Metal Carbenes In Organic Synthesis

Recognizing the quirk ways to get this books **Metal Carbenes In Organic Synthesis** is additionally useful. You have remained in right site to begin getting this info. get the Metal Carbenes In Organic Synthesis join that we have enough money here and check out the link.

You could purchase lead Metal Carbenes In Organic Synthesis or get it as soon as feasible. You could quickly download this Metal Carbenes In Organic Synthesis after getting deal. So, gone you require the book swiftly, you can straight acquire it. Its appropriately extremely easy and as a result fats, isnt it? You have to favor to in this aerate

Organic Synthesis Belakatte Parameshwarappa Nandeshwarappa 2020-05-27 The book 'Organic Synthesis - A Nascent Relook' is a compendium of the recent progress in all aspects of organic chemistry including bioorganic chemistry, organo-metallic chemistry, asymmetric synthesis, heterocyclic chemistry, natural product chemistry, catalytic, green chemistry and medicinal chemistry, polymer chemistry, as well as analytical methods in organic chemistry. The book presents the latest developments in these fields. The chapters are written by chosen experts who are internationally known for their eminent research contributions. Organic synthesis is the complete chemical synthesis of a target molecule. In this book, special emphasis is given to the synthesis of various bioactive heterocycles. Careful selection of various topics in this book will serve the rightful purpose for the chemistry community and the industrial houses at all levels.

Transition Metal-Catalyzed Carbene Transformations Jianbo Wang 2021-12-20 Presents an up-to-date overview of the rapidly growing field of carbene transformations Carbene transformations have had an enormous impact on catalysis and organometallic chemistry. With the growth of transition metal-catalyzed carbene transformations in recent decades, carbene transformations are today an important compound class in organic synthesis as well as in the pharmaceutical and agrochemical industries. Edited by leading experts in the field, Transition Metal-Catalyzed Carbene Transformations is a thorough summary of the most recent advances in the rapidly expanding research area. This authoritative volume covers different reaction types such as ring forming reactions and rearrangement reactions, details their conditions and properties, and provides readers with accurate information on a wide range of carbene reactions. Twelve in-depth chapters address topics including carbene C-H bond insertion in alkane functionalization, the application of engineered enzymes in asymmetric carbene transfer, progress in transition-metal-catalyzed cross-coupling using carbene precursors, and more. Throughout the text, the authors highlight novel catalytic systems, transformations, and applications of transition-metal-catalyzed carbene transfer. Highlights the dynamic nature of the field of transition-metal-catalyzed carbene transformations Summarizes the catalytic radical approach for selective carbene cyclopropanation, high enantioselectivity in X-H insertions, and bio-inspired carbene transformations Introduces chiral N,N'-dioxide and chiral guanidine-based catalysts and different transformations with gold catalysis Discusses approaches in cycloaddition reactions with metal carbenes and polymerization with carbene transformations Outlines multicomponent reactions through gem-difunctionalization and transition-metal-catalyzed cross-coupling using carbene precursors Transition Metal-Catalyzed Carbene Transformations is essential reading for all chemists involved in organometallics, including organic and inorganic chemists, catalytic chemists, and chemists working in industry.

Current Organic Chemistry 1998-09

New Aspects of Zirconium Containing Organic Compounds Ilan Marek 2005-02-18 Metal carbene complexes have made their way from organometallic curiosities to valuable reagents and catalysts. They offer novel synthetic opportunities in carbon-carbon bond formation based on either carbene-centered reactions or on metal-templated processes which makes them indispensable in modern synthetic methodology. The most prominent metal carbenes are now either commercially available or easy to synthesize and handle with modern laboratory techniques. This volume organized in eight chapters written by the leading scientists in the field illustrates the theoretical background, non-classical nucleophilic and cycloaddition patterns, chromium-templated benzannulation and photo-induced reactions, rhodium-catalyzed carbene transfer as well as the principles and applications of olefin metathesis which has coined the progress in synthetic methodology over the past decade. Designed for researchers in academia and industry as well as graduate students it presents the state-of-the-art potential of carbene complexes in modern organic synthesis.

Advances in Organometallic Chemistry 2017-06-08 Advances in Organometallic Chemistry, Volume 67, contains authoritative review articles of worldwide known researchers on the field of organometallic chemistry, covering topics in organometallic synthesis, reactions, mechanisms, homogeneous catalysis, and more. This book will benefit a wide range of researchers involved in organometallic chemistry, including synthetic protocols, mechanistic studies, and practical applications. Contains contributions from leading authorities in the field of organometallic chemistry Covers topics in organometallic synthesis, reactions, mechanisms, homogeneous catalysis, and more Informs and updates readers on all the latest developments in the field Carefully edited to provide easy-to-read material

Metal Carbenes in Organic Synthesis Florencio Zaragoza Dörwald 2008-09-26 There are hardly more versatile compounds in organic synthesis than carbene complexes. The rapid development of new synthetic methods involving carbene complexes - stereoselective cyclopropanation, carbonyl olefination, olefin metathesis, etc. - reveals the value and high potential of these compounds. Their application ranges from the synthesis of fine chemicals to polymer production. This comprehensive, well structured handbook presents the fundamental principles and the recent advances in carbene complex chemistry. Arranged according to structure and reactivity, all relevant classes of carbene complexes, their generation, and application in organic synthesis are discussed in detail. Critically selected, up-to-date references and valuable experimental procedures await the reader. Every chemist searching for a concise introduction and reference work for carbene complex chemistry will welcome this practical guide. "...this concise presentation of all the aspects of the use of carbene complexes in synthesis will help provide the impetus for even more rapid developments in this field of research." R. H. Grubbs (Caltech)

Science of Synthesis - N-Heterocyclic Carbenes in Catalytic Organic Synthesis Steven Nolan 2017-06-14 The field of N-heterocyclic carbenes, whether in transition-metal catalysis or organocatalysis, is rapidly evolving towards applications, but is also still very active on the catalyst development front. Significant advances have been made over the past two decades and the development of these reactions has dramatically improved the efficiency of organic synthesis. N-Heterocyclic carbene based catalysts are now widely applied in the area of synthesis of both natural products and therapeutic agents. "Science of Synthesis: N-Heterocyclic Carbenes in Catalytic Organic Synthesis" presents the most commonly used and significant metal- or non-metal-catalyzed reactions for modern organic synthesis. The basic principles and current state-of-the-art of the methods are covered. Scope, limitations, and mechanism of these reactions are discussed and key experimental procedures are included. Typical examples of target synthesis are often provided to show the utility and inspire further applications.

Advances in Metal Carbene Chemistry U. Schubert 2012-12-06 There are only few topics in organometallic chemistry, which have stimulated research activities in as many areas, as transition-metal carbene (alkylidene) complexes. About 25 years after the first planned synthesis of a carbene complex in E.O. Fischer's laboratory in Munich the NATO Advanced Research Workshop on Transition-Metal Carbene Complexes was the first meeting which,brought together scientists from different disciplines to discuss inorganic, organic, theoretical structural catalysis-related aspects of metal carbene chemistry. The 70th birthday of Professor E.O. Fischer was a good occasion for this enterprise. The organizers of the meeting (K.D. Dotz, Marburg; F.R. KreiBl, Munchen; U. Schubert, Wurzburg) were encouraged by the fact that most of the leading scientists in this area were able to participate in the workshop. The very high standard of the contributions is reflected in this book, which contains papers from the majority of the participants. The Proceedings show the state of the art in metal carbene chemistry and will hopefully be a landmark in the development of this area of chemistry. Generous financial support for the workshop and for the preparation of this book was provided by the Scientific Affairs Division of NATO and some companies. The organizers also acknowledge the efforts of the staff of the Bildungs zentrum der Hans-Seidel-Stiftung in Wild bad Kreuth for creating a pleasant and stimulating atmosphere during the conference.

The Organometallic Chemistry of the Transition Metals Robert H. Crabtree 2005-06-14 Fully updated and expanded to reflect recent advances, this Fourth Edition of the classic text provides students and professional chemists with an excellent introduction to the principles and general properties of organometallic compounds, as well as including practical information on reaction mechanisms and detailed descriptions of contemporary applications.

Recent Developments Of Diazo Compounds In Organic Synthesis Di Qiu 2020-12-29 Diazo compounds are versatile substances with diverse transformations in organic synthesis and other fields. Studies of diazo compounds have been ongoing for a very long time but still attract significant attention within the organic chemistry community, with new papers related to diazo compounds appearing at a daily pace. Over the past twenty years, there have been over fifty reviews and accounts related to the reactions of diazo compounds, but most of them cover limited aspects of diazo compounds. In addition to organic synthesis, diazo compounds have found applications in interdisciplinary fields such as material sciences, chemical biology and also polymerization.In this comprehensive book, the authors cover the most recent advances in the fields related to diazo compounds, including the application of donor-acceptor carbenes, carbene-based cross-coupling reactions and polymerizations, as well as the breakthrough in catalytic asymmetric carbene O-H, S-H, and N-H bond insertions. They also cover the application of flow chemistry in diazo reactions. The authors aim to provide a contemporary and comprehensive review for investigators engaged in or with interest in diazo compounds to boost further developments in this fascinating field.

N-Heterocyclic Carbenes Silvia Diez-Gonzalez 2016-11-04 In less than 20 years N-heterocyclic carbenes (NHCs) have become well-established ancillary ligands for the preparation of transition metal-based catalysts. This is mainly due to the fact that NHCs tend to bind strongly to metal centres, avoiding the need of excess ligand in catalytic reactions. Also, NHC–metal complexes are often insensitive to air and moisture, and have proven remarkably resistant to oxidation. This book showcases the wide variety of applications of NHCs in different chemistry fields beyond being simple phosphine mimics. This second edition has been updated throughout, and now includes a new chapter on NHC–main group element complexes. It covers the synthesis of NHC ligands and their corresponding metal complexes, as well as their bonding and stereoelectronic properties and applications in catalysis. This is complemented by related topics such as organocatalysis and biologically active complexes. Written for organic and inorganic chemists, this book is ideal for postgraduates, researchers and industrialists.

Organic Synthesis Highlights II Herbert Waldmann 2008-09-26 Like its predecessor, Organic Synthesis Highlights II surveys recent accomplishments and current trends in synthetic organic chemistry. Part I describes new methods and reagents including asymmetric carbon-carbon bond formation with metallocenes and with enzymes, via temporary silicon connections, and by means of carbohydrate complexes. Part II describes landmarks in the synthesis of natural products and surveys synthetic strategies to different classes of natural products. The forty essays in this volume bear witness to the creativity and talent which have led to the recent advances in the field. Both advanced students and researchers active in the field will welcome this as a source of ideas and inspiration.

N-heterocyclic Carbenes Silvia Díez-González 2011 Over the last fifteen years, N-heterocyclic carbenes (NHCs) have mostly been used as ancillary ligands for the preparation of transition metal-based catalysts. Compared to phosphorus-containing ligands, NHCs tend to bind more strongly to metal centres, avoiding the necessity for the use of excess ligand in catalytic reactions. The corresponding complexes are often less sensitive to air and moisture, and have proven remarkably resistant to oxidation. Recent developments in catalysis applications have been facilitated by the availability of carbenes stable enough to be bottled, particularly for their use as organocatalysts. This book shows how N-heterocyclic carbenes can be useful in various fields of chemistry and not merely laboratory curiosities or simple phosphine mimics. NHCs are best known for their contribution to ruthenium and palladium-catalysed reactions but the scope of this book is much broader. The synthesis of NHC ligands and their corresponding metal complexes are covered in depth. Moreover, the biological activity of NHC-containing complexes, as well as an overview of their theoretical aspects are included. Such metal species are further examined, not only in terms of their catalytic applications, but also of their stereoelectronic parameters and reactivity/stability. Finally, special attention is given to the hot topic of organocatalysis. The book will be of interest to postgraduates, academic researchers and those working in industry.

Metal Carbenes in Organic Synthesis K H Dtz 2004-09-21 With contributions by numerous experts

Current Organic Chemistry 1998-09

Science of Synthesis: N-Heterocyclic Carbenes in Catalytic Organic Synthesis Anthony Martin 2017-01-23 The field of N-heterocyclic carbenes, whether in transition-metal catalysis or organocatalysis, is rapidly evolving towards applications, but is also still very active on the catalyst development front. Significant advances have been made over the past two decades and the development of these reactions has dramatically improved the efficiency of organic synthesis. N-Heterocyclic carbene based catalysts are now widely applied in the area of synthesis of both natural products and therapeutic agents. "Science of Synthesis: N-Heterocyclic Carbenes in Catalytic Organic Synthesis" presents the most commonly used and significant metal- or non-metal-catalyzed reactions for modern organic synthesis. The basic principles and current state-of-the-art of the methods are covered. Scope, limitations, and mechanism of these reactions are discussed and key experimental procedures are included. Typical examples of target synthesis are often provided to show the utility and inspire further applications.

Palladium in Organic Synthesis Jiro Tsuji 2005-07-06 with contributions by numerous experts

N-Heterocyclic Carbenes in Synthesis Steven P. Nolan 2006-10-27 This first handbook to focus solely on the application of N-heterocyclic carbenes in synthesis covers metathesis, organocatalysis, oxidation and asymmetric reactions, along with experimental procedures. Written by leading international experts this is a valuable and practical source for every organic chemist.

N-Heterocyclic Carbenes Steven P. Nolan 2014-07-07 This comprehensive reference and handbook covers in depth all major aspects of the use of N-heterocyclic carbene-complexes in organic synthesis: from the theoretical background to characterization, and from cross-coupling reactions to olefin metathesis. Edited by a leader and experienced scientist in the field of homogeneous catalysis and use of NHCs, this is an essential tool for every academic and industrial synthetic chemist.

Organic Reactions Catalysis by Carbenes and Metal Carbene Complexes Nikolai Korotkikh 2015-01-29 The monograph is devoted to the actual problems of modern chemistry, i.e. the problems of catalysis of organic reactions by carbenes and metalcarbene complexes as one of the most promising areas of organic chemistry last time connecting with "green chemistry." Among the transformations catalyzed by carbenes much attention was paid to the reactions catalyzed by free carbenes and their transition metal complexes.

Rhodium Catalysis in Organic Synthesis Ken Tanaka 2019-05-06 An essential reference to the highly effective reactions applied to modern organic synthesis Rhodium complexes are one of the most important transition metals for organic synthesis due to their ability to catalyze a variety of useful transformations. Rhodium Catalysis in Organic Synthesis explores the most recent progress and new developments in the field of catalytic cyclization reactions using rhodium(I) complexes and catalytic carbon-hydrogen bond activation reactions using rhodium(II) and rhodium(III) complexes. Edited by a noted expert in the field with contributions from a panel of leading international scientists, Rhodium Catalysis in Organic Synthesis presents the essential information in one comprehensive volume. Designed to be an accessible resource, the book is arranged by different reaction types. All the chapters provide insight into each transformation and include information on the history, selectivity, scope, mechanism, and application. In addition, the chapters offer a summary and outlook of each transformation. This important resource: -Offers a comprehensive review of how rhodium complexes catalyze a variety of highly useful reactions for organic synthesis (e.g. coupling reactions, CH-bond functionalization, hydroformylation, cyclization reactions and others) -Includes information on the most recent developments that contain a range of new, efficient, elegant, reliable and useful reactions -Presents a volume edited by one of the international leading scientists working in the field today -Contains the information that can be applied by researchers in academia and also professionals in pharmaceutical, agrochemical and fine chemical companies Written for academics and synthetic chemists working with organometallics, Rhodium Catalysis in Organic Synthesis contains the most recent information available on the developments and applications in the field of catalytic cyclization reactions using rhodium complexes.

Transition Metals in the Synthesis of Complex Organic Molecules Louis S. Hegedus 1999 This second edition offers easy access to the field of organotransition metal chemistry. The book covers the basics of transition metal chemistry, giving a practical introduction to organotransition reaction mechanisms.

Organometallics in Organic Synthesis Armin de Meijere 2012-12-06 More and more possible applications of organometallic compounds in organic synthesis have been uncovered and a growing number of scientists are attracted to this area of research. This book presents an state-of-the-art account of the successful application of main- and transition metal mediated syntheses. It will stimulate new ideas and initiate further research in all areas of this fascinating chemistry.

Current Organic Chemistry 1998-09

Organic Synthesis Using Transition Metals Roderick Bates 2012-04-12 Transition metals open up new opportunities for synthesis, becausetheir means of bonding and their reaction mechanisms differ fromthose of the elements of the s and p blocks. In the last twodecades the subject has mushroomed - established reactions areseeing both technical improvements and increasing numbers ofapplications, and new reactions are being developed. Thepracticality of the subject is demonstrated by the large number ofpublications coming from the process development laboratories ofpharmaceutical companies, and its importance is underlined by thefact that three Nobel prizes have been awarded for discoveries inthis field in the 21st Century already. Organic Synthesis Using Transition Metals, 2nd Editionconsiders the ways in which transition metals, as catalysts andreagents, can be used in organic synthesis, both for pharmaceuticalcompounds and for natural products. It concentrates on thebond-forming reactions that set transition metal chemistry apartfrom "classical" organic chemistry. Each chapter isextensively referenced and provides a convenient point of entry tothe research literature. Topics covered include: introduction to transition metals in organic synthesis coupling reactions C-H activation carbonylative coupling reactions alkene and alkyne insertion reactions electrophilic alkene and alkyne complexes reactions of alkyne complexes carbene complexes spanstyle="font-family: Symbol; font-size: 10pt; mso-fareast-font-family: 'Times New Roman'; mso-bidi-font-family: Arial; mso-ansi-language: EN-GB; mso-fareast-language: EN-US; mso-bidi-language: AR-SA;"h/span3-or spanstyle="font-family: Symbol; font-size: 10pt; mso-fareast-font-family: 'Times New Roman'; mso-bidi-font-family: Arial; mso-ansi-language: EN-GB; mso-fareast-language: EN-US; mso-bidi-language: AR-SA;"p/span-allyl-allyl complexes diene, dienyl and arene complexes cycloaddition and cycloisomerisation reactions For this second edition the text has been extensively revisedand expanded to reflect the significant improvements and advancesin the field since the first edition, as well as the large numberof new transition metal-catalysed processes that have come toprominence in the last 10 years – for example theextraordinary progress in coupling reactions using"designer" ligands, catalysis using gold complexes, newopportunities arising from metathesis chemistry, and C-H activation– without neglecting the well established chemistry of metalssuch as palladium. Organic Synthesis Using Transition Metals, 2nd Editionwill find a place on the bookshelves of advanced undergraduates andpostgraduates working in organic synthesis, catalysis, medicinalchemistry and drug discovery. It is also useful for practisingresearchers who want to refresh and enhance their knowledge of thefield.

N-heterocyclic Carbenes in Catalytic Organic Synthesis Steven Nolan 2017 The field of N-heterocyclic carbenes, whether in transition-metal catalysis or organocatalysis, is rapidly evolving towards applications, but is also still very active on the catalyst development front. Significant advances have been made over the past two decades and the development of these reactions has dramatically improved the efficiency of organic synthesis. N-Heterocyclic carbene based catalysts are now widely applied in the area of synthesis of both natural products and therapeutic agents. Science of Synthesis: N-Heterocyclic Carbenes in Catalytic Organic Synthesis presents the most commonly used and significant metal- or non-metal-catalyzed reactions for modern organic synthesis. The basic principles and current state-of-the-art of the methods are covered. Scope, limitations, and mechanism of these reactions are discussed and key experimental procedures are included. Typical examples of target synthesis are often provided to show the utility and inspire further applications.

Current Organic Chemistry 1998-09

Transition metal Organometallics In Organic Synthesis Howard Alper 2012-12-02 Transition Metal Organometallics in Organic Synthesis: Volume I reviews the literature in the field of organic synthesis with a focus on the most effective synthetic transformations. The text covers topics such as the general considerations in organic synthesis, C-C and C-X bond formations, and the isomerization and reorganization reactions of olefins. Also covered are topics such as displacement reactions with transition metal complexes, electrophilic reactions of organopalladium complexes, carbonylation reactions, and metal-carbene complexes — its structure, spectra, bonding, and direct synthesis. The book is recommended as a reference for chemists and inorganic chemists who would like to learn the applications of organometallic complexes as reagents and catalysts.

N-Heterocyclic Carbenes in Transition Metal Catalysis and Organocatalysis Catherine S.J. Cazin 2010-10-04 N-Heterocyclic Carbenes in Transition Metal Catalysis and Organocatalysis features all catalytic reactions enabled by N-heterocyclic carbenes (NHCs), either directly as organocatalysts or as ligands for transition metal catalysts. An explosion in the use of NHCs has been reported in the literature during the past seven years making this comprehensive overview highly apropos. The book begins with an introductory overview of NHCs which could have been subtitled all you need to know about NHCs. The main body of the book is dedicated to applications of NHCs in catalysis. In addition to the success stories of NHCs in metathesis, NHCs in cross coupling and more recently NHCs in organocatalysis, all other less publicized areas are also covered. As the success of NHCs is generally attributed to their potential to stabilize metal centres, the inclusion of a chapter on the decomposition of NHC catalysts is pertinent. The book closes with a chapter describing the applications of NHCs in industrial processes, which is the first coverage of its kind, and brings a unique industrial context to this book. Included in this book: Historical aspects of NHCs Synthetic pathways to NHC precursors, free NHCs and complexes Methods of characterisation of NHCs and related complexes Electronic properties of NHCs Steric properties of NHCs and models for their description NHCs for metathesis and cross-coupling reactions NHCs as organocatalysts NHC Transition-Metal mediated oxidations, additions to multiple bonds, polymerisation and oligomerisation, cyclisations, direct arylations, reactions involving CO, C-F and C-H bond activation, ... Decomposition of NHC-containing catalysts Industrial applications involving NHC-containing catalysts N-Heterocyclic Carbenes in Transition Metal Catalysis and Organocatalysis provides a fresh view of NHCs since most contributors are young emerging researchers in the field of homogeneous catalysis using NHCs. This group of contributors is complemented by highly established academic researchers and an industrialist. This book is comprehensive, from the basic features of NHCs to the latest advances, hence it is suitable for both the novice and the expert.

Organometallic Reagents in Organic Synthesis John H. Bateson 1994 Organometallic chemistry has always been an important part of organic chemistry, but never more so than today. The expansion of synthetic methodology employing organometallic reagents and metallo-species in the lasttwenty years has been phenomenal.Two major important roles which organometallic reagents play are:Providing a means of activating small molecules like O2, CO, HCN and H2 into larger structuresConferring diastereo-and enantioselectivity.The applications of these reagents in synthesis ranges from the synthesis of drug candidates to the design of efficient large-scale chemical processes.This book brings together experts across the whole range of fields associated with organometallic chemistry to provide a spectrum of up-to-date information.It will be of interest to organic chemists and medicinal chemists in academia and the pharmaceutical industry.

Basic Organometallic Chemistry Ionel Haiduc 1985-01-01

Advances in Physical Organic Chemistry John P. Richard 2002-12-31 Advances in Physical Organic Chemistry provides the chemical community with authoritative and critical assessments of the many aspects of physical organic chemistry. The field is a fast developing one, with results and methodologies finding application from biology to solid state physics. This latest volume deals comprehensively with investigations that can be traced back to the birth of the field but which are still proving critical to the understanding of the stability of organic molecules and the mechanisms for their reactions. Volume 37 of this hugely successful Advances in Physical Organic Chemistry series Comprehensive review articles covering various topics of interest within the physical organic chemistry field

Organometallics Christoph Elschenbroich 2016-02-10 THE textbook on organometallic chemistry. Comprehensive and up-to-date, the German original is already a classic, making this third completely revised and updated English edition a must for graduate students and lecturers in chemistry, inorganic chemists, chemists working with/on organometallics, bioinorganic chemists, complex chemists, and libraries. Over one third of the chapters have been expanded to incorporate developments since the previous editions, while the chapter on organometallic catalysis in synthesis and production appears for the first time in this form. From the reviews of the first English editions: 'The selection of material and the order of its presentation is first class ... Students and their instructors will find this book extraordinarily easy to use and extraordinarily useful.' -Chemistry in Britain 'Elschenbroich and Salzer have written the textbook of choice for graduate or senior-level courses that place an equal emphasis on main group element and transition metal organometallic chemistry. ... this book can be unequivocally recommended to any teacher or student of organometallic chemistry.' - Angewandte Chemie International Edition 'The breadth and depth of coverage are outstanding, and the excitement of synthetic organometallic chemistry comes across very strongly.' - Journal of the American Chemical Society

Encyclopedia of Chromatography Jack Cazes 2009-10-12 Thoroughly revised and expanded, the third edition of the Encyclopedia of Chromatography is an authoritative source of information for researchers in chemistry, biology, physics, engineering, and materials science. This quick reference and guide to specific chromatographic techniques and theory provides a basic introduction to the science and techn

Functionalised N-Heterocyclic Carbene Complexes Olaf Kühl 2010-02-02 N-heterocyclic carbenes (NHCs) have found increasing use as reagents for a range of organic transformations and in asymmetric organocatalysis. The performance of these molecules can be improved and tuned by functionalisation. Functionalised carbenes can anchor free carbenes to the metal site, introduce hemilability, provide a means to immobilise transition metal carbene catalysts, introduce chirality, provide a chelate ligand or bridge two metal centres. NHC can be attached to carbohydrates and campher, derived from amino acids and purines, they can be used as organocatalysts mimicking vitamin B1 or as weak "solvent" donors in lanthanide chemistry. Functionalised N-Heterocyclic Carbene Complexes describes major trends in functionalised NHC ligands, aiming to assist readers in their attempts to develop and apply their own functionalised carbenes. After an introduction to the chemistry and behaviour of NHC, the book gives a detailed description of functionalised carbenes and their complexes according to a range of functional groups, each with a discussion of the synthetic route, structure, stability and performance. Functionalised N-Heterocyclic Carbene Complexes is an essential guide to fine-tuning this important class of compounds for practitioners, researchers and advanced students working in synthetic organometallic and organic chemistry and catalysis.

Comprehensive Organic Synthesis 2014-02-14 The second edition of Comprehensive Organic Synthesis—winner of the 2015 PROSE Award for Multivolume Reference/Science from the Association of American Publishers—builds upon the highly respected first edition in drawing together the new common themes that underlie the many disparate areas of organic chemistry. These themes support effective and efficient synthetic strategies, thus providing a comprehensive overview of this important discipline. Fully revised and updated, this new set forms an essential reference work for all those seeking information on the solution of synthetic problems, whether they are experienced practitioners or chemists whose major interests lie outside organic synthesis. In addition, synthetic chemists requiring the essential facts in new areas, as well as students completely new to the field, will find Comprehensive Organic Synthesis, Second Edition an invaluable source, providing an authoritative overview of core concepts. Winner of the 2015 PROSE Award for Multivolume Reference/Science from the Association of American Publishers Contains more than170 articles across nine volumes, including detailed analysis of core topics such as bonds, oxidation, and reduction Includes more than10,000 schemes and images Fully revised and updated; important growth areas—including combinatorial chemistry, new technological, industrial, and green chemistry developments—are covered extensively

N-Heterocyclic Carbenes in Transition Metal Catalysis Frank Glorius 2007-02-05 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.

N-Heterocyclic Carbenes in Organocatalysis Akkattu T. Biju 2019-03-04 Summarizing the emerging field of N-heterocyclic carbenes used in organocatalysis, this is an excellent overview of the synthesis and applications of NHCs focusing on carbon-carbon and carbon-heteroatom bond formation. Alongside comprehensive coverage of the synthesis, characteristics and applications, this handbook and ready reference also includes chapters on NHCs for polymerization reactions and natural product synthesis.

Pincer Compounds David Morales-Morales 2018-04-11 Pincer Compounds: Chemistry and Applications offers valuable state-of-the-art coverage highlighting highly active areas of research—from mechanistic work to synthesis and characterization. The book focuses on small molecule activation chemistry (particularly H2 and hydrogenation), earth abundant metals (such as Fe), actinides, carbene-pincers, chiral catalysis, and alternative solvent usage. The book covers the current state of the field, featuring chapters from renowned contributors, covering four continents and ranging from still-active pioneers to new names emerging as creative strong contributors to this fascinating and promising area. Over a decade since the publication of Morales-Morales and Jensen's The Chemistry of Pincer Compounds (Elsevier 2007), research in this unique area has flourished, finding a plethora of applications in almost every single branch of chemistry—from their traditional application as very robust and active catalysts all the way to potential biological and pharmaceutical applications. Describes the chemistry and applications of this important class of organometallic and coordination compounds Includes contributions from global leaders in the field, featuring pioneers in the area as well as emerging experts conducting exciting research on pincer complexes Highlights areas of promising and active research, including small molecule activation, earth abundant metals, and actinide chemistry

Current Organic Chemistry 1998-09