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Jackman - 1978

Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry - Lloyd Miles

Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry, Second Edition focuses on the applications of nuclear magnetic resonance...
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**Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry** - Lloyd Miles Jackman - 1978

Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry, Second Edition focuses on the applications of nuclear magnetic resonance spectroscopy to problems in organic chemistry and the theories involved in this kind of spectroscopy. The book first discusses the theory of nuclear magnetic resonance, including dynamic and magnetic properties of atomic and relaxation process. The manuscript also examines the experimental method. Topics include experimental factors that influence resolution and the shapes of absorption lines; measurement of line position.


Combines clear and concise discussions of key NMR concepts with succinct and illustrative examples. Designed to cover a full course in Nuclear Magnetic Resonance (NMR) Spectroscopy, this text offers complete coverage of classic (one-dimensional) NMR as well as up-to-date coverage of two-dimensional NMR and other modern methods. It contains practical advice, theory, illustrated applications, and classroom-tested problems; looks at such important ideas as relaxation, NOEs, phase cycling, and processing parameters; and provides brief, yet fully comprehensible, examples. It also uniquely lists all of the
advice relative to the experiments including mixing times, number of scans, relaxation times, and more. Nuclear Magnetic Resonance Spectroscopy: An Introduction to Principles, Applications, and Experimental Methods, 2nd Edition begins by introducing readers to NMR spectroscopy - an analytical technique used in modern chemistry, biochemistry, and biology that allows identification and characterization of organic, and some inorganic, compounds. It offers chapters covering: Experimental Methods; The Chemical Shift; The Coupling Constant; Further Topics in One-Dimensional NMR Spectroscopy; Two-Dimensional NMR Spectroscopy; Advanced Experimental Methods; and Structural Elucidation. Features classical analysis of chemical shifts and coupling constants for both protons and other nuclei, as well as modern multi-pulse and multi-dimensional methods Contains experimental procedures and practical execution of NMR experiments Includes a chapter-long, worked-out problem that illustrates the application of nearly all current methods Offers appendices containing the theoretical basis of NMR, including the most modern approach that uses product operators and coherence-level diagrams By offering a balance between volumes aimed at NMR specialists and the structure-determination-only books that focus on synthetic organic chemists, Nuclear Magnetic Resonance Spectroscopy: An Introduction to Principles, Applications, and Experimental Methods, 2nd Edition is an excellent text for students and post-graduate students working in analytical and bio-sciences, as well as scientists who use NMR spectroscopy as a primary tool in their work.

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APPLICATIONS OF NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY. - L M. Jackman - 1959

APPLICATIONS OF NUCLEAR MAGNETIC RESONANCE

Single-Sided NMR - Federico Casanova - 2011-01-28
This book describes the design of the first functioning single-sided tomograph, the related measurement methods, and a number of applications in medicine, materials science, and chemical engineering. It will be the first comprehensive account of this new device and its applications. Among the key advances of this method is that images can be obtained in much shorter times than originally anticipated, and that even vector maps of flow fields can be measured although the magnetic fields are highly inhomogeneous. Furthermore, the equipment is small, mobile and affordable to small and medium enterprises and can be located in doctors’ offices.
Nuclear Magnetic Resonance - Vasudevan Ramesh - 2016-04-28
This volume will focus on a theme - NMR applications in industry and providing a comprehensive yet critical review of the current literature from various industries.

Nuclear magnetic Resonance in biochemistry - Thomas James - 2012-12-02
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 next two chapters discuss the theoretical basis for NMR applications in biochemistry, with emphasis on Bloch equations, quantum mechanics, correlation function and correlation time, double resonance, and chemical exchange. The reader is then introduced to the basis for chemical shifts and spin-spin splitting, along with several examples of the use of these NMR parameters in studies of small molecule interactions and structure. The experimental apparatus and procedures employed in NMR studies, Fourier transform NMR, and NMR spectral parameters of small molecules interacting with macromolecules are also considered. The book highlights the information obtainable from the spectra of biopolymers, and then concludes with a chapter on NMR investigations of the state of motion of lipids in membranes and model membranes; water in macromolecular and cellular systems; and sodium ion in biological tissue. This book is intended primarily for chemists, biochemists, biophysicists, and molecular biologists, as well as graduate students.

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Applications of Nuclear Magnetic Resonance

Spectroscopy in Organic Chemistry - Lloyd Miles Jackman - 1959

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Magnetic Resonance and Its Applications - Vladimir I. Chizhik - 2014-04-08
The book is devoted to the description of the fundamentals in the area of magnetic resonance. The book covers two domains: radiospectroscopy and quantum radioelectronics. Radiospectroscopy comprises nuclear magnetic resonance, electron paramagnetic resonance, nuclear quadrupolar resonance, and some other phenomena. The radiospectroscopic methods are widely used for obtaining the information on internal (nano, micro and macro) structure of objects. Quantum radioelectronics, which was developed on the basis of radiospectroscopic methods, deals with processes in...
structure of objects. Quantum generators and magnetometers. We do not know analogues of the book presented. The book implies a few levels of the general consideration of phenomena, that can be useful for different groups of readers (students, PhD students, scientists from other scientific branches: physics, chemistry, physical chemistry, biochemistry, biology and medicine).

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**Nuclear Magnetic Resonance** - K.-J. Dunn - 2002-01-25
The applications of nuclear magnetic resonance (NMR) to petroleum exploration and production have become more and more important in recent years. The development of the NMR logging technology and the NMR applications to core analysis and formation evaluation have been very rapid and extensive. The scope of this book covers a
The applications of nuclear magnetic resonance (NMR) to petroleum exploration and production have become more and more important in recent years. The development of the NMR logging technology and the NMR applications to core analysis and formation evaluation have been very rapid and extensive. The scope of this book covers a wide range of NMR related petrophysical measurements on cores including brief descriptions of recent applications of Magic Angle Spinning (MAS) NMR and the basics of NMR imaging of cores. In the discussion of NMR logging applications various schemes of using NMR logs to obtain necessary information for formation evaluation are outlined, such as irreducible water saturation determination, hydrocarbon typing, oil viscosity estimation, and permeability prediction. The principles of these applications are discussed using schematic diagrams for illustration. A unique aspect of the book is that it provides a detailed account of the basic principles of spin diffusion and relaxation in porous media. Another important area that is covered is the inversion of NMR data into a distribution of amplitudes associated with relaxation time which provides the basic information needed to interpret the NMR measurements obtained from logging.
Applications of NMR Spectroscopy: - Atta-ur-Rahman - 2015-12-10

Applications of NMR Spectroscopy, Volume 2, originally published by Bentham and now distributed by Elsevier, presents the latest developments in the field of NMR spectroscopy, including the analysis of plant polyphenols, the role of NMR spectroscopy in neuroradiology, NMR-based sensors, studies on protein and nucleic acid structure and function, and mathematical formations for NMR spectroscopy in structural biology. The fully illustrated chapters contain comprehensive references to the recent literature. 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 with broad applications. 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. Sections are organized based on disciplines, such as food science and medical diagnostics. Each chapter is written by eminent experts in the field. 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 65 illustrations aid in the retention of key concepts
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Application of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry, Second Edition covers the theoretical background necessary for the intelligent application of NMR spectroscopy to common problems encountered in organic chemistry. This book is composed of five parts, and begins with introduction to the theory and practice of nuclear magnetic resonance. The succeeding chapter deals with the theory of chemical effects in NMR spectroscopy. These topics are followed by a discussion on the application of chemical shift to organic compound analysis and the principles of the spin-spin coupling. The final chapter considers the applications of time-dependent phenomena in NMR spectroscopy. This book will prove useful to analytical chemists and researchers in the allied fields.


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**NMR in Medicine** - R. Damadian - 2013-03-09

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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.
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.


Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry, Second Edition focuses on the applications of nuclear magnetic resonance organic chemistry and the theories involved in this kind of spectroscopy. The book first discusses the theory of nuclear magnetic resonance, including dynamic and magnetic properties of atomic nuclei, nuclear resonance, and relaxation process. The manuscript also examines the experimental method. Topics include experimental factors that influence resolution and the shapes of absorption lines; measurement of line positions and identification of the chemical shift; and measurement of intensities. The text reviews the theories of chemical effects in nuclear magnetic resonance spectroscopy and spin-spin multiplicity and the theory and applications of multiple irradiation. The book also tackles the theory of chemical shift, including the classification of shielding effects, local diamagnetic proton shielding, solvent effects, and contact shifts. The publication is a dependable source of data for readers interested in the applications of nuclear
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**Some Applications of Nuclear Magnetic Resonance** - John A. Underhill - 1951

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**Chemical Applications of Nuclear Magnetic Resonance** - C. W. J. Hirst - 1970

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Some Applications of Nuclear Magnetic Resonance Spectroscopy - R. P. H. Gasser - 1959

Applications of nuclear magnetic resonance span a wide range of scientific disciplines, from physics to medicine. For those wanting to become acquainted with NMR or seasoned practitioners, this is a valuable source of current methods and applications.


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.
Applications of NMR Spectroscopy; Vol. 6 - Atta-ur-Rahman - 2017-12-04

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.

Nuclear Magnetic Resonance - John D. Roberts - 1959

Applications of Nuclear Magnetic Resonance Spectroscopy in Pathology - George K. Radda - 1985

Applications of Nuclear Magnetic Resonance Spectroscopy in Pathology -
principles behind the use of magnetic field gradients to image molecular distribution and molecular motion, providing many examples by way of illustration. Following excellent reviews of the hardback edition the book is now available in paperback.

Some Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry - Bela Ternai - 1966

Applications of Nuclear Magnetic Resonance Spectroscopy in Organic - L. M. Jackman - 1959

Application of Nuclear Magnetic Resonance Spectroscopy to the Study of Medium-sized Rings.
Solid State NMR - Klaus Müller - 2021-09-07
Solid State NMR A thorough and comprehensive textbook covering the theoretical background, experimental approaches, and major applications of solid-state NMR spectroscopy Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful non-destructive technique capable of providing information about the molecular structure and dynamics of molecules. Alongside solution-state NMR, a well-established technique to study chemical structures and investigate physico-

molecules in solutions, solid-state NMR (SSNMR) offers many exciting possibilities for the analysis of solid and soft materials across scientific fields. SSNMR shows unique capabilities for a detailed investigation of structural and dynamic properties of materials over wide space and time ranges. For this reason, and thanks to significant advances in the past several years, the application of SSNMR to materials is rapidly increasing in disciplines such as chemistry, physics, and materials and life sciences. Solid State NMR: Principles, Methods, and Applications offers a systematic introduction to the theory, methodological concepts, and major experimental methods of SSNMR spectroscopy. Exploring the unique potential of SSNMR for the structural and dynamic characterization of soft and either amorphous or crystalline solid materials, this comprehensive textbook provides foundational knowledge and recent developments of SSNMR, covering physical and
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APPLICATIONS OF NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY IN ORGANIC CHEMISTRY (Volume 5). - LM. JACKMAN - 1959

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**Some Applications of Nuclear Magnetic Resonance to Inorganic Chemistry** - O. W. Howarth - 1965

**Some Biochemical Applications of Nuclear Magnetic Resonance** - Raymond Henson - 1972

**Nuclear Magnetic Resonance in Agriculture** - Philip E. Pfeffer - 1989-04-30

This informative publication presents the broad application of nuclear magnetic resonance to many of today's problem areas in agriculture. Solid-state NMR methodology is covered, with its applications to the study of intact agricultural matrices.

photosynthetic chloroplast membranes, forages, wood cellulose, and soils. In vivo solution NMR methodology and its applications to the study of different functioning plant tissues and their biochemical responses to various pathological, physiological, and toxicological stresses are illustrated with examples using 31P, 13C, 23Na, and 15N resonance methods. An introductory chapter presents a review of the in vivo literature and some basic principles and requirements for carrying out such experiments. A special section focuses on state-of-the-art 13C and 1H high-resolution multidimensional methods and their application to the study of agricultural toxins; biologically active components, including their structures and biosyntheses, and dynamic measurements of relaxation phenomena associated with cross relaxation in water bound to food proteins.
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Applications of Nuclear Magnetic Resonance Techniques in Food Research - John O'Brien (toxicoloog.) - 1992

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The idea that a long-lived form of spin order, namely singlet order, can be prepared from nuclear spin magnetisation first emerged in 2004. The unusual properties of singlet order—its long lifetime and the fact that it is NMR silent but interconvertible into other forms of NMR active order—make it a ‘smart tag’ that can be used to store information for a long time or through distant space points. It is not unexpected then, that since its first appearance, this idea has caught the attention of research groups interested in exploiting this form of order in different fields of research spanning from biology to materials science and from hyperpolarisation to quantum computing. This first book on the subject gives a thorough description of the various aspects that affect the development of the topic and details the interdisciplinary applications. The book starts with a section dedicated to the basic theories of long-lived spin order and then proceeds with a description of experimental techniques developed to manipulate singlet order. It then concludes by covering the generalization of the concept of singlet order by introducing and discussing other forms of long-lived spin order.

**Long-lived Nuclear Spin Order - Giuseppe Pileio -**

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Some Chemical Applications of Nuclear Magnetic Resonance - Christopher Deverell - 1966

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Magnetic Resonance Imaging - Vadim Kuperman - 2000-03-15
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researchers, and professors interested in physical and biomedical applications of Magnetic Resonance Imaging (MRI). Both the theoretical and practical aspects of MRI are emphasized. The book begins with a comprehensive discussion of the Nuclear Magnetic Resonance (NMR) phenomenon based on quantum mechanics and the classical theory of electromagnetism. The first three chapters of this book provide the foundation needed to understand the basic characteristics of MR images, e.g., image contrast, spatial resolution, signal-to-noise ratio, common image artifacts. Then MRI applications are considered in the following five chapters. Both the theoretical and practical aspects of MRI are emphasized. The book ends with a discussion of instrumentation and the principles of signal detection in MRI. Clear progression from fundamental physical principles of NMR to MRI and its applications Extensive discussion of image
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**Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chemistry**

Chemistry, by L.M. Jackman and S. Sternhell - Lloyd Miles Jackman - 1969