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Catalyst Components for Coupling Reactions - Gary A. Molander 2013-05-30
The long awaited Handbook for all synthetic chemists working on coupling reactions, compiling all major catalyst components in use in the area. Consists of a compilation of articles taken from the EROS database, with the inclusion of about 20 newly commissioned catalysts/pre-catalysts/ligands that have made an impact in this area of synthetic organic chemistry. Includes catalyst systems used in Heck, Kumada-Tamao-Corriu, Suzuki-Miyaura, Hiyama-Hatanaka, Negishi, Migita-Kosugi-Stille, Buchwald-Hartwig, and Tsuji-Trost coupling reactions.
Biological Chirality - Gyula Palyi 2019-11-06
Biological Chirality describes this occurrence, its history, and early research around the topic. The work covers analytical methods for observing the phenomenon, providing current techniques and practice and discussing the asymmetric morphology of certain living organisms, such as the position of the heart and liver in humans and the exceptions to biological homochirality seen in D-Amino Acids. In addition, it explores the requirement of enantioselectivity prepared pharmaceuticals to address enantioselectivities biomolecules, a major challenge in today's organic chemistry. Finally, the work considers the possible origin of biological homochirality, as well as the outlook for future research in this area. Describes the history of biological chirality research, its possible origins, and future exploration areas Discusses asymmetric exceptions in morphology and D-Amino Acids Explores the critical implications of enantioselective biomolecules for preparative organic chemistry with a goal of developing effective pharmaceuticals
Comprehensive Medicinal Chemistry II - David J Triggle 2006-12-29
The first edition of Comprehensive Medicinal Chemistry was published in 1990 and was very well received. Comprehensive Medicinal Chemistry II is much more than a simple updating of the contents of the first edition. Completely revised and expanded, this new edition has been refocused to reflect the significant developments and changes over the past decade in genomics, proteomics, bioinformatics, combinatorial chemistry, high-throughput screening and pharmacology, and more. The content comprises the most up-to-date, authoritative and comprehensive reference text on contemporary medicinal chemistry and drug research, covering major therapeutic classes and targets, research strategy and organisation, high-throughput technologies, computer-assisted design, ADME and selected case histories. It is this coverage of the strategy, technologies, principles and applications of

medicinal chemistry in a single work that will make Comprehensive Medicinal Chemistry II a unique work of reference and a single point of entry to the literature for pharmaceutical and biotechnology scientists of all disciplines and for many industry executives as well. Also available online via ScienceDirect (2006) - featuring extensive browsing, searching, and internal cross-referencing between articles in the work, plus dynamic linking to journal articles and abstract databases, making navigation flexible and easy. For more information, pricing options and availability visit www.info.sciencedirect.com. Comprehensively reviews - the strategies, technologies, principles and applications of modern medicinal chemistry Provides a global and current perspective of today's drug discovery process and discusses the major therapeutic classes and targets Includes a unique collection of case studies and personal assays reviewing the discovery and development of key drugs

Asymmetric Synthesis - Garry Procter 1996

This book covers a wide range of reactions which are of importance in the asymmetric synthesis of organic compounds. The principles of asymmetric additions to carbonyls, enolate alkylation, aldol reactions, additions to C-C double bonds, reduction and oxidation, rearrangements, and hydrolysis/ esterification reactions are covered, and selected examples used to illustrated the various topics. Numerous references to original literature should be of ues to organic chemists interested in the area of asymmetric synthesis.

Handbook of Reagents for Organic Synthesis - André B. Charette 2017-05-31

The Handbook is a compilation of 99 articles on diverse reagents and catalysts that describe the synthesis of heteroarenes, the building blocks of a wide range of chemicals used in pharma and chemical industries. Articles are selected from the e-EROS database and edited to make sure that it includes only the material relevant to the topic of the book and focus on the synthetic aspects. This makes the articles very focused on the needs of readers wanting information on specific syntheses of specific heteroarenes. In addition, the chemistry of each parent heteroarene is also included to ensure that the reader rapidly finds important information. The Handbook is a part of the Handbook of Reagents for Organic Chemistry series, aiming at collecting articles on a particular theme that individual researchers in academia or industry can use on a daily basis.

Fundamentals and Prospects of Catalysis - Goutam Kumar Patra 2020-09-21

Catalysis is an area of chemical sciences which has fascinated a wide range of academicians, researchers, chemical technologists and industries throughout the world. Progress in this field has been made owing to the thrust provided by this research and commercial interest. The field of catalysis is interdisciplinary by its nature, as it requires knowledge of organic synthesis, coordination and organometallic chemistry, reaction kinetics and mechanisms, stereochemical concepts and materials science. Fundamentals and Prospects of Catalysis highlights many important topics and sub-disciplines in catalysis by presenting 7 chapters on different but varied catalytic processes. This volume presents the following topics:· Organocatalytic Asymmetric Synthesis of Spiroacetals and Bridged Acetals· Design and Development of Bimetallic Enantioselective Salen Co Catalysts for The Hydrolytic Kinetic Resolution of Terminal Epoxides· Recent Trend in Asymmetric Heterogeneous Flow Catalysis· Ball Milling: A Green Tool in Synthetic Organic Chemistry· Recent Advances in the Developments of Enantioselective Electrophilic Fluorination Reactions via Organocatalysis· Green and Sustainable Biocatalytic Routes to Prepare Biobased Polyols as Precursors for Polyurethanes with Comparison of Existing Biobased Polyol Technology· Polymers Used as

Catalysts

Catalytic Asymmetric Synthesis - Iwao Ojima 2004-08-27

From the reviews of the First Edition . . . "An excellent text . . . will no doubt provide the benchmark forcomparative works for many years." —Journal of the American Chemical Society "A resounding success . . . the definitive current summaries ontheir respective subjects." —Synthesis Since this important work was first published in 1993, the fieldof catalytic asymmetric synthesis has grown explosively, spawningeffective new methods for obtaining enantiomerically pure compoundson a large scale and stimulating new applications in diversefields-from medicine to materials science. CatalyticAsymmetric Synthesis, Second Edition addresses these rapidchanges through new or substantially revised contributions fromhighly recognized world leaders in the field. It presents detailedaccounts of the most important catalytic asymmetric reactions knowntoday, discusses recent advances, and retains from the previousedition essential and intriguing information on the initialdevelopment of certain processes. An excellent working resource foracademic researchers and industrial chemists alike, the SecondEdition features: Contributions from Noyori, Sharpless, Kagan, Trost, Overman,Shibasaki, Doyle, Okamoto, Bolm, Carreira, and many otherinternationally renowned authorities New chapters on asymmetric carbometallations, asymmetricamplification and autocatalysis, and asymmetric polymerization Extended coverage of asymmetric carbene reactions, includingasymmetric intramolecular carbene insertion to C-H bonds as well asasymmetric dihydroxylation and aminohydroxylation Extended coverage of asymmetric carbon-carbon bond-formingreactions and applications An appendix listing all chiral ligands in the book

Sustainable Catalysis - Rafael Luque 2018-05-07

Highlighting sustainable catalytic processes in synthetic organic chemistry and industry, this useful guide places special emphasis on catalytic reactions carried out at room temperature. It describes the fundamentals, summarizes key advances, and covers applications in industrial processes in the field of energy generation from renewables, food science, and pollution control. Throughout, the latest research from various disciplines is combined, such as homogeneous and heterogeneous catalysis, biocatalysis, and photocatalysis. The book concludes with a chapter on future trends and energy challenges for the latter half of the 21st century. With its multidisciplinary approach this is an essential reference for academic and industrial researchers in catalysis science aiming to design more sustainable and energy-efficient processes.

Organic Molecular Photochemistry - V. Ramamurthy 2020-08-13

Focuses on complex naturally occurring and synthetic supramolecular arrays. The text describes applications of photochemistry in cystalline organic matrices; covers two-component crystals - crystalline molecular compounds, mixed crystals and simple mechanical mixtures - in solid and liquid phases; assesses photoinduced fragmentation of carbon-heteroatom bonds; and more.

Stereoselectivity in Organic Synthesis - Garry Procter 1998-04-23

This clear and concise text is concerned with the reactions used in stereoselective organic synthesis. These are important types of reactions which can be used for the selective preparation of new organic compounds with a defined and predictable three dimensional architecture. This informative text will be an invaluable study aid for all undergraduate chemistry students. Undergraduates in related subjects studying chemistry to second year level or higher will also find this book useful.

Stereochemistry and Organic Reactions - Dipak Kumar Mandal 2021-04-21

Stereochemistry and Organic Reactions: Conformation, Configuration, Stereoelectronic

Effects and Asymmetric Synthesis provides coverage on the stereochemistry of reactions of all mechanistic types, ranging from ionic, pericyclic and transition metal-catalyzed to radical and photochemical. Chapters cover acyclic molecules, cyclic molecules, the stereochemistry of organic reactions, the perturbation molecular orbital theory for the origin of stereoelectronic effects, and an introduction to the principles of stereoselectivity and hierarchical levels of asymmetric synthesis. Each chapter includes problems that reinforce main themes, making it valuable to students, teachers and researchers working in organic, biological and medicinal chemistry, as well as biologists, pharmacologists, polymer chemists and chemists. Presents a holistic and unified approach to stereochemical understanding and predictions, covering reactions of all mechanistic classes Includes two background chapters on perturbation theory and stereoselective principles, along with asymmetric designs Features novel rules and mnemonics to delineate product stereochemistry Includes up-to-date coverage with over 1300 selective references

Asymmetric Synthesis in Organophosphorus Chemistry - Oleg I. Kolodiazhnyi 2016-12-19

Authored by one of the leading experts in the field, this is the only comprehensive overview of chiral organophosphorus compounds, from asymmetric synthesis to catalysis and pharmacological applications. As such, this unique reference covers the chemical background as well as spectroscopical analysis of phosphorus compounds, and thoroughly describes all the various synthetic strategies for these substances. Metal-, organo- and biocatalyzed reactions for the introduction of phosphorus are explained as are asymmetric oxidation and reduction methods for the preparation of all possible oxidation states of phosphorus. The text also includes industrial applications for these compounds. Of particular interest to chemists working in the field of asymmetric synthesis, as well as to the pharmaceutical industry due to the increasing number of phosphorous-containing drugs.

Comprehensive Organic Functional Group Transformations II - 2004-12-16

Comprehensive Organic Functional Group Transformations II (COFGT-II) will provide the first point of entry to the literature for all scientists interested in chemical transformations. Presenting the vast subject of organic synthesis in terms of the introduction and interconversion of all known functional groups, COFGT-II provides a unique information source documenting all methods of efficiently performing a particular transformation. Organised by the functional group formed, COFGT-II consists of 144 specialist reviews, written by leading scientists who evaluate and summarise the methods available for each functional group transformation. Also available online via ScienceDirect - featuring extensive browsing, searching, and internal cross-referencing between articles in the work, plus dynamic linking to journal articles and abstract databases, making navigation flexible and easy. For more information, pricing options and availability visit www.info.sciencedirect.com. By systematically treating each functional group in turn the work also identifies what is not known, thus pointing the way to new research areas Follows the systematic layout of the successful 1995 COFGT reference work, based on the arrangement and bonding of hetero-atoms around a central carbon atom The work will save researchers valuable time in their research as each chapter is written by experts who have critically read and reviewed the literature and presented the best methods of forming every known functional group

Lewis Acid Reagents - Hisashi Yamamoto 1999

A clear and comprehensive laboratory manual providing step-by-step protocols for using Lewis acid reagents to catalyze organic synthesis processes. After an

examination of the synthetic utility of bulky aluminum reagents as Lewis acid receptors, the manual covers the following reagents, protocols, and processes: Boron; Magnesium (II) and other alkali and alkaline earth metals; Zinc (II); Chiral titanium complexes for enantioselective catalysis; Tin Lewis acid; Silicon (IV); Silver and gold; Zr- and Hf-centered Lewis acid in organic synthesis; Scandium (III) and yttrium (III); Lanthanides (III); and other transition metal reagents. Also covered are Lewis acid-assisted anionic polymerizations for synthesis of polymers with controlled molecular weights. Lewis Acid Chemistry: A Practical Approach, a volume in the Oxford Practical Approach Series in Chemistry will prove a handy addition to the professional libraries of organic chemists in research and industry.

New Frontiers in Asymmetric Catalysis - Koichi Mikami 2007-05-04

A compilation of recent advances and applications in asymmetric catalysis The field of asymmetric catalysis has grown rapidly and plays a key role in drug discovery and pharmaceuticals. New Frontiers in Asymmetric Catalysis gives readers a fundamental understanding of the concepts and applications of asymmetric catalysis reactions and discusses the latest developments and findings. With contributions from preeminent scientists in their respective fields, it covers: * "Rational" ligand design, which is critically dependent on the reaction type (reduction, oxidation, and C-C bond formation) * Recent findings on activation of C-H bonds, C-C bonds, and small molecules (C=O, HCN, RN=C, and CO2) and the latest developments on C-C bond reorganization, such as metathesis * Advances in "chirally economical" non-linear phenomena, racemic catalysis, and autocatalysis * Some of the recent discoveries that have led to a renaissance in the field of organocatalysis, including the development of chiral Brönstead acids and Lewis acidic metals bearing the conjugate base of the Brönstead acids as the ligands and the chiral bi-functional acid/base catalysts The book ends with a thought-provoking perspective on the future of asymmetric catalysis that addresses both the challenges and the unlimited potential in this burgeoning field. This is an authoritative, up-to-date reference for organic chemists in academia, government, and industries, including pharmaceuticals, biotech, fine chemicals, polymers, and agriculture. It is also an excellent textbook for graduate students studying advanced organic chemistry or chemical synthesis.

Catalysis in Asymmetric Synthesis - Vittorio Caprio 2009-03-09

Asymmetric synthesis has become a major aspect of modern organic chemistry. The stereochemical properties of an organic compound are often essential to its bioactivity, and the need for stereochemically pure pharmaceutical products is a key example of the importance of stereochemical control in organic synthesis. However, achieving high levels of stereoselectivity in the synthesis of complex natural products represents a considerable intellectual and practical challenge for chemists. Written from a synthetic organic chemistry perspective, this text provides a practical overview of the field, illustrating a wide range of transformations that can be achieved. The book captures the latest advances in asymmetric catalysis with emphasis placed on non-enzymatic methods. Topics covered include: Reduction of alkenes, ketones and imines Nucleophilic addition to carbonyl compounds Catalytic carbon-carbon bond forming reactions Catalytic reactions involving metal carbenoids Conjugate addition reactions Catalysis in Asymmetric Synthesis bridges the gap between undergraduate and advanced level textbooks and provides a convenient point of entry to the primary literature for the experienced synthetic organic chemist.

Principles and Applications of Stereochemistry - Michael North 2017-10-19

A thorough understanding of stereochemistry is essential for the comprehension of almost all aspects

of modern organic chemistry. It is also of great significance in many biochemical and medicinal disciplines, since the stereoisomers of a compound can have dramatically different biological properties. This text explains how the different properties of stereoisomers of a compound arise, and what processes can be used to prepare and analyze stereoisomerically pure compounds. It also presents prominent coverage of the stereochemistry of inorganic and organometallic compounds, which is likely to increase in importance, as these compounds are used as symmetric catalysts in asymmetric synthesis. Modern stereochemical terminology is used throughout, although reference is also made to older terms which are still widely used. A set of problems at the end of each chapter aims to further the reader's understanding of how the content can be applied. The book is designed mainly as a textbook for undergraduate students and as a reference source for more advanced levels, but is also intended for academic and professional organic chemists.

Core Carbonyl Chemistry - John Jones 1997

This Primer deals, in a brisk manner within a modern mechanistic framework, with the chemistry of the carbonyl group as found in aldehydes, ketones and carboxylic acid derivatives. This material is central to all foundation courses in organic chemistry and will be useful to all university students reading chemistry or biochemistry, especially in the first year.

Advances in Sulfur Chemistry - C.M. Rayner 2000-03-01

This volume is a testament to the continuing importance of sulfur chemistry, and the tremendous progress that has been made in recent years.

Current Trends in Organic Synthesis - Carlo Scolastico 2012-12-06

The last two decades have seen a rapid growth in the synthetic processing of both simple and complex molecules, aimed at meeting the needs of society in all aspects of life. Many efforts have been devoted to the development of new biologically active compounds, new materials with innovative properties such as bio-compatibility, new catalysts that allow highly selective transformations, and technologies that facilitate the synthetic pro cesses. This book is a compendium of recent progress in all these aspects of synthetic chemistry. It collects the lectures of the XII International Conference on Organic Synthesis, held in Venice from June 28 to July 2, 1998, in which the present state of art of this discipline has been reported. The topics covered include: combinatorial chemistry, new synthetic methods, stereo selective synthesis, metal-mediated synthesis, and target oriented synthesis. The book collects the contributions, in the mentioned topics, of 43 scientists from 19 different countries. The contributions presented in the Conference as plenary lectures are reported in the first section of the book. Particular attention has been dedicated to combinatorial chemistry, a new and promising methodology for the synthesis of libraries of pharmaco logically interesting compounds in order to allow the automatic pharmacological screening of thousands of compounds. The Conference has dedicated to combinatorial chemistry a mini-symposium in which scientists from academy and companies have described the current trends of this very new technology.

Organic Stereochemistry - Michael J. T. Robinson 2000

This book is an account for students of how the three-dimensional shapes of molecules influence their chemical and physical properties. It begins with the structures of molecules and then describes how such structures can be changed.

Principles of Asymmetric Synthesis - Robert E. Gawley 2012-07-16

The world is chiral. Most of the molecules in it are chiral, and asymmetric synthesis is an important means by which enantiopure chiral molecules may be obtained for study and sale. Using examples from the literature of asymmetric synthesis (more than 1300 references), the aim

of this book is to present a detailed analysis of the factors that govern stereoselectivity in organic reactions. It is important to note that the references were each individually checked by the authors to verify relevance to the topics under discussion. The study of stereoselectivity has evolved from issues of diastereoselectivity, through auxiliary-based methods for the synthesis of enantiomerically pure compounds (diastereoselectivity followed by separation and auxiliary cleavage), to asymmetric catalysis. In the latter instance, enantiomers (not diastereomers) are the products, and highly selective reactions and modern purification techniques allow preparation - in a single step - of chiral substances in 99% ee for many reaction types. After an explanation of the basic physical-organic principles of stereoselectivity, the authors provide a detailed, annotated glossary of stereochemical terms. A chapter on "Analytical Methods" provides a critical overview of the most common methods for analysis of stereoisomers. The authors then follow the 'tried-and-true' format of grouping the material by reaction type. Thus, there are four chapters on carbon-carbon bond forming reactions (enolate alkylations, organometal additions to carbonyls, aldol and Michael reactions, and cycloadditions and rearrangements), one chapter on reductions and hydroborations (carbon-hydrogen bond forming reactions), and one on oxidations (carbon-oxygen and carbon-nitrogen bond forming reactions). Leading references are provided to natural product synthesis that have been accomplished using a given reaction as a key step. In addition to tables of examples that show high selectivity, a transition state analysis is presented to explain - to the current level of understanding - the stereoselectivity of each reaction. In one case (Cram's rule) the evolution of the current theory is detailed from its first tentative (1952) postulate to the current Felkin-Anh-Heathcock formalism. For other reactions, only the currently accepted rationale is presented. Examination of these rationales also exposes the weaknesses of current theories, in that they cannot always explain the experimental observations. These shortcomings provide a challenge for future mechanistic investigations. Authoritative glossary to aid understanding of stereochemical terminology Explanations of the key factors influencing stereoselectivity with numerous examples, organized by reaction type A handy reference guide to the literature of asymmetric synthesis for practitioners in the field

Organic Synthesis - Douglass F. Taber 2017

Organic synthesis is a vibrant and rapidly evolving field; chemists can now cyclize alkenes directly onto enones. Like the first five books in this series, Organic Synthesis: State of the Art 2013-2015 will lead readers quickly to the most important recent developments in a research area. This series offers chemists a way to stay abreast of what's new and exciting in organic synthesis. The cumulative reaction/transformation index of 2013-2015 outlines all significant new organic transformations over the past twelve years. Future volumes will continue to come out every two years. The 2013-2015 volume features the best new methods in subspecialties such as C-O, C-N and C-C ring construction, catalytic asymmetric synthesis, selective C-H functionalization, and enantioselective epoxidation. This text consolidates two years of Douglass Taber's popular weekly online column, Organic Chemistry Highlights as featured on the organic-chemistry.org website and also features cumulative indices of all six volumes in this series, going back twelve years.

Introduction to Green Chemistry - Albert Matlack 2001-04-03

With roughly 5500 references, this book may be considered more of a treatise than a mere introduction to green chemistry. Using an unconventional approach, the author provides a broad but thorough review of the subject, covering traditional green chemistry topics such as

catalysis, benign solvents, and alternative feedstocks before moving on to less frequently covered topics such as chemistry of longer wear and population and the environmental chemistry. Topics such as these highlight the importance of chemistry to everyday life and demonstrate the real benefits that wider exploitation of green chemistry can have for society.

DNA in Supramolecular Chemistry and Nanotechnology - Eugen Stulz 2015-07-14

This book covers the emerging topic of DNA nanotechnology and DNA supramolecular chemistry in its broader sense. By taking DNA out of its biological role, this biomolecule has become a very versatile building block in materials chemistry, supramolecular chemistry and bio-nanotechnology. Many novel structures have been realized in the past decade, which are now being used to create molecular machines, drug delivery systems, diagnosis platforms or potential electronic devices. The book combines many aspects of DNA nanotechnology, including formation of functional structures based on covalent and non-covalent systems, DNA origami, DNA based switches, DNA machines, and alternative structures and templates. This broad coverage is very appealing since it combines both the synthesis of modified DNA as well as designer concepts to successfully plan and make DNA nanostructures. Contributing authors have provided first a general introduction for the non-specialist reader, followed by a more in-depth analysis and presentation of their topic. In this way the book is attractive and useful for both the non-specialist who would like to have an overview of the topic, as well as the specialist reader who requires more information and inspiration to foster their own research.

Chiral Reagents for Asymmetric Synthesis - Leo A. Paquette 2003-08-01

Derived from the renowned, Encyclopedia of Reagents for Organic Synthesis (EROS), the related editors have created a new handbook which focuses on chiral reagents used in asymmetric synthesis and is designed for the chemist at the bench. This new handbook follows the same format as the Encyclopedia, including an introduction and an alphabetical arrangement of the reagents. As chiral reagents are the key for the successful asymmetric synthesis, choosing the right reagents is essential, in this handy reference the editors give details on how to prepare, store and use the reagents as well as providing key reactions to demonstrate where reagents have been successfully used. Comprehensive information on 226 reagents Covers 64 reagents which were not included in EROS All information in one easy to use volume - at an affordable price All reagents included will be added to e-EROS - please visit the site where you can gain access to over 50,000 reactions and 3,800 of the most frequently consulted reagents. Visit: www.interscience.wiley.com/eros

Catalytic Methods in Asymmetric Synthesis - Michelangelo Gruttadauria 2011-07-05

This book covers advances in the methods of catalytic asymmetric synthesis and their applications. Coverage moves from new materials and technologies to homogeneous metal-free catalysts and homogeneous metal catalysts. The applications of several methodologies for the synthesis of biologically active molecules are discussed. Part I addresses recent advances in new materials and technologies such as supported catalysts, supports, self-supported catalysts, chiral ionic liquids, supercritical fluids, flow reactors and microwaves related to asymmetric catalysis. Part II covers advances and milestones in organocatalytic, enzymatic and metal-based mediated asymmetric synthesis, including applications for the synthesis of biologically active molecules. Written by leading international experts, this book consists of 16 chapters with 2000 References and illustrations of 560 schemes and figures.

Asymmetric Oxidation Reactions - Tsutomi Katsuki 2001

Asymmetric oxidation is a potent

method for the stereo-controlled synthesis of functional highly compounds. Asymmetric Oxidation Reactions: A Practical Approach contains protocols for all the major methods of asymmetric oxidation reactions: the C-H bond, epoxidation of olefins, epoxidationusing peroxides, dihydroxylation, aminohydroxyaltion, aziridination, hydroxylation of enolates and enols, Baeyer-Villiger oxidations, oxidations of sulfides, selenides, and other heteroatoms, and oxidation using biocatalysts. Each section is written by experts and as well as the protocols providesthe reader with the features of the individual reactions, optimal reaction conditions, experimental precautions, and sample results. This book is therefore an indispensable laboratory companion to any chemist performing asymmetric oxidations.

Asymmetric Synthesis - Alan Aitken 1992-12-30

Asymmetric synthesis is one of the most important areas of research and development in synthetic organic chemistry, and has wide-ranging industrial applications. This introduction to the subject covers chirality, nomenclature and analytical methods of resolution. The main body of the text describes the principal methods available to the organic chemist wishing to synthesize chiral compounds. Case studies are included, and reference sections allow access to the relevant review and research literature. This book is written for organic chemists at postgraduate and advanced undergraduate level.

Organosulfur Chemistry in Asymmetric Synthesis - Takeshi Toru 2008-09-08

In this first book to gather the information on this hot topic otherwise widely spread throughout the literature, experienced editors and top international authors cover everything the reader needs -- from the synthesis of chiral organosulfur compounds to applications and catalysis: * Asymmetric synthesis of chiral sulfinates and sulfoxides * Synthesis and use of chiral dithioacetal derivatives, ylids, chiral sulfoximines and sulfinamides * Use of chiral sulfoxides as ligands in catalysis * Asymmetric reactions of alpha-sulfenyl, alpha-sulfinyl and alpha-sulfonyl carbanions. As a result, readers will be able to improve their own performance in asymmetric synthesis.

Asymmetric Synthesis and Asymmetric Induction - Patrick Dunbar Ritchie 1933

Classics in Stereoselective Synthesis - Erick M. Carreira 2009-02-09

This book provides a noteworthy compilation of the groundbreaking methods of stereoselective synthesis, belonging to the repertoire of every modern practitioner of synthetic organic chemistry. The general principles underlying these processes are highlighted as they form the basis for the rapid and continuing developments in the field. The work also features illustrative examples of drug and natural product syntheses, resulting in a rich source of stimulating ideas for the efficient use of asymmetric reactions in the construction of stereochemically complex structures. From the contents: "Macrocyclic stereocontrol "Carbonyl addition reactions "alpha-Functionalization of enolates "Aldol and allylation reactions "Chiral acetals "Alkene hydroboration, reduction, and oxidation "Additions to C=N bonds and synthesis of amino acids "Conjugate additions "Chiral carbanions "Metal-catalyzed allylations "Cyclopropanations and CH-insertion reactions "Sigmatropic rearrangements "Diels-Alder and hetero-Diels-Alder reactions "[3+2]- and [2+2]-cycloaddition reactions

Organoselenium Chemistry - Thomas Wirth 2003-07-01

Embarking on a new millennium, the book in hands describes the recent developments of organsoselenium chemistry in all facets. Various distinguished scientists have contributed, with their skill and expertise, making this book a valuable source for synthetic oriented organic chemists and for those, who want to get a first insight into the chemistry of selenium.

Advanced Organic Chemistry - Francis A. Carey 2006-05-02
Since its original appearance in 1977, Advanced Organic Chemistry has found wide use as a text providing broad coverage of the structure, reactivity and synthesis of organic compounds. The Fourth Edition provides updated material but continues the essential elements of the previous edition. The material in Part A is organized on the basis of fundamental structural topics such as structure, stereochemistry, conformation and aromaticity and basic mechanistic types, including nucleophilic substitution, addition reactions, carbonyl chemistry, aromatic substitution and free radical reactions. The material in Part B is organized on the basis of reaction type with emphasis on reactions of importance in laboratory synthesis. As in the earlier editions, the text contains extensive references to both the primary and review literature and provides examples of data and reactions that illustrate and document the generalizations. While the text assumes completion of an introductory course in organic chemistry, it reviews the fundamental concepts for each topic that is discussed. The Fourth Edition updates certain topics that have advanced rapidly in the decade since the Third Edition was published, including computational chemistry, structural manifestations of aromaticity, enantioselective reactions and lanthanide catalysis. The two parts stand alone, although there is considerable cross-referencing. Part A emphasizes quantitative and qualitative description of structural effects on reactivity and mechanism. Part B emphasizes the most general and useful synthetic reactions. The focus is on the core of organic chemistry, but the information provided forms the foundation for future study and research in medicinal and pharmaceutical chemistry, biological chemistry and physical properties of organic compounds. The New Revised 5th Edition will be available shortly. For details, click on the link in the right-hand column.

Copper-Catalyzed Asymmetric Synthesis - Alexandre Alexakis 2013-12-30
This book reflects the increasing interest among the chemical synthetic community in the area of asymmetric copper-catalyzed reactions, and introduces readers to the latest, most significant developments in the field. The contents are organized according to reaction type and cover mechanistic and spectroscopic aspects as well as applications in the synthesis of natural products. A whole chapter is devoted to understanding how primary organometallics interact with copper to provide selective catalysts for allylic substitution and conjugate addition, both of which are treated in separate chapters. Another is devoted to the variety of substrates and experimental protocols, while an entire chapter covers the use on non-carbon nucleophiles. Other chapters deal with less-known reactions, such as carbometallation or the additions to imines and related systems, while the more established reactions cyclopropanation and aziridination as well as the use of copper (II) Lewis acids are warranted their own special chapters. Two further chapters concern the processes involved, as determined by mechanistic studies. Finally, a whole chapter is devoted to the synthetic applications. This is essential reading for researchers at academic institutions and professionals at pharmaceutical or agrochemical companies.
Stereochemistry and Mechanism - David Whittaker 1963

Organic Synthesis Engineering - L. K. Doraiswamy 2001-02-15
This book will formally launch "organic synthesis engineering" as a distinctive field in the armory of the reaction engineer. Its main theme revolves around two developments: catalysis and the role of process intensification in enhancing overall productivity. Each of these two subjects are becoming increasingly useful in organic synthesis engineering, especially in the production of medium and small volume chemicals and enhancing reaction rates by extending laboratory

techniques, such as ultrasound, phase transfer catalysts, membrane reactor, and microwaves, to industrial scale production. This volume describes the applications of catalysis in organic synthesis and outlines different techniques of reaction rate and/or selectivity enhancement against a background of reaction engineering principles for both homogeneous and heterogeneous systems.

Organic Synthesis Engineering - Laxmangudi Krishnamurthy Doraiswamy 2001

This book will formally launch "organic synthesis engineering" as a distinctive field in the armory of the reaction engineer. Its main theme revolves around two developments: catalysis and the role of process intensification in enhancing overall productivity. Each of these two subjects are becoming increasingly useful in organic synthesis engineering, especially in the production of medium and small volume chemicals and enhancing reaction rates by extending laboratory techniques, such as ultrasound, phase transfer catalysts, membrane reactor, and microwaves, to industrial scale production. This volume describes the applications of catalysis in organic synthesis and outlines different techniques of reaction rate and/or selectivity enhancement against a background of reaction engineering principles for both homogeneous and heterogeneous systems.

Handbook of Asymmetric Heterogeneous Catalysis - Kuiling Ding 2008-09-08

In this most up-to-date handbook each chapter contains a general introduction, followed by the principles of the immobilization and, finally, applications. In this way, it covers the most important approaches currently employed for the heterogenization of chiral catalysts, including data tables, applications, reaction types and literature citations. For chemists in both academia and industry as well as those working in the fine chemical and pharmaceutical industry.

Comprehensive Chirality - 2012-12-31

Although many books exist on the subject of chiral chemistry, they only briefly cover chiral synthesis and analysis as a minor part of a larger work, to date there are none that pull together the background information and latest advances in one comprehensive reference work. Comprehensive Chirality provides a complete overview of the field, and includes chiral research relevant to synthesis, analytic chemistry, catalysis, and pharmaceuticals. The individual chapters in each of the 9 volumes provide an in depth review and collection of references on definition, technology, applications and a guide/links to the related literature. Whether in an Academic or Corporate setting, these chapters will form an invaluable resource for advanced students/researchers new to an area and those who need further background or answers to a particular problem, particularly in the development of drugs. Chirality research today is a central theme in chemistry and biology and is growing in importance across a number of disciplinary boundaries. These studies do not always share a unique identifying factor or subject themselves to clear and concise definitions. This work unites the different areas of research and allows anyone working or researching in chiral chemistry to navigate through the most essential concepts with ease, saving them time and vastly improving their understanding. The field of chirality counts several journals that are directly and indirectly concerned with the field. There is no reference work that encompasses the entire field and unites the different areas of research through deep foundational reviews. Comprehensive Chirality fills this vacuum, and can be considered the definitive work. It will help users apply context to the diverse journal literature offering and aid them in identifying areas for further research and/or for solving problems. Chief Editors, Hisashi Yamamoto (University of Chicago) and Erick Carreira (ETH Zürich) have assembled an impressive, world-class team of Volume Editors and Contributing Authors. Each chapter has been painstakingly reviewed and checked for consistent high quality.

The result is an authoritative overview which ties the literature together and provides the user with a reliable background information and citation resource.