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Journal of the Chinese Chemical Society 2003

Comprehensive Coordination Chemistry II J. A. McClverty 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 commissioned chapters, with an emphasis on current trends in biology, materials science and other areas of contemporary scientific interest.

Metal Ions in Biological Systems Helmut Sigel 2004

Wiley Encyclopedia of Chemical Biology, Volume 3 Tadgh P. Begley 2009-02-03 The first major reference at the interface of chemistry, biology, and medicine Chemical biology is a rapidly developing field that uses the principles, tools, and language of chemistry to answer important questions in the life sciences. It has enabled researchers to gather critical information about the molecular biology of the cell and is the fundamental science of drug discovery, playing a key role in the development of novel agents for the prevention, diagnosis, and treatment of disease. Now students and researchers across the range of disciplines that use chemical biology techniques have a single resource that encapsulates what is known in the field. It is an excellent place to begin any chemical biology investigation. Major topics addressed in the encyclopedia include: Applications of chemical biology Biomolecules within the cell Chemical views of biology Chemistry of biological processes and systems Synthetic molecules as tools for chemical biology Technologies and techniques in chemical biology Some 300 articles range from pure basic research to areas that have immediate applications in fields such as drug discovery, sensor technology, and catalysis. Novices in the field can turn to articles that introduce them to the basics, whereas experienced researchers have access to articles exploring the cutting edge of the science. Each article ends with a list of references to facilitate further investigation. With contributions from leading researchers and pioneers in the field, the Wiley Encyclopedia of Chemical Biology builds on Wiley's unparalleled reputation for helping students and researchers understand the crucial role of chemistry and chemical techniques in the life sciences.

The Encyclopedia of Mass Spectrometry Michael L. Gross 2003

Ruthenium Complexes Alvin A. Holder 2018-02-27 Edited by a team of highly respected researchers combining their expertise in chemistry, physics, and medicine, this book focuses on the use of ruthenium-containing complexes in artificial photosynthesis and medicine. Following a brief introduction to the basic coordination chemistry of ruthenium complexes and their synthesis in section one, as well as their photophysical and photochemical properties, the authors discuss in detail the major concepts of artificial photosynthesis and mechanisms of hydrogen production and water oxidation with ruthenium in section two. The third section of the text covers biological properties and important medical applications of ruthenium complexes as therapeutic agents or in diagnostic imaging. Aimed at stimulating research in this active field, this is an invaluable information source for researchers in academia, health research institutes and governmental departments working in the field of organometallic chemistry, green and sustainable chemistry as well as medicine/drug discovery, while equally serving as a useful reference also for scientists in industry.

Metallopharmaceuticals I Michael J. Clarke 1999-05-21 Each volume provides the reader, whether engaged in chemistry, biochemistry, biology or molecular medicine, with a comprehensive summary and critical overview of a topic of great current interest written by leading international experts.

Small Molecule DNA and RNA Binders Martine Demeunynck 2006-03-06 The development of molecules that selectively bind to nucleic acids has provided many details about DNA and RNA recognition. The range of such substances, such as metal complexes, peptides, oligonucleotides and a wide array of synthetic organic compounds, is as manifold as the functions of nucleic acids. Nucleic acid recognition sequences are often found in the major or minor groove of a double strand, while other typical interactions include intercalation between base pairs or the formation of triple or quadruple helices. One example of a binding mode that has recently been proposed is end stacking on such complex structures as the telomere tetraplex. In this comprehensive book, internationally recognized experts describe in detail the important aspects of nucleic acid binding, and in so doing present impressive approaches to drug design. Since typical substances may be created naturally or synthetically, emphasis is placed on natural products, chemical synthesis, the use of combinatorial libraries, and structural characterization. The whole is rounded off by contributions on molecular modeling, as well as investigations into the way in which any given drug interacts with its nucleic acid recognition site.

Medicinal Organometallic Chemistry Gérard Jaouen 2010-09-14 Contents: Gérard Jaouen, Nils Metzler-Nolte : Introduction ; Stéphane GIBAUD and Gérard JAOUEN: Arsenic - based drugs: from Fowler's solution to modern anticancer chemotherapy; Ana M. Pizarro, Abbraha Habtemariam and Peter J. Sadler : Activation Mechanisms for Organometallic Anticancer Complexes; Angela Casini, Christian G. Hartinger, Alexey A. Nazarov, Paul J. Dyson : Organometallic antitumour agents with alternative modes of action; Elizabeth A. Hillard, Anne Vessières, Gerard Jaouen : Ferrocene functionalized endocrine modulators for the treatment of cancer; Megan Hogan and Matthias Tacke : Titanocenes - Cytotoxic and Anti-Angiogenic Chemotherapy Against Advanced Renal-Cell Cancer; Seann P. Mulcahy and Eric Meggers : Organometallics as Structural Scaffolds for Enzyme Inhibitor Design; Christophe Biot and Daniel Dive : Bioorganometallic Chemistry and Malaria; Nils Metzler-Nolte : Biomedical applications of organometal-peptide conjugates; Roger Alberto : Organometallic Radiopharmaceuticals; Brian E. Mann : Carbon Monoxide - an essential signaling molecule.

Handbook of Photomedicine Michael R. Hamblin 2013-10-22 Providing the most comprehensive, up-to-date coverage of this exciting biomedical field, Handbook of Photomedicine gathers together a large team of international experts to give you a complete account of the application of light in healthcare and medical science. The book progresses logically from the history and fundamentals of photomedicine to diverse therapeutic applications of light, known collectively as phototherapies. It facilitates your understanding of human diseases caused by light, the rationale for photoprotection, and major applications of phototherapy in clinical practice. The handbook begins with a series of historical vignettes of pioneers from the last two centuries. It also presents the fundamentals of physics and biology as applied to photomedicine. It next examines conditions and diseases caused by light, including skin cancer, dermatoses, and immunosuppression. The remainder of the book focuses on the most important clinical therapeutic applications of different kinds of light that vary in both wavelength and intensity. The book discusses ultraviolet phototherapy for skin diseases and infections and presents the basic science of photodynamic therapy and its use in cancer therapy and other medical specialties. It then covers mechanistic studies and clinical applications of low-level laser (light) therapy as well as the use of high power or surgical laser therapy in specialties, such as dentistry and dermatology. The book concludes with a collection of miscellaneous types of phototherapy.

Uses of Inorganic Chemistry in Medicine Nicholas P Farrell 2007-10-31 Metal-based drugs are a commercially important sector of the pharmaceutical business, yet most bioinorganic textbooks lack the space to cover comprehensively the subject of metals in medicine. Uses of Inorganic Chemistry in Medicine approaches an understanding of the topic in a didactic and systematic manner. The field of inorganic chemistry in medicine may usefully be divided into two main categories - drugs which target metal ions in some form, whether free or protein-bound, and secondly, metal-based drugs where the central metal ion is usually the key feature of the mechanism of action. This latter category can further be subdivided into pharmacodynamic and chemotherapeutic applications, as well as those of imaging. The book summarises the chemical and biological studies on clinically used agents of lithium, gold and platinum, as well as highlighting the research on prospective new drugs, including those based on vanadium and manganese. The coverage allows a clear distinction between pharmacodynamic and therapeutic properties of metal-based drugs and focuses not only on those clinical agents in current use, but also on new drugs and uses. This book serves to fill an important niche, bridging bioinorganic and medicinal chemistry and will undoubtedly be of use to senior undergraduates and postgraduates, as well as being an invaluable asset for teachers and researchers in the discipline.

Bioorganometallic Chemistry Gerard Simonneau 2006-05-23 Bioorganometallic Chemistry has become a mature area of science and is comprehensively covered by leading experts in this book. Research in this rapidly developing transdisciplinary field is having profound influence on other areas of scientific investigation, ranging from catalytic organic synthesis to biology, medicine and material science. This book provides a balanced view of this rapidly developing and promising subject.

Metalloproteomics Eugene Permyakov 2009-08-13 Synthesizes the current knowledge in the field and provides new insights into medical applications Metalloproteomics is the large-scale study of metal-binding proteins. These proteins, which represent about one quarter of all the proteins in the Protein Data Bank, play important roles in all biological systems and all biological processes. Metalloproteomics provides the latest information on all major families of metal-binding proteins, including their structural, physico-chemical, and functional properties, enabling readers to better understand these proteins. Moreover, the book demonstrates how understanding the structures, properties, and functions of intracellular and extracellular metal-binding proteins may unlock the key to drug development for the treatment of a myriad of diseases. Written by Eugene Permyakov, an international expert and pioneer in the structural analysis of metal-binding proteins, the book offers Theoretical introduction to cation binding Broad range of methods for investigating the binding of different cations to proteins Characteristics of interactions of physiologically important cations of Ca, Mg, Zn, Fe, Mn, Co, Cu, Ni, Mo, W, Na, and K with proteins Detailed considerations of structural and physico-chemical properties of the metal-binding proteins Interactions of all other metal cations with proteins Interactions of different types of cations with nucleic acids Throughout the text, the author integrates principles of proteomics. In addition, detailed examples underscore the role metal-binding proteins play in health and medicine.

Bringing together and analyzing all the latest findings, Metalloproteomics' scope and level of insight are unparalleled.

It is recommended for biophysicists, biochemists, enzymologists, cell and molecular biologists, protein and peptide scientists, organic and bioinorganic chemists, and chemical biologists.

Books in Print Supplement 2002

Metallopharmaceuticals II Michael J. Clarke 1999-08-13 with contributions by numerous experts

Handbook of Research on Medicinal Chemistry Debarshi Kar Mahapatra 2017-11-20 This valuable new book, Handbook of Research on Medicinal Chemistry: Innovations and Methodologies, presents some of the latest advancements in the various fields of combinatorial chemistry, drug discovery, biochemical aspects, pharmacology of medicinal agents, current practical problems, and nutraceuticals. The editors keep the drug molecule as the central component of the volume and aim to explain the associated features essential to exhibiting pharmacological activity. With a unique combination of chapters in biology, clinical aspects, biochemistry, synthetic chemistry, medicine and technology, the volume provides broad exposure to the essential aspect of pharmaceuticals. The volume many important aspects of medicinal chemistry, including techniques in drug discovery pharmacological aspects of natural products chemical mediators: druggable targets advances in medicinal chemistry The field of medicinal chemistry is growing at an unprecedented pace, and this volume takes an interdisciplinary approach, covering a range of new research and new practices in the field. The volume takes into account the latest therapeutic guidelines put forward by the World Health Organization and the U.S Food and Drug Administration.. Topics include: drug design drug discovery natural products and supplements and nutraceuticals pharmaceutical approaches to sexual dysfunction drug resistance parasites new natural compounds and identification of new targets stereochemistry aspects in medicinal chemistry common drug interactions in daily practices Handbook of Research on Medicinal Chemistry: Innovations and Methodologies will be a valuable addition to the bookshelves of pharmaceutical scientists and faculty as well as for industry professionals.

Combination Therapy Against Multidrug Resistance Mohammad Younus Wani 2020-04-30 Combination Therapy against Multidrug Resistance explores the potential of combination therapy as an efficient strategy to combat multi-drug resistance. Multidrug resistance (MDR) occurs when microorganisms such as bacteria, fungi, viruses, and parasites are excessively exposed to antimicrobial drugs such as antibiotics, antifungals, or antivirals, and in response the microorganism undergoes mutations or develops different resistance mechanisms to combat the drug for its survival. MDR is becoming an increasingly serious problem in both developed and developing nations. Bacterial resistance to antibiotics has developed faster than the production of new antibiotics, making bacterial infections increasingly difficult to treat, and the same is true for a variety of other diseases. Combination therapy proves to be a promising strategy as it offers potential benefits such as a broad spectrum of efficacy, greater potency than the drugs used in monotherapy, improved safety and tolerability, and reduction in the number of resistant organisms. This book considers how combination therapy can be applied in multiple situations, including cancer, HIV, tuberculosis, fungal infections, and more. Combination Therapy Against Multidrug Resistance gathers the most relevant information on the prospects of combination therapy as a strategy to combat multidrug resistance and helping to motivate the industrial sector and government agencies to invest more in research and development of this strategy as a weapon to tackle the multidrug resistance problem. It will be useful to academics and researchers involved in the development of new antimicrobial or anti-infective agents and treatment strategies to combat multidrug resistance. Clinicians and medical nurses working in the field of infection prevention and control (IPC) will also find the book relevant Explores strategic methods with investigation of both short- and long-term goals to combat multidrug resistance Presents a broad scope to understand fully the ways to apply combined therapy to multidrug resistance Provides an overview of combination therapy, but also includes specific cases such as cancer, tuberculosis, HIV and malaria

The British National Bibliography Arthur James Wells 2000

Metal-based Anticancer Agents Anne Vessières 2019-04-05 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 metalloodrugs, and postgraduate students of medicinal chemistry and metallology. Interplay between Metal Ions and Nucleic Acids Astrid Sigel 2012-01-02 Interplay between Metal Ions and Nucleic Acids provides in an authoritative and timely manner in 12 stimulating chapters, written by 24 internationally recognized experts from 8 nations, and supported by nearly 1500 references, about 20 tables, and 125 illustrations, many in color, a most up-to-date view on metal ion-nucleic acid interactions; the characterization of which is covered in solution and in the solid state. The volume concentrates on modern developments encompassing topics in the wide range from G-quadruplexes via DNazymes, catalysis at the DNA scaffold, and metal-mediated base pairs to peptide nucleic acids (PNAs) being thus of relevance, e.g., for chemistry and nanotechnology but also for molecular biology and (genetic) diagnostics.

Molecular Mechanics Across Chemistry Anthony K. Rappé 1997-05-07 The remarkable breadth of modern molecular mechanics is covered in this textbook developed for an undergraduate or first-time course on molecular mechanics. The book uses a case-study approach designed to give readers exposure to the relevance and utility of molecular mechanics as well as the opportunity to study a particular problem and its solution in depth.

Advances in Organometallic Chemistry and Catalysis Armando J. L. Pombeiro 2013-10-11 A contemporary compilation of recent achievements inorganometallic chemistry The prestigious International Conference on Organometallic Chemistry (ICOMC) was launched in 1963, providing a forum for researchers from around the world to share their findings and explore new paths to advance our knowledge and application of organometallic chemistry. The 25th ICOMC, held in Lisbon in 2012, gathered more than 1,200 participants from 54 countries. This volume celebrates the 25th Silver Edition and the 50th

Gold Year of the ICOMC. Featuring contributions from invited 25th ICOMC speakers, Advances in Organometallic Chemistry and Catalysis highlights recent achievements and new and emerging areas of research in the field. Its seven sections cover: Activation and Functionalization of Carbon Single Bonds and Small Molecules Organometallic Synthesis and Catalysis Organometallic Polymerization Catalysis Organometallic Polymers and Materials Organometallic Chemistry and Sustainable Energy Bioorganometallic Chemistry Organometallic Electrochemistry Chapters discuss fundamental underlying concepts, offer illustrative examples and cases, and explore future avenues for continued research. Readers will discover basic principles and properties of organometallic compounds, reaction mechanisms, and detailed descriptions of current applications. Collectively, these chapters underscore the versatility, richness, and potential of modern organometallic chemistry, including its interrelationships with other scientific disciplines. All the contributions are extensively referenced, providing a gateway to the most important original research papers and reviews in organometallic chemistry. Presenting a contemporary understanding of organometallic chemistry and its many applications, Advances in Organometallic Chemistry and Catalysis is recommended for all researchers in the field, from students to advanced investigators.

Biological Inorganic Chemistry Gray Bertini 2007 Part A.: Overviews of biological inorganic chemistry : 1. Bioinorganic chemistry and the biogeochemical cycles -- 2. Metal ions and proteins: binding, stability, and folding -- 3. Special cofactors and metal clusters -- 4. Transport and storage of metal ions in biology -- 5. Biominerals and biomineralization -- 6. Metals in medicine. -- Part B.: Metal ion containing biological systems : 1. Metal ion transport and storage -- 2. Hydrolytic chemistry -- 3. Electron transfer, respiration, and photosynthesis : 1. Oxygen metabolism -- 5. Hydrogen, carbon, and sulfur metabolism -- 6. Metalloenzymes with radical intermediates -- 7. Metal ion receptors and signaling. -- Cell biology, biochemistry, and evolution: Tutorial I. -- Fundamentals of coordination chemistry: Tutorial II.

Opioids and Their Receptors Mariana Spetea 2020-12-18 The interest in opioids such as morphine, the prototypical opioid ligand, has been maintained through the years. The identification of endogenous opioids and their receptors (μ , δ , κ , and nociceptin), molecular cloning, and the elucidation of the crystal structures of opioid receptors represent key milestones in opioid research. The opioid system modulates numerous pharmacological responses, with therapeutic (i.e., analgesia) and detrimental side effects (i.e., addiction). The medical use and misuse of opioids have dramatically increased, leading to the 21st century opioid crisis. This book presents recent developments in opioid drug discovery, specifically in the medicinal chemistry and pharmacology of new ligands targeting the opioid receptors as effective and safe therapeutics for human diseases. Furthermore, it draws a special attention to advancing concepts and strategies in opioid drug discovery to mitigate opioid liabilities. The diversity among the discussed topics is a testimony to the complexity of the opioid system, which results from the expression, regulation, and functional role of ligands and receptors. The array of multidisciplinary research areas illustrates the rapidly developing basic research and translational activities in opioid drug discovery. This book will serve as a useful reference while also stimulating continued research in the chemistry and pharmacology of opioids and their receptors, with the prospect of developing improved therapies for human diseases, but also improving health and quality of life in general. *American Book Publishing Record* 2001

Metallopharmaceuticals I Michael J. Clarke 2013-03-14 Each volume provides the reader, whether engaged in chemistry, biochemistry, biology or molecular medicine, with a comprehensive summary and critical overview of a topic of great current interest written by leading international experts.

Ligand Design in Medicinal Inorganic Chemistry Tim Storr 2014-06-12 Increasing the potency of therapeutic compounds, while limiting side-effects, is a common goal in medicinal chemistry. Ligands that effectively bind metal ions and also include specific features to enhance targeting, reporting, and overall efficacy are driving innovation in areas of disease diagnosis and therapy. Ligand Design in Medicinal Inorganic Chemistry presents the state-of-the-art in ligand design for medicinal inorganic chemistry applications. Each individual chapter describes and explores the application of compounds that either target a disease site, or are activated by a disease-specific biological process. Ligand design is discussed in the following areas: Platinum, Ruthenium, and Gold-containing anticancer agents Emissive metal-based optical probes Metal-based antimalarial agents Metal overload disorders Modulation of metal-protein interactions in neurodegenerative diseases Photoactivatable metal complexes and their use in biology and medicine Radiodiagnostic agents and Magnetic Resonance Imaging (MRI) agents Carbohydrate-containing ligands and Schiff-base ligands in Medicinal Inorganic Chemistry Metalloprotein inhibitors Ligand Design in Medicinal Inorganic Chemistry provides graduate students, industrial chemists and academic researchers with a launching pad for new research in medicinal chemistry.

Medicinal Inorganic Chemistry Jonathan L. Sessler 2005 This book, a compilation by experts in the field, is designed to provide an introduction to the area of medicinal inorganic chemistry and to summarize current, state-of-the-art developments in the field. Medicinal inorganic chemistry represents a key thrust area in medicine and biological inorganic chemistry. It is one of great current excitement and achievement. The field of metals in medicine represents an approximate \$3 billion dollar a year industry, with successes in the area of Tc- and Gd-based imaging agents and Pt-based cancer therapeutics being major contributors to this bottom line. It has become increasingly apparent, however, that metal-based pharmaceuticals can play a prominent role in areas outside of imaging and oncology, including in those associated with the diagnosis and treatment of metabolism- and genetic disorders, cardiovascular disease, gene therapy, inflammation, reperfusion injury, stroke, diabetes, ALS, malaria, and neurological disease to name but a few. A objective of this book, therefore, is to highlight these opportunities for future advances and to foster further interactions between those working in the metal-based drug development, including imaging agents, and those engaged in more classic pharmaceutical industries.

Inorganic and Organometallic Transition Metal Complexes with Biological Molecules and Living Cells Kenneth Kam-Wing Lo 2016-12-30 Inorganic and Organometallic Transition Metal Complexes with Biological Molecules and Living Cells provides a complete overview of this important research area that is perfect for both newcomers and expert researchers in the field. Through concise chapters written and edited by esteemed experts, this book brings together a comprehensive treatment of the area previously only available through scattered, lengthy review articles in the literature. Advanced topics of research are covered, with particular focus on recent advances in the biological applications of transition metal complexes, including inorganic medicine, enzyme inhibitors, antiparasital agents, and biological imaging reagents. Geared toward researchers and students who seek an introductory overview of the field, as well as researchers working in advanced areas Focuses on the interactions of inorganic and organometallic transition metal complexes with biological molecules and live cells Focuses on the fundamentals and their potential therapeutic and diagnostic applications Covers recent biological applications of transition metal complexes, such as anticancer drugs, enzyme inhibitors, bioconjugation agents, chemical biology tools, and bioimaging reagents

Progress in Nucleic Acid Research and Molecular Biology Kivie Moldava 2002-07-04 Progress in Nucleic Acid Research and Molecular Biology provides a forum for discussion of new discoveries, approaches, and ideas in molecular biology. It contains contributions from leaders in their fields and abundant references. Nucleic acids are the fundamental building blocks of DNA and RNA and are found in virtually every living cell. Molecular biology is a branch of science that studies the physicochemical properties of molecules in a cell, including nucleic acids, proteins, and enzymes

Metallo-Drugs: Development and Action of Anticancer Agents Astrid Sigel 2018-02-05 Volume 18, entitled Metallo-Drugs: Development and Action of Anticancer Agents of the series Metal Ions in Life Sciences centers on biological, medicinal inorganic chemistry. The serendipitous discovery of the antitumor activity of cis-diamminodichloroplatinum(II) (cisplatin) by Barnett Rosenberg in the 1960s is a landmark in metallodrug-based chemotherapy. The success of cisplatin in the clinic, followed by oxaliplatin and carboplatin, along with their drawbacks relating mainly to resistance development and severe toxicity, initiated research on polynuclear platinum complexes and on Pt(IV) complexes as prodrugs. Furthermore, the indicated shortcomings led to the exploration of other transition and main group metal ions, among them Ru(II/III), Au(I/III), Ti(IV), V(IV/V), and Ga(III) including also the essential metal ions Fe(II/III), Cu(I/II), and Zn(II). Ionic as well as covalent and non-covalent interactions between structurally very different complexes and biomolecules like nucleic acids, proteins, and carbohydrates are studied and discussed with regard to their possible anticancer actions. Hence, MLLS-18 summarizes the research at the forefront of medicinal inorganic chemistry, including studies on the next-generation, tailor-made anticancer drugs. All this and more is treated in an authoritative and timely manner in the 17 stimulating chapters of this book, written by 39 internationally recognized experts from 10 nations (from the US via Europe to China and Australia). The impact of this vibrant research area is manifested by more than 2700 references, nearly 150 illustrations (more than half in color) and several comprehensive tables. Metallo-Drugs: Development and Action of Anticancer Agents is an essential resource for scientists working in the wide range from enzymology, material sciences, analytical, organic, and inorganic biochemistry all the way through to medicine including the clinic ... not forgetting that it also provides excellent information for teaching.

Journal American Chemical Society 2004

The Encyclopedia of Mass Spectrometry Richard M. Caprioli 2005-11-11 Volume 3 looks at classes of biomolecules including carbohydrates, nucleic acids, and lipids. In addition, special areas of application are 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 are intended to teach and therefore strive to 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 articles or in additional reading citations.

Metallo-Drugs: Development and Action of Anticancer Agents Astrid Sigel 2018-02-05 Volume 18, entitled Metallo-Drugs: Development and Action of Anticancer Agents of the series Metal Ions in Life Sciences centers on biological, medicinal inorganic chemistry. The serendipitous discovery of the antitumor activity of cis-diamminodichloroplatinum(II) (cisplatin) by Barnett Rosenberg in the 1960s is a landmark in metallodrug-based chemotherapy. The success of cisplatin in the clinic, followed by oxaliplatin and carboplatin, along with their drawbacks relating mainly to resistance development and severe toxicity, initiated research on polynuclear platinum complexes and on Pt(IV) complexes as prodrugs. Furthermore, the indicated shortcomings led to the exploration of other transition and main group metal ions, among them Ru(II/III), Au(I/III), Ti(IV), V(IV/V), and Ga(III) including also the essential metal ions Fe(II/III), Cu(I/II), and Zn(II). Ionic as well as covalent and non-covalent interactions between structurally very different complexes and biomolecules like nucleic acids, proteins, and carbohydrates are studied and discussed with regard to their possible anticancer actions. Hence, MLLS-18 summarizes the research at the forefront of medicinal inorganic chemistry, including studies on the next-generation, tailor-made anticancer drugs. All this and more is treated in an authoritative and timely manner in the 17 stimulating chapters of this book, written by 39 internationally recognized experts from 10 nations (from the US via Europe to China and Australia). The impact of this vibrant research area is manifested by more than 2700 references, nearly 150 illustrations (more than half in color) and several comprehensive tables. Metallo-Drugs: Development and Action of Anticancer Agents is an essential resource for scientists working in the wide range from enzymology, material sciences, analytical, organic, and inorganic biochemistry all the way through to medicine including the clinic ... not forgetting that it also provides excellent information for teaching.

Medicinal Applications of Coordination Chemistry Chris J Jones 2007-10-31 Metals in pharmaceuticals have played an increasingly important role in medicine over the last century, particularly in cancer therapy and diagnostic imaging methods. Medicinal Applications of Coordination Chemistry focuses on the role that transition metals play in clinical applications. Medicinal Applications of Coordination Chemistry begins with a brief historical review and an introduction to the chemistry of d- and f- block metals. Subsequent sections discuss metalloodrugs for a number of different applications, the design of new drugs and the relationship between structure and function. Key sections include diagnostic applications of metal compounds in anatomical and functional imaging, and therapeutic applications of metals compounds. This book is ideal for researchers in academia and industry and comes complete with examples of real life applications.

Ligands Paula Gawryszewska 2014-01-01 To meet the search for new therapeutic compounds this book summarizes the research on biologically active organic molecules (chapters 1, 2 and 3), metal complexes with biological activity (chapter 4), and shows the possibilities for coordination chemistry in the planning of metal complexes with interesting properties for application (chapters 5, 6, 7, 8, and 9). It should be remembered that in the design of a new potentially active metalloodrugs, beyond the nature of the metal, the choice of appropriate ligands which affect the thermodynamic and kinetic stability, as well as the solubility and lipophilicity of the complexes is of paramount importance. The information contained in the book concerns: 1) the interactions involving the members of the Nuclear Receptor superfamily and their ligands; 2) the role of chemokine ligands and their receptors in normal and disease processes, and the emerging therapeutic approaches of using chemokine antagonists for appropriately targeted therapy; 3) the inhibition of alkaline phosphatases by calix[4]arenes functionalised at the macrocyclic upper rim by one or two antimetlebisphosphonic acid fragments; 4) the main biological applications, enzyme modelling and antiproliferative and antimicrobial activity of such scorpionate-type complexes, which are classified by ligand and also by transition metal; 5) the silver(I) discrete and polymeric coordination compounds bearing 1,3,5-triaza-7-phosphaadamantane or its derivatives towards engineering functional silver-organic frameworks (MOFs); 6) arylhydrazones of methylene active nitriles and their use as starting materials for the generation of new organic and coordination compounds; 7) amidophosphate ligands as promising sensitizers of lanthanide ions emission; 8) N-acetylalicylhydrazidate as a versatile ligand for the synthesis of higher nuclearity metal complexes, which are illustrated herein along with their applications; 9) the chemistry and some applications of formazans which can be used for the simultaneous selective determination of several metal cations. All chapters were compiled by renowned scientists, providing both beginners in the field and advanced researchers with comprehensive information on the subject. (Imprint: Nova)

Advances in Metalloodrugs Shahidul Ul-Islam 2020-07-08 This book is organized into 12 important chapters that focus on the progress made by metal-based drugs as anticancer, antibacterial, antiviral, anti-inflammatory, and anti-neurodegenerative agents, as well as highlights the application areas of newly discovered metalloodrugs. It can prove beneficial for researchers, investigators and scientists whose work involves inorganic and coordination chemistry, medical science, pharmacy, biotechnology and biomedical engineering.

Ruthenium Chemistry Ajay Kumar Mishra 2018-01-17 This book will describe Ruthenium complexes as chemotherapeutic agent specifically at tumor site. It has been the most challenging task in the area of cancer therapy. Nanoparticles are now emerging as the most effective alternative to traditional chemotherapeutic approach. Nanoparticles have been shown to be useful in this respect. However, in view of organ system complications, instead of using nanoparticles as a delivery tool, it will be more appropriate to synthesize a drug of nanoparticle size that can use blood transport mechanism to reach the tumor site and regress cancer. Due to less toxicity and effective bio-distribution, ruthenium (Ru) complexes are of much current interest. Additionally, lumiscent Ru-complexes can be synthesized in nanoparticle size and can be directly traced at tissue level. The book will contain the synthesis, characterization, and applications of various Ruthenium complexes as chemotherapeutic agents. The book will also cover the introduction to chemotherapy, classification of Ru-complexes with respect to their oxidation states and geometry, Ruthenium complexes of nano size: shape and binding- selectivity, binding of ruthenium complexes with DNA, DNA cleavage studies and cytotoxicity. The present book will be more beneficial to researchers, scientists and biomedical. Current book will empower specially to younger generation to create a new world of ruthenium chemistry in material science as well as in medicines. This book will be also beneficial to national/international research laboratories, and academia with interest in the area of coordination chemistry more especially to the Ruthenium compounds and its applications.

Metal Complex - DNA Interactions Nick Hadjilias 2009-03-30 Metal ions and metal complexes have long been recognized

critically important components of nucleic acid chemistry, both in regulation of gene expression and as promising therapeutic agents. Understanding how metal complexes interact with DNA has become an active research area at the interface between chemistry, molecular biology and medicine. Metal Complex - DNA Interactions provides a comprehensive overview of this increasingly diverse field, presenting recent developments and the latest research with particular emphasis on metal-based drugs and metal ion toxicity. The text is divided into four parts: Basic Structural and Kinetic Aspects: includes chapters on sequence-selective metal binding to DNA and thermodynamic models. Medical Applications: focuses on anticancer platinum drugs, including discussions on DNA repair in antitumor effects of platinum drugs and photo-dynamic therapy. DNA Recognition - Nucleases and Sensor: describes probes for DNA recognition, artificial restriction agents, metallo-DNAzymes for metal sensing applications and metal ion-dependent catalysis in nucleic acid enzymes. Toxicological Aspects: deals with structural studies of mercury-DNA interactions, chromium-induced DNA damage and repair, and the effect of arsenic and nickel on DNA integrity. This book will be a valuable resource for academic researchers and professionals from a range of pharmaceutical and chemical industries, particularly those involved in the development of new and less toxic anticancer metallo-drugs, and in the field of environmental and toxicological chemistry.

Platinum and Other Metal Coordination Compounds in Cancer Chemotherapy Stephen B. Howell 2013-11-11 Taken together the

data presented in this review, and work by many other investigators, support the notion that DNA excision repair is important in a tumor cell's resistance to platinum compounds. Inhibition of this repair system by combination chemotherapy with the excision repair inhibitors HU and Ara-C produces synergistic cell kills and increased levels and persistence of DNA interstrand crosslinks. The studies with cis-DDP and --DDP in combination with UV induced thymine dimers suggest that there may be competition for DNA repair enzymes between the dimer and the platinum lesion. Whether the competing lesion is an intrastrand crosslink, interstrand crosslink, or platinum monoadduct (or all of these lesions) cannot be determined. The similarity between an intrastrand crosslink and a cyclobutane dimer suggests that these lesions may compete for repair. However, the increased peak levels of interstrand crosslinks, and increased persistence of these lesions at later time points suggest that this lesion may also be a substrate for the repair system. These observations may be of clinical relevance. Recently Dr. Kathy Albain of our institution has completed a Phase III I study using a 12 hour pretreatment with HU and Ara-C in patients prior to their cis-DDP therapy. She observed a significant number of responders in this trial (54). She is currently completing a second Phase III study substituting IV HU for the oral formulation. We anticipate initiating other clinical trials based upon these observations.