

Nmr Spectroscopy Explained Simplified Theory Applications And Examples For Organic Chemistry And Structural Biology 1st Edition By Jacobsen Neil E 2007 Hardcover

Data Processing Handbook for Complex Biological Data provides relevant and to the point content for those who need to understand the different types of biological data and the techniques to process and interpret them. The book includes feedback the editor received from students studying at both undergraduate and graduate levels, and from her peers. In order to succeed in data processing for biological data sources, it is necessary to master the type of data and general methods and tools for modern data processing. For instance, many labs follow the path of interdisciplinary studies and get their data validated by several independent researchers themselves, but either in collaboration or through outsourcing, they make use of a range of them, because, in the absence of cross validation using different techniques, the chances for acceptance of an article for publication in high profile journals is weakened. Explains how to interpret enormous amounts of data generated using several experimental approaches in simpler terms, thus relating biology and physics at the atomic level. Presents sample data files and explains the usage of equations and web servers cited in research articles to extract useful information from their own biological data. Discusses, in detail, raw data files, data processing strategies, and the web based sources relevant for data processing.

Presents the theory of NMR enhanced with Mathematica notebooks. Provides short, focused chapters with brief explanations of well-defined topics with an emphasis on a mathematical description. Presents essential results from quantum mechanics concisely and/or easy use in predicting and simulating the results of NMR experiments. Includes Mathematica notebooks that implement the theory in the form of text, graphics, sound, and calculations based on class tested methods developed by the author over his 25 year teaching career. These notebooks show exactly how the theory works and provide useful calculation templates for NMR researchers.

A definitive reference source on novel methods in NMR acquisition and processing, this book will highlight similarities and differences between emerging approaches and focus on identifying which methods are best suited for different applications. The highly qualified editors have conducted extensive research into the fundamentals of fast methods of data acquisition in NMR, including applications of non-Fourier methods of spectrum analysis. With contributions from additional distinguished experts in allied fields, clear explanations are provided on methods that speed up NMR experiments using different ways to manipulate the nuclei in the sample, modern methods for estimating the spectrum from the time domain response recorded during an NMR experiment, and finally how the data is sampled. Starting with a historical overview of Fourier Transformation and its role in modern NMR spectroscopy, this volume will clarify and demystify this important emerging field for spectroscopists and analytical chemists in industry and academia.

This fifth edition provides information on techniques needed to analyze foods for chemical and physical properties. The book is ideal for undergraduate courses in food analysis and is also an invaluable reference to professionals in the food industry. General information chapters on regulations, labeling, sampling, and data handling provide background information for chapters on specific methods to determine chemical composition and characteristics, physical properties, and objectionable matter and constituents. Methods of analysis covered include information on the basic principles, advantages, limitations, and applications. Sections on spectroscopy and chromatography along with chapters on techniques such as immunoassays, thermal analysis, and microscopy from the perspective of their use in food analysis have been expanded. Instructors who adopt the textbook can contact the editor for access to a website with related teaching materials.

Basic 1H- and 13C-NMR Spectroscopy
Bioinformatics and Biomedical Engineering

NMR Case Studies
Food Analysis

NMR Spectroscopy of Polymers
Introduce your students to the latest advances in spectroscopy with the text that has set the standard in the field for more than three decades: **INTRODUCTION TO SPECTROSCOPY**, 5e, by Donald L. Pavia, Gary M. Lampman, George A. Kriz, and James R. Vyvyan. Whether you use the book as a primary text in an upper-level spectroscopy course or as a companion book with an organic chemistry text, your students will receive an unmatched, systematic introduction to spectral and basic theoretical concepts in spectroscopic methods. This acclaimed resource features up-to-date spectra; a modern presentation of one-dimensional nuclear magnetic resonance (NMR) spectroscopy; an introduction to biological molecules in mass spectrometry; and coverage of modern techniques alongside DEPT, COSY, and HECTOR. **Important Notice:** Media content referenced within the product description or the product text may not be available in the ebook version.

The isolation and structural characterization of substances present at very low concentrations, as is necessary to satisfy regulatory requirements for pharmaceutical drug degradants and impurities, can present scientific challenges. The coupling of HPLC with NMR spectroscopy has been at the forefront of cutting-edge technologies to address these issues. LC-NMR: Expanding the Limits of Structure Elucidation presents a comprehensive overview of key concepts in HPLC and NMR that are required to achieve definitive structure elucidation with very low levels of analytes. Because skill sets from both of these highly established disciplines are critical to the methodology, this book is written to facilitate readers' proficiency in both areas, including an entire chapter on NMR theory. This book provides guidance in setting up LC-NMR systems, discussion of LC methods that are compatible with NMR, and an update on recent hardware and software advances for system performance, such as improvements in magnet design, probe technology, and solvent suppression techniques that enable unprecedented mass sensitivity in NMR. It also describes numerous NMR collection strategies, including continuous flow, stop flow, solid phase extraction (SPE), loop collection, and capillary electrophoresis. In addition, the author presents an overview of NMR experiments and techniques used in structure elucidation. The text focuses on current developments in chromatographic-NMR integration, with particular emphasis on utility in the pharmaceutical industry. Applications include trace analysis, analysis of mixtures, and detection of degradation products, impurities, metabolites, peptides, and more. The text discusses novel uses and emerging technologies that challenge detection limits as well future directions for this important technique. This book is a practical primary resource for NMR structure determination—including theory and application—that guides the reader through the steps required for isolation and NMR structure elucidation on the micro scale.

Provides a practical introduction to graduate scientists and industrial researchers towards the understanding of the assignment of 1H NMR spectra. Discusses, and includes on enclosed CD, one of the best, the fastest and most applicable pieces of NMR prediction software available. Allows students of organic chemistry to solve problems in 1H NMR with accuracy in 300 assigned spectra.

Biological Environmental Science is an introductory textbook for undergraduate students who desire a one semester course or, alternatively, a springboard course for advanced environmental offerings. This book features timely issues such as global warming, air, ground and water pollutions, population growth, species extinction and environmental poli

Understanding 1D and 2D NMR Spectra of Organic Compounds and Natural Products

Ionic Liquids Completely UnCOILed

Analytical Techniques and Methods for Biomass

NMR Spectroscopy Explained

Modelling 1H NMR Spectra of Organic Compounds

Modern NMR Techniques for Synthetic Chemistry

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful and theoretically complex analytical tool. Basic 1H- and 13C-NMR Spectroscopy provides an introduction to the principles and applications of NMR spectroscopy. Whilst looking at the problems students encounter when using NMR spectroscopy, the author avoids the complicated mathematics that are applied within the field. Providing a rational description of the NMR phenomenon, this book is easy to read and is suitable for the undergraduate and graduate student in chemistry. Describes the fundamental principles of the pulse NMR experiment and 2D NMR spectra Easy to read and written with the undergraduate and graduate chemistry student in mind. Provides a rational description of NMR spectroscopy without complicated mathematics.

Nuclear Magnetic Resonance (NMR) spectroscopy is one of the most powerful and widely used techniques in chemical research for investigating structures and dynamics of molecules. Advanced methods can even be utilized for structure determinations of biopolymers, for example proteins or nucleic acids. NMR is also used in medicine for magnetic resonance imaging (MRI). The method is based on spectral lines of different atomic nuclei that are excited when a strong magnetic field and a radiofrequency transmitter are applied. The method is very sensitive to the features of molecular structure because also the neighboring atoms influence the signals from individual nuclei and this is important for determining the 3D-structure of molecules. This new edition of the popular classic has a clear style and a highly practical, mostly non-mathematical approach. Many examples are taken from organic and organometallic chemistry, making this book an invaluable guide to undergraduate and graduate students of organic chemistry, biochemistry, spectroscopy or physical chemistry, and to researchers using this well-established and extremely important technique. Problems and solutions are included.

A recipient of the PROSE 2017 Honorable Mention in Chemistry & Physics, Radioactivity: Introduction and History, From the Quantum to Quarks, 2nd Edition provides a greatly expanded overview of radioactivity from natural and artificial sources on earth, radiation of cosmic origins, and an introduction to the atom and its nucleus. The book also includes historical accounts of the lives, works, and major achievements of many famous pioneers and Nobel Laureates from 1895 to the present. These leaders in the field have contributed to our knowledge of the science of the atom, its nucleus, nuclear decay, and subatomic particles that are part of our current knowledge of the structure of matter, including the role of quarks, leptons, and the bosons (force carriers). Users will find a completely revised and greatly expanded text that includes all new material that further describes the significant historical events on the topic dating from the 1950s to the present. Provides a detailed account of nuclear radiation - its origin and properties, the atom, its nucleus, and subatomic particles including quarks, leptons, and force carriers (bosons) Includes fascinating biographies of the pioneers in the field, including captivating anecdotes and insights Presents meticulous accounts of experiments and calculations used by pioneers to confirm their findings

Diffusion and Electrophoretic NMR experiments resolve chemical compounds based on their molecular motion. This publication introduces the basics of these methods and explains how they can be used to measure the size of molecules and aggregates, to determine degree of polymerization and to solve other chemical problems. Supplied with many case studies, the book is a must-have for students and researchers who work with practical NMR measurements.

Introduction and History, From the Quantum to Quarks

Shape Memory Polymers for Biomedical Applications

Protein NMR Spectroscopy

Simplified Theory, Applications and Examples for Organic Chemistry and Structural Biology

An Introduction to Principles, Applications, and Experimental Methods

Understanding NMR Spectroscopy

Protein NMR Spectroscopy, Second Edition combines a comprehensive theoretical treatment of NMR spectroscopy with an extensive exposition of the experimental techniques applicable to proteins and other biological macromolecules in solution. Beginning with simple theoretical models and experimental techniques, the book develops the complete repertoire of theoretical principles and experimental methods for protein NMR. The most sophisticated NMR experiments, important new techniques and applications of NMR spectroscopy have emerged since the first edition of this extremely successful book was published in 1996. This updated version includes new sections describing measurement and use of residual dipolar coupling constants for structure determination, TROSY and deuterium labeling for application to large proteins and membranes, and the use of relaxation-optimized experiments for studying fast dynamics. The book is written as a graduate-level textbook and will be of interest to biochemists, chemists, biophysicists, and structural biologists who utilize NMR spectroscopy or wish to understand the theoretical principles important to biological NMR spectroscopy. Demonstrates how to implement, optimize and troubleshoot modern multi-dimensional NMR experiments Allows for the capability of designing effective experimental protocols for investigations of protein structures and dynamics Includes a comprehensive set of example NMR spectra of ubiquitin provides a brief Dealing with the basics, theory and applications of dynamic pulsed-field-gradient NMR (PFG-NMR), this book describes the essential theory behind diffusion in heterogeneous media that can be combined with NMR measurements to extract important information of the system being investigated. This information could be the surface to volume ratio, droplet size distribution in emulsions, ring porous materials and medical applications currently being developed. Besides theory and applications it will provide the readers with background knowledge on the experimental set-ups, and most important, deal with the pitfalls that are notoriously present in work with PFG-NMR. How to analyze the NMR data and some important basic knowledge on the hardware will be explained. Too.

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 gained such significance as NMR spectroscopy. It is used in all branches of science in which precise structural determination is required and in which the nature of interactions and reactions in solution is being studied. The premier means for the specialist and non-specialist 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. * Highlights the increasing importance of NMR spectroscopy as a technique for structural determination.

Provides a practical introduction to graduate scientists and industrial researchers towards the understanding of the assignment of 1H NMR spectra. Discusses, and includes on enclosed CD, one of the best, the fastest and most applicable pieces of NMR prediction software available. Allows students of organic chemistry to solve problems in 1H NMR with accuracy in 300 assigned spectra.

Biological Environmental Science is an introductory textbook for undergraduate students who desire a one semester course or, alternatively, a springboard course for advanced environmental offerings. This book features timely issues such as global warming, air, ground and water pollutions, population growth, species extinction and environmental poli

Understanding 1D and 2D NMR Spectra of Organic Compounds and Natural Products

Ionic Liquids Completely UnCOILed

Analytical Techniques and Methods for Biomass

NMR Spectroscopy Explained

Modelling 1H NMR Spectra of Organic Compounds

Modern NMR Techniques for Synthetic Chemistry

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful and theoretically complex analytical tool. Basic 1H- and 13C-NMR Spectroscopy provides an introduction to the principles and applications of NMR spectroscopy. Whilst looking at the problems students encounter when using NMR spectroscopy, the author avoids the complicated mathematics that are applied within the field. Providing a rational description of the NMR phenomenon, this book is easy to read and is suitable for the undergraduate and graduate student in chemistry. Describes the fundamental principles of the pulse NMR experiment and 2D NMR spectra Easy to read and written with the undergraduate and graduate chemistry student in mind. Provides a rational description of NMR spectroscopy without complicated mathematics.

Nuclear Magnetic Resonance (NMR) spectroscopy is one of the most powerful and widely used techniques in chemical research for investigating structures and dynamics of molecules. Advanced methods can even be utilized for structure determinations of biopolymers, for example proteins or nucleic acids. NMR is also used in medicine for magnetic resonance imaging (MRI). The method is based on spectral lines of different atomic nuclei that are excited when a strong magnetic field and a radiofrequency transmitter are applied. The method is very sensitive to the features of molecular structure because also the neighboring atoms influence the signals from individual nuclei and this is important for determining the 3D-structure of molecules. This new edition of the popular classic has a clear style and a highly practical, mostly non-mathematical approach. Many examples are taken from organic and organometallic chemistry, making this book an invaluable guide to undergraduate and graduate students of organic chemistry, biochemistry, spectroscopy or physical chemistry, and to researchers using this well-established and extremely important technique. Problems and solutions are included.

A recipient of the PROSE 2017 Honorable Mention in Chemistry & Physics, Radioactivity: Introduction and History, From the Quantum to Quarks, 2nd Edition provides a greatly expanded overview of radioactivity from natural and artificial sources on earth, radiation of cosmic origins, and an introduction to the atom and its nucleus. The book also includes historical accounts of the lives, works, and major achievements of many famous pioneers and Nobel Laureates from 1895 to the present. These leaders in the field have contributed to our knowledge of the science of the atom, its nucleus, nuclear decay, and subatomic particles that are part of our current knowledge of the structure of matter, including the role of quarks, leptons, and the bosons (force carriers). Users will find a completely revised and greatly expanded text that includes all new material that further describes the significant historical events on the topic dating from the 1950s to the present. Provides a detailed account of nuclear radiation - its origin and properties, the atom, its nucleus, and subatomic particles including quarks, leptons, and force carriers (bosons) Includes fascinating biographies of the pioneers in the field, including captivating anecdotes and insights Presents meticulous accounts of experiments and calculations used by pioneers to confirm their findings

Diffusion and Electrophoretic NMR experiments resolve chemical compounds based on their molecular motion. This publication introduces the basics of these methods and explains how they can be used to measure the size of molecules and aggregates, to determine degree of polymerization and to solve other chemical problems. Supplied with many case studies, the book is a must-have for students and researchers who work with practical NMR measurements.

Introduction and History, From the Quantum to Quarks

Shape Memory Polymers for Biomedical Applications

Protein NMR Spectroscopy

Simplified Theory, Applications and Examples for Organic Chemistry and Structural Biology

An Introduction to Principles, Applications, and Experimental Methods

Understanding NMR Spectroscopy

Protein NMR Spectroscopy, Second Edition combines a comprehensive theoretical treatment of NMR spectroscopy with an extensive exposition of the experimental techniques applicable to proteins and other biological macromolecules in solution. Beginning with simple theoretical models and experimental techniques, the book develops the complete repertoire of theoretical principles and experimental methods for protein NMR. The most sophisticated NMR experiments, important new techniques and applications of NMR spectroscopy have emerged since the first edition of this extremely successful book was published in 1996. This updated version includes new sections describing measurement and use of residual dipolar coupling constants for structure determination, TROSY and deuterium labeling for application to large proteins and membranes, and the use of relaxation-optimized experiments for studying fast dynamics. The book is written as a graduate-level textbook and will be of interest to biochemists, chemists, biophysicists, and structural biologists who utilize NMR spectroscopy or wish to understand the theoretical principles important to biological NMR spectroscopy. Demonstrates how to implement, optimize and troubleshoot modern multi-dimensional NMR experiments Allows for the capability of designing effective experimental protocols for investigations of protein structures and dynamics Includes a comprehensive set of example NMR spectra of ubiquitin provides a brief Dealing with the basics, theory and applications of dynamic pulsed-field-gradient NMR (PFG-NMR), this book describes the essential theory behind diffusion in heterogeneous media that can be combined with NMR measurements to extract important information of the system being investigated. This information could be the surface to volume ratio, droplet size distribution in emulsions, ring porous materials and medical applications currently being developed. Besides theory and applications it will provide the readers with background knowledge on the experimental set-ups, and most important, deal with the pitfalls that are notoriously present in work with PFG-NMR. How to analyze the NMR data and some important basic knowledge on the hardware will be explained. Too.

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 gained such significance as NMR spectroscopy. It is used in all branches of science in which precise structural determination is required and in which the nature of interactions and reactions in solution is being studied. The premier means for the specialist and non-specialist 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. * Highlights the increasing importance of NMR spectroscopy as a technique for structural determination.

Provides a practical introduction to graduate scientists and industrial researchers towards the understanding of the assignment of 1H NMR spectra. Discusses, and includes on enclosed CD, one of the best, the fastest and most applicable pieces of NMR prediction software available. Allows students of organic chemistry to solve problems in 1H NMR with accuracy in 300 assigned spectra.

Biological Environmental Science is an introductory textbook for undergraduate students who desire a one semester course or, alternatively, a springboard course for advanced environmental offerings. This book features timely issues such as global warming, air, ground and water pollutions, population growth, species extinction and environmental poli

Understanding 1D and 2D NMR Spectra of Organic Compounds and Natural Products

Ionic Liquids Completely UnCOILed

Analytical Techniques and Methods for Biomass

NMR Spectroscopy Explained

Modelling 1H NMR Spectra of Organic Compounds

Modern NMR Techniques for Synthetic Chemistry

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful and theoretically complex analytical tool. Basic 1H- and 13C-NMR Spectroscopy provides an introduction to the principles and applications of NMR spectroscopy. Whilst looking at the problems students encounter when using NMR spectroscopy, the author avoids the complicated mathematics that are applied within the field. Providing a rational description of the NMR phenomenon, this book is easy to read and is suitable for the undergraduate and graduate student in chemistry. Describes the fundamental principles of the pulse NMR experiment and 2D NMR spectra Easy to read and written with the undergraduate and graduate chemistry student in mind. Provides a rational description of NMR spectroscopy without complicated mathematics.

Nuclear Magnetic Resonance (NMR) spectroscopy is one of the most powerful and widely used techniques in chemical research for investigating structures and dynamics of molecules. Advanced methods can even be utilized for structure determinations of biopolymers, for example proteins or nucleic acids. NMR is also used in medicine for magnetic resonance imaging (MRI). The method is based on spectral lines of different atomic nuclei that are excited when a strong magnetic field and a radiofrequency transmitter are applied. The method is very sensitive to the features of molecular structure because also the neighboring atoms influence the signals from individual nuclei and this is important for determining the 3D-structure of molecules. This new edition of the popular classic has a clear style and a highly practical, mostly non-mathematical approach. Many examples are taken from organic and organometallic chemistry, making this book an invaluable guide to undergraduate and graduate students of organic chemistry, biochemistry, spectroscopy or physical chemistry, and to researchers using this well-established and extremely important technique. Problems and solutions are included.

A recipient of the PROSE 2017 Honorable Mention in Chemistry & Physics, Radioactivity: Introduction and History, From the Quantum to Quarks, 2nd Edition provides a greatly expanded overview of radioactivity from natural and artificial sources on earth, radiation of cosmic origins, and an introduction to the atom and its nucleus. The book also includes historical accounts of the lives, works, and major achievements of many famous pioneers and Nobel Laureates from 1895 to the present. These leaders in the field have contributed to our knowledge of the science of the atom, its nucleus, nuclear decay, and subatomic particles that are part of our current knowledge of the structure of matter, including the role of quarks, leptons, and the bosons (force carriers). Users will find a completely revised and greatly expanded text that includes all new material that further describes the significant historical events on the topic dating from the 1950s to the present. Provides a detailed account of nuclear radiation - its origin and properties, the atom, its nucleus, and subatomic particles including quarks, leptons, and force carriers (bosons) Includes fascinating biographies of the pioneers in the field, including captivating anecdotes and insights Presents meticulous accounts of experiments and calculations used by pioneers to confirm their findings

Diffusion and Electrophoretic NMR experiments resolve chemical compounds based on their molecular motion. This publication introduces the basics of these methods and explains how they can be used to measure the size of molecules and aggregates, to determine degree of polymerization and to solve other chemical problems. Supplied with many case studies, the book is a must-have for students and researchers who work with practical NMR measurements.

Introduction and History, From the Quantum to Quarks

Shape Memory Polymers for Biomedical Applications

Protein NMR Spectroscopy

Simplified Theory, Applications and Examples for Organic Chemistry and Structural Biology

An Introduction to Principles, Applications, and Experimental Methods

Understanding NMR Spectroscopy

Protein NMR Spectroscopy, Second Edition combines a comprehensive theoretical treatment of NMR spectroscopy with an extensive exposition of the experimental techniques applicable to proteins and other biological macromolecules in solution. Beginning with simple theoretical models and experimental techniques, the book develops the complete repertoire of theoretical principles and experimental methods for protein NMR. The most sophisticated NMR experiments, important new techniques and applications of NMR spectroscopy have emerged since the first edition of this extremely successful book was published in 1996. This updated version includes new sections describing measurement and use of residual dipolar coupling constants for structure determination, TROSY and deuterium labeling for application to large proteins and membranes, and the use of relaxation-optimized experiments for studying fast dynamics. The book is written as a graduate-level textbook and will be of interest to biochemists, chemists, biophysicists, and structural biologists who utilize NMR spectroscopy or wish to understand the theoretical principles important to biological NMR spectroscopy. Demonstrates how to implement, optimize and troubleshoot modern multi-dimensional NMR experiments Allows for the capability of designing effective experimental protocols for investigations of protein structures and dynamics Includes a comprehensive set of example NMR spectra of ubiquitin provides a brief Dealing with the basics, theory and applications of dynamic pulsed-field-gradient NMR (PFG-NMR), this book describes the essential theory behind diffusion in heterogeneous media that can be combined with NMR measurements to extract important information of the system being investigated. This information could be the surface to volume ratio, droplet size distribution in emulsions, ring porous materials and medical applications currently being developed. Besides theory and applications it will provide the readers with background knowledge on the experimental set-ups, and most important, deal with the pitfalls that are notoriously present in work with PFG-NMR. How to analyze the NMR data and some important basic knowledge on the hardware will be explained. Too.

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 gained such significance as NMR spectroscopy. It is used in all branches of science in which precise structural determination is required and in which the nature of interactions and reactions in solution is being studied. The premier means for the specialist and non-specialist 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. * Highlights the increasing importance of NMR spectroscopy as a technique for structural determination.

Provides a practical introduction to graduate scientists and industrial researchers towards the understanding of the assignment of 1H NMR spectra. Discusses, and includes on enclosed CD, one of the best, the fastest and most applicable pieces of NMR prediction software available. Allows students of organic chemistry to solve problems in 1H NMR with accuracy in 300 assigned spectra.

Biological Environmental Science is an introductory textbook for undergraduate students who desire a one semester course or, alternatively, a springboard course for advanced environmental offerings. This book features timely issues such as global warming, air, ground and water pollutions, population growth, species extinction and environmental poli

Understanding 1D and 2D NMR Spectra of Organic Compounds and Natural Products

Ionic Liquids Completely UnCOILed

Analytical Techniques and Methods for Biomass

NMR Spectroscopy Explained

Modelling 1H NMR Spectra of Organic Compounds

Modern NMR Techniques for Synthetic Chemistry

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful and theoretically complex analytical tool. Basic 1H- and 13C-NMR Spectroscopy provides an introduction to the principles and applications of NMR spectroscopy. Whilst looking at the problems students encounter when using NMR spectroscopy, the author avoids the complicated mathematics that are applied within the field. Providing a rational description of the NMR phenomenon, this book is easy to read and is suitable for the undergraduate and graduate student in chemistry. Describes the fundamental principles of the pulse NMR experiment and 2D NMR spectra Easy to read and written with the undergraduate and graduate chemistry student in mind. Provides a rational description of NMR spectroscopy without complicated mathematics.

Nuclear Magnetic Resonance (NMR) spectroscopy is one of the most powerful and widely used techniques in chemical research for investigating structures and dynamics of molecules. Advanced methods can even be utilized for structure determinations of biopolymers, for example proteins or nucleic acids. NMR is also used in medicine for magnetic resonance imaging (MRI). The method is based on spectral lines of different atomic nuclei that are excited when a strong magnetic field and a radiofrequency transmitter are applied. The method is very sensitive to the features of molecular structure because also the neighboring atoms influence the signals from individual nuclei and this is important for determining the 3D-structure of molecules. This new edition of the popular classic has a clear style and a highly practical, mostly non-mathematical approach. Many examples are taken from organic and organometallic chemistry, making this book an invaluable guide to undergraduate and graduate students of organic chemistry, biochemistry, spectroscopy or physical chemistry, and to researchers using this well-established and extremely important technique. Problems and solutions are included.

A recipient of the PROSE 2017 Honorable Mention in Chemistry & Physics, Radioactivity: Introduction and History, From the Quantum to Quarks, 2nd Edition provides a greatly expanded overview of radioactivity from natural and artificial sources on earth, radiation of cosmic origins, and an introduction to the atom and its nucleus. The book also includes historical accounts of the lives, works, and major achievements of many famous pioneers and Nobel Laureates from 1895 to the present. These leaders in the field have contributed to our knowledge of the science of the atom, its nucleus, nuclear decay, and subatomic particles that are part of our current knowledge of the structure of matter, including the role of quarks, leptons, and the bosons (force carriers). Users will find a completely revised and greatly expanded text that includes all new material that further describes the significant historical events on the topic dating from the 1950s to the present. Provides a detailed account of nuclear radiation - its origin and properties, the atom, its nucleus, and subatomic particles including quarks, leptons, and force carriers (bosons) Includes fascinating biographies of the pioneers in the field, including captivating anecdotes and insights Presents meticulous accounts of experiments and calculations used by pioneers to confirm their findings

Diffusion and Electrophoretic NMR experiments resolve chemical compounds based on their molecular motion. This publication introduces the basics of these methods and explains how they can be used to measure the size of molecules and aggregates, to determine degree of polymerization and to solve other chemical problems. Supplied with many case studies, the book is a must-have for students and researchers who work with practical NMR measurements.

Introduction and History, From the Quantum to Quarks

Shape Memory Polymers for Biomedical Applications

Protein NMR Spectroscopy

Simplified Theory, Applications and Examples for Organic Chemistry and Structural Biology

An Introduction to Principles, Applications, and Experimental Methods

Understanding NMR Spectroscopy

Protein NMR Spectroscopy, Second Edition combines a comprehensive theoretical treatment of NMR spectroscopy with an extensive exposition of the experimental techniques applicable to proteins and other biological macromolecules in solution. Beginning with simple theoretical models and experimental techniques, the book develops the complete repertoire of theoretical principles and experimental methods for protein NMR. The most sophisticated NMR experiments, important new techniques and applications of NMR spectroscopy have emerged since the first edition of this extremely successful book was published in 1996. This updated version includes new sections describing measurement and use of residual dipolar coupling constants for structure determination, TROSY and deuterium labeling for application to large proteins and membranes, and the use of relaxation-optimized experiments for studying fast dynamics. The book is written as a graduate-level textbook and will be of interest to biochemists, chemists, biophysicists, and structural biologists who utilize NMR spectroscopy or wish to understand the theoretical principles important to biological NMR spectroscopy. Demonstrates how to implement, optimize and troubleshoot modern multi-dimensional NMR experiments Allows for the capability of designing effective experimental protocols for investigations of protein structures and dynamics Includes a comprehensive set of example NMR spectra of ubiquitin provides a brief Dealing with the basics, theory and applications of dynamic pulsed-field-gradient NMR (PFG-NMR), this book describes the essential theory behind diffusion in heterogeneous media that can be combined with NMR measurements to extract important information of the system being investigated. This information could be the surface to volume ratio, droplet size distribution in emulsions, ring porous materials and medical applications currently being developed. Besides theory and applications it will provide the readers with background knowledge on the experimental set-ups, and most important, deal with the pitfalls that are notoriously present in work with PFG-NMR. How to analyze the NMR data and some important basic knowledge on the hardware will be explained. Too.

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 gained such significance as NMR spectroscopy. It is used in all branches of science in which precise structural determination is required and in which the nature of interactions and reactions in solution is being studied. The premier means for the specialist and non-specialist 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. * Highlights the increasing importance of NMR spectroscopy as a technique for structural determination.

Provides a practical introduction to graduate scientists and industrial researchers towards the understanding of the assignment of 1H NMR spectra. Discusses, and includes on enclosed CD, one of the best, the fastest and most applicable pieces of NMR prediction software available. Allows students of organic chemistry to solve problems in 1H NMR with accuracy in 300 assigned spectra.

Biological Environmental Science is an introductory textbook for undergraduate students who desire a one semester course or, alternatively, a springboard course for advanced environmental offerings. This book features timely issues such as global warming, air, ground and water pollutions, population growth, species extinction and environmental poli

Understanding 1D and 2D NMR Spectra of Organic Compounds and Natural Products

Ionic Liquids Completely UnCOILed

Analytical Techniques and Methods for Biomass

NMR Spectroscopy Explained

Modelling 1H NMR Spectra of Organic Compounds

Modern NMR Techniques for Synthetic Chemistry

Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful and theoretically complex analytical tool. Basic 1H- and 13C-NMR Spectroscopy provides an introduction to the principles and applications of NMR spectroscopy. Whilst looking at the problems students encounter when using NMR spectroscopy, the author avoids the complicated mathematics that are applied within the field. Providing a rational description of the NMR phenomenon, this book is easy to read and is suitable for the undergraduate and graduate student in chemistry. Describes the fundamental principles of the pulse NMR experiment and 2D NMR spectra Easy to read and written with the undergraduate and graduate chemistry student in mind. Provides a rational description of NMR spectroscopy without complicated mathematics.

Nuclear Magnetic Resonance (NMR) spectroscopy is one of the most powerful and widely used techniques in chemical research for investigating structures and dynamics of molecules. Advanced methods can even be utilized for structure determinations of biopolymers, for example proteins or nucleic acids. NMR is also used in medicine for magnetic resonance imaging (MRI). The method is based on spectral lines of different atomic nuclei that are excited when a strong magnetic field and a radiofrequency transmitter are applied. The method is very sensitive to the features of molecular structure because also the neighboring atoms influence the signals from individual nuclei and this is important for determining the 3D-structure of molecules. This new edition of the popular classic has a clear style and a highly practical, mostly non-mathematical approach. Many examples are taken from organic and organometallic chemistry, making this book an invaluable guide to undergraduate and graduate students of organic chemistry, biochemistry, spectroscopy or physical chemistry, and to researchers using this well-established and extremely important technique. Problems and solutions are included.

A recipient of the PROSE 2017 Honorable Mention in Chemistry & Physics, Radioactivity: Introduction and History, From the Quantum to Quarks, 2nd Edition provides a greatly expanded overview of radioactivity from natural and artificial sources on earth, radiation of cosmic origins, and an introduction to the atom and its nucleus. The book also includes historical accounts of the lives, works, and major achievements of many famous pioneers and Nobel Laureates from 1895 to the present. These leaders in the field have contributed to our knowledge of the science of the atom, its nucleus, nuclear decay, and subatomic particles that are part of our current knowledge of the structure of matter, including the role of quarks, leptons, and the bosons (force carriers). Users will find a completely revised and greatly expanded text that includes all new material that further describes the significant historical events on the topic dating from the 1950s to the present. Provides a detailed account of nuclear radiation - its origin and properties, the atom, its nucleus, and subatomic particles including quarks, leptons, and force carriers (bosons) Includes fascinating biographies of the pioneers in the field, including captivating anecdotes and insights Presents meticulous accounts of experiments and calculations used by pioneers to confirm their findings

Diffusion and Electrophoretic NMR experiments resolve chemical compounds based on their molecular motion. This publication introduces the basics of these methods and explains how they can be used to measure the size of molecules and aggregates, to determine degree of polymerization and to solve other chemical problems. Supplied with many case studies, the book is a must-have for students and researchers who work with practical NMR measurements.

Introduction and History, From the Quantum to Quarks

Shape Memory Polymers for Biomedical Applications

Protein NMR Spectroscopy

Simplified Theory, Applications and Examples for Organic Chemistry and Structural Biology

An Introduction to Principles, Applications, and Experimental Methods

Understanding NMR Spectroscopy

Protein NMR Spectroscopy, Second Edition combines a comprehensive theoretical treatment of NMR spectroscopy with an extensive exposition of the experimental techniques applicable to proteins and other biological macromolecules in solution. Beginning with simple theoretical models and experimental techniques, the book develops the complete repertoire of theoretical principles and experimental methods for protein NMR. The most sophisticated NMR experiments, important new techniques and applications of NMR spectroscopy have emerged since the first edition of this extremely successful book was published in 1996. This updated version includes new sections describing measurement and use of residual dipolar coupling constants for structure determination, TROSY and deuterium labeling for application to large proteins and membranes, and the use of relaxation-optimized experiments for studying fast dynamics. The book is written as a graduate-level textbook and will be of interest to biochemists, chemists, biophysicists, and structural biologists who utilize NMR spectroscopy or wish to understand the theoretical principles important to biological NMR spectroscopy. Demonstrates how to implement, optimize and troubleshoot modern multi-dimensional NMR experiments Allows for the capability of designing effective experimental protocols for investigations of protein structures and dynamics Includes a comprehensive set of example NMR spectra of ubiquitin provides a brief Dealing with the basics, theory and applications of dynamic pulsed-field-gradient NMR (PFG-NMR), this book describes the essential theory behind diffusion in heterogeneous media that can be combined with NMR measurements to extract important information of the system being investigated. This information could be the surface to volume ratio, droplet size distribution in emulsions, ring porous materials and medical applications currently being developed. Besides theory and applications it will provide the readers with background knowledge on the experimental set-ups, and most important, deal with the pitfalls that are notoriously

products and uses of biomass. The quality of the biomass used determines the product quality. Therefore, reliable information is required about the chemical composition of the biomass to establish the best use (e.g., most suitable conversion process and its conditions), which will influence harvest and preparation steps. Conversion processes should be monitored for their yield, integrity, safety, and environmental impact. Effluent or residues should be monitored and analyzed for environmental control. Co-products need to be monitored to avoid interference with the product yield and product purity; however, co-products are also a good opportunity to add value to the biomass chain. Finally, products need to be monitored and analyzed to determine their yields and purity and to ensure their quality. In this context, analytical chemistry can contribute significantly to the biomass supply chains, be it of plant or animal origin.