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KEY=CHAPTER - CECELIA CABRERA

Radiochemistry and Nuclear Chemistry

Elsevier Radiochemistry or Nuclear Chemistry is the study of radiation from an atomic or molecular perspective, including elemental transformation and reaction effects, as well as physical, health and medical properties. This revised edition of one of the earliest and best known books on the subject has been updated to bring into teaching the latest developments in research and the current hot topics in the field. In order to further enhance the functionality of this text, the authors have added numerous teaching aids that include an interactive website that features testing, examples in MathCAD with variable quantities and options, hotlinks to relevant text sections from the book, and online self-grading texts. As in the previous edition, readers can closely follow the structure of the chapters from the broad introduction through the more in depth descriptions of radiochemistry then nuclear radiation chemistry and finally the guide to nuclear energy (including energy production, fuel cycle, and waste management). New edition of a well-known, respected text in the specialized field of nuclear/radiochemistry Includes an interactive website with testing and evaluation modules based on exercises in the book Suitable for both radiochemistry and nuclear chemistry courses

Nuclear and Radiochemistry, 2 Volume Set

Fundamentals and Applications

John Wiley & Sons The third edition of this classic in the field is completely updated and revised with approximately 30% new content so as to include the latest developments. The handbook and ready reference comprehensively covers nuclear and radiochemistry in a well-structured and readily accessible manner, dealing with the theory and fundamentals in the first half, followed by chapters devoted to such specific topics as nuclear energy and reactors, radiotracers, and radionuclides in the life sciences. The result is a valuable resource for both newcomers as well as established scientists in the field.

Chemistry: An Atoms First Approach

Cengage Learning Steve and Susan Zumdahl's texts focus on helping students build critical thinking skills through the process of becoming independent problem-solvers. They help students learn to think like a chemists so they can apply the problem solving process to all aspects of their lives. In CHEMISTRY: AN ATOMS FIRST APPROACH, the Zumdahls use a meaningful approach that begins with the atom and proceeds through the concept of molecules, structure, and bonding, to more complex materials and their properties. Because this approach differs from what most students have experienced in high school courses, it encourages them to focus on conceptual learning early in the course, rather than relying on memorization and a plug and chug method of problem solving that even the best students can fall back on when confronted with familiar material. The atoms first organization provides an opportunity for students to use the tools of critical thinkers: to ask questions, to apply rules and models and to evaluate outcomes. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Nuclear and Radiochemistry

Exploring Chemistry

W. H. Freeman Matthew Johll's *Exploring Chemistry* covers the standard topics for the nonmajors course in the typical order, but each chapter unfolds in the context of a single case study that helps students connect what they are learning to real-life situations. For example, students work through the often-difficult topics of molecular structure, gas laws, and organic chemistry by learning about the development of powerful new chemotherapy drugs, new technologies for screening airline passengers, and the creation of biodegradable biopolymers. It's the same case-driven approach that Johll uses in his acclaimed *Investigating Chemistry* (now in its Third Edition) but *Exploring Chemistry* goes beyond the other book's specific focus on examples from forensic science to use real-life stories from cooking, athletics, genetics, green chemistry, and more.

High-resolution NMR Techniques in Organic Chemistry

Elsevier From the initial observation of proton magnetic resonance in water and in paraffin, the discipline of nuclear magnetic resonance has seen unparalleled growth as an analytical method. Modern NMR spectroscopy is a highly developed, yet still evolving, subject which finds application in chemistry, biology, medicine, materials science and geology. In this book, emphasis is on the more recently developed methods of solution-state NMR applicable to chemical research, which are chosen for their wide applicability and robustness. These have, in many cases, already become established techniques in NMR laboratories, in both academic and industrial establishments. A considerable amount of information and guidance is given on the implementation and execution of the techniques described in this book.

General, Organic, and Biological Chemistry

Cengage Learning Emphasizing the applications of chemistry and minimizing complicated mathematics, *GENERAL, ORGANIC, AND BIOLOGICAL CHEMISTRY, 7E* is written throughout to help students succeed in the course and master the biochemistry content so important to their future careers. The Seventh Edition's clear explanations, visual support, and effective pedagogy combine to make the text ideal for allied health majors. Early chapters focus on fundamental chemical principles while later chapters build on the foundations of these principles. Mathematics is introduced at point-of-use and only as needed. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Radiochemistry and Nuclear Chemistry

Butterworth-Heinemann Origin of Nuclear Science; Nuclei, Isotopes and Isotope Separation; Nuclear Mass and Stability; Unstable Nuclei and Radioactive Decay; Radionuclides in Nature; Absorption of Nuclear Radiation; Radiation Effects on Matter; Detection and Measurement Techniques; Uses of Radioactive Tracers; Cosmic Radiation and Elementary Particles; Nuclear Structure; Energetics of Nuclear Reactions; Particle Accelerators; Mechanics and Models of Nuclear Reactions; Production of Radionuclides; The Transuranium Elements; Thermonuclear Reactions: the Beginning and the Future; Radiation Biology and Radiation Protection; Principles of Nuclear Power; Nuclear Power Reactors; Nuclear Fuel Cycle; Behavior of Radionuclides in the Environment; Appendices; Solvent Extraction Separations; Answers to Exercises; Isotope Chart; Periodic Table of the Elements; Quantities and Units; Fundamental Constants; Energy Conversion Factors; Element and Nuclide Index; Subject Index.

An Introduction to Nuclear Waste Immobilisation

Newnes Drawing on the authors' extensive experience in the processing and disposal of waste, *An Introduction to Nuclear Waste Immobilisation, Second Edition* examines the gamut of nuclear waste issues from the natural level of radionuclides in the environment to geological disposal of waste-forms and their long-term behavior. It covers all-important aspects of processing and immobilization, including nuclear decay, regulations, new technologies and methods. Significant focus is given to the analysis of the various matrices used,

especially cement and glass, with further discussion of other matrices such as bitumen. The final chapter concentrates on the performance assessment of immobilizing materials and safety of disposal, providing a full range of the resources needed to understand and correctly immobilize nuclear waste. The fully revised second edition focuses on core technologies and has an integrated approach to immobilization and hazards. Each chapter focuses on a different matrix used in nuclear waste immobilization: cement, bitumen, glass and new materials. Keeps the most important issues surrounding nuclear waste - such as treatment schemes and technologies and disposal - at the forefront.

Chemistry 2e

Principles of Nuclear Chemistry

World Scientific Publishing Company Principles of Nuclear Chemistry is an introductory text in nuclear chemistry and radiochemistry, aimed at undergraduates with little or no knowledge of physics. It covers the key aspects of modern nuclear chemistry and includes worked solutions to end of chapter questions. The text begins with basic theories in contemporary physics and uses these to introduce some fundamental mathematical techniques. It relates nuclear phenomena to key divisions of chemistry such as atomic structure, spectroscopy, equilibria and kinetics. It also gives an introduction to f-block chemistry and the nuclear power industry. This book is essential reading for those taking a first course in nuclear chemistry and is a useful companion to other volumes in physical and analytical chemistry. It will also be of use to those new to working in nuclear chemistry or radiochemistry.

Modern Nuclear Chemistry

John Wiley & Sons Written by established experts in the field, this book features in-depth discussions of proven scientific principles, current trends, and applications of nuclear chemistry to the sciences and engineering. • Provides up-to-date coverage of the latest research and examines the theoretical and practical aspects of nuclear and radiochemistry • Presents the basic physical principles of nuclear and radiochemistry in a succinct fashion, requiring no basic knowledge of quantum mechanics • Adds discussion of math tools and simulations to demonstrate various phenomena, new chapters on Nuclear Medicine, Nuclear Forensics and Particle Physics, and updates to all other chapters • Includes additional in-chapter sample problems with solutions to help students • Reviews of 1st edition: "... an authoritative, comprehensive but succinct, state-of-the-art textbook" (The Chemical Educator) and "...an excellent resource for libraries and laboratories supporting programs requiring familiarity with nuclear processes ..." (CHOICE)

Handbook of nuclear chemistry

Instrumentation, separation techniques environmental issues

Springer Science & Business Media

Metal-based Anticancer Agents

Royal Society of Chemistry Metal-based anticancer drugs are among the most successful therapeutic agents, as evidenced by the frequent prescription of selected platinum and arsenic compounds to patients. Metal-based Anticancer Agents covers the interdisciplinary world of inorganic drug discovery and development by introducing the most prominent compound classes based on different transition metals, discussing emerging concepts and enabling methods, as well as presenting key pre-clinical and clinical aspects. Recent progress on the unique features of next-generation targeted metal-based anticancer agents, including supramolecular coordination complexes used for both therapy and drug delivery, promise a bright future beyond the benefits of pure cytotoxic activity. With contributions from global leaders in the field, this book will serve as a useful reference to established researchers as well as a practical guide to those new to metallodrugs, and postgraduate students of medicinal chemistry and metallobiology.

Chemistry

McGraw-Hill Higher Education Designed for the two-semester general chemistry course, Chang's best-selling textbook continues to take a traditional approach and is often considered a student and teacher favorite. The book features a straightforward, clear writing style and proven problem-solving strategies. It continues the tradition of providing a firm foundation in chemical concepts and principles while presenting a broad range of topics in a clear, concise manner. The tradition of "Chemistry" has a new addition with co-author, Kenneth Goldsby from Florida State University, adding variations to the 11th edition. The organization of the chapter order has changed with nuclear chemistry moving up in the chapter order. There is a new problem type - Interpreting, Modeling, and Estimating - fully demonstrating what a real life chemist does on a daily basis. The authors have added over 340 new problems to the book. The new edition of "Chemistry" continues to strike a balance between theory and application by incorporating real examples and helping students visualize the three-dimensional atomic and molecular structures that are the basis of chemical activity. An integral part of the text is to develop students' problem-solving and critical thinking skills. The 11th edition continues to deliver the integration of tools designed to inspire both students and instructors. Effective technology is integrated throughout the book.

Complete Companion for JEE Main 2020 Che

Pearson Education India Complete Companion for JEE Main series has been designed to be an independent resource to enable faster and effective learning. This series includes three separate books on Physics, Chemistry and Mathematics where the core objective of each book is to provide 'effective preparation via modular and graded content'. Developed by highly experienced and qualified faculties these books would act as trusted content for aspirants who are aiming to clear the JEE (Joint Entrance Examinations) and other key engineering entrance examinations. Table of Contents: Chapter 1: Solutions Chapter 2: Redox Reactions and Electrochemistry Chapter 3: Chemical Kinetics Chapter 4: Surface Chemistry Chapter 5: Chemistry of Lighter Elements Chapter 6: Chemistry of Heavier Elements (Metallurgy) Chapter 7: Transition Metals Including Lanthanides and Actinides Chapter 8: Coordination Compounds Chapter 9: Nuclear Chemistry Chapter 10: Organic Compounds with Functional Groups Containing Halogens Chapter 11: Alcohol Phenol Ether Chapter 12: Organic Compounds Containing Oxygen-II Chapter 13: Organic Compounds with Functional Groups Containing Nitrogen Chapter 14: Polymers Chapter 15: Biomolecules and Biological Processes Chapter 16: Chemistry in Everyday Life Chapter 17: Practical Chemistry

The Pearson Guide to Physical Chemistry for the IIT JEE

Pearson Education India

Chemistry at a Glance

Pearson Education India Chemistry at a Glance is part of a three book series, designed especially for students aspiring to be future engineers and doctors. This book will help students to prepare for engineering (JEE, BITSAT and Boards) and medical entrance examinations (AIPMT and AIIMS). The book follows a crisp presentation approach to simplify concepts to enable easier understanding and retention. It would act as an indispensable tool to crack the examinations.

Rapid Review of Chemistry for the Life Sciences and Engineering

With Select Applications

CRC Press To understand, maintain, and protect the physical environment, a basic understanding of chemistry, biology, and physics, and their hybrids is useful. Rapid Review of Chemistry for the Life Sciences and Engineering demystifies chemistry for the non-chemist who, nevertheless, may be a practitioner of some area of science or engineering requiring or involving chemistry. It provides quick and easy access to fundamental chemical principles, quantitative relationships, and formulas. Armed with select, contemporary

applications, it is written in the hope to bridge a gap between chemists and non-chemists, so that they may communicate with and understand each other. Chapters 1-10 are designed to contain the standard material in an introductory college chemistry course. Chapters 11-15 present applications of chemistry that should interest and appeal to scientists and engineers engaged in a variety of fields. Additional features More than 100 solved examples clearly illustrated and explained with SI units and conversion to other units using conversion tables included Assists the reader to understand organic and inorganic compounds along with their structures, including isomers, enantiomers, and congeners of organic compounds Provides a quick and easy access to basic chemical concepts and specific examples of solved problems This concise, user-friendly review of general and organic chemistry with environmental applications will be of interest to all disciplines and backgrounds.

A Serious Glance at Chemistry

Basic Notions Explained

World Scientific Focuses on what is generally taught in the first two years of an undergraduate university chemistry program. This textbook contains topics in electronic structure of atoms and molecules, biochemistry, chemical reactions, energy production and even modern topics such as quantum chemistry and molecular orbital theory.

Introduction to General, Organic and Biochemistry

Cengage Learning This bestselling text continues to lead the way with a strong focus on current issues, pedagogically rich framework, wide variety of medical and biological applications, visually dynamic art program, and exceptionally strong and varied end-of-chapter problems. Revised and updated throughout, the eleventh edition now includes new biochemistry content, new Chemical Connections essays, new and revised problems, and more. Most end of chapter problems are now available in the OWLv2 online learning system. - See more at:

http://www.cengage.com/search/productOverview.do?Ntt=bettelheim|32055039717924713418311458721577017661&N=16&Ntk=APG%7CP_EPI&Ntx=mode+matchallpartial#Overview
w Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Student's Guide to Fundamentals of Chemistry

Brescia, Arents, Meislich, Turk

Elsevier Student's Guide to Fundamentals of Chemistry, Fourth Edition provides an introduction to the basic chemical principles. This book deals with various approaches to chemical principles and problem solving in chemistry. Organized into 25 chapters, this edition begins with an overview of how to define and recognize the more common names and symbols in chemistry. This text then discusses the historical development of the concept of atom as well as the historical determination of atomic weights for the elements. Other chapters consider how to calculate the molecular weight of a compound from its formula. This book discusses as well the characteristics of a photon in terms of its particle-like properties and defines the wavelength, frequency, and speed of light. The final chapter deals with the fundamental components of air and the classification of materials formed in natural waters. This book is a valuable resource for chemistry students, lecturers, and instructors.

Nuclear Analytical Techniques for Metallomics and Metalloproteomics

Royal Society of Chemistry This authoritative book provides readers with a comprehensive view of advanced nuclear analytical techniques for metallomics and metalloproteomics.

Chemical Principles

Cengage Learning This fully updated Seventh Edition of CHEMICAL PRINCIPLES provides a unique organization and a rigorous but understandable introduction to chemistry that emphasizes conceptual understanding and the importance of models. Known for helping students develop a qualitative, conceptual foundation that gets them thinking like chemists, this market-leading text is designed for students with solid mathematical preparation. The Seventh Edition features a new section on Learning to Solve Problems that discusses how to solve problems in a flexible, creative way based on understanding the fundamental ideas of chemistry and asking and answering key questions. The book is also enhanced by new visual problems, new student learning aids, new Chemical Insights boxes, and more. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Chemistry 15 Years' Solved Papers For Jee Main & Advanced

S. Chand Publishing Our experts have created Mathematics: 15 Years Solved Papers for JEE Main and Advanced keeping in mind a distinct pattern emerging 2000 onwards and have covered all previous years' questions from 2004. We have chosen solved questions from the year 2004 in order to apprise students of at least two years' of 'subjective type' (numerical value) questions asked in the IIT entrance exam.

The Encyclopedia of Mass Spectrometry, Ten-Volume Set

Elsevier Science Overview: The Encyclopedia of Mass Spectrometry The need for an encyclopedia of mass spectrometry (MS) becomes apparent when considering the subject's evolution. By 1990, MS had evolved as a discipline and as a technique for solving problems in chemistry. Along with nuclear magnetic resonance and optical spectroscopy, it was a tool for compound identification. For complex mixtures as found in environmental chemistry, flavors, energy materials, and small-molecule metabolism, gas chromatography-mass spectrometry had become the premier analytical method. Despite these advances, MS played in 1990 only a small role in polar and large-molecule analysis. Field desorption, fast atom bombardment, and Cf-252 plasma desorption gently pushed it into peptide sequencing and molecular weight determination of larger polymers. Although these ionizations had limitations, when they were coupled with tandem mass spectrometers, the future became clearer. MS now awaited the development of new ionization methods that would extend its capabilities into many different research laboratories. The inventions of electrospray ionization (ESI) and matrix-assisted laser desorption ionization (MALDI) in the late 1980s opened the door for that greater role. Even the discipline of MS could expand by embracing the chemical-physical studies of proteins and oligodeoxynucleotides in the gas phase. The broad applicability of MS to a multitude of chemical, physical, and biological problems makes it now the central tool in chemical analysis. No longer a specialist's tool, it has assumed broad applicability and availability. To permit a full and fruitful expansion in other disciplines, the Encyclopedia of Mass Spectrometry is designed to be a learning tool to newcomers who do not have the theoretical and practical background needed to take advantage of the possibilities of MS. Moreover, the field is now so broad that the specialist also needs a resource to allow exploration of its vast reaches. The encyclopedia meets that need and strives to be an entrance into the subject and to serve as its major reference work. **Volume 1: Theory and Ion Chemistry** Volume 1 begins with two theory chapters. The first discusses theoretical aspects of ion collisions, chemistry, and dynamics, and the second introduces ab initio calculations of ions. The latter has become a nearly indispensable tool in ion chemistry studies today. Instrumentation is essential in fundamental investigations. Chapter 3 introduces instrumentation, with an emphasis on unusual instrumentation, generally not commercially available. Ion traps, ion cyclotron resonance mass spectrometers, and time-of-flight instruments, which are important in both fundamental studies and in applications, are also covered. Chapter 4 discusses myriad means of performing spectroscopic experiments on ions. In the next chapter, various methods of measuring thermodynamic information about ions are introduced and evaluated. Collisional activation and dissociation processes, in various incarnations, are in Chapter 6. Mobility experiments are the focus of the next chapter, which covers fundamental aspects and applications of this rapidly growing technology. Various means and uses of changing charge states of ions is the topic of chapter 8. Chapters 9 and 10 introduce the ion chemistry of organic ions, positive and negative, respectively. The last three chapters (Chapter 11-13) are expositions of the ion chemistry of clusters and solvation phenomena, inorganic chemistry, and the rapidly expanding area of biochemistry. **Volume 2: Biological Applications Part A** The focus of Volume 2 is peptides and proteins. The organization emphasizes separation techniques, preparation protocols, and fundamentals of ionic gas-phase species of biological importance. This volume is divided into four sections: (1) experimental approaches and protocols, (2) sequence analysis, (3) other structural analyses, and (4) targeted applications. The first section encompasses separation procedures (e.g., 2-D gel electrophoresis), sample preparation (e.g., desalting and enzyme digestion), and instrumentation issues (e.g., high resolving power, molecular-weight determination, protein chips,

and quantification). H/D exchange, analysis of membrane proteins, and bioinformatics are included. The next section on sequencing covers high energy and low energy CAD, protein identification, fundamentals of peptide fragmentation, bottom-up and top-down strategies, chemical derivatization, and post-source decay with MALDI. A section on structure analysis includes primary structure determination and issues with studying quaternary structure, protein-protein and protein-ligand complexes, disulfide analysis, phosphopeptides and phosphoproteins, selenoproteins, nitrated proteins, metal ion binding, and oxidized proteins. Additional coverage of methods for studying the biophysics of proteins is provided in Volume 6. The last chapter, Targeted Applications, focuses on neuropeptides, clinical applications, enzyme kinetics, imaging, and single-cell analysis.

Volume 3: Biological Applications Part B Over the past decades, enormous gains have been made towards the analysis of all the biomolecules in cells. Although early attention was focused on peptides and proteins, a wealth of information is arising about other major biomolecules including nucleic acids, lipids and carbohydrates. In no small way, modern ionization methods, especially electrospray and matrix-assisted laser desorption, have provided a quantum leap in the capabilities of the tools we can now deploy in answering biological questions involving structure and molecular weight of virtually every type of molecule in the cell. Volume 3 covers classes carbohydrates, nucleic acids, and lipids. In addition, special areas of application are also included, such as pharmaceuticals, natural products, isotope ratio methods for biomolecules analysis, and clinical applications. The articles are arranged under general headings for continuity and ease of access, although several of these are of interest across the various disciplines. The articles cover basics and sufficient additional detail to bring the reader up-to-date on a given subject. Some advanced topics are also covered, either in a special section of an article or in additional reading citations.

Volume 4: Organic and Organometallic Compounds This volume presents a cross section of applications in organic and organometallic chemistry in two parts. Chapters 1 to 6 are devoted to the fundamentals whereas chapters 7 and 8 cover applications to organic and organometallic compounds, either available as pure compounds or present in complex mixtures. Chapter 1 describes the theory for organic mass spectrometry, building on and complementing material in Volume 1. The themes for Chapter 2 are the structures and properties of gas-phase ions of conventional, distonic, and non-covalent complexes. Chapter 3 covers methodology used in study of gas-phase ions. Chapters 4 and 5 turn to mechanisms of both unimolecular and bimolecular reactions of ions and include topics in stereochemistry and radical chemistry. Chapter 6 contains a number of articles on the formation and reactivity of metal ion complexes and organometallic cations and anions, drawing connections with molecular recognition, catalysis and organic synthesis. Chapter 7 deals with the structure determination of organic compounds, including chiral compounds and natural products. In chapter 8 are contributions that provide illustrative examples of the determination of organic compounds present at low levels in complex samples that originate from various natural and biological sources. Included is an article on the determination of explosives.

Volume 5: Elemental and Isotope Ratio Mass Spectrometry This volume focuses on (1) the plethora of mostly atomic ionization techniques that have been coupled to MS for elemental analysis, the measurement of isotope ratios, and even the determination of inorganic compounds and (2) the precise measurement of isotope ratios of organic elements as small gas molecules by isotope ratio mass spectrometry (IRMS).

Volume 6: Ionization Methods Volume 6 captures the story of molecular ionization and its phenomenal evolution that makes mass spectrometry the powerful method it is today. Chapters 1 and 2 cover fundamentals and various issues that are common to all ionization (e.g., accurate mass, isotope clusters, and derivatization). Chapters 3-9 acknowledge that some ionization methods are appropriate for gas-phase molecules and others for molecules that are in the solid or liquid states. Chapters 3-6 cover gas-phase molecules, dividing the subject into: (1) ionization of gas-phase molecules by particles (e.g., EI), (2) ionization by photons, (3) ionization by ion-molecule and molecule-molecule reactions (e.g., APCI and DART), and ionization in Strong electric fields (i.e., Electrohydrodynamic and Field Ionization/Desorption). "Ionization in a Strong Electric Field" illustrates the transition to ionization of molecules in the solid or liquid states, covered in Chapters 7-9: (1) spray methods for ionization (e.g., electrospray), (2) desorption ionization by particle bombardment (e.g., FAB), and (3) desorption by photons (e.g., MALDI). Electrospray and MALDI also lead to applications in biophysical chemistry, the theme of Chapter 10. Chapter 11 reconsiders ionization from the view of choosing an ionization method. The range of subjects is from ionization of organic and biomolecules to the study of microorganisms.

Volume 7: Mass Analyzers The volume is under preparation

Volume 8: Hyphenated Methods Starting with gas chromatography-mass spectrometry (GC-MS) and continuing through GCxGC-MS, LC-MS_n, and LC-NMR-MS, hyphenated methods have revolutionized chemical analysis. This volume covers that revolution in two parts. The first (Chapters 1-4) describes principles, instrumentation, and technology, and the second (Chapters 5-10) organizes major application areas in GC-MS and LC-MS. After a general introduction (Chapter 1), attention is paid to principles and instrumentation of GC-MS (Chapter 2) and LC-MS (Chapter 3). Other hyphenated methods, including online combinations of capillary electromigration methods and supercritical fluid chromatography with mass spectrometry, are in Chapter 4. Applications are then covered in the remaining chapters. The application-oriented chapters are focused on the role of mainly LC-MS in the pharmaceutical field (Chapter 5) and biochemical and biotechnological applications (Chapter 10), and the application of both GC-MS and LC-MS in relation to environmental analysis (Chapter 6), food safety and food analysis (Chapter 7), characterization of natural products (Chapter 8), and clinical, toxicological, and forensic analysis (Chapter 9).

Volume 9: History of Mass Spectrometry This volume is under preparation.

Volume 10: Index This multi-volume work is the first to provide unparalleled and comprehensive coverage of the full range of topics and techniques Suitable for new graduate students who are interested but not yet versed in the subject of mass spectrometry Techniques, methods and applications of mass spectrometry are described in considerable detail; including limitations, current problems, and areas in which the method does not succeed well

Radioactivity

Introduction and History, From the Quantum to Quarks

Elsevier A recipient of the PROSE 2017 Honorable Mention in Chemistry & Physics, *Radioactivity: Introduction and History, From the Quantum to Quarks, Second 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

General Chemistry for Engineers

Elsevier *General Chemistry for Engineers* explores the key areas of chemistry needed for engineers. This book develops material from the basics to more advanced areas in a systematic fashion. As the material is presented, case studies relevant to engineering are included that demonstrate the strong link between chemistry and the various areas of engineering. Serves as a unique chemistry reference source for professional engineers Provides the chemistry principles required by various engineering disciplines Begins with an 'atoms first' approach, building from the simple to the more complex chemical concepts Includes engineering case studies connecting chemical principles to solving actual engineering problems Links chemistry to contemporary issues related to the interface between chemistry and engineering practices

Quantum Chemistry and Dynamics of Excited States

Methods and Applications

John Wiley & Sons An introduction to the rapidly evolving methodology of electronic excited states For academic researchers, postdocs, graduate and undergraduate students, *Quantum Chemistry and Dynamics of Excited States: Methods and Applications* reports the most updated and accurate theoretical techniques to treat electronic excited states. From methods to deal with stationary calculations through time-dependent simulations of molecular systems, this book serves as a guide for beginners in the field and knowledge seekers alike. Taking into account the most recent theory developments and representative applications, it also covers the often-overlooked gap between theoretical and computational chemistry. An excellent reference for both researchers and students, *Excited States* provides essential knowledge on quantum chemistry, an in-depth overview of the latest developments, and theoretical techniques around the properties and nonadiabatic dynamics of chemical systems. Readers will learn: ● Essential theoretical techniques to describe the properties and dynamics of chemical systems ● Electronic Structure methods for stationary calculations ● Methods for electronic excited states from both a quantum chemical and time-dependent point of view ● A breakdown of the most recent developments in the past 30 years For those searching for a better understanding of excited states as they relate to chemistry, biochemistry, industrial chemistry, and beyond, *Quantum Chemistry and Dynamics of Excited States* provides a solid education in the necessary foundations and important theories of excited states in photochemistry and ultrafast phenomena.

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Modern Nuclear Chemistry

John Wiley & Sons Written by established experts in the field, this book features in-depth discussions of proven scientific principles, current trends, and applications of nuclear chemistry to the sciences and engineering. • Provides up-to-date coverage of the latest research and examines the theoretical and practical aspects of nuclear and radiochemistry • Presents the basic physical principles of nuclear and radiochemistry in a succinct fashion, requiring no basic knowledge of quantum mechanics • Adds discussion of math tools and simulations to demonstrate various phenomena, new chapters on Nuclear Medicine, Nuclear Forensics and Particle Physics, and updates to all other chapters • Includes additional in-chapter sample problems with solutions to help students • Reviews of 1st edition: "... an authoritative, comprehensive but succinct, state-of-the-art textbook" (The Chemical Educator) and "...an excellent resource for libraries and laboratories supporting programs requiring familiarity with nuclear processes ..." (CHOICE)

The Encyclopedia of Mass Spectrometry, Ten-Volume Set

Elsevier Science Overview: The Encyclopedia of Mass Spectrometry The need for an encyclopedia of mass spectrometry (MS) becomes apparent when considering the subject's evolution. By 1990, MS had evolved as a discipline and as a technique for solving problems in chemistry. Along with nuclear magnetic resonance and optical spectroscopy, it was a

tool for compound identification. For complex mixtures as found in environmental chemistry, flavors, energy materials, and small-molecule metabolism, gas chromatography-mass spectrometry had become the premier analytical method. Despite these advances, MS played in 1990 only a small role in polar and large-molecule analysis. Field desorption, fast atom bombardment, and Cf-252 plasma desorption gently pushed it into peptide sequencing and molecular weight determination of larger polymers. Although these ionizations had limitations, when they were coupled with tandem mass spectrometers, the future became clearer. MS now awaited the development of new ionization methods that would extend its capabilities into many different research laboratories. The inventions of electrospray ionization (ESI) and matrix-assisted laser desorption ionization (MALDI) in the late 1980s opened the door for that greater role. Even the discipline of MS could expand by embracing the chemical-physical studies of proteins and oligodeoxynucleotides in the gas phase. The broad applicability of MS to a multitude of chemical, physical, and biological problems makes it now the central tool in chemical analysis. No longer a specialist's tool, it has assumed broad applicability and availability. To permit a full and fruitful expansion in other disciplines, the Encyclopedia of Mass Spectrometry is designed to be a learning tool to newcomers who do not have the theoretical and practical background needed to take advantage of the possibilities of MS. Moreover, the field is now so broad that the specialist also needs a resource to allow exploration of its vast reaches. The encyclopedia meets that need and strives to be an entrance into the subject and to serve as its major reference work. **Volume 1: Theory and Ion Chemistry** Volume 1 begins with two theory chapters. The first discusses theoretical aspects of ion collisions, chemistry, and dynamics, and the second introduces ab initio calculations of ions. The latter has become a nearly indispensable tool in ion chemistry studies today. Instrumentation is essential in fundamental investigations. Chapter 3 introduces instrumentation, with an emphasis on unusual instrumentation, generally not commercially available. Ion traps, ion cyclotron resonance mass spectrometers, and time-of-flight instruments, which are important in both fundamental studies and in applications, are also covered. Chapter 4 discusses myriad means of performing spectroscopic experiments on ions. In the next chapter, various methods of measuring thermodynamic information about ions are introduced and evaluated. Collisional activation and dissociation processes, in various incarnations, are in Chapter 6. Mobility experiments are the focus of the next chapter, which covers fundamental aspects and applications of this rapidly growing technology. Various means and uses of changing charge states of ions is the topic of chapter 8. Chapters 9 and 10 introduce the ion chemistry of organic ions, positive and negative, respectively. The last three chapters (Chapter 11-13) are expositions of the ion chemistry of clusters and solvation phenomena, inorganic chemistry, and the rapidly expanding area of biochemistry. **Volume 2: Biological Applications Part A** The focus of Volume 2 is peptides and proteins. The organization emphasizes separation techniques, preparation protocols, and fundamentals of ionic gas-phase species of biological importance. This volume is divided into four sections: (1) experimental approaches and protocols, (2) sequence analysis, (3) other structural analyses, and (4) targeted applications. 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Half-life of Tritium