can be used as a text for undergraduate and graduate students and as a reference for researchers in academia and industry. Experimental methods and instrumentation are described with topics ranging from the most widely used methods (electronic and vibrational CD) to frontier areas such as nonlinear spectroscopy and photoelectron CD, as well as the theory of chiroptical methods and techniques for simulating chiroptical properties. Applications of chiroptical spectroscopy to problems in organic stereochemistry, inorganic stereochemistry, and biochemistry and structural biology are also discussed, and each chapter is written by one or more leading authorities with extensive experience in the field.

Applications of NMR Spectroscopy, Vol. 6

This book highlights major advances in researching a cell’s molecular machinery through analytical, computational, and imaging methods. It focuses on developing biophysical approaches to studying control of gene expression at the translational level.

Bioluminescence and Chemiluminescence Spectroscopy

Techniques of solid state nuclear magnetic resonance (NMR) spectroscopy are constantly being extended to a more diverse range of materials, pressing into service an ever-expanding range of nuclides including some previously considered too intractable to provide usable results. At the same time, new developments in both hardware and software are being introduced and refined. This book covers the most important of these new developments. With sections addressed to non-specialist researchers (providing accessible answers to the most common questions about the theory and practice of NMR asked by novices) as well as a more specialised and up-to-date treatment of the most important areas of inorganic materials research to which NMR has application, this book should be useful to NMR users whatever their level of expertise and whatever inorganic materials they wish to study.

Plasmonic Biosensors

Nuclear Magnetic Resonance in Biochemistry. Principles and Applications focuses on the principles and applications of nuclear magnetic resonance (NMR) in biochemistry. Topics covered include experimental methods in NMR: the mechanisms of NMR relaxation; chemical and paramagnetic shifts; spin-spin splitting; the use of NMR in investigations of biopolymers and biomolecular interactions; and molecular dynamics in biological and biochemical systems. This text is comprised of eight chapters, the first of which gives an overview of NMR spectroscopy and its use in studies of biological systems. The n
Spectroscopy has established itself as a premier means for the specialist and nonspecialist alike to become familiar with new techniques and applications of NMR spectroscopy. Provides updates on the latest developments in NMR spectroscopy. Includes comprehensive review articles highlighting the increasing importance of NMR spectroscopy as a technique for structural determination.

Comprehensive Chiroptical Spectroscopy

In recent years there has been a tremendous growth in the use of vibrational spectroscopic methods for diagnosis and screening. These applications range from diagnosis of disease states in humans, such as cancer, to rapid identification and screening of microorganisms. The growth in such types of studies has been possible thanks to advances in instrumentation and associated computational and mathematical tools for data processing and analysis. This volume of Advances in Biomedical Spectroscopy contains chapters from leading experts who discuss the latest advances in the application of Fourier transform infrared (FTIR), near infrared (NIR), Terahertz and Raman spectroscopy for diagnosis and screening in fields ranging from medicine, dentistry, forensics and aquatic science. Many of the chapters provide information on sample preparation, data acquisition and data interpretation that would be particularly valuable for new users of these techniques including established scientists and graduate students in both academia and industry.

Applications of NMR Spectroscopy

Nuclear Magnetic Resonance (NMR) spectroscopy is the most powerful technique for characterization of biomolecular structures at atomic resolution in the solid state. This timely book, entitled “Biomolecular NMR Spectroscopy,” focuses on the latest state-of-the-art NMR techniques for characterization of biological macromolecules in the solid and solution state. The editors, Dr. Andrew Dingley (University of Auckland, New Zealand) and Dr. Steven Pascal (Massey University, New Zealand) have organized the book into four sections, covering the following topics: sample preparation, structure and dynamics of proteins, structure and dynamics of nucleic acids and protein-nucleic acid complexes, and rapid and hybrid techniques.

Understanding NMR Spectroscopy

This text is aimed at people who have some familiarity with high-resolution NMR and who wish to deepen their understanding of how NMR experiments actually ‘work’. This revised and updated edition takes the same approach as the highly-acclaimed first edition. The text concentrates on the description of commonly-used experiments and explains in detail the theory behind how such experiments work. The quantum mechanical tools needed to analyse pulse sequences are introduced step by step, but the approach is relatively informal with the emphasis on obtaining a good understanding of how the experiments actually work. The use of two-colour printing and a new larger format improves the readability of the text. In addition, a number of new topics have been introduced: How product operators can be extended to describe experiments in AX2 and AX3 spin systems, thus making it possible to discuss the important APT, INEPT and DEPT experiments often used in carbon-13 NMR Spin system analysis i.e. how shifts and couplings can be extracted from strongly-coupled (second-order) spectra. How the presence of chemically equivalent spins leads to spectral features which are somewhat unusual and possibly misleading, even at high magnetic fields. A discussion of chemical exchange effects has been introduced in order to help with the explanation of transverse relaxation. The double-quantum spectroscopy of a three-spin system is now considered in more detail. Reviews of the First Edition “For anyone wishing to know what really goes on in their NMR experiments, I would highly recommend this book” – Chemistry World “I warmly recommend for budding NMR spectroscopists, or others who wish to deepen their understanding of elementary NMR theory or theoretical tools” – Magnetic Resonance in Chemistry.

Biomedical Applications of Biophysics

NMR spectroscopy is widely used in biomolecular science particularly for structure determination of proteins, nucleic acids and carbohydrates. Much of the innovation within NMR spectroscopy has been within the field of protein NMR spectroscopy, an important technique in structural biology. Filling a gap in the literature, this book draws together experts in the field to discuss the real advances in NMR methods that have occurred or have an impact on the biomolecular field in the last few years. The coverage includes recent developments in using NMR for determination of protein structures, membrane proteins, the dynamics of RNAs and advances in NMR in drug discovery. Edited by leading biological NMR spectroscopists, the book is essential reference for researchers in industry and academia interested in or joining this bioanalytical field.

Applications of NMR Spectroscopy: Volume 9

With over 17,000 articles concerning NMR published per year, keeping up to date with the latest developments and applications of this technique can prove time-consuming. Now in its 42nd volume, the Specialist Periodical Report on NMR provides a digest of the current literature, compiled by experts in the field. The current volume devotes several chapters to the aspects and applications of spin-spin couplings, and biochemists will find separate chapters dedicated to proteins, lipids and carbohydrates. Further chapters discuss the latest developments in nuclear shielding, imaging and NMR in living systems. For a comprehensive account of the latest developments and research using NMR, look no further than Specialist Periodical Reports - Nuclear Magnetic Resonance. An essential book for NMR lab and university shelf.

Fundamentals of Molecular Structural Biology

The technique of nuclear magnetic resonance (NMR) spectroscopy is an important tool in biochemistry and biophysics for the understanding of the structure and ultimately, the function of biomolecules. This textbook explains the salient features of biological NMR spectroscopy to undergraduates and postgraduates taking courses in NMR, biological NMR, physical biochemistry, and biophysics. Unlike other books in the general field of NMR (except the advanced treatises), the approach here is to introduce and make use of quantum mechanical product operators as well as the classical vector method of explaining the bewildering array of pulse sequences available today. The book covers two- dimensional, three- dimensional, and four- dimensional NMR and their application to protein and DNA structure determination. A unique feature is the coverage of the biological aspects of solid- state NMR spectroscopy. The author provides many selected examples from the research literature, illustrating the applications of NMR spectroscopy to biological proteins.

Isotope labeling in Biomolecular NMR

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In this book Andreas Dahlin has written a comprehensive and thorough review of plasmonic biosensors that operate by refractometric detection. After an introductory chapter on biosensors, in which he sets out the concepts of biosensing in its application to such areas as proteomics, medical diagnostics and environmental control, he undertakes an integrated coverage of surface chemistry, surface physics and optics, specifically related to the requirements of design of a plasmonic biosensor. Sections on nanoparticle plasmons and surface plasmons follow, leading to a review of SPR technology for biosensing. The optical properties of nanoholes in metal films and other more complicated plasmonic nanostructures are also briefly discussed. Later chapters discuss experimental plasmon spectroscopy and spectral analysis while the final sections discuss topics such as sensor response and the extent to which quantitative measurements can be made. The book introduces a few relatively controversial opinions on some open questions, such as how best to define sensor performance and the practical use of highly miniaturized sensors. Each of the chapters is extensively referenced and contains appropriate illustrations. The book contains a wealth of information that will be highly beneficial to both existing and new users of refractometric sensing techniques in life science research. It will be a valuable resource for post-graduate research students, academic researchers and those working in industry.

Practical Approaches to Biological Inorganic Chemistry

The first major reference at the interface of chemistry, biology and medicine Chemical biology is a rapidly developing field that uses the principles, tools and language of chemistry to answer important questions in the life sciences. It has enabled researchers to gather critical information about the molecular biology of the cell and is the fundamental science of drug discovery, playing a key role in the development of novel agents for the prevention, diagnosis, and treatment of disease. Now students and researchers across the range of disciplines that use chemical biology techniques have a single resource that encapsulates what is known in the field. It is an excellent place to begin any chemical biology investigation. Major topics addressed in the encyclopedia include: Applications of chemical biology Biomolecules within the cell Chemical views of biology Chemistry of biological processes and systems Synthetic molecules as tools for chemical biology Technologies and techniques in chemical biology Some 360 articles range from pure basic research to areas that have immediate applications in fields such as drug discovery, sensor technology, and catalysis. Novices in the field can turn to articles that introduce them to the basics, whereas experienced researchers have access to articles exploring the cutting edge of the science. Each article ends with a list of references to facilitate further investigation. With contributions from leading researchers and pioneers in the field, the Wiley Encyclopedia of Chemical Biology builds on Wiley's unparalleled reputation for helping students and researchers understand the crucial role of chemistry and chemical techniques in the life sciences.

Introduction to Biomolecular Structure and Biophysics

Applications of NMR Spectroscopy, Volume 3 presents the latest developments in the field of NMR spectroscopy, including the analysis of the structure-property relationship of polyphenols, breast cancer diagnosis, drug discovery and formulation, protein confirmation analysis using Fluorine NMR, and enamine studies. The well-illustrated chapters contain comprehensive references to the recent literature. The content is ideal for readers who are seeking reviews and updates, as it consolidates scientific articles of a diverse nature into a single volume. The book is organized into sections based on disciplines such as food science and medical diagnostics, with each chapter written by eminent experts in the field. The applications presented cover a wide range of the field, such as drug development, medical imaging and diagnostics, food science, mining, Petrochemical, process control, materials science, and chemical engineering, making this resource a multi-disciplinary reference. Consolidates the latest developments in NMR spectroscopy into a single volume Authored and edited by world-leading experts in spectroscopy Features comprehensive references to the most recent related literature More than 75 illustrations aid in the retention of key concepts

Applications of Raman Spectroscopy to Biology

Magnetic Resonance Spectroscopy (MRS) is a unique tool to probe the biochemistry in vivo providing metabolic information non-invasively. Applications using MRS has been found over a broad spectrum in investigating the underlying structures of compounds as well as in determining disease states. In this book, topics of MRS both relevant to the clinic and also those that are beyond the clinical arena are covered. The book consists of two sections. The first section is entitled ‘MRS inside the clinic’ and is focused on clinical applications of MRS while the second section is entitled ‘MRS beyond the clinic’ and discusses applications of MRS in other academic fields. Our hope is that through this book, readers can understand the broad applications that NMR and MRS can offer and also that there are enough references to guide the readers for further study in this important topic.

Applications of NMR Spectroscopy: Volume 7

This book presents contributions from some of the leading experts in spectroscopic techniques including infrared, Raman, NMR, Fluorescence and Circular Dichroism spectroscopy. Structural characterization of biomolecules, cells, tissues and whole organisms are amongst the topics that were covered by these experts at the 14th European Conference on Spectroscopy of Biological Molecules (ECSBM2011), held at the University of Coimbra, Portugal, from 29th August to 3rd September 2011, of which this book contains the papers. The book would be particularly valuable for those interested in vibrational spectroscopy and imaging of cells and tissues, applications of spectroscopy in biotechnology, single cell studies and microbial characterization. It highlights the potential of spectroscopy and imaging in medical diagnosis and screening, and discusses related methodology, including data acquisition, analysis and processing that would be valuable for scientists who are new to the field. The book would be an important reference source for scientists in academia and industry as well as early stage researchers such as graduate students and post-doctoral researchers.

NMR in Biological Systems

Steering clear of quantum mechanics and product operators, “Pocket Guide to Biomolecular NMR” uses intuitive, concrete analogies to explain the theory required to understand NMR studies on the structure and dynamics of biological macromolecules. For example, instead of explaining nuclear spin with angular momentum equations or Hamiltonians, the book describes nuclei as “bells” in a choir, ringing at specific frequencies depending on the atom type and their surrounding electromagnetic environment. This simple bell analogy, which is employed throughout the book, has never been used to explain NMR and makes it surprisingly easy to learn complex, bewildering NMR concepts, such as dipole-dipole coupling and CPMG pulse sequences. Other topics covered include the basics of multi-dimensional NMR, relaxation theory, and Model-Free analysis. The small size and fast pace of “Pocket Guide to Biomolecular NMR” makes the book a perfect companion to traditional biophysics and biochemistry textbooks, but the book’s unique perspective will provide even seasoned spectroscopists with new insights and handy “thought” short-cuts.
Biomolecular Structure and Function covers the proceedings of the 1977 -Cellular Function and Molecular Structure: Biophysical Approaches to Biological Problems- symposium. It summarizes the application of several biophysical techniques to molecular research in biology. This book starts by describing the use of deuterium-labeled lipids, as monitors of the degree of organization of membrane lipids. It also describes the use of carbon-13-labeled lipids, as indicators of molecular mobility. It explains the lipid-protein interactions involving two integral membrane proteins, mitochondrial cytochrome oxidase and calcium-dependent ATPase of muscle sarcoplasmic reticulum. The book goes on to present NMR studies on the organization and conformation of phospholipids, chloroplast membranes, and erythrocyte membranes. It also presents the ESR study of spectrin-phospholipid associations. It discusses the use of fluorescence probes, electrokinetics, neutron diffraction and ion theory studies of phospholipid-protein association, hormone disease, and senescence effects on prokaryotic and eukaryotic cells. Moreover, this book presents the experiments and phosphorus-31 NMR methodology to simultaneously monitor the intracellular pH and phosphate metabolism in a beating heart, functioning kidney, or an intact living microorganism. This book then describes physical probing of intracellular fluidity and structural changes attending tissue or cell cycles. It also relates relatively narrow lines in the hydrogen-1 NMR spectrum of the extremely viscous complex of the muscle protein tropinin and highly polymerized tropomyosin. Structure-function studies of fibrous proteins, such as collagen, actin, and myosin, and active site analysis of enzymes are also presented. Finally, a wide variety of methodologies and technologies is exemplified. This includes proton, carbon, fluorine, phosphorus, and lithium NMR spectroscopy, spin labeling and EPR spectroscopy, chemical studies, light scattering and fluorescence, and electron microscopy.

Vibrational Spectroscopy in Diagnosis and Screening

High-Resolution NMR Techniques in Organic Chemistry, Third Edition describes the most important NMR spectroscopy techniques for the structure elucidation of organic molecules and the investigation of their behavior. It is appropriate for advanced undergraduate and graduate students, research chemists and NMR facility managers. This thorough revision covers practical aspects of NMR techniques and instrumentation, data collection, and spectrum interpretation. It describes all major classes of one- and two-dimensional NMR experiments including homonuclear and heteronuclear correlations, the nuclear Overhauser effect, diffusion measurements, and techniques for studying protein-ligand interactions. A trusted authority on this critical expertise, High-Resolution NMR Techniques in Organic Chemistry, Third Edition is an essential resource for every chemist and NMR spectroscopist.

Biomolecular Structure and Function

Applications of NMR Spectroscopy is a book series devoted to publishing the latest advances in the applications of nuclear magnetic resonance (NMR) spectroscopy in various fields of organic chemistry, biochemistry, health and agriculture. The sixth volume of the series features reviews focusing on NMR spectroscopic techniques for studying tautomerism, applications in medical diagnosis, in food chemistry and identifying secondary metabolites.

Biomolecular NMR Spectroscopy

Applications of NMR Spectroscopy is a book series devoted to publishing the latest advances in the applications of nuclear magnetic resonance (NMR) spectroscopy in various fields of organic chemistry, biochemistry, health and agriculture. The eighth volume of the series features reviews focusing on NMR spectroscopic techniques for studying tautomerism, applications in medical diagnosis, in food chemistry and identifying secondary metabolites.

Recent Developments in Biomolecular NMR

This book presents a critical assessment of progress on the use of nuclear magnetic resonance spectroscopy to determine the structure of proteins, including brief reviews of the history of the field along with coverage of current clinical and in vivo applications. The book, in honor of Oleg Jardetsky, one of the pioneers of the field, is edited by two of the most highly respected investigators using NMR, and features contributions by most of the leading workers in the field. It will be valued as a landmark publication that presents the state-of-the-art perspectives regarding one of today's most important technologies.

Nuclear Magnetic Resonance in Biochemistry

Applications of NMR Spectroscopy is a book series devoted to publishing the latest advances in the applications of nuclear magnetic resonance (NMR) spectroscopy in various fields of organic chemistry, biochemistry, health and agriculture. The ninth volume of the series features reviews that highlight NMR spectroscopic techniques in microbiology, food science, pharmaceutical analysis and cancer diagnosis. The reviews in this volume are - NMR spectroscopy for the characterization of photoprotective compounds in cyanobacteria - Coffee assessment using 1H NMR spectroscopy and multivariate data analysis - a review - Evaluation of structure-property relationship of coconut shell lignins by NMR spectroscopy: from biorefinery to high-added value products - Application of NMR spectroscopy in chiral recognition of drugs - NMR-based metabolomics: general aspects and applications in cancer diagnosis.

Applications of NMR Spectroscopy

Raman spectroscopy has been known and used as a technique for 80 years, originally for the study of inorganic substances. Recent advances in underlying technology, such as lasers, detectors, filters and components, have transformed the technique into a very effective modern tool for studying complex biological problems. Professor Mahmoud Ghomi (of the University of Paris XIII) has edited this book on the applications of Raman spectroscopy to biology, covering in a readily accessible way the area from basic studies to the diagnosis of disease. The early chapters provide background information on basic principles underlying the main Raman methods covered in the book, with information on Surface-Enhanced Raman Scattering (SERS) and Surface-Enhanced Fluorescence (SEF), as well as giving accounts of applications to biomolecular and cellular investigations. Among the topics covered are studies of drugs and their complexes with biomolecules on nanoparticles, application of SERS to blood analysis, studies of single cells and of
applications to human cancer diagnostics. This will be a useful book for experimental scientists in academic, governmental, industrial and clinical environments and for those entering the field of biomolecular spectroscopy.