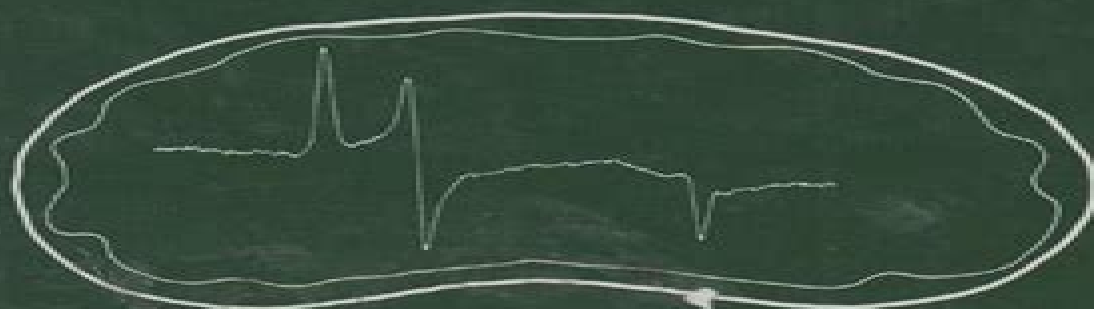


The Bioinorganic Chemistry of Nickel

**Edited by
Jack R. Lancaster, Jr.**



Bioinorganic Chemistry Of Nickel

Ivano Bertini, Astrid Sigel



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Nickel Robert P. Hausinger, 2013-06-29 In this timely monograph the author summarizes the rapidly growing body of knowledge regarding nickel by providing a balanced discussion of its harmful and beneficial effects Coverage includes a history of nickel the chemistry of nickel descriptions of the four known enzymes which contain nickel and nickel metabolism in microbes plants and animals Taken as a whole Dr Hausinger s work will highlight key features of this important element and help define future research **Metal Ions in Biological Systems** Helmut Sigel, Astrid Sigel, 1988-03-30 Metal Ions in

Biological Systems is devoted to increasing our understanding of the relationship between the chemistry of metals and life processes. The volumes reflect the interdisciplinary nature of bioinorganic chemistry and coordinate the efforts of researchers in the fields of biochemistry, inorganic chemistry, coordination chemistry, environmental chemistry, biophysics, pharmacy and medicine. Volumes deal with such topics as the formation, stability, structure and reactivity of biological compounds of low and high molecular weight containing metal ions; the metabolism and transport of metal ions and their complexes; and new models of complicated natural structures and processes. Devoted solely to the vibrant research area of nickel and its role in biology, Volume 23 offers a comprehensive account of this important subject from the perspectives of 24 distinguished international authorities. In 11 stimulating in-depth chapters, **Nickel and Its Role in Biology** covers nickel and its function in the environment in aquatic systems, in plants, as well as its metabolism in man and animals; treats nickel ion binding to amino acids and peptides; examines nickel in proteins and enzymes, including hydrogenases; considers the interaction of nickel with nucleic acids and their constituents; displays thoroughly the toxicology of nickel compounds; and describes the analysis of nickel in biological materials. With more than 1 400 references to assist further research, **Nickel and Its Role in Biology** is an essential resource for scientists and students in several disciplines, including biochemistry, bioinorganic, inorganic and coordination chemistry, biophysics, molecular biology, enzymology, pharmacology, clinical chemistry, nutrition and toxicology. **Book jacket**

Nickel and Its Surprising Impact in Nature Astrid Sigel, Helmut Sigel, Roland K. O. Sigel, 2007-03-13 Helmut Sigel, Astrid Sigel and Roland K. O. Sigel in close cooperation with John Wiley & Sons launch a new Series Metal Ions in Life Sciences. The philosophy of the Series is based on the one successfully applied to a previous series published by another publisher, but the move from biological systems to life sciences will open the aims and scope and allow for the publication of books touching on the interface between chemistry, biology, pharmacology, biochemistry and medicine. Volume 2 focuses on the vibrant research area concerning nickel, as well as its complexes and their role in Nature. With more than 2 800 references and over 130 illustrations, it is an essential resource for scientists working in the wide range from inorganic biochemistry all the way through to medicine. In 17 stimulating chapters written by 47 internationally recognized experts, **Nickel and Its Surprising Impact in Nature** highlights critically the biogeochemistry of nickel, its role in the environment in plants and cyanobacteria, as well as for the gastric pathogen *Helicobacter pylori* for gene expression and carcinogenesis. In addition, it covers the complex-forming properties of nickel with amino acids, peptides, phosphates, nucleotides and nucleic acids. The volume also provides sophisticated insights in the recent progress made in understanding the role of nickel in enzymes such as ureases, hydrogenases, superoxide dismutases, acireductone dioxygenases, acetyl coenzyme A synthases, carbon monoxide dehydrogenases, methyl coenzyme M reductases, and it reveals the chaperones of nickel metabolism. **Biological Chemistry of Nickel** Deborah Zamble, Magdalena Rowińska-Żyrek, Henryk Kozłowski, 2017-03-24 Metal ions play key roles in biology. Many are essential for catalysis, for electron transfer and for the

fixation sensing and metabolism of gases Others compete with those essential metal ions or have toxic or pharmacological effects This book is structured around the periodic table and focuses on the control of metal ions in cells It addresses the molecular aspects of binding transport and storage that ensure balanced levels of the essential elements Organisms have also developed mechanisms to deal with the non essential metal ions However through new uses and manufacturing processes organisms are increasingly exposed to changing levels of both essential and non essential ions in new chemical forms They may not have developed defenses against some of these forms such as nanoparticles Many diseases such as cancer diabetes and neurodegeneration are associated with metal ion imbalance There may be a deficiency of the essential metals overload of either essential or non essential metals or perturbation of the overall natural balance This book is the first to comprehensively survey the molecular nature of the overall natural balance of metal ions in nutrition toxicology and pharmacology It is written as an introduction to research for students and researchers in academia and industry and begins with a chapter by Professor R J P Williams FRS

Toxicology of Metals, Volume I Louis W. Chang, 2023-07-28 This volume offers the most comprehensive presentation available on metal toxicology It discusses not only metals but also the toxic endpoints such as neurotoxicity renal toxicity and cancer induction Chapters are written by experts in their respective fields focusing on carcinogenesis and human exposures and highlighting the major aspects and issues of toxicity in general

Ni Organonickel Compounds Peter W. Jolly, 2013-11-11 This volume starts the updating of the information on organonickel chemistry one of the most active areas of modern organometallic chemistry It covers all mononuclear compounds containing one nickel to carbon bond The main part is devoted to the family of planar NiII compounds $RNi(D)_2X$ which within 20 years has increased from about 250 to more than 1000 members This research interest has been stimulated by the fact that many compounds insert various unsaturated species into the Ni C bond to create new organonickel species Moreover these compounds are important as intermediates in many catalytic processes involving organic halides Compounds containing η^2 bonded heteroalkene molecules including the C1 fragments CO₂ and CS₂ and related metallocyclic compounds are also emphasized in this volume These types of compounds play an important role in a number of nickel catalyzed co oligomerization reactions involving unsaturated organic compounds Most of the compounds are well characterized by modern spectroscopic techniques The various types of compounds are in most cases confirmed by X ray diffraction The author of these volumes a member of the M lheim group has made many contributions of his own and is eminently qualified to critically review this area of research

Molecular Mechanisms of Metal Toxicity and Carcinogenicity, 1994

Transition Metals in Microbial Metabolism Gunther Winkelmann, 1997-12-23 Comprises 17 papers exploring the role of transition metals in a variety of metabolic processes from simple interactions where the protein matrix does little more than bind an inorganic ion to systems in which the binding site of the protein modifies the metals properties considerably to the very complex multimetallic systems which may function as part of a supramolecular assembly Intended as a reference for

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Molecular Biology and Toxicology of Metals Rudolfs K. Zalups,D. James Koropatnick,2000-02-24 Molecular Biology and Toxicology of Metals provides a critical review and analysis of the current state of knowledge of metal ion transport and metabolism in prokaryotic and eukaryotic cellular systems It covers the latest information on specific metals and the biological molecules with which metals interact It also details mechanisms in the handling and toxicity of metals in specific organ systems and the role of metals in cell signalling and gene transcription in target cells This book is sure to prove a fertile meeting ground for the disciplines of molecular genetics and metal toxicology

Syntheses, Structures, and Properties of Discrete Nickel (II) Selenolates Christine Marganian Goldman,1995

Organometallic Chemistry and Catalysis Didier Astruc,2007-08-02 This volume covers both basic and advanced aspects of organometallic chemistry of all metals and catalysis In order to present a comprehensive view of the subject it provides broad coverage of organometallic chemistry itself The catalysis section includes the challenging activation and fictionalization of the main classes of hydrocarbons and the industrially crucial heterogeneous catalysis Summaries and exercises are provided at the end of each chapter and the answers to these exercises can be found at the back of the book Beginners in inorganic organic and organometallic chemistry as well as advanced scholars and chemists from academia and industry will find much value in this title

Bioenergetics and Thermodynamics: Model Systems A. Braibanti,2012-12-06 Proceedings of the NATO Advanced Study Institute Tabiano Parma Italy May 21 June 1 1979

Bioinorganic Chemistry R.J.P. Williams,2014-03-12 In this book the first three chapters outline the chemistry of nickel and heme largely associated with anaerobic life and believed to represent reactions which took place some 3.4x10⁹ years ago Nickel has disappeared from the chemistry of man The fascinating detail of the primitive catalysts is of interest to industrial society since very simple feed stock is used hydrogen carbon monoxide and sulphate for example The fourth chapter switches attention to a metal which became valuable later in evolution copper and which is involved with the use of dioxygen It also has extremely interesting catalytic sites in enzymes The essence of the volume lies in an appreciation of metallo enzymes and their changing roles as the environment changed

Cytotoxic, Mutagenic and Carcinogenic Potential of Heavy Metals Related to Human Environment N. Hadjiliadis,2012-12-06 Environmental pollution is one of the main problems to confront humanity with the heavy metals occupying a leading role among the most pernicious pollutants The metals cause cancer and other sicknesses Their cytotoxic mutagenic and carcinogenic potentials are not fully understood and any thorough investigation demands the combined efforts of scientists drawn from many different disciplines But the effects of heavy metals are not all negative some like cis DDP and some ruthenium and tin complexes have antitumour activity The idea underlying the present work is therefore to present a multidisciplinary perspective on heavy metals in the environment affording a better understanding of their action on human organisms and health aiming to make them less polluting and more environmentally friendly

Metallomics and the Cell Lucia Banci, 2013-04-18 Metallomics and the Cell provides in an authoritative and timely manner in 16 stimulating chapters written by 37 internationally recognized experts from 9 nations and supported by more than 3000 references several tables and 110 illustrations mostly in color a most up to date view of the metallomes which as defined in the omics world describe the entire set of biomolecules that interact with or are affected by each metal ion The most relevant tools for visualizing metal ions in the cell and the most suitable bioinformatic tools for browsing genomes to identify metal binding proteins are also presented Thus MILS 12 is of relevance for structural and systems biology inorganic biological chemistry genetics medicine diagnostics as well as teaching etc *Handbook on Metalloproteins* Ivano Bertini, Astrid Sigel, 2001-06-29 This Handbook on Metalloproteins focuses on the available structural information of proteins and their metal ion coordination spheres It centers on the metal ions indispensable for life but also considers metal ions used as substitution probes in studies of metalloproteins Emphasizing the structure function relationship the book covers the common and distinct characteristics of metallo enzymes proteins and amino acids bonded to copper zinc iron and more

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In some sort of driven by information and connectivity, the energy of words has be much more evident than ever. They have the ability to inspire, provoke, and ignite change. Such may be the essence of the book **Bioinorganic Chemistry Of Nickel**, a literary masterpiece that delves deep into the significance of words and their effect on our lives. Published by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we shall explore the book is key themes, examine its writing style, and analyze its overall impact on readers.

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