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From the Royal Society of Chemistry

The print and eBooks in our portfolio number in the hundreds, and all are full of relevant, expert insight from international authors and editors. The information required to take a vital next step – whether in study, research or teaching technique – could come from any one of them. So for 2021, we wanted to highlight recently published titles, as well as giving you advanced notice of the books coming in the next six months.

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Specialist Periodical Reports can always be relied upon to provide an expertly reviewed, balanced perspective on specific fields in the chemical sciences. The 50th volume in the trusted Organophosphorus Chemistry collection will be published in 2021. An amazing achievement! You can also look forward to the 50th book in our professional reference series Issues in Environmental Science and Technology. *Environmental Pollutant Exposures and Public Health* will join many other popular titles.

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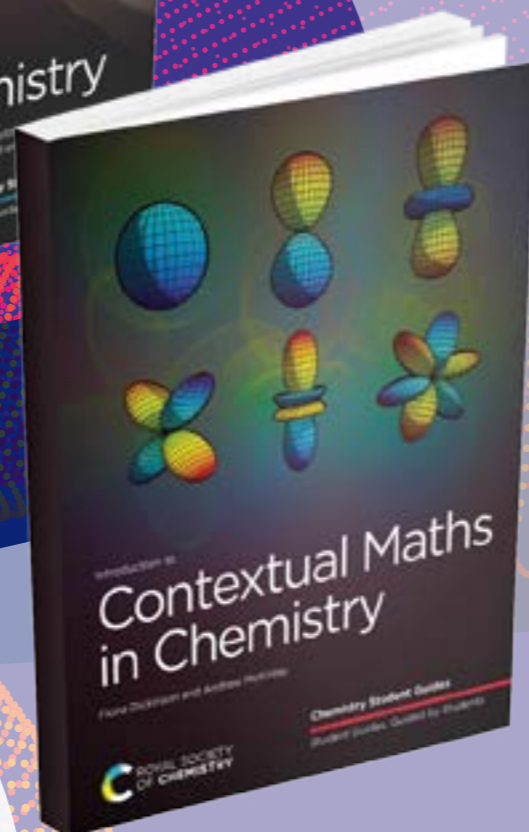
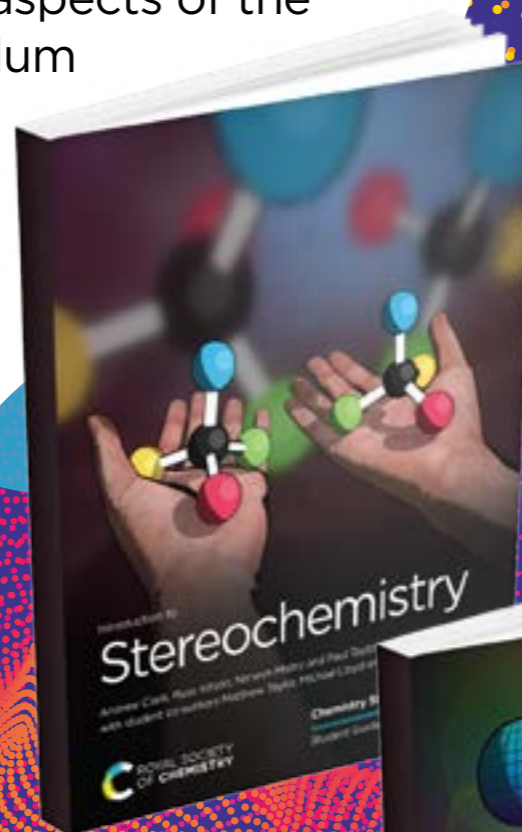
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## Detection Science

### About the series

ISSN 2052-3068

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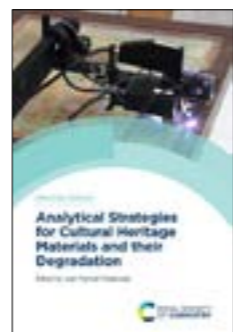
**(Michael) Yang** City University of Hong Kong, Hong Kong

Providing a comprehensive look at the state of the art in detection technologies and materials used in the development of diagnostics for clinical, medicinal, and environmental applications, the books in this Series are a valuable reference for graduate students and professional researchers across academia and industry. Emphasising the detection of chemicals and biochemical species in a quantitative fashion, the Series will also interest advisors, consultants and government agency staff, who will benefit from the detailed nature of these titles.

### Analytical Strategies for Cultural Heritage Materials and their Degradation

**Juan Manuel Madariaga** University of the Basque Country, Spain

Reviewing the analytical strategies used in the study of cultural heritage assets ie movable - artworks and archaeological items - and immovable - eg mural paintings, archaeological sites, historical buildings, this book pays particular attention to the analytical methodology (spectroscopic and chromatographic analysis) and ensuring reliable results are obtained. It considers the influence of the environment on the conservation state and how modern analytical methods have improved the possibilities of analysing materials. The book emphasizes multi-method approaches on a range of materials, an approach that is of keen interest to those working in conservation practice. It is for final year undergraduate study and masters' level and supplementary reading for postgraduates and academics who require analytical techniques to enhance their research.



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### Challenges in Detection Approaches for Forensic Science

**Lynn Dennany** University of Strathclyde, UK

This book will explore the specific challenges encountered by forensic scientists and the developments that are being made to address the requirement of law enforcement agencies within the framework of the legislative requirements. Currently there are many forensic science books, which focus on the underlying theory of chemical approaches, but there is a clear gap in the dissemination of the current state of the art approaches for forensic science. This gap includes current detection strategies and how legislation and changes to forensic practices has prompted these changes as well as how research in the field is seeking to address the current hurdles in a cohesive manner. For graduates and forensic professionals, it will also cover essential principles for students and illustrate how these relate to applications.



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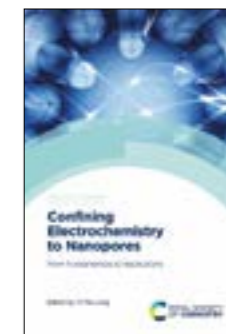
## Detection Science

### Confining Electrochemistry to Nanopores

From Fundamentals to Applications

**Yi-Tao Long** Nanjing University, China

Aimed at developing the concept of the electrochemical confined space in analysing single molecules, this book serves as a stepping stone to many exciting discoveries in nanopore-based analysis of biological processes and chemical reactions in confined space. There has been no newly published books on nanopore technology that provide a general overview of the research on nanopore-based sensing but the field of nanopore sensors is growing rapidly. The book provides a good source of nanopore studies for researchers interested in and working in the general areas of electrochemistry and nanobiotechnology, especially on nanopore sensors.



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### Detection Methods in Precision Medicine

**Mengsu (Michael) Yang** City University of Hong Kong, Hong Kong | **Michael Thompson** University of Toronto, Canada

Precision Medicine is a medical model that proposes the customization of healthcare, with medical decisions, treatments, practices, or products being tailored to the individual patient. It has a particularly important role in the treatment of inherited diseases and cancer as physicians often screen for genetic markers in their patients, yet it is increasingly clear that clinicians are only tapping the surface of what it can offer. Developing new diagnostic tests and expanding the use of biomarkers enables the identification of the molecular cause of disease, and ultimately supports the development of novel, more precisely targeted treatments. This book will support the literature in the area from the bioanalytical point of view. The scientific and medical community are interested in this area with detection methods covering topics for physicians, medical laboratory technologists and scientists/engineers.



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### Disposable Electrochemical Sensors for Healthcare Monitoring

Material Properties and Design

**A Pandikumar** CSIR-Central Electrochemical Research Institute, India | **K S Shalini Devi** CSIR-Central Electrochemical Research Institute, India

This book focuses on the variety of emerging multi-functional materials and biomarkers involved in monitoring major disorders and diseases using disposable electrodes. The specificity of these sensors improves with incorporation of nanocomposites, hybrids or coating with conductive materials. These electrochemical sensors designed with disposable electrodes are modified with various biomarkers, aptamers or specific antibodies for the detection of targeted diseases or disorders. Aimed at academic and research institutes at both the graduate and postgraduate level, the book will be of interest to the health care industries.



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## New Developments in Mass Spectrometry

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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.

### Advanced Fragmentation Methods in Biomolecular Mass Spectrometry

Probing Primary and Higher Order Structure with Electrons, Photons and Surfaces

**Frederik Lermyte** University of Warwick, UK

Breaking down large biomolecules into fragments in a controlled manner is key to modern biomolecular mass spectrometry. This book is a high-level introduction – as well as a reference work for experienced users – to ECD, ETD, EDD, NETD, UVPD, SID, and other advanced fragmentation methods. It provides a comprehensive overview of their history, mechanisms, instrumentation, and key applications. With contributions from leading experts, this book will act as an authoritative guide to these methods. Aimed at postgraduate and professional researchers mainly in academia, but also in industry, it could be used as supplementary reading for advanced students on mass spectrometry or analytical (bio)chemistry courses.



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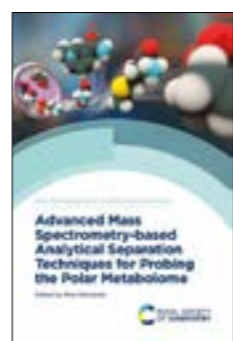


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### Advanced Mass Spectrometry-based Analytical Separation Techniques for Probing the Polar Metabolome

**Rawi Ramautar** Leiden University, The Netherlands

The efficient analysis of polar and charged metabolites in biological samples remains a huge challenge in the field of metabolomics. Novel mass spectrometry-based analytical tools have been developed to enable the sensitive and efficient profiling of polar ionogenic metabolites in various biological samples. This book gives the reader a comprehensive overview of these recent technological developments. Discussing the state-of-the-art of the proposed topics in one single book for probing the polar metabolome, using relevant examples, is unique and needed in the metabolomics field. This book has relevance and appeal to an international audience of analytical and biomedical researchers in industry and academia.



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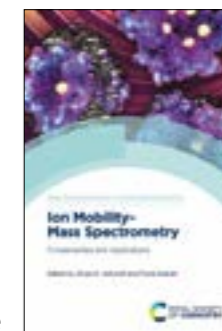
## New Developments in Mass Spectrometry

### Ion Mobility–Mass Spectrometry

Fundamentals and Applications

**Alison E Ashcroft** University of Leeds, UK | **Frank Sobott** University of Leeds, UK

Over the last decade, the use of ion mobility separation in combination with mass spectrometry analysis has developed significantly. This technique adds a unique extra dimension enabling the in-depth analysis of a wide range of complex samples in the areas of the chemical and biological sciences. Providing a comprehensive guide to the technique, each chapter is written by an internationally recognised expert and with numerous different commercial platforms to choose from, this book will help the end users understand the practicalities of using different instruments for different ion mobility purposes. The book is primarily aimed at researchers appealing to practising chemists and biochemists as well as those in the pharmaceutical and medical fields.



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### Mass Spectrometry in Neonatal Screening and Metabolism

Current Practice and Future Perspectives

**Donald H Chace** Metabolic Screening Solutions, USA | **Timothy Garrett** University of Florida, USA

This book describes the largest use of mass spectrometry in clinical laboratories in terms of patient volumes – newborn screening. The newborn screening story is compelling – but rather than just a summary of what it has done, it is important to show where it is going and how it really is paving the way for new era metabolomics and genomics integration. The text focuses on the application setting. Appealing to a wider variety of readers, not just clinical chemists in the space, the book not only describes the literature but also answers the question whether mass spectrometry is the best choice as a primary test or rather as a secondary confirmatory test and approaches why mass spectrometry is important and how to implement it. Clinicians, students in laboratory medicine, laboratory managers and directors will all want to read this timely addition to the literature.



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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 in this field. 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 the instrumentation.

### Advanced Diffusion Encoding Methods in MRI

**Daniel Topgaard** Lund University, Sweden

The medical MRI community is by far the largest user of diffusion NMR techniques and this book captures the current surge of methods and provides a primary source to aid adoption in this field. Recently published papers indicate great potential for improved diagnosis of the numerous pathological conditions associated with changes of tissue microstructure that are invisible to conventional diffusion MRI. This book disseminates these recent developments to the wider community of MRI researchers and clinicians. The chapters cover the theoretical basis, hardware and pulse sequences, data analysis and validation, and recent applications aimed at promoting further growth in the field.



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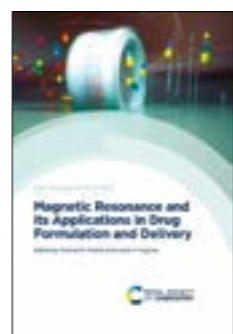


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### Magnetic Resonance and its Applications in Drug Formulation and Delivery

**Michael D Mantle** University of Cambridge, UK | **Leslie P Hughes** AstraZeneca, UK

This book details the latest research and development in the use of magnetic resonance imaging and spectroscopy as tools to give quantitative insights/information concerning late stage pharmaceutical formulation, tablet manufacturing and drug dissolution behaviour. The book combines different facets of magnetic resonance and highlights the use of spatial resolution (MRI) and how this adds to the knowledge base to further our understanding of the microscopic physicochemical processes occurring during drug release from solid dosage forms. Focusing on late stage development rather than molecular drug discovery provides a unique approach and the book will appeal to a diversity of disciplines using spectroscopy for study.



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## New Developments in NMR

### NMR and MRI of Electrochemical Energy Storage Materials and Devices

**Yong Yang** Xiamen University, China | **Riqiang Fu** Florida State University, USA | **Hua Huo** Harbin Institute of Technology, China

This book introduces NMR and MRI methods for investigating electrochemical storage materials and devices including the theory of paramagnetic interactions and relevant calculation methods, a number of specific NMR approaches developed for battery materials and case studies of a variety of related materials. Energy storage material is a hot topic and NMR has emerged as a powerful tool to enable an understanding of the working/failing mechanisms of these materials and devices. Due to the complexity of the topic, the book will be written for academics – postgraduate and above – and industrial readers requiring an overview of new methodologies being developed in the electrochemical arena. Each chapter includes some basic level information aimed at readers less familiar with the topics, including undergraduates.



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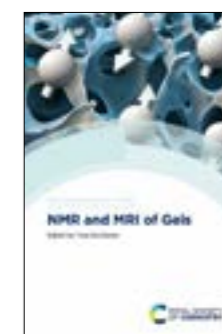


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### NMR and MRI of Gels

**Yves De Deene** Macquarie University, Australia

Gels are used in a large variety of commercial and scientific products from drug delivery and food science to biomedical sensors. This book has been developed to discuss the state-of-the-art of NMR and MRI techniques in studying the physics and chemistry of gel systems. The first part of the book will cover the fundamental physical concepts of gels and the NMR techniques to study gel systems. The second part of the book will be dedicated to the application of gels in life sciences and in the medical practice to validate radiotherapy and new MRI techniques.



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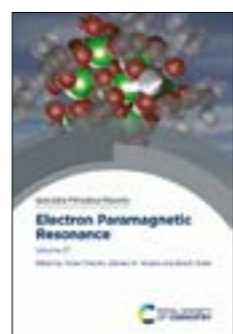
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### Electron Paramagnetic Resonance

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**Victor Chechik** University of York, UK | **Damien M Murphy** University of Cardiff, UK | **Bela E Bode** University of St Andrews, UK

The topics covered in this volume describe contrasting types of electron paramagnetic resonance (EPR) application, which remain very significant in modern science. This volume compiles critical coverage of developments in the recent literature by a hand-picked group of researchers at the cutting-edge of the field. Providing a snapshot of the area, this book is a useful addition to any library supporting this research.



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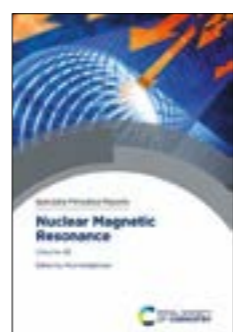
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### Nuclear Magnetic Resonance

Volume 46

**Paul Hodgkinson** Durham University, UK

Nuclear magnetic resonance has proved a uniquely versatile and powerful spectroscopic technique, with applications across chemistry, physics and medicine. The success of NMR and its constant redevelopment means that the literature is vast and wide-ranging. Each chapter in this volume is a distillation of the key recent literature in different areas covering the spectrum of NMR theory and practice, and including solution-state, solid-state and in-vivo NMR. These reports will be invaluable both for new researchers wishing to engage with literature for the first time, and for seasoned practitioners, particularly service managers, wishing to keep in touch with the ever-expanding ways in which NMR is used.



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## Professional Reference

### Advances in Portable X-ray Fluorescence Spectrometry

Instrumentation, Application and Interpretation

**B Lee Drake** University of New Mexico, USA | **Brandi L MacDonald** University of Missouri Research Reactor, USA

This book provides a comprehensive assessment of the state of the art in nondestructive and destructive XRF analysis. With authors from both academia and industry, the coverage is wide ranging including details on applications and how specific analysis are done. The general introductory chapters are very important for informing worldwide users of this technology and how powerful it is. Chapters on mapping and core analysis will go beyond the species of XRF and venture into analytics. Aimed at graduates and postgraduates using this instrumentation who require accessible background information in order to develop quality analysis. It will go beyond appealing to traditional uses (art conservation and archaeology) of this technique to new fields where adoption is moving quickly.



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### Analytical Applications of Functionalized Magnetic Nanoparticles

**Chaudhery Mustansar Hussain** New Jersey Institute of Technology, USA

This book will provide quality research and practical guidance to analytical scientists, researchers, engineers, quality control experts and laboratory specialists. It covers applications of functionalized MNPs in all stages of analytical procedures. Their incorporation has opened new possibilities for sensing, extraction and detection enabling an increase in sensitivity, magnifying precision and improvement in the detection limit of modern analysis. Toxicity, safety, risk, and legal aspects of functionalized MNPs and the future of analytical chemistry with respect to their use is covered. The book provides an integrated approach for advanced analytical methods and techniques for postgraduates and researchers looking for a reference outlining new and advanced techniques surrounding the applications of functionalized nanomaterials in analytical chemistry.



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ISSN 2516-2624

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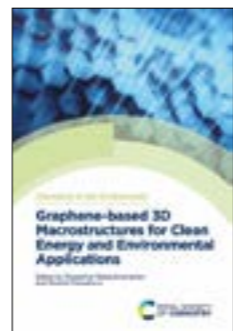
**Rajasekhar Balasubramanian** National University of Singapore, Singapore | **Triantafyllos Kaloudis** Athens Water Supply and Sewerage Company (EYDAP S.A.), Greece | **Rafael Luque** University of Cordoba, Spain

With environmental issues of increasing global concern to both the public and governments, there is growing interest in scientific research that will allow us to predict, prevent and resolve environmental problems. This series recognises the pivotal role of chemistry in understanding the effects of pollution, climate change and natural processes. The titles deliver up-to-date and critical perspectives on the fate, behaviour and interactions of chemicals and pollutants (both natural and man-made) in the environment. The books in this series provide an accessible reference for academics, industrialists and postgraduates working in environmental chemistry, environmental engineering and remediation technology.

### Graphene-based 3D Macrostructures for Clean Energy and Environmental Applications

**Rajasekhar Balasubramanian** National University of Singapore, Singapore | **Shamik Chowdhury** Indian Institute of Technology, India

Graphene-based 3D Macrostructures for Clean Energy and Environmental Applications provides a critical and comprehensive account of the recent advances in the development and potential applications of high performance 3D GBMs for tackling global energy and environmental issues in a sustainable manner. Particular attention is paid to the fabrication schemes, modulation of physicochemical properties, and their integration into practical devices, and the roles of surface chemistry and pore morphology on the overall performance of 3D GBMs are examined.



Hardback | 400 pages  
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ISBN 978-1-83916-001-1



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## Energy and Environment Series

### About the series

ISSN 2044-0774

#### Series editors

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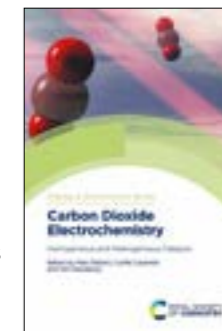
Energy lies at the heart of modern society, and it is critical that we make informed choices of the methods by which we convert and manage energy. This series provides up-to-date and critical perspectives on the various options that are available. The wide range of topics covered reflects the wealth of chemical ideas and concepts that have the potential to make an important impact in the search for sustainable energy. Books in this series form important references for chemists and material scientists, chemical and process engineers, energy researchers, bio-scientists and environmental scientists from across academia, industry and Government.

### Carbon Dioxide Electrochemistry

Homogeneous and Heterogeneous Catalysis

**Marc Robert** Université Paris Diderot, France | **Cyrille Costentin** Université Paris Diderot, France | **Kim Daasbjerg** Aarhus University, Denmark

Conversion of light and electricity to chemicals is an important component of a sustainable energy system. Carbon Dioxide Electrochemistry showcases different advances in the field and bridges the two worlds of homogeneous and heterogeneous catalysis that are often perceived as in competition in research. Written and edited by internationally recognised scientists, this title will appeal to students and researchers working in energy, catalysis, chemical engineering and physical chemistry.



Hardback | 450 pages  
9781788015462 | 2021  
£179.00 | \$250.00



ISBN 978-1-78801-546-2

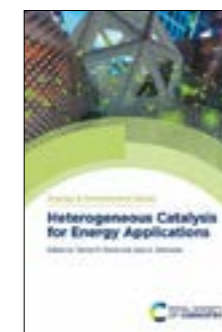


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### Heterogeneous Catalysis for Energy Applications

**Tomas R Reina** University of Surrey, UK | **Jose A Odriozola** Universidad de Sevilla, Spain

Heterogeneous catalysis plays a central role in the global energy paradigm, with practically all energy-related process relying on a catalyst at a certain point. This book provides an overview of the design, limitations and challenges of heterogeneous catalysts for energy applications. With contributions from leaders in the field, Heterogeneous Catalysis for Energy Applications is an essential toolkit for chemists, physicists, chemical engineers and industrialists working on energy.



Hardback | 516 pages  
9781788017183 | 2020  
£179.00 | \$250.00



ISBN 978-1-78801-718-3



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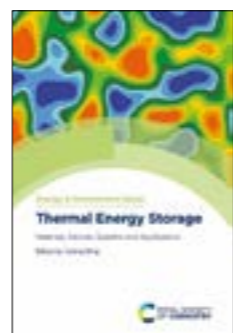
## Energy and Environment Series

### Thermal Energy Storage

Materials, Devices, Systems and Applications

**Yulong Ding** University of Birmingham, UK

Thermal energy storage refers to a collection of technologies that store energy in the forms of heat, cold or their combination, which currently accounts for approximately 55% of global non-pumped hydro installations. The potential market for thermal energy storage on future low-carbon energy systems and associated social and economic impacts are enormous, with significant progress having been made in recent years. Edited by an expert in the field, this title is suitable for graduate students and researchers in energy, energy storage, materials engineering, chemical and process engineering, mechanical engineering and manufacture technologies.



Hardback | 500 pages  
9781788017176 | 2021  
£179.00 | \$250.00

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ISBN 978-1-78801-717-6

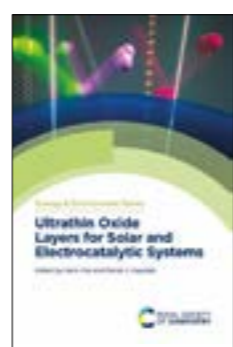


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### Ultrathin Oxide Layers for Solar and Electrocatalytic Systems

**Heinz Frei** Lawrence Berkeley National Laboratory, USA | **Daniel Esposito** Columbia University, USA

Ultrathin metal oxide layers have emerged as a powerful approach for substantially enhancing the performance of photo, electro, or thermal catalytic systems for energy, in some cases even enabling the use of highly attractive materials previously found unsuitable. This book brings together the fundamentals and applications of ultrathin oxide layers while highlighting connections and future opportunities. Edited by leaders in the field, and with contributions from global experts, this title will be of interest to graduate students and researchers across materials science and chemistry who are interested in ultrathin oxide layers and their applications.



Hardback | 350 pages  
9781839161797 | 2021  
£169.00 | \$235.00

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ISBN 978-1-83916-179-7



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## Green Chemistry Series

### About the series

ISSN 1757-7039

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**Series editors**

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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. This 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.

### CO<sub>2</sub>-switchable Materials

Solvents, Surfactants, Solutes and Solids

**Philip G Jessop** Queen's University, Canada | **Michael F Cunningham** Queen's University, Canada

Summarizing recent progress in the preparation, self-assembly, and functional applications of CO<sub>2</sub>-responsive materials, this book explores the physical chemistry of CO<sub>2</sub>-switching, including constraints on structural design and process conditions, together with applications. The book discusses the environmental, health, and safety advantages and disadvantages compared to conventional materials. It is ideal for researchers and industrialists working in green chemistry, chemical engineering, polymer chemistry and material science.



Hardback | 240 pages  
9781782628767 | 2021  
£149.00 | \$205.00

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ISBN 978-1-78262-876-7



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### Renewable Resources for Surface Coatings, Inks and Adhesives

**Rainer Höfer** Editorial Ecosiris, Germany

Providing a detailed survey of renewable raw materials for paints, inks and glues, this book examines the raw materials that are used, their sourcing and processing. It explores biorefineries and white biotechnology manufacturing technologies and the use of renewable raw materials in the latest developments in industrial surface coatings and adhesives. The book is ideal for researchers and industrialists working in green chemistry, industrial coatings, adhesives and inks and printing technologies.



Hardback | 300 pages  
9781782629931 | 2021  
£159.00 | \$220.00

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ISBN 978-1-78262-993-1



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## Issues in Environmental Science and Technology

### About the series

ISSN 1350-7583

#### Series editors

**R M Harrison** University of Birmingham, UK

Written by world experts in their specialised fields, this series tackles important environmental topics. It also focuses on broader issues, notably economic, legal and political considerations. Authors are drawn from industry, the public service and academic organisations. The books are invaluable for scientists and engineers in industry and public service, consultancy and academic institutions. They are also essential reading for students taking specialised courses in environmental chemistry, and provide supplementary reference material for general science courses.

### Environmental Pollutant Exposures and Public Health

**R M Harrison** University of Birmingham, UK

On a day-to-day basis, we are constantly exposed to a variety of different pollutants. From the air we breathe to the food we eat, undesirable substances can be found everywhere and they can have significant health effects. Covering topics from dietary exposure to chemicals through to the health effects of climate change, this book brings together contributors from around the world to highlight the latest science on how environmental pollutant exposure impacts upon public health.



Hardback | 371 pages  
9781788018951 | 2021  
£70.00 | \$95.00



ISBN 978-1-78801-895-1



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## Professional Reference

### Life Cycle Assessment

A Metric for The Circular Economy

**Aiduan Borrion** University College London, UK | **Mairi J Black** University of Surrey, UK | **Onesmus Mwabonje** Imperial College London, UK

Life Cycle Assessment (LCA) is an established methodology used to quantify the environmental impacts of products, processes and services. Circular Economy (CE) thinking is a conceptual way of thinking of the impacts of consumption. Providing a robust systematic approach to the circular economy concept, using the established methodology of LCA, this book will be a practical guide for those who wish to use LCA as a research tool or to inform policy, process, and product improvement.



Hardback | 320 pages  
9781788014458 | 2021  
£70.00 | \$95.00



ISBN 978-1-78801-445-8



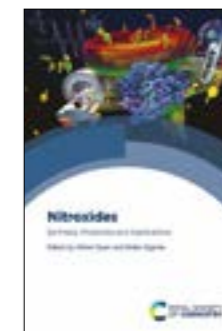
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### Nitroxides

Synthesis, Properties and Applications

**Olivier Ouari** Aix-Marseille University, France | **Didier Gimes** Aix-Marseille University, France

Nitroxides are versatile small organic molecules possessing a stabilised free radical. With their unpaired electron spin, they display a unique reactivity towards various environmental factors, enabling a diverse range of applications. This book covers the synthesis, physicochemical studies and applications of nitroxides, showcasing the developments which have occurred in recent years. Edited and written by experts working in the field, this title will be of interest to graduate students and researchers working across chemistry, physics, biology and materials science.



Hardback | 400 pages  
9781788017527 | 2021  
£179.00 | \$250.00



ISBN 978-1-78801-752-7



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## Food Chemistry, Function and Analysis

### About the series

ISSN 2398-0656

#### Series editors

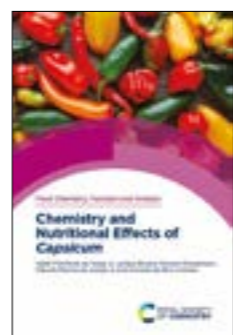
**Gary Williamson** Monash University, Australia | **Alejandro G Marangoni** University of Guelph, Canada | **Graham A Bonwick** AgriFoodX Limited, Chester, UK | **Catherine S Birch** AgriFoodX Limited, Chester, UK

Food Chemistry, Function and Analysis provides a suite of reference books focusing on food chemistry, the functions of food in relation to health and the analytical methods and approaches used by scientists in the area. Providing comprehensive coverage of important topics such as the biochemistry of food, physical properties and structure, efficacy and mechanisms of bioactives in the body including biomarkers, nutrient physiology/metabolism and interactions and the role of nutrition and diet in disease. The series is aimed at academic and industrial researchers and graduate students in food science and chemistry as well as for physicists, biochemists, nutritionists and others who work at the interface of the chemistry, physics and biology of food.

### Chemistry and Nutritional Effects of Capsicum

**Valdir Florêncio da Veiga, Jr** Military Institute of Engineering, Brazil | **Larissa Silveira Moreira Wiedemann** Universidade Federal do Amazonas, Brazil | **Claudio Pereira de Araújo, Jr** Military Institute of Engineering, Brazil | **Ananda da Silva Antônio** Federal University of Amazonas, Brazil

This book identifies and provides the diversity of beneficial properties provided by capsicum peppers and their application in the food industry from food additives to defensive devices and medicines. Providing a comprehensive overview, this book includes a holistic description of the properties of Capsicum and how these correlate with their chemical profile. Intended for all types of audiences, it is a resource for those curious about pepper's pungency, for graduate students aiming to improve their skills and professional who need to update their knowledge regarding pepper's chemistry and pharmacology.



Hardback | 300 pages  
9781788017503 | 2021  
£149.00 | \$205.00



ISBN 978-1-78801-750-3



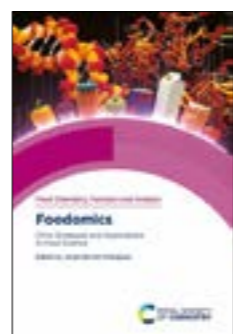
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### Foodomics

Omic Strategies and Applications in Food Science

**Jorge Barros-Velázquez** University of Santiago de Compostela, Spain

Presenting an up-to-date review of the state-of-the-art and main applications of omics technologies to current hot topics in food sciences, this book is divided into four convenient sections. The book brings together work from top international scientists to produce the most significant academic book for some years on omics and food for a broad audience. It presents unique features not covered so far by other books, such as a detailed description of different strategies and applications of omics techniques to many food sectors and provides a welcome addition to the cutting-edge literature in this area for researchers and professionals in food science and food chemistry.



Hardback | 420 pages  
9781788018845 | 2021  
£179.00 | \$250.00



ISBN 978-1-78801-884-5



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## Food Chemistry, Function and Analysis

### Food Digestion and Absorption

Its Role in Food Product Development

**C Anandharamakrishnan** Indian Institute of Food Processing Technology, India | **Jeyan Arthur Moses** Indian Institute of Food Processing Technology, India | **S Priyanka** Indian Institute of Food Processing Technology, India

Focusing on the complexity of the food digestion process from oral cavity to intestine, this book looks at the anatomical intricacies of the digestive system, techniques currently used to study food digestibility, the glycemic index and bioavailability of food components. It also provides a detailed understanding of various modification techniques, critical information for any food product development, such as modification of food structure, its composition, and size. Apart from readers from the field of medicine, this book would be highly inter-disciplinary and would attract readers from food science, nutrition and food physics.



Hardback | 380 pages  
9781788018586 | 2021  
£169.00 | \$235.00



ISBN 978-1-78801-858-6



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### Food Proteins and Peptides

Emerging Biofunctions, Food and Biomaterial Applications

**Chibuikwe C Udenigwe** University of Ottawa, Canada

This book discusses the chemistry of food proteins and peptides and their relationship with nutritional, functional, and health applications. Bringing together authorities in the field, it provides a comprehensive discussion focused on fundamental chemistries and mechanisms underpinning the structure-function relationships of food proteins and peptides. Research into this area behind the functional, health and nutritional benefits is burgeoning and has gained the interest of scientists, the industry, regulatory agencies, and consumers. This book fills the knowledge gap providing an excellent source of information for researchers, instructors, students, food and nutrition industry, and policy makers.



Hardback | 500 pages  
9781788018593 | 2021  
£179.00 | \$250.00



ISBN 978-1-78801-859-3



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### Metabolism of Nutrients by Gut Microbiota

**Joseph F Pierre** University of Tennessee Health Science Center, USA

This book highlights emerging functional and mechanistic research findings that illustrate the inner workings of the dietary-microbial-host relationship to metabolic regulation. Discussing how diet regulates microbial function with metabolic implications for human health, the chapters are designed to cover the broad concepts of microbial-host interactions under the dietary influences of specific macronutrients, micronutrient, small molecule generation, bile acid circulation, with inclusion of later clinical chapters encompassing topics like bariatric surgery and current understanding of probiotics, prebiotics, and synbiotics. In a nutshell - different micronutrients affect the gut and are absorbed in different ways - a better understanding of this relationship is one of the most exciting parts of functional food research.



Hardback | 320 pages  
9781788017480 | 2021  
£149.00 | \$205.00



ISBN 978-1-78801-748-0



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## Food Chemistry, Function and Analysis

### Nutrimetabonomics

Principles and Techniques

**Sandrine P Claus** University of Reading, UK | **Isabel Bondia-Pons** Steno Diabetes Centre, Denmark

Nutrimetabonomics offers insight into the effects of diet and nutrition on humans by measuring and mathematically modelling changes in the levels of products of metabolism found in human fluids and tissues. This book covers the whole process, from experiment design to data analysis and interpretation. Written by world experts in the field, it will appeal to those looking to gain an understanding of the technique and its practical aspects, from food scientists to biochemists.



Hardback | 250 pages  
9781782627777 | 2021  
£159.00 | \$220.00

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ISBN 978-1-78262-777-7

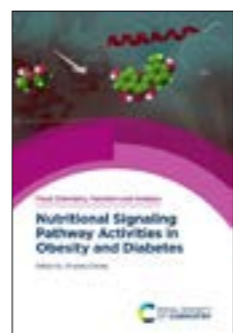


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### Nutritional Signaling Pathway Activities in Obesity and Diabetes

**Zhiyong Cheng** The University of Florida, USA

Nutrients act as signaling molecules initiating and mediating signaling transduction that regulates cell function and homeostasis. As such, nutrient status has been linked to altered profiles of transcripts and protein expression, which affect mitochondrial function, autophagy, inflammation, and metabolism. This book disseminates the cutting-edge knowledge pertaining to nutritional signaling activities in obesity and diabetes, including the regulatory mechanisms and perspectives of nutritional interventions for disease prevention. It brings the reader in-depth understanding of the nutritional aspects, cellular and molecular biology, as well as pathophysiology of obesity and diabetes. In addition, each chapter of the book includes a component of future direction or intervention perspective based on the pathways discussed in the chapter, making the new knowledge transformative and translational. Aimed at researchers and professionals in nutrition, diet, diabetes, and obesity, this book will also appeal to health science researchers.



Hardback | 338 pages  
9781788015578 | 2021  
£169.00 | \$235.00

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ISBN 978-1-78801-557-8



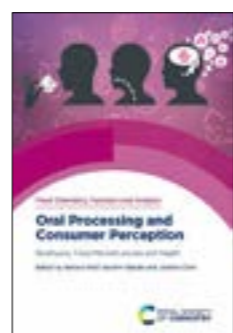
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### Oral Processing and Consumer Perception

Biophysics, Food Microstructures and Health

**Bettina Wolf** University of Birmingham, UK | **Serafim Bakalis** The University of Nottingham, UK | **Jianshe Chen** Zhejiang Gongshang University, China

This book provides a comprehensive overview of food oral processing. It will be of interest to postgraduate students and researchers in academia and industry who may be from a very diverse background ranging from food process engineers to functional food developers and professionals concerned with swallowing and taste disorders. Hence, the book will include some fundamental chapters at the beginning of each section to aid the understanding of the later more specific oral processing chapters.



Hardback | 450 pages  
9781788017152 | 2021  
£179.00 | \$250.00

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ISBN 978-1-78801-715-2



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## Food Chemistry, Function and Analysis

### The Chemistry and Bioactive Components of Turmeric

**Sreeraj Gopi** Aurea Biolabs Private Limited, India | **Sabu Thomas** Mahatma Gandhi University, India | **Ajaikumar B Kunnumakkara** Indian Institute of Technology Guwahati, India | **Bharat B Aggarwal** Inflammation Research Center, USA  
**Augustine Amalraj** Aurea Biolabs Private Limited, India

Turmeric is cultivated in tropical and sub-tropical regions around the world and used extensively as a colouring and flavouring agent. It is also one of the most popular medicinal herbs, with a wide range of pharmacological activities attributed mainly to curcuminoids and two related compounds, demethoxycurcumin and bisdemethoxycurcumin. This book brings together the research carried out in the area of the constituents obtained from turmeric such as curcuminoid, volatile oil, proteins and carbohydrates and their medicinal, nutraceutical and cosmetic applications. It starts from the isolation of components from turmeric and summarizes the chemistry of isolated compounds, the synthetic methodology to prepare them, various formulations of important components of turmeric to enhance the bioavailability and their biological activity. It is a comprehensive treatment of this important spice appealing to researchers and professionals in natural products and nutraceuticals and food chemists.



Hardback | 450 pages  
9781788015554 | 2021  
£169.00 | \$235.00

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ISBN 978-1-78801-555-4



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## Professional Reference

### Concepts of Small-scale Food Processing

**Donald G. Mercer** University of Guelph, Canada

Providing detailed information on key areas of post-harvest technologies, this book is written with small-scale processors and entrepreneurs in food processing in mind. Uniquely it will review the hands-on aspects of food processing from a largely non-academic viewpoint. It is written in non-technical language and covers everything from the basic science of why food is processed to a description of the main methods used. The target audience for this book is vastly under-served with appropriate information and the abundant use of photographs, showing the various concepts described in the text, makes this book appealing to those required to understand their food process operations.



Hardback | 416 pages  
9781788018401 | 2021  
£70.00 | \$98.00

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ISBN 978-1-78801-840-1



### Consumer-based New Product Development for the Food Industry

**Sebastiano Porretta** Experimental Station for the Food Preserving Industry, Italy | **Howard Moskowitz** Mind Genomics Advisors, USA | **Attila Gere** Szent István University, Hungary

In food product development, as in all new product development, time is money. This is the first book that describes and explains food development from the point of view of the consumer rather than from the top down approach. Innovative development starts with the consumers and makes use of new disrupting technologies to describe the process. Combining research from experienced and international top quality contributors, it defines the more nuanced development solutions that are becoming available. It includes case studies from around the world that consider aspects of consumer behaviour as well as consumer responses to market research. Aimed at all those involved in new product development, e.g marketing personnel, food engineers and manufacturers as well as food scientists, this book will provide a fascinating insight into this exciting area of research.



Hardback | 250 pages  
9781839161391 | 2021  
£120.00 | \$168.00

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ISBN 978-1-83916-139-1



### Saltmarsh's Essential Guide to Food Additives

**Mike Saltmarsh** Inglehurst Foods Limited, UK

Food additives have played and still play an essential role in the food industry. Additives span a great range from simple materials like sodium bicarbonate, essential in the kitchen for making cakes, to mono and diglycerides of fatty acids, essential emulsifiers in low fat spreads and in bread. It has been popular to criticise food additives, and in so doing, to lump them all together, but this approach ignores their diversity of history, source and use. While the pace of change in legislation and application of food additives has slowed, there have been a number of changes since the fourth edition was published in 2013. The book will include food additives and why they are used, safety of food additives in Europe, additive legislation within the EU and outside Europe and the complete listing of all additives permitted in the EU. Bringing the literature up to date, it will include a new chapter on clean labelling and comment on the impact of the departure of the UK from the EU. Providing an invaluable resource for food and drink manufacturers, this book is the only work covering in detail every additive, its sources and uses.



Hardback | 320 pages  
9781839161032 | 2021  
£75.00 | \$105.00

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ISBN 978-1-83916-103-2



## Biomaterials Science Series

### About the series

ISSN 2397-1401

**Editor-in-chief**

**Julian Jones** Imperial College London, UK

**Series editors**

**Changyou Gao** Zhejiang University, China | **Cole DeForest** University of Washington, USA

Addressing the hottest topics in biomaterials science, these authoritative texts provide in-depth overviews and analysis for graduates, academics and practitioners requiring a deeper understanding of the subject. Emphasising a physical science and engineering approach, titles address physicochemical properties and structure-property relationships to inform function and design. Capturing underpinning principles applied to biomaterials science, as well as emerging technological advances and applications, this series is a high quality resource for those studying and conducting research in biomaterials science and engineering.

### Biomimetic Protein Based Elastomers

Emerging Materials for the Future

**Namita Roy Choudhury** University of Adelaide, Australia | **Julie C Liu** Purdue University, USA | **Naba K Dutta** RMIT University, Australia

Elastomeric proteins are ubiquitous in nature and exhibit an exceptionally broad range of material properties which are necessary for many biological functions including normal cardiac development and function, elasticity in human arterial walls as well as jumping and flying mechanisms of arthropods. Edited by active researchers in the field, the book provides a timely overview of the materials, along with synthesis techniques, responsive behaviour and health applications.



Hardback | 500 pages  
9781788010788 | 2021  
£179.00 | \$251.00

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ISBN 978-1-78801-078-8

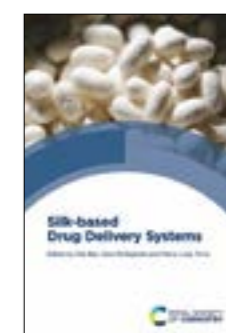


## Professional Reference

### Silk-based Drug Delivery Systems

**Elia Bari** University of Pavia, Italy | **Sara Perteghella** University of Pavia, Italy | **Maria Luisa Torre** University of Pavia, Italy

Covering spider silk and silk worm cocoons, the editors elucidate the extraction, structure and properties of silk sericin and silk fibroin. Showing how these proteins are employed in micro and nano drug delivery systems, their use in pre-clinical and clinical trials, and closing with a chapter on sustainability- driven innovation in the pharma industry, this book is ideal for graduates and researchers in biomaterials science and pharmaceutical science.



Hardback | 225 pages  
9781788017725 | 2021  
£159.00 | \$220.00

ee

ISBN 978-1-78801-772-5





## Inorganic Materials Series

### About the series

ISSN 2472-3819

#### Series editors

**Duncan W Bruce** University of York, UK | **Dermot O'Hare** University of Oxford, UK | **Richard I Walton** University of Warwick, UK

This series will provide authoritative coverage of topical and emerging research areas in inorganic materials chemistry and its related disciplines in physics, biology and materials science. The series will cover the three key areas of materials class, function and methodology, with each volume themed around a specific type of material, characterisation method, preparation technique or application. The books are written at a level accessible to advanced undergraduates, postgraduates and researchers wishing to learn about the subject.

### Biomedical Applications of Inorganic Materials

**Gareth R Williams** University College London, UK

This book provides a contemporary research-led overview of the applications of inorganic materials in biomedicine. It begins with a short introduction summarising fundamental concepts, then discusses key areas in which inorganic materials have been applied. A clear focus is maintained on the fate of the applied materials in vivo, clinical considerations, and the path to translation from lab to clinic. With contributions from leading researchers, Biomedical Applications of Inorganic Materials provides a comprehensive introduction for advanced undergraduates, postgraduates and researchers.



Hardback | 350 pages  
9781788016063 | 2021  
£99.99 | \$140.00



ISBN 978-1-78801-606-3



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### Computer Simulation of Porous Materials

Current Approaches and Future Opportunities

**Kim Jelfs** Imperial College London, UK

Computer Simulation of Porous Materials covers the key approaches in the modelling of porous materials, with a focus on how these can be used for structure prediction and to either rationalise or predict a range of properties. Through chapters focusing on techniques for specific types of applications and properties, it outlines the challenges and opportunities in applying approaches and methods to different classes of systems, including a discussion of high-throughput screening. Edited by a world leader in the field, this title is presented at a level accessible to advanced undergraduates, postgraduates and researchers wishing to learn more about the topic.



Hardback | 350 pages  
9781788019002 | 2021  
£99.99 | \$140.00



ISBN 978-1-78801-900-2



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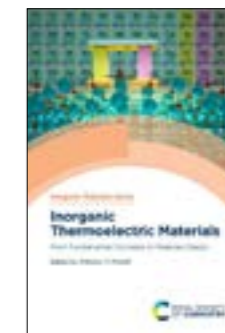
## Inorganic Materials Series

### Inorganic Thermoelectric Materials

From Fundamental Concepts to Materials Design

**Anthony V Powell** University of Reading, UK

Thermoelectric devices convert a heat flux directly into electrical power. They afford opportunities to achieve efficiency savings in a variety of applications, through the conversion of otherwise waste heat into useful electrical energy. Implementation of this technology requires new materials that offer better performance and stability and contain readily available and inexpensive elements. Inorganic Thermoelectric Materials reviews the important new families of advanced materials that have emerged and taken the field beyond the long-standing focus on traditional thermoelectric materials. With contributions from global experts, this title will be of interest to advanced undergraduates, postgraduates and researchers.



Hardback | 350 pages  
9781788017596 | 2021  
£99.99 | \$140.00



ISBN 978-1-78801-759-6



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### The Chemistry of Inorganic Biomaterials

**Christopher Spicer** University of York, UK

Biomaterials offer the potential to restore and supplement the function of tissues and organs following injury or disease. The use of inorganic materials in the clinic to date has been widespread, in the form of metallic joint replacements and ceramic implants. The Chemistry of Inorganic Biomaterials overviews the underlying chemistry behind the most common and cutting-edge inorganic materials in current use, or approaching use, in vivo. Written in an accessible style, this book will be of interest to advanced undergraduates, postgraduates and researchers in biomaterials, inorganic materials and materials chemistry.



Hardback | 350 pages  
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£99.99 | \$140.00



ISBN 978-1-78801-753-4

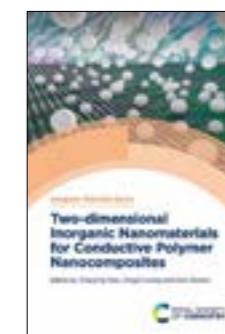


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### Two-dimensional Inorganic Nanomaterials for Conductive Polymer Nanocomposites

**Chaoying Wan** University of Warwick, UK | **Xingyi Huang** Shanghai Jiao Tong University, China | **Chris Bowen** University of Bath, UK

Functional, flexible and lightweight products are in high demand for modern technologies ranging from microelectronics to energy storage devices. The majority of polymers are thermal and electrical insulators, which hinder their use in these applications. This book highlights the synthesis, chemistry and applications of two-dimensional (2D) inorganic nanoplatelets in polymer nanocomposites. Chapters cover technical challenges, such as surface functionalisation, compatibilization, interfacial interaction, dispersion, and manufacturing technologies of the polymer nanocomposites. This title provides a much-needed overview of the field, giving advanced undergraduates, postgraduates and other researchers a convenient introduction to the topic.



Hardback | 350 pages  
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ISBN 978-1-78801-843-2



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## Monographs in Supramolecular Chemistry

### About the series

ISSN 1368-8642

#### Series editors

**Jonathan Steed** Durham University, UK | **Philip Gale** The University of Sydney, Australia

Supramolecular chemistry concerns the structure and function of molecular assemblies formed through weak interactions. These complexes have found diverse applications in materials chemistry, nanoscience, catalysis, food sciences, and medicine, and this has led to a rapid expansion in supramolecular chemistry research. With contributions from high profile international scientists working within the field, each book in the series covers a key concept for graduate-level students and above interested in supramolecular chemistry and its diverse applications. The books are ideal for reference and as state-of-the-art guides, and they aim to enable further developments of new applications through an understanding of the fundamentals and a comprehensive overview of the latest research.

### Reactivity in Confined Spaces

**Gareth Lloyd** Lincoln University, UK | **Ross S Forgan** Glasgow University, UK

The chemistry that occurs within confined spaces is a product of the collective forces that go beyond singular factors. Chapters in this book combine the classical host-guest chemistry with catalysis, reactivity and modern supramolecular chemistry. With contributions from key authors in the field, *Reactivity in Confined Spaces* will be of interest to graduate students and researchers working in supramolecular chemistry, homogeneous catalysis, organic chemistry, materials science and polymer chemistry.



Hardback | 450 pages  
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ISBN 978-1-78801-776-3



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### Structure and Dynamics in Solid-state Inclusion Compounds

**Leonard J Barbour** Stellenbosch University, South Africa | **Luigi R Nassimbeni** University of Cape Town, South Africa

Recent advances in structural methods and in situ techniques have greatly facilitated the elucidation of crystal and molecular structures. Concurrent advances have also occurred in the development of complementary techniques. This book describes the methods used to elucidate structure–property relationships of solid-state inclusion compounds. In particular, it focuses strongly on structural chemistry and the physical methods used to determine bulk properties. Written by world leaders in the field, this title will appeal to students and researchers working in solid-state organic chemistry, crystal engineering and supramolecular chemistry.



Hardback | 270 pages  
9781788014106 | 2021  
£159.00 | \$220.00



ISBN 978-1-78801-410-6



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## Monographs in Supramolecular Chemistry

### Supramolecular Chemistry in Biomedical Imaging

**Stephen Faulkner** University of Oxford, UK | **Thorfinnur Gunnlaugsson** Trinity College Dublin, Ireland | **Gearóid Ó Máille** Trinity College Dublin, Ireland

There have been great advances in biomedical imaging techniques in recent years, with supramolecular interactions playing a key role. This book clarifies the current understanding of the techniques used in imaging and the molecular and supramolecular systems used. It caters for academics coming to the field from mainstream supramolecular chemistry and graduate students interested in supramolecular chemistry, imaging agents and imaging techniques for biomedical applications.



Hardback | 300 pages  
9781782622970 | 2021  
£159.00 | \$220.00



ISBN 978-1-78262-297-0



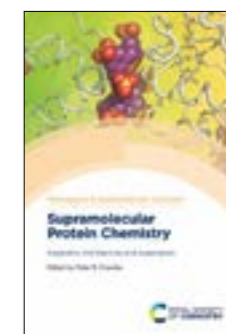
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### Supramolecular Protein Chemistry

Assembly, Architecture and Application

**Peter B Crowley** NUI Galway, Ireland

Building on decades of “host-guest” research, recent years have seen a surge of activity in water-soluble supramolecular receptors for protein recognition and assembly. This book addresses the exciting interface of supramolecular chemistry and protein science. Chapters cover supramolecular approaches to protein recognition, assembly and regulation. Principles outlined will highlight the opportunities that are readily accessible to collaborating chemists and biochemists. *Supramolecular Protein Chemistry* will be of particular interest to graduate students and researchers working in supramolecular chemistry, protein science, self-assembly, biomaterials, biomedicine and biotechnology.



Hardback | 450 pages  
9781788017541 | 2021  
£169.00 | \$236.60



ISBN 978-1-78801-754-1



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## Nanoscience & Nanotechnology Series

### About the series

ISSN 1757-7136

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**Nguyễn T K Thanh** University College London, UK

**Series editors**

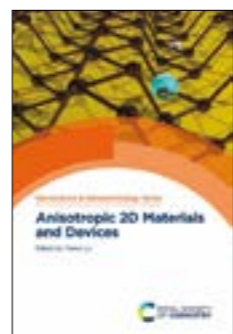
**Gabriel Caruntu** Central Michigan University, USA | **Shinya Maenosono** Japan Advanced Institute of Science and Technology, Japan | **Neerish Revaprasadu** University of Zululand, South Africa

The possible uses of nanotechnology span many fields from health to the environment and energy; as a result there is a wealth of scientific nanoscience research taking place all over the world. When there is so much information available on the topic, it can be difficult to get a complete overview of the latest developments. The Nanoscience and Nanotechnology Series provides a comprehensive resource of books covering key topics such as the synthesis, characterisation, performance and properties of nanostructured materials and technologies and their applications. With contributions from leading experts in nanoscale research, the books are suitable for graduate student level and above in chemistry, physics, biology, materials science, engineering and medicine wanting to know more about nanoscience.

### Anisotropic 2D Materials and Devices

**Yuerui Lu** Australian National University, Australia

Presenting recent progress in exploring anisotropic 2D materials, the reader will be introduced to phosphorene and its arsenic alloys, monochalcogenides of group IV elements in the form of MX (M = Ge, Sn and X = S, Se, Te), low-symmetry transition-metal dichalcogenide (TMD) materials such as rhenium disulphide (ReS<sub>2</sub>) and rhenium diselenide (ReSe<sub>2</sub>), and organic 2D materials. Covering many aspects of anisotropic 2D materials, including recent research progress, major obstacles, and future direction, this book will be a useful reference to the scientific communities working in related research fields, especially for materials scientists, chemists, physicists and engineers. This book may also be of use to those in chemical academia and industry more broadly.



Hardback | 500 pages  
9781788015066 | 2021  
£179.00 | \$250.00

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ISBN 978-1-78801-506-6



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### Bionanodesign

Old Forms for New Functions 2nd Edition

**Maxim Ryadnov** National Physical Laboratory, UK

Bionanodesign has been fully revised and updated to bring together contemporary approaches for designing nanostructures that employ naturally-derived self-assembling motifs as synthetic platforms. The overall aim is to compile the existing understanding of rules that govern biomolecular self-assembly into a practical guide to molecular nanotechnology. Written by a world recognised expert, this book provides an authoritative guide to those working in design and development of nanomaterial research in industry and academia, from postgraduate researchers upwards.



Hardback | 250 pages  
9781782628163 | 2021  
£159.00 | \$220.00

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ISBN 978-1-78262-816-3



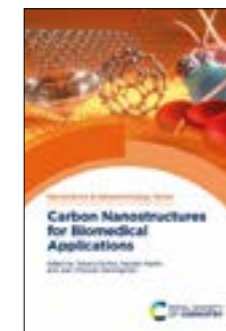
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## Nanoscience & Nanotechnology Series

### Carbon Nanostructures for Biomedical Applications

**Tatiana Da Ros** Trieste University, Italy | **Nazario Martin** Universidad Complutense Madrid | **Jean-Francois Nierengarten** University of Strasbourg, France

Edited by renowned experts in the subject, this book collects and delineates the most notable advances within the growing field surrounding carbon nanostructures for biomedical purposes. Exploration ranges from fundamentals around classifications to toxicity, biocompatibility and the immune response. Emerging classes of materials, such as carbon dots and nanohorns are discussed, with chapters devoted to applications across imaging, drug delivery and tissue scaffolding.



Hardback | 450 pages  
9781788015677 | 2021  
£179.00 | \$250.00

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ISBN 978-1-78801-567-7



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### Nanotubes and Nanowires

3rd Edition

**C N Ram Rao** Jawaharlal Nehru Centre for Advanced Science Research, India | **A Govindaraj** Jawaharlal Nehru Centre for Advanced Scientific Research, India | **Leela Srinivas Panchakarla** Indian Institute of Technology Bombay, India

Nanotubes demonstrate a range of fascinating properties, many of which relate directly to potential applications. Nanowires have been made from a vast array of inorganic materials and provide great scope for further research into their properties and possible applications. Chapters in this book provide a comprehensive and up-to-date survey of the research area, including synthesis, characterisation, properties and applications. This new edition of Nanotubes and Nanowires is ideal both for graduates needing an introduction to the field, as well as for professionals and researchers in academia and industry.



Hardback | 600 pages  
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ISBN 978-1-78801-782-4

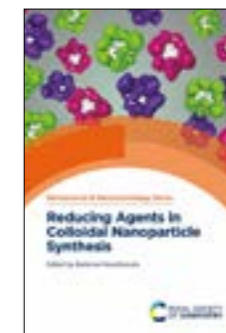


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### Reducing Agents in Colloidal Nanoparticle Synthesis

**Stefanos Mourdikoudis** University College London, UK

Nanoparticles can be synthesised via a number of methods, including laser ablation, thermal decomposition, chemical reduction and polyol synthesis. This book will highlight the role of reducing agents in the chemical synthesis of nanoparticle systems, presenting the main categories of reducing agents, which vary on reactivity, selectivity, availability and toxicity. With contributions from global experts, this title will be appropriate for graduate students and researchers in nanochemistry, colloidal synthesis, inorganic chemistry, organometallic chemistry, chemical engineering, physical chemistry, materials science, biology and physics.



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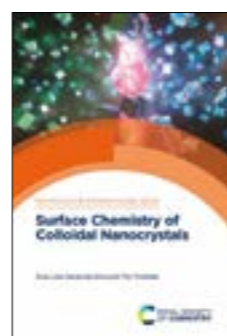


## Nanoscience & Nanotechnology Series

### Surface Chemistry of Colloidal Nanocrystals

**Ana Luísa Daniel-da-Silva** University of Aveiro, Portugal | **Tito Trindade** University of Aveiro, Portugal

The chemistry of nanomaterials has developed considerably in the past two decades. This book provides insights on the chemistry of inorganic nanoparticles of colloidal nature, with fundamentals on the topic for a broad audience as well as information on the chemical modification of surfaces of several different nanocrystal systems. Written by prestigious scientists, it will be a useful resource for students and researchers working in surface science, nanoscience and materials science as well as those interested in the applications of the nanomaterials.



Hardback | 250 pages  
9781788014014 | 2021  
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ISBN 978-1-78801-401-4



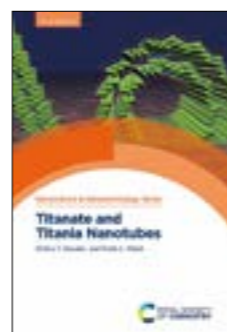
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### Titanate and Titania Nanotubes

2nd Edition

**Dmitry Bavykin** University of Southampton, UK | **Frank Walsh** University of Southampton, UK

While titanium oxides are less popular than carbon nanostructures, they have the marked advantages of low cost and facile synthesis routes that use conventional laboratory techniques and scalable technology; a variety of techniques allow processing of thin and templated layers. The second edition of Titanate and Titania Nanotubes consolidates knowledge of the synthesis, properties and application of nanostructured titanates having various morphologies, including tubular and lamellar forms. The book identifies common principles that can be useful in developing approaches to the synthesis of unknown inorganic nanotubes. Written by leaders in the field, this title will be of interest to students and researchers who experimentally study nanomaterials.



Hardback | 220 pages  
9781788017374 | 2021  
£149.00 | \$205.00

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ISBN 978-1-78801-737-4



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## Polymer Chemistry Series

### About the series

ISSN 2044-0790

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Bringing together fundamental and application based research, the Polymer Chemistry series gives graduate students and researchers knowledge in key representative themes across all areas of polymer science. With contributions from leading experts across the world, each book highlights research on structures, properties and applications of polymers in the areas of optoelectronics, biomedicine, environmental protection and other related fields.

### Polymer Functionalized Graphene

**Arun Kumar Nandi** Indian Association for the Cultivation of Science, India

There is an immense variety of research on polymer functionalized graphene (PFG). Applications of these graphene polymer hybrids are included in chemical and biological sensing, photovoltaic devices, supercapacitors and batteries, dielectric materials and drug/gene delivery vehicles. This book will shed light on the synthesis, properties and applications of these new materials, covering two methods (covalent and noncovalent) for producing polymer functionalized graphene. Graduate students and researchers in polymer chemistry and nanoscience will find this book valuable reading.



Hardback | 350 pages  
9781788018791 | 2021  
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ISBN 978-1-78801-879-1



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### Redox Polymers for Energy and Nanomedicine

**Nerea Casado** University of the Basque Country, Spain | **David Mecerreyes** University of the Basque Country, Spain

Polymers with redox properties are electroactive macromolecules containing localized sites or groups that can be oxidized and reduced. Redox Polymers for Energy and Nanomedicine highlights trends in the chemistry, characterization and application of polymers with redox properties. Chapters cover batteries, supercapacitors, solar cells, biofuel cells, thermoelectric cells, drug delivery, biosensors, actuators and smart surfaces. The book will be of interest to graduate students and researchers working in polymer science, electrochemistry, energy research and nanomedicine.



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ISBN 978-1-78801-871-5



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## Smart Materials Series

### About the series

ISSN 2046-0066

#### Series editors

**Hans-Jorg 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 the series covers the fundamentals and applications of a different material system from renowned international experts. Stay in the know with the Smart Materials Series - the intelligent way to find your materials solution.

### Ambipolar Materials and Devices

**Ye Zhou** Shenzhen University, China | **Su-Ting Han** The University of Michigan, USA

Ambipolar materials represent a class of materials where positive and negative charge carriers can both transport concurrently. This book highlights recent development of ambipolar materials involving materials design, fundamental principles, interface modifications, device structures, ambipolar characteristics and promising applications. It will appeal to graduate students and researchers who want to understand the design, materials characteristics, device operation principles, specialized device application and mechanisms of the latest ambipolar materials.



Hardback | 446 pages  
9781788018685 | 2021  
£179.00 | \$250.00



ISBN 978-1-78801-868-5



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### Hybrid Metal–Organic Framework and Covalent Organic Framework Polymers

**Bo Wang** Beijing Institute of Technology, China

Metal-organic frameworks (MOFs) are crystalline porous materials constructed from metal ions/clusters and organic linkers, while covalent organic frameworks (COFs) are crystalline porous materials built from organic molecular units with diverse structures and applications. Hybrid materials with intriguing properties can be achieved by appropriate preparation methods and careful selection of MOFs/COFs and polymers, broadening their potential applications. This book documents the latest research progress in MOF/COF-polymer hybrid materials and reviews and summarises hybridization strategies to achieve MOF/COF polymeric composites. It will appeal to graduate students and researchers working on porous materials, polymers, hybrid materials, and supramolecular chemistry.



Hardback | 300 pages  
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ISBN 978-1-83916-153-7



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## 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

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, 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.

### Droplet Microfluidics

**Carolyn Ren** University of Waterloo, Canada | **Abraham Lee** University of California, Irvine, USA

Edited by two leaders, this book has drawn together expertise from around the globe to form a unified, cohesive resource for the droplet microfluidics community. Starting with the basic theory of droplet microfluidics before introducing its use as a tool, the reader is treated to chapters on important techniques, including robust passive and active droplet manipulations and applications such as single cell analysis, which is key for drug discovery. This book is a go-to resource for the community yearning to adopt and promote droplet microfluidics into different applications.



Hardback | 305 pages  
9781788017695 | 2021  
£159.00 | \$220.00



ISBN 978-1-78801-769-5



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### Peptide-based Biomaterials

**Mustafa O. Guler** The University of Chicago, USA

Research into the field of peptide materials is booming, as these versatile building blocks are used to design a host of functional biomaterials via chemical modifications. It is a field that is attracting research interest from across soft matter science, molecular engineering and biomaterials science. This book covers the fundamental concepts of self-assembly, design and synthesis before moving on to focussed chapters describing important peptide based materials and their biomedical applications. Each of these chapters is written by a leader in their respective field and will be the definitive guide to the field.



Hardback | 425 pages  
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£179.00 | \$250.00



ISBN 978-1-78801-729-9



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## Soft Matter Series

### Soft Matter for Biomedical Applications

**Helena S Azevedo** Queen Mary University of London, UK | **João F Mano** University of Aveiro, Portugal | **João Borges** University of Aveiro, Portugal

Dynamic soft materials that have the ability to expand and contract, change stiffness, self-heal or dissolve in response to environmental changes, are of great interest in applications ranging from biosensing and drug delivery to soft robotics and tissue engineering. This book covers the state-of-the-art and current trends in the active and exciting field of bioinspired soft matter, its fundamentals and comprehension from the structural-property point of view, as well as materials and cutting-edge technologies that enable their design, fabrication, advanced characterization and underpin their biomedical applications.



Hardback | 500 pages  
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ISBN 978-1-78801-757-2



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### Soft Matter in Plants

From Biophysics to Biomimetics

**Kaare Jensen** Technical University of Denmark, Denmark | **Yoël Forterre** CNRS Aix-Marseille Université, France

Plants offer some of the most elegant applications of soft matter principles in Nature. Understanding the interplay between chemistry, physics, biology, and fluid mechanics is critical to forecast plant behaviour, which is necessary for agriculture and environmental science. The understanding also lends itself to the discovery of new biomimetic applications. Starting with fundamental concepts, this book then dives into research topics, such as drought and disease, providing the reader with a concise, expert introduction to the field.



Hardback | 275 pages  
9781788017244 | 2021  
£159.00 | \$220.00

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## Specialist Periodical Reports

### Nanoscience

Volume 7

**Neerish Revaprasadu** University of Zululand, South Africa | **Malik Dilshad Khan** University of Zululand, South Africa

The field of nanoscience continues to grow and, with such a vast landscape of material, careful distillation of the most important discoveries will help researchers find the key information they require. Nanoscience provides a critical and comprehensive assessment of the most recent research and opinion from across the globe. Anyone practising in any nano-allied field, or wishing to enter the nano-world will benefit from this resource, presenting the current thought and applications of nanoscience.



Hardback | 250 pages  
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ISBN 978-1-83916-250-3



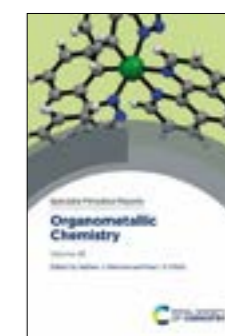
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### Organometallic Chemistry

Volume 43

**Nathan J Patmore** University of Huddersfield, UK | **Paul I P Elliott** University of Huddersfield, UK

With the increase in volume, velocity and variety of information, researchers can find it difficult to keep up to date with the literature in their field. This interdisciplinary field has the potential to provide answers to problems and challenges faced in catalysis, synthetic organic chemistry and the development of therapeutic agents and new materials. Providing an invaluable volume, this volume contains analysed, evaluated and distilled information on the latest in organometallic chemistry research.



Hardback | 250 pages  
9781788016919 | 2021  
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ISBN 978-1-78801-691-9



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## Professional Reference

### All-carbon Composites and Hybrids

**Oxana V. Kharissova** Universidad Autónoma de Nuevo León, Mexico | **Boris Kharisov** Universidad Autónoma de Nuevo León, Mexico

All-carbon composites are carbon materials reinforced with other carbon materials, typically nanostructures such as carbon fibres. There are a large number of all-carbon materials, many of which demonstrate unique and useful sets of properties. Combining and hybridising different carbon materials and nanomaterials together also opens up a number of possibilities to fine-tune the materials for desirable combinations of these properties. This book provides a broad overview of these materials and their uses.



Hardback | 500 pages  
9781839161766 | 2021  
£179.00 | \$250.00

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ISBN 978-1-83916-176-6



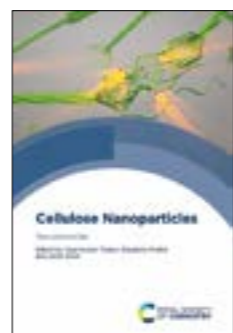
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### Cellulose Nanoparticles

Two-volume Set

**Vijay Kumar Thakur** Cranfield University, UK | **Elisabete Frollini** University of Sao Paulo, Brazil | **Janet Scott** University of Bath, UK

Cellulose nanoparticles (CNP) are a class of bio-based nanoscale materials, which are of interest due to their unique structural features and properties such as biocompatibility, biodegradability, and renewability. This two-volume set covers Cellulose Nanoparticles: Chemistry and Fundamentals and Cellulose Nanoparticles: Synthesis and Manufacturing. Written by an international collection of contributors in the field, these books form a useful reference work for graduate students and researchers in chemistry, materials science, nanoscience and green nanotechnology.



Hardback | 775 pages  
9781788017992 | 2021  
£320.00 | \$440.00

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ISBN 978-1-78801-799-2



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### Energy Materials Discovery

Enabling a Sustainable Future

**Geoffrey A Ozin** University of Toronto, Canada | **Joel Lohr** University of Toronto, Canada

Documenting, through the eyes of a practicing materials chemist, an epic journey to make the energy transition from non-renewable to renewable forms possible, this unique book will crosscut the disciplines of chemistry, physics, materials science and engineering. It is mainly about a bottom-up synthetic chemistry approach to energy materials rather than a top-down engineering physics methodology. A distinctive feature of the book is the inclusion of the use of artificial intelligence, machine learning and robotic materials discovery. Helping many students and researchers, funding agencies and industries, media and investors to understand the story of energy materials, the book will be a unique addition to the literature.



Hardback | 250 pages  
9781839163166 | 2021  
£75.00 | \$105.00

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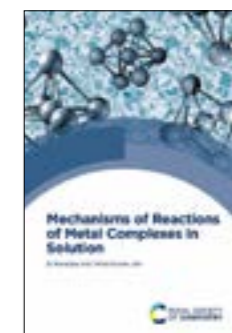
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## Professional Reference

### Mechanisms of Reactions of Metal Complexes in Solution

**D Banerjea** Calcutta University, India, University of Kolkata, India | **Sanchita Goswami** Calcutta University, India

Mechanisms of Reactions of Metal Complexes in Solution provides a comprehensive overview of an often-overlooked research area. Despite its importance and recent reshaping of the field, many inorganic chemists have lost an appreciation for the significance of stability constants and the thermodynamic aspects of complex formation. Ideal for newcomers and established researchers in the field this book is a complete treatment of the area covering advanced topics with relevance to biomedical applications, extraction metallurgy, food chemistry and a wealth of other industrial processes and research areas. The book will be of particular interest to postgraduates with an interest in coordination chemistry, catalysis, supramolecular chemistry, metallobiology and related aspects of biochemistry.



Hardback | 300 pages  
9781839161865 | 2021  
£149.00 | \$205.00

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ISBN 978-1-83916-186-5



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### Science and Art

The Contemporary Painted Surface

**Antonio Sgamellotti** Accademia Nazionale dei Lincei, University of Perugia, Italy | **Brunetto Giovanni Brunetti** INSTM, University of Perugia, Italy | **Costanza Miliani** CNR-ISTM, Perugia, Italy

Science and art are increasingly linked to the study and conservation of works of art. With an emphasis on current artists, the reader will learn about how these protagonists developed new and meaningful techniques, innovative methodologies and artistic languages. With contributions from art historians, curators, scientists and artists, this book will appeal to those scientifically interested in the area, students studying art conservation as well as those actively working in conservation science of contemporary art.



Hardback | 524 pages  
9781788014694 | 2020  
£70.00 | \$95.00

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ISBN 978-1-78801-469-4



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## Chemical Biology

### About the series

ISSN 2055-1975

**Editor-in-chief****Kira J Weissman** Université de Lorraine, France

The Chemical Biology Series aims to provide a comprehensive suite of reference books on developing areas at the interface of chemistry and biology. Chapters written and edited by experts worldwide will introduce practical aspects and best methods, will explain the fundamental chemistry knowledge, and will provide forward-looking perspectives. Ultimately, the series aims to aid postgraduate students and researchers to apply chemical tools and understand current challenges in the field. The books will provide a valuable reference for scientists working outside their own area of current expertise or looking to engage in chemical biology research. Coverage will include topics such as analytical and computational tools, chemical probes, imaging, glycosciences, genomics and transcriptomics, chemical genetics and gene editing tools, and aspects of synthetic biology.

### DNA Damage, DNA Repair and Disease

Two-volume Set

**Miral Dizdaroglu** National Institute of Standards and Technology, USA | **R Stephen Lloyd** Oregon Health & Science University, USA

The DNA of all organisms is constantly being damaged by endogenous and exogenous sources. These books provide a comprehensive overview of the interdisciplinary area of DNA damage and DNA repair, and their relevance to disease pathology. Edited by recognised leaders in the field, this two-volume set is an appealing resource to a variety of readers including chemists, chemical biologists, geneticists, cancer researchers and drug discovery scientists.



Hardback | 839 pages  
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### Inhibitors of Protein-Protein Interactions

Small Molecules, Cyclic Peptides, Macrocycles and Antibodies

**Ali Tavassoli** University of Southampton, UK

Many biological functions involve the formation of protein-protein complexes and the inhibition of this process has led to significant interest in pharmaceutical research and the development of novel therapies for numerous diseases. This book comprehensively covers the various approaches to the inhibition of protein-protein interactions from small molecule inhibitors to peptidomimetics, cyclic peptides, macrocycles and antibodies. Illustrated throughout with successful case studies this book provides a holistic, cutting-edge view of the subject area and is ideal for chemical biologists and medicinal chemists interested in developing PPI inhibitors.



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## Chemical Biology

### NMR in Chemical Biology

Advances and Applications

**Sofia Pauleta** Universidade Nova de Lisboa, Portugal | **Eurico J Cabrita** Universidade Nova de Lisboa, Portugal

NMR is an important tool for achieving molecular reasoning of biological systems at the interface between chemistry and biology. NMR in Chemical Biology focuses on the use of small molecules as tools for chemical biology, the latest advances in structure elucidation of small molecules and their interactions with biomolecules, modern approaches to structure determination of lipids, proteins, glycans and nucleic acids as well as the NMR approaches to characterize complex protein dynamics in solution. Illustrated with examples of the application of NMR to tackle important problems in chemical biology, this book is ideal for a wide range of chemical biologists from medicinal and organic chemists to biochemists in academia and industry working in a range of disciplines.



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### RNA Polymerases as Molecular Motors

On the Road 2nd Edition

**Robert Landick** University of Wisconsin, USA | **Terence Strick** Institut Jacques Monod, France | **Jade Wang** University of Wisconsin-Madison, USA

To thrive, every living cell must continuously gauge and respond to changes in its environment. These changes are ultimately implemented by modulating gene expression, a process that relies on transcription by Nature's most multivalent molecular machine, the RNA polymerase. This book covers progress made over the past decade understanding how this machine functions to compute the cellular state, from the atomistic structural level responsible for chemistry to the integrative level at which RNA polymerase interacts with the other key molecular machineries of the cell.



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Phosphorus chemical biology underlies most of life's reactions and processes, from the covalent bonds that hold RNA and DNA together, to the making and spending 75 kg of ATP every day, required to run almost all metabolic and mechanical events in cells. Authored by a renowned biochemist, The Chemical Biology of Phosphorus provides an in-depth, unifying chemical approach to the logic and reactivity of inorganic phosphate and its three major derivatives (anhydrides, mono- and diesters) throughout biology to examine why life depends on phosphorus. Covering the breadth of phosphorus chemistry in biology, this book is ideal for biochemistry students, postgraduates and researchers interested in the chemical logic of phosphate metabolites, energy generation, biopolymer accumulation and phosphoproteomics.



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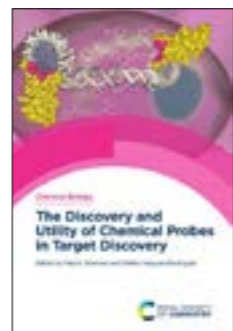
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## Chemical Biology

### The Discovery and Utility of Chemical Probes in Target Discovery

**Paul Brennan** University of Oxford, UK | **Saleta Vazquez Rodriguez** University of Oxford, UK

Numerous genetic methods can be utilised to link a phenotype to a single molecular target but annotated small molecule chemical probes and even entire chemogenomic libraries are increasingly being used as a complementary approach. This book will comprehensively cover the state of the art in chemical probes and best practice for use in target discovery, illustrated throughout with examples. Ideal for students and established biochemists, the book will also cover new technologies for probe discovery, new probe modalities, the new field of probes for RNA targets and the mature field of kinase chemical probes.



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## Drug Development and Pharmaceutical Science

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ISSN 2631-5246

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The Drug Development and Pharmaceutical Science Series follows on from the successful Drug Discovery Series and covers all aspects in the development of pharmaceuticals examining administration, distribution, metabolism, excretion and toxicology. The books encourage learning in a range of topics complementary to development and provide a valuable reference for scientists working outside of their areas of expertise. Chapters are written and edited by experienced researchers from both industry and academia. This series will be of particular interest to postgraduate students and medicinal chemists and biochemists working in academia or industry.

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## Drug Discovery

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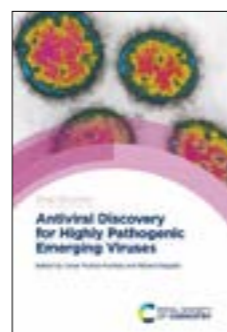
**David Fox** Vulpine Science & Learning, UK | **Ana Martinez** Centro de Investigaciones Biologicas-CSIC, Spain | **Hong Shen** Roche Innovation Center Shanghai, China | **Ian Storer** AstraZeneca, UK | **Corey Hopkins** University of Nebraska Medical Center, USA

The Drug Discovery Series covers all aspects of drug discovery and medicinal chemistry and contains over seventy books published since 2010. Providing comprehensive coverage of this important and far-reaching area, the books encourage learning in a range of different topics and provide valuable reference sources for scientists working outside their own areas of expertise. Books feature case studies to bring different aspects of the drug discovery process alive and they detail the fundamental science necessary for understanding through to the most up-to-date discoveries and cutting-edge technologies. Chapters are written and edited by experienced researchers from both industry and academia. This series will be of particular interest to postgraduate students and medicinal chemists and biochemists working in academia or industry.

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New antivirals are urgently needed. Recent outbreaks caused by viruses with great epidemiological impact such as Zika, or extraordinary virulence such as Ebola, Nipah, Lassa, Crimean-Congo haemorrhagic fever highlight the current lack of clinically proven vaccines and treatments for these potentially catastrophic agents. Antiviral Discovery for Highly Pathogenic Emerging Viruses will comprehensively outline the state of the art in antiviral drug discovery including identification of targets, screening, strategies, and the current pipeline of candidate antivirals. The book will also address the challenges faced in proceeding from pre-clinical studies to animal models and clinical trials with these highly pathogenic agents.



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Due to significant advances in Deep Learning and related areas, artificial intelligence methods are increasingly utilised in drug discovery to tackle challenges that have hitherto been difficult to solve, such as predicting properties, designing molecules, and optimising synthetic routes. Artificial Intelligence in Drug Discovery comprehensively covers artificial intelligence and machine learning tools and techniques; covering specific challenges such as learning from chemical data, designing new molecular structures, predictive modelling in both ligand and structure-space, synthesis planning, and molecular simulations. The book tackles real-world challenges in drug discovery ensuring context of application is preserved and disseminated by world leaders in the field.



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## Drug Discovery

### Digital Design of Drug Products

**Richard Storey** AstraZeneca PLC, UK | **Sean Bermingham** Process System Enterprise, UK | **Bob Docherty** Pfizer, UK

This book consolidates the modelling and simulation work across the pharmaceutical sciences ecosystem that underpins the transformation of a molecule into a medicine. The book covers selecting the right molecule, designing the product and optimising the manufacturing processes for both the active ingredient and the drug product. The digital design of drug products is an emerging area of great importance. The book is an ideal companion to drug discovery scientists, medicinal chemists with an interest in simulation and computation for digital drug design, and formulation scientists.



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### Drug Repurposing

**David Cavalla** Numedicus, UK

Drug Repurposing is the development of existing drugs for new uses: given that 9 in 10 drugs that enter drug development are never marketed and therefore represent wasted effort, it is an attractive as well as inherently more efficient process. Three repurposed drugs can be brought to market for the same cost as one new chemical entity; and they can also be identified more quickly, an important benefit for patients whose diseases are progressing faster than therapeutic innovation. This book provides a single source, comprehensive reference on the latest developments and innovations in drug repurposing ideal for students and researchers in pharmaceutical science and drug discovery.



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### DNA-encoded Library Technology for Drug Discovery

**Jin Li** HitGen Ltd., China | **Barry Morgan** HitGen Ltd., China | **Casey J Krusemark** Purdue University, USA

DNA-Encoded libraries have numerous advantages over traditional screening methods including easy identification of compounds and the large quantity of compounds that can be screened simultaneously. This book provides a comprehensive guide to the implementation of DNA-Encoded Library Technology (DEL) in drug discovery from encoding and library synthesis to screening and hit validation. A valuable resource for researchers in drug discovery, this book is complete with successful case studies to illustrate the best practice in implementation and operation of DELT.



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## Drug Discovery

### New Tools to Interrogate Endocannabinoid Signalling

From Natural Compounds to Synthetic Drugs

**Mauro Maccarrone** University of Rome, Italy

This book covers the study of natural compounds that affect the endocannabinoid signalling and their utilisation to produce potential therapeutics and tools to understand the basis of the endocannabinoid signalling system in a variety of diseases. Ideally suited for pharmaceutical researchers in natural product drug discovery and those studying endocannabinoid signalling, particularly in neurochemistry, this book is a timely summation of this fast moving subject of broad and current interest.



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### Organic Chemistry of Drug Degradation

**Min Li** Merck, USA

The vast majority of drugs are organic molecular entities. A clear understanding of the chemistry of drug degradation is essential to maintaining the stability, efficacy and safety of medicines throughout their shelf-life. This revised and updated edition examines various degradation pathways with an emphasis on the underlying chemical mechanisms. This approach is essential for degradant identification, formulation development, and manufacturing process improvement. Much of the book is devoted to relevant organic reactions which are reviewed and illustrated with examples. It finishes with a discussion of the strategies for rapid elucidation of drug degradants with regard to the current regulatory requirements and guidelines. This book will be a valuable resource for students and professionals in pharmaceutical and analytical sciences.



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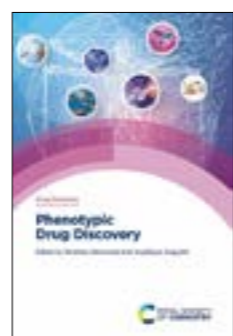


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### Phenotypic Drug Discovery

**Beverley Isherwood** AstraZeneca, UK | **Angeliqe Augustin** Hoffmann-La Roche, Switzerland

Phenotypic drug discovery has been highlighted in the past decade as an important strategy in the discovery of novel medical entities. How many marketed drugs are derived from phenotypic screens? From the most recent examples, what were the factors enabling target identification and validation? From the contribution of phenotypic screens to marketed drugs and the fundamental capabilities required for phenotypic discovery and platform development to recent case reports, this book brings together a wealth of experience from practitioners across academia and industry sharing their perspectives on key success factors, technologies and future directions. This book aims to equip researchers with a thought-provoking guide to the application and development of contemporary phenotypic drug discovery for clinical success.



Hardback | 300 pages  
9781788018760 | 2021  
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ISBN 978-1-78801-876-0



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## Drug Discovery

### Protein Degradation with New Chemical Modalities

Successful Strategies in Drug Discovery and Chemical Biology

**Hilmar Weinmann** Janssen Pharmaceutica N.V., Belgium | **Craig Crews** Yale University, USA

Targeting protein degradation using small molecules is one of the most exciting small-molecule therapeutic strategies in decades and a rapidly growing area of research. In particular, the development of proteolysis targeting chimera (PROTACs) as potential drugs capable of recruiting target proteins to the cellular quality control machinery for elimination has opened new avenues to address traditionally 'difficult to target' proteins. This book provides a comprehensive overview from the leading academic and industrial experts on recent developments, scope and limitations in this dynamically growing research area; an ideal reference work for researchers in drug discovery and chemical biology as well as advanced students.



Hardback | 400 pages  
9781788016865 | 2021  
£179.00 | \$250.00



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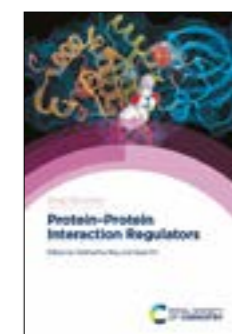


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### Protein-Protein Interaction Regulators

**Siddhartha Roy** Bose Institute, India | **Haian Fu** Emory University School of Medicine, USA

Molecular interactions, protein-protein interactions play a crucial role in regulating many cellular functions. In many diseases, aberrant forms of these interactions play central roles. Thus, they have emerged as critical drug targets. This book includes a survey of recent advances in the structural understanding of protein-protein interactions, as well as recent developments in modulator discovery.



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ISBN 978-1-78801-187-7



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## Issues in Toxicology

### About the series

ISSN 1757-7179

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**Diana Anderson** University of Bradford, UK

#### Series editors

**Alok Dhawan** Indian Institute of Toxicology Research (CSIR-IITR), India | **Tim Marrs** Edentox Associates, UK |

**Michael D. Waters** Integrated Laboratory Systems (ILS) Inc., USA

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 will serve as a guide to investigations in toxicology, biomedicine, biochemistry, forensics and environmental and pollution sciences.

### Challenges in Endocrine Disruptor Toxicology and Risk Assessment

**Alberto Mantovani** Italian National Health Institute, Italy | **Alexandra Fucic** Institute for Medical Research and Occupational Health, Croatia

Endocrine disruptors are chemicals that can interfere with the endocrine systems (hormone systems) at certain dosages and are known to affect the development of numerous diseases. They are an increasing concern given the number of known EDCs in household products and the environment. This book will cover the pathology of EDCs across the spectrum of disease as well as risk assessment and government and legal regulation to provide a holistic view of the current issues and cutting-edge research.



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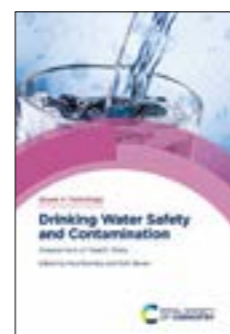


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### Drinking Water Safety and Contamination Assessment of Health Risks

**Paul Rumsby** IEH Consulting, UK | **Ruth Bevan** IEH Consulting, UK

Continual advances in industrial and agricultural processes has led to a continuing need to analyse water for chemicals and microbiologicals and assess their risk to health. This book reviews recent information on potential contamination of drinking water by chemicals, bacteria and viruses, their detection and risk assessment methodologies. It includes descriptions of contamination incidents and what can be learnt from them, and looks at the future of the global provision of pure and wholesome drinking water.



Hardback | 300 pages  
9781788018463 | 2021  
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ISBN 978-1-78801-846-3



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## Issues in Toxicology

### Marsupial Mammal Species in Environmental Risk Assessment Strategies

**Marcelo L Larramendy** National University of La Plata, Argentina | **Guillermo Liwszyc** University of Helsinki, Finland

With the expansion of human settlements and the environmental changes brought on by human activity and pollutants the topic is becoming increasingly of interest to toxicologists involved in environmental research. This book focuses specifically on environmental risk assessment in marsupial mammals. Marsupial ecotoxicology is poorly understood in scientific research and as such environmental risk assessment in marsupials (and toxicology in marsupials in general) is an area of rapidly growing interest. This book will be an ideal companion to toxicologists and ecologists interested in risk assessment in the environments of mammals. Particularly those with an interest in the impact introduced by human activity. The book will also be of interest to those working in conservation biology, biological invasion, biocontrol and habitat management.



Hardback | 350 pages  
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ISBN 978-1-83916-198-8



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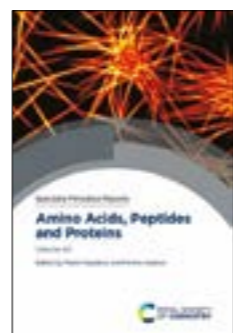
## Specialist Periodical Reports

### Amino Acids, Peptides and Proteins

Volume 44

**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.



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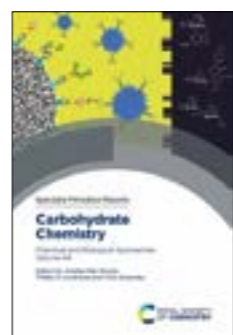
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### Carbohydrate Chemistry

Chemical and Biological Approaches Volume 44

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

The understanding of the structure and function of carbohydrates and glycoconjugates remains vital in many fields, notably in medicine and molecular biology. This new volume of Carbohydrate Chemistry contains critical reviews covering the latest findings in both chemical and biological sciences, and demonstrates the interdisciplinary nature of modern carbohydrate research. This book addresses diverse applications that continue to be major challenges for carbohydrate chemists. The oxidative deamination reactions and synthesis of N-acetylneuraminic acid derivatives, ketoheptoses, lipid A and analogs, the fascinating world of complex glycans in the interplay with Siglecs, carbohydrates and regenerative medicine, chemistry for the stereocontrol of glycosylation, and the impact of gold chemistry in carbohydrate research are some of the topics presented in this volume 44, which will certainly benefit any researcher who wishes to learn about the latest developments in the carbohydrate field.



Hardback | 276 pages  
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### Organophosphorus Chemistry

Volume 50

**Lee J Higham** Newcastle University, UK | **David W Allen** Sheffield Hallam University, UK | **John C Tebby** Sheffield Hallam University, UK

Marking its golden anniversary, this annual review of the literature presents a comprehensive and critical survey of the vast field of study involving organophosphorus compounds, from phosphines and related P-C bonded compounds to phosphorus acids, phosphine chalcogenides and green synthetic approaches in organophosphorus chemistry. The Editors have added a new chapter on homogeneous catalysis for bulk and fine chemicals. This chapter details the research in this area with phosphorus ligands and reflects current interest. With an emphasis on interdisciplinary content, this book will appeal to the worldwide organic chemistry and engineering research communities.



Hardback | 400 pages  
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## Specialist Periodical Reports

### Photochemistry

Volume 48

**Stefano Protti** University of Pavia, Italy | **Carlotta Raviola** University of Pavia, Italy

Reviewing photo-induced processes that have relevance to a wide-ranging number of academic and commercial disciplines, this volume reflects the current interests in chemistry, physics, biology and technology. Highlight chapters include advances in computational photochemistry and chemiluminescence of biological and nanotechnological molecules, industrial applications of photochemistry, recent advances in logically and light induced systems and applications of photofragmentation in synthesis. A new category of SPR lectures has been included with the first of several topics being photochemistry of organic compounds at the air-ice interface being covered. Essential reading for postgraduates, academics and industrialists working in the field of photochemistry, enabling them to keep on top of the literature.



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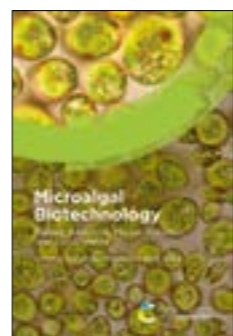
## Professional Reference

### Microalgal Biotechnology

Recent Advances, Market Potential, and Sustainability

**Ajam Shekh** University of Queensland, Australia | **Peer Schenk** University of Queensland, Australia | **R Sarada** Central Food Technological Research Institute, India

Microalgal Biotechnology consolidates the latest research in the field together with a look at market potential and policy considerations. Highlighting the huge potential of microalgae as commercial commodities, it covers progress on various fronts including; bio-refinery, genetic engineering, CO<sub>2</sub> utilisation, biosafety and regulatory issues, open and closed photo-bioreactors for high value metabolites production, market space and sustainability for algal products.



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### Oleoresins

Composition, Chemistry and Applications

**Valdir Florêncio da Veiga, Jr** Military Institute of Engineering, Brazil

Oleoresins are, in a very wide definition, plant extracts. From plant natural exudates, geological amber, pine, incense and myrrh resins, to plant extracts usually treated as resins, such as capsicum, pepper and cannabis; all are very bioactive materials. The unique properties and pharmacological activities of many resins are studied globally and are also under consideration as a source of new medicines as well as their industrial materials for their physical properties. The aim of this book is to outline and discuss the chemical differences, wide ranging properties and broad biological activities present in plant oleoresins.



Hardback | 350 pages  
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ISBN 978-1-78801-880-7



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### The COVID-19 Pandemic and the Future

Virology, Epidemiology, Translational Toxicology and Therapeutics

**Michael D Waters** Consultant, Integrated Laboratory Systems (ILS) Inc., USA | **Alok Dhawan** Indian Institute of Toxicology Research (CSIR-IITR), India | **Tim Marrs** Edentox Associates, UK | **Diana Anderson** University of Bradford, UK | **Claude Hughes** IQVIA, USA

This volume chronicles the outbreak and world-wide spread of SARS-Cov-2 (COVID-19) and delineates the role of several disciplines in therapeutic and control measures. By addressing considerations of efficacy and safety of drugs and chemicals used to combat COVID-19, virtually in real-time, this book documents and highlights the advances in science and place the toxicology, pharmaceutical science, public health and medical community in a better position to advise in future epidemics.



Hardback | 600 pages  
9781839163067 | 2021  
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ISBN 978-1-83916-306-7



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## Professional Reference

### The Origin of Chirality in the Molecules of Life

**Albert Guijarro** Universidad de Alicante, Spain

Completely revised and updated, this book covers a hot topic and one of the unsolved problems not just in chemistry, but in all science. It condenses a large and very diverse number of contributions from almost every field, organized, interrelated and explained in a unified way. Structured to be amenable for both researchers and for educational purposes, this book covers fundamental aspects while maintaining a comprehensive overview. Highly illustrated throughout, the book provides a clear review of many interdisciplinary subjects treated in the book.



Hardback | 200 pages  
9781839162343 | 2021  
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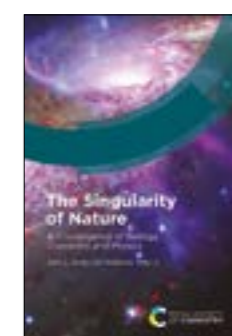
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### The Singularity of Nature

A Convergence of Biology, Chemistry and Physics

**John S Torday** UCLA Evolutionary Medicine, USA | **William B Miller Jr** OmniBiome Therapeutics, USA

Understanding how simple molecules have given rise to the complex biochemical systems and processes of contemporary biology is widely regarded as one of chemistry's great unsolved questions. There are numerous theories as to the origins of life, the majority of which draw on the idea that DNA and nucleic acids are the central dogma of biology. This book takes a systems-based approach to the origin and evolution of complex life. Readers will gain a novel understanding of physiologic evolution and the limits to our current understanding, as well as offering new opportunities for understanding relationships between physics and biology in the origins of biological life at the cellular-molecular level.



Hardback | 400 pages  
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## Catalysis Series

### About the series

ISSN 1757-6725

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**Justin S J Hargreaves** University of Glasgow, UK

#### Series editors

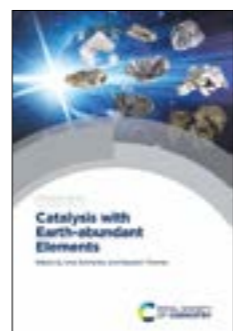
**Jose Rodriguez** Brookhaven National Laboratory, USA

Catalysis is a major area of scientific research covering numerous fields of chemistry, and is a key factor in tackling many of the scientific challenges faced today, such as renewable energy systems and environmental protection. The books in this series provide an accessible reference for postgraduates, academics and industrialists working in this exciting field. The books cover both the research developments and applications of catalysis, across academia and industry.

### Catalysis with Earth-abundant Elements

**Uwe Schneider** University of Edinburgh, UK | **Stephen Thomas** University of Edinburgh, UK

Catalysis remains a key technology in the 21st century. Considering the limited resources of our planet, earth-abundant elements will have to be explored increasingly in the future. The aim of this book is to highlight the use of the most earth-abundant elements in various types of catalysis and will be of interest to graduates, academic researchers and practitioners in catalysis.



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9781788011181 | 2021  
£169.00 | \$235.00



ISBN 978-1-78801-118-1

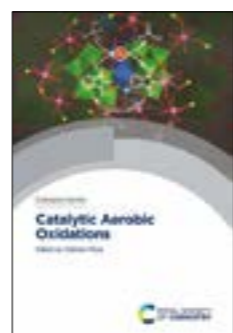


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### Catalytic Aerobic Oxidations

**Esteban Mejía** Leibniz Institute for Catalysis (LIKAT), Germany

Catalytic reactions that are selective and efficient and allow the replacement of common stoichiometric oxidants with molecular oxygen from air at atmospheric pressure provide higher atom efficiency and water as the only side product. Focusing on the use of molecular oxygen as the terminal oxidant, this book covers recent advances in both heterogeneous and homogeneous catalytic systems in academia and industry.



Hardback | 334 pages |  
9781788017206 | 2020  
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## Catalysis Series

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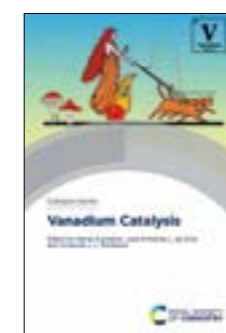


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### Vanadium Catalysis

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Vanadium is one of the more abundant elements in the Earth's crust making it a more sustainable and more economical choice as a catalyst than many of the noble metals. A wide variety of reactions have been found to be catalysed by both homogeneous and supported vanadium complexes. This book brings together the research on the catalytic uses of this element into one essential resource. Including theoretical perspectives on proposed mechanisms for vanadium catalysis and an overview of its relevance in biological processes.



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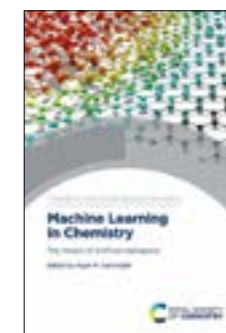
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The Impact of Artificial Intelligence

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There is a growing consensus that machine learning (ML) has the potential to develop into a tool that is almost as fundamental in scientific research as computers themselves. With contributions from leading research groups, this book presents in-depth examples of the application of ML to real chemical problems. Through these examples, readers who are intrigued by the power of this technique can gain a feel for its potential and discover how it might be applied in their own field.



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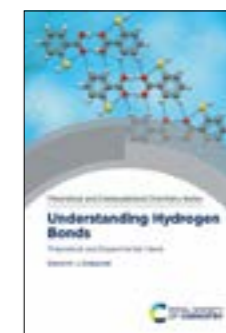
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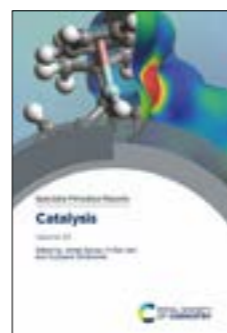
## Specialist Periodical Reports

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Volume 33

**James Spivey** Louisiana State University, USA | **Yi-Fan Han** East China University of Science and Technology, China | **Dushyant Shekhawat** National Energy Technology Laboratory, USA

This volume looks at modern approaches to catalysis and reviews the extensive literature. Chapters highlight application of 2D materials in biomass conversion catalysis, plasmonic photocatalysis, catalytic demonstration of mesoporosity in the hierarchical zeolite and the effect of surface phase oxides on supported metals and catalysis. Looking to the future a chapter on ab initio machine learning for accelerating catalytic materials discovery is included. Appealing broadly to researchers in academia and industry, these illustrative chapters bridge the gap from academic studies in the laboratory to practical applications in industry not only for catalysis field but also for environmental protection. The book will be of great benefit to any researcher wanting a succinct reference on developments in this area now and looking to the future.



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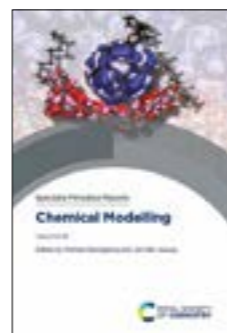
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### Chemical Modelling

Volume 16

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Chemical modelling covers a wide range of disciplines and this book is the first stop for any materials scientist, biochemist, chemist or molecular physicist wishing to acquaint themselves with major developments in the applications and theory of chemical modelling. Containing both comprehensive and critical reviews, this volume is a convenient reference to the current literature.



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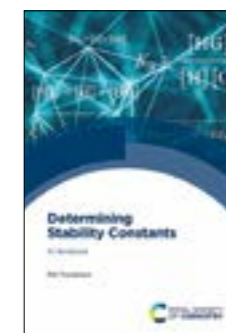
## Professional Reference

### Determining Stability Constants

A Handbook

**Pall Thordarson** University of New South Wales, Australia

Determining binding constants is a fundamental component of experimental chemistry research. This book provides an up-to-date overview of the most powerful experimental methods and software tools available and systematically catalogues the main methods and useful information regarding the determination of stability constants in supramolecular chemistry, ranging from simple host-guest equilibria to complex cooperative assemblies. Written by an expert in the field, this title will be an important resource for students and researchers working in supramolecular chemistry, inorganic chemistry and drug delivery.



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## Faraday Discussions

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ISSN 1359-6640

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#### Series editors

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Faraday Discussions covers a variety of topics in rapidly developing areas of the physical sciences, with a focus on physical chemistry and its interfaces with other scientific disciplines. The journal publishes the papers presented and a record of the questions, discussion and debate that took place at the corresponding Faraday Discussions meeting and provides an important record of current international knowledge and opinions in the relevant field. Each Faraday Discussion covers a topic in a rapidly developing area of chemistry, and will be of interest to academic and industrial chemists across all areas of the chemical sciences.

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### Luminescent Silicon Nanostructures

#### Faraday Discussion 222

Silicon is the most important semiconducting material of the microelectronic industry. Bulk silicon does not exhibit good optical properties, however in the late 1980s good emission was observed in porous silicon. Since then, a variety of luminescent silicon nanostructures have been investigated, but the origin of this luminescence is debated in the literature. This Faraday Discussion explores new methodologies to synthesize and characterise luminescent silicon nanostructures, from porous silicon to nanocrystals and nanorods.



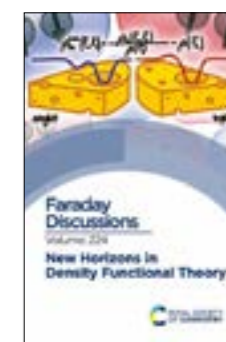
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John Comyn

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### A Practical Guide to Quasi-elastic Neutron Scattering

Mark T F Telling Science and Technologies Facility Council, UK

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Paperback | 152 pages  
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### Carbonyl Compounds and Derivatives

Paulo Costa Federal University of Rio de Janeiro, Brazil | Ronaldo Pilli University of Campinas, Brazil | Sergio Pinheiro Universidade Federal Fluminense, Brazil

Originally published in Portuguese, this book is divided into three sections: the chemistry of aldehydes, ketones, nitriles, imines and derivatives; the chemistry of carboxylic and carbonic acids and derivatives and the chemistry of alpha, beta-unsaturated carbonyls. The authors have merged aspects of valence bond and molecular orbital theories in order to discuss structural and physico-chemical properties and reactivity and stereochemical outcomes of the most relevant reactions for these functional groups. The book provides representative experimental procedures for key reactions, highlights to contextualize the concepts and properties discussed and includes some biographical notes. It will help advanced level undergraduate and graduate students to understand and become well acquainted with the reactions of carbonyl compounds and derivatives.



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### Characterization of Nanostructured Materials

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**Ashok Ganguli** IIT Delhi, India | **Jiban Jyoti Panda** Institute of Nano Science and Technology, India | **Menaka Jha** Institute of Nano Science and Technology, India | **Neha Sardana** IIT Jodhpur, India

Written with an interdisciplinary audience in mind, this textbook provides a broad overview of characterisation techniques applied to nanomaterials. Suitable for advanced undergraduate and graduate courses, the authors bring a holistic approach to the subject, balancing physics and materials science perspectives with chemical and biological aspects, ensuring it appeals to a diverse classroom mix. Based on a successful course by the authors, the student will form a clear understanding between fundamentals and applications across a broad range of tools, encompassing chemical characterization, surface characterization, biomolecular characterisation and non-invasive testing of materials inside living and non-living systems.



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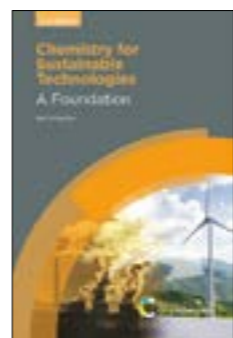
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Following the success of the first edition, this fully updated and revised book continues to provide an interdisciplinary introduction to sustainability issues in the context of chemistry and chemical technology. Its prime objective is to equip young chemists (and others) more fully to appreciate, defend and promote the role that chemistry and its practitioners play in moving towards a society better able to control, manage and ameliorate its impact on the ecosphere. Progress since 2010 is reflected by the inclusion of the latest research and thinking, selected and discussed to put the advances concisely in a much wider setting – historic, scientific, technological, intellectual and societal. While the book stresses the central importance of rigour in the collection and treatment of evidence and reason in decision-making, to ensure that it meets the needs of an extensive community of students, it is broad in scope, rather than deep. It is, therefore, appropriate for a wide audience, including all practising scientists and technologists.



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### Controlled Drug Analysis

**Michael Cole** Anglia Ruskin University, UK | **Lata Gautam** Anglia Ruskin University, UK | **Agatha Grela** Anglia Ruskin University, UK

This book brings together, for the first time, a number of areas around the analysis of controlled substances. Aimed at undergraduate and postgraduate taught programmes, it will include methods for drug analysis and comparison using physical, biologically based, comparative and numerical techniques. It introduces statistical methods for drug sample comparison and the appropriateness of some of the statistical techniques, which have been applied to drug analysis, and examines their use. It also considers analytical methods that have been developed, and significant legislative changes. Aimed at academics delivering forensic science courses in particular, it could also be used by chemistry, biochemistry, criminalistics, criminology and law and policing students on MSc forensic science courses and postgraduate research candidates.



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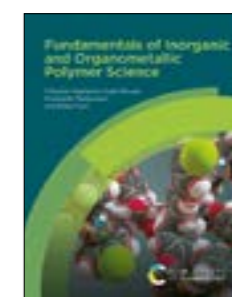


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### Fundamentals of Inorganic and Organometallic Polymer Science

**Christian Agatemor** The John Hopkins University School of Medicine, USA | **Kajal Ghosal** Dr. B. C. Roy College of Pharmacy and Allied Health Sciences, India | **Prashanth Poddutoori** University of Minnesota, USA | **Peter Foot** Kingston University, London, UK

Inorganic and organometallic polymers feature many attractive properties that are useful for the design of diverse functional materials. Emphasising concepts that inform polymer design, synthesis, and applications, users of this book will gain a complete introduction to inorganic and organometallic polymer science that will further their studies in materials science, chemistry and engineering.



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**James Hook** University of New South Wales, Australia | **Allan Torres** Western Sydney University, Australia | **William S Price** Western Sydney University, Australia

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9781839161414 | 2021  
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ISBN 978-1-83916-141-4



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### Macromolecules at the Interface

#### Concepts to Applications

**Gil Garnier** Monash University, Australia | **Vikram Singh Raghuvanshi** Monash University, Australia

This book portrays, clearly and simply, how and why macromolecules adsorb at the interface, the basic mechanisms and forces involved, what systems of macromolecules there are at the interface, how polymer conformations vary with environment and how control of macromolecules at the interface is used in traditional and emerging fields. Written for advanced level students and researchers in academia and industry, the effect of macromolecules at the interface is presented and linked to applications. Following a descriptive approach the authors bring the literature up-to-date and make it accessible.



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### Microfluidics and Lab-on-a-chip

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Covering the fast and dynamic development of miniaturization,  $\mu$ TAS and microfluidics, this accessible text is unique in its approach. The chapters provide the tools for analysing phenomena from the scientific point of view and aids for implementing quantitative/qualitative models including applications in cell biology and bioanalytical chemistry. Providing a short, affordable text for students that includes sufficient information to open up this area to them, this book is useful to a wide audience, students that for the first time approach the field, as well as engineers, physicians, cell biologists, biochemists, microbiologists, geneticists, and medical researchers.



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Hardback | 500 pages  
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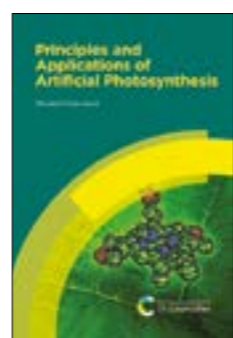
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## Textbooks

### Quantities, Units and Symbols in Physical Chemistry

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Prepared by the IUPAC Physical Chemistry Division this abridged version of the definitive manual is designed to improve the exchange of scientific information among the readers in different disciplines and across different nations. This book has been systematically brought up to date to reflect the increasing volume of scientific literature and terminology and aims to provide a helpful guide to the widely used terms and symbols together with understandable definitions and explanations of best practice. It echoes the experience of the contributors with the previous editions and the comments and feedback have been integrated into this essential resource.



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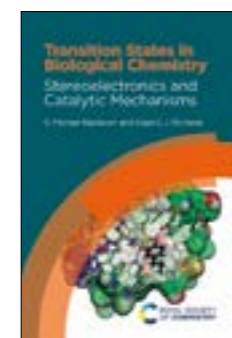


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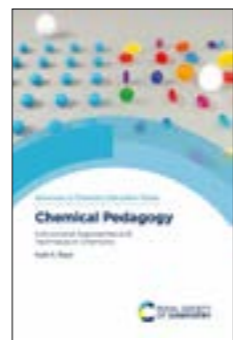
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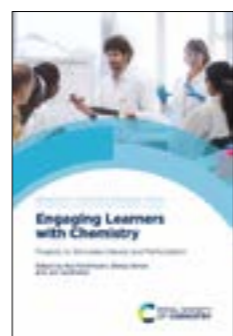
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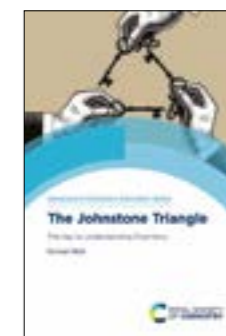
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Chemistry is often seen as a difficult subject to understand. This book focusses on the triangle model that Alex H Johnstone developed in the early 1980s. Originally conceived in the context of making chemistry more accessible to a wider range of learners, the model has been applied in almost every area of education in chemistry at all stages of learning.



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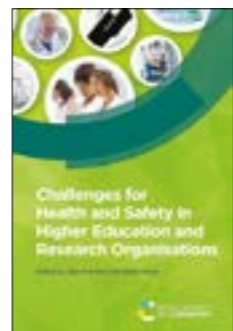
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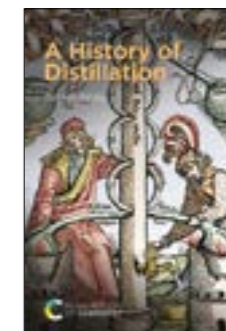
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Cosmetic science and the personal care industry are often misrepresented. This book will educate and inform the public and the wider science community about the sound science they are based on. In the process many positive aspects of cosmetic chemistry can be revealed, from creating colours, fragrances and sensorial formulations to understanding the important interactions of UV light with organic and inorganic absorbers and blending these for effective SPF sunscreens. Providing background material for education and as an accessible scientific title for the interested lay reader, this book shows chemistry in an everyday context based on the real world and dispelling the many myths.



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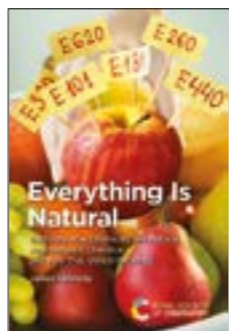
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Since the early 1990s, advances in toxicology have allowed scientists to detect traces of adulterant substances in everyday products – even down to parts per billion concentrations. We can now detect the presence of harmful ingredients at levels so low that they actually cause no harm. This book explores the history of chemical fears and the recent events that amplified it. It describes how consumers, teachers, doctors, lawmakers and journalists can help make better connections with the public by telling stories that are more engaging about chemistry and materials science.



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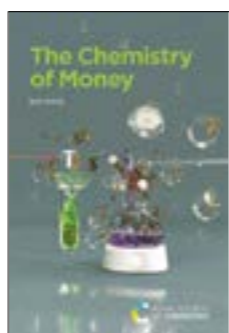


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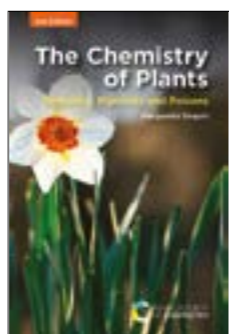
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This second edition retains the main objective of presenting organic chemistry and its compounds in an accessible and inviting way by linking it with the world of plants. Chemistry tends to be considered as a field that is hard to comprehend but the colours, fragrances, and defensive substances that plants produce and their uses serve as an introduction to chemistry. The book is a combination of organic chemistry with the living world of plants and an introduction to organic plant compounds for the non-chemist. The author, an organic chemist and plant enthusiast, has taught popular undergraduate college level courses on plant chemistry to non-chemistry majors and numerous field seminars to the general public. The comments and questions from these audiences and the topics that especially captured people's interest have greatly shaped this book. The book can be used both as a text to introduce organic chemistry as it relates to plants and as a text of reference for more advanced readers.



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Since the publication of the first edition in 2014, the whisky industry has changed and this book provides the reader with an overview of the latest academic research and industry best practice in an accessible and authoritative format. An entirely new chapter discussing the management and utilization of co-products and recent developments in areas such as anaerobic digestion is included along with revisions and updates to most chapters. Written by acknowledged and experienced authorities, this book provide an up to date treatment of this fast developing area. Aimed at the popular market, it provides a leading text for students of distilling, industry practitioners, new craft distillers and whisky enthusiasts.



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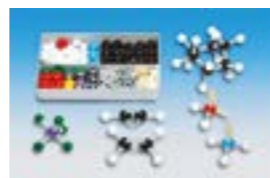
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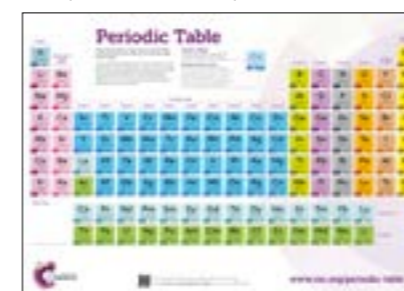
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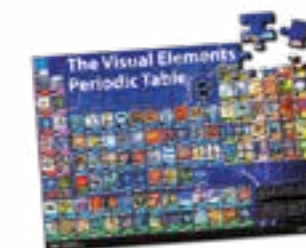


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