Chemistry & Materials Science

May to August 2018

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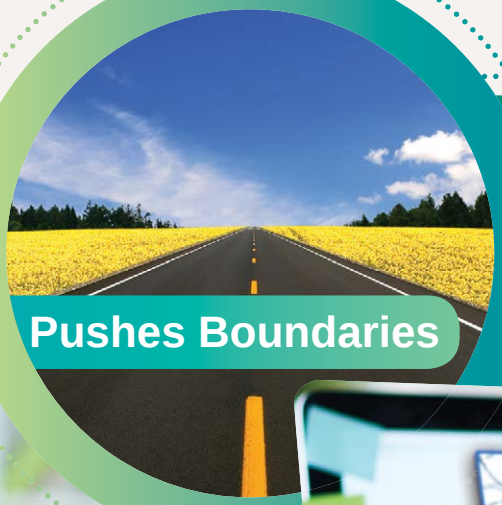

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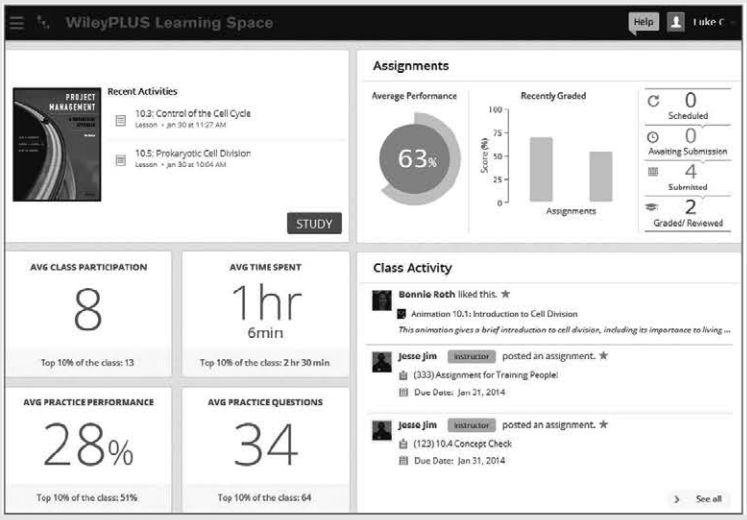

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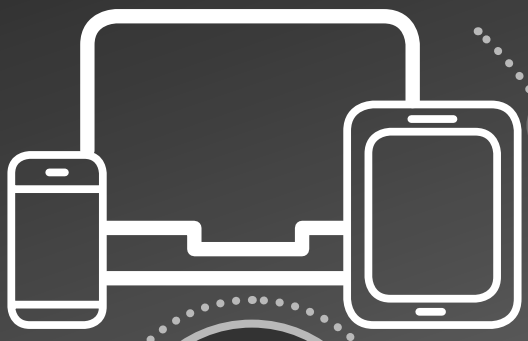

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Table of Contents

Lead Title Textbook

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BIOCHEMICAL ENGINEERING

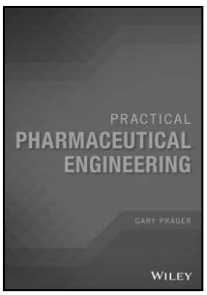
Biomedical Engineering Challenges

A Chemical Engineering Insight

Vincenzo Piemonte, Angelo Basile, Taichi Ito & Luigi Marrelli

In the past 50 years remarkable achievements have been advanced in the fields of biomedical and chemical engineering. With contributions from leading chemical engineers, *Biomedical Engineering Challenges* reviews the recent research and discovery that sits at the interface of engineering and biology. The authors explore the principles and practices that are applied to the ever-expanding array of such new areas as gene-therapy delivery, biosensor design, and the development of improved therapeutic compounds, imaging agents, and drug delivery vehicles. Filled with illustrative case studies, this important resource examines such important work as methods of growing human cells and tissues outside the body in order to repair or replace damaged tissues. In addition, the text covers a range of topics including the challenges faced with developing artificial lungs, kidneys, and livers; advances in 3D cell culture systems; and chemical reaction methodologies for biomedical imagining analysis.

ISBN: 978-1-119-29604-1 • Cloth • US$180.00 • Apr 2018 • 256pp



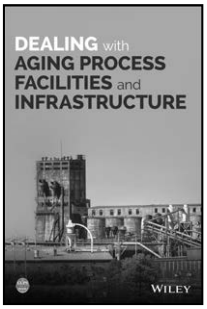
Practical Pharmaceutical Engineering

Gary Prager

The intent of this book is to provide basic information for individuals seeking a working knowledge of the salient technical elements of the pharmaceutical and biotech manufacturing and process design. While intended for individuals with an engineering background, the book should be of value to those with an affiliated knowledge such as chemistry, pharmacy and mathematics. Similarly, the goal of the text is to equip individuals who are currently or plan to be involved in project aspects of the pharmaceutical/biotech industry. The emphasis is to prepare or reinforce skills required for personnel to knowledgeably deal with projects and programs often performed by consulting firms, engineering firms and/or consultants. Similarly, this proposed text is also intended to assist individuals assigned to technical teams involved in projects for which they pose a minimal technical background relating to the project subject matter.

ISBN: 978-0-470-41032-5 • Cloth • US$139.95 • Jun 2018 • 528pp

PROCESS DEVELOPMENT



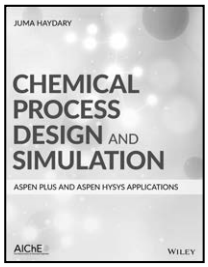
Dealing with Aging Process Facilities and Infrastructure

CCPS (Center for Chemical Process Safety)

This book explores the many ways in which process facilities, equipment, and infrastructure might deteriorate upon continuous exposure to operating and climatic conditions. It covers the functional and physical failure modes for various categories of equipment and discusses the many warning signs of deterioration. *Dealing with Aging Process Facilities and Infrastructure* also explains how to deal with equipment that may not be safe to operate. The book describes a risk-based strategy in which plant leaders and supervisors can make more informed decisions on aging situations and then communicate them to upper management effectively. Additionally, it discusses the dismantling and safe removal of facilities that are approaching their intended lifecycle or have passed it altogether. *Dealing with Aging Process Facilities and Infrastructure* is an important book for industrial practitioners who are often faced with the challenge of managing process facilities and infrastructure as they approach the end of their useful lifecycle.

ISBN: 978-1-119-43083-4 • Cloth • US$124.95 • Mar 2018 • 224pp

PROCESS ENGINEERING



Chemical Process Design and Simulation

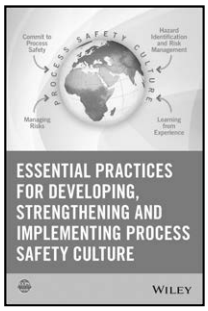
Aspen Plus and Aspen Hysys Applications

Juma Haydary

The book aims to provide principles of chemical engineering design and at the same time examples of their application using the most often employed simulation software. The book is divided into four sections: Introduction to design and simulation; Design and simulation of single unit operations; Plant design and simulation — conventional components; and Plant design and simulation — nonconventional components. The first section describes basic methodologies for computer aided design followed by a description of basic steps of process simulation in Aspen Plus and Aspen HYSYS. The second section is devoted to the design and simulation of individual single unit operations. The third section describes the design of new plants and simulation of existing plants where conventional chemicals and material mixtures with measurable compositions are used. In this section, material integration, energy analysis and economic evaluation are described and shown on examples in Aspen Plus and Aspen HYSYS respectively. The final section covers plant design and simulation of processes using nonconventional components.

ISBN: 978-1-119-08911-7 • Cloth • US$TBA • Aug 2018 • 400pp

PROCESS SAFETY

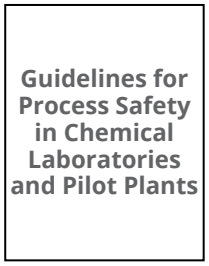


Essential Practices for Developing, Strengthening and Implementing Process Safety Culture

CCPS (Center for Chemical Process Safety) (*Previously Announced*)

This book provides an overview for understanding an organization's working culture and provides guidance on why a good culture is essential for safe, cost-effective, and high quality operations. It Includes a wide range of topics such as defining process safety culture (history, organizational impact and benefits, and role of organizational leadership at all levels); core principles (maintain sense of vulnerability, combat normalization of deviance, establish an imperative for safety, perform valid/timely hazard/risk assessments, ensure open and frank communications, learn and advance the culture); leadership for process safety culture within the organizational structure; applications and work processes; and sustaining process safety culture improvements, warning signs of cultural degradation and remedies, use of applications discussed in earlier chapters , the importance of using diverse methods over time to assess culture.

ISBN: 978-1-119-01015-9 • Cloth • US$TBA • Jun 2018 • 413pp



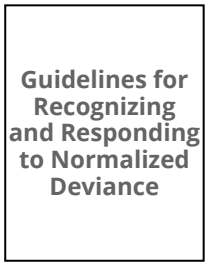
Guidelines for Process Safety in Chemical Laboratories and Pilot Plants

CCPS (Center for Chemical Process Safety) (*Previously Announced*)

This book provides guidance on "what" can be done from a management systems perspective to identify hazards and manage risks of "loss of containment" events in chemical laboratories and pilot plants. It provides examples of "how to" implement such practices and descriptions of a range of typically encountered process safety hazards typical controls based on current best practices.

ISBN: 978-1-119-01013-5 • Cloth • US$124.95 • Jun 2018 • 400pp

THEORY, PLANNING & MANAGEMENT

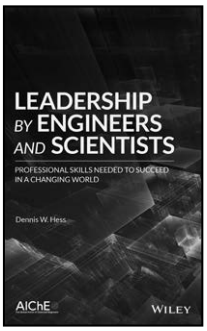


Guidelines for Recognizing and Responding to Normalized Deviance

CCPS (Center for Chemical Process Safety)

This book addresses how to recognize and respond to the normalization of deviation that can, and almost certainly will, occur in any ongoing process that involves humans. The primary focus is on reducing the incidence of normalization of deviation and the associated increased risk exposure due to its effects while operating a chemical manufacturing facility. It contains an introduction to the concept and offers approaches for finding and addressing normalization of deviation when it presents itself in both operational and organizational activities. This book makes it clear that actively addressing normalization of deviation can assist manufacturers to succeed in improving Process safety performance, Personnel safety performance, Environmental responsibility, Product quality performance, and Sustainable long-term profitability.

ISBN: 978-1-119-50671-3 • Cloth • US$TBA • May 2018 • 240pp



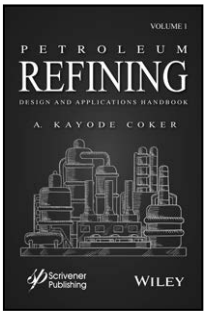
Leadership by Engineers and Scientists

Professional Skills Needed to Succeed in a Changing World

Dennis W. Hess

Leadership by Engineers and Scientists guides and facilitates approaches to solving leadership/people problems encountered by technically trained individuals. Students and practicing engineers will learn leadership by being asked to consider specific situations, debate how to deal with these issues, and then make decisions based on what they have learned. Readers will learn technical leadership fundamentals; ethics and professionalism; time management; building trust and credibility; risk taking; leadership through questions; creating a vision; team building and teamwork; running an effective meeting; conflict management and resolution; communication; and presenting difficult messages. It describes positive traits and characteristics that technically-trained individuals bring to leadership positions, indicates how to use these skills, and describes attitudes and approaches necessary for effectively serving as leaders and covers negative traits and characteristics that can be detrimental when applied to dealing with others in their role as leaders.

ISBN: 978-1-119-43659-1 • Cloth • US$79.95 • Mar 2018 • 256pp



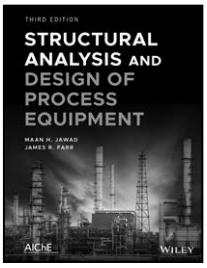
Petroleum Refining Designs and Applications Handbook

Volume 1

A. Kayode Coker

With so many changes over the last few decades in equipment and processes, petroleum refining is almost a living document, constantly needing updating. With no new refineries being built, companies are spending their capital re-tooling and adding on to existing plants. Refineries are like small cities, today, as they grow bigger and bigger and more and more complex. A huge percentage of a refinery can be changed, literally, from year to year, to account for the type of crude being refined or to integrate new equipment or processes. This book is the most up-to-date and comprehensive coverage of the most significant and recent changes to petroleum refining, presenting the state-of-the-art to the engineer, scientist, or student. Written by one of the world's foremost authorities, this book sets the standard for the industry and is an integral part of the petroleum refining renaissance. It is truly a must-have for any practicing engineer or student in this area.

ISBN: 978-1-118-23369-6 • Cloth • US$TBA • May 2018 • 400pp



Structural Analysis and Design of Process Equipment

3rd Edition

Maan H. Jawad & James R. Farr

This edition of the classic guide to the analysis and design of process equipment has been thoroughly updated to reflect current practices as well as the latest ASME Codes and API standards. In addition to covering the code requirements governing the design of process equipment, the book supplies structural, mechanical, and chemical engineers with expert guidance to the analysis and design of storage tanks, pressure vessels, boilers, heat exchangers, and related process equipment and its associated external and internal components. Still the only guide covering the design of both API equipment and ASME pressure vessels, *Structural Analysis and Design of Process Equipment, 3*rd *Edition* covers the design of rectangular vessels with various side thicknesses and updated equations for the design of heat exchangers. It now includes numerical vibration analysis needed for earthquake evaluation and relates the requirements of the ASME codes to international standards.

ISBN: 978-1-119-10283-0 • Cloth • US$149.95 • May 2018 • 480pp

ANALYTICAL CHEMISTRY

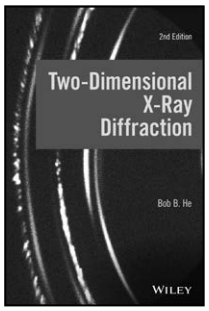
Persistent Toxic Substances Monitoring

Nanoelectrochemical Methods

Xing-Jiu Huang, Xing Chen & Meng Yang

Filling the urgent need for a professional book that specifies the applications of nanoelectrochemistry for the monitoring of persistent toxic substances, this monograph clearly describes the design concept, construction strategies and practical applications of PTS sensing interfaces based on nanoelectrochemical methods. The comprehensive and systematic information not only provides readers with the fundamentals, but also inspires them to develop PTS monitoring sensors based on functional nanostructures and nanomaterials. Of interest to chemists, electrochemistry researchers, materials researchers, environmental scientists, and companies dealing with electrochemical treatment and environment.

ISBN: 978-3-527-34400-0 • Cloth • US$255.00 • Jun 2018 • 568pp



Two-Dimensional X-ray Diffraction

2nd Edition

Bob B. He

Written by one of the pioneers of 2D X-Ray Diffraction, this updated and expanded edition of the definitive text in the field provides comprehensive coverage of the fundamentals of that analytical method, as well as state-of-the art experimental methods and applications. Geometry convention, x-ray source and optics, two-dimensional detectors, diffraction data interpretation, and configurations for various applications, such as phase identification, texture, stress, microstructure analysis, crystallinity, thin film analysis, and combinatorial screening are all covered in detail. Numerous experimental examples in materials research, manufacture, and pharmaceuticals are provided throughout. *Two-Dimensional X-Ray Diffraction, Second Edition* is an up-to-date resource for understanding how the latest 2D detectors are integrated into diffractometers, how to get the best data using the 2D detector for diffraction, and how to interpret this data. All those desirous of setting up a 2D diffraction in their own laboratories will find the author's coverage of the physical principles, projection geometry, and mathematical derivations extremely helpful.

ISBN: 978-1-119-35610-3 • Cloth • US$174.95 • Jul 2018 • 496pp

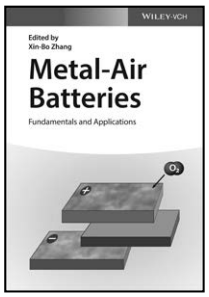
BATTERIES & FUEL CELLS

Advanced Battery Materials

Ashutosh Tiwari

This book covers the recent advances in battery materials and their novel applications at the cross-section of advanced materials both current and next-generation, that are shaping the future of energy storage. Well-known researchers deliberate subjects including design and development of lithium ion batteries: Technology innovation and challenges for electric vehicles; transition metal oxide based electrocatalyst for metal-air battery; comprehensively account of lithium-sulfur batteries; production of graphene and graphene composites from biomass starting material, formation mechanism; and end application. The book also includes three-dimensionally porous Li-ion and Li-S secondary battery cathodes; rational structure design and performance optimization of transition metal oxide-based lithium ion battery anodes; carbon-based anode materials for sodium-ion batteries; lithium titanate-based lithium-ion batteries; doped graphene for electrochemical energy storage systems; promising nanoscale materials as high-performance anodes in sodium-ion batteries; and copper-metal-sulfides for advanced batteries.

ISBN: 978-1-119-40755-3 • Cloth • US$TBA • Aug 2018 • 400pp



Metal-Air Batteries

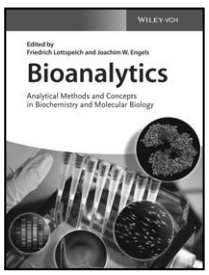
Fundamentals and Applications

Xin-Bo Zhang

Covering different types of metal-air batteries and their components as well as system designation, this book systematically summarizes current progress and research advances in the field that was previously unavailable in the literature. Following the fundamentals of electrochemical batteries, the text then goes on to introduce the various types of metal-air batteries and such topics as cathode construction, electrocatalysts, anode protection, and oxygen electrochemistry, as well as the system-level considerations for their use. The focus throughout is on those battery systems that show great potential for renewable energy storage and the book concludes with a summary of future perspectives in the field.

ISBN: 978-3-527-34279-2 • Cloth • US$167.95 • Aug 2018 • 350pp

BIOANALYTICAL CHEMISTRY



Bioanalytics

Analytical Methods and Concepts in Biochemistry and Molecular Biology

Friedrich Lottspeich & Joachim W. Engels

Analytical methods are the essential enabling tools of the modern biosciences. This book presents a comprehensive introduction into these analytical methods, including their physical and chemical backgrounds, as well as a discussion of the strengths and weakness of each method. It covers all major techniques for the determination and experimental analysis of biological macromolecules, including proteins, carbohydrates, lipids and nucleic acids. The presentation includes frequent cross-references in order to highlight the many connections between different techniques. The book provides a bird's eye view of the entire subject and enables the reader to select the most appropriate method for any given bioanalytical challenge. This makes the book a handy resource for students and researchers in setting up and evaluating experimental research. The depth of the analysis and the comprehensive nature of the coverage mean that there is also a great deal of new material, even for experienced experimentalists.

ISBN: 978-3-527-33919-8 • Cloth • US$135.00 • Mar 2018 • 1134pp

BIOCHEMISTRY (CHEMICAL BIOLOGY)

Molecular Technology

Life Innovation, Volume 2

Hisashi Yamamoto & Takashi Kato

Edited by foremost leaders in chemical research together with a number of distinguished international authors, Volume 2 presents the most important and promising recent chemical developments in life sciences, neatly summarized in one book. Interdisciplinary and application-oriented, this ready reference focuses on methods and processes with a high practical aspect, covering new trends in drug delivery, in-vivo analysis, structure formation and much more. This book will be of great interest to chemists and life scientists in academia and industry.

ISBN: 978-3-527-34162-7 • Cloth • US$179.95 • Aug 2018 • 400pp

ISBN 978-3-527-34162-7
9 783527 341627

Principles and Applications of Fermentation Technology

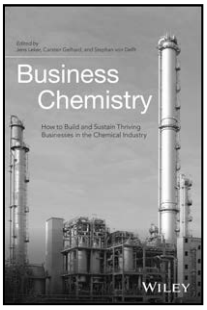
Arindam Kuila & Vinay Sharma

The book covers all aspects of fermentation technology such as principles, reaction kinetics, scaling up of processes, and applications. The 20 chapters written by subject matter experts are divided into two parts: Principles and Applications. In the first part subjects covered include modelling and kinetics of fermentation technology; sterilization techniques used in fermentation processes; design and types of bioreactors used in fermentation technology. The second part subjects covered includes lactic acid and ethanol production using fermentation technology; various industrial value-added product biosynthesis using fermentation technology; microbial cyp450 production and its industrial application; polyunsaturated fatty acid production through solid state fermentation; application of oleaginous yeast for lignocellulosic biomass based single cell oil production; utilization of micro-algal biomass for bioethanol production; poly-lactide production from lactic acid through fermentation technology; bacterial cellulose and its potential impact on industrial applications.

ISBN: 978-1-119-46026-8 • Cloth • US$TBA • Jul 2018 • 400pp

ISBN 978-1-119-46026-8
9 781119 460268

BUSINESS & MANAGEMENT IN CHEMISTRY



Business Chemistry

How to Build and Sustain Thriving Businesses in the Chemical Industry

Jens Leker, Carsten Gelhard & Stephan von Delft

Business Chemistry: How to Build and Sustain Thriving Businesses in the Chemical Industry is a concise text aimed at chemists, other natural scientists, and engineers who want to develop essential management skills. Written in an accessible style with the needs of managers in mind, this book provides an introduction to essential management theory, models, and practical tools relevant to the chemical industry and associated branches such as pharmaceuticals and consumer goods. Drawing on first-hand management experience and in-depth research projects, the authors of this book outline the key topics to build and sustain businesses in the chemical industry. The book addresses important topics such as strategy and new business development, describes global trends that shape chemical companies, and looks at recent issues such as business model innovation.

ISBN: 978-1-118-85849-3 • Cloth • US$100.00 • Jan 2018 • 352pp

ISBN 978-1-118-85849-3
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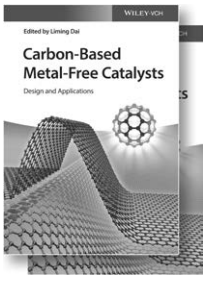
CATALYSIS



Carbon-Based Metal-Free Catalysts

Design and Applications, 2 Volumes

Liming Dai

Offering comprehensive coverage of this hot topic, this two-volume handbook and ready reference treats a wide range of important aspects, from synthesis and properties of carbon nanomaterials to their applications as metal-free catalysts in important industrial processes. Following a look at the development of various important graphitic carbon materials and carbon-based catalyst supports, subsequent sections deal with a mechanistic understanding for the molecular design of efficient carbon-based metal-free catalysts, with a special emphasis on heteroatom-doped carbon nanotubes, graphene and graphite along with recent advances in the development of carbon-based metal-free catalysts. The book is rounded off by a summary of the current challenges and future opportunities in this exciting field. With contributions from world-leading scientists, this is an indispensable source of information for academic and industrial researchers in catalysis, green chemistry, materials science, nanotechnology, energy technology and chemical engineering, as well as graduates and scientists entering the field.

ISBN: 978-3-527-34341-6 • Cloth • US$361.95 • Aug 2018 • 760pp

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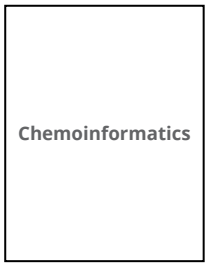
CHEMICAL INFORMATICS



ISBN 978-3-527-33109-3
9 783527 331093

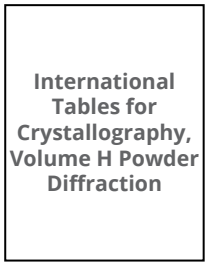
Chemoinformatics
Basic Concepts and Methods

Thomas Engel & Johann Gasteiger

This essential guide to the knowledge and tools in the field Includes everything from the basic concepts to modern methods, while also forming a bridge to bioinformatics. The textbook offers a very clear and didactical structure, starting from the basics and the theory, before going on to provide an overview of the methods. Learning is now even easier thanks to exercises at the end of each section or chapter. Software tools are explained in detail, so that the students not only learn the necessary theoretical background, but also how to use the different software packages available. The wide range of applications is presented in the corresponding book Applied Chemoinformatics - Achievements and Future Opportunities (ISBN 9783527342013). For Master and PhD students in chemistry, biochemistry and computer science, as well as providing an excellent introduction for other newcomers to the field.

ISBN: 978-3-527-33109-3 • Paper • US$120.00 • May 2018 • 560pp

CRYSTALLOGRAPHY



ISBN 978-1-118-41628-0
9 781118 416280

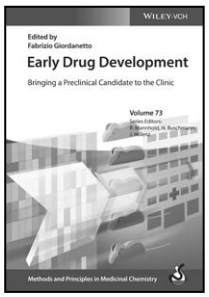
International Tables for Crystallography, Volume H Powder Diffraction
Volume H (*Previously Announced*)

C. J. Gilmore, J. A. Kaduk & H. Schenk

Powder diffraction is the mostly widely used crystallographic method, with applications spanning all aspects of structural science. This new volume of International Tables covers all aspects of the technique with over 50 chapters written by experts in the field. Consisting of seven parts, this volume provides an overview of the principles of powders diffraction and discusses the radiation sources used for powder-diffraction studies, instrumentation, the use of different sample environments and methods of sample preparation. It covers methodology, including data processing, indexing and reduction, whole-pattern modelling and quantitative analysis with an overview of the relevant crystallographic databases included. The book focus on structure determination (including real- and reciprocal-space methods and the maximum-entropy method), structure refinement and structure validation and discusses defects, texture, microstructure and fibres, including stress and strain, domain size and thin films.

ISBN: 978-1-118-41628-0 • Cloth • US$310.00 • Jul 2018 • 600pp

DRUG DISCOVERY & DEVELOPMENT



ISBN 978-3-527-34149-8
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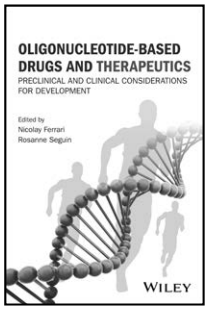
Early Drug Development
Bringing a Preclinical Candidate to the Clinic

Fabrizio Giordanetto

This one-stop reference systematically covers key aspects in early drug development that are directly relevant to the discovery phase and are required for first-in-human studies. Its broad scope brings together critical knowledge from many disciplines, ranging from process technology to pharmacology to intellectual property issues. After introducing the overall early development workflow, the critical steps of early drug development are described in a sequential and enabling order: the availability of the drug substance and that of the drug product, the prediction of pharmacokinetics and -dynamics, as well as that of drug safety. The final section focuses on intellectual property aspects during early clinical development. The emphasis throughout is on recent case studies to exemplify salient points, resulting in an abundance of practice-oriented information that is usually not available from other sources.

ISBN: 978-3-527-34149-8 • Cloth • US$405.00 • Jun 2018 • 792pp



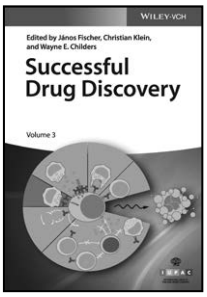
ISBN 978-1-118-53733-6
9 781118 537336

Oligonucleotide-Based Drugs and Therapeutics
Preclinical and Clinical Considerations for Development

Nicolay Ferrari & Rosanne Seguin

Antisense oligonucleotides are single strands of DNA or RNA that are complementary to a chosen sequence. While the idea of antisense oligonucleotides to target single genes dates back to the 1970's, most advances have taken place in recent years. The increasing number of antisense oligonucleotide programs in clinical development is a testament to the progress and understanding of pharmacologic, pharmacokinetic, and toxicologic properties as well as improvement in the delivery of oligonucleotides. This valuable book reviews the fundamentals of oligonucleotides, with a focus on antisense oligonucleotide drugs, and reports on the latest research underway worldwide. It helps readers understand antisense molecules and their targets, biochemistry, and toxicity mechanisms, roles in disease, and applications for safety and therapeutics and examines the principles, practices, and tools for scientists in both pre-clinical and clinical settings and how to apply them to antisense oligonucleotides.

ISBN: 978-1-118-53733-6 • Cloth • US$224.95 • Jul 2018 • 560pp



Successful Drug Discovery

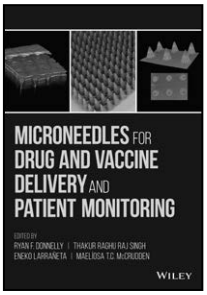
Volume 3 (*Previously Announced*)

János Fischer, Christian Klein & Wayne E. Childers

With its focus on drugs so recently introduced that they have yet to be found in any other textbooks or general references, the information and insight found here makes this a genuinely unique handbook and reference. Following the successful approach of the previous volumes in the series, inventors and primary developers of successful drugs from both industry and academia tell the story of the drug's discovery and describe the sometimes twisted route from the first drug candidate molecule to the final marketed drug. The 11 case studies selected describe recent drugs ranging across many therapeutic fields and provide a representative cross-section of present-day drug developments. Backed by plenty of data and chemical information, the insight and experience of today's top drug creators makes this one of the most useful training manuals that a junior medicinal chemist may hope to find.

ISBN: 978-3-527-34303-4 • Cloth • US$215.00 • May 2018 • 472pp

DRUG FORMULATION & DELIVERY



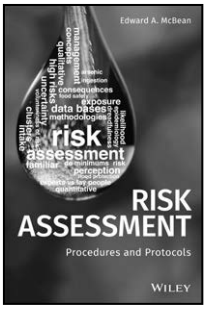
Microneedles for Drug and Vaccine Delivery and Patient Monitoring

Ryan F. Donnelly, Thakur Raghu Raj Singh, Eneko Larrañeta & Maelíosa T. C. McCrudden

Beginning with a history of the field and the various methods employed to produce microneedles from different materials, *Microneedles for Drug and Vaccine Delivery and Patient Monitoring* discusses the penetration of the stratum corneum by microneedles and the importance of application method and force and microneedle geometry (height, shape, inter-needle spacing). Transdermal and intradermal delivery research using microneedles is comprehensively and critically reviewed, focusing on the outcomes of in vivo animal and human studies. The book describes the important topics of safety and patient acceptability studies carried out to date. It also covers in detail the growing area for microneedle use in the monitoring of interstitial fluid contents. Finally, it reviews translational and regulatory developments in the microneedles field and describes the work ongoing in industry. Authored by four experts in pharmaceuticals, this is the only book currently available on microneedles and is filled with tables, graphs, and black and white images (photographs, micrographs).

ISBN: 978-1-119-30514-9 • Cloth • US$170.00 • Jul 2018 • 304pp

ENVIRONMENTAL CHEMISTRY



Risk Assessment

Procedures and Protocols

Edward A. McBean

Risk Assessment describes the methodologies, the math, and assumptions needed in risk assessment calculations and explores the various statistical analysis procedures that are used for estimating the parameters employed in risk assessment approaches. The author — a noted expert in the field — outlines a logical step-by-step approach to assessment: Identify a hazard; Analyze the risk associated with that hazard; and Determine if the elimination, or control of the risk is warranted. The text puts the focus on assessing environmental risk and describes the basics used in hypothesis testing to determine when there are differences in environmental quality at various locations. The author describes statistical techniques in approachable terms that are designed to be understandable to the non-statistician. The text downplays mathematical notation while offering clear explanations for the development of equations. It highlights applications with numerous examples of problems of censored data as they influence the use of alternative tests. In addition, the text focuses on both parametric and non-parametric procedures.

ISBN: 978-1-119-28906-7 • Cloth • US$124.95 • Jun 2018 • 352pp

FORENSICS

Fingerprint Development Techniques

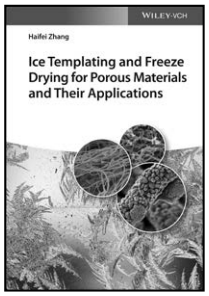
Theory and Application

Stephen M. Bleay, Ruth S. Croxton & Marcel de Puit

With contributions from leading experts in the field, *Fingerprint Development Techniques* offers a comprehensive review of the key techniques used in the development and imaging of fingerprints. It Includes a review of the properties of fingerprints, the surfaces that fingerprints are deposited on, and the interactions that can occur between fingerprints, surfaces and environments. Comprehensive in scope, the text explores the history of each process, the theory behind the way fingerprints are either developed or imaged, and information about the role of each of the chemical constituents in recommended formulations. The authors explain the methodology employed for carrying out comparisons of effectiveness of various development techniques that clearly demonstrate how to select the most effective approaches. It also explores how techniques can be used in sequence and with techniques for recovering other forms of forensic evidence and offers a guide for the selection of fingerprint development techniques and Includes information on the influence of surface contamination and exposure conditions.

ISBN: 978-1-119-99261-5 • Cloth • US$120.00 • Mar 2018 • 520pp

INDUSTRIAL CHEMISTRY

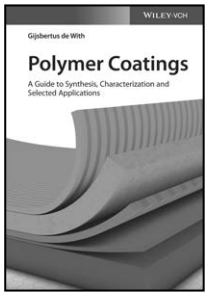


Ice Templating and Freeze Drying for Porous Materials and Their Applications

Haifei Zhang

Filling a gap in the literature, this is the first book to focus on the fabrication of functional porous materials by using ice templating and freeze drying. Comprehensive in its scope, the volume covers such techniques as the fabrication of porous polymers, porous ceramics, biomimic strong composites, carbon nanostructured materials, nanomedicine, porous nanostructures by freeze drying of colloidal or nanoparticle suspensions, and porous materials by combining ice templating and other techniques. In addition, applications for each type of material are also discussed. Of great benefit to those working in the freeze-drying field and researchers in porous materials, materials chemistry, engineering, and the use of such materials for various applications, both in academia and industry.

ISBN: 978-3-527-34272-3 • Cloth • US$190.00 • Jul 2018 • 352pp



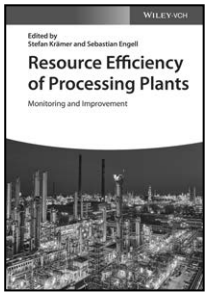
Polymer Coatings

A Guide to Synthesis, Characterization and Selected Applications

Gijsbertus de With

The book provides a practice-oriented overview of the fundamentals of polymer coatings. The readers learn about the different classes of materials in use, namely polymers and polymer networks, thermoset plastics, alternative chemicals like solvent- and water-based coatings, and a variety of additives. Dedicated chapters present deposition methods encompassing several mechanical and electrochemical coating approaches, in addition to physical-chemical aspects of the coating process. The wealth of currently available characterization methods is covered in a separate chapter which treats spectroscopic, morphological, thermal and mechanical techniques. The second part of the book is devoted to different selected topics which have undergone strong developments in recent years, such as electrically conductive coatings, hydrophobic and hydrophilic paints, and self-replenishing coatings. Finally, the author summarizes the present status of the research field, describes systems currently under investigation and draws our attention to systems that have not been explored yet.

ISBN: 978-3-527-34210-5 • Cloth • US$215.00 • Jul 2018 • 576pp



Resource Efficiency of Processing Plants

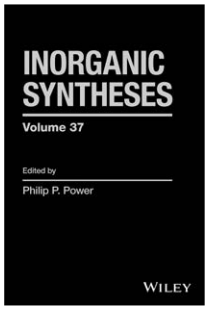
Monitoring and Improvement

Stefan Krämer & Sebastian Engell

This monograph provides foundations, methods, guidelines and examples for monitoring and improving resource efficiency during the operation of processing plants and for improving their design. The measures taken to improve their energy and resource efficiency are strongly influenced by regulations and standards which are covered in Part I of this book. Without changing the actual processing equipment, the way how the processes are operated can have a strong influence on the resource efficiency of the plants and this potential can be exploited with much smaller investments than needed for the introduction of new process technologies. This aspect is the focus of Part II. In Part III we discuss physical changes of the process technology such as heat integration, synthesis and realization of optimal processes, and industrial symbiosis. The last part deals with the people that are needed to make these changes possible and discusses the path towards a company and sector wide resource efficiency culture.

ISBN: 978-3-527-34074-3 • Cloth • US$215.00 • Jan 2018 • 528pp

INORGANIC CHEMISTRY



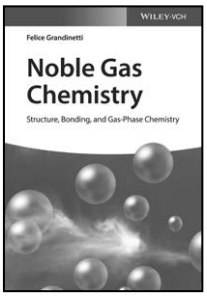
Inorganic Syntheses

Volume 37

Philip P. Power

The newest volume in the authoritative *Inorganic Syntheses* book series provides users of inorganic substances with detailed and foolproof procedures for the preparation of important and timely inorganic and organometallic compounds that can be used in reactions to develop new materials, drug targets, and bio-inspired chemical entities.

ISBN: 978-1-119-47773-0 • Cloth • US$194.95 • May 2018 • 240pp



Noble Gas Chemistry

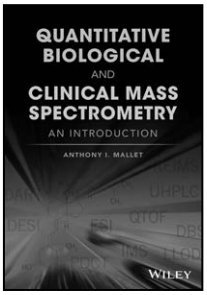
Structure, Bonding, and Gas-Phase Chemistry

Felice Grandinetti

Authored by one of the world's leading experts in the chemistry of lighter noble gases, this comprehensive monograph fills the need for an up-to-date review of the diverse experimental techniques and theoretical methods currently in practice. After reviewing the experiments breaking the paradigm of "non-reactive" noble gases, the physico-chemical background is introduced. Besides the emphasis on gas phase reactions, the author presents other relevant systems, such as chemistry in the bulk phase, under high pressure, and cold matrices. The discussion of gas-phase chemistry of the noble gases covers neutral and ionic compounds, diatomic molecules, complexes with small molecules and metal compounds, up to large clusters.

ISBN: 978-3-527-34180-1 • Cloth • US$190.00 • Jul 2018 • 368pp

MASS SPECTROMETRY



Quantitative Biological and Clinical Mass Spectrometry

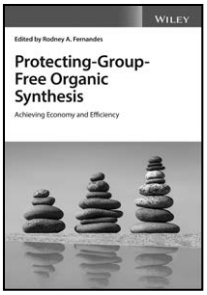
An Introduction

Anthony I. Mallet

This introductory text provides information and assistance to new users of mass spectrometry (MS) working in clinical or biochemical fields who are faced with implementing and designing quantitative mass spectrometric assays for a variety of classes of molecules of biological interest. *Quantitative Biological and Clinical Mass Spectrometry* uses examples where development has not been immediately successful but where unforeseen problems have arisen and describes the strategies used to solve these. Advances in addressing the very large numbers of clinical samples that arise on routine screening programs such as those involved in inborn errors of metabolism studies are discussed. Direct mass spectrometric based analyses applicable to point of care testing (POCT) situations are also covered. The book concludes with a short section on possible novel developments, bibliography, references, and a glossary of terms.

ISBN: 978-1-119-28120-7 • Cloth • US$80.00 • Jun 2018 • 208pp

METHODS - SYNTHESIS & TECHNIQUES



Protecting-Group-Free Organic Synthesis

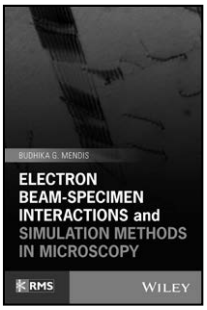
Achieving Economy and Efficiency

Rodney A. Fernandes

This book supports synthetic chemists in the design of strategies, which avoid or minimize the use of protecting groups so as to come closer to achieving an "ideal synthesis" and back the global need of practicing green chemistry. The only resource of its kind to focus entirely on protecting-group-free synthesis, it is edited by a leading practitioner in the field, and features enlightening contributions by top experts and researchers from across the globe. The introductory chapter includes a concise review of historical developments, and discusses the concepts, need for, and future prospects of protecting-group-free synthesis. Following this, the book presents information on protecting-group-free synthesis of complex natural products and analogues, heterocycles, drugs, and related pharmaceuticals. Later chapters discuss practicing protecting-group-free synthesis using carbohydrates and of glycosyl derivatives, glycol-polymers and glyco-conjugates. The book concludes with a chapter on latent functionality as a tactic toward formal protecting-group-free synthesis.

ISBN: 978-1-119-29520-4 • Cloth • US$150.00 • Jul 2018 • 472pp

MICROSCOPY



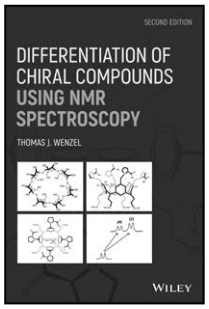
Electron Beam-Specimen Interactions and Simulation Methods in Microscopy

Budhika G. Mendis

Electron Beam-Specimen Interactions and Simulation Methods in Microscopy offers enlightening coverage of: the Monte-Carlo Method; Multislice Simulations; Bloch Waves in Conventional and Analytical Transmission Electron Microscopy; Bloch Waves in Scanning Transmission Electron Microscopy; Low Energy Loss and Core Loss EELS. It also supplements each chapter with clear diagrams and provides appendices at the end of the book to assist with the pre-requisites. It includes a detailed presentation of the physics of electron beam-specimen interactions and each chapter first discusses the background physics before moving onto simulation methods and uses computer programs to simulate electron beam-specimen interactions (presented in the form of case studies). The book includes hot topics brought to light due to advances in instrumentation (particularly aberration-corrected and monochromated microscopes). This book benefits students undertaking higher education degrees, practicing electron microscopists who wish to learn more about their subject, and researchers who wish to obtain a deeper understanding of the subject matter for their own work.

ISBN: 978-1-118-45609-5 • Cloth • US$120.00 • Mar 2018 • 296pp

NMR SPECTROSCOPY / MRI / IMAGING



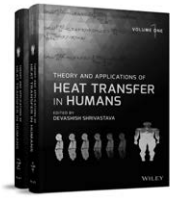
Differentiation of Chiral Compounds Using NMR Spectroscopy

2nd Edition

Thomas J. Wenzel

Differentiation of Chiral Compounds Using NMR Spectroscopy offers a thoroughly revised second edition to the essential volume that puts the focus on the chiral systems that are commercially available and have been widely vetted for use in NMR spectroscopy. The text covers a broad range of reagents that make it possible to determine the enantiomeric purity and assign the absolute configuration of many classes of compounds. Comprehensive in scope, the text describes the chiral NMR differentiating agents as derivatizing agents, solvating agents, metal-based reagents and liquid crystals and gels, and explains the range and types of compounds for which they can be used for analysis. New to this edition are the most recent findings in the field as well as the development of advanced NMR measurement techniques that allow for the simplification of complex spectra resulting in more readily identified enantiodifferentiation.

ISBN: 978-1-119-32391-4 • Cloth • US$TBA • Jul 2018 • 592pp



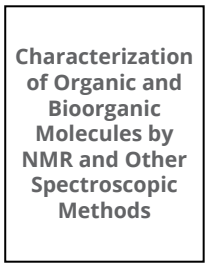
Theory and Applications of Heat Transfer in Humans

Devashish Shrivastava

Theory and Applications of Heat Transfer in Humans 2 Volume Set offers a reference to the field of heating and cooling of tissue, and associated damage. The author — a noted expert in the field — presents, in this book, the fundamental physics and physiology related to the field, along with some of the recent applications, all in one place, in such a way as to enable and enrich both beginner and advanced readers. This important text is the vital resource that offers a reference book in the field of heating and cooling of tissue, and associated damage and provides a comprehensive theoretical and experimental basis with biomedical applications. It shows how to develop and implement both, simple and complex mathematical models to predict tissue temperatures and includes simple examples and results so readers can use those results directly or adapt them for their applications.

ISBN: 978-1-119-12730-7 • Cloth • US$245.00 • Jun 2018 • 880pp

ORGANIC CHEMISTRY

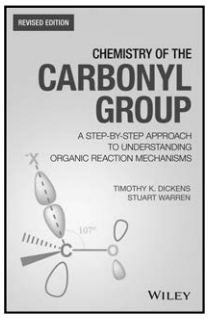


Characterization of Organic and Bioorganic Molecules by NMR and Other Spectroscopic Methods

Daniel S. Sem

This book teaches the theory and process of structure elucidation using spectroscopic techniques for characterizing molecules including: (a) simple organic molecules, (b) more complicated molecules — "natural products", and (c) proteins. The book explains primary techniques, including infrared spectroscopy, mass spectrometry (MS), UV-visible spectroscopy and NMR spectroscopy. It Includes hands-on computational exercises, processing and simulating NMR spectra using Spinworks software. Coverage Includes protein identification with mass spectrometry and protein structure determination with NMR — using actual examples with data provided. A complementary workbook combines concepts covered in the book chapters and applies them to real-world structure elucidation problems of drug building blocks, natural products, and biomolecules.

ISBN: 978-1-118-01715-9 • Cloth • US$TBA • Jun 2018



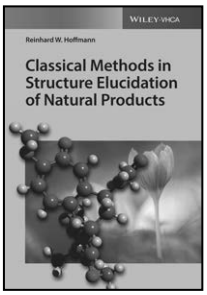
Chemistry of the Carbonyl Group

A Step-by-Step Approach to Understanding Organic Reaction Mechanisms, Revised Edition

Timothy K. Dickens & Stuart Warren

Chemistry of the Carbonyl Group: A Programmed Approach to Organic Reaction Mechanisms, Revised Edition provides a solid grounding in the fundamental reactions of carbonyls. Presented in full colour to enhance the understanding of mechanisms within chemistry, the chapters of this step-by-step guide cover: nucleophilic addition to the carbonyl group; nucleophilic substitution; nucleophilic substitution at the carbonyl group with complete removal of carbonyl oxygen; carbanions and enolisation; and building organic molecules from carbonyl compounds. A must-have book for undergraduate chemists to emphasise understanding in carbonyl group chemistry, it goes through all the stages of basic carbonyl chemistry, detailing even the simplest mechanisms. The book includes a step-by-step learning guide to synthetic chemistry for the first year of a chemistry degree, with all the information needed for independent learning. The book is packed with all the information on synthetic chemistry that every first-year student will need in order to learn independently.

ISBN: 978-1-119-45956-9 • Paper • US$50.00 • Jun 2018 • 168pp



Classical Methods in Structure Elucidation of Natural Products

Reinhard W. Hoffmann

In light of the limited experimental methods available and the lack of established reference compounds, this represented an unparalleled intellectual challenge. This book makes use of twenty-five representative examples to retrace the great accomplishments made by the generation of chemists during this era. At the same time, it questions the reliability of the experimental results when judged by today's criteria, particularly since the structures for numerous natural products are stated as established facts in standard text books. With each chapter devoted to one organic compound, the author combines results from historic experiments to trace a line of evidence that may follow the path put forward by the original contributors. However, in some cases the experimental facts have been combined to form another, hopefully shorter, line of evidence. As a result, readers are able to determine for themselves the 'facts behind the established structure assignments' of a number of important natural products.

ISBN: 978-3-90639-073-4 • Cloth • US$165.00 • Jan 2018 • 280pp

Organic Reaction Mechanisms 2014

A. C. Knipe

Organic Reaction Mechanisms 2014, the 50th annual volume in this highly successful and unique series, surveys research on organic reaction mechanisms described in the available literature dated 2014. Classes of organic reaction mechanisms comprehensively reviewed includes: Reaction of Aldehydes and Ketones and their Derivatives; Reactions of Carboxylic, Phosphoric, and Sulfonic Acids and their Derivatives; Oxidation and Reduction; Carbenes and Nitrenes; Nucleophilic Aromatic Substitution; Electrophilic Aromatic Substitution; Carbocations; Nucleophilic Aliphatic Substitution; Carbanions and Electrophilic Aliphatic Substitution; Elimination Reactions; Polar Addition Reactions; Cycloaddition Reactions; Molecular Rearrangements. An experienced team of authors compile these reviews every year, so that the reader can rely on a continuing quality of selection and presentation. This volume Includes a 5-year cumulative index.

ISBN: 978-1-118-94179-9 • Cloth • US$585.00 • Jan 2018 • 1024pp

Organic Reactions

Volume 95

Scott E. Denmark

The 95th volume in this series for organic chemists in industry presents critical discussions of widely used organic reactions or particular phases of a reaction. The material is treated from a preparative viewpoint, with emphasis on limitations, interfering influences, effects of structure and the selection of experimental techniques. The work Includes tables that contain all possible examples of the reaction under consideration. Detailed procedures illustrate the significant modifications of each method.

ISBN: 978-1-119-30892-8 • Cloth • US$294.95 • Mar 2018 • 656pp

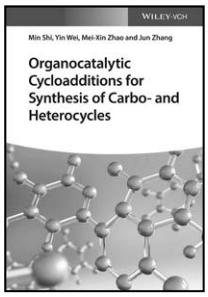
Organic Reactions

Volume 96 (*Previously Announced*)

Scott E. Denmark

The 96th volume in this series for organic chemists in industry presents critical discussions of widely used organic reactions or particular phases of a reaction. The material is treated from a preparative viewpoint, with emphasis on limitations, interfering influences, effects of structure and the selection of experimental techniques. The work Includes tables that contain all possible examples of the reaction under consideration. Detailed procedures illustrate the significant modifications of each method.

ISBN: 978-1-119-37453-4 • Cloth • US$TBA • Jun 2018 • 750pp



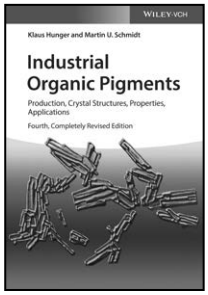
Organocatalytic Cycloadditions for Synthesis of Carbo- and Heterocycles

Min Shi, Yin Wei, Mei-Xin Zhao & Jun Zhang

Organocatalytic Cycloadditions for Synthesis of Carbo- and Heterocycles offers a clear explanation to the development of and the information on the latest research pertaining to zwitterion-oriented cycloadditions promoted by organoamines, organophosphines, N-heterocyclic carbenes. The authors — noted experts in the field — include a comprehensive review to the investigations of the reaction mechanisms and explore the synthesis of different products from the same starting materials. Filled with illustrative examples and designed to be accessible, the text shows how to control the chemo-, regio- and stereoselectivity and explains the further design of novel cycloaddition reactions catalyzed by organoamines and organophosphines based on zwitterion-oriented synthetic strategy. This important text explains why the formation of carbo- and heterocycles is a key transformation in organic synthesis and offers a clear description to the development of zwitterion-oriented cycloadditions promoted by organoamines, organophosphines, N-heterocyclic carbenes, and explores the latest research.

ISBN: 978-3-527-34268-6 • Cloth • US$190.00 • May 2018 • 368pp

PAINTS, PIGMENTS, COATINGS, DYES



Industrial Organic Pigments

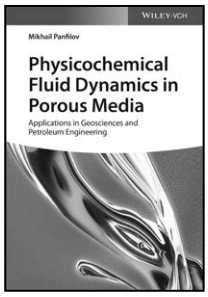
Production, Crystal Structures, Properties, Applications, 4th Completely Revised Edition

Klaus Hunger & Martin U. Schmidt

Revised and updated, this highly acclaimed work, now in its fourth edition, remains the most comprehensive source of information available on organic pigments. It provides up-to-date information on synthesis, reaction mechanism, physical and chemical properties, test methods, and applications of all the industrially produced organic pigments available on the world market. This fourth edition now includes new chapters on the latest applications and three-dimensional X-ray analysis, while the chapters on legislation, ecology, and toxicology have been rewritten to reflect recent developments. It sets the international standard for information on the synthesis, reaction mechanisms, properties, relevant test methods, and applications of organic pigments and contains all industrially produced pigments of the world market, even those which can no longer be found in producers' catalogs are described. The reader is given useful hints as to which pigment is best for a given application with its clearly structured and concise text with up-to-date references to the pertinent literature.

ISBN: 978-3-527-32608-2 • Cloth • US$380.00 • Jun 2018 • 758pp

PETROCHEMISTRY / FUEL



Physicochemical Fluid Dynamics in Porous Media

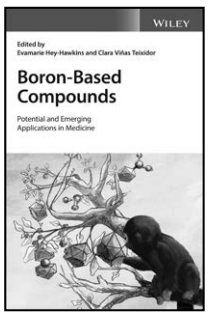
Applications in Petroleum Geosciences and Petroleum Engineering

Mikhail Panfilov

A timely overview of all flow and transport processes in which chemical or physico-chemical phenomena are essential, bringing together previously scattered theoretical and experimental results necessary for the understanding of hydrodynamics in porous media. The text begins by explaining the thermodynamics of phase equilibria for multicomponent fluids, physico-chemical models of single-phase and immiscible two-phase flow, based on the macroscopic theory of oil displacement by water. Subsequent chapters are devoted to the theory of two-phase flow with partial miscibility, with partially miscible flows with phase transitions described later on by means of the negative saturation approach. The final chapters cover important industrial applications such as in-situ leaching of uranium and flow with bio-chemical reactions in terms of the underground storage of hydrogen.

ISBN: 978-3-527-34235-8 • Cloth • US$120.00 • Aug 2018 • 414pp

PHARMACEUTICAL & MEDICINAL CHEMISTRY



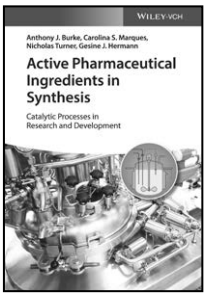
Boron-Based Compounds

Potential and Emerging Applications in Medicine

Evamarie Hey-Hawkins & Clara Viñas Teixidor

Boron-Based Compounds offers a summary of the present status and promotes the further development of new boron-containing drugs and advanced materials, mostly boron clusters, for molecular medical diagnostics. The knowledge accumulated during the past decades on the chemistry and biology of bioorganic and organometallic boron compounds laid the foundation for the emergence of a new area of study and application of boron compounds as lipophilic pharmacophores and modulators of biologically active molecules. This important text brings together in one comprehensive volume contributions from renowned experts in the field of medicinal chemistry of boron compounds. The authors cover a range of the most relevant topics including boron compounds as modulators of the bioactivity of biomolecules, boron clusters as pharmacophores or for drug delivery, boron compounds for boron neutron capture therapy (BNCT) and for diagnostics, as well as in silico molecular modeling of boron- and carborane-containing compounds in drug design.

ISBN: 978-1-119-27555-8 • Cloth • US$180.00 • May 2018 • 496pp



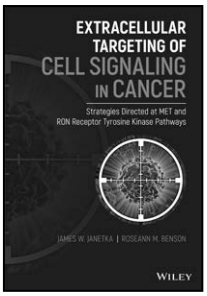
Active Pharmaceutical Ingredients in Synthesis

Catalytic Processes in Research and Development

Anthony J. Burke, Carolina S. Marques, Nicholas Turner & Gesine J. Hermann

This timely reference presents the most effective catalytic reactions in use today, with a special focus on process intensification, sustainability, waste reduction and innovative methods. The book demonstrates the importance of efficient catalytic transformations for producing pharmaceutically active molecules, discussing every key reaction and the most efficient catalytic processes, including their major advantages compared to previous methods, with a strong emphasis throughout on asymmetric catalytic reactions. Of great interest to synthetic chemists working in the pharmaceutical industry, and for fine-chemical companies and other R&D researchers, as well as for chemists in academia.

ISBN: 978-3-527-34241-9 • Cloth • US$179.95 • Aug 2018 • 380pp



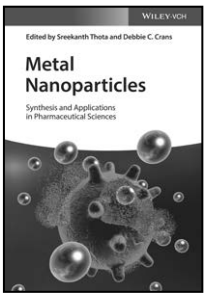
Extracellular Targeting of Cell Signaling in Cancer

Strategies Directed at MET and RON Receptor Tyrosine Kinase Pathways

James W. Janetka & Roseann M. Benson

Extracellular Targeting of Cell Signaling in Cancer highlights innovative therapeutic strategies to treat cancer metastasis and prevent tumor progression. Currently, there are no drugs available to treat or prevent metastatic cancer other than non-selective, toxic chemotherapy. With contributions from an international panel of experts in the field, the book integrates diverse aspects of biochemistry, molecular biology, protein engineering, proteomics, cell biology, pharmacology, biophysics, structural biology, medicinal chemistry and drug development.

ISBN: 978-1-119-30018-2 • Cloth • US$185.00 • Jun 2018 • 326pp



Metal Nanoparticles

Synthesis and Applications in Pharmaceutical Sciences

Sreekanth Thota & Debbie C. Crans

A much-needed summary of the importance, synthesis and applications of metal nanoparticles in pharmaceutical sciences, with a focus on gold, silver, copper and platinum nanoparticles. After a brief introduction to the history of metal complexes in medicine and fundamentals of nanotechnology, the chapters continue to describe different methods for preparation of metal nanoparticles. This section is followed by representative presentations of current biomedical applications, such as drug delivery, chemotherapy, and diagnostic imaging. Aimed at stimulating further research in this field, the book serves as an reference guide for academics and professionals working in the field of chemistry and nanotechnology.

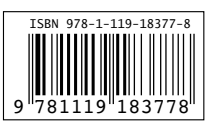
ISBN: 978-3-527-33979-2 • Cloth • US$190.00 • Jan 2018 • 312pp

The Greening of Pharmaceutical Engineering

Applications for Physical Disorder Treatments, Volume 4

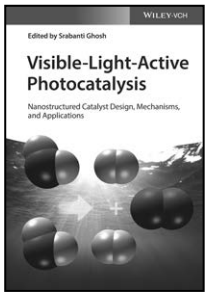
M. R. Islam

This fourth volume in a four-volume set rounds out the set by offering new theories and applications for the diagnosis and treatment of physical disorders. Having laid the groundwork in the first three volumes, the authors now embark on significant, real-life scenarios that apply their philosophy to physical disorder treatments, after covering mental disorders in volume three. The goal of the project is to take the industry toward sustainability, not just in terms of the chemical engineering used to create medicines, but also environmentally, economically, and personally. Their unique approach uses a more holistic and philosophically cohesive method for treating mental disorders, making the industry "greener" and the patient healthier. This ground-breaking set of books is a unique and state-of-the-art study that only appears here, within these pages. A fascinating study for the engineer, scientist, and pharmacist working in the pharmaceutical industry and interested in sustainability, it is also a valuable textbook for students and faculty studying these subjects.



ISBN: 978-1-119-18377-8 • Cloth • US$TBA • Jul 2018 • 500pp

PHOTOCHEMISTRY



ISBN 978-3-527-34293-8

Visible-Light-Active Photocatalysis

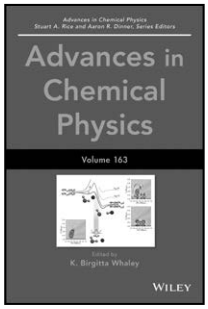
Nanostructured Catalyst Design, Mechanisms and Applications (*Previously Announced*)

Srabanti Ghosh

A comprehensive and timely overview of this important and hot topic, with special emphasis placed on environmental applications and the potential for solar light harvesting. Following introductory chapters on environmental photocatalysis, water splitting, and applications in synthetic chemistry, further chapters focus on the synthesis and design of photocatalysts, solar energy conversion, and such environmental aspects as the removal of water pollutants, photocatalytic conversion of CO_2. Besides metal oxide-based photocatalysts, the authors cover other relevant material classes including carbon-based nanomaterials and novel hybrid materials. Chapters on mechanistic aspects, computational modeling of photocatalysis and Challenges and perspectives of solar reactor design for industrial applications complete this unique survey of the subject. With its in-depth discussions ranging from a comprehensive understanding to the engineering of materials and applied devices, this is an invaluable resource for a range of disciplines.

ISBN: 978-3-527-34293-8 • Cloth • US$255.00 • May 2018 • 632pp

PHYSICAL CHEMISTRY



ISBN 978-1-119-37499-2

Advances in Chemical Physics

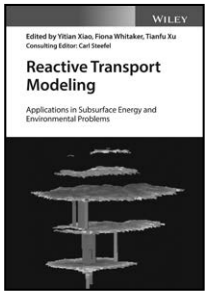
Volume 163

K. Birgitta Whaley

The *Advances in Chemical Physics* series provides the chemical physics field with a forum for critical, authoritative evaluations of advances in every area of the discipline. This is the only series of volumes available that presents the cutting edge of research in chemical physics and includes 10 contributions from leading experts in this field of research. The book contains a representative cross-section of research in chemical reaction dynamics and state of the art quantum description of intramolecular and intermolecular dynamics and is structured with an editorial framework that makes the book an excellent supplement to an advanced graduate class in physical chemistry, chemical physics, or molecular physics.

ISBN: 978-1-119-37499-2 • Cloth • US$294.95 • Apr 2018 • 352pp

SOIL & GEOCHEMISTRY



ISBN 978-1-119-06000-0

Reactive Transport Modeling

Applications in Subsurface Energy and Environmental Problems

Yitian Xiao, Fiona Whitaker, Tianfu Xu & Carl Steefel

This book lays out the basic principles and approaches of Reactive Transport Modeling (RTM) for surface and subsurface environments, presenting specific workflows and applications. The techniques discussed are being increasingly commonly used in a wide range of research fields, and the information provided covers fundamental theory, practical issues in running reactive transport models, and how to apply techniques in specific areas. The need for RTM in engineered facilities, such as nuclear waste repositories or CO_2 storage sites, is ever increasing, because the prediction of the future evolution of these systems has become a legal obligation. With increasing recognition of the power of these approaches, and their widening adoption, comes responsibility to ensure appropriate application of available tools. This book aims to provide the requisite understanding of key aspects of RTM, and in doing so help identify and thus avoid potential pitfalls.

ISBN: 978-1-119-06000-0 • Cloth • US$210.00 • May 2018 • 560pp

SUSTAINABLE CHEMISTRY & GREEN CHEMISTRY

Beyond Oil and Gas
The Methanol Economy, 3rd Edition

George A. Olah, Alain Goeppert & G. K. Surya Prakash

Completely revised and updated, the third edition of this bestseller discusses the concept and ongoing development of using methanol as a transportation fuel, energy storage medium, and as a raw material to replace oil. The contents have been expanded by 35% with new chapters on energy storage, methanol from biomass and waste products, as well as on carbon dioxide recycling. Written by the late Nobel laureate George Olah and his team, this is an inspiring read for anyone concerned with the major challenge posed by tomorrow's energy and environmental problems.

ISBN: 978-3-527-33803-0 • Paper • US$55.00 • Aug 2018 • 472pp

Green Chemical Engineering
Volume 12

Paul T. Anastas & Alexei Lapkin

There has been dramatic growth in the community of researchers and industrialists working in the area of Green Chemistry. There has been an increasing recognition by a wide-range of scientists and engineers in the chemical enterprise that the framework of Green Chemistry is relevant and enabling to their work. There has been a significant body of work that has accumulated over the past decade that details the breakthroughs, innovation and creativity within Green Chemistry and Engineering. While there have been edited volumes on Green Chemistry that collect a limited number of papers often on a particular topic area, there is not currently a series that seeks to provide a more comprehensive overview of the current state of the science. The lack of this type of series is a notable niche for which the continually growing Green Chemistry and engineering community would value and welcome.

ISBN: 978-3-527-32643-3 • Cloth • US$255.00 • Aug 2018 • 396pp

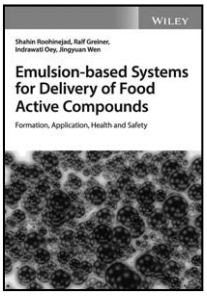
TOXICOLOGY

Stem Cells in Birth Defects Research and Developmental Toxicology
Theodore P. Rasmussen

This book contains material contributed by forward-looking scientists who work at the interface of stem cell research and applied science with the aim to improve human fetal safety and the understanding of human developmental and degenerative disorders. It provides important platforms and contemporary accounts of the state of stem cell research in the fields of toxicology and teratology and considers both in vitro uses of stem cells as platforms for teratology and also stem cellopathies, which are in vivo developmental and degenerative disorders. The book helps the pharmaceutical industry and safety and environmental authorities validate the status quo of in vitro toxicity test systems based on human pluripotent stem cells and their derivatives.

ISBN: 978-1-119-28321-8 • Cloth • US$184.95 • Apr 2018 • 368pp

FOOD ENGINEERING



Emulsion-based Systems for Delivery of Food Active Compounds
Formation, Application, Health and Safety

Shahin Roohinejad, Ralf Greiner, Indrawati Oey & Jingyuan Wen

Emulsion-based Systems for Delivery of Food Active Compounds is a comprehensive recourse that reviews the principles of emulsion-based systems formation, examines their characterization and explores their effective application as carriers for delivery of food active ingredients. The text also Includes information on emulsion-based systems in regards to digestibility and health and safety challenges for use in food systems. Each chapter reviews specific emulsion-based systems (Pickering, multiple, multilayered, solid lipid nanoparticles, nanostructured lipid carriers and more) and explains their application for delivery of food active compounds used in food systems. In addition, the authors — noted experts in the field — review the biological fate, bioavailability and the health and safety challenges of using emulsion-based systems as carriers for delivery of food active compounds in food systems.

ISBN: 978-1-119-24714-2 • Cloth • US$194.95 • Jun 2018 • 352pp

FOOD PROCESSING, PRODUCTION & MANUFACTURE

Food and Drink - Good Manufacturing Practice

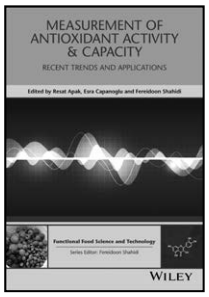
A Guide to its Responsible Management (GMP7), 7th Edition

Louise Manning

This all-new edition features a wealth of new information reflecting changes in the industry and advances in science that have occurred since the publication of the last edition back in 2013. They include topics such as: Food Safety Culture, Food Crime and Food Integrity Management Systems, Food Crime Risk Assessment including vulnerability risk assessment and Threat Analysis Critical Control Point (TACCP), Security and Countermeasures, Food Toxins, Allergens and Risk Assessment, Provenance and authenticity, Electronic and digital traceability technologies, Worker Welfare Standards; Smart Packaging, Food Donation Controls and Animal Food Supply, Safety Culture; Provenance and integrity testing and Sustainability Issues. In addition to the new topics mentioned above, the book offers comprehensive coverage of information in chapters on Quality Management System; Hazard Analysis Critical Control Point (HACCP); Premises and Equipment; Cleaning and Sanitation; Product Control, Testing and Inspection; Heat Preserved Foods; Frozen Foods; Foods for Catering and Vending Operations; and much more.

ISBN: 978-1-119-38844-9 • Paper • US$145.00 • Aug 2018 • 300pp

FUNCTIONAL FOODS & NUTRACEUTICALS



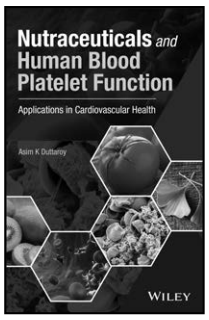
Measurement of Antioxidant Activity and Capacity

Recent Trends and Applications

Resat Apak, Esra Capanoglu & Fereidoon Shahidi

Measurement of Antioxidant Activity and Capacity offers a much-needed resource for assessing the antioxidant potential of food and Includes proven approaches for creating healthy food products. With contributions from world-class experts in the field, the text presents the general mechanisms underlying the various assessments, the types of molecules detected, and the key advantages and disadvantages of each method. Both thermodynamic (i.e. efficiency of scavenging reactive species) and kinetic (i.e. rates of hydrogen atom or electron transfer reactions) aspects of available methods are discussed in detail. A thorough description of all available methods provides a basis and rationale for developing standardized antioxidant capacity/activity methods for food and nutraceutical sciences and industries. This text also contains data on new antioxidant measurement techniques including nanotechnological methods in spectroscopy and electrochemistry, as well as on innovative assays combining several principles. Therefore, the comparison of conventional methods versus novel approaches is made possible.

ISBN: 978-1-119-13535-7 • Cloth • US$190.00 • Jan 2018 • 352pp



Nutraceuticals and Human Blood Platelet Function

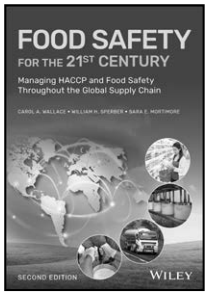
Applications in Cardiovascular Health

Asim K. Duttaroy

Nutraceuticals and Human Blood Platelet Function offers a summary of the most current evidence on the effects of anti-platelet factors isolated mainly from food and natural sources, their structure function relationship, bioavailability, mechanisms of actions, and also information on human trials data. The author — a noted expert in the field — explores platelet function and their roles in development of CVD, functional foods and bioactive compounds in CVD risk factors. The author highlights platelets, their mechanisms of actions, data from epidemiological studies, structure-function relationship clinical trial data, ex vivo and in vitro data. This important resource will focus primarily on human studies and emphasize functional and physiological implications of the nutritional impact on platelet function and CVD that could be an important approach to highlight the concept of preventive CVD nutrition.

ISBN: 978-1-119-37601-9 • Cloth • US$160.00 • Jun 2018 • 256pp

MICROBIOLOGY, FOOD SAFETY & SECURITY



Food Safety for the 21st Century

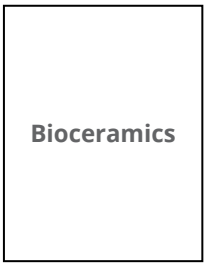
Managing HACCP and Food Safety Throughout the Global Supply Chain, 2nd Edition

Carol A. Wallace, William H. Sperber & Sara E. Mortimore

Revised to reflect the most recent developments in food safety, the second edition of *Food Safety for the 21st Century* offers practitioners an authoritative text that contains the essentials of food safety management in the global supply chain. The authors — noted experts in the field — reveal how to design, implement and maintain a stellar food safety programme. The book contains industry best-practices that can help businesses to improve their systems and accelerate the application of world-class food safety systems. The authors outline the key food safety considerations for individuals, businesses and organisations involved in today's complex global food supply chains. The text contains the information needed to recognise food safety hazards, design safe products and processes and identify and manage effectively the necessary control mechanisms within the food business. The authors also include a detailed discussion of current issues and key challenges in the global food supply chain.

ISBN: 978-1-119-05359-0 • Cloth • US$160.00 • Jul 2018 • 376pp

CERAMICS



Bioceramics
Principles and Applications

Ziyad Haidar & Murugan Ramalingam

The use of ceramics in biological environments and biomedical applications is of increasing importance, as is the understanding of how biology works with minerals to develop strong materials suitable for the clinic. Bioceramics have been revolutionizing the biomedical field in the form of bone grafts, fillers, implants and metal implant surface coatings for use in humans. This book presents a review of recent research and developments in the pre-clinical and clinical use of bioceramics, its derivatives, and other bioceramic-based biomaterials and coatings in the fields of medicine and dentistry. An in-depth look into material processing, characterization, optimization, performance and cell/tissue interactions is presented with an overview of the potential of bioceramics in therapeutic agent and stem cell delivery, tissue engineering extending into the future perspectives of bioceramics, in an attempt to address the frequently asked questions relating to the development, characterization, modulation, optimization, and safe application of ceramic materials and ceramic-coated devices.

ISBN: 978-1-119-16029-8 • Cloth • US$TBA • Jun 2018 • 500pp

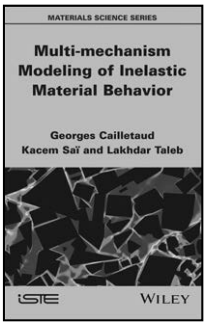
Proceedings of the 12th Pacific Rim Conference on Ceramic and Glass Technology
Ceramic Transactions, Volume 264

Dileep Singh, Manabu Fukushima, Young-Wook Kim, Kiyoshi Shimamura, Nobuhito Imanaka, Tatsuki Ohji, Jake Amoroso & Michael Lanagan

This proceeding contains a collection of 32 papers presented at the 12th Pacific Rim Conference on Ceramic and Glass Technology (PacRim12), May 21-26, 2017 in Waikoloa, Hawaii. PacRim is a bi-annual conference held in collaboration with the ceramic societies of the Pacific Rim countries - The American Ceramic Society, The Chinese Ceramic Society, The Korean Ceramic Society, and the Australian Ceramic Society. Topics included in this collection include multiscale modeling and simulation, processing and manufacturing, nanotechnology, multifunctional materials, ceramics for energy and the environment, biomedical materials, and more.

ISBN: 978-1-119-49421-8 • Cloth • US$249.95 • Mar 2018 • 354pp

CORROSION

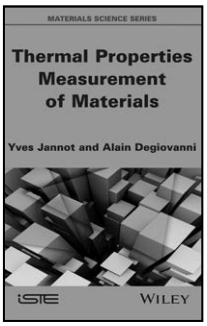


Multi-mechanism Modeling of Inelastic Material Behavior
Georges Cailletaud, Kacem Saï & Lakhdar Taleb

This book focuses on a particular class of models (namely Multi-Mechanism models) and their applications to extensive experimental data base related to different kind of materials. These models (i) are able to describe the main mechanical effects in plasticity, creep, creep/plasticity interaction, ratcheting extra-hardening under non-proportional loading (ii) provide local information (such us local stress/strain fields, damage, ….). A particular attention is paid to the identification process of material parameters. Moreover, finite element implementation of the Multi-Mechanism models is detailed.

ISBN: 978-1-84821-580-1 • Cloth • US$119.95 • Feb 2018 • 284pp

GENERAL & INTRODUCTORY MATERIALS SCIENCE

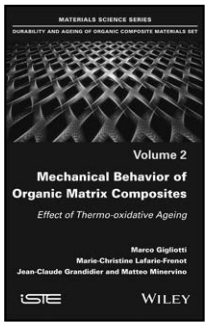


Thermal Properties Measurement of Materials
Yves Jannot & Alain Degiovanni

This book presents the main methods used for thermal properties measurement. It aims to be accessible to all those, specialists in heat transfer or not, who need to measure the thermal properties of a material. The objective is to allow them to choose the measurement method the best adapted to the material to be characterized, and to pass on them all the theoretical and practical information allowing implementation with the maximum of precision.

ISBN: 978-1-78630-255-7 • Cloth • US$154.95 • Feb 2018 • 342pp

MATERIALS CHARACTERIZATION



Mechanical Behavior of Organic Matrix Composites
Effect of Thermo-oxidative Ageing, Volume 2

Marco Gigliotti, Marie-Christine Lafarie-Frenot, Jean-Claude Grandidier & Matteo Minervino

The book focuses on the effect of ageing (thermo-oxidation, humid ageing) on the mechanical properties of organic matrix composite materials, covering Bibliographic issues and a detailed state-of-the-art; phenomenological and experimental issues; modelling issues and models parameter identification; illustration and interpretation of experimental tests and proposal for novel test design in the light of the model predictions.

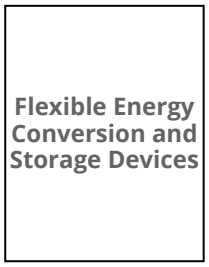
ISBN: 978-1-78630-018-8 • Cloth • US$114.95 • Feb 2018 • 174pp

MATERIALS FOR ENERGY SYSTEMS

Advanced Photovoltaic Materials
Ashutosh Tiwari

This book covers the recent advances in photovoltaics materials and their innovative applications. Many materials science problems are encountered in understanding existing solar cells and the development of more efficient, less costly, and more stable cells. This important and timely book provides a historical overview, but concentrates primarily on the exciting developments in the last decade. It Includes organic and perovskite solar cells, photovoltaics in ferroelectric materials, organic-inorganic hybrid perovskite, materials with improved photovoltaic efficiencies as well as the full range of semiconductor materials for solar-to-electricity conversion, from crystalline silicon and amorphous silicon to cadmium telluride, copper indium gallium sulfide selenides, dye sensitized solar cells, organic solar cells, and environmentally-friendly copper zinc tin sulfide selenides.

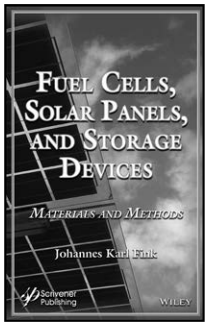
ISBN: 978-1-119-40754-6 • Cloth • US$TBA • Aug 2018 • 400pp



Flexible Energy Conversion and Storage Devices
Chunyi Zhi

Reviewing recent progress in flexible energy conversion and storage devices, this highly relevant book introduces not only the basic principles and strategies to make a device flexible, but also the applicable materials and technologies. Adopting an application-oriented approach throughout, the text discusses perspectives for different devices, such as batteries, supercapacitors, solar cells and fuel cells, covering such technologies as polymers, carbon materials, nanotechnologies and textile technologies.

ISBN: 978-3-527-34253-2 • Cloth • US$179.95 • Aug 2018 • 520pp

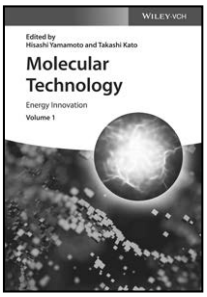


Fuel Cells, Solar Panels, and Storage Devices
Materials and Methods

Johannes Karl Fink

This book focuses on the materials used for fuel cells, solar panels, and storage devices, such as rechargeable batteries. Fuel cell devices, such as direct methanol fuel cells, direct ethanol fuel cells, direct urea fuel cells, as well as biological fuel cells and the electrolytes, membranes, and catalysts used there are detailed. Separate chapters are devoted to polymer electrode materials and membranes. The text focuses on the basic issues and also the literature of the past decade. Beyond education, this book may serve the needs of polymer specialists as well as other specialists, e.g., materials scientists, electrochemical engineers, etc., who have only a passing knowledge of these issues, but need to know more.

ISBN: 978-1-119-48010-5 • Cloth • US$194.95 • Dec 2017 • 312pp



Molecular Technology

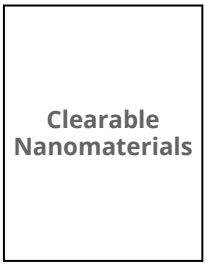
Energy Innovation, Volume 1

Hisashi Yamamoto & Takashi Kato

Edited by foremost leaders in chemical research together with a number of distinguished international authors, this first volume presents the most important and promising recent chemical developments regarding green processes and materials, neatly summarized in one book. Interdisciplinary and application-oriented, the ready reference focuses on methods and processes that realize practical “green” solutions, covering new developments in synthesis, polymer chemistry and catalysis. This book will be of high interest to synthetic chemists in academia and industry, but also for polymer and supramolecular chemists as well as material scientists.

ISBN: 978-3-527-34163-4 • Cloth • US$190.00 • Aug 2018 • 320pp

NANOMATERIALS

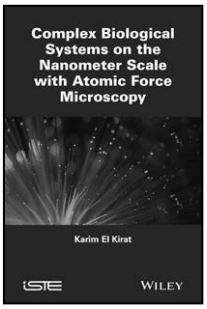


Clearable Nanomaterials

Valerio Voliani & Domenico Cassano

In the last two decades, several promising engineered nanomaterials that combine therapeutic features and imaging functionalities have been presented, but very few have arrived on the market. The purpose of this book is to collect and comprehensively discuss the advances in this current and exciting topic in order to promote and enhance its growth. In the first part, a general introduction about the main features of both organic and inorganic nanomaterials is provided. Then, the most promising and innovative applications for cancer treatment and diagnostic are introduced. In the second part, an analysis of the nanomaterials in the market for healthcare applications is presented. The issue of unwanted accumulation of metals in organisms after the designed action is then discussed. Finally, the most recent progresses in the design of nanomaterials that are able to escape from organisms after the selected action are comprehensively described, and the perspectives of this exciting field provided.

ISBN: 978-1-119-41827-6 • Cloth • US$TBA • Jun 2018 • 300pp

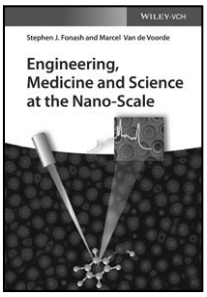


Complex Biological Systems on the Nanometer Scale with Atomic Force Microscopy

Karim El Kirat

Nanotechnology corresponds to the manipulation of objects that are as small as a few atoms or molecules. This technology has enabled us to produce nanomaterials, namely materials of nanometric size in at least one of their dimensions. This very small size confers new properties or particular behaviors that are very useful in new technological applications. This book describes the exploration of the properties of biological systems on the nanometer scale (especially with AFM), the toxicological issues associated with the development of nanotechnology and the need to develop socially responsible research in this emerging field.

ISBN: 978-1-84821-549-8 • Cloth • US$94.95 • Aug 2018 • 160pp

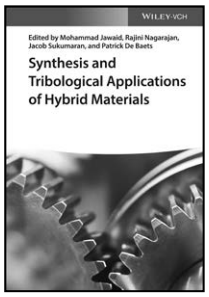


Engineering, Medicine and Science at the Nano-Scale

Stephen J. Fonash & Marcel Van de Voorde (*Previously Announced*)

The result of lectures given for a graduate and advanced undergraduate course at Penn State University, students at universities the world over will benefit from the authors' concise treatment. The textbook begins by addressing, in general terms, the phenomena and peculiarities that occur at the nanoscale. In the following four parts, readers are introduced in detail to nanoscale physics, chemistry, materials science, and biology, followed by two parts on synthesis and fabrication as well as characterization at the nanoscale. A variety of exemplary applications taken from a wide range of sectors are also presented and discussed. Concerns for safety, environmental impact, workforce development, economic wellbeing, and societal change issues arising from nanotechnology are woven throughout the book and additionally form the focus of the last two chapters. With special didactic elements such as learning objectives at the beginning of chapters, summaries at the end of chapters, and "Further Reading" sections, this is the definitive textbook on nanotechnology.

ISBN: 978-3-527-33872-6 • Paper • US$110.00 • May 2018 • 288pp

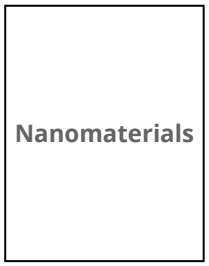


Synthesis and Tribological Applications of Hybrid Materials

Mohammad Jawaid, Rajini Nagarajan, Jacob Sukumaran & Patrick De Baets

Unique in its discussion of recent advances in the field, this book provides a comprehensive overview of the tribological properties of hybrid composites. The authors integrate theory, synthesis and characterization as well as properties along with applications in biotechnological and biomedical fields. The book concludes with a look at future technology developments. The result is a well-structured text that represents an essential reference for readers from materials science, mechanical engineering, biomaterials, chemistry, physics and nanotechnology.

ISBN: 978-3-527-34301-0 • Cloth • US$165.00 • Jul 2018 • 248pp



Nanomaterials

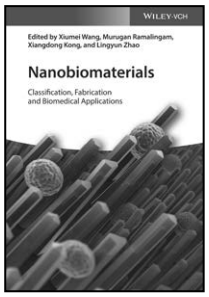
Biomedical and Environmental Applications

Suvardhan Kanchi & Shakeel Ahmed

This timely volume on nanomaterials and their biomedical and environmental applications Includes the fundamentals of nanoparticles, and state-of-the-art properties, characterization, and the synthesis methods as well as the applications. The main thrust of the book is to present review chapters that explore all these aspects of nanomaterials for scientists, engineers and students who are fairly new to the field and want to have a deeper understanding of all the recent R & D advances. The 12 chapters are written by subject matter experts and plot the influence of nanomaterials on the analytical systems (macro to micro & lab-on-a-chip) for biomedical and environmental applications.

ISBN: 978-1-119-37026-0 • Cloth • US$TBA • Jun 2018 • 500pp

NANOMEDICINE



Nanobiomaterials

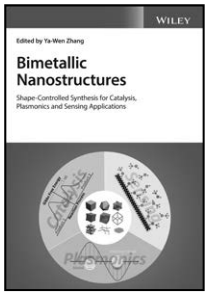
Classification, Fabrication and Biomedical Applications

Xiumei Wang, Murugan Ramalingam, Xiangdong Kong & Lingyun Zhao

Written by an international team of editors and contributors from renowned universities and institutes, this book addresses the latest research in the field of nanobiomaterials, covering nanotechnologies for their fabrication, developments in biomedical applications, and the challenges of biosafety in clinic uses. Clearly structured, the volume defines the scope and classification of the field, resulting in a broad overview from fundamental principles to current technological advances, and from materials synthesis to biomedical applications along with future trends.

ISBN: 978-3-527-34067-5 • Cloth • US$215.00 • Jan 2018 • 512pp

SENSOR MATERIALS



Bimetallic Nanostructures

Shape-Controlled Synthesis for Catalysis, Plasmonics and Sensing Applications

Ya-Wen Zhang

Bimetallic Nanostructures: Shape-Controlled Synthesis for Catalysis, Plasmonics and Sensing Applications is divided into three parts. Part 1 introduces basic chemical and physical knowledge of bimetallic structures, including fundamentals, computational models, and in situ characterization techniques. Part 2 summarizes recent developments in synthetic methods, characterization, and properties of bimetallic structures from the perspective of morphology effect, including zero-dimensional nanomaterials, one-dimensional nanomaterials, and two-dimensional nanomaterials. Part 3 discusses applications in electrocatalysis, heterogeneous catalysis, plasmonics and sensing. This is a comprehensive reference for an important multidisciplinary research field. It thoroughly summarizes the present state and latest developments in bimetallic structures and helps researchers find optimal synthetic methods and explore new phenomena in surface science and synthetic chemistry of bimetallic nanostructures. This is an excellent source or reference for researchers and advanced students. Academic researchers in nanoscience, nanocatalysis, and surface plasmonics, and those working in industry in areas involving nanotechnology, catalysis and optoelectronics, will find this book of interest.

ISBN: 978-1-119-21464-9 • Cloth • US$200.00 • Jul 2018 • 448pp

THIN FILMS, SURFACES & INTERFACES

Advanced Coatings Materials

Ashutosh Tiwari

This book covers the recent advances in coating materials and their novel applications at the cross-section of advanced materials both current and next-generation. *Advanced Coatings Materials* contains chapters covering the latest research on polymers, carbon resins, and high-temperature materials used for coatings, adhesives, and varnishes today. Concise chapters describe the development, chemical and physical properties, synthesis and polymerization, commercial uses, and other characteristics for each raw material and coating detailed. A comprehensive, yet practical source of reference, this book provides an excellent foundation for comparing the properties and performance of coatings and selecting the most suitable materials based on specific service needs and environmental factors.

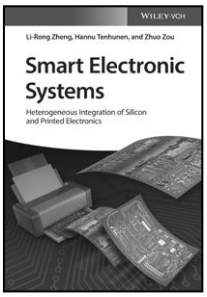
ISBN: 978-1-119-40756-0 • Cloth • US$TBA • Aug 2018 • 400pp

Advanced Tropological Insulator Materials

Ashutosh Tiwari

This book is the first pedagogical synthesis of the field of topological insulators and superconductors, one of the most exciting areas of research in condensed matter physics. Presenting the latest developments, while providing all the calculations necessary for a self-contained and complete description of the discipline, it is ideal for researchers and graduate students preparing to work in this area, and it will be an essential reference both within and outside the classroom. The book begins with simple concepts such as Berry phases, Dirac fermions, Hall conductance and its link to topology, and the Hofstadter problem of lattice electrons in a magnetic field. It moves on to explain topological phases of matter such as Chern insulators, two- and three-dimensional topological insulators, and methods and tools for topological material's investigations, topological insulators for advanced optoelectronic devices. *Advanced Topological Insulators Materials* provides researchers and graduate students with the physical understanding and mathematical tools needed to embark on research in this rapidly evolving field.

ISBN: 978-1-119-40729-4 • Cloth • US$TBA • Aug 2018 • 400pp



Smart Electronic Systems

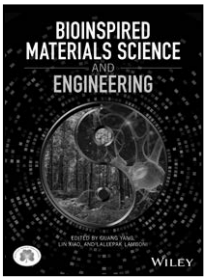
Heterogeneous Integration of Silicon and Printed Electronics

Li-Rong Zheng, Hannu Tenhunen & Zhuo Zou

Unique in focusing on both organic and inorganic materials from a system point of view, this text offers a complete overview of printed electronics integrated with classical silicon electronics. Following an introduction to the topic, the book discusses the materials and processes required for printed electronics, covering conducting, semiconducting and insulating materials, as well as various substrates, such as paper and plastics. Subsequent chapters describe the various building blocks for printed electronics, while the final part describes the resulting novel applications and technologies, including wearable electronics, RFID tags and flexible circuit boards. Suitable for a broad target group, both industrial and academic, ranging from mechanical engineers to ink developers, and from chemists to engineers.

ISBN: 978-3-527-33895-5 • Cloth • US$165.00 • Aug 2018 • 262pp

BIOPOLYMERS

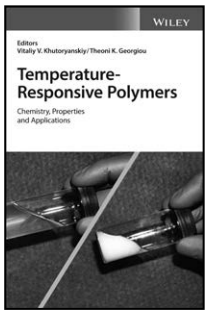


Bioinspired Materials Science and Engineering

Guang Yang, Lin Xiao & Lallepak Lamboni

Bioinspired Materials Science and Engineering offers a comprehensive view of the science and engineering of bioinspired materials and Includes a discussion of biofabrication approaches and applications of bioinspired materials as they are fed back to nature in the guise of biomaterials. The authors also review some biological compounds and shows how they can be useful in the engineering of bioinspired materials. With contributions from noted experts in the field, this comprehensive resource considers biofabrication, biomacromolecules, and biomaterials. The authors illustrate the bioinspiration process from materials design and conception to application of bioinspired materials. In addition, the text presents the multidisciplinary aspect of the concept, and contains a typical example of how knowledge is acquired from nature, and how in turn this information contributes to biological sciences, with an accent on biomedical applications.

ISBN: 978-1-119-39032-9 • Cloth • US$194.95 • Jul 2018 • 416pp



Temperature-Responsive Polymers

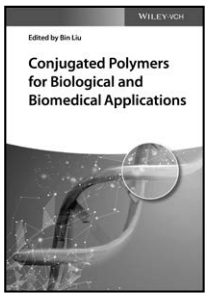
Chemistry, Properties and Applications

Vitaliy V. Khutoryanskiy & Theoni K. Georgiou

With contributions from a distinguished panel of experts, *Temperature-Responsive Polymers* puts the focus on hydrophilic polymers capable of changing their physicochemical properties in response to changes in environmental temperature. The contributors review the chemistry of these systems, and discuss a variety of synthetic approaches for preparation of temperature-responsive polymers, physicochemical methods of their characterisation and potential applications in biomedical areas. The text reviews a wide-variety of topics including: The characterisation of temperature-responsive polymers; Infrared and Raman spectroscopy; Applications of temperature-responsive polymers grafted onto solid core nanoparticles; and much more. The contributors also explore how temperature-responsive polymers can be used in the biomedical field for applications such as tissue engineering. This important resource offers an important synthesis of the current research on temperature-responsive polymers and covers the chemistry, the synthetic approaches for presentation and the physiochemical method of temperature-responsive polymers. It includes a review of the fundamental characteristics of temperature-responsive polymers and explores many of the potential applications in biomedical science, including drug delivery and gene therapy.

ISBN: 978-1-119-15778-6 • Cloth • US$185.00 • Jul 2018 • 402pp

POLYMER CHARACTERIZATION

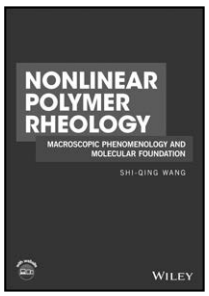


Conjugated Polymers for Biological and Biomedical Applications

Bin Liu

This first book to specifically focus on applications of conjugated polymers in the fields of biology and biomedicine covers materials science, physical principles, and nanotechnology. The editor and authors, all pioneers and experts with extensive research experience in the field, firstly introduce the synthesis and optical properties of various conjugated polymers, highlighting how to make organic soluble polymers compatible with the aqueous environment. This is followed by the application of these materials in optical sensing and imaging as well as the emerging applications in image-guided therapy and in the treatment of neurodegenerative diseases. The result is a consolidated overview for polymer chemists, materials scientists, biochemists, biotechnologists, and bioengineers.

ISBN: 978-3-527-34273-0 • Cloth • US$205.00 • Mar 2018 • 424pp



Nonlinear Polymer Rheology

Macroscopic Phenomenology and Molecular Foundation

Shi-Qing Wang

Integrating latest research results and characterization techniques, this book helps readers understand and apply fundamental principles in nonlinear polymer rheology. The author connects the basic theoretical framework with practical polymer processing, which aids practicing scientists and engineers to go beyond the existing knowledge and explore new applications. Although it is not written as a textbook, the content can be used in an upper undergraduate and first year graduate course on polymer rheology. It describes the emerging phenomena and associated conceptual understanding in the field of nonlinear polymer rheology and incorporates details on latest experimental discoveries and provides new methodology for research in polymer rheology. The book integrates latest research results and new characterization techniques like particle tracking velocimetric method; focuses on the issues concerning the conceptual and phenomenological foundations for polymer rheology; and has a companion website for readers to access with videos complementing the content within several chapters.

ISBN: 978-0-470-94698-5 • Cloth • US$174.95 • Jan 2018 • 464pp

Chemistry & Materials Science
May to August 2018 New Titles

TITLE	AUTHOR	ISBN	PAGE REFERENCE	BIND	PRICES (US$)	QUANTITY
Active Pharmaceutical Ingredients in Synthesis: Catalytic Processes in Research and Development	Burke, Marques, Turner, Hermann	978-3-527-34241-9	13	Cloth	179.95	
Advanced Battery Materials	Tiwari	978-1-119-40755-3	4	Cloth	TBA	
Advanced Coatings Materials	Tiwari	978-1-119-40756-0	21	Cloth	TBA	
Advanced Photovoltaic Materials	Tiwari	978-1-119-40754-6	18	Cloth	TBA	
Advanced Tropological Insulator Materials	Tiwari	978-1-119-40729-4	21	Cloth	TBA	
Advances in Chemical Physics, Volume 163	Whaley	978-1-119-37499-2	14	Cloth	294.95	
Beyond Oil and Gas: The Methanol Economy, 3rd Edition	Olah, Goeppert, Prakash	978-3-527-33803-0	15	Paper	55.00	
Bimetallic Nanostructures: Shape-Controlled Synthesis for Catalysis, Plasmonics and Sensing Applications	Zhang	978-1-119-21464-9	20	Cloth	200.00	
Bioanalytics: Analytical Methods and Concepts in Biochemistry and Molecular Biology	Lottspeich, Engels	978-3-527-33919-8	4	Cloth	135.00	
Bioceramics: Principles and Applications	Haidar, Ramalingam	978-1-119-16029-8	17	Cloth	TBA	
Bioinspired Materials Science and Engineering	Yang, Xiao, Lamboni	978-1-119-39032-9	21	Cloth	194.95	
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Clearable Nanomaterials	Voliani, Cassano	978-1-119-41827-6	19	Cloth	TBA	

TITLE	AUTHOR	ISBN	PAGE REFERENCE	BIND	PRICES (US$)	QUANTITY
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Conjugated Polymers for Biological and Biomedical Applications	Liu	978-3-527-34273-0	22	Cloth	205.00	
Dealing with Aging Process Facilities and Infrastructure	CCPS (Center for Chemical Process Safety)	978-1-119-43083-4	1	Cloth	124.95	
Differentiation of Chiral Compounds Using NMR Spectroscopy, 2nd Edition	Wenzel	978-1-119-32391-4	10	Cloth	TBA	
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Engineering, Medicine and Science at the Nano-Scale	Fonash, Van de Voorde	978-3-527-33872-6	19	Paper	110.00	
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Guidelines for Process Safety in Chemical Laboratories and Pilot Plants	CCPS (Center for Chemical Process Safety)	978-1-119-01013-5	2	Cloth	124.95	
Guidelines for Recognizing and Responding to Normalized Deviance	CCPS (Center for Chemical Process Safety)	978-1-119-50671-3	2	Cloth	TBA	
Metal-Air Batteries: Fundamentals and Applications	Zhang	978-3-527-34279-2	4	Cloth	167.95	
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TITLE	AUTHOR	ISBN	PAGE REFERENCE	BIND	PRICES (US$)	QUANTITY
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Measurement of Antioxidant Activity and Capacity: Recent Trends and Applications	Apak,Capanoglu, Shahidi	978-1-119-13535-7	16	Cloth	190.00	
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Microneedles for Drug and Vaccine Delivery and Patient Monitoring	Donnelly, Singh, Larrañeta, McCrudden	978-1-119-30514-9	7	Cloth	170.00	
Molecular Technology: Energy Innovation, Volume 1	Yamamoto, Kato	978-3-527-34163-4	19	Cloth	190.00	
Molecular Technology: Life Innovation, Volume 2	Yamamoto, Kato	978-3-527-34162-7	5	Cloth	179.95	
Multi-mechanism Modeling of Inelastic Material Behavior	Cailletaud, Saï, Taleb	978-1-84821-580-1	17	Cloth	119.95	
Nanobiomaterials: Classification, Fabrication and Biomedical Applications	Wang, Ramalingam, Kong, Zhao	978-3-527-34067-5	20	Cloth	215.00	
Nanomaterials: Biomedical and Environmental Applications	Kanchi, Ahmed	978-1-119-37026-0	20	Cloth	TBA	
Noble Gas Chemistry: Structure, Bonding, and Gas-Phase Chemistry	Grandinetti	978-3-527-34180-1	9	Cloth	190.00	
Nonlinear Polymer Rheology: Macroscopic Phenomenology and Molecular Foundation	Wang	978-0-470-94698-5	22	Cloth	174.95	
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Oligonucleotide-Based Drugs and Therapeutics: Preclinical and Clinical Considerations for Development	Ferrari, Seguin	978-1-118-53733-6	6	Cloth	224.95	
Organic Reaction Mechanisms 2014	Knipe	978-1-118-94179-9	11	Cloth	585.00	
Organic Reactions, Volume 95	Denmark	978-1-119-30892-8	11	Cloth	294.95	
Organic Reactions, Volume 96	Denmark	978-1-119-37453-4	11	Cloth	TBA	
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Polymer Coatings: A Guide to Synthesis, Characterization and Selected Applications	de With	978-3-527-34210-5	8	Cloth	215.00	
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TITLE	AUTHOR	ISBN	PAGE REFERENCE	BIND	PRICES (US$)	QUANTITY
Principles and Applications of Fermentation Technology	Kuila, Sharma	978-1-119-46026-8	5	Cloth	TBA	
Proceedings of the 12th Pacific Rim Conference on Ceramic and Glass Technology: Ceramic Transactions, Volume 264	Singh, Fukushima, Kim, Shimamura, Imanaka, Ohji, Amoroso, Lanagan	978-1-119-49421-8	17	Cloth	249.95	
Protecting-Group-Free Organic Synthesis: Achieving Economy and Efficiency	Fernandes	978-1-119-29520-4	9	Cloth	150.00	
Quantitative Biological and Clinical Mass Spectrometry: An Introduction	Mallet	978-1-119-28120-7	9	Cloth	80.00	
Reactive Transport Modeling: Applications in Subsurface Energy and Environmental Problems	Xiao, Whitaker, Xu, Steefel	978-1-119-06000-0	14	Cloth	210.00	
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Risk Assessment: Procedures and Protocols	McBean	978-1-119-28906-7	7	Cloth	124.95	
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