Life Sciences books catalogue

Royal Society of Chemistry

ROYAL SOCIETY OF CHEMISTRY

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Introduction

Welcome to our Life Sciences books catalogue

The Royal Society of Chemistry is the world's leading chemistry community, advancing excellence in the chemical sciences. A not-for-profit organisation with 170 years of history, we promote, support and celebrate chemistry and work to shape the future of the chemical sciences – for the benefit of science and humanity.

Book publication is a key part of our work to invest in the chemical sciences.

Now approaching 1,300 titles, our collection features titles from authors around the globe and spans 46 years of research, supporting our international vision for the future.

As with all of our published material, our books portfolio is high quality and wide-ranging, covering professional reference books, specialist reports, textbooks and popular science titles.

Highlights:

- Our acclaimed Drug Discovery Series featuring titles including *Cardiovascular and Metabolic Diseases* and *Venoms to Drugs*
- The 6th edition of *Food: The Chemistry of its Components* by Tom P Coultate
- The Merck Index* 15th Edition

Textbooks include:

- 7th edition of *McCance and Widdowson's The Composition of Foods*
- 6th edition of *Molecular Biology and Biotechnology*
- *The Handbook of Medicinal Chemistry*

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We hope you enjoy browsing our catalogue. If you have any questions, please contact us at **books@rsc.org**

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RSC Drug Discovery

About the Series

ISSN: 2041-3203

Editor-in-Chief

David Thurston King's College London, UK

Series Editors

David Fox Vulpine Science and Learning, UK | **Ana Martinez** Centro de Investigaciones Biologicas-CSIC, Spain | **David Rotella** Montclair State University, USA

Editorial Adviser

Sarah Skerratt Pfizer, UK

The RSC Drug Discovery Series covers all aspects of drug discovery and medicinal chemistry. Providing comprehensive coverage of this important and far-reaching area, the books encourage learning in a range of topics and provide understanding to scientists working outside their areas of expertise. Following an idea from initial research and findings to the most up-to-date discoveries and cutting-edge technology, these titles focus on learning and critical evaluation. They will be of particular interest to advanced and postgraduate students, as well as medicinal chemists and biochemists working in academia or industry.

Biotherapeutics

Recent Developments using Chemical and Molecular Biology

Lyn H Jones Pfizer, USA | **Andrew J McKnight** AnaptysBio Inc., USA

This exemplary new book illustrates the successful partnership of chemistry and biology to advance biotherapeutic modalities. Molecular design to create function is common to chemical and molecular biology, and the book highlights recent developments from both disciplines that have delivered drugs, clinical candidates or significantly advanced biotherapeutic approaches. Biotherapeutics are generally considered beyond the reach of the medicinal chemist, but chemistry has an essential role to play in the future success of this area. Chemical biology technologies that underpin specific therapeutic advances are described to demonstrate the value of molecular design and understanding. This book is essential reading for medicinal chemists, pharmacologists, molecular and chemical biologists.

Hardback | 336 pages | 9781849736015 | 2013 | £159.99 | $260.00

Carbohydrates in Drug Design and Discovery

Jesus Jimenez-Barbero Centro de Investigaciones Biologicas, Spain | **F Javier Canada** CIB-CSIC, Spain
Sonsoles Martin-Santamaria Universidad CEU San Pablo, Spain

In recent years there has been increasing evidence of the importance of carbohydrates and glycoconjugates in biomedical applications, and the use of synthetic ligands based on carbohydrates as drugs has received much attention. Focusing on drug discovery from key targets and placing an emphasis on the multi-disciplinary approaches necessary to challenge these issues, this book comprehensively covers the recent discoveries in the area of carbohydrate drug discovery. Providing a worldwide perspective on this broad area, with examples of therapeutics already developed using these methods, this book provides a comprehensive introduction, discussion and update on this fast-developing and advancing field for medicinal chemists and biochemists working in industry and academia.

Hardback | 336 pages | 9781849739399 | 2015 | £169.00 | $275.00

Cardiovascular and Metabolic Disease

Scientific Discoveries and New Therapies

Philip Peplow University of Otago, New Zealand | **James Adams** University of Southern California, USA
Tim Young Vertex Pharmaceuticals, USA

Cardiovascular and metabolic diseases remain the number one cause of death in developed countries and their prevalence is increasing rapidly in developing nations. This book is the first to bring together the most recent information on obesity, hypertension and insulin resistance and the links that exist between them in order to provide a complete picture of drug discovery for these disorders. The opening chapter introduces the molecular links between obesity and metabolic dysfunction before the three main sections present obesity, hypertension and diabetes in turn. Chapters are contributed by leaders in the field from both academia and industry and cover biomarkers, risk factors, gene-environment interactions, therapies and the various types of animal models that have been used to study each disease. Case studies describing the implementation of the models in drug development further enhance the book's usefulness as a comprehensive guide for medicinal and pharmaceutical chemists.

Hardback | 350 pages | 9781782620464 | 2015 | £179.00 | $300.00

Comprehensive Biomarker Discovery and Validation for Clinical Application

Péter Horvatovich and **Rainer Bischoff** University of Groningen, the Netherlands

This book focuses on proteomics biomarker discovery and validation procedures from the clinical perspective. Topics covered include: sample selection; regulation of biomarker approval; sample storage and preparation; comprehensive LC-MS profiling and data preprocessing; statistical analysis; and biomarker validation. It discusses the current status of the science and technology involved and their limitations. Future developments needed to improve the success rate of translating biomarker discovery into useful clinical tests are also included. Common pitfalls and success stories are discussed and best practice guidelines are provided. Broad and interdisciplinary in approach, this book provides an excellent source of information for industrial and academic researchers and those managing biobanks.

Hardback | 384 pages | 9781849734226 | 2013 | £159.99 | $260.00

Drug Discovery for Schizophrenia

Tatiana Lipina Institute of Physiology and Fundamental Medicine, Russia
John Roder Lunenfeld-Tanenbaum Research Institute, Canada

Since the development of pharmacotherapy by antipsychotics in the 1950s, only a few major innovations have been made in drugs for schizophrenia, pointing to a general stagnation of the field. *Drug Discovery for Schizophrenia* covers new insights with the aim of advancing scientists' and clinicians' understanding in this area and of fueling drug discovery.

Hardback | 286 pages | 9781782620266 | 2015 | £169.00 | $275.00

Emerging Drugs and Targets for Parkinson's Disease

Ana Martinez Centro de Investigaciones Biologicas-CSIC, Spain
Carmen Gil Consejo Superior de Investigaciones Cientificas, Spain

This exemplary new book reviews some of the most outstanding examples of new drugs currently in pharmaceutical development or new targets under the validation process that will reach the Parkinson's drug market over the next few years as disease modifying drugs. The contents are divided into four main sections that cover: L-Dopa and dopaminergic agents; Alpha synuclein hypothesis; neuroprotective therapies; and neuroregenerative strategies. A key feature of this title is that it presents contributions from a number of opinion leaders from both industry and academia. This is essential reading for medicinal chemists, chemical biologists and pharmaceutical scientists.

Hardback | 402 pages | 9781849736176 | 2014 | £159.99 | $260.00

Epigenetics for Drug Discovery

Nessa Carey PraxisUnico, UK

Epigenetics is one of the fastest moving fields in drug discovery, with almost every large pharmaceutical company and a substantial number of biotechnology companies targeting epigenetic processes to treat diseases ranging from cancer to Huntington's disease and from inflammation to sickle cell anaemia. The book introduces epigenetics and explains the importance at both a phenomenological and molecular level. It reviews the breakthoughs in the field and highlights the ongoing challenges in creating safe and effective epigenetic drugs. Including case histories and real life examples, and written and edited by experts in the field from both industry and academia, this book provides an invaluable guide to this developing field for medicinal chemists working in academia and in the pharmaceutical industry.

Hardback | 350 pages | 9781849738828 | 2015 | £164.99 | $264.00

Fragment-Based Drug Discovery

Steven Howard Astex Therapeutics Ltd., UK | **Chris Abell** University of Cambridge, UK

Fragment-based drug discovery is a rapidly evolving area of research that has recently seen new applications in areas such as epigenetics, GPCRs and the identification of novel allosteric binding pockets. This book is an invaluable resource for medicinal chemists working in academia and industry, as well as anyone interested in drug discovery techniques.

Hardback | 300 pages | 9781849739085 | 2015 | £169.00 | $275.00

Green Chemistry Strategies for Drug Discovery

Emily A Peterson Amgen, USA | **Julie B Manley** Guiding Green LLC, USA

Pharmaceutical companies are realising that incorporation of green chemistry techniques at earlier stages of drug development can speed up the development of a drug candidate. Edited by experts who have pioneered green chemistry efforts within their own institutions, this book provides a practical guide for both academic and industrial labs wanting to know where to start when introducing greener approaches and where to channel efforts for greatest return on investment. This book takes a comprehensive approach to the topic, covering surrounding issues such as intellectual property. It covers the entire drug discovery process from molecule conception, through to synthesis, formulation and toxicology with specific examples and case studies where green chemistry strategies have been implemented. Also addressed is green chemistry in biologics discovery, a cutting-edge topic. Ultimately, readers will learn how to incorporate green chemistry strategies into their everyday workflow without slowing down their science.

Hardback | 350 pages | 9781849739610 | 2015 | £179.00 | $300.00

Human-based Systems for Translational Research

Robert Coleman Independent Drug Discovery Consultant, UK

This book provides a detailed history and discussion of the use of human tissues as an alternative to animal-based testing for assessing the efficacy and safety of new medicines. Beginning by providing the history and background of animal-based testing, it describes in detail the issues relating to access to human cells and tissue and the rules and regulations governing their use. The book contains chapters on tissue slices, culture, assays, microfluidics and body-on-a-chip technology, as well as chapters on emerging technologies and techniques such as engineered organs. Each chapter comprehensively covers a technique from its utilisation and methodology to the opportunities and limitations of the method. Written and edited by worldwide experts in the field, this book is an essential text for biochemists and researchers working in translational medicine in both industry and academia.

Hardback | 278 pages | 9781849738255 | 2015 | £155.00 | $255.00

Inhibitors of Molecular Chaperones as Therapeutic Agents

Timothy D Machajewski Achaogen Inc, USA | **Zhenhai Gao** Novartis, USA

This book aims to provide a comprehensive examination of the field of molecular chaperone inhibition and its application to pharmaceutical research. With several small molecule inhibitors in oncology clinical development, there is clearly intense interest in the chaperones as a molecular target. Filling a significant gap in the market by providing a detailed comparison of discovery programmes across the industry, this text will be of interest to researchers in the fields of molecular chaperone pharmaceutical research, oncology research and medicinal chemistry.

Hardback | 442 pages | 9781849736664 | 2013 | £159.99 | $260.00

Ion Channel Drug Discovery

Brian Cox and **Martin Gosling** Novartis, UK

Ion channel drug discovery is a rapidly evolving field fuelled by recent, but significant, advances in our understanding of ion channel function combined with enabling technologies such as automated electrophysiology. The resurgent interest in this target class by both pharmaceutical and academic scientists was clearly highlighted by the over-subscribed RSC/BPS 'Ion Channels as Therapeutic Targets' symposium.

This book aims to build on the platform created by this meeting, addressing themes including advances in screening technology, ion channel structure and modelling, and covering up-to-date case histories of the discovery of modulators of a range of both voltage-gated and non-voltage-gated channels.

Hardback | 384 pages | 9781849731867 | 2015 | £175.00 | $290.00

Macrocycles in Drug Discovery

Jeremy Levin Boehringer Ingelheim, USA

This book reviews macrocycles in drug discovery, both those of natural origin and semi-synthetic derivatives of natural products, and those designed and synthesised based on principles of medicinal chemistry. It discusses these compounds in the context of their broad chemotype as compounds composed of large rings. Providing a wide-reaching review of this important area in a single volume, this book is of interest to biochemists, pharmaceutical scientists and medicinal chemists working in industry or academia.

Hardback | 528 pages | 9781849737012 | 2015 | £175.00 | $290.00

Orphan Drugs and Rare Diseases

David C Pryde Pfizer, UK | **Michael Palmer** Medicinal Chemistry Consultant, UK

Orphan drugs are designated drug substances intended to treat rare or 'orphan' diseases. More than 7,000 rare diseases are known that collectively affect some 6–7% of the developed world's population. However, individually, any single rare disease may only affect a handful of people, making them unattractive for the biopharmaceutical industry to target. Providing an up-to-date monograph, this book covers the basic science, drug discovery and regulatory elements behind orphan drugs.

Hardback | 486 pages | 9781849738064 | 2014 | £175.00 | $290.00

Pain Therapeutics

Current and Future Treatment Paradigms

Charlotte Allerton Pfizer, USA

This book provides a contemporary review of the field of pain therapeutics, including the historical medicines which still dominate standard of care treatments, as well as the new mechanisms and combinations/reformulations that have dominated the regulatory approvals over the last decade. In addition it provides a deep analysis of the key biological mechanisms currently under investigation for their utility into the treatment of pain, such as ion channels, opiates and others. The current challenges of pain research are also discussed, covering a range of topics from difficulties in identifying new targets from pre-clinical models to the current regulatory and commercial challenges. This then sets the scene for recent scientific changes in pain research, such as the drive for genetic validation of targets and the derivation of human cell platforms from stem cells. Finally the book presents a selection of case studies on the discovery and development of new pain products that have been approved in the last decade. These case studies provide an insight into the challenges and successes for both oral and non-oral products.

Hardback | 412 pages | 9781849736459 | 2013 | £159.99 | $260.00

Successful Strategies for the Discovery of Antiviral Drugs

Explorations from Natural Utilization Systems

Manoj C Desai Gilead Science Inc., USA | **Nicholas A Meanwell** Bristol-Myers Squibb, USA

The antiviral therapeutic area continues to rapidly generate meaningful new chemical entities; for example, for HIV alone more than 25 drugs have been approved, and in the next few years many individual drugs and single tablet regimens will be approved for the treatment of hepatitis C virus infection. The increasing success in the antiviral area could be due to targeting drugs at "non-self" genomes and to the patient population that is tolerant of manageable side effects and adaptable to inconvenient dosing. This book focuses on capturing tactical aspects of problem solving in antiviral drug design, an approach that holds special appeal for those engaged in antiviral drug development, but also appeals to the broader medicinal chemistry community based on its focus on tactical aspects of drug design.

Hardback | 550 pages | 9781849736572 | 2013 | £159.99 | $260.00

Traditional Chinese Medicine

Scientific Basis for Its Use

James D Adams and **Eric J Lien** University of Southern California, USA

Traditional Chinese medical practitioners understand that yin, yang and chi constantly interact in the body to maintain health. Western medical practitioners understand how to use agonists and antagonists and how to modify signalling processes, but generally do not accept the use of complex plant extracts to perform these functions.

Aimed at medical scientists, and including detailed explanations of the theories behind the science, this text may help researchers to understand, and communicate more effectively with, Chinese medical practitioners and will lead to greater acceptance of traditional medications in the West. Presenting a clear rationale for the use of traditional Chinese medications in Western medical facilities, the title enables scientists to find new directions in experimental design and encourage examination of these useful, but often poorly understood, preparations in clinical trials.

Hardback | 366 pages | 9781849736619 | 2013 | £149.99 | $245.00

Venoms to Drugs

Venom as a Source for the Development of Human Therapeutics

Glenn F King The University of Queensland, Australia

The pharmaceutical industry has become increasingly interested in biologics from animal venoms as a potential source for therapeutic agents in recent years, with a particularly emphasis on peptides. To date, six drugs derived from venom peptides or proteins have been approved by the FDA, with nine further agents currently being investigated in clinical trials. This unique book provides an up to date and comprehensive account of the potential of peptides and proteins from animal venoms as possible therapeutics. The first text focusing on this fascinating area and bridging an important gap, it provides the reader with essential and current knowledge on this fast-developing area. *Venoms to Drugs* will find wide readership with researchers working in academia and industry working in all medicinal and pharmaceutical areas.

Hardback | 320 pages | 9781849736633 | 2015 | £169.00 | $275.00

RSC Metallobiology

About the Series

ISSN: 2045-547X

Editor-in-Chief

C David Garner University of Nottingham, UK

Series Editors

Anthony Wedd University of Melbourne, Australia | **Hongzhe Sun** University of Hong Kong, Hong Kong

Editorial Advisers

Stefano Ciurli Università di Bologna, Italy | **Alison Butler** University of California, Santa Barbara, USA

The RSC Metallobiology Series is a collection of professional reference books covering all aspects of the roles of metals in biological systems. The scope encompasses a wide range of areas including metalloenzymes, metalloproteins, storage and transport of metal ions, bio-organometallic chemistry and interaction of metal ions with biomolecules, particularly proteins. The series will be of interest to both academics and those in industry working in a wide range of disciplines, including medicinal chemistry, pharmaceutical science, biochemistry, metabolomics and inorganic biochemistry.

Binding, Transport and Storage of Metal Ions in Biological Cells

Wolfgang Maret King's College London, UK | **Anthony Wedd** University of Melbourne, Australia

The chemistry of metals is associated with many health matters, from its role in diseases such as neurodegeneration, cancer and diabetes and the toxicological effects of non-essential metal ions such as cadmium and arsenic, to its uses in therapeutic and diagnostic applications. This book focuses on the molecular aspects of the ingress, transport, regulation and egress of both essential and non-essential metal ions emphasising that chemistry controls the crucial nutrient and toxicological properties. Structured around the periodic table, each chapter is written by a leading expert and documents a different element and its structural, chemical and biochemical role in biological cells giving a logical structure for the comparison of properties. This is the first book to combine the molecular features of metal ions in nutrition, toxicology and pharmacology at the research front level for students, postgraduates and researchers in academic and industry.

Hardback | 938 pages | 9781849735995 | 2014 | £195.00 | $310.00

Mechanisms and Metal Involvement in Neurodegenerative Diseases

Roberta Ward and **Robert Crichton** Catholique University of Louvain, Belgium
David Dexter Imperial College London, UK

Dementia and neurodegenerative diseases such as Parkinson's and Alzheimer's are becoming an increasingly important cause of medical and social concern due to the growth in the ageing population. *Mechanisms and Metal Involvement in Neurodegenerative Diseases* delivers in one volume a streamlined source of information on each of the main neurodegenerative diseases. Written by acknowledged experts in their respective areas, this new book provides readers with readily accessible information.

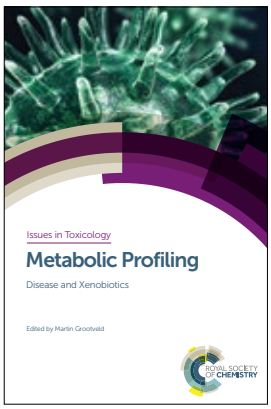
Hardback | 230 pages | 9781849735889 | 2013 | £139.99 | $240.00

2-Oxoglutarate-Dependent Oxygenases

Robert Hausinger Michigan State University, USA | **Christopher Schofield** University of Oxford, UK

Since the discovery of the first examples of 2-oxoglutarate-dependent oxygenase-catalysed reactions in the 1960s, a remarkably broad diversity of alternate reactions and substrates has been revealed. These enzymes are important agrochemical targets and are being pursued as therapeutic targets for a wide range of diseases including cancer and anaemia. This book provides a central source of information that summarises the key features of the essential group of 2-oxoglutarate-dependent dioxygenases and related enzymes for those already working in the field as well as for those approaching the topic anew or interested in translating the basic science into medicinal and agricultural benefits. The book begins with four broad chapters that highlight critical aspects, including an overview of possible catalytic reactions, structures and mechanisms. The following 17 chapters focus on carefully selected topics, each written by leading experts in the area.

Hardback | 600 pages | 9781849739504 | 2015 | £179.00 | $300.00



Issues in Toxicology

About the Series

ISSN: 1757-7179

Editor-in-Chief

Diana Anderson University of Bradford, UK

Series Editors

Tim Marrs Edentox Associates, UK

Mike Waters Integrated Laboratory Systems Inc., USA

Editorial Adviser

Alok Dhawan Ahmedabad University, India

The field of toxicological research is continually expanding and diversifying, driven by the need to understand the human and ecological risks of exposure to chemicals and other toxicants. This Series is devoted to coverage of modern toxicology and assessment of risk. Written by expert scientists from academia, government and industry, each book serves as a guide to investigations in toxicology, biomedicine, biochemistry, forensics and environmental/pollution sciences.

Advances in Dermatological Sciences

Robert Chilcott Health Protection Agency, UK | **Keith R Brain** University of Cardiff, UK

This book collates the major research achievements in dermatological research from the past two years into a single source. It incorporates a broad range of topics including: experimental models; toxicology; regulatory matters; exposure assessment; therapeutics; cosmetics; and decontamination. Each section starts with an introductory chapter summarising work to date and explaining how new research detailed in subsequent chapters contributes to our understanding of the skin. There are also predictions of where the next major developments are likely to occur. Readily accessible yet detailed, this book will interest researchers in the clinical, pharmaceutical and cosmetics industries, as well as academics and students.

Hardback | 474 pages | 9781849733984 | 2014 | £175.00 | $290.00

Aging and Vulnerability to Environmental Chemicals

Age-related Disorders and their Origins in Environmental Exposures

Bernard Weiss University of Rochester, USA

With age-related disorders affecting every organ system, the world's aging populations are generating medical care costs that are rising at an unsustainable rate. Although such disorders are expected, we are now beginning to ask whether exposures to toxic environmental chemicals hasten or account for their onset. This book provides a detailed review of current knowledge about the possible associations between a variety of chemical contaminants and adverse effects later in life. It will serve as a guide to policy decisions about protecting us from chemical exposures that distort the aging process, as well as to current understanding of how our contaminated environment may be influencing the aging process. It also contains examples of approaches that will help us undertake further research on this topic. By alerting policy-makers to the implications of chemical pollution for aging populations, it will help formulate initiatives for environmental protection. This book provides a comprehensive view of how environmental exposures may alter the health of our aging population. For readers engaged in environmental research, or aging research, it will highlight a number of questions that need more attention For other readers, they will learn something about the kind of exposures they should avoid or that they should prompt policy makers to reduce or eliminate.

Hardback | 484 pages | 9781849734189 | 2013 | £153.99 | $246.00

Chemical Toxicity Prediction

Category Formation and Read-Across

Mark Cronin, **Judith Madden, Steven Enoch** and **David Roberts** Liverpool John Moores University, UK

The aim of this book is to provide the scientific background to using the formation of chemical categories or groups of molecules to allow for read-across, ie the prediction of toxicity from chemical structure. It covers the scientific basis for this approach to toxicity prediction including the methods to group compounds (structural analogues and/or similarity, mechanism of action) and the tools to achieve this. The approaches to perform read-across within a chemical category are also described. This book will provide concise practical guidance for those wishing to apply these methods in risk /orhazard assessment and will be illustrated with case studies.

Hardback | 191 pages | 9781849733847 | 2013 | £114.99 | $190.00

Mammalian Toxicology of Insecticides

Tim Marrs Edentox Associates, UK

Insects are more similar in structure and physiology to mammals than plants or fungi. Consequently, insecticides are often of greater toxicity to mammals than herbicides. However, some insecticides are targeted at structures or hormonal systems specific to insects (insect growth regulators/chitin synthesis inhibitors) so are less harmful but can still be mildly haematotoxic. There are, therefore, issues specific to insecticides which do not occur with other pesticides – hence the need for a book specifically on insecticide toxicology in mammals. This book starts with general issues relating to the mammalian toxicity of insecticides, including target/non-target specificity, nomenclature and metabolism of insecticides before going on to discuss specific types of insecticides.

Hardback | 506 pages | 9781849731911 | 2012 | £144.99 | $232.00

Manganese in Health and Disease

Lucio Costa University of Washington, USA | **Michael Aschner** Vanderbilt University, USA

Manganese in the diet is nutritionally essential for normal physiologic functioning. However, excessive exposure to manganese has been associated with developmental, neurodegenerative and other disorders. This book comprehensively covers the toxicology of manganese. Leading investigators provide perspectives from toxicology, neuroscience, nutrition, molecular biology and risk assessment disciplines. Chapters cover the toxicokinetics, toxicodynamic interactions and health effects of manganese, as well as its potential role in neurodegenerative diseases. A large section devoted to health effects presents the latest research that associates manganese exposure to potential human diseases. Any scientist, health professional or regulator involved with metal exposure and toxicology should find this volume essential reading. Students and researchers in neurotoxicology will also find this a useful reference.

Hardback | 632 pages | 9781849739436 | 2015 | £175.00 | $290.00

Metabolic Profiling

Disease and Xenobiotics

Martin Grootveld De Montford University, UK

Multivariate analysis of the multi-component analytical profiles of carefully collected biofluid and/or tissue biopsy specimens can provide a 'fingerprint' of their biomolecular or metabolic status. If applied correctly, valuable information regarding disease indicators, disease strata and sub-strata and disease activities can be obtained. This book provides a detailed introduction to the area, applications and common pitfalls of the techniques discussed before moving into detailed coverage of specific disease areas, each highlighted in individual chapters. This title is an invaluable resource for medicinal chemists, biochemists and toxicologists working in industry and academia.

Hardback | 395 pages | 9781849731638 | 2015 | £175.00 | $290.00

Reducing, Refining and Replacing the Use of Animals in Toxicity Testing

Dave Allen and **Mike D Waters** Integrated Laboratory Systems Inc., USA

Toxicity testing is used to assess the safety or hazards presented by substances such as industrial chemicals, consumer products and pharmaceuticals. Many methods currently involve laboratory animals but alternative procedures are now being developed to reduce, refine or replace animal usage. Aimed at postgraduates, academics and industrialists, this book describes the ever-expanding 'toolbox' of methods now available. These often result from our growing understanding of the biochemical pathways that mediate toxicity. By combining various techniques to build a "weight of evidence", toxicologists are developing mechanistically-based alternatives to experimentation on live animals. This text also emphasises the importance of adequate test validation, reliability and relevance.

Hardback | 362 pages | 9781849736527 | 2013 | £159.99 | $260.00

The Carcinogenicity of Metals

Human risk through occupational and environmental exposure

Alan B G Lansdown Imperial College London, UK

This book re-evaluates epidemiological and occupational health studies, experimental studies in animals and in vitro experiments relating to the toxicity of 27 metal and metalloid elements for which evidence of carcinogenicity has been presented. This important text comprehensively examines each of the elements, providing detailed information on the carcinogenicity and toxicity and detailing the most up-to-date research in this area. This book is an essential tool for toxicologists, medicinal chemists, biochemists and environmental scientists working in both industry and academia.

Hardback | 448 pages | 9781849737180 | 2013 | £159.99 | $260.00

The Cellular Response to the Genotoxic Insult

The Question of Threshold for Genotoxic Carcinogens

Helmut Greim Technical University of Munich, Germany | **Richard Albertini** University of Vermont, USA

Although the cellular defence mechanisms are increasingly understood, the critical and rate limiting parameters and their dose-response to the insulting agent need to be evaluated. In this book the different cellular defence mechanisms and their regulation are described. Understanding the protective mechanisms by which the cell responds to a genotoxic impact to protect integrity of the genomes will permit the evaluation of whether the assumption of a threshold for genotoxic carcinogens at low dose exposure is justified. Besides its scientific value, this dispute is of regulatory importance since it may result in a scientifically defendable threshold concept for genotoxic carcinogens, which will allow identification of a NOEL and a proposal of health-based exposure limits – even for genotoxic carcinogens.

Hardback | 334 pages | 9781849731775 | 2012 | £169.99 | $272.00

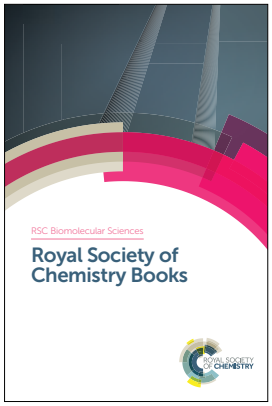
Toxicological Effects of Veterinary Medicinal Products in Humans

Complete Set

Kevin Woodward TSGE Consulting Limited, UK

This two-volume set is the first definitive guide to the adverse effects of veterinary medicinal products in humans. It covers occupational safety and consumer issues and examines the circumstances under which exposure is likely to occur. These books also discuss fundamental aspects of regulatory issues relating to safety assessment, and examine the manner in which user safety is assessed prior to authorisation/approval and what measures can be taken afterwards in the light of findings from pharmacovigilance activities. These volumes also consider a series of individual drugs including antibiotics, anaesthetics and organophosphorus compounds and are of interest to those in industry and academia, practising veterinarians and physicians.

Hardback | 876 pages | 9781849736855 | 2013 | £300.00 | $480.00



RSC Biomolecular Sciences

About the Series

ISSN: 1757-7152

A collection of books published between 2005 and 2012 and edited by leading international scientists working in the field, the RSC Biomolecular Sciences Series provides an authoritative resource for researchers and postgraduate students in biochemisty, biophysics and molecular biology.

DNA Conjugates and Sensors

Keith R Fox University of Southampton, UK | **Tom Brown** University of Oxford, UK

The preparation of synthetic nucleic acids has been possible for several years, but their use as molecular tools has recently been enhanced by the addition of other groups. These include enzymes, fluorophores and small molecules. Modification to the DNA bases or backbone can also improve biological stability and increase sensitivity. Written by leaders in the field, this volume describes the preparation and application of these DNA-conjugates. Several have been used as biological sensors (aptamers, riboswitches and nanostructures). Others link reporter groups such as proteins or fluorophores to RNA or DNA for detection, single molecule studies and increasing the sensitivity of PCR. This book will interest researchers in related areas of chemistry, biology and molecular pharmacology.

Hardback | 316 pages | 9781849734271 | 2012 | £153.99 | $246.00

Innovations in Biomolecular Modeling and Simulations

Complete Set

Tamar Schlick New York University, USA

This two-volume set describes innovations in biomolecular modeling and simulation, in both the algorithmic and application fronts. With contributions from experts in the field, the books describe progress and innovation in areas including: simulation algorithms for dynamics and enhanced configurational sampling; force field development; implicit solvation models; coarse-grained models; quantum-mechanical simulations; protein folding; DNA polymerase mechanisms; nucleic acid complexes and simulations; RNA structure analysis and design; and other important topics in structural biology modeling. The books are aimed at graduate students and experts in structural biology and chemistry, with an emphasis on reporting innovative new approaches rather than providing comprehensive reviews on each subject.

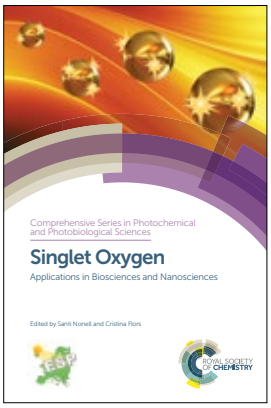
Hardback | 734 pages | 9781849734103 | 2012 | £259.99 | $416.00

Recent Developments in Biomolecular NMR

Marius Clore The National Institute of Diabetes and Digestive and Kidney Diseases, USA
Jennifer Potts University of York, UK

Filling a gap in the literature, this book draws together experts in the field to discuss the real advances in NMR methods that have occurred or had an impact on the biomolecular field in the last few years. Edited by leading biological NMR spectroscopists, this book is an essential reference for researchers in industry and academia interested in this bioanalytical field.

Hardback | 347 pages | 9781849731201 | 2012 | £153.99 | $246.00



Comprehensive Series in Photochemical & Photobiological Sciences

About the Series

ISSN: 2041-9716

Series Editor

Massimo Trotta University of Bari, Italy

Initiated by the European Society for Photobiology this series is a comprehensive overview of specific areas of photoscience, giving in-depth coverage of the very different fields related to light effects including: photobiology; photochemistry; photomedicine; and the technology for light production, filtering and measurement. It embraces both well-established and emerging fields and allows investigators, physicians, students, industrialists and non-specialists to get an updated account in specific fields. It also includes ready access to the recent literature. Importantly, these reviews are a critical evaluation of the directions the field is taking, outlining hotly debated or innovative topics, and even suggesting redirections where appropriate.

Photodynamic Inactivation of Microbial Pathogens

Medical and Environmental Applications

Michael R Hamblin Massachusetts General Hospital, USA | **Giulio Jori** University of Padova, Italy

This book is the first to comprehensively cover the use of visible light and photosensitising agents for controlling the population of microbial pathogens. Edited by two pioneers in the application of this technique for addressing both medical and environmental issues, and bringing together the foremost practitioners internationally in this field, this up-to-date account addresses basic/mechanistic aspects followed by exhaustive coverage of the current medical applications and environmentally friendly approaches. This book is an indispensable resource for students and professionals working in fields relating to photochemistry, environmental science and medical applications for photodynamic therapy.

Hardback | 434 pages | 9781849731447 | 2011 | £199.95 | $320.00

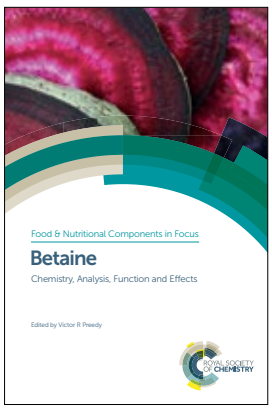
Singlet Oxygen

Applications in Biosciences and Nanosciences

Santi Nonell Universitat Ramon Llull, Spain | **Cristina Flors** Madrid Institute for Advanced Studies in Nanoscience, Spain

Collecting and curating the vast amount of knowledge gained in the field of singlet oxygen, this title covers the physical, chemical and biological properties of this reactive oxygen species as well as its increasingly important applications. A crucial reference resource for beginners and experienced researchers, working across photochemistry, photobiology and photomedicine. The editors' unique insight in this field ensures the book attains the highest scientific level.

Hardback | 450 pages | 9781782620389 | 2015 | £199.00 | $320.00



Food and Nutritional Components in Focus

About the Series

ISSN: 2045-1695

Editor-in-Chief

Victor R Preedy King's College London, UK

In the past three decades there have been major advances in our understanding of the chemistry and function of nutritional components. This has been enhanced by rapid developments in analytical techniques and instrumentation. Chemists, food scientists and nutritionists are, however, separated by divergent skills and professional disciplines. Until now, this transdisciplinary divide has been difficult to bridge. In a single volume, this Food and Nutritional Components in Focus Series covers the chemistry, analysis, function and effects of single components in the diet or its food matrix. Its aim is to bridge scientific disciplines so that information becomes more meaningful and applicable to health in general.

Betaine

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Betaine is widely distributed in plants and animals and has a role as an osmolyte and as a cofactor in methylation in liver metabolism. It has been shown to protect internal organs, improve vascular risk factors and enhance performance. The growing body of evidence shows that betaine is an important nutrient for the prevention of chronic disease. This volume surveys the current state of play in these and other areas of interest, including its role in one-carbon metabolism and appropriate analytical techniques. Written by an expert team, this book provides a fascinating insight for those with an interest in the health and nutritional sciences.

Hardback | 360 pages | 9781849738866 | 2015 | £199.00 | $330.00

Caffeine

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Caffeine covers the latest knowledge in a uniquely structured format, specifically designed to link chemistry with health and nutrition to provide a broad, appealing book. Coverage begins with caffeine in relation to nutrition focusing on beverages, then concentrates on chemistry, crystal structures of complexes in caffeine and biochemistry. In the analysis chapters, assays are conducted by LC-MS, capillary electrophoresis, automated flow methods and immunoassay methods. The effects of caffeine on the brain, cognitive performance, sleep, oxidative damage, exercise and pulmonary function are all considered in the closing section of the book.

Hardback | 442 pages | 9781849733670 | 2012 | £153.99 | $246.00

Calcium

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Calcium's importance in health and disease is clear when listing its multiple roles in the body, which include building strong bones and teeth, clotting blood, muscle function, hormonal regulation and maintaining a normal heartbeat. This book examines these roles and also covers areas such as chemical analysis, influence of Vitamin D, hypercalcemia and nutritional aspects. This edited volume pools knowledge across scientific disciplines in a way that increases its applicability to a wide range of audiences and fills the gap identified in providing comprehensive synopses of food substances. Chemists, analytical scientists, forensic scientists and food scientists, as well as course lecturers and university librarians, will all benefit from this title.

Hardback | 800 pages | 9781849738873 | 2015 | £199.00 | $330.00

Dietary Sugars

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Dietary sugars are known to have medical implications for humans, from causing dental caries to obesity. This book aims to put dietary sugars in context and includes the chemistry of several typical subclasses, eg glucose, galactose and maltose. Modern techniques of analysis of the dietary sugars are covered in detail, including self-monitoring and uses of biosensors. The final section of the book details the function and effects of dietary sugars and includes chapters on obesity, intestinal transport, aging, liver function, diet of young children, intolerance and more. A must have for the bookshelf of anyone with an interest in diet and nutritional health.

Hardback | 904 pages | 9781849733700 | 2012 | £153.99 | $246.00

Fluorine

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Fluorine is best known for its role in the prevention of cavities and in improving oral and bone health. This volume, written by leading researchers in this area, examines those aspects as well as others such as dietary supplementation and intake, coronary artery disease and metabolic function. Extremely useful for underpinning cross-disciplinary fluoride research, this book provides a fascinating insight for those with an interest in the health and nutritional sciences.

Hardback | 360 pages | 9781849738880 | 2015 | £199.00 | $330.00

Imidazole Dipeptides

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Carnosine and anserine are two imidazole dipeptides found in muscle and brain tissues of animals (anserine in birds). Their dietary and nutritional significance lies in their antioxidant properties and a number of investigators are looking at other health benefits of the compounds. This volume surveys the current state of play in these and other areas of interest, including immunology, the promotion of wound healing and cellular homeostasis. Providing an up to date, interdisciplinary approach, this book will be of great interest to researchers and professionals in chemistry, food science, biochemistry, health sciences and sports sciences.

Hardback | 600 pages | 9781849738903 | 2015 | £199.00 | $330.00

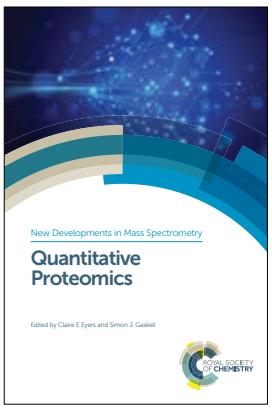
Selenium

Chemistry, Analysis, Function and Effects

Victor R Preedy King's College London, UK

Although toxic in large doses, selenium is an essential trace mineral in the animal diet and in some plants. It has roles in making antioxidant enzymes and in the functioning of the thyroid gland. This volume examines the chemical activity of selenium and its functional health effects, eg towards cancers in the heart and brain. It also covers other areas such as functional food enrichment, whole body metabolism and the effects of selenium deficiency on health. Chemists, analytical scientists, forensic scientists and food scientists, as well as course lecturers, will all benefit from this interdisciplinary title written by international experts in the area.

Hardback | 465 pages | 9781849738910 | 2015 | £199.00 | $330.00



New Developments in Mass Spectrometry

About the Series

ISSN: 2045-7545

Editor-in-Chief

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Series Editors

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Examining instrument and method development and new applications of mass spectrometry, this Series is an important resource for graduate students, researchers and analytical chemists interested in the respective instrumentation and techniques. The books present the key facts and concepts in a concise and readable manner to keep readers up to date with the latest information and to promote the practice of mass spectrometry techniques.

Quantitative Proteomics

Claire E Eyers University of Liverpool, UK | **Simon Gaskell** Queen Mary University of London, UK

As a component of post-genome science, the field of proteomics has assumed great prominence in recent years. Whereas quantitative analyses dealt at first with relative quantification, a greater emphasis is now placed on absolute quantification and consideration of proteome dynamics. Coverage of the topic of quantitative proteomics requires consideration both of the analytical fundamentals of quantitative mass spectrometry and the specific demands of proteome analysis. This exemplary book will be essential reading for analytical and biological spectroscopists working in proteomic research.

Hardback | 390 pages | 9781849738088 | 2014 | £165.00 | $264.00

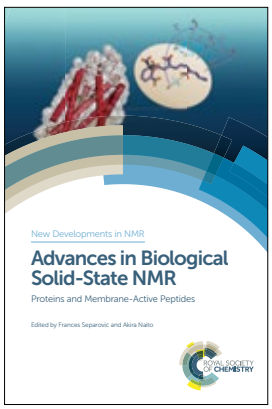
Tandem Mass Spectrometry of Lipids

Molecular analysis of complex lipids

Robert C Murphy University of Colorado Denver, USA

During the last 20 years, developments in the emerging field of lipidomics have been made due to advances in mass spectrometry and, in particular, tandem mass spectrometry. A wealth of information about these diverse biomolecules has been generated and – until now – has not been brought together into one source. Written by a leader in the field, this book updates the literature so that investigators considering structural lipidomics have a convenient source to review mechanism of decomposition reactions related to the diversity of lipid structure.

Hardback | 280 pages | 9781849738279 | 2015 | £145.00 | $240.00



New Developments in NMR

About the Series

ISSN: 2044-253X

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Masatsune Kainosho Tokyo Metropolitan University, Japan

Editorial Adviser

Sharon Ashbrook University of St Andrews, UK

Focusing on novel aspects of method and instrumentation development, applications in emerging fields and new techniques and technologies, this Series documents the important advances being made. The books provide comprehensive introductions to the relevant theory to facilitate greater understanding and to encourage wider usage of NMR techniques – making them ideal for students, researchers and practising analytical scientists, as well as manufacturers with an interest in instrumentation.

Advances in Biological Solid-State NMR

Proteins and Membrane-Active Peptides

Frances Separovic University of Melbourne, Australia | **Akira Naito** Yokohama National University, Japan

With over 30 years' experience in this field, the editors have been active in advancing biological solid-state NMR and have seen applications in biological membranes and whole cells becoming areas of great significance. The ability to study protein and peptides in situ is an exciting development. With contributions from leaders in the field, this book describes the methodology and applications of solid state NMR spectroscopy to studies of proteins, membrane-active peptides and model biological membranes. As well as structural studies, the editors include studies of membrane interactions and molecular motions. This book is divided into five main sections: introduction to biological solid-state NMR; applications to biological membranes; membrane proteins; protein complexes and in-cell NMR; and structural studies of amyloid fibrils. This book is essential reading for NMR spectroscopists, analytical chemists and biophysical scientists.

Hardback | 630 pages | 9781849739108 | 2014 | £175.00 | $280.00

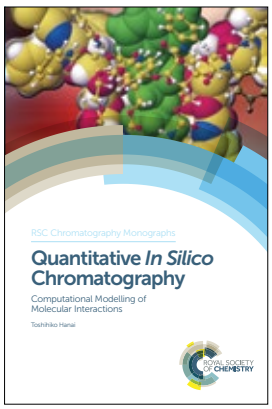
New Applications of NMR in Drug Discovery and Development

Leoncio Garrido Consejo Superior de Investigaciones Cientifica, Spain

Nicolau Beckmann Novartis, Switzerland

This book presents a review of recent developments in NMR applications in pharmaceutical research. Consideration is given to consolidated and emerging techniques and methods, many of which are not yet widely applied but are likely to provide new opportunities for drug design. Aimed at NMR spectroscopists, pharmacologists, imaging researchers and pharmaceutical scientists, this title will be invaluable at putting NMR in context within its role in drug discovery and development.

Hardback | 565 pages | 9781849734448 | 2013 | £159.99 | $256.00



RSC Chromatography Monographs

About the Series

ISSN: 1757-7055

Series Editor

Roger Smith Loughborough University of Technology, UK

Covering all techniques and applications in topics such as supercritical fluid chromatography, affinity chromatography and counter-current chromatography, this informative Series is a collection of bench-top guides for practising researchers. Each book provides an up-to-date review of a specific topic in chromatography, including details on established and developing techniques. Featuring all necessary practical information the books explain central facts and concepts clearly and simply, making them accessible to non-specialists.

Chromatographic Methods in Metabolomics

Tuulia Hyotylainen Steno Diabetes Center, Denmark | **Susanne Wiedmer** University of Helsinki, Finland

Metabolomics is an emerging field and this is the first book to present chromatographic techniques in metabolomics in a fundamental way. Sample preparation and quality control are crucial aspects which are described in detail. Uniquely, guidelines for the selection of appropriate methodology are also provided. This book covers the chromatographic techniques, such as liquid chromatography, gas chromatography, comprehensive two-dimensional gas chromatography and electrochromatographic techniques utilised in metabolomics.

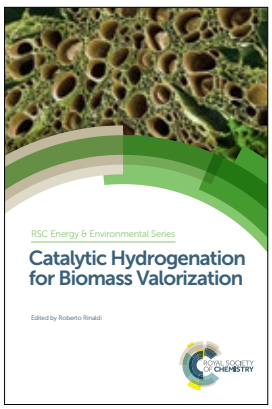
Hardback | 536 pages | 9781849736077 | 2013 | £149.99 | $245.00

UHPLC in Life Sciences

Davy Guillarme and **Jean-Luc Veuthey** Geneva University, Switzerland

This unique book is dedicated to the basics of UHPLC, a current 'hot topic', and its application in the field of drug analysis. Since its commercial introduction in 2004, there has been a tremendous interest in UHPLC (in both academic laboratories and industries) to speed up and increase resolution of traditional HPLC. The goal of this book is to provide a solid background on how to work properly in UHPLC and how this strategy has been applied for analysis in the life sciences. The first half of the book covers many of the specificities of UHPLC, providing a guideline for working properly in UHPLC. The second part is dedicated to the analysis of drugs with UHPLC and above all UHPLC-MS, which is a field of high interest for pharmaceutical and toxicological analysis.

Hardback | 447 pages | 9781849733885 | 2012 | £153.99 | $246.00



RSC Energy and Environment Series

About the Series

ISSN: 2044-0774

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Energy lies at the heart of modern society; it is critical that we make informed choices on the methods by which we convert and manage energy. Reflecting the wealth of chemical ideas and concepts that have the potential to make an important impact in sustainable energy, the RSC Energy and Environment Series is an important reference for material scientists, chemical engineers, energy researchers, bio-scientists and environmental scientists from across academia, industry and government.

Biological Conversion of Biomass for Fuels and Chemicals

Explorations from Natural Utilization Systems

Jianzhong Sun Jiangsu University, China | **Shi-You Ding** National Renewable Energy Laboratory, USA
Joy D Peterson University of Georgia, USA

This book covers biomass modification to facilitate the industrial degradation processing of feedstocks and new technologies for the conversion of lignocelluloses into biofuels. It describes recent advances in natural biomass utilization systems such as wood-feeding termites and animals that efficiently degrade lignocellulose substrates. Consolidated bioprocessing (CBP) integrates cellulase production and cellulose hydrolysis with pentose and hexose fermentation in a single step. This replicates what happens in the digestive systems of animals such as termites and cows. CBP has the potential to reduce production costs and lower capital investment whilst increasing conversion efficiency. This book makes essential reading for academics and industrial groups concerned with overcoming the challenges inherent in the biological conversion of biomass into fuels and chemicals.

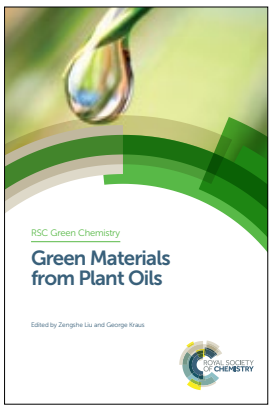
Hardback | 407 pages | 9781849734240 | 2013 | £159.99 | $260.00

Catalytic Hydrogenation for Biomass Valorization

Roberto Rinaldi Max Planck Institut fur Kohlenforschung, Germany

The efficient conversion of biomass to value-added products has become a major research area in the pursuit of alternatives to petroleum-based feedstocks; hydrogenation and hydrogenolysis are important tools for acheiving this aim. This book presents a comprehensive examination of the catalysts, reactions and products obtainable using these tools, with consideration given to the biorefinery concept. The editor is a leading figure in the conversion of lignin through hydrogenation and has brought together leading researchers from across the globe to ensure a thorough examination of the potential biomass hydrogenation to meet the needs of the future.

Hardback | 310 pages | 9781849738019 | 2015 | £155.00 | $255.00



RSC Green Chemistry

About the Series

ISSN: 1757-7039

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Editorial Adviser

Changwei Hu Sichuan University, China

Green chemistry is one of the most rapidly growing fields in modern chemistry, and is widely recognised as being important across the chemical sciences and throughout industry, education and research. The RSC Green Chemistry Series provides high-level research books at the cutting-edge of green chemistry. The books are invaluable to industrialists, researchers and academics worldwide and anyone interested in the practical means that are being used to reduce the environmental impact of chemical processes and products.

Biomass for Sustainable Applications

Pollution Remediation and Energy

Sarra Gaspard and **Mohamed C Ncibi** Université des Antilles et de la Guyane, Guadeloupe

Sustainable energy production and a supply of good quality water are two major challenges facing modern societies today – and for decades ahead. In this context, renewable biomass presents both a sustainable energy source and an alternative to expensive water treatment technologies. This book gives an overview of the various ways to valorize biomass for energy production as well as for pollution treatment of contaminated soils and wastewaters. It focuses on the fact that we could produce renewable energy from biomass without using corn, sugarcane or colza oil, but lignocelluloses, bacteria and algae instead. Furthermore, water or soil pollution can be treated using algae and fungi. This book guides the reader to identifying the local bioresources which could be valorized and chosen for the remediation of a pollution-related problem or a response to an energetic need.

Hardback | 430 pages | 9781849736008 | 2014 | £159.99 | $260.00

Chemical Biotechnology and Bioengineering

Xuhong Qian, **Zhenjiang Zhao**, **Yufang Xu**, **Jian-He Xu**, **Jingyan Zhang** and **Fengxian Hu** East China University of Science and Technology, China | **Yang-Chun Yong** Jiangsu University, China
Y H Zhang Cell Free Bioinnovations Inc., USA

Chemically promoted biotechnology and bioengineering is an emerging field seeking to improve the productivity of plant cell cultures using chemical elicitors, increasing yields of the secondary metabolites sought as a new source of chemical feedstocks. This book introduces the reader to the field, presenting the theory behind the biotechnology of enzymatic reactions, and how they can be chemically enhanced. Special emphasis is given to green plant protection products, demonstrating the capabilities of this new technique.

Hardback | 240 pages | 9781849738101 | 2015 | £149.00 | $245.00

Green Materials from Plant Oils

Zengshe Liu NCAUR, ARS/USDA, USA | **George Kraus** Iowa State University, USA

Today, plant oils are important renewable raw materials for the chemical industry and are heavily used for surfactants, cosmetic products and lubricants. This book covers the green chemistry of products and intermediates synthesised from plant oils. Photo-initiated polymerisation and polymerisation of vegetable oils in environmental media are covered as well as click reactions to chemically modified vegetable oils. Useful products from plant oils such as polymers, biomaterials, biofibres and lubricants, as well as their further applications, are described. This book will be a valuable resource for researchers in academia and industry, biomass producers and suppliers and manufacturers of end-products.

Hardback | 323 pages | 9781849739016 | 2015 | £145.00 | $240.00

Natural Product Extraction

Principles and Applications

Mauricio A Rostagno and **Juliana M Prado** University of Campinas, Brazil

Natural products are used across the food, pharmaceutical and cosmetics industries, and extraction technologies and potential applications for plant extracts are of great interest. This book provides an in-depth view of the techniques available for the extraction of natural products. The use of ultrasounds, microwaves, pressurised liquids and supercritical fluids are examined, with examples and case studies giving a balanced outline of the applications and potential uses of each technique. Recent trends are discussed, such as the use of combinatory and hyphenated techniques.

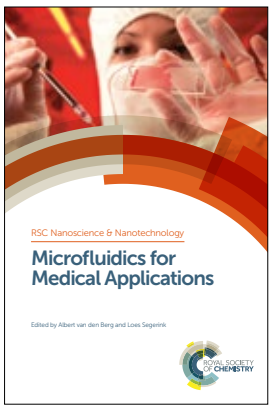
Hardback | 516 pages | 9781849736060 | 2013 | £159.99 | $260.00

The Economic Utilisation of Food Co-Products

Abbas Kazmi University of York, UK | **Peter Shuttleworth** CSIC, Spain

The world's population is predicted to reach nine billion by 2050 which will increase food demand to levels never seen before. This will mean a significant increase in food co-products which are regarded as a waste or have low-value applications. These co-products are a resource which can be utilised for the production of value-added chemicals and materialsm. For example, orange peels contain a high concentration of 'pectins' which, when extracted, can be used as gelling agents in the food industry. This book focuses on key areas of the food market such as cereals, oils, fruit and vegetables, dairy, meat and marine products internationally. It also discusses hot processing technologies such as microwave pyrolysis, fermentation and supercritical CO_2 extraction.

Hardback | 246 pages | 9781849736152 | 2013 | £139.99 | $230.00



RSC Nanoscience & Nanotechnology

About the Series

ISSN: 1757-7136

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Editorial Adviser

Harry Kroto Florida State University, USA

The possible uses of nanotechnology span many fields, from energy to health. As a result there is a wealth of scientific nanoscience research taking place all over the world. When there's so much information available on a topic it can be difficult to get a complete overview of the latest developments. The RSC Nanoscience and Nanotechnology Series provides a comprehensive resource of books covering key topics in nanoscience including the characterisation, performance and properties of nanostructured materials and technologies and their applications.

Artificial Cilia

Jaap den Toonder Philips Research, the Netherlands
Patrick Onck University of Groningen, the Netherlands

This book gives an overview of the research field of artificial cilia, a novel technology for controlling and sensing fluid flow at microscopic scales. This field is inspired by nature, namely by naturally occurring cilia which are tiny hairs covering biological cells that have already been used for over a billion years by nature to generate and sense fluid flow. This research field started less than a decade ago and has grown fast in recent years since it offers very interesting options for flow control in lab-on-a-chip devices.

Hardback | 265 pages | 9781849735971 | 2013 | £149.99 | $245.00

Microfluidics for Medical Applications

Albert van den Berg and **Loes Segerink** University of Twente, the Netherlands

This book presents an overview of the major microfluidics techniques and platforms used for medicine and medical applications, providing the reader with an overview of the recent developments in this field. It is divided in three parts: tissue and organs on-chip; microfluidics for medicine; and point of care diagnostics. In every chapter, state-of-the-art topics are treated, giving an overview of both the latest research in that field and also background information on the microfluidic techniques used. The editors have more than 10 years experience in the field and have drawn on a wealth of expertise in producing this essential handbook for practitioners and technology developers.

Hardback | 303 pages | 9781849736374 | 2015 | £155.00 | $255.00

Nanoparticles in Anti-Microbial Materials

Use and Characterisation

Fiona Regan, James Chapman and **Timothy Sullivan** Dublin City University, Ireland

This book describes the most up-to-date research in the area of nanoparticles that show anti-microbial activity. It looks at the types of materials and their applications in the area of environmental science, medical devices and coatings for a range of applications, as well as describing the techniques that are being used to characterise the materials and nanoparticles. In addition, some techniques that have not been used specifically but could show promise for characterisation of the materials are also covered. *Nanoparticles in Anti-Microbial Materials* deals with a current hot topic and gives academics, researchers and industrialists a reference text to assist in locating the research literature as well as an overview of techniques and procedures. Undergraduate students in analytical science and material science will also find it valuable.

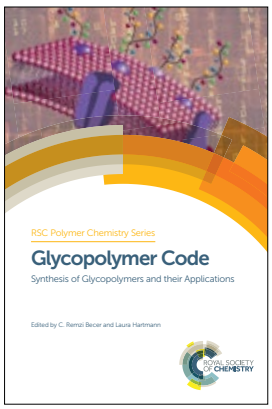
Hardback | 242 pages | 9781849731591 | 2012 | £144.99 | $232.00

Soft Nanoparticles for Biomedical Applications

José Callejas-Fernández University of Granada, Spain | **Joan Estelrich** University of Barcelona, Spain
Manuel Quesada-Pérez University of Jaén, Spain
Jacqueline Forcada University of the Basque Country, Spain

Nanoparticles are attractive for many biomedical applications, such as imaging, therapeutics and diagnostics. This new book looks at different soft nanoparticles and their current and potential uses in medicine and health, including magnetoliposomes, micro/nanogels, polymeric micelles, DNA particles, dendrimers and bicelles. Each chapter provides a description of the synthesis of the particles and focuses on the techniques used to characterise the size, shape, surface charge, internal structure and surface microstructure of the nanoparticles, together with modeling and simulation methods. By giving a strong physical-chemical approach to the topic, readers gain a good background into the subject and an overview of recent developments. The multidisciplinary point of view makes the book suitable for researchers in physics, chemistry and biology interested in soft matter and its uses.

Hardback | 410 pages | 9781849738118 | 2014 | £175.00 | $290.00



RSC Polymer Chemistry Series

About the Series

ISSN: 2044-0790

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Stephen Craig Duke University, USA | **Jianhua Dong,** National Natural Science Foundation of China, China | **Toshio Masuda** Shanghai University, China
Christoph Weder University of Fribourg, Switzerland

With contributions from leading experts across the world, the RSC Polymer Chemistry Series covers key themes in polymer chemistry research for graduate-level students and above.

Cationic Polymers in Regenerative Medicine

Sangram K Samal and **Peter Dubruel** Ghent University, Belgium

Cationic polymers have been gaining much interest for many clinical applications, including drug and gene delivery. This book provides a comprehensive overview of the recent advances in cationic polymer synthesis, modification and designing of biomaterials for regenerative medicine applications. Suitable as an educational perspective for both those new to the field and those already active in the field, this book has a multidisciplinary appeal for postgraduates and researchers in chemistry, engineering, material and biological sciences interested in biomaterials and regenerative medicine.

Hardback | 618 pages | 9781849739375 | 2015 | £195.00 | $310.00

Functional Polymers for Nanomedicine

Youqing Shen Zhejiang University, China

The application of nanotechnology to medicine could transform the way we diagnose, treat and prevent diseases such as cancer. However, the clinical success of nanomedicine is limited due to problems with toxicity and therapeutic efficacy. To overcome this, it is essential to produce new nanosystems with specific functions, by designing new polymers with particular properties that can be used for nanomedicine. *Functional Polymers for Nanomedicine* provides a summary of the current problems and directions of the field and an overview of different polymers with particular functions, including hyperbranched polymers, polymersomes, polysaccharides, polymeric micelles and zwitterionic polymers – along with their applications in gene therapy and drug delivery.

Hardback | 332 pages | 9781849736206 | 2013 | £159.99 | $260.00

Fundamentals of Controlled/Living Radical Polymerization

Nicolay V Tsarevsky Southern Methodist University, USA | **Brent S Sumerlin** University of Florida, USA

Over the last 20 years, controlled/living radical polymerization (CRP) has revolutionised and revitalised the field of synthetic polymer chemistry. *Fundamentals of Controlled/Living Radical Polymerization* is the first book to summarise the fundamental aspects of CRP by providing an in-depth history, description and mechanistic understanding of each of the CRP techniques along with practical details necessary to carry out the reactions. Written by leading experts on the subject, this book provides essential insight into a rapidly growing field that goes beyond a simple literature review of the area, making this book an indispensible resource for researchers, instructors and students in polymer chemistry.

Hardback | 364 pages | 9781849734257 | 2013 | £149.99 | $245.00

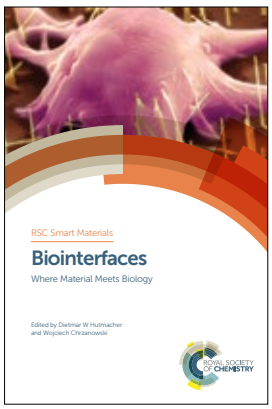
Glycopolymer Code

Synthesis of Glycopolymers and Their Applications

C Remzi Becer Queen Mary University of London, UK | **Laura Hartmann** Max Planck Institute, Germany

Glycopolymers are important for cell signalling, recognition pathways and their role in the immune system. They are gaining attention for new applications in tissue engineering and drug delivery.
This book provides a unique source for post-graduates and academics who are entering or working on glycopolymers. It covers the advanced synthesis techniques for preparing glycopolymers, the analytical techniques used in investigating lectin receptor glycopolymer interactions and the properties and types of lectins widely used to understand the multivalent interactions and various applications of synthetic glycopolymers.

Hardback | 360 pages | 9781849739788 | 2015 | £159.00 | $260.00



RSC Smart Materials

About the Series

ISSN: 2046-0066

Series Editors

Hans-Jörg Schneider Universität des Saarlandes, Germany
Mohsen Shahinpoor University of Maine, USA

The progress of new functional materials plays a vital role in solving many of today's global challenges, from energy and sustainability to medicine and healthcare. With a wealth of information available it's hard to find a resource providing a complete overview of the different types of smart materials available. Each book in this Series covers the fundamentals and applications of different material systems from renowned international experts.

Biointerfaces

Where Material Meets Biology

Dietmar Hutmacher Queensland University of Technology, Australia
Wojciech Chrzanowski University of Sydney, Australia

This book gives a comprehensive overview of the newest developments in surface modifications to control and direct cellular and bacterial responses on synthetic materials used in medicine. By including methods and techniques of examination of biointerfaces, it is effectively a handbook for researchers. Edited by leading researchers, this book will appeal to materials scientists, chemists, biotechnologists, molecular-biologists and biomedical engineers interested in the fundamentals and applications of biomaterials and biointerfaces.

Hardback | 453 pages | 9781849738767 | 2015 | £175.00 | $290.00

Cell Surface Engineering

Fabrication of Functional Nanoshells

Rawil Fakhrullin Kazan Federal University, Russia | **Insung Choi** KAIST, South Korea
Yuri Lvov Louisiana Tech University, USA

This book summarises the recent achievements in surface-functionalised cells, including fabrication, characterisation, applications and nanotoxicity. The chapters cover a range of different systems for altering and enhancing the functionalities of cells using different functional nanomaterials, such as polymer nanofilms, nanoparticles, nanocoated cells and artificial spores. This book provides an interdisciplinary approach to the topic with authors from both biological and chemical backgrounds and is suitable for researchers at postgraduate level and above interested in biomaterials, biochemistry, microbiology and colloid chemistry.

Hardback | 272 pages | 9781849739023 | 2014 | £155.00 | $255.00

Materials Design Inspired by Nature

Function Through Inner Architecture

Peter Fratzl, **John Dunlop** and **Richard Weinkamer** Max Planck Institute, Germany

The inner architecture of a material can have an astonishing effect on its overall properties and this understanding is vital when designing new materials. Nature is a master at designing hierarchical structures and so researchers are looking at biological examples for inspiration to create new materials. *Materials Design Inspired by Nature* is the first book to address the relationship between the inner architecture of natural materials and their physical properties for materials design. The book explores examples from plants, the marine world, arthropods and bacteria, where the inner architecture is exploited to obtain specific mechanical, optical or magnetic properties – along with how these design principles are used in man-made products. Experimental methods used to investigate hierarchical structures are also covered, including X-ray scattering techniques, transmission electron microscopy and Raman microscopy. Written by leading experts in bio-inspired materials research, this is essential reading for anyone developing new materials.

Hardback | 402 pages | 9781849735537 | 2013 | £159.99 | $260.00

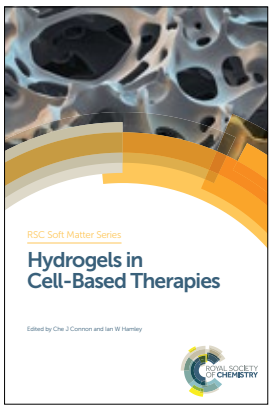
Smart Materials for Drug Delivery

Complete Set

Carmen Alvarez-Lorenzo and **Angel Concheiro** Universidad de Santiago de Compostela, Spain

Novel smart materials are needed for the design of intelligent drug delivery systems to enable the controlled release of active molecules. With so many papers available on smart and stimuli-responsive materials for drug delivery applications, it's hard to know where to start reading about this exciting topic. This two-volume set brings together recent findings in the area and provides a critical analysis of the information available and how it can be applied to advanced drug delivery. Written by leading experts in the field, including a foreword from distinguished scientist Nicholas Peppas (The University of Texas at Austin, USA), this book provides an introduction to the key areas for both graduate students and new researchers in the stimuli-responsive field. It also serves as a reference for those already working on fundamental materials research or their applications.

Hardback | 900 pages | 9781849735520 | 2013 | £230.00 | $370.00



RSC Soft Matter Series

About the Series

ISSN: 2048-7681

Series Editors

Hans-Jürgen Butt Max Planck Institute for Polymer Research, Germany
Ian W Hamley University of Reading, UK | **Howard A Stone** Princeton University, USA | **Chi Wu** The Chinese University of Hong Kong, China

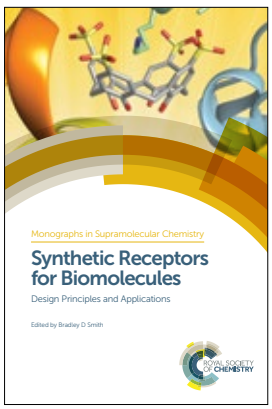
Get up to speed on the latest research in soft matter with this new authoritative Series from the Royal Society of Chemistry. With contributions from experts in the field, the books in this Series provide an essential overview of the latest developments in soft matter research. Each title covers a specific aspect of soft matter science, from the fundamental concepts of soft matter systems to the diverse applications across different disciplines. The books are suitable for advanced undergraduate students, postgraduate students and professional researchers working in soft matter science and related fields.

Hydrogels in Cell-Based Therapies

Che J Connon and **Ian W Hamley** University of Reading, UK

Hydrogels in Cell-Based Therapies looks at the use of different polymers and other bionanomaterials to fabricate different hydrogel systems and their biomedical applications, including enzyme responsive hydrogels and biomaterials, thermally responsive hydrogels, collagen gels and alginates. With complementary expertise in cell biology and soft materials, the editors offer a comprehensive overview of recent updates in this extremely topical field. This highly interdisciplinary subject will appeal to researchers in cell biology, biochemistry, biomaterials and polymer science and those interested in hydrogel applications.

Hardback | 238 pages | 9781849737982 | 2014 | £155.00 | $255.00



Monographs in Supramolecular Chemistry

About the Series

ISSN: 1368-8642

Series Editors

Philip Gale University of Southampton, UK | **Jonathan Steed** Durham University, UK

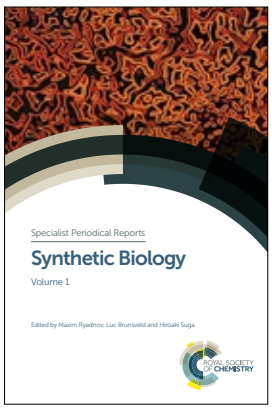
Supramolecular chemistry examines the structure and function of molecular assemblies formed through weak interactions. There is great interest in the applications for materials chemistry, nanoscience, catalysis and medicine, which has led to a rapid expansion in research in this area. To enable further developments of new applications, an understanding of the fundamentals and a comprehensive overview of the latest research is needed. With contributions from high profile international scientists working within the field, each book in this Series covers a key concept for graduate-level students and above interested in supramolecular chemistry and its diverse applications.

Supramolecular Systems in Biomedical Fields

Hans-Jörg Schneider Universität des Saarlandes, Germany

The ability to design synthetic host compounds to selectively interact within biological systems has gained wide appeal due the vast number of potential applications. Uses in the life sciences include sensing of bioactive analytes (from metals to proteins), drug delivery systems, supramolecular ligands for biopolymers, drugs based on macrocyclic hosts, diagnostic tools, selective markers and bioassays. In *Supramolecular Systems for Biomedical Fields* internationally renowned experts cover each of the different applications providing a comprehensive overview of the topic. This timely publication will appeal to researchers from chemical, pharmaceutical, biological and medicinal fields.

Hardback | 548 pages | 9781849736589 | 2013 | £159.99 | $260.00



Specialist Periodical Reports

Synthetic Biology

Volume 2

Maxim Ryadnov National Physical Laboratory, UK
Luc Brunsveld Eindhoven University of Technology, the Netherlands
Hiroaki Suga University of Tokyo, Japan

Synthetic biology is a new area of biological research that will enable the design of biological systems in a rational and systematic way. This volume captures the expanding primary literature in the form of critical and comprehensive reviews, providing the reader with an authoritative digest of the latest developments in this emerging field. Leading researchers draw on the recent literature, from both dedicated journals and broader sources, making this an essential reference for any library supporting this research.

Hardback | 300 pages | 9781782621201 | 2016 | £314.95 | $505.00

Amino Acids, Peptides and Proteins

Volume 40

Maxim Ryadnov National Physical Laboratory, UK | **Ferenc Hudecz** Eötvös Loránd University, Hungary

Amino Acids, Peptides and Proteins comprises a comprehensive and critical review of significant developments at the biology/chemistry interface. Compiled by leading researchers in their subject, this volume incorporates current trends and emerging areas. Appealing broadly to researchers in academia and industry, it will be of great benefit to any researcher wanting a succinct reference in the field.

Hardback | 300 pages | 9781782621218 | 2015 | £314.95 | $505.00

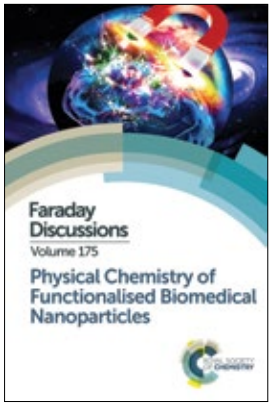
Carbohydrate Chemistry

Volume 41

Amelia Pilar Rauter Universidade de Lisboa, Portugal | **Thisbe Lindhorst** Kiel University, Germany
Yves Queneau INSA Lyon, France

The synthesis of novel carbohydrates and carbohydrate mimetics continues to be a major challenge for organic chemists, not least because of the increasingly interdisciplinary nature of carbohydrate science. Covering both chemical and biological science related to the particular volume topic, this series demonstrates the interdisciplinary nature of modern carbohydrate research and will be of great benefit to any researcher who wants to learn about the latest developments in the carbohydrate field.

Hardback | 300 pages | 9781782621218 | 2015 | £314.95 | $505.00



Faraday Discussions

About the Series

ISSN: 1359-6640

Series Editors

A Mount University of Edinburgh, UK | **Ian Hamley** University of Reading, UK
Graham Hutchings Cardiff University, UK | **Fred Manby** University of Bristol, UK
C Percival University of Manchester, UK | **Katharine Reid** Univeristy of Nottingham, UK | **Erwin Reisner** University of Cambridge, UK

Faraday Discussions document a long-established series of unique international forums for the exchange of views and newly acquired results in developing areas of physical chemistry, biophysical chemistry and chemical physics. The presented research papers are published with a record of the discussion contributions and are an important record of current international knowledge and views – as well as being highly cited and well respected accounts by world-class experts.

Lipids and Membrane Biophysics

Faraday Discussions No. 161

Jianzhong Sun Jiangsu University, China | **Shi-You Ding** National Renewable Energy Laboratory, USA
Joy D Peterson University of Georgia, USA

This discussion considers recent developments in the study of biomembrane structure, ordering and dynamics, with particular emphasis on the roles of lipids in these phenomena. As well as discussing new experimental and theoretical findings and novel methodologies, the meeting focuses on exploring the relevance of concepts from amphiphile self-assembly and soft matter physics to understanding biomembranes.

Hardback | 627 pages | 9781849736886 | 2013 | £165.00 | $272.00

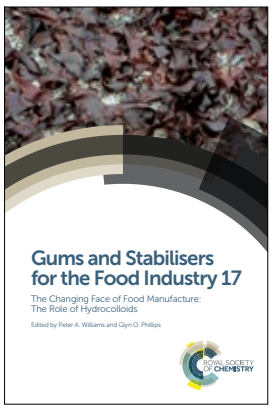
Self-Assembly of Biopolymers

Faraday Discussions No. 166

Jianzhong Sun Jiangsu University, China | **Shi-You Ding** National Renewable Energy Laboratory, USA
Joy D Peterson University of Georgia, USA

This volume focuses on the self-assembly of novel bio-hybrid materials, especially conjugates of proteins with polymers, glycosylation of proteins and polymer/virus hybrids. Much work in this field has been driven by recent advances in synthetic methodology which has enabled exciting work on the production of self-assembling and self-organising systems – systems under intense research for applications in tissue scaffolding and drug delivery systems, for which an understanding of the physical chemistry of self-assembly is essential.

Hardback | 468 pages | 9781849736930 | 2013 | £165.00 | $272.00



Special Publications

About the Series

ISSN: 0260-6291

The Special Publications series is a collection of books produced from the proceedings of international symposia. Editors bring together contributions from authorities in the field and the books provide snapshots of the latest developments of that field.

Gums and Stabilisers for the Food Industry 17

The Changing Face of Food Manufacture: The Role of Hydrocolloids

Peter Williams Glyndwr University, UK | **Glyn Phillips** Hubei University of Technology, China

This book describes the new advances in the science and technology of hydrocolloids used in food and related systems. *Gums and Stabilisers for the Food Industry 17* captures the latest research findings of leading scientists presented at the Gums and Stabilisers for the Food Industry Conference.

The wide range of topics covered includes functional properties of proteins, alternative protein surces, low moisture foods, value added co-products from biorefining and bioactive polysaccharides. This book will be a useful information source to researchers and other professionals in both industry and academia, particularly those involved with food science.

Hardback | 404 pages | 9781849738835 | 2014 | £119.95 | $195.00

Magnetic Resonance in Food Science

Defining Food by Magnetic Resonance

Francesco Capozzi and **Luca Laghi** University of Bologna, Italy

Peter S Belton University of East Anglia, UK

This definitive book includes contributions from a whole range of magnetic resonance applications in food and represents the latest advances and thinking on the subject. Coming from a conference which has established an international reputation as the forum for advances in applications of magnetic resonance to food, the coverage is dedicated to quantitative NMR, on line and non-invasive NMR, foodomics and new developments in the area and quality and safety. It is aimed at academics and industrialists who are committed to the utilisation of MR tools to improve our understanding of food systems.

Hardback | 250 pages | 9781782620310 | 2015 | £119.95 | $192.00

Nutrition, Functional and Sensory Properties of Foods

Chi-Tang Ho Rutgers University, USA | **Cynthia Mussinan** International Flavors & Fragrances, USA
Fereidoon Shahidi Memorial University of Newfoundland, Canada | **Ellene Tratras Contis** Eastern Michigan University, USA

The link between nutrition, food and health is well established, but new information is being generated every day. This book pulls together the latest research on food and flavours as well as covering food functionality, molecular biology and delivery systems – for example encapsulation and flavour release. Written by experts in the field and edited to a high standard, this title provides a unique reference for researchers and other professionals in both industry and academia, particularly those involved directly in food science.

Hardback | 335 pages | 9781849736442 | 2013 | £159.99 | $260.00

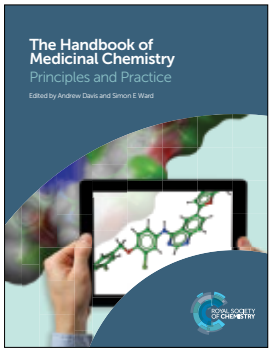
Stability of Complex Carbohydrate Structures

Biofuels, Foods, Vaccines and Shipwrecks

Stephen E Harding University of Nottingham, UK

Complex carbohydrates, such as high molecular weight polysaccharides like starch and cellulose, are well known for their importance in foodstuffs, paper and wood but their importance extends far beyond that into the biopharmaceutical, healthcare, oil and printing industries. This book, based on a discussion meeting organised by the Royal Society of Chemistry's Biotechnology and Carbohydrate Groups, brings together leading experts from the polysaccharide and glycoconjugate communities to review, discuss and assess in detail one specific topic: the importance of the stability and degradation of carbohydrate structures. Coverage includes applications as diverse as food, biopharmaceuticals, vaccines, biofuels and preservation of Viking boats. Essential reading for anyone interested in these structures and the diversity of their applications, this book will appeal to a broad, multidisciplinary group from industry, academia and research institutions.

Hardback | 206 pages | 9781849735636 | 2013 | £119.95 | $192.00



Textbooks and Reference Books

Our textbook and reference works provide high-quality and in-depth information on a broad range of topics. Our textbooks focus on applied chemistry, making them the perfect companion to traditional textbooks that may not extend to practical applications, and are appropriate as accompanying course material for both undergraduates and postgraduates.

Biodiesel

Production and Properties

Amit Sarin Amritsar College of Engineering and Technology, India

This professional reference book provides a detailed and comprehensive review of the production and properties of biodiesel. A particular emphasis is placed on the statistical relationship between biodiesel composition and properties – especially the correlations between oxidative stability and low-temperature flow, highly important in making biodiesel commercially viable. Specific chapters include: the use of vegetable oil as a fuel; the production of biodiesel; biodiesel properties; fuel specifications in Europe, USA, India and other major countries; oxidation stability of biodiesel; low-temperature flow properties; the dependence of other properties of biodiesel on fatty acid methyl ester composition; diesel engine efficiency and emissions using biodiesel; major sources of vegetable oils for biodiesel production; the present state of the biodiesel industry in Europe, USA, India and other parts of the world; and the 'food vs fuel' issue.

Hardback | 280 pages | 9781849734707 | 2012 | £144.99 | $232.00

Biological and Biomimetic Adhesives

Challenges and Opportunities

Romana Santos Universidade De Lisboa, Portugal | **Nick Aldred** University of Newcastle, UK
Stanislav Gorb Kiel University, Germany | **Patrick Flammang** Universite de Mons, Belgium

Biological adhesives often provide elegant solutions to engineering and biomedical requirements and are expected to inspire future technological innovations for adhesives in hostile conditions. Containing a selection of papers presented at the 1st International Conference on Biological and Biomimetic Adhesives, this book showcases the latest advances in the chemical and structural characterisation of adhesives, the mechanical testing of adhesives, and theory, fabrication and applications of biomimetic adhesives. Following the work of COST Action TD0909, this book aims to further understanding of the mode of action of biological adhesives to allow successful development of improved synthetic counterparts.

Hardback | 208 pages | 9781849736695 | 2013 | £139.99 | $230.00

Biophysical Chemistry, 2nd edition

Alan Cooper University of Glasgow, UK

The easily digestible, pragmatic approach of this book captures the reader with the fascinating challenges this subject poses for theoretical and experimental scientists. It is ideal for early undergraduates studying chemical or physical sciences and can act as a basis for more advanced study. Students in other areas of biological sciences will appreciate the less intimidating approach to physical chemistry.

Paperback | 244 pages | 9781849730815 | 2011 | £21.99 | $35.00

Bio-inspired Materials and Sensing Systems

Peter D E Biggins DSTL, UK | **Anne Kusterbeck** US Naval Research Laboratory, USA
John A Hiltz DRDC Atlantic, Canada

This book explores the potential of bio-inspired materials and sensing systems together with examples of how they are being implemented. It provides an overview of how bio-inspired or bio-derived approaches can be used to enhance components, systems and systems of systems for defence and security applications. This graduate-level textbook provides an increased awareness of the need for more sophisticated, networked sensors and systems in the defence and security communities and will be of interest to both specialists in this area and science and technology generalists.

Hardback | 151 pages | 9781849731218 | 2011 | £75.00 | $126.00

Brewing, 2nd edition

Ian Hornsey Nethergate Brewery, UK

It is believed that beer has been produced, in some form, for thousands of years – the ancient Egyptians being one civilisation with a knowledge of the fermentation process. Beer production has seen many changes over the centuries, and *Brewing, 2nd Edition* brings the reader right up to date with the advances in the last decade. Covering the various stages of beer production, reference is also made to microbiology within the brewery and some pointers to research on the topic are given. Written by a recently retired brewer, this book will appeal to all beer-lovers – but particularly those within the industry who wish to understand the processes – and will be relevant to students of food or biological sciences.

Paperback | 332 pages | 9781849736022 | 2013 | £27.99 | $45.00

Carbohydrate Chemistry and Biochemistry

Structure and Mechanism, 2nd Edition

Michael Sinnott University of Huddersfield, UK

This fully updated and expanded second edition of a highly popular textbook focuses on the structure and mechanism in carbohydrate chemistry and biochemistry. Extensively referenced with citations and a detailed index, this book contains everything the reader needs to know to start a carbohydrate research project. One of the real strengths of this book is the treatment and integration of the important physical-chemical principles and methods. Suitable for researchers who are new to the subject and those more established, it will appeal to readers from diverse backgrounds and interests, including chemists, biochemists, food scientists and technologists involved with the processing of polysaccharides in the paper, textile, cosmetics, biofuels and other industries.

Hardback | 834 pages | 9781849733274 | 2013 | £79.99 | $128.00

Chemistry in the Kitchen Garden

James Hanson University of Sussex, UK

This book is aimed at readers with a chemical background who want to know more about the natural products they are eating, their beneficial effects, and the roles that these compounds have in nature. Developments in the understanding of the ecological and beneficial chemistry of fruit and vegetables have made the exploration of their chemical diversity a fascinating and expanding area of natural product chemistry. This book will give readers some 'taste' of this.

Hardback | 300 pages | 9781849733236 | 2011 | £24.99 | $40.00

Chocolate and Health

Chemistry, Nutrition and Therapy

Philip Wilson East Tennessee State University, USA | **W Jeffrey Hurst** The Hershey Company Technical Centre, USA

Chocolate and Health provides a comprehensive overview of the chemistry, nutrition and bioavailability of cacao and chocolate. The book begins with a brief historical introduction to the topic, outlining the current and historical medical uses of chocolate and chocolate derivatives. The remainder of the text is arranged into three sections that take the reader through various aspects of the nutritional and health aspects of cacoa. Each section is written and prepared by experts within the field, providing a global perspective of the current and ongoing research in this area. This text gives the reader a complete overview of the field and will be of interest to food and biomedical scientists, as well as nutritionists, medicinal chemists and anyone with an interest in chocolate.

Hardback | 293 pages | 9781849739122 | 2015 | £59.99 | $96.00

Chocolate as Medicine

A Quest over the Centuries

Philip K Wilson East Tennessee State University, USA
W Jeffrey Hurst The Hershey Company Technical Centre, USA

The Mesoamerican population had over 150 documented applications of cocoa as medicine ranging from cardiac uses to snake bites. Today, a scientific literature search shows over 300 references to the use of cocoa in cardiac medicine. This book for the first time describes the topic of chocolate as medicine from a historical perspective but also explores the benefits of cocoa, its positive health effects and the myths around why chocolate was thought to be bad for you (avoidance in diabetes, bringing out spots, obesity etc). The book is written by a unique combination of a historian of science and a practising scientist with expertise in cocoa and chocolate. It includes a historical perspective on the development of medicinal uses of cocoa, an introduction to the chemistry and physiology involved, and ends with its suggestions for chocolate's future uses in medicine. It will appeal to food scientists, cocoa researchers, ethnobotanists, historians and medical scientists as well as anyone with an interest in this science.

Paperback | 213 pages | 9781849734110 | 2012 | £29.99 | $48.00

Dendrimers in Biomedical Applications

Barbara Klajnert University of Lodz, Poland | **Ling Peng** Université de la Méditerranée, France
Valentin Cena Universidad de Castilla-La Mancha, Spain

Dendrimers are important molecules that are currently undergoing investigation for use in a variety of different biomedical applications. Following the work of COST action TD0802, the main objective of which is to improve existing therapies and find new drugs based on dendrimers, this book provides comprehensive coverage of dendrimer applications. With clear indications for future research and applications, this text will appeal to chemists, biologists and materials scientists working in both academia and industry.

Hardback | 216 pages | 9781849736114 | 2013 | £139.99 | $230.00

Fat Chemistry

The Science behind Obesity

Claire S Allardyce EPFL ISIC, Switzerland

Currently, the health of over half the adult population in the UK suffers because of obesity. The UK is not alone – obesity is a global problem – but the populations of some countries are heavier than others. Based on an extensive review of scientific literature, this topical book is a presentation of the biochemical origins of obesity written in a way that is accessible to the non-specialist. Suitable for the general public, the principal focus of the book is to advance the public understanding and awareness of science through the high interest subject of obesity. Many universities also recommend public understanding of science texts to students as a means of broadening general knowledge and emphasising to students the importance of communicating their research to the public. This book will be key to developing this knowledge.

Paperback | 384 pages | 9781849733250 | 2012 | £24.99 | $40.00

Food

The Chemistry of its Components, 6th edition

Tom Coultate South Bank University, UK

This new edition of the textbook provides a source of detailed information on the chemistry of food. It investigates food components present in large amounts (carbohydrates, fats, proteins, minerals and water) and also those that occur in smaller amounts (colours, flavours, vitamins and preservatives). Food-borne toxins, allergens, pesticide residues and other undesirables are also given detailed consideration. Attention is drawn to the nutritional and health significance of food components. The sixth edition also includes additional chapters on enzymes, nucleic acids and nucleotides.

Paperback | 600 pages | 9781849738804 | 2015 | £34.99 | $57.99

Food Microbiology, 4th edition

Martin R Adams and **Maurice O Moss** University of Surrey, UK | **Peter McClure** Unilever, UK

Now in its fourth edition, this highly successful text covers the full range of topics encompassed in modern food microbiology. This new edition provides updated and revised individual chapters and uses new examples to illustrate incidents with particular attention being paid to images. This textbook is a thorough and accessible account designed for students in the biological sciences, biotechnology and food science. It will also be valuable to researchers, teachers and practising food microbiologists.

Hardback | 500 pages | 9781849739603 | 2015 | £34.99 | $56.00

Food Safety Hazard Guidebook, 2nd edition

Richard Lawley, **Laurie Curtis** and **Judy Davis** Food Safety Info., UK

This book provides a concise, accessible and affordable source of reference covering a wide range of known and emerging food safety hazards, both biological and chemical. It presents accurate and up-to-date factual information relating to individual hazards within a consistent and easy-to-navigate structure, allowing information to be found quickly and easily. A highly useable working companion for food industry professionals, it presents the key facts about each hazard from a practical industry viewpoint and directs the reader to authoritative sources of more detailed information, both published and on the web. An indispensable resource for food scientists.

Hardback | 546 pages | 9781849733816 | 2012 | £121.99 | $195.00

Guanine Quartets

Structure and Application

Lea Spindler Josef Stefan Institute, Slovenia
Wolfgang Fritzsche Institute of Photonic Technology, Germany

Guanosine and its derivatives have a high potential for self-recognition and self-assembly, as well as the recognition ability for other biologically important molecules. This book explores these properties in detail with the goal of increasing knowledge of the basic principles of guanosine-assembly, synthesis of new optimised materials and exploration of their electronic and optical properties. Following the work of COST Action MP0802, the aim is to design novel reproducible and well ordered supramolecular structures to serve as molecular-scale architectures for new hybrid molecular electronics. Coverage includes synthesis, characterisation and optimisation, theoretical modelling and prediction, biochemical and biorecognition properties and applications in nanotechnology – especially in molecular electronics.

Hardback | 356 pages | 9781849734608 | 2013 | £119.95 | $192.00

Handbook of Culture Media for Food and Water Microbiology, 3rd edition

Janet E L Corry University of Bristol, UK | **Gordon D W Curtis** University of Oxford, UK
R M Baird University of Bath, UK

This highly anticipated third edition of a book written by the Working Party on Culture Media of the International Committee on Food Microbiology and Hygiene is a handy reference for microbiologists wanting to know which media to use for the detection of microbes in foods or water, and how to check the performance of the media. The information and methods described in the first two editions have been widely adopted by practical microbiologists and many microbiological media manufacturers. The latest edition concentrates on media for water as well as food microbes and contains a series of chapters on media for different groups of microbes.

Hardback | 1036 pages | 9781847559166 | 2012 | £199.95 | $320.00

Histological Techniques

An Introduction for Beginners in Toxicology

Robert Maynard University of Birmingham, UK | **Noel Downes** and **Brenda Finney** Sequani Limited, UK

Histological techniques form the basis of many areas of research, yet they are often poorly understood. Aimed at postgraduate students and those at an early stage of their career, this title provides a detailed and comprehensive introduction to histological techniques.

Hardback | 334 pages | 9781849739924 | 2014 | £84.99 | $140.00

Iron-Containing Enzymes

Versatile Catalysts of Hydroxylation Reactions in Nature

Samuel P de Visser University of Manchester, UK
Devesh Kumar Babasaheb Bhimrao Ambedkar University, India

Mononuclear iron containing enzymes are important intermediates in bioprocesses and have potential in the industrial biosynthesis of specific products. Consequently, understanding their mechanism and function is important and will assist in searches for commercial exploitation. The editors, leaders in the field of nonheme and heme iron containing monoxygenases, have filled the book with topical review chapters by leaders in the various sub-disciplines. It will therefore be of interest to a large readership including biochemists, bioinorganic chemists, inorganic chemists, physical chemists and computational chemists.

Hardback | 462 pages | 9781849731812 | 2011 | £139.99 | $224.00

McCance and Widdowson's The Composition of Foods

Seventh Summary Edition

Jianzhong Sun Jiangsu University, China | **Shi-You Ding** National Renewable Energy Laboratory, USA
Joy D Peterson University of Georgia, USA

McCance and Widdowsons's The Composition of Foods, Seventh Summary Edition provides a timely, authoritative and comprehensive update of the nutrient data for the most commonly consumed foods in the UK. Foods that are less commonly consumed but are important in the diets of sub-groups of the population are also included.

This Seventh Summary Edition contains data which has been reviewed and updated since the last edition was published in 2002. It incorporates data from previously published supplements plus new analytical data and additional data from manufacturers. New data includes updates on key foods in the UK diet, including flours and grains, bread, pasta, breakfast cereals, biscuits, cakes, eggs, fat spreads, fruits, vegetables, fish and fish products. Values for a wide range of nutrients (eg proximates, inorganics, vitamins, fibre and fatty acids) are provided and additional tables provide data for carotenoid fractions, vitamin E fractions and vitamin K for selected foods. Values for specific nutrients, including sodium, sugars, saturated and trans fatty acids in processed foods have been updated to reflect changes resulting from health policy and recent industry initiatives on reformulations. AOAC fibre values have been included for a wide range of foods to enable energy calculations, including fibre for food labelling purposes.

Aimed at students and professionals in all food and health disciplines, this essential handbook should be on the bookshelf of everyone who needs to know the nutritional value of foods consumed in the UK.

Paperback | 644 pages | 9781849736367 | 2015 | £59.50 | $95.00

Molecular Biology and Biotechnology, 6th edition

Ralph Rapley and **David Whitehouse** University of Hertfordshire, UK

This popular textbook has been revised and updated to provide a comprehensive overview that reflects the latest developments in this rapidly developing area. Continuing with the broad base style of both current molecular and traditional biotechnology, chapters have been updated to reflect current interest and include new areas such as stem cell technology, and important areas in drug discovery such as IP and patents. By presenting information in an easily assimilated from, this book makes an ideal undergraduate text for students of biology and chemistry, as well as appealing to postgraduates.

Hardback | 555 pages | 9781849737951 | 2015 | £55.99 | $89.99

Tanning Chemistry

The Science of Leather

Anthony D Covington The University of Northampton, UK

The leather industry generates in the order of 100 billion dollars a year worldwide. Written by the leading expert in the field, this unique book contains the distilled essence of leather science from both a practical and a theoretical point of view. It encompasses the chemistry and mechanisms of tanning, together with the latest thinking on the fundamental principles of collagen stabilisation. Aimed at students as well as experienced practitioners in the art, this is the only current text on tanning science. It includes a subject index, references and glossary.

Paperback | 520 pages | 9781849734349 | 2011 | £45.99 | $74.00

The Chemistry of Plants

Perfumes, Pigments and Poisons

Margareta Séquin San Francisco State University, USA

This book combines organic chemistry with the living world of plants and is an introduction to organic plant compounds for the non-chemist. It starts with a review of basic concepts of chemistry as they relate to plant life, followed by an introduction to structures of organic compounds and chapters on primary metabolites and plant fragrances, pigments and plant defensive compounds. The final chapter relates plant compounds to human life, with subchapters on foods from plants, medicines, psychoactives, fibers and dyes. Historic discoveries of plant compounds, their developments for contemporary uses (like modern pharmaceuticals) and a section on genetically modified plants connect with topics of recent interest. Plant photos and stories accompany chemistry topics and chemical structures.

Paperback | 226 pages | 9781849733342 | 2012 | £24.99 | $40.00

The Handbook of Medicinal Chemistry

Principles and Practice

Andrew Davis AstraZeneca, Sweden | **Simon E Ward** University of Sussex, UK

Drug discovery is a constantly developing and expanding area of research. Developed to provide a comprehensive guide, *The Handbook of Medicinal Chemistry* covers the past, present and future of the entire drug development process. Highlighting the recent successes and failures, this book will help readers to understand the factors governing modern drug discovery from the initial concept through to translational science and intellectual property. Each chapter includes expert advice to not only provide a rigorous understanding of the principles being discussed but to give useful hints and tips gained from within the pharmaceutical industry to enable medicinal chemists to fully understand the entire drug discovery process and every area in which medicinal chemists are critically involved. This expert advice, combined with project case studies highlighting and discussing all areas of successful projects, make this an essential handbook for all those involved in pharmaceutical development.

Hardback | 753 pages | 9781849736251 | 2015 | £84.99 | $140.00

Download on the App Store

A free app has been created in collaboration with the editors of this book that provides a suite of resources to support the day-to-day work of medicinal chemists. Simply search the App Store for **Medicinal Chemistry Toolkit.**

The Merck Index

An Encyclopedia of Chemicals, Drugs, and Biologicals, 15th edition

Maryadele J O'Neil Merck Publishing Group, USA

The Merck Index is the definitive reference work for scientists and professionals looking for authoritative information on chemicals, drugs and biologicals. It has been the leading source of information on chemical compounds for generations of scientists and professionals, selling over one million copies since its publication in 1889.

The Merck Index contains over 10,000 monographs with information relating to compounds of significance in research, commerce and environmental impact. The 15th edition, available from Royal Society of Chemistry publishing for the first time, is fully revised and updated and contains over 500 new monographs. Over 35% of the existing entries have been updated since the last edition, molecular weights have been recalculated with the latest IUPAC standards and there are revised periodic table and atomic weight tables.

Hardback | 2708 pages | 9781849736701 | 2013 | £99.99 | $150.00

Transforming Food Waste into a Resource

Andrea Segre and **Silvia Gaiani** Università di Bologna, Italy

This easy-to-read manual on overproduction and overconsumption in contemporary society highlights some alarming global data. It discusses the origins and causes of food waste and its correlation with climate change, agriculture, population growth and the need for a more ethical, ecological society. Case studies and practical information are included to show readers ways of transforming food waste into a resource.

Paperback | 279 pages | 9781849732536 | 2011 | £24.99 | $40.00

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