Heterocycles In Drugs And Drug Discovery

"Based on a symposium held at the fall 2006 meeting of the American Chemical Society in San Francisco, California"--Pref.

This expanded second edition provides a concise overview of the main principles and reactions of heterocyclic chemistry for undergraduate students studying chemistry and related courses. Using a successful and student-friendly "at a glance" approach, this book helps the student grasp the essence of heterocyclic chemistry, ensuring that they can confidently use that knowledge when required. The chapters are thoroughly revised and updated with references to books and reviews; extra examples and student exercises with answers online; and color diagrams that emphasize exactly what is happening in the reaction chemistry depicted.

Molecules and Medicine provides, for the first time ever, a completely integrated look at chemistry, biology, drug discovery, and medicine. It delves into the discovery, application, and mode of action of more than one hundred of the most significant molecules in use in modern medicine. Opening sections of the book provide a unique, clear, and concise introduction, which enables readers to understand chemical formulas.

Medicinal Chemistry of Anticancer Drugs, Second Edition, provides an updated treatment from the point of view of medicinal chemistry and drug design, focusing on the mechanism of action of antitumor drugs from the molecular level, and on the relationship between chemical structure and chemical and biochemical reactivity of antitumor agents. Antitumor chemotherapy is a very active field of research, and a huge amount of information on the topic is generated every year. Cytotoxic chemotherapy is gradually being supplemented by a new generation of drugs that recognize specific targets on the surface or inside cancer cells, and resistance to antitumor drugs continues to be investigated. While these therapies are in their infancy, they hold promise of more effective therapies with fewer side effects. Although many books are available that deal with clinical aspects of cancer chemotherapy, this book provides a sorely needed update from the point of view of medicinal chemistry and drug design. Presents information in a clear and concise way using a large number of figures Historical background provides insights on how the process of drug discovery in the anticancer field has evolved Extensive references to primary literature

Multicomponent Reactions towards Heterocycles

Strategies, Methods, and the Role of Catalysis

Drug-like Properties: Concepts, Structure Design and Methods

The Medicinal Chemist's Guide to Solving ADMET Challenges

Vicinal Diaryl Substituted Heterocycles

Privileged Scaffolds in Medicinal Chemistry

Imidazole-Based Drug Discovery covers all categories of imidazole and its derivatives, synthesis, pharmacological applications and drug-based studies. Imidazole scaffolds act as a channel between organic synthesis and medicinal chemistry and compel researchers to explore new drug candidates. This book provides detailed coverage of several greener synthetic protocols and pharmacological applications of imidazole derivatives that are useful to researchers working on designing more promising clinical lead compounds with this scaffold. It also includes information on past decades of research on the synthesis and biological applications of imidazole derivatives. This is an ideal resource for researchers in organic chemistry both in academic and industrial settings, as well as postgraduates in chemistry and medicinal chemistry. Reviews the most current developments and future perspectives of imidazole on different disease therapies to achieve the ultimate goal of disease eradication Discusses the role of imidazole in contemporary science, technological innovation, drug development, critical challenges and future research directions Covers emerging trends on different eco-benign pathways to synthesize imidazole derivatives for the development of simpler synthetic protocols

Key Heterocycle Cores for Designing Multitargeting Molecules provides a helpful overview of current developments in the field. Following a detailed introduction to the manipulation of heterocycle cores for the development of dual or multitargeting molecules, the book goes on to describe specific examples of such developments, focusing on compounds such as Benzimidazole, Acridine, Flavones, Thiazolidinedione and Oxazoline. Drawing on the latest developments in the field, this volume provides a valuable guide to current approaches in the design and development of molecules capable of acting on multiple targets. Adapting the heterocyclic core of a single-target molecule can facilitate its development into an agent capable of acting on multiple targets. Such multi-targeting drugs have the potential to become essential components in the design of novel, holistic treatment plans for complex diseases, making the design of such active agents an increasingly important area of research. Emphasizes the chemical development of heterocyclic nuclei, from single to multitargeting molecules Provides chapter-by-chapter coverage of the key heterocyclic compounds used in synthesizing multitargeting agents Outlines current trends and future developments in multitarget molecule design for the treatment of various diseases

This book focuses on the drug discovery and developmentapplications of transition metal catalyzed processes, which canefficiently create preclinical and clinical drug candidates as wellas marketed drugs. The authors pay particular attention tothe challenges of transitioning academically-developed reactionsinto scalable industrial processes. Additionally, the book lays thegroundwork for how continued development of transition metalcatalyzed processes can deliver new drug candidates. This workprovides a unique perspective on the applications of transitionmetal catalysis in drug discovery and development – it is aguide, a historical prospective, a practical compendium, and asource of future direction for the field.

This timely book provides a succinct summary of methods for the synthesis of bioactive heterocycles using a multicomponent reaction (MCR) approach. The majority of pharmaceuticals and biologically active agrochemicals are heterocycles while countless additives and modifiers used in industrial applications are heterocyclic in nature. With the recent introduction of high-throughput biological evaluation, the importance of MCRs for drug discovery has been recognized and considerable efforts have been focused especially on the design and development of multi-component procedures for the generation of various bioactive heterocycles due to their significant therapeutic potential.

Scope of Selective Heterocycles from Organic and Pharmaceutical Perspective

A Gold Mine for the Discovery of Novel Therapeutic Agents

Fundamentals of Heterocyclic Chemistry

Promising Drug Molecules of Natural Origin

Structure-based Design of Drugs and Other Bioactive Molecules

Green Synthesis of Heterocycles

Extensive experimentation and high failure rates are a well-recognised downside to the drug discovery process, with the resultant high levels of inefficiency and waste producing a negative environmental impact. Sustainable and Green Approaches in Medicinal Chemistry reveals how medicinal and green chemistry can work together to directly address this issue. After providing essential context to the growth of green chemistry in relation to drug discovery in Part 1, the book goes on to identify a broad range of practical methods and synthesis techniques in Part 2. Part 3 reveals how medicinal chemistry techniques can be used to improve efficiency, mitigate failure and increase the environmental benignity of the entire drug discovery process, whilst Parts 4 and 5 discuss natural products and microwave-induced chemistry. Finally, the role of computers in drug discovery is explored in Part 6.

Written by medicinal chemists and ADMET scientists with a combined experience of over 300 years this aid to discovering drugs provides detailed coverage on absorption, distribution, metabolism, excretion and toxicology issues associated with new drugs.

Applications of Heterocycles in the Design of Drugs and Agricultural Products, Volume 134 in the Advances in Heterocyclic Chemistry series represents the most definitive series in the field - one of great importance to organic chemists, polymer chemists, and many biological scientists. Chapters in this updated volume cover Hydroxy azoles as carboxylic acid bioisosteres, Cyclic sulfoxides and sulfones in drug design, Thiazoles and topological control in drug design, Applications of fused pyrrolidine [3.3.0] heterocycles in drug design, 1,4 Disubstituted and 1,4,5 trisubstituted-1,2,3-triazoles in drug discovery and development: from the flask to the clinic, and Conformationally restricted [3.2.2]- and [3.2.1]-3-azabicyclic diamines. Because biology and organic chemistry increasingly intersect, the associated nomenclature is being used more frequently in explanations. Written by established authorities in the field from around the world, this comprehensive review combines descriptive synthetic chemistry and mechanistic insight to yield an understanding of how chemistry drives the preparation and useful properties of heterocyclic compounds. Considered the definitive serial in the field of heterocyclic chemistry Serves as the go-to reference for organic chemists, polymer chemists and biological scientists Provides the latest, comprehensive reviews written by established authorities in the field Combines descriptive synthetic chemistry and mechanistic insight to enhance understanding of how chemistry drives the preparation and useful properties of heterocyclic compounds

Enables researchers to fully realize the potential to discover new pharmaceuticals among heterocyclic compounds Integrating heterocyclic chemistry and drug discovery, this innovative text enables readers to understand how and why these two fields go hand in hand in the effective practice of medicinal chemistry. Contributions from international leaders in the field review more than 100 years of findings, explaining their relevance to contemporary drug discovery practice. Moreover, these authors have provided plenty of practical guidance and tips based on their own academic and industrial laboratory experience, helping readers avoid common pitfalls. Heterocyclic Chemistry in Drug Discovery is ideal for readers who want to fully realize the almost limitless potential to discover new and effective pharmaceuticals among heterocyclic compounds, the largest and most varied family of organic compounds. The book features: Several case studies illustrating the role and application of 3, 4, 5, and 6+ heterocyclic ring systems in drug discovery Step-by-step descriptions of synthetic methods and practical techniques Examination of the physical properties for each heterocycle, including NMR data and quantum calculations Detailed explanations of the complexity and intricacies of reactivity and stability for each class of heterocycles Heterocyclic Chemistry in Drug Discovery is recommended as a textbook for organic and medicinal chemistry courses, particularly those emphasizing heterocyclic chemistry. The text also serves as a guide for medicinal and process chemists in the pharmaceutical industry, offering them new insights and new paths to explore for effective drug discovery.

from ADME to Toxicity Optimization

Volume 1: Advanced Synthetic Techniques

Tools and Strategies

Design, Synthesis, Evaluation

Synthesis and Biological Activities

Synthesis Towards Novel 1,3-azaborine Heterocycles as Potential Dual-mode HIV-1 Protease Inhibitors

Scope of Selective Heterocycles from Organic and Pharmaceutical Perspective is a compilation of bioactive-chosen heterocyclic scaffolds intended for postgraduates, research scholars, pharmaceutical scientists, and others interested in an appreciation of the title subject. It is an edited book and is not comprehensive as well in the mentioned field. Few synthetic strategies along with bioactivity are presented, and some limitations were raised in order to arouse curiosity of the reader.

10.22 Piperidine-Based Gastric Antisecretory Drugs -- 10.23 Piperidine-Based Hypoglycemic Drugs -- 10.24 Piperidine-Based Drugs Used in the Treatment of Rheumatoid Arthritis -- 10.25 Piperidine-Based Nicotinic Cholinomimetics -- 10.26 Piperidine-Based Immunosuppresant Drugs -- 10.27 Conclusion -- Index-Trade Names -- Index-Substance Classes -- Back Cover

Of the thousands of novel compounds that a drug discovery project team invents and that bind to the therapeutic target, typically only a fraction of these have sufficient ADME/Tox properties to become a drug product. Understanding ADME/Tox is critical for all drug researchers, owing to its increasing importance in advancing high quality candidates to clinical studies and the processes of drug discovery. If the properties are weak, the candidate will have a high risk of failure or be less desirable as a drug product. This book is a tool and resource for scientists engaged in, or preparing for, the selection and optimization process. The authors describe how properties affect in vivo pharmacological activity and impact in vitro assays. Individual drug-like properties are discussed from a practical point of view, such as solubility, permeability and metabolic stability, with regard to fundamental understanding, applications of property data in drug discovery and examples of structural modifications that have achieved improved property performance. The authors also review various methods for the screening (high throughput), diagnosis (medium throughput) and in-depth (low throughput) analysis of drug properties. * Serves as an essential working handbook aimed at scientists and students in medicinal chemistry * Provides practical, step-by-step guidance on property fundamentals, effects, structure-property relationships, and structure modification strategies * Discusses improvements in pharmacokinetics from a practical chemist's standpoint

Piperidine-Based Drug Discovery outlines the complexities of Piperidine scaffold use in drug discovery, including derivative chemistry, structural properties, methods of synthesis and practical implementations. Piperidine scaffolds are the cornerstones of over 70 commercialized drugs (including multiple blockbusters). Designed as a guide for both experts and students working in this and related areas, it is hoped that this volume will encourage and inspire the continued design and development of novel pharmaceuticals based on Piperidine and its derivatives. Heterocyclic compounds are of central importance to medicinal chemistry, as demonstrated by the high percentage of marketable drugs that feature heterocyclic fragments in their structures. As starting points for drug discovery they offer a broad range of attractive properties, and a detailed understanding of the particular characteristics of each is of great benefit to researchers. The most commonly used heterocycle among US FDA approved pharmaceuticals, Piperidine is an extremely important building block in the synthesis of medicinal agents. This heterocycle and its derivatives exhibit a number of important functionalities and have been employed variously as CNS modulators, antiaggregants, anticoagulants, antihistamines, anti-cancer drugs and analgesics. Explores this extremely important heterocycle to a high level of detail Describes synthesis methods for 70 current drugs based on Piperidine scaffolds Gives drug designers all the key knowledge required to develop new drugs utilizing Piperidine Provides pharmacologists a solid overview of the chemical background of existing Piperidine-based drugs

Synthesis, Application and Environment

Impact of the Building Blocks of Medicinal Chemistry in ADMET

Principles of Organic Medicinal Chemistry

The Organic Chemistry of Drug Synthesis

Medicinal Chemistry of Anticancer Drugs

Applications of Heterocycles in the Design of Drugs and Agricultural Products

Heterocycles in Life and Society is an introduction to the chemistry of heterocyclic compounds, focusing on their origin and occurrence in nature, biochemical significance and wide range of applications. Written in a readable and accessible style, the book takes a multidisciplinary approach to this extremely important area of organic chemistry. Topics covered include an introduction to the structure and properties of heterocycles; the key role of heterocycles in important life processes such as the transfer of hereditary information, how enzymes function, the storage and transport of bioenergy, and photosynthesis; applications of heterocycles in medicine, agriculture and industry; heterocycles in supramolecular chemistry; the origin of heterocycles on primordial Earth; and how heterocycles can help us solve 21st century challenges. For this second edition, Heterocycles in Life and Society has been completely revised and expanded, drawing on a decade of innovation in heterocyclic chemistry. The new edition includes discussions of the role of heterocycles in nanochemistry, green chemistry, combinatorial chemistry, molecular devices and sensors, and supramolecular chemistry. Impressive achievements include the creation of various molecular devices, the recording and storage of information, the preparation of new organic conductors, and new effective drugs and pesticides with heterocyclic structures. Much new light has been thrown on various life processes, while the chemistry of heterocycles has expanded to include new types of heterocyclic structures and reactions, and the use of heterocyclic molecules as ionic liquids and proton sponges. Heterocycles in Life and Society is an essential guide to this important field for students and researchers in chemistry, biochemistry, and drug discovery, and scientists at all levels wishing to expand their scientific horizon.

Pyrazole-Based Drug Discovery outlines the complexities of the pyrazole scaffold use in drug discovery, including derivative chemistry, structural properties, methods of synthesis and practical implementations. Designed as a guide for both experts and students working in this and related areas, this volume will facilitate the continued design and development of novel pharmaceuticals based on pyrazole and its derivatives. Heterocyclic compounds are of central importance to medicinal chemistry, as demonstrated by the high percentage of marketable drugs that feature heterocyclic fragments in their structures. As starting points for drug discovery they offer a broad range of attractive properties, and a detailed understanding of the particular characteristics of each is of great benefit to researchers. Pyrazole is a novel heterocycle with anti-fungal, antimicrobial, anti-tubercular, and antipsychotic pharmacological activities, proving to be a promising agent for medicinal chemists to synthesize various new chemical entities with desired biological activities. This book is ideal for researchers working in organic and medicinal chemistry both in academia and industry. Explores this extremely important heterocycle in a high level of detail Describes synthesis methods for current drugs based on pyrazole scaffolds Gives drug designers all the key knowledge required to develop new drugs utilizing pyrazole Provides pharmacologists a solid overview of the chemical background of existing pyrazole-based drugs

Plant virus disease is a worldwide threat to agriculture. Environment-Friendly Antiviral Agents for Plants systematically describes the basic theory, new ideas, and new methods to discover novel antiviral agents through research on plant immune activation. The cutting-edge research methodology, technology and progress on novel antiviral agent innovation are systematically described. With abundant illustrations and figures, the book is intended for researchers and practitioners in the fields of pesticide science, plant protection, organic chemistry, fine chemicals, applied chemistry, environment chemistry and agriculture science. Dr. Baoan Song and Dr. Song Yang are professors at the Center for R&D of Fine Chemicals, Guizhou University, China; Mr. Linhong Jin and Dr. Pinaki S. Bhadury are associate professors there.

Presents a wide-ranging overview of essential topics and recent advances in MCR chemistry Heterocycles are a central component in natural product chemistry, pharmaceuticals, agrochemicals, and material science. New synthetic methodologies integrating the sequencing of multicomponent reactions (MCRs) are today being used for the rapid synthesis of diversified heterocycles in just one step. Multicomponent Reactions towards Heterocycles presents an up-to-date summary MCR chemistry with a focus on the conjugation between modern synthetic methodologies and MCRs. Featuring contributions by leaders in the field, this comprehensive resource highlights applications of MCRs in natural products and intermediate synthesis, discusses current trends and future prospects in MCR chemistry, outlines novel multicomponent procedures, and more. The authors provide the practical information required for designing new reaction strategies and mechanisms, covering topics including MCR-based green synthetic methods, cyclization and cycloaddition reactions, heterocycle multicomponent syntheses in a continuous flow, catalytic alkynoyl generation, MCR synthesis of saturated heterocycles, and C – H functionalization and multicomponent reactions. Provides a thorough overview of heterocycles as input in multicomponent reactions Discusses recent advances in the field of MCR chemistry and progress in the synthesis and functionalization of heterocycles Demonstrates the use of MCRs to simplify synthetic design and achieve complexity and diversity in novel bioactive molecules Highlights examples of multicomponent polymerizations, target-oriented synthesis, and applications of MCR in medicinal chemistry Explains the methodology of using on-resin MCRs to produce heterocycle compounds Illustrating the key role of MCRs towards heterocycles in natural product synthesis, drug discovery, organic synthesis, and other applications, Multicomponent Reactions towards Heterocycles is required reading for synthetic chemists in academia and industry alike.

Fluorinated Heterocycles

Pyrazole-Based Drug Discovery

Applications of Transition Metal Catalysis in Drug Discovery and Development

An Introduction to Heterocyclic Chemistry, Biochemistry and Applications

An Industrial Perspective

Heterocycles in Life and Society

Benzodiazepine-Based Drug Discovery covers benzodiazepines and benzothiazepines, which constitute two pivotal classes of heterocyclic compounds widely used as core structures of medicinal drugs for the treatment of depression, epilepsy, seizures and muscle spasms. 1,4-Benzodiazepine, 1,5-benzodiazepine, and 1,5-benzothiazepine are the most studied groups of benzodiazepines and benzothiazepines because of their outstanding potential biological activities. This book offers a broad range of recent developments and detailed coverage of the synthesis and biological activities of the drugs based on benzodiazepine and benzothiazepine matrixes, and is an ideal reference guide to researchers working in organic and medicinal chemistry. The importance of these privileged pharmacophores is not limited to the treatment of psychotic disorders because minor changes in the structures can generate various biological activities. They represent a wide range of therapeutic functions such as anticonvulsant, antianxiety, anti-depressant, antiviral, anti-HIV, anti-inflammatory, anticoagulant, anti-obesity, endothelin antagonist, cholecystokinin antagonist, and vasopressin receptor antagonist activities. Presents detailed coverage of chemical structures and practical synthetic methods of benzodiazepines and benzothiazepines in drug discovery Compiles detailed in vivo and in vitro biological activity data of 1,4-benzodiazepine- and 1,5-benzodiazepine-based drugs that will help researchers design and develop innovative drugs Discusses promising avenues and potential challenges in the development of new benzodiazepines and benzothiazepines in medicinal drug synthesis

Medicinal chemistry is a complex science that lies at the very heart of drug discovery. Poor solubility, complex metabolism, tissue retention and slow elimination are just some of the properties of investigational compounds that present a challenge to the design and conduct of ADMET studies. Medicinal chemistry experience and knowledge relating to how a lead structure was modified to solve a specific problem is generally very challenging to retrieve. Presented in a visual and accessible style, this book provides rapid solutions to overcome the universal challenges to optimizing ADMET.

This book has so closely matched the requirements of its readership over the years that it has become the first choice for chemists worldwide. Heterocyclic chemistry comprises at least half of all organic chemistry research worldwide. In particular, the vast majority of organic work done in the pharmaceutical and agrochemical industries is heterocyclic chemistry. The fifth edition of Heterocyclic Chemistry maintains the principal objective of earlier editions – to teach the fundamentals of heterocyclic reactivity and synthesis in a way that is understandable to second- and third-year undergraduate chemistry students. The inclusion of more advanced and current material also makes the book a valuable reference text for postgraduate taught courses, postgraduate researchers, and chemists at all levels working with heterocyclic compounds in industry. Fully updated and expanded to reflect important 21st century advances, the fifth edition of this classic text includes the following innovations: Extensive use of colour to highlight changes in structure and bonding during reactions Entirely new chapters on organometallic heterocyclic chemistry, heterocyclic natural products, especially in biochemical processes, and heterocycles in medicine New sections focusing on heterocyclic fluorine compounds, isotopically labeled heterocycles, and solid-phase chemistry, microwave heating and flow reactors in the heterocyclic context Essential teaching material in the early chapters is followed by short chapters throughout the text which capture the essence of heterocyclic reactivity in concise resumés suitable as introductions or summaries, for example for examination preparation. Detailed, systematic discussions cover the reactivity and synthesis of all the important heterocyclic systems. Original references and references to reviews are given throughout the text, vital for postgraduate teaching and for research scientists. Problems, divided into straightforward revision exercises, and more challenging questions (with solutions available online), help the reader to understand and apply the principles of heterocyclic reactivity and synthesis.

Heterocyclic chemistry is of prime importance as a sub-discipline of Organic Chemistry, as millions of heterocyclic compounds are known with more being synthesized regularly Introduces students to heterocyclic chemistry and synthesis with practical examples of applied methodology Emphasizes natural product and pharmaceutical applications Provides graduate students and researchers in the pharmaceutical and related sciences with a background in the field Includes problem sets with several chapters

Drug Synthesis

Multicomponent Reactions

Environment-Friendly Antiviral Agents for Plants

Heterocycles

Chemistry and Applications of Benzimidazole and its Derivatives

The Chemistry of Heterocycles

Green Synthetic Approaches for Biologically Relevant Heterocycles, Second Edition, Volume One: Advanced Synthetic Techniques reviews this significant group of organic compounds within the context of sustainable methods and processes, expanding on the first edition with fully updated coverage and a whole range of new chapters. Volume One explores advanced synthetic techniques, with each chapter presenting in-depth coverage of various green protocols for the synthesis of a wide variety of bioactive heterocycles that are classified on the basis of ring-size and/or the presence of heteroatoms. Techniques covered range from high pressure cycloaddition reactions and microwave irradiation to sustainable one-pot domino reactions. This updated edition is an essential resource on sustainable approaches for academic researchers, R&D professionals, and students working across medicinal, organic, natural product and green chemistry. Provides fully updated coverage of the field of greener heterocycle synthesis Includes new chapters on varied multicomponent reactions, alongside both traditional and novel approaches Presents information in an accessible style with an emphasis on sustainability

The classic reference on the synthesis of medicinal agents -- now completely updated The seventh volume in the definitive series that provides a quick yet thorough overview of the synthetic routes used to access specific classesof therapeutic agents, this volume covers approximately 220 new non-proprietary drug entities introduced since the publication of Volume 6. Many of these compounds represent novel structural types firstidentified by sophisticated new cell-based assays. Specifically, a significant number of new antineoplastic and antiviral agents are covered. As in the previous volumes, materials are organized by chemical class and syntheses originate with available starting materials. Organized to make the information accessible, this resource covers disease state, rationale for method of drug therapy, and the biological activities of each compound and preparation. The Organic Chemistry of Drug Synthesis, Volume 7 is a hands-on reference for medicinal and organic chemists, and a great resource for graduate and advanced undergraduate students in organic and medicinal chemistry.

The heterocycles are the largest group of organic compounds and this monograph represents a comprehensive survey of this vast field. The discussion is backed by numerous lucid diagrams while the extensive reaction schemes are supported by pertinent references. The text treats aromatic and nonaromatic heterocycles according to ring size under six defined headings for easy location and comparison, and also includes natural occurrence, synthetic aspects and applications in the chemical and pharmaceutical industries. An invaluable reference for advanced undergraduate and graduate students of chemistry and related subjects, this is equally an important aid to professional chemists and teachers of chemistry. Belongs on the shelf of every university library and in laboratories dealing with any aspect of heterocyclic chemistry.

Drug design is a complex, challenging and innovative research area. Structure-based molecular design has transformed the drug discovery approach in modern medicine. Traditionally, focus has been placed on computational, structural or synthetic methods only in isolation. This one-of-akind guide integrates all three skill sets for a complete picture of contemporary structure-based design. This practical approach provides the tools to develop a high-affinity ligand with drug-like properties for a given drug target for which a high-resolution structure exists. The authors use numerous examples of recently developed drugs to present "best practice" methods in structurebased drug design with both newcomers and practicing researchers in mind. By way of a carefully balanced mix of theoretical background and case studies from medicinal chemistry applications, readers will quickly and efficiently master the basic skills of successful drug design. This book is aimed at new and active medicinal chemists, biochemists, pharmacologists, natural product chemists and those working in drug discovery in the pharmaceutical industry. It is highly recommended as a desk reference to guide students in medicinal and chemical sciences as well as to aid researchers engaged in drug design today.

Bioactive Marine Heterocyclic Compounds

Green Synthetic Approaches for Biologically Relevant Heterocycles

Key Heterocycle Cores for Designing Multitargeting Molecules

Metabolism, Pharmacokinetics, and Toxicity of Functional Groups

Imidazole-Based Drug Discovery

Importance in Nature and in the Synthesis of Pharmaceuticals

The Book Principles Of Organic Medicinal Chemistry Describes The Principles And Concepts Of Chemistry, Synthetic Schemes, Structure Activity Relationships, Mechanism Of Action And Clinical Uses Of Carbon Compounds In The Light Of Modern Trends. The Book Covers The Syllabai Of B. Pharmacy And M.Pharmacy Courses Of All Indian Universities.This Book Comprises Of 22 Chapters. Chapter 1 Gives An Introduction To Medicinal Chemistry, Chapter 2 Explain About The Basics On Principles Of Drug Action And Physicochemical Properties Of Organic Medicinal, Substances Are Elaborated In Chapter 3. The Concepts Of Prodrugs And Drug Metabolism Are Summarized In Chapter 4 And Chapter 5 Respectively. Chapter 6 To Chapter 22 Explains Chemistry, Properties, Mechanism Of Action, Structure Activity Relationships, Chemistry Of Newer Drugs And Clinical Uses Of Various Therapeutic Agents. At The End Of Book, A Set Of More Than 200 Essays And Short Questions And 225 Objective Questions With Answers Are St Strategically Designed.

This new volume, Promising Drug Molecules of Natural Origin, explores potential beneficial drug substances derived from nature. It presents the general principles, characteristics, evaluation techniques, and applications involved in drug molecules from natural sources, such as plants and marine life. With chapters from renowned experts from around the world, the chapters in this volume address the challenges of standardization of herbal medicines, methods of characterization of natural medicines and phyto-constituents, and quality control methods for herbal medicines. Several chapters in the book focus on the evolution of phyto-constituents in cancer therapeutics, while others deal with applications for other diseases, such as diabetes and neuroinflammatory disorders. The volume also specifically reviews heterocyclic drugs from plants. This volume will be a valuable resource for faculty and advanced students in pharmaceutics as well as researchers, scientists, and industry professionals in medicine and drug development.

Vicinal Diaryl-Substituted Heterocycles: A Gold Mine for the Discovery of Novel Therapeutic Agents draws together all of the key information about these compounds in one place for the first time. Following an informative overview of the importance of these structures to the discovery of potential therapeutic agents, the text goes on to outline the main compound types, with each chapter focusing on the activities of a different structure. Designed to support researchers by consolidating this important information in a single, practical guide, the authors hope to encourage further advancement and development in the discovery of novel therapeutic agents. As flexible building blocks for the production of novel compounds, vicinal diaryl-substituted heterocycles are a rich source of leads for the development of new drugs. Their adaptability means that they can be used to produce structures with a broad range of attractive characteristics, and a large number of vicinal diaryl-substituted heterocyclic compounds have already been synthesized and investigated by medicinal chemists as promising lead molecules. Collects together details of the key vicinal diaryl-substituted heterocyclic compounds in one place for the first time Highlights biological activities and SAR of derivatives Structured practically for ease of navigation between different derivatives

Finding new strategies for synthesizing benzimidazole derivatives and functionalizing the benzimidazole core has proved to be important due to the compound's various applications in medicine, chemistry, and other areas. The multitude of benzimidazole derivatives marketed as drugs has led to intensive research in the field for the discovery of new biologically active structures. The general applications of benzimidazole derivatives in materials chemistry, electronics, technology, dyes, pigments, and agriculture open up new research horizons. This book guides the rational design of benzimidazole derivatives synthesis with certain applications. Chapters cover such topics as therapeutic use of benzimidazole in conditions like diabetes, viruses, and parasitic diseases; X-ray crystal structure of selected benzimidazole derivatives; benzimidazole compounds for cancer therapy; and others.

Heterocyclic Chemistry

Benzodiazepine-Based Drug Discovery

Structure, Reactions, Syntheses and Applications

Halogenated Heterocycles

Strategies for Organic Drug Synthesis and Design

Heterocyclic Chemistry in Drug Discovery

This Special Issue of Marine Drugs, entitled "Bioactive Marine Heterocyclic Compounds", aimed to collect excellent original research articles and reviews focused on the isolation of new heterocyclic marine natural products, total synthesis, synthetic modification, or on finding important bioactivities of known heterocyclic marine natural products. As a result, five original papers on isolation and one synthetic study of metabolites from marine-derived bioorganisms or a marine sponge, along with one review paper on thiazole-based peptides, were published. I am proud to show these most recent works of outstanding scientists in this field and hope this Special issue will affect new drug developments or innovation in the future.

This book examines and evaluates the strategies utilized to design and synthesize pharmaceutically active agents. Significant updates over the last 10 years since the publication of the 1st edition include synthesis of enantiomerically pure isomers, novel chemical methodologies, and new pharmaceutical agents targeted at novel biological endpoints. Written by an experienced successful author, this book meets the needs of a growing community of researchers in pharmaceutical R &D, as well as medical professionals, by providing a useful guide for designing and synthesizing pharmaceutical agents. Additionally, it is a useful text for medicinal chemistry students.

G. Sandford: Perfluoroheteroaromatic Chemistry: Multifunctional Systems from Perfluorinated Heterocycles by Nucleophilic Aromatic Substitution Processes.- A. A. Gakh: Monofluorinated Heterocycles.- R. Dembinski ? Y. Li ? D. Gundapuneni ? A. Decker: Synthesis of beta-Halofurans.- Y. Shermolovich ? S. Pazenok: Synthesis of halogenated 5- and 6-membered sulfur- and Sulfur, Nitrogen Containing Heterocycles.- S. Minakata ? Y. Takeda ? J. Hayakawa: Heterocyclic Reagents Containing Nitrogen-Halogen Bond: Recent Applications.- Michael Schnürch: Recent Progress on the Halogen Dance Reaction on Heterocycles.- T. Kosjek ? E. Heath: Halogenated Heterocycles as Pharmaceuticals.- E. Heath ? T. Kosjek: Sources, Occurrence and Fate of Halogenated Heterocyclic Pharmaceuticals in the Environment.- J. Iskra: Green Methods in Halogenation of Heterocycles.

One strategy to expedite the discovery of new drugs, a process that is somewhat slow and serendipitous, is the identification and use of privileged scaffolds. This book covers the history of the discovery and use of privileged scaffolds and addresses the various classes of these important molecular fragments. The first of the benzodiazepines, a class of drugs that is powerful for treating anxiety, may not have been discovered had it not been for a chance experiment on the contents of a discarded flask found during a lab clean-up. Some years later, scientists discovered that benzodiazepine derivatives were also effective in treating other diseases. This class of molecules was the first to be described as privileged in the sense that it is especially effective at altering the course of disease. Other privileged molecular structures have since been discovered, and since these compounds are so effective at interacting with numerous classes of proteins, they may be an effective starting point to look for new drugs against the supposedly "undruggable" proteins. Following introductory chapters presenting an overview, a historical perspective and the theoretical background and findings, main chapters describe the structure of privileged structures in turn and discuss major drug classes associated with them and their syntheses. This book provides comprehensive coverage of the subject through chapters contributed by expert authors from both academia and industry and will be an excellent reference source for medicinal chemists of a range of disciplines and experiences.

Concepts and Applications

Synthesis of Bioactive Heterocycles

Green Approaches in Medicinal Chemistry for Sustainable Drug Design

Heterocyclic Chemistry At A Glance

Piperidine-Based Drug Discovery

Molecules and Medicine