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Inorganic Experiments - J. Derek Woollins 2010-02-01
A classic brought up to date with new experiments using the latest methods. Modern spectroscopic techniques and current research topics make this an incomparable resource for undergraduate and graduate students, presenting a fascinating approach to inorganic chemistry by providing experiments that resemble real research. As a result, students learn to think in a research-oriented fashion and to research together in a group. The experiments have been thoroughly tested and safety instructions are included, while hazardous substances are replaced by less harmful ones. This new edition also has a special focus on environmentally friendly experiments.
Computational Chemistry and Molecular Modeling - K. I. Ramachandran 2008-05-20
The gap between introductory level textbooks and highly specialized monographs is filled by this modern textbook. It provides in one comprehensive volume the in-depth theoretical background for molecular modeling and detailed descriptions of the applications in chemistry and related fields like drug design, molecular sciences, biomedical, polymer and materials engineering. Special chapters on basic mathematics and the use of respective software tools are included. Numerous numerical examples, exercises and explanatory illustrations as well as a web site with application tools (http://www.amrita.edu/cen/ccmm) support the students and lecturers.
Introduction to Coordination Chemistry - Geoffrey A. Lawrance 2013-03-15
At the heart of coordination chemistry lies the coordinate bond, inits simplest sense arising from donation of a pair of electronsfrom a donor atom to an empty orbital on a central metalloid ormetal. Metals overwhelmingly exist as their cations, but these arerarely met ‘naked’ – they are clothed in an arrayof other atoms, molecules or ions that involve coordinate covalentbonds (hence the name coordination compounds). These metal ioncomplexes are ubiquitous in nature, and are central to an array ofnatural and synthetic reactions. Written in a highly readable, descriptive and accessible styleIntroduction to Coordination Chemistry describes propertiesof coordination compounds such as colour, magnetism and reactivityas well as the logic in their assembly and nomenclature. It isillustrated with many examples of the importance of coordinationchemistry in real life, and includes extensive references and abibliography. Introduction to Coordination Chemistry is a comprehensiveand insightful discussion of one of the primary fields of study inInorganic Chemistry for both undergraduate and non-specialistreaders.
Recent Advances in Scientific Research - Devajani Boruah 2018-07-27

Scientific Study from the year 2018 in the subject Chemistry - Biochemistry, language: English, abstract: During the last few years, a variety of Schiff base complexes have been reported and their biological activities have been investigated. The coordination chemistry of ruthenium with P, N-donor ligands have been overviewed which received much attention in the last couple of years due to academic interest as well as industrial needs. Especially in the field of catalysis for different chemical transformations. Therefore, an attempt has been made to provide a base of essential information of some areas in scientific research, which would help the budding researcher to develop a model, to design the experiments and to implement the strategies for the development of society and the improvement of the quality of life. The recent advancement in science and technology has brought the revolutionary changes in every aspect of human life. But one cannot overlook the traditional system, which is the base of all the revolutionary changes. Nowadays people are turning towards the ancient system which is based on natural products because of its fewer chances of side effects. The ancient system of Indian science of medicine 'Ayurveda' reports a large number of plants that are effective in treating liver diseases. Some studies showed the therapeutic effects of plants because of its phytocompounds. Therefore, by adopting proper protocols, pharmacological experiments and clinical trials, new potent drugs and nutraceuticals could be developed from the indigenous medicinal plants. The Microbes play an important role in every aspect of life. Phosphate solubilizing microbes are very important in any soil as well as in tea gardens. Attempts were made to isolate phosphate solubilizing microbes (PSM) from different tea estates of Assam, India. The isolated strains could be used to improve the phosphate nutrition of the tea soil and plant in an economic and eco-friendly way. In the

Copper(I) Chemistry of Phosphines, Functionalized Phosphines and Phosphorus Heterocycles - Maravanji S. Balakrishna 2019-04-25

Copper(I) Complexes of Phosphines, Functionalized Phosphines and Phosphorus Heterocycles is a comprehensive guide to one of the most widely used and extensively studied metals: copper. The numerous practical applications of copper compounds are discussed, including homogeneous and heterogeneous catalysis and their use as fungicides, pesticides, pigments for paints, resins and glasses, and in high-temperature superconductors. The remarkable structural flexibility of simple copper(I) complexes, such as cuprous halides is covered, including numerous structural motifs that, when combined with different ligand systems, exhibit linear, trigonal planar or tetrahedral geometries. This work is an essential reference for inorganic and coordination chemists, as well as researchers working on catalysis, anticancer reagents, luminescence, fluorescence and photophysical aspects. Discusses the properties of copper and similarities to noble metals, such as their corrosion resistance, high thermal and electrical conductivity and rich coordination chemistry Includes the copper(I) coordination chemistry of tertiary phosphines, bisphosphines and phosphines containing other donor atoms and their potential application in catalysis, biosystems and photochemical areas Features a discussion of the rich photochemistry exhibited by some mixed-ligand copper(I) complexes (phosphines with heteroaromatic ligands) which can exhibit coprophilic interactions, photoluminescence and thermochromic properties

Inorganic Experiments - J. Derek Woollins 2003

Introductory Experiments. Intermediate Experiments. Advanced Experiments. Index.

Transition Metal Catalyzed Carbonylation Reactions - Matthias Beller 2013-08-13

Transition Metal Catalyzed Carbonylation Reactions is a comprehensive monograph focusing on carbon monoxide usage. This book provides students and researchers in organic synthesis with a detailed discussion of carbonylation from the basics through to applications. The authors have structured the book around the types of reactions, based on the different nucleophiles involved. Scientists working in carbonylation or with carbon monoxide, as well as teachers of organic synthesis can use this book to become familiar with this important area of organic chemistry.

Maths for Chemists - Martin Cockett 2012

This is a new edition of the combined Volumes I and II of the hugely successful Tutorial Chemistry Texts Maths for Chemists. The new edition will continue to provide an excellent resource for all undergraduate chemistry students particularly focussing on the needs of students who may not have studied mathematics beyond GCSE level (or equivalent). The text is introductory in nature and adopts a sympathetic approach for students who need support and understanding in working with the diverse mathematical tools required in a typical chemistry degree course. The topics covered include: power series, which are used to formulate alternative representations of functions and are important in model building in chemistry; complex numbers and complex functions, which appear in quantum chemistry, spectroscopy and crystallography; matrices and determinants used in the solution of sets of simultaneous linear equations and in the representation of geometrical transformations used to describe molecular symmetry characteristics; and vectors which allow the description of directional properties of molecules. New material includes a new chapter on Statistics and Error Analysis. Ideal for the needs of undergraduate chemistry students, Maths for Chemists is a comprehensive text consisting of short, single topic or modular texts concentrating on the fundamental areas of chemistry taught in undergraduate science courses. It provides a concise account of the basic principles underlying a given subject, embodying an independent-learning philosophy and including worked examples.

Nanostructured Materials for Environmental Applications - Subramanian Balakumar 2021-08-25

This book discusses how nanostructured materials play a key role in helping address environmental challenges. Employing nanostructured materials in catalysis can increase the efficient decomposition of toxic pollutants in air, water, and soil. This multidisciplinary book discusses the most promising nanostructured materials made-up of metals, metal oxides, metal chalcogenides, multi-metal oxides, carbon nanostructures, and hybrid materials that can address environmental remediation. It provides a well-referenced introduction to newcomers from allied disciplines and will be valuable to researchers in academia, industry, and government working on solutions to environmental problems.

Synthesis of Organometallic Compounds - Sanshiro Komiya 1997-05-28

Inorganic Chemistry This series reflects the breadth of modern research in inorganic chemistry and fulfils the need for advanced texts. The series covers the whole range of inorganic and physical chemistry, solid state chemistry, coordination chemistry, main group chemistry and bioinorganic chemistry. Synthesis of Organometallic Compounds A Practical Guide Edited by Sanshiro Komiya Tokyo University of Agriculture and Technology, Japan. This book describes the concepts of organometallic chemistry and provides an overview of the chemistry of each metal including the synthesis and handling of its important organometallic compounds. Synthesis of Organometallic Compounds: A Practical Guide provides: * an excellent introduction to organometallic synthesis * detailed synthetic protocols for the most important organometallic syntheses * an overview of the reactivity, applications and versatility of organometallic compounds * a survey of metals and their organometallic derivatives The purpose of this book is to serve as a practical guide to understanding the general concepts of organometallics for graduate students and scientists who are not necessarily specialists in organometallic chemistry.

Introduction to Modern Inorganic Chemistry, 6th edition - R.A. Mackay 2002-11-18

This popular and comprehensive textbook provides all the basic information on inorganic chemistry that undergraduates need to know. For this sixth edition, the contents have undergone a complete revision to reflect progress in areas of research, new and modified techniques and their applications, and use of software packages. Introduction to Modern Inorganic Chemistry begins by explaining the electronic structure and properties of atoms, then describes the principles of bonding in diatomic and polyatomic covalent molecules, the solid state, and solution chemistry. Further on in the book, the general properties of the periodic table are studied along with specific elements and groups such as hydrogen, the 's' elements, the lanthanides, the actinides, the

transition metals, and the "p" block. Simple and advanced examples are mixed throughout to increase the depth of students' understanding. This edition has a completely new layout including revised artwork, case study boxes, technical notes, and examples. All of the problems have been revised and extended and include notes to assist with approaches and solutions. It is an excellent tool to help students see how inorganic chemistry applies to medicine, the environment, and biological topics.

Successful Industrial Experimentation - B. Kyle 1995-10-12

This book is an introductory guide to process and product improvement through the use of simple quality improvement techniques and experimental design methodology. The fundamentals of a sound experimental approach to problem-solving which incorporates valid statistical analysis is stressed. All techniques presented in this book have been applied in a variety of industrial situations by individuals with varying academic backgrounds. This book is particulary beneficial to those individuals who are interested in performing experiments but have no inclination toward becoming a statistician. It is an ideal textbook for college courses on experimental techniques, correspondence courses or for self paced study programs.

Applied Homogeneous Catalysis - Arno Behr 2012-04-16

Adopting a didactic approach at an advanced, masters level, this concise textbook provides an array of questions & answers and features numerous industrial case studies and examples, with references for further, more detailed reading and to the latest peer-reviewed articles at the end of each chapter. A significant feature is the book's treatment of more recently developed catalytic processes and their applications in the pharmaceutical and fine chemical industries, with an indication of their present and future commercial impact. Written by a dedicated lecturer with a wealth of experience in industry, this is an invaluable tool for practicing chemical engineers and chemists who need to advance their education in this vibrant and expanding field.

The Inorganic Chemistry of Materials - Paul J. van der Put 2013-06-29

P.J. van der Put offers students an original introduction to materials chemistry that integrates the full range of inorganic chemistry. Technologists who need specific chemical facts to manipulate matter will also find this work invaluable as an easy-to-use reference. The text includes practical subjects of immediate use for materials such as bonding, morphogenesis, and design that more orthodox materials science volumes often leave out.

Synthesis and Technique in Inorganic Chemistry - Gregory S. Girolami 1999

Previously by Angelici, this laboratory manual for an upper-level undergraduate or graduate course in inorganic synthesis has for many years been the standard in the field. In this newly revised third edition, the manual has been extensively updated to reflect new developments in inorganic chemistry. Twenty-three experiments are divided into five sections: solid state chemistry, main group chemistry, coordination chemistry, organometallic chemistry, and bioinorganic chemistry. The included experiments are safe, have been thoroughly tested to ensure reproducibility, are illustrative of modern issues in inorganic chemistry, and are capable of being performed in one or two laboratory periods of three or four hours. Because facilities vary from school to school, the authors have included a broad range of experiments to help provide a meaningful course in almost any academic setting. Each clearly written & illustrated experiment begins with an introduction that hig! hlights the theme of the experiment, often including a discussion of a particular characterization method that will be used, followed by the experimental procedure, a set of problems, a listing of suggested Independent Studies, and literature references.

Organomagnesium Methods in Organic Chemistry - Basil J. Wakefield 1995-03-16

The book opens with a general overview of the constitution and reactivity of organomagnesium compounds, followed by information on handling them and on their detection and estimation. Throughout, practical aspects aswell as principles are emphasized. The chapters on the synthesis of organomagnesium compounds cover the preparation of special forms of metallic magnesium and the reaction of magnesium with substrates such as dienes, as well as the traditional preparation of

Grignard reagents. Preparations by metallation and metal-halogen exchanges are also included, as are newer methods such as hydromagnesiation of alkenes and alkynes. Systematic coverage is provided on synthetically useful reactions of organomagnesium compounds. Of fundamental importance in organic synthesis are carbon-carbon bond forming reactions; additions to carbon-carbon, carbon-nitrogen, carbon-oxygen, and carbon-sulfur multiple bonds; and nucleophilic substitution at carbon. The formation of carbon-heteroatom bonds in organic compounds is described, where the heteroatom is hydrogen, nitrogen, oxygen, sulfur, or halogen. Finally, the use of organomagnesium compounds in preparing other organometalloid and organometallic compounds is outlined. Representative experimental procedures are included throughout the book, and tables with references to well-described examples are provided. Presents a general overview of the constitution and reactivity of organomagnesium compounds Provides coverage on the detection and estimation of organomagnesium compounds Emphasizes practical aspects as well as principles Covers the preparation of special forms of metallic magnesium and the reaction of magnesium with substrates such as dienes Includes preparations by metallation and metal-halogen exchanges Reviews new preparation methods such as hydromagnesiation of alkenes and alkynes Outlines information on synthetically useful reactions of organomagnesium compounds Describes the formation of carbon-heteroatom bonds in organic compounds Addresses the use of organomagnesium compounds in preparing other organometalloid and organometallic compounds Includes representative procedures and tables with references to well-described examples

The Curiosities of Ale & Beer - John Bickerdyke 1886

Mr Chaston Chapman collected works for two libraries; his working library, based at his laboratory in London, and a private, historical collection. Subjects include brewing and the brewing industry, wine and winemaking, beer, distillation and distilling industry, drinking customs, liquors, ciders and whiskey and legal issues surrounding alcohol. The brewing section represents part of Mr Chaston Chapman's library. The collection contains works on brewing and alcohol which dates from 1578, with 'A Perfite platforme of a Hoppe Garden'.

Complexity in Chemistry and Beyond: Interplay Theory and Experiment - Craig Hill 2013-01-08

Complexity occurs in biological and synthetic systems alike. This general phenomenon has been addressed in recent publications by investigators in disciplines ranging from chemistry and biology to psychology and philosophy. Studies of complexity for molecular scientists have focussed on breaking symmetry, dissipative processes, and emergence. Investigators in the social and medical sciences have focused on neurophenomenology, cognitive approaches and self-consciousness. Complexity in both structure and function is inherent in many scientific disciplines of current significance and also in technologies of current importance that are rapidly evolving to address global societal needs. Several of these multifaceted scientific disciplines are addressed in this book including complexity from the general and philosophical perspective, magnetic phenomena, control of self assembly and function in large multicomponent clusters, application of theory to probe structure and mechanism in highly complex molecular species, and the design of multifunctional nanoscale molecules of value in decontamination and solar fuels research. Each chapter is both a review and addresses some ongoing challenges, thus each should provide a good preparation for further work in these highly active areas of research endeavour.

Practical Inorganic Chemistry - G. Pass 2013-03-09

In revising the text opportunity has been taken to introduce SI units throughout. An Appendix has been included which contains tables of SI units and a table of conversion factors for use when consulting data in non-SI units. Chapter 19 now includes experiments demon strating the use of ion-exchange and solid-liquid chromatography_ Exercises involving colorimetry have been included in Chapter 17. These techniques are introduced as part of a complementary exercise where their relevance is seen as part of a complete piece of work. Minor improvements have been made to some of the experimental procedures

and we are grateful to those who have made helpful suggestions in this respect. G. PASS H. SUTCLIFFE iii Preface to the First Edition The student of inorganic chemistry is fortunate in having a wide choice of textbooks covering the descriptive and theoretical aspects of the sUbject. There is no comparable choice of textbooks covering practical inorganic chemistry. Moreover, there is a tendency for many students to draw an unfortunate distinction between chemistry taught in the lecture room, and laboratory work. Consideration of these points prompted the preparation of this book, in which we have attempted to emphasize the relationship between theory and practice.

Lanthanide and Actinide Chemistry - Simon Cotton 2013-03-15

The only introduction into the exciting chemistry of Lanthanidesand Actinides. The book is based on a number of courses on "f elements" The author has a long experience in teaching this field ofchemistry Lanthanides have become very common elements in research andtechnology applications; this book offers the basic knowledge The book offers insights into a vast range of applications,from lasers to synthesis The Inorganic Chemistry: A Textbook series reflects thepivotal role of modern inorganic and physical chemistry in a wholerange of emerging areas, such as materials chemistry, greenchemistry and bioinorganic chemistry, as well as providing a solidgrounding in established areas such as solid state chemistry,coordination chemistry, main group chemistry and physical inorganicchemistry. Lanthanide and Actinide Chemistry is a one-volume accountof the Lanthanides (including scandium and yttrium), the Actinidesand the Transactinide elements, intended as an introductorytreatment for undergraduate and postgraduate students. Theprincipal features of these elements are set out in detail,enabling clear comparison and contrast with the Transition Elementsand Main Group metals. The book covers the extraction of the elements from their oresand their purification, as well as the synthesis of the man-madeelements; the properties of the elements and principal binarycompounds; detailed accounts of their coordination chemistry andorganometallic chemistry, from both preparative and structuralviewpoints, with a clear explanation of the factors responsible forthe adoption of particular coordination numbers; spectroscopy andmagnetism, especially for the lanthanides, with case studies andaccounts of applications in areas like magnetic resonance imaging,lasers and luminescence; nuclear separations and problems in wastedisposal for the radioactive elements, particularly in the contextof plutonium. Latest developments are covered in areas like the synthesis ofthe latest man-made elements, whilst there is a whole chapter onthe application of lanthanide compounds in synthetic organicchemistry. End-of-chapter questions suitable for tutorial discussions areprovided, whilst there is a very comprehensive bibliographyproviding ready access to further reading on all topics.

The Chemistry of Aqua Ions: Synthesis, Structure and Reactivity - David T. Richens 1997-04-08

This book has been written at a time when environmental issues and the move towards "clean technology" is driving synthetic chemists away from organic based solvent systems and towards water as the preferred medium of the future. The paints industry has already moved to aqueous based products. Metal aqua complexes are widely used in the areas of catalysis, dyes and pigments and in hydrometallurgy where a complete understanding of the metal ions in aqueous media is highly desirable.

Enzyme-Mediated Stereoselective Synthesis - Stefano Serra 2019-12-06

This book is a collection of studies focused on the exploitation of enzyme stereoselectivity for the synthesis of relevant chemicals, such as innovative materials, chiral building blocks, natural products, and flavor and fragrance compounds. Different catalytic approaches are reported. The first study describes a resolution-based process for the stereoselective synthesis of the enantiomeric forms of the flavor compound linaloyl oxide, whereas other enantiomeric enriched aroma compounds were obtained through a novel microbial approach based on solid-state fermentation. Two relevant works exploit the potential of the biocatalyzed reduction reactions. The first of these contributions describes the enantioselective synthesis of β-nitroalcohols by enzyme-mediated reduction of α-nitroketones, whereas a second contribution

reports the preparation of chiral 1,4-diaryl-1,4-diols through ADH-catalyzed bioreduction of the corresponding diketones. Concerning enantioenriched alcohol derivatives, natural hydroxy fatty acids are prepared by means of the biocatalytic hydration reaction of natural fatty acids using the probiotic bacterium Lactobacillus rhamnosus as a whole-cell biocatalyst. Further studies describe the use of modified pullulan polysaccharide for lipase immobilization and the recent advances in synthetic applications of ω-transaminases for the production of chiral amines.

Advanced Inorganic Chemistry - F. Albert Cotton 1999-04-13

For more than a quarter century, Cotton and Wilkinson's Advanced Inorganic Chemistry has been the source that students and professional chemists have turned to for the background needed to understand current research literature in inorganic chemistry and aspects of organometallic chemistry. Like its predecessors, this updated Sixth Edition is organized around the periodic table of elements and provides a systematic treatment of the chemistry of all chemical elements and their compounds. It incorporates important recent developments with an emphasis on advances in the interpretation of structure, bonding, and reactivity.“/p> From the reviews of the Fifth Edition: "The first place to go when seeking general information about the chemistry of a particular element, especially when up-to-date, authoritative information is desired." —Journal of the American Chemical Society "Every student with a serious interest in inorganic chemistry should have [this book]." —Journal of Chemical Education "A mine of information . . . an invaluable guide." —Nature "The standard by which all other inorganic chemistry books are judged." —Nouveau Journal de Chimie "A masterly overview of the chemistry of the elements." —The Times of London Higher Education Supplement "A bonanza of information on important results and developments which could otherwise easily be overlooked in the general deluge of publications." —Angewandte Chemie

Bioinorganic Chemistry -- Inorganic Elements in the Chemistry of Life - Wolfgang Kaim 2013-08-01

The field of Bioinorganic Chemistry has grown significantly inrecent years; now one of the major sub-disciplines of InorganicChemistry, it has also pervaded other areas of the life sciencesdue to its highly interdisciplinary nature. Bioinorganic Chemistry: Inorganic Elements in the Chemistryof Life, Second Edition provides a detailed introduction to therole of inorganic elements in biology, taking a systematicelement-by-element approach to the topic. The second edition ofthis classic text has been fully revised and updated to include newstructure information, emerging developments in the field, and anincreased focus on medical applications of inorganic compounds. Newtopics have been added including materials aspects of bioinorganicchemistry, elemental cycles, bioorganometallic chemistry, medicalimaging and therapeutic advances. Topics covered include: Metals at the center of photosynthesis Uptake, transport, and storage of essential elements Catalysis through hemoproteins Biological functions of molybdenum, tungsten, vanadium andchromium Function and transport of alkaline and alkaline earth metalcations Biomineralization Biological functions of the non-metallic inorganicelements Bioinorganic chemistry of toxic metals Biochemical behavior of radionuclides and medical imaging usinginorganic compounds Chemotherapy involving non-essential elements This full color text provides a concise and comprehensive review ofbioinorganic chemistry for advanced students of chemistry,biochemistry, biology, medicine and environmental science.

Infrared and Raman Spectra of Inorganic and Coordination Compounds, Part A - Kazuo Nakamoto 2008-12-22

The Sixth Edition of this classic work comprises the most comprehensive and current guide to infrared and Raman spectra of inorganic, organometallic, bioinorganic, and coordination compounds. From fundamental theories of vibrational spectroscopy to applications in a variety of compound types, this has been extensively updated. New topics include the theoretical calculations of vibrational frequencies (DFT method), chemical synthesis by matrix co-condensation reactions, time-resolved Raman spectroscopy, and more. This volume is a core reference for chemists and medical professionals working with infrared or Raman spectroscopies and an excellent textbook for graduate courses.

Comprehensive Organic Chemistry Experiments for the Laboratory Classroom - Carlos A M Afonso 2020-08-28
This expansive and practical textbook contains organic chemistry experiments for teaching in the laboratory at the undergraduate level covering a range of functional group transformations and key organic reactions.The editorial team have collected contributions from around the world and standardized them for publication. Each experiment will explore a modern chemistry scenario, such as: sustainable chemistry; application in the pharmaceutical industry; catalysis and material sciences, to name a few. All the experiments will be complemented with a set of questions to challenge the students and a section for the instructors, concerning the results obtained and advice on getting the best outcome from the experiment. A section covering practical aspects with tips and advice for the instructors, together with the results obtained in the laboratory by students, has been compiled for each experiment. Targeted at professors and lecturers in chemistry, this useful text will provide up to date experiments putting the science into context for the students.
Main Group Chemistry - W. Henderson 2000
Main Group Chemistry covers the chemistry of the s- and p-block elements, together with a brief chapter on the chemistry of zinc, cadmium and mercury, often classified as main group elements rather than as transition elements. The Periodic Table is an important predictive tool in main group chemistry and in this book, forms the basis for describing the trends and variations in the chemistry of the elements. Introductory material covers the basic principles behind the Periodic Table, bonding, electronegativity and VSEPR (Valence Shell Electron Pair Repulsion) theory. The chemistry of various groups of elements is then discussed. The book incorporates a valuable chapter on inorganic polymers, discussing the chemistry of materials such as silicates, silicones, phosphazenes and diamond. Additional material is available on the website at www.rsc.org/tct Ideal for the needs of undergraduate chemistry students, Tutorial Chemistry Texts is a major series consisting of short, single topic or modular texts concentrating on the fundamental areas of chemistry taught in undergraduate science courses. Each book provides a concise account of the basic principles underlying a given subject, embodying an independent-learning philosophy and including worked examples.
Molecular Materials - Duncan W. Bruce 2011-04-04
"... the book does an excellent job of putting together several different classes of materials. Many common points emerge, and the book may facilitate the development of hybrids in which the qualities of the "parents" are enhanced." –Angew. Chem. Int. Ed. 2011 With applications in optoelectronics and photonics, quantum information processing, nanotechnology and data storage, molecular materials enrich our daily lives in countless ways. These materials have properties that depend on their exact structure, the degree of order in the way the molecules are aligned and their crystalline nature. Small, delicate changes in molecular structure can totally alter the properties of the material in bulk. There has been increasing emphasis on functional metal complexes that demonstrate a wide range of physical phenomena. Molecular Materials represents the diversity of the area, encapsulating magnetic, optical and electrical properties, with chapters on: Metal-Based Quadratic Nonlinear Optical Materials Physical Properties of Metallomesogens Molecular Magnetic Materials Molecular Inorganic Conductors and Superconductors Molecular Nanomagnets Structured to include a clear introduction, a discussion of the basic concepts and up-to-date coverage of key aspects, each chapter provides a detailed review which conveys the excitement of work in that field. Additional volumes in the Inorganic Materials Series: Low-Dimensional Solids | Molecular Materials | Porous Materials | Energy Materials
Inorganic Experiments - J. Derek Woollins 1994-09-13
Offers detailed descriptions of more than 60 experiments ranging from undergraduate to graduate level, covering organometallic, main group, solid state and coordination chemistry--Cover.
Introduction to Chemical Kinetics - Margaret Robson Wright 2005-08-19
The range of courses requiring a good basic understanding of chemical kinetics is extensive, ranging from chemical engineers and pharmacists

to biochemists and providing the fundamentals in chemistry. Due to the wide reaching nature of the subject readers often struggle to find a book which provides in-depth, comprehensive information without focusing on one specific subject too heavily. Here Dr Margaret Wright provides an essential introduction to the subject guiding the reader through the basics but then going on to provide a reference which professionals will continue to dip in to through their careers. Through extensive worked examples, Dr Wright, presents the theories as to why and how reactions occur, before examining the physical and chemical requirements for a reaction and the factors which can influence these. * Carefully structured, each chapter includes learning objectives, summary sections and problems. * Includes numerous applications to show relevance of kinetics and also provides plenty of worked examples integrated throughout the text.

Arguments about Abortion - Kate Greasley 2017

Does the morality of abortion depend on the moral status of the human fetus? Must the law of abortion presume an answer to the question of when personhood begins? Can a law which permits late abortion but not infanticide be morally justified? These are just some of the questions this book sets out to address. With an extended analysis of the moral and legal status of abortion, Kate Greasley offers an alternative account to the reputable arguments of Ronald Dworkin and Judith Jarvis Thomson and instead brings the philosophical notion of 'personhood' to the foreground of this debate. Structured in three parts, the book will (I) consider the relevance of prenatal personhood for the moral and legal evaluation of abortion; (II) trace the key features of the conventional debate about when personhood begins and explore the most prominent issues in abortion ethics literature: the human equality problem and the difference between abortion and infanticide; and (III) examine abortion law and regulation as well as the differing attitudes to selective abortion. The book concludes with a snapshot into the current controversy surrounding the scope of the right to conscientiously object to participation in abortion provision.

Mass Spectrometry of Inorganic and Organometallic Compounds - William Henderson 2005-07-15

This is the first modern book to treat inorganic and organometallic mass spectrometry simultaneously. It is textbook and handbook in one; as a textbook it introduces the techniques and gives hints on how to apply the various techniques, as a handbook it lists all available ionization techniques for just about any given compound. The book also includes non-mathematical explanations of how modern MS instruments work Mass Spectrometry of Inorganic and Organometallic Compounds will inspire the synthetic inorganic and organometallic chemist with the confidence to apply some of the new techniques to their characterization problems.

Organometallic Chemistry and Catalysis - Karl Kirchner 2012-12-06

From the beginning of chemistry as an exact (natural) science - almost 200 years ago - there was a more or less distinct differentiation between its various branches such as organic, inorganic, physical, analytical, or biochemistry. With the increasing insight into the connections and governing laws it soon became obvious, however, that such a clear separation could be regarded as more or less obsolete; within almost any field of chemical research one has to deal with most of the branches mentioned. Especially organic and inorganic chemistry are significant examples for this statement, overlapping considerably within the important field of organome tallic chemistry. This regime of chemistry started its advance with the discovery of dimethylzinc 150 years ago, had a highlight with the introduction of Grignard reagents around 1900, developed further with the start of lithium organyls in 1925 and literally exploded after the discovery of the first transition metal cyclopenta dienyl complex ferrocene half a century ago. The chronological sequence of the important steps, i. e. 1850 (Zn) - 1900 (Mg) - 1925 (Li) - 1950 (Fe), seems rather remarkable. The increasing group of metallocenes is not only of high theoretical and, due to the potential chirality of its members, stereochemical interest, but offers also a wide variety of extremely useful catalysts, especially for stereoselective reactions. The Austrian Chemical Society took this development into account by organizing the Twelfth International Conference on Organometallic Chemistry held in Vienna in

1985.

Oxford Studies in Philosophy of Law - John Gardner 2018-09-20

Oxford Studies in Philosophy of Law is a forum for some of the best new philosophical work on law, by both senior and junior scholars from around the world. The essays range widely over issues in general jurisprudence (the nature of law, adjudication, and legal reasoning), the philosophical foundations of specific areas of law (from criminal law to evidence to international law), the history of legal philosophy, and related philosophical topics that illuminate the problems of legal theory. OSPL will be essential reading for philosophers, academic lawyers, political scientists, and historians of law who wish to keep up with the latest developments in this flourishing field.

Inorganic Reactions in Water - Ronald Rich 2007-12-22

Organized to facilitate reference to the reagents involved, this book describes the reactions of the elements and their mostly simpler compounds, primarily inorganic ones and primarily in water. The book makes available some of the more comprehensive coverage of descriptive aqueous chemistry found in older sources, but now corrected and interpreted with the added insights of the last seven decades.

Handbook of Preparative Inorganic Chemistry - Georg Brauer 1963

Comprehensive Coordination Chemistry II - J. A. McCleverty 2003-12-03

Comprehensive Coordination Chemistry II (CCC II) is the sequel to what has become a classic in the field, Comprehensive Coordination Chemistry, published in 1987. CCC II builds on the first and surveys new developments authoritatively in over 200 newly comissioned chapters, with an emphasis on current trends in biology, materials science and other areas of contemporary scientific interest.

Inorganic Rings and Polymers of the P-block Elements - Tristram Chivers 2009

Ring systems represent a very important branch of organic chemistry. Benzene is perhaps the pre-eminent example and provides the benchmark for the so-called aromatic character of cyclic systems. Cycloalkanes are another prominent class of organic compounds and these saturated ring systems form a homologous series known as alicyclics. Materials that are constructed from organic polymers such as polythene, polystyrene, polyisoprene (natural rubber) and polyvinyl chloride are common features of our daily lives. Most of these and related organic polymers are generated from acyclic precursors by free radical, anionic, cationic or organometallic polymerisation processes or by condensation reactions. The focus of this book is monocyclic inorganic ring systems of the p-block elements and the polymers that are, in many cases derived from them. Bicyclic or polycyclic arrangements are considered when they are closely related to those of monocyclic systems. Inorganic heterocycles that are more accurately described as coordination complexes of chelating inorganic ligands are included only when they are directly related to an inorganic homocycle or heterocycle by the replacement of one p-block element by a more metallic p-block element. After a short introductory chapter, the first half of the book is comprised of seven chapters that deal with the fundamentals of the subject intended for undergraduates or researchers who are unfamiliar with the topic, covering the following areas: - synthetic methods - characterisation techniques - delocalisation in inorganic rings - paramagnetic inorganic rings - inorganic macrocycles - ligand chemistry - inorganic polymers (general concepts including, synthesis, structure and bonding, characterisation methods, properties and applications) The final four chapters discuss in detail the chemistry of inorganic homo- and hetero-cycles involving the elements of groups 13-16 (the p-block elements). The focus is on relating the early seminal contributions to the field with exciting new developments. From the fundamental standpoint, novel structures and new bonding concepts are highlighted, in addition to synthetic approaches. This is the first book that addresses both the fundamental and applied aspects of inorganic ring systems through an emphasis of their use as precursors to inorganic polymers and other useful materials (e.g. semiconductors and ceramics). The book is intended primarily for senior undergraduates and graduate students in inorganic chemistry, as well research workers in the field of inorganic

ring systems and polymers. At the undergraduate level it serves as a supplementary text to the more general inorganic chemistry text books and at the graduate level it would be the text of choice for a course in the area of inorganic rings and polymers.

Structural Methods in Molecular Inorganic Chemistry - D. W. H. Rankin 2013-01-02

Determining the structure of molecules is a fundamental skill that all chemists must learn. Structural Methods in Molecular Inorganic Chemistry is designed to help readers interpret experimental data, understand the material published in modern journals of inorganic chemistry, and make decisions about what techniques will be the most useful in solving particular structural problems. Following a general introduction to the tools and concepts in structural chemistry, the following topics are covered in detail: • computational chemistry • nuclear magnetic resonance spectroscopy • electron paramagnetic resonance spectroscopy • Mössbauer spectroscopy • rotational spectra and rotational structure • vibrational spectroscopy • electronic characterization techniques • diffraction methods • mass spectrometry The final chapter presents a series of case histories, illustrating how chemists have applied a broad range of structural techniques to interpret and understand chemical systems. Throughout the textbook a strong connection is made between theoretical topics and the real world of practicing chemists. Each chapter concludes with problems and discussion questions, and a supporting website contains additional advanced material. Structural Methods in Molecular Inorganic Chemistry is an extensive update and sequel to the successful textbook Structural Methods in Inorganic Chemistry by Ebsworth, Rankin and Cradock. It is essential reading for all advanced students of chemistry, and a handy reference source for the professional chemist.

Selenium and Tellurium Chemistry - J. Derek Woollins 2011-07-28

Our knowledge of the chemistry of selenium and tellurium has seen significant progress in the last few decades. This monograph comprises contributions from leading scientists on the latest research into the synthesis, structure and bonding of novel selenium and tellurium compounds. It provides insight into mechanistic studies of these compounds and describes coordination chemistry involving selenium and tellurium containing ligands. Contributions also describe the theoretical and spectroscopic studies of selenium and tellurium compounds. Additionally, this monograph outlines the applications of selenium and tellurium in biological systems, materials science and as reagents in organic synthesis and shows how these applications have been a fundamental driving force behind the research into the inorganic and organic chemistry these fascinating elements.