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Thermodynamics - Ricardo Morales-Rodriguez 2012-10-03

This book presents the selection of various high level contributions involving thermodynamics. The book goes from the fundamentals up to several applications in different scientific fields. The content of the book has been classified in six sections: Classical Thermodynamics, Statistical Thermodynamics, Property Prediction in Thermodynamics, Material and Products, Non Equilibrium and Thermodynamics in Diverse Areas. The classification of the book aims to provide to the reader the facility of finding the desired topic included in the book. It is expected that this collection of chapters will contribute to the state of the art in the thermodynamics area.

Computational Chemistry - 2019-02-20

Computational Chemistry, Volume 73, the latest release in the Advances in Inorganic Chemistry series, presents timely and informative summaries on current progress in a variety of subject areas. This acclaimed serial features reviews written by experts in the field, serving as an indispensable reference to advanced researchers that empowers readers to pursue new developments in each field. Users will find this to be a comprehensive overview of recent findings and trends from the last decade that covers various kinds of inorganic topics, from theoretical oriented supramolecular chemistry, to the quest for accurate calculations of spin states in transition metals. Features comprehensive reviews on the latest developments in computational studies in inorganic chemistry Includes contributions from leading experts in the field of inorganic reaction mechanisms Serves as an indispensable reference to advanced researchers in many related fields

Inorganic Chemistry - J. E. House 2012-10-30

This textbook provides essential information for students of inorganic chemistry or for chemists pursuing self-study. The presentation of topics is made with an effort to be clear and concise so that the book is portable and user friendly. Inorganic Chemistry 2E is divided into five major themes (structure, condensed phases, solution chemistry, main group and coordination compounds) with several chapters in each. There is a logical progression from atomic structure to molecular structure to properties of substances based on molecular structures, to behavior of solids, etc. The author emphasizes fundamental principles-including molecular structure, acid-base chemistry, coordination chemistry, ligand field theory, and solid state chemistry -and presents topics in a clear, concise manner. There is a reinforcement of basic principles throughout the book. For example, the hard-soft interaction principle is used to explain hydrogen bond strengths, strengths of acids and bases, stability of coordination compounds, etc. The book contains a balance of topics in theoretical and descriptive chemistry. New to this Edition: New and improved illustrations including symmetry and 3D molecular orbital representations Expanded coverage of spectroscopy, instrumental techniques, organometallic and bio-inorganic chemistry More in-text worked-out examples to encourage active learning and to prepare students for their exams • Concise coverage maximizes student understanding and minimizes the inclusion of details students are unlikely to use. • Discussion of elements begins with survey chapters focused on the main groups, while later chapters cover the elements in greater detail. • Each chapter opens with narrative introductions and includes figures, tables, and end-of-chapter problem sets.

The Heaviest Metals - William J. Evans 2019-01-08

An authoritative survey of the science and advanced technological uses of the actinide and transactinide metals The Heaviest Metals offers an essential resource that covers the fundamentals of the chemical and physical properties of the heaviest metals as well as the most recent advances in their science and technology. The authors - noted experts in the field - offer an authoritative review of the actinide and transactinide elements, i.e., the elements from actinium to lawrencium as well as rutherfordium through organesson, the current end of the periodic table, element 118. The text explores the history of the metals, their occurrence and issues of production, and covers a broad range of chemical subjects including environmental concerns and remediation approaches. The authors also offer information on the most recent and emerging applications of the metals, such as in superconducting materials, catalysis, and research into medical diagnostics. This important resource: Provides an overview of the science and advanced technological uses of the actinide and transactinide metals Describes the basic chemical and physical properties of the heaviest metals, and discusses the challenges and opportunities for their technological applications Contains accessible information on the fundamental features of the heaviest metals, special requirements for their experimental study, and the critical role of computational characterization of their compounds Highlights the most current and emerging applications in areas such as superconducting materials, catalysis, nuclear forensics, and medicine Presents vital contemporary issues of the heaviest metals Written for graduate students and researchers working with the actinide and transactinide elements, industrial and academic inorganic and nuclear chemists, and engineers, The Heaviest Metals is a comprehensive volume that explores the fundamental chemistry and properties of the heaviest metals, and the challenges and opportunities associated with their present and emerging technological uses.

Electrons, Atoms, and Molecules in Inorganic Chemistry - Joseph J. Stephanos 2017-06-01

Electrons, Atoms, and Molecules in Inorganic Chemistry: A Worked Examples Approach builds from fundamental units into molecules, to provide the reader with a full understanding of inorganic chemistry concepts through worked examples and full color illustrations. The book uniquely discusses failures as well as research success stories. Worked problems include a variety of types of chemical and physical data, illustrating the interdependence of issues. This text contains a bibliography providing access to important review articles and papers of relevance, as well as summaries of leading articles and reviews at the end of each chapter so interested readers can readily consult the original literature. Suitable as a professional reference for researchers in a variety of fields, as well as course use and self-study. The book offers valuable information to fill an important gap in the field. Incorporates questions and answers to assist readers in understanding a variety of problem types Includes detailed explanations and developed practical approaches for solving real chemical problems Includes a range of example levels, from classic and simple for basic concepts to complex questions for more sophisticated topics Covers the full range of topics in inorganic chemistry: electrons and wave-particle duality, electrons in atoms, chemical binding, molecular symmetry, theories of bonding, valence bond theory, VSEPR theory, orbital hybridization, molecular orbital theory, crystal field theory, ligand field theory, electronic spectroscopy, vibrational and rotational spectroscopy

Essentials of Inorganic Chemistry - Katja A. Strohfeldt 2015-02-16

A comprehensive introduction to inorganic chemistry and, specifically, the science of metal-based drugs, *Essentials of Inorganic Chemistry* describes the basics of inorganic chemistry, including organometallic chemistry and radiochemistry, from a pharmaceutical perspective. Written for students of pharmacy and pharmacology, pharmaceutical sciences, medicinal chemistry and other health-care related subjects, this accessible text introduces chemical principles with relevant pharmaceutical examples rather than as stand-alone concepts, allowing students to see the relevance of this subject for their future professions. It includes exercises and case studies.

CONCISE INORGANIC CHEMISTRY, 5TH ED - J. D. Lee 2008-01-03

This textbook is divided into six parts: theoretical concepts and hydrogen, the s-block, the p-block, the d-block, the f-block, and other topics (the nucleus and spectra). It also focuses on the commercial exploitation of inorganic chemicals and the treatment of the inorganic aspects of environmental chemistry has also been extended. · Atomic structure and the Periodic table · Introduction to bonding · The ionic bond · The covalent bond · The metallic bond · General properties of the elements · Coordination compounds · Hydrogen and the hydrides · Group 1 - The alkali metals · The chlor-alkali industry · Group 2 - The alkaline earth elements · The group 13 elements · The group 14 elements · The group 15 elements · Group 16 - the chalcogens · Group 17 - the halogens · Group 18 - the noble gases · An introduction to the transition elements · Group 3 - The scandium group · Group 4 - The titanium group · Group 5 - The vanadium group · Group 6 - The chromium group · Group 7 - The manganese group · Group 8 - The iron group · Group 9 - The cobalt group · Group 10 - The nickel group · Group 11 - The copper group: Coinage metals · Group 12 - The zinc group · The lanthanide series · The actinides · The atomic nucleus · Spectra

Descriptive Inorganic, Coordination, and Solid State Chemistry - Glen E. Rodgers 2011-01-19

This proven book introduces the basics of coordination, solid-state, and descriptive main-group chemistry in a uniquely accessible manner, featuring a less is more approach. Consistent with the less is more philosophy, the book does not review topics covered in general chemistry, but rather moves directly into topics central to inorganic chemistry. Written in a conversational prose style that is enjoyable and easy to understand, this book presents not only the basic theories and methods of inorganic chemistry (in three self-standing sections), but also a great deal of the history and applications of the discipline. This edition features new art, more diversified applications, and a new icon system. And to better help readers understand how the seemingly disparate topics of the periodical table connect, the book offers revised coverage of the author's Network of Interconnected Ideas on new full color endpapers, as well as on a convenient tear-out card. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Modern Inorganic Synthetic Chemistry - Ruren Xu 2017-02-11

Modern Inorganic Synthetic Chemistry, Second Edition captures, in five distinct sections, the latest advancements in inorganic synthetic chemistry, providing materials chemists, chemical engineers, and materials scientists with a valuable reference source to help them advance their research efforts and achieve breakthroughs. Section one includes six chapters centering on synthetic chemistry under specific conditions, such as high-temperature, low-temperature and cryogenic, hydrothermal and solvothermal, high-pressure, photochemical and fusion conditions. Section two focuses on the synthesis and related chemistry problems of highly distinct categories of inorganic compounds, including superheavy elements, coordination compounds and coordination polymers, cluster compounds, organometallic compounds, inorganic polymers, and nonstoichiometric compounds. Section three elaborates on the synthetic chemistry of five important classes of inorganic functional materials, namely, ordered porous materials, carbon materials, advanced ceramic materials, host-guest materials, and hierarchically structured materials. Section four consists of four chapters where the synthesis of functional inorganic aggregates is discussed, giving special attention to the growth of single crystals, assembly of nanomaterials, and preparation of amorphous materials and membranes. The new edition's biggest highlight is Section five where the frontier in inorganic synthetic chemistry is reviewed by focusing on biomimetic synthesis and rationally designed synthesis. Focuses on the chemistry of inorganic synthesis, assembly, and organization of wide-ranging inorganic systems Covers all major methodologies of inorganic synthesis Provides state-of-the-art synthetic

methods Includes real examples in the organization of complex inorganic functional materials Contains more than 4000 references that are all highly reflective of the latest advancement in inorganic synthetic chemistry Presents a comprehensive coverage of the key issues involved in modern inorganic synthetic chemistry as written by experts in the field

Inorganic Chemistry - Catherine E. Housecroft 2001

This manual contains Catherine Housecroft's detailed worked solutions to all the end of chapter problems within *Inorganic Chemistry*. It provides fully worked answers to all non-descriptive problems; bullet-point essay plans; general notes of further explanation of particular topics and tips on completing problems; cross-references to main text and to other relevant problems; margin notes for guidance and graphs, structures and diagrams. It includes Periodic table and Table of Physical Constants for reference. This manual should be a useful tool in helping students to grasp problem-solving skills and to both lecturers and students who are using the main *Inorganic Chemistry* text.

Inorganic Chemistry - Catherine E. Housecroft 2005

Inorganic Chemistry "Catherine E. Housecroft and Alan G. Sharpe" This book has established itself as a leading textbook in the subject by offering a fresh and exciting approach to the teaching of modern inorganic chemistry. It gives a clear introduction to key principles with strong coverage of descriptive chemistry of the elements. Special selected topics chapters are included, covering inorganic kinetics and mechanism, catalysis, solid state chemistry and bioinorganic chemistry. A new full-colour text design and three-dimensional illustrations bring inorganic chemistry to life. Topic boxes have been used extensively throughout the book to relate the chemistry described in the text to everyday life, the chemical industry, environmental issues and legislation, and natural resources. Teaching aids throughout the text have been carefully designed to help students learn effectively. The many worked examples take students through each calculation or exercise step by step, and are followed by related self-study exercises tackling similar problems with answers to help develop their confidence. In addition, end-of-chapter problems reinforce learning and develop subject knowledge and skills. Definitions boxes and end-of-chapter checklists provide excellent revision aids, while further reading suggestions, from topical articles to recent literature papers, will encourage students to explore topics in more depth. New to this edition Many more self-study exercises have been introduced throughout the book with the aim of making stronger connections between descriptive chemistry and underlying principles. Additional 'overview problems' have been added to the end-of-chapter problem sets. The descriptive chemistry has been updated, with many new results from the literature being included. Chapter 4 Bonding in polyatomic molecules, has been rewritten with greater emphasis on the use of group theory for the derivation of ligand group orbitals and orbital symmetry labels. There is more coverage of supercritical fluids and 'green' chemistry. The new full-colour text design enhances the presentation of the many molecular structures and 3-D images. Supporting this edition Companion website featuring multiple-choice questions and rotatable 3-D molecular structures, available at "www.rearsoned.co.uk/housecroft," For full information, including details of lecturer material, see the Contents list inside the book. A Solutions Manual, written by Catherine E. Housecroft, with detailed solutions to all end-of-chapter problems within the text is available for purchase separately ISBN 0131 39926 8. "Catherine E. Housecroft" is Professor of Chemistry at the University of Basel, Switzerland. She is the author of a number of textbooks and has extensive teaching experience in the UK, Switzerland, South Africa and the USA. "Alan G. Sharpe" is a Fellow of Jesus College, University of Cambridge, UK and has had many years of experience teaching inorganic chemistry to undergraduates

Descriptive Inorganic Chemistry - J. E. House 2010-09-22

This book covers the synthesis, reactions, and properties of elements and inorganic compounds for courses in descriptive inorganic chemistry. It is suitable for the one-semester (ACS-recommended) course or as a supplement in general chemistry courses. Ideal for major and non-majors, the book incorporates rich graphs and diagrams to enhance the content and maximize learning. Includes expanded coverage of chemical bonding and enhanced treatment of Buckminster Fullerenes Incorporates new industrial applications matched to key topics in the text

Physical Chemistry - Ignacio Tinoco 2002

This best-selling volume presents the principles and applications of physical chemistry as they are used to

solve problems in biology and medicine. The First Law; the Second Law; free energy and chemical equilibria; free energy and physical Equilibria; molecular motion and transport properties; kinetics: rates of chemical reactions; enzyme kinetics; the theory and spectroscopy of molecular structures and interactions: molecular distributions and statistical thermodynamics; and macromolecular structure and X-ray diffraction. For anyone interested in physical chemistry as it relates to problems in biology and medicine.

Chemistry - Catherine Housecroft 2010-05-19

Chemistry provides a robust coverage of the different branches of chemistry - with unique depth in organic chemistry in an introductory text - helping students to develop a solid understanding of chemical principles, how they interconnect and how they can be applied to our lives.

Introduction to Molecular Symmetry - J. S. Ogden 2001

This Primer presents an introduction to molecular symmetry and point groups with an emphasis on their applications. The author has adopted a non-mathematical approach as far as possible and the text will supplement those that are too advanced or gloss over important information. Chapter topics include symmetry elements, operations and point groups; matrices, multiplications tables and representations; the reduction formula; molecular vibrations; vibrational spectroscopy and degenerate vibrations; symmetry aspects of chemical bonding and matrices in higher order point groups

Iodine Chemistry and Applications - Tatsuo Kaiho 2014-10-09

This book comprehensively covers iodine, its chemistry, and its role in functional materials, reagents, and compounds. • Provides an up-to-date, detailed overview of iodine chemistry with discussion on elemental aspects: characteristics, properties, iodides, and halogen bonding • Acts as a useful guide for readers to learn how to synthesize complex compounds using iodine reagents or intermediates • Describes traditional and modern processing techniques, such as starch, copper, blowing out, and ion exchange resin methods • Includes seven detailed sections devoted to the applications of iodine: Characteristics, Production, Synthesis, Biological Applications, Industrial Applications, Bioorganic Chemistry and Environmental Chemistry, and Radioisotopes • Features hot topics in the field, such as hypervalent iodine-mediated cross coupling reactions, agrochemicals, dyesensitized solar cells, and therapeutic agents

Inorganic and Organic Chemistry - Dr. Satish M. Chavan

This book is the text book of Inorganic and Organic Chemistry S.Y.B.Sc. PAPER-II [CH-302] Semester-III written for second year B.Sc. students of Savitribai Phule Pune University. The book is written according to the New Revised Choice Based Syllabus (CBCS) of Savitribai Phule Pune University to be implemented from June 2020. This book written in easy and lucid language to understand valence bond theory, molecular orbital theory, bond formation in molecules, co-ordination compounds, structure and reactivity benzene and their analogs, alkyl halides, aryl halides, alcohols, phenols, ethers and their nomenclature, preparation and reactions. For the self study, exercise is added with short answer type questions, brief answer type questions, multiple choice questions (MCOs) and true-false type questions.

Molecular Symmetry And Group Theory - Robert L. Carter 2009-11-12

This comprehensive text provides readers with a thorough introduction to molecular symmetry and group theory as applied to chemical problems. Its friendly writing style invites the reader to discover by example the power of symmetry arguments for understanding otherwise intimidating theoretical problems in chemistry. A unique feature demonstrates the centrality of symmetry and group theory to a complete understanding of the theory of structure and bonding." Fundamental Concepts." Representations of Groups." Techniques and Relationships for Chemical Applications." Symmetry and Chemical Bonding." Equations for Wave Functions." Vibrational Spectroscopy." Transition Metal Complexes.

Helium and Hydrogen Isotope Adsorption and Separation in Metal-Organic Frameworks - Ingrid Zaiser 2016-10-31

The separation of isotopes has always been a challenge because of their identical size, shape and thermodynamic properties. Nowadays, the extraction of deuterium is performed e.g. by the Girdler Sulfid process or cryogenic distillation, which lead to low separation factors (below 2.5) in combination with high energy costs. The standard way to produce helium-3 is to skim it as a byproduct of the radioactive tritium decay. In this thesis, two alternative approaches have been investigated for the separation of light isotopes, Quantum Sieving and Chemical Affinity Sieving. While Quantum Sieving is based on confinement in small

pores, Chemical Affinity Sieving relies on strong adsorption sites. Both methods use the mass difference of the isotopes, which is related to their zero-point energy. The microporous metal-organic frameworks are excellent candidates for studying these quantum effects due to their well-defined pore structure and the possibility to introduce strong adsorption sites directly into the framework. The samples have been exposed to an isotope mixture and the adsorbed quantity of each isotope was detected by low-temperature thermal desorption spectroscopy (TDS). The ratio of the desorbed amount of the isotopes leads directly to the selectivity (separation factor). The selectivity is determined as a function of exposure time and temperature and exhibits the highest value of 25 observed for hydrogen isotopes at temperatures well above the boiling point of liquid nitrogen.

Research Methodologies and Practical Applications of Chemistry - Lionello Pogliani 2019-05-08

This new volume, *Research Methodologies and Practical Applications of Chemistry*, presents a detailed analysis of current experimental and theoretical approaches surrounding chemical science. With an emphasis on multidisciplinary as well as interdisciplinary applications, the book extensively reviews fundamental principles and presents recent research to help show logical connections between the theory and application of modern chemistry concepts. It also emphasizes the behavior of materials from the molecular point of view. The burgeoning field of chemistry and chemical science has led to many recent technological innovations and discoveries. Understanding the impact of these technologies on business, science, and industry is an important first step in developing applications for a variety of settings and contexts. The aim of this book is to present research that has transformed this discipline and aided its advancement. The book examines the strengths and future potential of chemical technologies in a variety of industries.

Inorganic Chemistry - 1902

The Heavier D-block Metals - Catherine E. Housecroft 1999

This book addresses the chemistry of the second and third row d-block metals, assuming a knowledge of the chemistry of the first row metals. Chapter 1 looks at the metals and summarizes occurrence, physical properties and uses. Chapter 2 considers periodic trends in properties. Chapter 3 considers aqueous solution chemistry, species present (with comparisons of the first row metal ions) and redox properties. Chapter 4 surveys structure: the range of coordination numbers shown by second and third row metals is often a topic for discussion in University courses. Chapter 5 looks at electronic spectra and magnetic properties, making comparisons with the first row the main objective of the chapter. Detailed mathematical treatments are not given. Chapter 6 considers metal-metal bonding, and the classes of compound that contain triple and quadruple bonds; the role of bridging ligands is introduced. Chapter 7 looks at selected clusters with a pi donor ligands (e.g. metal halo species) in which metal-metal bonding is important. Chapter 8 introduces the area of polyoxometallates, closing with a short discussion of the wide range of applications. The book contains many references to encourage wider reading by the student; in addition to textbooks of relevance, the author has included many recent literature citations, and a section called *Metals in Action* which gives citations which show the heavier metals at work in, for example, catalytic converters and molecular wires."

Inorganic Chemistry - Catherine E. Housecroft 2018

[Main text] -- Solutions manual

Process Safety Calculations - Renato Benintendi 2021-03-02

Process Safety Calculations, Second Edition remains to be an essential guide for students and practitioners in process safety engineering who are working on calculating and predicting risks and consequences. The book focuses on calculation procedures based on basic chemistry, thermodynamics, fluid dynamics, conservation equations, kinetics and practical models. It provides helpful calculations to demonstrate compliance with regulations and standards, such as Seveso directive(s)/COMAH, CLP regulation, ATEX directives, PED directives, REACH regulation, OSHA/NIOSH and UK ALARP, along with risk and consequence assessment, stoichiometry, thermodynamics, stress analysis and fluid-dynamics. This fully revised, updated and expanded second edition follows the same organization as the first, including the original three main parts, Fundamentals, Consequence Assessment and Quantitative Risk Assessment.

However, the latter part is significantly expanded, including an appendix consisting of five fundamental thematic areas belonging to the risk assessment framework, including in-depth calculations methodologies for some fundamental monothematic macro-areas of process safety. Revised, updated and expanded new edition that includes newly developing areas of process safety that are relevant to QRA Provides engineering fundamentals to enable readers to properly approach the subject of process safety Includes a remarkable and broad numbers of calculation examples, which are completely resolved and fully explained Develops the QRA subject, consistently with the methodology applied in the big projects

The Organometallic Chemistry of the Transition Metals - Robert H. Crabtree 2005-06-14

Fully updated and expanded to reflect recent advances, this Fourth Edition of the classic text provides students and professional chemists with an excellent introduction to the principles and general properties of organometallic compounds, as well as including practical information on reaction mechanisms and detailed descriptions of contemporary applications.

Loose-leaf Version for Introductory Chemistry - Kevin Revell 2020-11-17

Introductory Chemistry creates light bulb moments for students and provides unrivaled support for instructors! Highly visual, interactive multimedia tools are an extension of Kevin Revell's distinct author voice and help students develop critical problem solving skills and master foundational chemistry concepts necessary for success in chemistry.

Multi Length-Scale Characterisation - Duncan W. Bruce 2013-12-04

This volume examines important experimental techniques needed to characterise inorganic materials in order to elucidate their properties for practical application. Addressing methods that examine the structures and properties of materials over length scales ranging from local atomic order to long-range order on the meso- and macro-scopic scales, Multi Length-Scale Characterisation contains five detailed chapters: Measurement of Bulk Magnetic Properties Thermal Methods Atomic Force Microscopy Gas Sorption in the Analysis of Nanoporous Solids Dynamic Light Scattering Ideal as a complementary reference work to other volumes in the series (Local Structural Characterisation and Structure from Diffraction Methods) or as an examination of the specific characterisation techniques in their own right, Multi Length-Scale Characterisation is a valuable addition to the Inorganic Materials Series.

Organo Main Group Chemistry - Kin-ya Akiba 2011-08-23

Forging a new association; main group elements and organic chemistry Covering the essentials of all main group elements in organic chemistry, along with the synthesis and reactions of their organic compounds in just one volume, Organo Main Group Chemistry breaks important new ground. While main group chemistry has traditionally been classified as part of inorganic chemistry, this book establishes the organic chemistry of main group elements for the first time. The organic compounds of elements in the second period of the periodic table, which are centered around carbon, are the major components of animals and plants, while those in the third period and below also play key roles worthy of discussion when studying main group element chemistry. The major chapters describe synthesis and reactivity of organic compounds in the third period and below and are arranged according to the order of the periodic table. Starting with the role of lithium and magnesium cations, the chapters reach fluorine and iodine compounds. The first two chapters summarize the unique and common characteristics of main group elements in relation to carbon. The latter chapters deal with modern topics that address the unique characteristics of organo main group compounds. Suitable for professional researchers, chemistry professors, and advanced students, Organo Main Group Chemistry presents a novel new approach to the way we view both main groups and organic chemistry itself.

Inorganic Chemistry - Alan G. Sharpe 1981

Inorganic Chemistry For Dummies - Michael Matson 2013-06-04

The easy way to get a grip on inorganic chemistry Inorganic chemistry can be an intimidating subject, but it doesn't have to be! Whether you're currently enrolled in an inorganic chemistry class or you have a background in chemistry and want to expand your knowledge, Inorganic Chemistry For Dummies is the approachable, hands-on guide you can trust for fast, easy learning. Inorganic Chemistry For Dummies features a thorough introduction to the study of the synthesis and behavior of inorganic and organometallic

compounds. In plain English, it explains the principles of inorganic chemistry and includes worked-out problems to enhance your understanding of the key theories and concepts of the field. Presents information in an effective and straightforward manner Covers topics you'll encounter in a typical inorganic chemistry course Provides plain-English explanations of complicated concepts If you're pursuing a career as a nurse, doctor, or engineer or a lifelong learner looking to make sense of this fascinating subject, Inorganic Chemistry For Dummies is the quick and painless way to master inorganic chemistry.

Keynotes in Organic Chemistry - Andy Parsons 2009-02-12

The development of university organic chemistry curricula and the trend towards modularisation of chemistry courses has driven the need for smaller, highly focussed and accessible organic chemistry textbooks, which complement the very detailed "standard texts", to guide students through the key principles of the subject. This concise and accessible book provides organic chemistry notes for students studying chemistry and related courses at undergraduate level, covering core organic chemistry in a format ideal for learning and rapid revision. The material is organised so that fundamental concepts are introduced early, then built on to provide an overview of the essentials of functional group chemistry and reactivity, leading the student to a solid understanding of the basics of organic chemistry. Graphical presentation of information is central to the book, to facilitate the rapid assimilation, understanding and recall of critical concepts, facts and definitions. Students wanting a comprehensive and accessible overview of organic chemistry to build the necessary foundations for a more detailed study will find this book an ideal source of the information they require. In addition, the structured presentation, highly graphical nature of the text and practice problems with outline answers will provide an invaluable framework and aid to revision for students preparing for examinations.

Principles of Inorganic Chemistry - Brian W. Pfennig 2015-03-30

Aimed at senior undergraduates and first-year graduate students, this book offers a principles-based approach to inorganic chemistry that, unlike other texts, uses chemical applications of group theory and molecular orbital theory throughout as an underlying framework. This highly physical approach allows students to derive the greatest benefit of topics such as molecular orbital acid-base theory, band theory of solids, and inorganic photochemistry, to name a few. Takes a principles-based, group and molecular orbital theory approach to inorganic chemistry The first inorganic chemistry textbook to provide a thorough treatment of group theory, a topic usually relegated to only one or two chapters of texts, giving it only a cursory overview Covers atomic and molecular term symbols, symmetry coordinates in vibrational spectroscopy using the projection operator method, polyatomic MO theory, band theory, and Tanabe-Sugano diagrams Includes a heavy dose of group theory in the primary inorganic textbook, most of the pedagogical benefits of integration and reinforcement of this material in the treatment of other topics, such as frontier MO acid-base theory, band theory of solids, inorganic photochemistry, the Jahn-Teller effect, and Wade's rules are fully realized Very physical in nature compare to other textbooks in the field, taking the time to go through mathematical derivations and to compare and contrast different theories of bonding in order to allow for a more rigorous treatment of their application to molecular structure, bonding, and spectroscopy Informal and engaging writing style; worked examples throughout the text; unanswered problems in every chapter; contains a generous use of informative, colorful illustrations

Chemistry - Catherine E. Housecroft 2010

This text integrates the three major branches of chemistry, with the aim of enabling students to tackle more easily the problems within the subject and to apply chemistry to real-life situations.

Inorganic chemistry - Catherine E. Housecroft 2007-11-22

This updated solutions manual contains detailed worked solutions to the problems contained in the third edition of Inorganic Chemistry. This manual is a useful tool in helping students to grasp problem-solving skills and should prove invaluable to both lecturers and students who are using the main Inorganic Chemistry text.

inorganic chemistry -

Supramolecular Chemistry - Jonathan W. Steed 2022-01-10

A one-stop, comprehensive, and thoroughly updated resource for students, professors, and researchers

alike Thoroughly revised and updated, the Third Edition of Supramolecular Chemistry delivers a comprehensive and integrated approach to this rapidly evolving and quickly expanding field. Distinguished professors and authors Jonathan Steed and Jerry Atwood provide readers with a broad and exhaustive resource that assumes little in the way of prior knowledge of supramolecular chemistry. Extensive new content on cutting edge research throughout the field including molecular machines and the mechanical bond, mechanochemistry, halogen bonding, and crystal nucleation accompanies full-color imagery and study problems designed to help students understand and apply the principles introduced within the book. Additional material is provided in the supplementary online resources, including solutions to the student exercises and PowerPoint slides of the figures in the book. Supramolecular Chemistry, Third Edition also includes: The latest research and developments reported over the last decade A unique "key references" system that highlights crucial reviews and primary literature A description of key experimental techniques included in accessible "boxes" for the non-expert Exercises and problems for students, complete with online solutions Full-color illustrations and imagery designed to facilitate learning and retention of the key concepts and state-of-the art of the field Perfect for undergraduate and postgraduate students taking courses on supramolecular chemistry, the Third Edition of Supramolecular Chemistry also belongs on the bookshelves of all researchers in this, and any closely related, fields. Academics, in particular postdoctoral students and professors, will benefit significantly from this text.

Reaction Mechanisms of Inorganic and Organometallic Systems - Robert B. Jordan 2007-06-18

Reaction Mechanisms of Inorganic and Organometallic Systems helps students develop both an appreciation of and skepticism about mechanistic studies.

Inorganic Chemistry - James E. House 2019-11-01

Inorganic Chemistry, Third Edition, emphasizes fundamental principles, including molecular structure, acid-base chemistry, coordination chemistry, ligand field theory and solid state chemistry. The book is organized into five major themes: structure, condensed phases, solution chemistry, main group and coordination compounds, each of which is explored with a balance of topics in theoretical and descriptive chemistry. Topics covered include the hard-soft interaction principle to explain hydrogen bond strengths, the strengths of acids and bases, and the stability of coordination compounds, etc. Each chapter opens with narrative introductions and includes figures, tables and end-of-chapter problem sets. This new edition features updates throughout, with an emphasis on bioinorganic chemistry and a new chapter on nanostructures and graphene. In addition, more in-text worked-out examples encourage active learning and prepare students for exams. This text is ideal for advanced undergraduate and graduate-level students enrolled in the Inorganic Chemistry course. Includes physical chemistry to show the relevant principles from bonding theory and thermodynamics Emphasizes the chemical characteristics of main group elements and coordination chemistry Presents chapters that open with narrative introductions, figures, tables and end-of-chapter problem sets

Hypercarbon Chemistry - George A. Olah 2011-08-04

The essential new edition of the book that put hypercarbon chemistry on the map A comprehensive and contemporary treatment of the chemistry of hydrocarbons (alkanes, alkenes, alkynes, and aromatics) towards electrophiles, *Hypercarbon Chemistry*, Second Edition deals with all major aspects of such chemistry involved in hydrocarbon transformations, and of the structural and reaction chemistry of carboranes, mixed hydrides in which both carbon and boron atoms participate in the polyhedral molecular frameworks. Despite the firmly established tetravalency, carbon can bond simultaneously to five or more other atoms. "Hypercarbon" bonding permeates much organic, inorganic and organometallic chemistry, and the book serves as the compendium for this phenomenon. Copious diagrams illustrate the rich variety of hypercarbon structures now known, and patterns therein. Individual chapters deal with specific categories of compound (e.g. organometallics, carboranes, carbocations) or transformations that proceed through transient hypercarbon species, detailing fundamental chemistry, including reactivity, selectivity, stereochemistry, mechanistic factors and more.

Principles of Inorganic Chemistry - Brian W. Pfennig 2022-02-02

PRINCIPLES OF INORGANIC CHEMISTRY Discover the foundational principles of inorganic chemistry with this intuitively organized new edition of a celebrated textbook In the newly revised Second Edition of *Principles of Inorganic Chemistry*, experienced researcher and chemist Dr. Brian W. Pfennig delivers an accessible and engaging exploration of inorganic chemistry perfect for sophomore-level students. This redesigned book retains all of the rigor of the first edition but reorganizes it to assist readers with learning and retention. In-depth boxed sections include original mathematical derivations for more advanced students, while topics like atomic and molecular term symbols, symmetry coordinates in vibrational spectroscopy, polyatomic MO theory, band theory, and Tanabe-Sugano diagrams are all covered. Readers will find many worked examples throughout the text, as well as numerous unanswered problems at varying levels of difficulty. Informative, colorful illustrations also help to highlight and explain the concepts discussed within. The new edition includes an increased emphasis on the comparison of the strengths and weaknesses of different chemical models, the interconnectedness of valence bond theory and molecular orbital theory, as well as a more thorough discussion of the atoms in molecules topological model. Readers will also find: A thorough introduction to and treatment of group theory, with an emphasis on its applications to chemical bonding and spectroscopy A comprehensive exploration of chemical bonding that compares and contrasts the traditional classification of ionic, covalent, and metallic bonding In-depth examinations of atomic and molecular orbitals and a nuanced discussion of the interrelationship between VBT, MOT, and band theory A section on the relationship between a molecule's structure and bonding and its chemical reactivity With its in-depth boxed discussions, this textbook is also ideal for senior undergraduate and first-year graduate students in inorganic chemistry, *Principles of Inorganic Chemistry* is a must-have resource for anyone seeking a principles-based approach with theoretical depth. Furthermore, it will be useful for students of physical chemistry, materials science, and chemical physics.