

## Doi 10 4181 Rnc 2012 20 67401 7p Dist Rbios Da

One of the greatest public health achievements during the last century was the reduction of infectious diseases due to public sanitation measures, vaccines and antibiotics. However, in recent years, several new infectious diseases have been identified, and since the appearance of the first penicillin-resistant bacteria, 'old diseases' have reemerged. Volume 8 of Contributions to Microbiology provides an overview of a great variety of bacterial pathogens representative of those groups and discusses the underlying reasons for disease emergence. The various chapters clearly illustrate how changes in society, technology and the environment result in the appearance or spread of bacterial pathogens. Not only bacterial human pathogens, but also bacterial plant pathogens are an issue and serve as an example of how bacteria can adapt very specifically to a particular host environment. As a consequence of this adaptability, the available antimicrobial drugs have become less effective against many infectious agents; the reasons for this are thoroughly discussed in the book. There is an urgent need for the development of new antibiotics. The volume therefore concludes with a chapter on modern approaches which allow a rational design of a new generation of antimicrobial drugs less likely to become ineffective or cause broad-spectrum drug resistance.

Evolutionary Developmental Biology of Invertebrates 6DeuterostomiaSpringer

Organic Chemistry, Volume 20: Isonitrile Chemistry discusses the fundamental aspects of the chemistry of isonitriles. This book provides an introduction to as well as a thorough coverage of isonitrile chemistry. Organized into 10 chapters, this volume begins with an overview of the general properties and structure of isonitriles. This text then examines the quantitative study of

the kinetics of isonitrile rearrangement as well as the principal resonance structure of the isonitrile molecule. Other chapters consider the experimental and theoretical findings on the fall-off behavior of the unimolecular rate constants of different isonitriles with pressure. This book discusses as well the behavior of isonitriles toward a center of low electron density, which is particularly manifested in the reactivity of alkyl and aryl isonitriles toward diborane and alkyl or arylboranes. The final chapter deals with the inorganic coordination chemistry of isonitriles. This book is a valuable resource for organic chemists.

This volume brings together leading quantum physicists to expound on the meaning and future directions of quantum mechanics. It offers new insights from different vantage points to tackle essential questions in quantum mechanics and its interpretation. All the authors have written for a broad readership, and the resulting volume will appeal to everyone wishing to keep abreast of new developments in quantum mechanics, as well as its history and philosophy.

The free-radical chemistry of DNA had been discussed in some detail in 1987 in my book *The Chemical Basis of Radiation Biology*. Obviously, the more recent developments and the concomitant higher level of understanding of mechanistic details are missing. Moreover, in the living cell, free-radical DNA damage is not only induced by ionizing radiation, but free-radical-induced DNA damage is a much more general phenomenon. It was, therefore, felt that it is now timely to review our present knowledge of free-radical-induced DNA damage induced by all conceivable free-radical-generating sources. Originally, it had been thought to include also a very important aspect, the repair of DNA damage by the cell's various repair enzymes. Kevin Prise (Cancer Campaign, Gray Laboratory, L- don) was so kind to agree to write this part. However, an adequate description of this strongly expanding area would have exceeded the

allocated space by much, and this section had to be omitted. The directors of the Max-Planck-Institut für Strahlenchemie (now MPI für Bioanorganische Chemie), Karl Wieghardt and Wolfgang Lubitz, kindly allowed me to continue to use its facilities after my retirement in 2001. Notably, our - brarian, Mrs. Jutta Theurich, and her right-hand help, Mrs. Rosemarie Schr- er, were most helpful in getting hold of the literature. I thank them very much. Without their constant help, this would have been very difficult indeed.

Development and integration of antigravity muscular control in 4 postural positions: prone, Supine, Sitiing, and Standing

During the last two decades, remarkable and often spectacular progress has been made in the methodological and instrumental aspects of x-ray absorption and emission spectroscopy. This progress includes considerable technological improvements in the design and production of detectors especially with the development and expansion of large-scale synchrotron reactors All this has resulted in improved analytical performance and new applications, as well as in the perspective of a dramatic enhancement in the potential of x-ray based analysis techniques for the near future. This comprehensive two-volume treatise features articles that explain the phenomena and describe examples of X-ray absorption and emission applications in several fields, including chemistry, biochemistry, catalysis, amorphous and liquid systems, synchrotron radiation, and surface phenomena. Contributors explain the underlying theory, how to set up X-ray absorption experiments, and how to analyze the details of the resulting spectra. X-Ray Absorption and X-ray Emission Spectroscopy: Theory and Applications: Combines the theory, instrumentation and applications of x-ray absorption and emission spectroscopies which offer unique diagnostics to study almost any object in the Universe. Is the go-to reference book in

the subject for all researchers across multi-disciplines since intense beams from modern sources have revolutionized x-ray science in recent years. Is relevant to students, postdocurates and researchers working on x-rays and related synchrotron sources and applications in materials, physics, medicine, environment/geology, and biomedical materials. Microbial endocrinology represents a newly emerging interdisciplinary field that is formed by the intersection of the fields of neurobiology and microbiology. This book will introduce a new perspective to the current understanding not only of the factors that mediate the ability of microbes to cause disease, but also to the mechanisms that maintain normal homeostasis. The discovery that microbes can directly respond to neuroendocrine hormones, as evidenced by increased growth and production of virulence-associated factors, provides for a new framework with which to investigate how microorganisms interface not only with vertebrates, but also with invertebrates and even plants. The reader will learn that the neuroendocrine hormones that one most commonly associates with mammals are actually found throughout the plant, insect and microbial communities to an extent that will undoubtedly surprise many, and most importantly, how interactions between microbes and neuroendocrine hormones can influence the pathophysiology of infectious disease.

The first book to place recent academic developments within the context of real

life industrial applications, this is a timely overview of the field of aerobic oxidation reactions in the liquid phase that also illuminates the key challenges that lie ahead. As such, it covers both homogeneous as well as heterogeneous chemocatalysis and biocatalysis, along with examples taken from various industries: bulk chemicals and monomers, specialty chemicals, flavors and fragrances, vitamins, and pharmaceuticals. One chapter is devoted to reactor concepts and engineering aspects of these methods, while another deals with the relevance of aerobic oxidation catalysis for the conversion of renewable feedstock. With chapters written by a team of academic and industrial researchers, this is a valuable reference for synthetic and catalytic chemists at universities as well as those working in the pharmaceutical and fine chemical industries seeking a better understanding of these reactions and how to design large scale processes based on this technology.

Provides a timely overview of critical advances in molecular and cellular neurobiology, covers key methodologies driving progress, and highlights key future directions for research on neuronal injury and neurodegeneration relevant to neuronal brain pathologies. The editors bring together contributions from internationally recognized workers in the field to provide an up to date account of how and why molecular and cellular neurobiology is such an important area for

clinical neuroscience. Understanding the molecular aspects of a number of neurodegenerative conditions such as Parkinson's or Alzheimer's disease for the purpose of improving patient management remains a major challenge of neurobiology be it from the basic or clinical perspective. A strategic evaluation of research contributions and the power of modern methods will help advance knowledge over the next years.

This multi-author, six-volume work summarizes our current knowledge on the developmental biology of all major invertebrate animal phyla. The main aspects of cleavage, embryogenesis, organogenesis and gene expression are discussed in an evolutionary framework. Each chapter presents an in-depth yet concise overview of both classical and recent literature, supplemented by numerous color illustrations and micrographs of a given animal group. The largely taxon-based chapters are supplemented by essays on topical aspects relevant to modern-day EvoDevo research such as regeneration, embryos in the fossil record, homology in the age of genomics and the role of EvoDevo in the context of reconstructing evolutionary and phylogenetic scenarios. A list of open questions at the end of each chapter may serve as a source of inspiration for the next generation of EvoDevo scientists. *Evolutionary Developmental Biology of Invertebrates* is a must-have for any scientist, teacher or student interested in developmental and

evolutionary biology as well as in general invertebrate zoology. This chapter is dedicated to the Deuterostomia, comprising the Echinodermata and Hemichordata (usually grouped together as the Ambulacraria) as well as the Cephalochordata and the Tunicata.

In recent years remarkable progress has been accomplished with respect to our knowledge about bacterial protein toxins. This refers especially to structural aspects of protein toxins but also holds true for genetics, molecular biology and biochemical mechanisms underlying the action of toxins. This volume covers the very current and exciting aspects of up-to-date bacterial toxicology and comprehensively reviews the most important bacterial protein toxins such as the intracellular acting toxins which exhibit enzyme activity, as well as those toxins that interact with cell plasma membranes by damaging the membranes (pore formation) or stimulating cell receptors (superantigens). This is the most current reference work on these important bacterial protein toxins, which are presented from the point of view of different disciplines such as pharmacology, microbiology, cell biology and protein chemistry.

Splicing of primary RNA transcript is a quasi-systematic step of gene expression in higher organisms. This is the first book to highlight the medical implications, i.e. diseases, caused by alternative splicing. Alternative splicing not only vastly

increases protein diversity but also offers numerous opportunities for aberrant splicing events with pathological consequences. The book also outlines possible targets for therapy.

Has the concept of Diversity Oriented Synthesis remained unchanged over these two decades, or do we observe improvements or deviations from the original guidelines drawn by the pioneers? The aim of this Research Topic is to collect contributions on the state-of-the-art and progress of Diversity Oriented Synthesis, and to foresee its shape in the next decade.

Praise for the previous edition: "This...edition is timely, useful, well organized, and should be in the bags of all doulas, nurses, midwives, physicians, and students involved in childbirth."

–Journal of Midwifery and Women's Health The Labor Progress Handbook: Early Interventions to Prevent and Treat Dystocia is an unparalleled resource on simple, non-invasive interventions to prevent or treat difficult or prolonged labor. Thoroughly updated and highly illustrated, the book shows how to tailor one's care to the suspected etiology of the problem, using the least complex interventions first, followed by more complex interventions if necessary. This new edition now includes a new chapter on reducing dystocia in labors with epidurals, new material on the microbiome, as well as information on new counselling approaches specially designed for midwives to assist those who have had traumatic childbirths. Fully referenced and full of practical instructions throughout, The Labor Progress Handbook continues to be an indispensable guide for novices and experts alike who will



benefit from its concise and accessible content.

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.

This is a complete examination of the theory and methods of modern olefin metathesis, one of the most widely used chemical reactions in research and industry. Provides basic information for non-specialists, while also explaining the latest trends and advancements in the field to experts. Discusses the various types of metathesis reactions, including CM, RCM, enyne metathesis, ROMP, and tandem processes, as well as their common applications. Outlines the tools of the trade—from the important classes of active metal complexes to optimal reaction conditions—and suggests practical solutions for common reaction problems. Includes tables with structures of commercial catalysts, and recommendations for commercial catalyst suppliers.

Dosage calculations can be intimidating, but they don't need to be. Dimensional analysis is an easy, systematic approach that shows you how to master simple to complex calculations with consistency and accuracy and reduce medication errors with simple safety mechanisms.

The almost universal presence of water in our everyday lives and the very 'common' nature of its presence and properties possibly deflects attention from the fact that it has a number of very unusual characteristics which, furthermore, are found to be extremely sensitive to physical parameters, chemical environment and other influences. Hydrogen-bonding effects, too, are not restricted to water, so it is necessary to investigate other systems as well, in order to understand the characteristics in a wider context. *Hydrogen Bond Networks* reflects the

diversity and relevance of water in subjects ranging from the fundamentals of condensed matter physics, through aspects of chemical reactivity to structure and function in biological systems.

Fully revised and in its second edition, this standard reference on nano-optics is ideal for graduate students and researchers alike.

The Organometallic Chemistry of N-heterocyclic Carbenes describes various aspects of N-heterocyclic Carbenes (NHCs) and their transition metal complexes at an entry level suitable for advanced undergraduate students and above. The book starts with a historical overview on the quest for carbenes and their complexes. Subsequently, unique properties, reactivities and nomenclature of the four classical NHCs derived from imidazoline, imidazole, benzimidazole and 1,2,4-triazole are elaborated. General and historically relevant synthetic aspects for NHCs, their precursors and complexes are then explained. The book continues with coverage on the preparation and characteristics of selected NHC complexes containing the most common metals in this area, i.e. Ni, Pd, Pt, Ag, Cu, Au, Ru, Rh and Ir. The book concludes with an overview and outlook on the development of various non-classical NHCs beyond the four classical types. Topics covered include: Stabilization, dimerization and decomposition of NHCs Stereoelectronic properties of NHCs and their evaluation Diversity of NHCs Isomers of NHC complexes and their identification NMR spectroscopic signatures of NHC complexes normal, abnormal and mesoionic NHCs The Organometallic Chemistry of N-heterocyclic Carbenes is an essential resource for all students and researchers interested in this increasingly important and popular field of research.

This multi-author, six-volume work summarizes our current knowledge on the developmental

biology of all major invertebrate animal phyla. The main aspects of cleavage, embryogenesis, organogenesis and gene expression are discussed in an evolutionary framework. Each chapter presents an in-depth yet concise overview of both classical and recent literature, supplemented by numerous color illustrations and micrographs of a given animal group. The largely taxon-based chapters are supplemented by essays on topical aspects relevant to modern-day EvoDevo research such as regeneration, embryos in the fossil record, homology in the age of genomics and the role of EvoDevo in the context of reconstructing evolutionary and phylogenetic scenarios. A list of open questions at the end of each chapter may serve as a source of inspiration for the next generation of EvoDevo scientists. *Evolutionary Developmental Biology of Invertebrates* is a must-have for any scientist, teacher or student interested in developmental and evolutionary biology as well as in general invertebrate zoology. This volume starts off with three chapters that set the stage for the entire work by covering general aspects of EvoDevo research, including its relevance for animal phylogeny, homology issues in the age of developmental genomics, and embryological data in the fossil record. These are followed by taxon-based chapters on the animals that are commonly considered to have branched off the Animal Tree of Life before the evolution of the Bilateria: the Porifera, Placozoa, Cnidaria (with the Myxozoa being treated separately) and Ctenophora. In addition, the Acoelomorpha, Xenoturbellida and Chaetognatha are examined, including their currently hotly debated phylogenetic affinities.

Managing climate variability and change remains a key development and food security issue in Bangladesh. Despite significant investments, floods, droughts, and cyclones during the last two decades continue to cause extensive economic damage and impair livelihoods. Climate

change will pose additional risks to ongoing efforts to reduce poverty. This book examines the implications of climate change on food security in Bangladesh and identifies adaptation measures in the agriculture sector using a comprehensive integrated framework. First, the most recent science available is used to characterize current climate and hydrology and its potential changes. Second, country-specific survey and biophysical data is used to derive more realistic and accurate agricultural impact functions and simulations. A range of climate risks (i.e. warmer temperatures, higher carbon dioxide concentrations, changing characteristics of floods, droughts and potential sea level rise) is considered to gain a more complete picture of potential agriculture impacts. Third, while estimating changes in production is important, economic responses may to some degree buffer against the physical losses predicted, and an assessment is made of these. Food security is dependent not only on production, but also future food requirements, income levels and commodity prices. Finally, adaptation possibilities are identified for the sector. This book is the first to combine these multiple disciplines and analytical procedures to comprehensively address these impacts. The framework will serve as a useful guide to design policy intervention strategies and investments in adaptation measures.

Despite the undoubted success of a scientific approach to pharmaceuticals, the last few decades have witnessed a spectacular rise in interest in herbal medicinal products. This general interest has been followed by increasing scientific and commercial attention that led to the coining of the term ethnopharmacology to describe the scientific discipline.

Tetraspanin proteins have recently emerged as a new class of modulators of various processes involving cell surface receptors, including cell migration and invasion, host immune responses, cell-cell fusion, and viral infection. The book summarises recent advances in the

fields of biology in which the role of tetraspanins have been established and also covers the molecular evolution of the tetraspanin superfamily and structural aspects of the organisation of tetraspanin microdomains.

The efficacy of isocyanide reactions in the synthesis of natural or naturallike products has resulted in a renaissance of isocyanide chemistry. Now isocyanides are widely used in different branches of organic, inorganic, coordination, combinatorial and medicinal chemistry. This invaluable reference is the only book to cover the topic in such depth, presenting all aspects of synthetic isonitrile chemistry. The highly experienced and internationally renowned editor has brought together an equally distinguished team of authors who cover multicomponent reactions, isonitriles in total synthesis, isonitriles in polymer chemistry and much more.

Written by outstanding authorities in the field, this Northwest guide tells in interesting and readable fashion how to find and identify the various salamanders, frogs, turtles, lizards, and snakes that inhabit Washington, Oregon, Idaho, and British Columbia.

Showcases the important role of organometallic chemistry in industrial applications and includes practical examples and case studies This comprehensive book takes a practical approach to how organometallic chemistry is being used in industrial applications. It uniquely offers numerous, real-world examples and case studies that aid working R&D researchers as well as Ph.D. and postdoc students preparing to ace interviews in order to enter the workforce. Edited by two world-leading and established industrial chemists, the book covers flow chemistry (catalytic and non-catalytic organometallic chemistry), various cross-coupling reactions (C-C, C-N, and C-B) in classical batch chemistry, conjugate addition reactions, metathesis, and C-H arylation and achiral hydrogenation reactions. Beginning with an overview

of the many industrial milestones within the field over the years, *Organometallic Chemistry in Industry: A Practical Approach* provides chapters covering: the design, development, and execution of a continuous flow enabled API manufacturing route; continuous manufacturing as an enabling technology for low temperature organometallic chemistry; the development of a nickel-catalyzed enantioselective Mizoroki-Heck coupling; and the development of iron-catalyzed Kumada cross-coupling for the large scale production of Aliskiren intermediates. The book also examines aspects of homogeneous hydrogenation from industrial research; the latest industrial uses of olefin metathesis; and more. -Includes rare industrial case studies difficult to find in current literature -Helps readers successfully carry out their own reactions -Covers topics like flow chemistry, cross-coupling reactions, and dehydrative decarbonylation -Features a foreword by Nobel Laureate R. H. Grubbs -A perfect resource for every R&D researcher in industry -Useful for PhD students and postdocs: excellent preparation for a job interview *Organometallic Chemistry in Industry: A Practical Approach* is an excellent resource for all chemists, including those working in the pharmaceutical industry and organometallics. This book provides a practical, concise guide to existing and future biosensor methodologies and technologies (i.e. portable sensing devices for continuous monitoring of parameters of blood glucose, carbon dioxide, PH, neurochemical analysis.) It considers why continuous in vivo sensing might be preferable to discontinuous in vitro sensing, which diagnostic parameters are of immediate health-care and commercial interest and which existing commercial devices lie on the path to fully autonomous, implantable devices. "This engagingly written text provides a useful pedagogical introduction to an extensive class of geometrical phenomena in the optics of polarization and phase, including simple

explanations of much of the underlying mathematics." —Michael Berry, University of Bristol, UK  
"The author covers a vast number of topics in great detail, with a unifying mathematical treatment. It will be a useful reference for both beginners and experts...." —Enrique Galvez, Charles A. Dana Professor of Physics and Astronomy, Colgate University "a firm and comprehensive grounding both for those looking to acquaint themselves with the field and those of us that need reminding of the things we thought we knew, but hitherto did not understand: an essential point of reference." —Miles Padgett, Kelvin Chair of Natural Philosophy and Vice Principal (Research), University of Glasgow This book focuses on the various forms of wavefield singularities, including optical vortices and polarization singularities, as well as orbital angular momentum and associated applications. It highlights how an understanding of singular optics provides a completely different way to look at light. Whereas traditional optics focuses on the shape and structure of the non-zero portions of the wavefield, singular optics describes a wave's properties from its null regions. The contents cover the three main areas of the field: the study of generic features of wavefields, determination of unusual properties of vortices and wavefields that contain singularities, and practical applications of vortices and other singularities.

Due to the dramatic growth of the Latino population in America, in combination with the relative decline of the Anglo (non-Hispanic white) share, Latino Studies is increasingly at the forefront of political concern. With *Latino Politics: Identity, Mobilization, and Representation*, editors Rodolfo Espino, David L. Leal, and Kenneth J. Meier bring together essays from a number of leading scholars to address the ever-more important issues within the field. Providing an overview of issues surrounding Latino identity and political opinion--such as differences among



Latino groups based on national origin, the importance of descriptive representation, and issues of competition and cooperation, particularly with reference to African Americans--the editors speak to the many fundamental debates ingrained in the discipline. In addition to highlighting important contributions of the study of Latino politics to date, this volume suggests areas that have yet to be explored and, perhaps more importantly, demonstrates how the study of Latino politics relates to broader questions of American politics and society. Foregrounding debates in the overall discipline of political science, the collection will appeal to those who study Latino politics as well as those who are interested in understanding American politics and society with reference to Latino and "minority" concerns. Contributors: Rodney E. Hero, University of Notre Dame \* Benjamin Márquez, University of Wisconsin, Madison \* David L. Leal, University of Texas at Austin \* Michael Jones-Correa, Cornell University \* Matt A. Barreto, University of Washington \* Ricardo Ramírez, University of Southern California \* Louis DeSipio, University of California, Irvine \* Adrian D. Pantoja, Arizona State University \* Sylvia Manzano, Texas A&M University \* Helena Alves Rodrigues, University of Arizona \* Gary M. Segura, University of Washington \* René R. Rocha, University of Iowa \* Luis Ricardo Fraga, University of Washington \* Sharon A. Navarro, University of Texas at San Antonio \* Rodolfo Espino, Arizona State University \* Jason P. Casellas, University of Texas at Austin \* Eric Gonzalez Juenke, University of Colorado at Boulder \* Nick A. Theobald, California Polytechnic State University, San Luis Obispo \* Valerie Martinez-Ebers, Texas Christian University \* Manuel Avalos, Arizona State University \* Kenneth J. Meier, Texas A&M University

Three-dimensional (3D) immersive virtual worlds have been touted as being capable of facilitating highly interactive, engaging, multimodal learning experiences. Much of the evidence

gathered to support these claims has been anecdotal but the potential that these environments hold to solve traditional problems in online and technology-mediated education—primarily learner isolation and student disengagement—has resulted in considerable investments in virtual world platforms like Second Life, OpenSimulator, and Open Wonderland by both professors and institutions. To justify this ongoing and sustained investment, institutions and proponents of simulated learning environments must assemble a robust body of evidence that illustrates the most effective use of this powerful learning tool. In this authoritative collection, a team of international experts outline the emerging trends and developments in the use of 3D virtual worlds for teaching and learning. They explore aspects of learner interaction with virtual worlds, such as user wayfinding in Second Life, communication modes and perceived presence, and accessibility issues for elderly or disabled learners. They also examine advanced technologies that hold potential for the enhancement of learner immersion and discuss best practices in the design and implementation of virtual world-based learning interventions and tasks. By evaluating and documenting different methods, approaches, and strategies, the contributors to *Learning in Virtual Worlds* offer important information and insight to both scholars and practitioners in the field.

Comprehensive and up-to-date, this book focuses on the latest advances in the field, such as newly developed techniques, more environmentally benign processes, broadened scopes, and completely novel MCRs. In addition to carbene-promoted MCRs and frequently applied metal-catalyzed MCRs, it also covers recently developed catalytic enantioselective variants as well as MCR in drug discovery and for the synthesis of heterocyclic molecules and macrocycles. Edited by the leading experts and with a list of authors reading like a "who's

who" in multicomponent reaction chemistry, this is definitely a must-have for every synthetic organic chemist as well as medicinal chemists working in academia and pharmaceutical companies.

Casimir effects serve as primary examples of directly observable manifestations of the nontrivial properties of quantum fields, and as such are attracting increasing interest from quantum field theorists, particle physicists, and cosmologists. Furthermore, though very weak except at short distances, Casimir forces are universal in the sense that all material objects are subject to them. They are thus also an increasingly important part of the physics of atom-surface interactions, while in nanotechnology they are being investigated not only as contributors to 'stiction' but also as potential mechanisms for actuating micro-electromechanical devices. While the field of Casimir physics is expanding rapidly, it has reached a level of maturity in some important respects: on the experimental side, where most sources of imprecision in force measurements have been identified as well as on the theoretical side, where, for example, semi-analytical and numerical methods for the computation of Casimir forces between bodies of arbitrary shape have been successfully developed. This book is, then, a timely and comprehensive guide to the essence of Casimir (and Casimir-Polder) physics that will have lasting value, serving the dual purpose of an introduction and reference to the field. While this volume is not intended to be a unified textbook, but rather a collection of largely independent chapters written by prominent experts in the field, the detailed and carefully written articles adopt a style that should appeal to non-specialist researchers in the field as well as to a broader audience of graduate students.

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