

---

# Read PDF Rep Borohydrides And Complexes Sigma Borane Boryls Borylenes I Chemistry Boron Metal Contemporary

---

Thank you very much for downloading **Rep Borohydrides And Complexes Sigma Borane Boryls Borylenes I Chemistry Boron Metal Contemporary**. As you may know, people have look hundreds times for their favorite readings like this Rep Borohydrides And Complexes Sigma Borane Boryls Borylenes I Chemistry Boron Metal Contemporary, but end up in malicious downloads. Rather than enjoying a good book with a cup of tea in the afternoon, instead they are facing with some infectious virus inside their desktop computer.

Rep Borohydrides And Complexes Sigma Borane Boryls Borylenes I Chemistry Boron Metal Contemporary is available in our digital library an online access to it is set as public so you can get it instantly.

Our digital library hosts in multiple locations, allowing you to get the most less latency time to download any of our books like this one.

Merely said, the Rep Borohydrides And Complexes Sigma Borane Boryls Borylenes I Chemistry Boron Metal Contemporary is universally compatible with any devices to read

---

**KEY=BORANE - VIRGINIA KYLAN**

---

## Metal Complexes Containing Boron Based Ligands

**MDPI Boron-based compounds have been utilized as ligands within transition metal complexes for many decades. The diversity of such compounds in terms of varying functional groups is truly exceptional. Boron compounds are of high interest due to the great potential to modify the substituents around the boron center and to produce a broad range of structural motifs. The many different ways these compounds can coordinate or interact with transition metal centers is**

astonishing. Examples of transition metal complexes containing boron-based ligands include scorpionates, cluster-type borane- and carboranes, borates, and phosphine-stabilized borylene ligands. This Special Issue brings together a collection of articles focusing on recent developments in the aforementioned boron-based ligands. The articles reported in this book will provide the reader with an overview of the types of boron-based ligands which are currently being researched in groups around the world.

## Valence and the Structure of Atoms and Molecules

## Synthesis and Application of Organoboron Compounds

**Springer** The series **Topics in Organometallic Chemistry** presents critical overviews of research results in organometallic chemistry. As our understanding of organometallic structure, properties and mechanisms increases, new ways are opened for the design of organometallic compounds and reactions tailored to the needs of such diverse areas as organic synthesis, medical research, biology and materials science. Thus the scope of coverage includes a broad range of topics in pure and applied organometallic chemistry, where new breakthroughs are being achieved that are of significance to a larger scientific audience. The individual volumes of **Topics in Organometallic Chemistry** are thematic. Review articles are generally invited by the volume editors.

## Frustrated Lewis Pairs I

## Uncovering and Understanding

**Springer** **Discovery of Frustrated Lewis Pairs: Intermolecular FLPs for Activation of Small Molecules**, by Douglas W. Stephan **Intramolecular Frustrated Lewis Pairs: Formation and Chemical Features**, by Gerald Kehr, Sina Schwendemann, Gerhard Erker **Frustrated Lewis Pair Mediated Hydrogenations**, by Douglas W. Stephan, Gerhard Erker **Amine-Borane Mediated Metal-Free Hydrogen Activation and Catalytic Hydrogenation**, by Victor Sumerin, Konstantin Chernichenko, Felix Schulz, Markku Leskelä, Bernhard Rieger, Timo Repo **Hydrogen Activation by Frustrated Lewis Pairs: Insights from Computational Studies**, by Tibor András Rokob, Imre Pápai **Quantum Chemistry of FLPs and Their**

**Activation of Small Molecules: Methodological Aspects**, by Birgitta Schirmer, Stefan Grimme **Computational Design of Metal-Free Molecules for Activation of Small Molecules, Hydrogenation, and Hydroamination**, by Zhi-Xiang Wang, Lili Zhao, Gang Lu, Haixia Li, Fang Huang **Computational Studies of Lewis Acidity and Basicity in Frustrated Lewis Pairs**, by Thomas M. Gilbert **Solid-State NMR as a Spectroscopic Tool for Characterizing Phosphane - Borane Frustrated Lewis Pairs**, by Thomas Wiegand, Hellmut Eckert, Stefan Grimme

## Modern Reduction Methods

**John Wiley & Sons** With its comprehensive overview of modern reduction methods, this book features high quality contributions allowing readers to find reliable solutions quickly and easily. The monograph treats the reduction of carbonyles, alkenes, imines and alkynes, as well as reductive aminations and cross and heck couplings, before finishing off with sections on kinetic resolutions and hydrogenolysis. An indispensable lab companion for every chemist.

## Molecular Clusters of the Main Group Elements

**John Wiley & Sons** With more than 20 contributions from leading research groups, this book provides essential information for chemists and materials scientists working with molecular clusters. It treats both homonuclear and heteronuclear clusters, including: the theory and concepts in main-group cluster chemistry, \* novel boranes and heteroboranes, \* silicon/germanium/tin clusters, \* alkali metal suboxides, \* clusters in alloys with mercury, \* chalcogen clusters \* and numerous other compound classes. The whole is illustrated by examples of the great potential for technical applications such as electron storage, cancer therapy and in optoelectronic devices. Its systematic coverage of all relevant main group elements makes this the prime reference source in the field.

## Early Main Group Metal Catalysis

# Concepts and Reactions

**John Wiley & Sons Early Main Group Metal Catalysis** gives a comprehensive overview of catalytic reactions in the presence of group 1 and group 2 metals. Chapters are ordered to reaction type, contain educational elements and deal with concepts illustrated by examples that cover the main developments. After a short introduction on polar organometallic chemistry and synthesis of early main group metal complexes, a variety of catalytic reactions are described, e.g. polymerization of alkenes, hydroamination and phosphination reactions, hydrosilylation, hydroboration and hydrogenation catalysis, as well as enantioselective and Lewis-acid catalysis. The book addresses organic chemists and researchers in industry interested in the state-of-the-art and new possibilities of early main group metal catalysis as well as newcomers to the field. Written by a team of leaders in the field, it is a very welcome addition to the area of main group metal chemistry, and to the field of catalysis.

## Alkaline-Earth Metal Compounds

## Oddities and Applications

**Springer** The series **Topics in Organometallic Chemistry** presents critical overviews of research results in organometallic chemistry. As our understanding of organometallic structure, properties and mechanisms increases, new ways are opened for the design of organometallic compounds and reactions tailored to the needs of such diverse areas as organic synthesis, medical research, biology and materials science. Thus the scope of coverage includes a broad range of topics in pure and applied organometallic chemistry, where new breakthroughs are being achieved that are of significance to a larger scientific audience. The individual volumes of **Topics in Organometallic Chemistry** are thematic. Review articles are generally invited by the volume editors.

# Metal-catalysis in Industrial Organic Processes

Royal Society of Chemistry Catalysis underpins most modern industrial organic processes. It has become an essential tool in creating a 'greener' chemical industry by replacing more traditional stoichiometric reactions, which have high energy consumption and high waste production, with mild processes which increasingly resemble Nature's enzymes. **Metal-Catalysis in Industrial Organic Processes** considers the major areas of the field and discusses the logic of using catalysis in industrial processes. This popular book, now available as softback, provides information on oxidation, hydrogenation, carbonylation, C-C bond formation, metathesis and polymerization processes, as well as on the mechanisms involved. In addition two appendices offer a concise treatment of homogeneous and heterogeneous catalysis. Numerous exercises referring to problems of catalytic processes, and research perspectives complete the book. This definitive reference source, written by practising experts in the field, provides detailed and up-to-date information on key aspects of metal catalysis.

## Modern Carbonyl Olefination

### Methods and Applications

John Wiley & Sons While this important reaction class is among the most important and most widely used in organic chemistry, this is the first book to summarize the many different olefination methods, including: \* Wittig reaction \* Peterson reaction \* Julia olefination \* Utilizing the Tebbe and related reagents \* Low-valent chromium, zinc or titanium mediated olefination \* McMurry coupling plus the related reactions in each case and the application to asymmetric synthesis. It thus collates in one ready reference the current level of knowledge as well as new developments in this constantly evolving field -- information which until now has been dispersed throughout the literature.

# Organic Chemistry I For Dummies

**John Wiley & Sons Organic Chemistry I For Dummies, 2nd Edition (9781119293378) was previously published as Organic Chemistry I For Dummies, 2nd Edition (9781118828076). While this version features a new Dummies cover and design, the content is the same as the prior release and should not be considered a new or updated product. The easy way to take the confusion out of organic chemistry Organic chemistry has a long-standing reputation as a difficult course. Organic Chemistry I For Dummies takes a simple approach to the topic, allowing you to grasp concepts at your own pace. This fun, easy-to-understand guide explains the basic principles of organic chemistry in simple terms, providing insight into the language of organic chemists, the major classes of compounds, and top trouble spots. You'll also get the nuts and bolts of tackling organic chemistry problems, from knowing where to start to spotting sneaky tricks that professors like to incorporate. Refreshed example equations New explanations and practical examples that reflect today's teaching methods Fully worked-out organic chemistry problems Baffled by benzines? Confused by carboxylic acids? Here's the help you need—in plain English!**

## Boron Hydride Chemistry

**Elsevier Boron Hydride Chemistry covers the significant contributions of boron hydride research in the subjects of bonding, structure, and stereochemistry. This book contains 12 chapters that illustrate the merging of certain areas of boron hydride chemistry with other disciplines, such as organic, organometallic, and transition metal chemistry. After providing an overview of the general geometric, stereochemical, and dynamic stereochemical features of boron hydrides, this book goes on exploring the bonding theory and theoretical research on boron hydrides, with an emphasis on boron hydrides that have open polyhedral structures. These topics are followed by discussions on gas phase and solution reactions of borane and substituted boranes. A chapter focuses on the chemistry of cations containing boron atoms bonded to hydrogen. The remaining chapters examine the syntheses, structures, bonding, spectral properties, and chemistry of specific boron hydrides, including borazines, closo-boron hydrides, carboranes, icosahedral carboranes, and close- and nido-heteroboranes. Inorganic chemists and researchers, teachers, and undergraduate inorganic chemistry students will find this book invaluable.**

# Smart Inorganic Polymers

## Synthesis, Properties, and Emerging Applications in Materials and Life Sciences

**Wiley-VCH Provides complete and undiluted knowledge on making inorganic polymers functional This comprehensive book reflects the state of the art in the field of inorganic polymers, based on research conducted by a number of internationally leading research groups working in this area. It covers the synthesis aspects of synthetic inorganic polymers and looks at multiple inorganic monomers as building blocks, which exhibit unprecedented electronic, redox, photo-emissive, magnetic, self-healing and catalytic properties. It also looks at the applications of inorganic polymers in areas such as optoelectronics, energy storage, industrial chemistry, and biology. Beginning with an overview of the use of smart inorganic polymers in daily life, Smart Inorganic Polymers: Synthesis, Properties and Emerging Applications in Materials and Life Sciences goes on to study the synthesis, properties, and applications of polymers incorporating different heteroelements such as boron, phosphorus, silicon, germanium, and tin. The book also examines inorganic polymers in flame-retardants, as functional materials, and in biology. -An excellent addition to the polymer scientists' and synthetic chemists' toolbox -Summarizes the state of the art on how to make and use functional inorganic polymers?from synthesis to applications -Edited by the coordinator of a highly funded European community research program (COST action) that focuses specifically on the exploration of inorganic polymers - Features contributions from top experts in the field Aimed at academics and industrial researchers in this field, Smart Inorganic Polymers: Synthesis, Properties and Emerging Applications in Materials and Life Sciences will also benefit scientists who want to get a better overview on the state-of-the-art of this rapidly advancing area.**

## Aldol Reactions

**Springer Science & Business Media Aldol Reactions provides a comprehensive up-to-date overview of aldol reactions including application of different metal enolates; catalytic aldol additions catalyzed by different Lewis acids and Lewis**

bases; enantioselective direct aldol additions; antibodies and enzyme catalyzed aldol additions and the recent aggressive development of organocatalyzed aldol additions. The power of each method is demonstrated by several applications in total synthesis of natural products. The pros and cons of these methodologies with regard to stereoselectivity, regioselectivity and application in total synthesis of natural products are discussed. Great importance is set to the diverse possibilities of the manual of aldol reaction to install required configurations in complicated natural product synthesis.

## Frontier Orbitals and Organic Chemical Reactions

John Wiley & Sons Provides a basic introduction to frontier orbital theory with a review of its applications in organic chemistry. Assuming the reader is familiar with the concept of molecular orbital as a linear combination of atomic orbitals the book is presented in a simple style, without mathematics making it accessible to readers of all levels.

## Sulfur Chemistry

Springer Nature The series Topics in Current Chemistry Collections presents critical reviews from the journal Topics in Current Chemistry organized in topical volumes. The scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology, medicine and materials science. The goal of each thematic volume is to give the non-specialist reader, whether in academia or industry, a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience. Each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed. The coverage is not intended to be an exhaustive summary of the field or include large quantities of data, but should rather be conceptual, concentrating on the methodological thinking that will allow the non-specialist reader to understand the information presented. Contributions also offer an outlook on potential future developments in the field.

# Recent Advances in Iron Catalysis

Transition metal-catalyzed reactions play a key role in many transformations of synthetic organic chemistry. For most of these reactions, noble metals, for example, palladium, have been used as catalysts. Over the last two decades, more and more first row transition metals have been applied as catalysts for organic reactions, with iron taking the center stage. The driving forces behind this development are not only the high costs for the noble metals but also their toxicity. Iron is the most abundant transition metal in the Earth's crust, and thus, it is considerably cheaper than the precious noble metals. Moreover, iron compounds are involved in many biological processes, and thus, iron exhibits a low toxicity. Because of this low toxicity, iron-catalyzed reactions are important for an environmentally benign sustainable chemistry. However, iron catalysts are not only investigated to replace noble metals; they offer many applications in synthesis beyond those of classical noble metal catalysts. Several articles of the present book emphasize the complementarity of iron-catalyzed reactions as compared to reactions catalyzed by noble metals. The book shows intriguing recent developments and the current standing of iron-catalyzed reactions as well as applications to organic synthesis.

## Polyhedral Boranes

Hodder Education

## Progress in Catalysis

Elsevier This volume contains papers and short communications presented at the 12th Canadian Symposium on Catalysis. The aim of the meeting was to present an update on new and established areas of catalysis research being performed in industry, government and university laboratories. Topics covered relate mainly to resource processing, such as heavy oil and natural gas upgrading, and to environmental issues. Approximately half the papers are included in sections on hydrogenation, carbon-carbon bond formation and environmental issues. The remaining papers cover general topics and homogeneous reactions. Examples include studies of hydroprocessing catalysts, carbon-carbon bond formation via methane oxidative coupling and dimerization of olefins, homogeneous catalysts in polymerization

and dimerization reactions, performance of pillared clays, metal-oxygen cluster compounds, zeolites and catalysts prepared by metal oxide vapour synthesis. Studies that address the environmental issues include wet-air oxidation, catalytic elimination of organics, oxidation reactions and catalyst regeneration. The book provides practitioners of catalysis with an update on a wide number of topics and will be particularly useful to those interested in an overview of current catalysis research activities. Specialists in the areas of hydrogenation, carbon-carbon bond formation, homogeneous catalysis and environmental issues will also find a valuable set of new data and interesting discussions on these topics.

## High Energy Density Materials

Springer

## Rhodium Catalyzed Hydroformylation

**Springer Science & Business Media** In the last decade there have been numerous advances in the area of rhodium-catalyzed hydroformylation, such as highly selective catalysts of industrial importance, new insights into mechanisms of the reaction, very selective asymmetric catalysts, in situ characterization and application to organic synthesis. The views on hydroformylation which still prevail in the current textbooks have become obsolete in several respects. Therefore, it was felt timely to collect these advances in a book. The book contains a series of chapters discussing several rhodium systems arranged according to ligand type, including asymmetric ligands, a chapter on applications in organic chemistry, a chapter on modern processes and separations, and a chapter on catalyst preparation and laboratory techniques. This book concentrates on highlights, rather than a concise review mentioning all articles in just one line. The book aims at an audience of advanced students, experts in the field, and scientists from related fields. The didactic approach also makes it useful as a guide for an advanced course.

## Contemporary Boron Chemistry

**Royal Society of Chemistry** The continued and evolving significance of boron chemistry to the wider chemical community is demonstrated by the international and interdisciplinary nature of the research reported in this book.

Contemporary Boron Chemistry encompasses inorganic and organic compounds as well as polymers, solid-state materials, medicinal aspects and theoretical studies. Covering many areas of chemistry with boron at its centre, topics include applications to polyolefin catalysis, medicine, materials and polymers; boron cluster chemistry, including carboranes and metal-containing clusters; organic and inorganic chemistry of species containing only 1 or 2 boron atoms; and theoretical studies of boron-containing compounds. New materials with novel optical and electronic properties are also discussed. Comprehensive and up to date, graduates and researchers in a wide range of fields, particularly those in organometallic and organic chemistry and materials science, will welcome this book.

## Organotransition Metal Chemistry: From Bonding to Catalysis

Univ Science Books Based on Collman et al.'s best-selling classic book, Principles and Applications of Organotransition Metal Chemistry, Hartwig's text consists of new or thoroughly updated and restructured chapters and provides an in-depth view into mechanism, reaction scope, and applications. It covers the most important developments in the field over the last twenty years with great clarity with a selective, but thorough and authoritative coverage of the fundamentals of organometallic chemistry, the elementary reactions of these complexes, and many catalytic processes occurring through organometallic intermediates, making this the Organotransition Metal Chemistry text for a new generation of scientists.

## Chemistry of Iron

Springer Science & Business Media This book is designed to be of use to the reader in two different ways. First, it is intended to provide a general introduction to all aspects of iron chemistry for readers from a variety of different scientific backgrounds. It has been written at a level suitable for use by graduates and advanced undergraduates in chemistry and biochemistry, and graduates in physics, geology, materials science, metallurgy and biology. It is not designed to be a dictionary of iron compounds but rather to provide each user with the necessary tools and background to pursue their individual interests in the wide areas that are influenced by the chemistry of iron. To achieve this goal each chapter has been written by a contemporary expert active in the subject so that the reader will

benefit from their individual insight. Although it is generally assumed that the reader will have an understanding of bonding theories and general chemistry, the book is well referenced so that any deficiencies in the reader's background can be addressed. The book was also designed as a general reference book for initial pointers into a scientific literature that is growing steadily as the understanding and uses of this astonishingly versatile element continue to develop. To meet this aim the book attempts some coverage of all aspects of the chemistry of iron, not only outlining what understanding has been achieved to date but also identifying targets to be aimed at in the future.

## Boron

### The Fifth Element

**Springer** This multi-author edited volume reviews the recent developments in boron chemistry, with a particular emphasis on the contribution of computational chemistry. The contributors come from Europe, the USA and Asia. About 60% of the book concentrates on theoretical and computational themes whilst 40% is on topics of interest to experimental chemists. Specific themes covered include structure, topology, modelling and prediction, the role of boron clusters in synthetic chemistry and catalysis, as medical agents when acting as inhibitors of HIV protease and carbonic anhydrases.

### Transition Metal and Rare Earth Compounds III

### Excited States, Transitions, Interactions

**Springer Science & Business Media** With contribution by numerous experts

### Organometallic Chemistry and Catalysis

**Springer Science & Business Media** 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 organometallic 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.

## Oxygen Complexes and Oxygen Activation by Transition Metals

Springer Science & Business Media This monograph consists of manuscripts, summary statements, and poster abstracts submitted by invited speakers and poster contributors who participated in the symposium "Oxygen Complexes and Oxygen Activation by Transition Metals," held March 23-26, 1987, at Texas A&M University. This meeting was the fifth annual international symposium sponsored by the Texas A&M Industry-University Cooperative Chemistry Program (IUCCP). The co chairmen of the conference were Professors Arthur E. Martell and Donald T. Sawyer of the Texas A&M University Chemistry Department. The program was developed by an academic-industrial steering committee consisting of the co-chairmen and members appointed by the sponsoring chemical companies Dr. James F. Bradzil, The Standard Oil Company, Ohio; Dr. Jerry R. Ebner, Monsanto Company; Dr. Craig Murchison, Dow Chemical Company; Dr. Donald C. Olsen, Shell Development Company; Dr. Tim R. Ryan, Celanese Chemical Company; and Dr. Ron Sanderson, Texaco Chemical Company. The subject of this conference reflects the intense interest that has developed in academic institutions and industry on several aspects of dioxygen chemistry. These include the formation of dioxygen complexes and their applications in facilitated transport and oxygen separation; homogeneous and

heterogeneous catalysis of oxidation; and oxygenation of organic substrates by molecular oxygen. The conference differs in two respects from several other symposia on dioxygen chemistry held during the past few years. First, there is extensive industrial participation, especially with respect to oxygen activation.

## Catalytic Hydrogenation in Organic Syntheses

Elsevier Catalytic Hydrogenation in Organic Syntheses focuses on the process of catalytic hydrogenation in organic synthesis. This book gives the reader easy access to catalytic history, to show what can be done and how to do it. A variety of working generalities and common sense guides are given as aids in selecting catalytic metal, catalyst support, concentration of metal and catalyst, solvent, and reaction conditions. All manner of hydrogenation catalysts are considered and mechanisms of hydrogenation are presented at a level that is useful to the synthetic organic chemist. This volume is comprised of 15 chapters and begins with an overview of catalytic hydrogenation and heterogeneous hydrogenation catalysts, along with hydrogenation reactors and reaction conditions. The discussion then shifts to the hydrogenation of compounds such as acetylenes, olefins, aldehydes, ketones, nitriles, oximes, acids, esters, lactones, anhydrides, and nitro compounds as well as carbocyclic aromatics and heterocyclic compounds. The reader is also introduced to reductive alkylation, catalytic dehydrohalogenation, and hydrogenolysis of small rings. A chapter on miscellaneous hydrogenolyses concludes the book. This book will be of interest to organic chemists working in the field of catalytic hydrogenation.

## Boronic Acids

## Preparation, Applications in Organic Synthesis and Medicine

John Wiley & Sons For the first time, the whole field of organoboronic acids is presented in one comprehensive handbook. Professor Dennis Hall, a rising star within the community, covers all aspects of this important substance class, including applications in chemistry, biology and medicine. Starting with an introduction to the structure,

properties, and preparation of boronic acid derivatives, together with an overview of their reactions and applications, the book goes on to look at metal-catalyzed borylation of alkanes and arenes, coupling reactions and rhodium-catalyzed additions of boronic acids to alkenes and carbonyl compounds. There follows chapters on copper-promoted C-O and C-N cross-coupling of boronic acids, recent applications in organic synthesis, as well as alpha-haloalkylboronic esters in asymmetric synthesis. Later sections deal with cycloadditions, organoboronic acids, oxazaborolidines as asymmetric inducers, and boronic acid based receptors and sensors. The whole is rounded off with experimental procedures, making this invaluable reading for organic, catalytic and medicinal chemists, as well as those working in organometallics.

## Catalytic Asymmetric Conjugate Reactions

**John Wiley & Sons** This unique and long-awaited handbook on this important topic in the hot field of stereoselective organic synthesis covers several types of nucleophiles. Top international authors deal with modern forms of achieving stereoselective conjugate additions based on the use of chiral auxiliaries or asymmetric catalysis, such as P-N ligands, organocatalysis, domino reactions, Lewis acid and base catalysis. There is also a discussion of the employment of enantioselective conjugate addition transformations in total synthesis of important molecules. With its reliable and previously unpublished experimental procedures, this is a true source of high quality information.

## Frustrated Lewis Pairs

**Springer Nature** This volume highlights the latest research in frustrated Lewis pair (FLP) chemistry and its applications. The contributions present the recent developments of the use of FLPs in asymmetric catalysis, polymer synthesis, homogeneous and heterogeneous catalysis, as well as demonstrating their use as a pedagogical tool. The book will be of interest to researchers in academia and industry alike.

## Polymer Molecular Weights, (2 Part)

**CRC Press** This two-part book incorporates in one definitive publication the major techniques used to determine the molecular weights of polymers as presented by some of the most respected authorities in the field. Part I of this

practical guide covers membrane osmometry, end group determinations, absolute colligative property methods, and light-scattering methods. Discussions on theoretical background are included for every experimental procedure, as are examples of applications in polymeric processes. The information contained in *Polymer Molecular Weights* cannot be found in any other single publication, making it the most convenient source of information on molecular weight measurement for polymer chemists and physicists, analytical and physical chemists, biochemists, and other scientists in the plastics and synthetic fiber industries. Book jacket.

## N-Heterocyclic Carbenes in Transition Metal Catalysis

Springer In this book leading experts have surveyed major areas of application of NHC metal complexes in catalysis. The authors have placed a special focus on nickel- and palladium-catalyzed reactions, on applications in metathesis reactions, on oxidation reactions and on the use of chiral NHC-based catalysts. This compilation is rounded out by an introductory chapter and a chapter dealing with synthetic routes to NHC metal complexes.

## Photoinitiators

## Structures, Reactivity, and Applications in Polymerizations

John Wiley & Sons A comprehensive text that covers everything from the processes and mechanisms to the reactions and industrial applications of photoinitiators Photoinitiators offers a wide-ranging overview of existing photoinitiators and photoinitiating systems and their uses in ever-growing green technologies. The authors—*noted experts on the topic*—provide a concise review of the backgrounds in photopolymerization and photochemistry, explain the available structures, and examine excited state properties, involved mechanisms, and structure, reactivity, and efficiency relationships. The text also contains information on the latest developments and trends in the design of novel tailor-made systems. The book explores the role of current systems in existing and emerging processes and applications. Comprehensive in scope, it covers polymerization of thick samples and in-shadow areas, polymerization under LEDs,

**NIR light induced thermal polymerization, photoinitiators for novel specific and improved properties, and much more. Written by an experienced and internationally renowned team of authors, this important book: Provides detailed information about excited state processes, mechanisms, and design of efficient photoinitiator systems Discusses the performance of photoinitiators of polymerization by numerous examples of reactions and application Includes information on industrial applications Presents a review of current developments and challenges Offers an introduction to the background information necessary to understand the field Discusses the role played by photoinitiators in a variety of different polymerization reactions Written for polymer chemists, photochemists, and materials scientists, Photoinitiators will also earn a place on the bookshelves of photochemists seeking an authoritative, one-stop guide to the processes, mechanisms, and industrial applications of photoinitiators.**

## Boron-Based Compounds

### Potential and Emerging Applications in Medicine

**John Wiley & Sons Noted experts review the current status of boron-containing drugs and materials for molecular medical diagnostics Boron-Based Compounds offers a summary of the present status and promotes the further development of new boron-containing drugs and advanced materials, mostly boron clusters, for molecular medical diagnostics. The knowledge accumulated during the past decades on the chemistry and biology of bioorganic and organometallic boron compounds laid the foundation for the emergence of a new area of study and application of boron compounds as lipophilic pharmacophores and modulators of biologically active molecules. This important text brings together in one comprehensive volume contributions from renowned experts in the field of medicinal chemistry of boron compounds. The authors cover a range of the most relevant topics including boron compounds as modulators of the bioactivity of biomolecules, boron clusters as pharmacophores or for drug delivery, boron compounds for boron neutron capture therapy (BNCT) and for diagnostics, as well as in silico molecular modeling of boron- and carborane-containing compounds in drug design. Authoritative and accessible, Boron-Based Compounds: Contains contributions from a panel of internationally renowned experts in the field Offers a concise summary of the current status of boron-containing drugs and materials used for molecular diagnostics Highlights the range and capacity of boron-based compounds in medical applications Includes information on boron neutron capture therapy and diagnostics Designed**

for academic and industrial scientists, this important resource offers the cutting-edge information needed to understand the current state of boron-containing drugs and materials for molecular medical diagnostics.

## Boranes and Metalloboranes

### Structure, Bonding, and Reactivity

Ellis Horwood

## Nuclear Magnetic Resonance Spectroscopy of Boron Compounds

**Springer Science & Business Media** The revolutionary impetus of the NMR methods in organic chemistry has parallels in the field of boron chemistry. IIB NMR spectroscopy provided a basis for the elucidation of structures and reactions of the boron hydrides. However, although many studies have been carried out with the higher boranes, carboranes, metalloboranes, etc., and although certain patterns have emerged, the correlation between the observed chemical shift and the assigned structural unit is still not fully understood. Therefore, predictions in this area are still rather limited, and semiquantitative interpretations are not yet possible. Several years ago Eaton and Lipscomb summarized the status in this field in their book "NMR Studies of Boron Hydrides and Related Compounds" and a plethora of new data has accumulated since then. The book also contained material on simple borane derivatives, but they were not discussed in any detail. On the other hand many systematic studies, both synthetic and spectroscopic, have been conducted on these simple boron materials in the last decade. Thus a large amount of NMR information is available, not only on IIB but also on  $^1\text{H}$ ,  $^{13}\text{C}$ , and  $^{14}\text{N}$ . However, this information is widely scattered in the literature, and often the data are not discussed at all. It seemed appropriate, therefore, to collect these data and to present them in one volume.

# Anion Receptor Chemistry

**Royal Society of Chemistry** Anion recognition plays a critical role in a range of biological processes, and a variety of receptors and carriers can be found throughout the natural world. Chemists working in the area of supramolecular chemistry have created a range of anion receptors, drawing inspiration from nature as well as their own inventive processes. This book traces the origins of anion recognition chemistry as a unique sub-field in supramolecular chemistry while illustrating the basic approaches currently being used to effect receptor design. The combination of biological overview and summary of current synthetic approaches provides a coverage that is both comprehensive and comprehensible. First, the authors detail the key design motifs that have been used to generate synthetic receptors and which are likely to provide the basis for further developments. They also highlight briefly some of the features that are present in naturally occurring anion recognition and transport systems and summarise the applications of anion recognition chemistry. Providing as it does a detailed review for practitioners in the field and a concise introduction to the topic for newcomers, *Anion Receptor Chemistry* reflects the current state of the art. Fully referenced and illustrated in colour, it is a welcome addition to the literature.

## Anion Sensing

**Springer Science & Business Media** with contributions by numerous experts