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In 2020, you can look forward to more titles that cover emerging areas like biomaterials science and inorganic materials, and more additions to our new *Food Chemistry, Function and Analysis* series. The core disciplines are represented by works focusing on significant developments in analytical science, green chemistry, catalysis and detection science.

Continuing our collaboration with IUPAC, we will also be publishing the fourth edition of the *Compendium of Terminology in Analytical Science*, an abridged version of *Quantities, Units and Symbols in Physical Chemistry*, and the *Glossary of Terms Used in Molecular Toxicology*.

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We are here to help everyone in the chemical sciences to do their best work and drive scientific progress. 2020 textbook topics include *Microfluidics and Lab-on-a-Chip*, *Controlled Drug Analysis* and *Conservation Science*.

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Chemistry is at the centre of everything you can see, smell, touch and taste, so we will be adding to the books that show the chemistry in our lives. *Sticking Together*, *Discovering Cosmetic Science* and *Perfume in the Bible* are just a few examples of books to broaden your chemistry horizons that you can look forward to in 2020.

If you have any queries, contact books@rsc.org to talk to the team.

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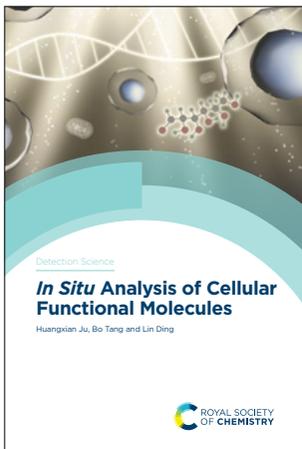
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Providing a comprehensive look at the state of the art in detection technologies and materials used in the development of diagnostics for clinical, medicinal, and environmental applications, the books in this Series are a valuable reference for graduate 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 Electrogenerated Chemiluminescence

From Fundamentals to Bioassays

Neso Sojic Université de Bordeaux, France

Highlighting the various fields in analytical chemistry where electrogenerated chemiluminescence (ECL) is widely applied, this book details some well-established ECL sensing applications like immunoassays, DNA and enzymatic assays and those emerging recently like multiplexed ECL or the combination of ECL and bipolar electrochemistry and their use in diagnostic issues. It presents the processes, theory, bioanalytical applications and the recent developments involved in the instrumentation and analytical nano/micro-systems. Being at the frontier between several scientific disciplines involving analytical chemistry, electrochemistry, photochemistry, materials sciences, nanochemistry and biology, it has broad appeal.

Hardback | 492 pages | 9781788014144 | 2020 | £179.00 | \$250.00



ISBN 978-1-78801-414-4
9 781788 014144

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.

Hardback | 300 pages | 9781788015240 | 2021 | £159.00 | \$220.00



ISBN 978-1-78801-524-0
9 781788 015240

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.

Hardback | 350 pages | 9781839160226 | 2021 | £169.00 | \$235.00



Confining Electrochemistry to Nanopores



From Fundamentals to Applications

Yi-Lun Ying East China University of Science and Technology, China | **Yao Lin** East China University of Science and Technology, China | **Yi-Tao Long** East China University of Science and Technology, 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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In Situ Analysis of Cellular Functional Molecules



Huangxian Ju Nanjing University, China | **Bo Tang** Shandong Normal University, China |
Lin Ding Nanjing University, China

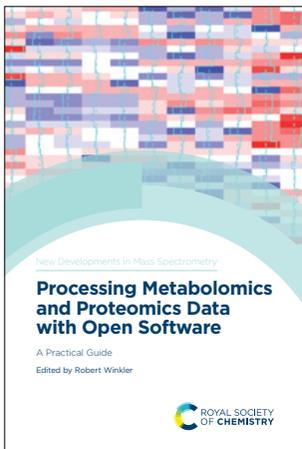
In situ analysis of cellular functional molecules has attracted considerable interest as it can provide spatially or temporally resolved information of these essential molecules on/within living cells through non-invasive methods. This book introduces the tailor-made design of detection probes as well as schemes from a top-down perspective according to the unique characteristics of cellular functional molecules. Written by leaders in the field, it will provide a comprehensive overview to those working on different aspects of cellular analysis and cell biology.

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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. No dedicated book exists at this time that provides a comprehensive overview. While contributing authors have included recent research, the primary aim of this book is to fill this gap and act as an authoritative guide. Aimed at postgraduate and professional researchers (mainly in academia, but also in industry), it could be used as supplementary reading for advance students on mass spectrometry or analytical (bio)chemistry courses.

Hardback | 350 pages | 9781839161049 | 2021 | £169.00 | \$235.00



Lipidomics



Current and Emerging Techniques

William Griffiths Swansea University, UK | **Yuqin Wang** Swansea University, UK

Lipidomics is one of the newest 'omics' techniques with growing importance in bioscience. This book discusses interesting standard and non-standard techniques relevant to the measurement and analysis of lipids by mass spectrometry. It provides a guide to the possibilities of the techniques and introduces the reader to exciting newer methods which allow isomer differentiation, improve sensitivity, allow spatial location and go beyond annotation of simply matching a mass to a database entry. For the first time in a book, the emerging methods and advantages and disadvantages of new technologies for lipid structure characterization are highlighted.

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Processing Metabolomics and Proteomics Data with Open Software



A Practical Guide

Robert Winkler CINVESTAV Unidad Irapuato, Mexico

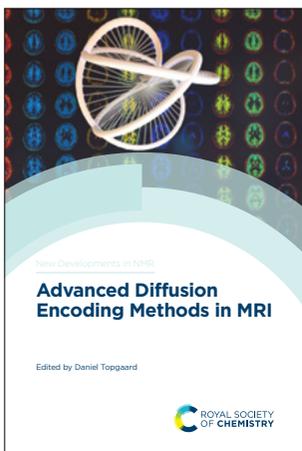
Metabolomics and proteomics allow deep insights into the chemistry and physiological processes of biological systems. These omics methods rely heavily on mass spectrometry, however, building valid models from raw mass spectrometry data is challenging, and the field of data analysis and integration is evolving rapidly. This book will enable researchers, practitioners and students from different backgrounds to analyze metabolomics and proteomics mass spectrometry data. The book contains tutorials, code examples and datasets that facilitate the training and the development of the reader's own programs and workflows.

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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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In-cell NMR Spectroscopy

From Molecular Sciences to Cell Biology

Yutaka Ito Tokyo Metropolitan University, Japan | **Volker Dötsch** University of Frankfurt, Germany | **Masahiro Shirakawa** Kyoto University, Japan

In-cell NMR spectroscopy is a relatively new field. Despite its short history, recent in-cell NMR-related publications in major journals indicate that this method is receiving significant general attention. No informative books specifically focused on in-cell NMR have been published yet. This book provides detailed descriptions covering the background of in-cell NMR, methods for in-cell biological techniques and NMR spectroscopy, as well as applications, and future perspectives. Researchers in biochemistry, biophysics, molecular biology, cell biology, structural biology as well as NMR analysts interested in biological applications will all find this book valuable reading.

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Long-lived Nuclear Spin Order

Theory and Applications

Giuseppe Pileio University of Southampton, UK

In 2004, the idea that a long-lived form of spin order, namely singlet order, can be prepared from nuclear spin magnetisation emerged. This first book on the subject gives a thorough description of the various aspects that intervene in the development of the topic and details the interdisciplinary applications. The book starts with a section dedicated to the basic theories of long-lived spin order and then proceeds with a description of the state-of-the-art experimental techniques developed to manipulate singlet order. The book proceeds by describing several applications of this order in various fields of research and then concludes by covering the generalization of the concept of singlet order by introducing and discussing other forms of long-lived spin order. This idea has caught the attention of research groups interested in exploiting this form of order in different fields of research spanning from biology to materials science and from hyperpolarisation to quantum computing.

Hardback | 300 pages | 9781788015684 | 2020 | £159.00 | \$220.00



ISBN 978-1-78801-568-4
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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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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.

Hardback | 350 pages | 9781788018487 | 2021 | £169.00 | \$235.00



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Electrochemistry



Volume 16

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Providing the reader with an up to date digest of the most important research currently carried out in the field, Electrochemistry Volume 16 is compiled and written by leading experts from across the globe. This volume is a key reference for researchers providing a timely overview of this exciting and developing area.

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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.

Hardback | 300 pages | 9781782629986 | 2021 | £314.95 | \$440.00



Advances in Portable X-ray Fluorescence Spectrometry

Instrumentation, Application and Interpretation

B Lee Drake University of New Mexico, 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.

Hardback | 380 pages | 9781788014229 | 2021 | £169.00 | \$235.00



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Compendium of Terminology in Analytical Chemistry

4th Edition

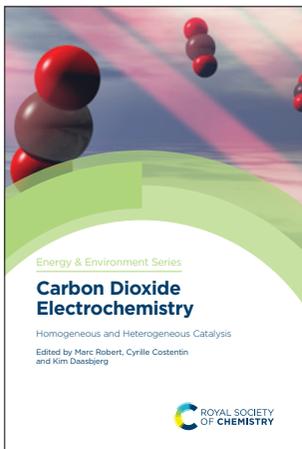
D Brynn Hibbert University of New South Wales, Australia

How do you describe an analytical method, or name the new chemical that you have just assayed, or report the units of the measurement? For analytical chemists, the principal tool of the trade, or source of terms, is this book - the so-called Orange Book. Originating in 1978, this latest edition takes into account the expansion of new analytical procedures and at the same time the diversity of the techniques and the quality and performance characteristics of the procedures. This new volume will be an indispensable reference resource for the coming decade, revising and updating additional accepted terminology. New chapters on chemometrics and statistics, immuno- and bio-analytical methods of analysis and sampling and sample preparation have been added

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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 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.

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Mai Bui Imperial College London, UK | **Niall Mac Dowell** Imperial College London, UK

This book will provide the latest global perspective on the role and value of carbon capture and storage (CCS) in delivering temperature targets and reducing the impact of global warming. As well as providing a comprehensive, up-to-date overview of the major sources of carbon dioxide emission and negative emissions technologies, the book also discusses technical, economic and political issues associated with CCS along with strategies to enable commercialisation.

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Carbon Dioxide Electrochemistry

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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.

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Electrochemical Methods for Hydrogen Production



Keith Scott Newcastle University, UK

Increased hydrogen supplies using cleaner methods are seen as essential for potential hydrogen based power systems for transportation and renewable energy conversion into fuel. This book provides a comprehensive picture of the various routes to use electricity to produce hydrogen using electrochemical science and technology. Edited by an expert in the field, this title will be of interest to graduate students and researchers in academia and industry working in energy, electrochemistry, physical chemistry and chemical engineering.

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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 industrials working on energy.

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Thermal Energy Storage



Materials, Devices, Systems and Applications

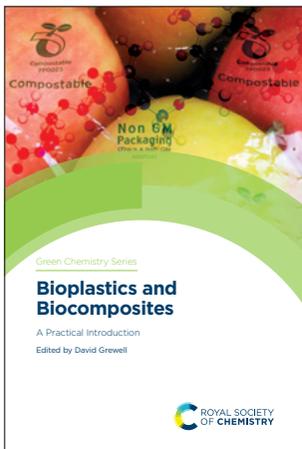
Yulong Ding University of Birmingham, UK

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. This book covers thermal energy storage materials, devices, systems and applications. 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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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.

Biobased Materials for Oil Spill Management **ee**

Bhairavi Doshi Lappeenranta University of Technology, Finland | **Mika Sillanpää** Lappeenranta University of Technology, Finland

Bio-based materials generally have better biodegradability, lower toxicity and can even be more economical. This book discusses different bio-based approaches to dealing with oil spills, including adsorption, dispersion and degradation. Comparing the sustainability of a variety of bio-based oil spill management options to more conventional approaches, this is a useful reference for people working in the oil industry, oil spill response workers and environmental engineers as well as green materials chemists interested in potential applications for their work.

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Bioplastics and Biocomposites **ee**

A Practical Introduction

David Grewell Iowa State University, USA

Providing readers with a fundamental understanding of plastics and polymer processing, this book introduces bioplastics and biocomposites. Concepts covered include bioplastic processing, formulations, biocomposites, properties of biobased materials, economic evaluations of biobased materials, end of life treatment as well as environmental impacts of biobased materials. This book is ideal for researchers new to this field looking for a solid understanding in the materials science, processing and social and economic impacts of bioplastics.

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CO₂-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 CO₂-responsive materials, this book explores the physical chemistry of CO₂-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 materials science.

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Greener Analytical Techniques



Miguel de la Guardia University of Valencia, Spain | **Salvador Garrigues** University of Valencia, Spain

The past decade has seen significant developments in improving the greenness of analytical chemistry, including the use of new smart materials as analytical tools. Solvent selection, miniaturization and metrics for the evaluation of method greenness make this book useful for researchers and industry, interested in integrating safer and sustainable analytical techniques into their work. The fact that, in general, green methods of analysis offer cheaper alternatives to traditional ones, adds an economical interest to this approach.

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Methane Conversion Routes



Status and Prospects

Vladimir Galvita Ghent University, Belgium | **René Bos** Ghent University, Belgium

Methane is an abundantly available carbon-based feedstock but historically it has been underutilised due to its low chemical reactivity. Highlighting the recent advances in methane activation and direct conversion processes this book discusses the progress and current state of the art for a wide variety of alternative methane activation and subsequent conversion processes, including homogeneous- and heterogeneous catalytic, electro catalytic and pyrolytic systems. It is a useful resource for those working in green chemistry, catalysis and chemical engineering.

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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.

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Transition Towards a Sustainable Biobased Economy



Piergiuseppe Morone Unitelma Sapienza University of Rome, Italy | **James H Clark** University of York, UK

This book promotes the development of sustainability schemes (including standards, labels and certifications) for the assessment of biobased products, which are fundamental to the establishment of a cutting-edge sustainable bioeconomy. Chemical-related, globally relevant case studies are used throughout the book. An important resource for researchers, industrial professionals and policy makers involved in the bioeconomy.

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Transportation Biofuels



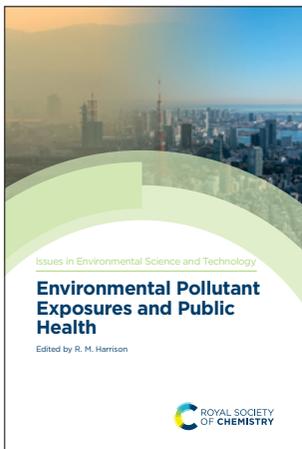
Pathways for Production, 2nd Edition

Alwin Hoogendoorn The Centre of Expertise Biobased Economy, The Netherlands | **Han van Kasteren** Eindhoven University of Technology and the Centre of Expertise Biobased Economy, The Netherlands

Ten years on from the publication of the first edition of this book and fossil fuels still dominate the transport industry. However, there have been a number of advances in the production of biofuels for transportation use. This new edition provides updates on the previously discussed pathways for biofuels, including new experimental results and pilot plant studies, making it a useful read for researchers and industrialists working in biofuel development as well as postgraduate students studying fuel alternatives.

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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.

Electronic Waste Management



2nd Edition

G H Eduljee | **R M Harrison** University of Birmingham, UK

This new edition of *Electronic Waste Management* provides an updated overview of waste management across the world as well as presenting new chapters on current issues in recycling and waste management. It is an essential reference not only for those working in recycling and waste management but also for those working in manufacturing and product development who wish to consider the full lifecycle of their product. It also provides valuable insights for policymakers developing more environmentally sound and sustainable systems and strategies for the management of electronic waste.

Hardback | 337 pages | 9781788017442 | 2020 | £70.00 | \$95.00



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 | 250 pages | 9781788018951 | 2020 | £70.00 | \$95.00



Life Cycle Assessment



A Metric for The Circular Economy

Aiduan Borrion University College London, UK | **Mairi Black** University of Surrey, UK |

Onesmus Mwabonje Imperial College London, UK

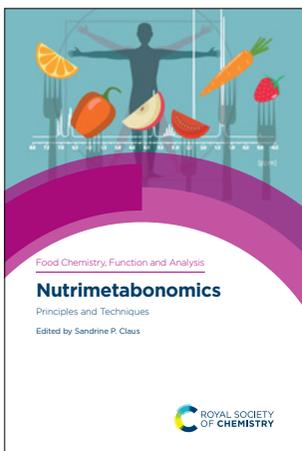
Life Cycle Assessment (LCA) is an established methodology used to quantify the environmental impacts of products, processes and services. Circular Economy (CE) thinking is conceptual way of thinking of the impacts of consumption. Providing a robust systematic approach to the circular economy concept, 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 | 2020 | £70.00 | \$95.00

ISBN 978-1-78801-445-8



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About the series

ISSN: 2398-0656

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Gary Williamson Monash University, Australia
| **Alejandro G Marangoni** University of Guelph, Canada

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, in one comprehensive source, the diversity of beneficial properties provided by capsicum peppers and their application in the food industry as food, as additives, as colorants and also as a non-lethal weapon. The substances that gives peppers their pungency is a set of related compounds collectively called capsaicinoids. Each of these compounds has a different effect on the mouth and its different proportions are responsible for the different sensations produced by the different varieties. The Capsicum pepper is often classified as a functional food based on its antioxidant, anti-inflammatory, antimutagenic and chemopreventive substances, such as carotenes and capsaicinoids. The diversity of beneficial properties of peppers and their wide application indicate the importance of this plant and its chemistry and nutritional effects.

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

ISBN 978-1-78801-750-3



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Health Claims and Food Labelling

Sian Astley EUROFIN, UK

Increasing numbers of foods carry nutrition and/or health claims on their packaging. These need to be regulated in order to protect consumers from false claims, and to promote foods with proven health benefits. This title explores the use of nutrition and health claims around the world, the impact of legislation on consumers especially understanding of the terminology used, and likely developments in the future. It is a valuable reference for those in the food industry, as well as in the regulatory environment.

Hardback | 224 pages | 9781788010733 | 2020 | £149.00 | \$205.00

ISBN 978-1-78801-073-3



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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 | 2020 | £149.00 | \$205.00



Nutraceuticals and Human Health

The Food-to-supplement Paradigm

Paul A Spagnuolo University of Guelph, Canada

Nutraceuticals is a broad umbrella term used to describe any product derived from food sources with extra health benefits in addition to the basic nutritional value found in foods. This book is a comprehensive look at two themes in the area: technical considerations and biological considerations. It is the first book to examine comprehensively the entire process of nutraceutical development from food to supplement creation and all the important considerations in between. This serves as an excellent and up-to-date reference for food scientists, food chemists, researchers in human nutrition.

Hardback | 256 pages | 9781788014168 | 2020 | £149.00 | \$205.00



Nutritional Signalling Pathway Activities in Obesity and Diabetes

Zhiyong Cheng The University of Florida, USA

Nutrients act as signalling molecules initiating and mediating signalling 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 signalling 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 should also appeal to health science researchers.

Hardback | 320 pages | 9781788015578 | 2021 | £159.00 | \$220.00



Oral Processing and Consumer Perception

Biophysics, Food Microstructures and Health

Bettina Wolf University of Nottingham, UK | **Serafim Bakalis** The University of Birmingham, UK

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 sections to aid the understanding of the later more specific oral processing chapters.

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



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** Anti-inflammation Research Institute, 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 | 2020 | £179.00 | \$250.00



The Maillard Reaction



2nd Edition

Justine Cottam University of Canterbury, New Zealand | **Sian E Fayle** | **Juliet A Gerrard**
University of Auckland, New Zealand

It is a little over 100 years since the Maillard reaction was first described. Despite decades of research since then, the products of the reaction and the mechanistic pathways leading to their formation are being gradually unravelled. It combines comprehensive information regarding the various methods that are employed in the analysis of Maillard products with a discussion of the advantages and limitations of those methods. This fully updated, revised and expanded version of the original volume includes a greater focus on the impact of the Maillard reaction on food, including flavour, texture, nutritional quality and aspects of food safety. It will be useful for both new and experienced researchers who are involved in solving the mysteries and complexities of Maillard chemistry.

Hardback | 200 pages | 9781782629108 | 2021 | £123.00 | \$170.00

ISBN 978-1-78262-910-8



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Saltmarsh's Essential Guide to Food Additives

5th Edition

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.

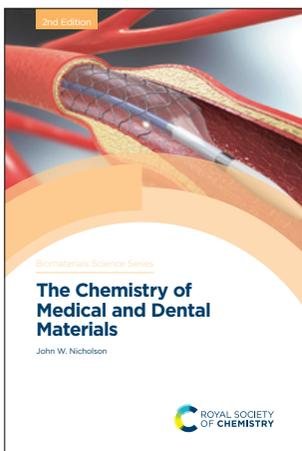
The book will include food additives and why they are used, safety of food additives in Europe, additive legislation within the EU and outside Europe and the complete listing of all additives permitted in the EU. Bringing the literature up to date, it will include a new chapter on clean labelling and 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



ISBN 978-1-83916-103-2





About the series

ISSN: 2397-1401

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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.

Biomaterials for Stem Cell Delivery in Regenerative Medicine

Frank Barry REMEDI, Ireland | **Abbie Binch** REMEDI, Ireland

Focussed on stem cell delivery for different regenerative medicine applications, from cardiac repair to neural tissues, this book will highlight biomaterial selection and use for cell delivery, covering tuneable hydrogels, nanomaterials and biomimetic substrates. Adult, human and induced pluripotent stem cells will be covered, making this a truly comprehensive book for the field.

Hardback | 500 pages | 9781788012447 | 2020 | £179.00 | \$250.00



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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** University of Adelaide, 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 | 2020 | £179.00 | \$250.00



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Decellularized Extracellular Matrix



Characterization, Fabrication and Applications

Tetsuji Yamaoka National Cerebral and Cardiovascular Center Research Institute (NCVC), Japan | **Takashi Hoshiba** Tokyo Metropolitan Industrial Technology Research Institute, Japan

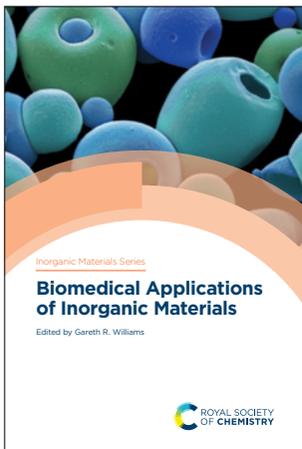
Takashi Hoshiba and Tetsuji Yamaoka have brought together, for the first time, leading contributors to provide a fundamental guide to the decellularized extracellular matrix. Focussing on the sources of dECM, preparation, characterization and applications of dECM in regenerative medicine and biological systems, this is a must-have resource for those working in regenerative medicine and tissue engineering.

Hardback | 325 pages | 9781788014670 | 2020 | £159.00 | \$220.00

ISBN 978-1-78801-467-0



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About the series

ISSN: 2472-3819

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Duncan W Bruce University of York, UK | **Dermot O'Hare** University of Oxford, UK |

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This new 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



Inorganic Thermoelectric Materials

From Fundamental Concepts to Materials Design

Anthony Powell University of Reading, UK

Thermoelectric devices convert a heat flux directly into electrical power, offering the capacity to improve system efficiency by recovery of a portion of waste heat for conversion into 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 which 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



The Chemistry of Inorganic Biomaterials

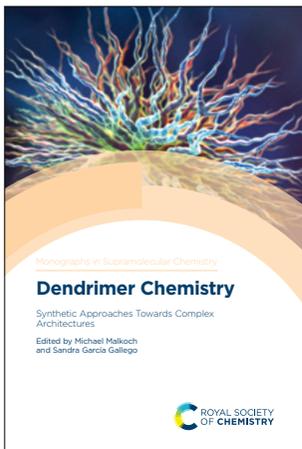


Christopher Spicer University of York, UK

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 | 9781788017534 | 2021 | £99.99 | \$140.00





About the series

ISSN: 1368-8642

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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.

Coordination Polymers



Design, Analysis and Application: 2nd Edition

Stuart R Batten Monash University, Australia | **Suzanne M Neville** University of New South Wales, Australia | **David R Turner** Monash University, Australia

The second edition of Coordination Polymers will reflect cutting-edge advances in this fast-paced field. The aim is to provide a flavour of each aspect of coordination polymers whilst introducing the important concepts and developments using carefully selected examples. Written in the style of a tutorial review, the book is suitable for both senior specialists and new postgraduate students taking their first steps in the field. It also provides an authoritative and detailed reference source.

Hardback | 450 pages | 9781788010825 | 2021 | £179.00 | \$250.00



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Dendrimer Chemistry



Synthetic Approaches Towards Complex Architectures

Michael Malkoch KTH Royal Institute of Technology, Sweden | **Sandra García Gallego** University of Alcalá, Spain

The dendrimer field continues to grow due to the unique structure of dendrimers that lends itself to useful properties and applications, such as in drug delivery. This book covers the latest advances in the synthesis of dendrimers and other complex dendritic architectures. It provides an overview of the most established building blocks for each family of dendritic material, and highlights the synthetic and structural trends and new applications. This will be a handy reference for postgraduate students and researchers in organic chemistry, polymer chemistry, (nano) materials science and macromolecular chemistry.

Hardback | 350 pages | 9781788011327 | 2020 | £169.00 | \$235.00



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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 | 9781788017763 | 2021 | £179.00 | \$250.00



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



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 | 2020 | £159.00 | \$220.00



Supramolecular Protein Chemistry



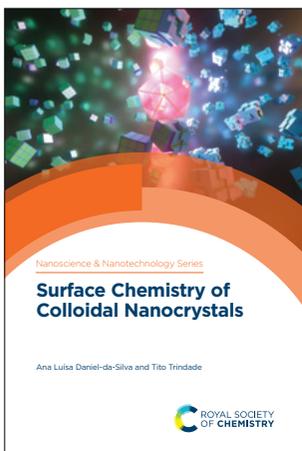
Assembly, Architecture and Application

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 | 2020 | £179.00 | \$250.00





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ISSN: 1757-7136

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Revaprasadu University of Zululand, South Africa

The possible uses of nanotechnology span many fields from health, environment to 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.

Bionanodesign

Old Forms for New Functions

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 | 2020 | £159.00 | \$220.00



Concepts and Design of Materials Nanoarchitectonics

Omar Azzaroni Universidad Nacional de La Plata, Argentina | **Katsuhiko Ariga** National Institute for Materials Science, Japan

The concept of Nanoarchitectonics was introduced to describe the correct manipulation of nanoscale materials in the creation of nano-devices and applications. Chapters cover introductory features underlying the field and present a unifying overview of the theoretical aspects and emerging applications that are changing the capability to understand and design advanced functional materials. Edited by pioneers of the field, this book will be of interest to researchers working in nanoscience, materials science, supramolecular chemistry, physical chemistry and organic chemistry, as well as graduate students in these fields.

Hardback | 450 pages | 9781788018029 | 2021 | £179.00 | \$250.00



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 | 9781788017824 | 2020 | £179.00 | \$250.00



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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 | 2020 | £149.00 | \$205.00



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Titanate and Titania Nanotubes



2nd Edition

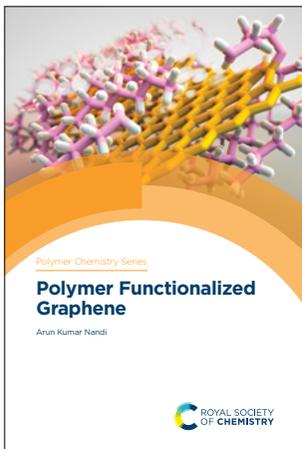
Dmitry Bavykin University of Southampton, UK | **Frank Walsh** University of Southampton, UK

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 and scalable technology methods. The second edition of Titanate and Titania Nanotubes consolidates knowledge regarding the synthesis, properties and application of nanostructured titanates. Hydrothermal, wet chemical, sol-gel, electrophoretic and anodic synthesis methods are considered along with single metal oxide, mixed metal oxide, multilayer, gradient and composite layers. Written by leaders in the field, this title will be of interest to students and researchers who experimentally study nanomaterials.

Hardback | 220 pages | 9781788017374 | 2020 | £149.00 | \$205.00



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About the series

ISSN: 2044-0790

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Polymer chemistry is a vast research area and with so many papers published on the topic, it's hard to know where to start and what papers to read. With contributions from leading experts across the world, each book in the series covers key themes in polymer chemistry research for graduate students and researchers. The perfect introduction to key topics giving the reader the knowledge to continue their work.

Amphiphilic Polymer Co-networks



Synthesis, Properties, Modelling and Applications

Costas S Patrickios University of Cyprus, Cyprus

The improved mechanical properties of amphiphilic polymer co-networks (APCNs) are attracting increasing attention from further basic research on the system and also new biomedical and catalysis applications. This new book focuses on the new developments in the field covering the key areas of synthesis, properties, applications and modelling. Edited by a leading name in the field, the book will appeal to graduate students and researchers interested in hydrogels, polymer networks, polymer chemistry, block copolymers, self-assembly and nanomaterials.

Hardback | 400 pages | 9781788013703 | 2020 | £169.00 | \$235.00



ISBN 978-1-78801-370-3

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 include 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 | £169.00 | \$235.00



ISBN 978-1-78801-879-1

Redox Polymers for Energy and Nanomedicine

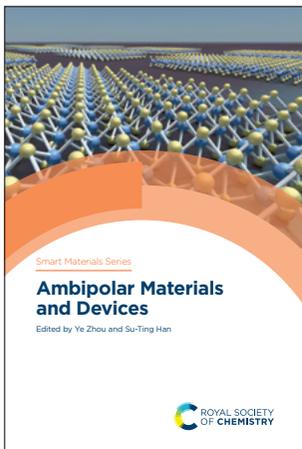


David Mecerreyes University of the Basque Country, Spain | **Nerea Casado** University of the Basque Country, Spain

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.

Hardback | 350 pages | 9781788018715 | 2021 | £169.00 | \$235.00





About the series

ISSN: 2046-0066

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

The progress of new functional materials plays a vital role in solving many of today's global challenges, from energy and sustainability to medicine and healthcare. With a wealth of information available it's hard to find a resource providing a complete overview of the different types of smart materials available. Each book in the series covers the fundamentals and applications of 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 | 350 pages | 9781788018685 | 2021 | £169.00 | \$235.00



ISBN 978-1-78801-868-5
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Chemistry of Spintronics

From Fundamentals to Applications

Erin Chernick University of Tübingen, Germany

Chemistry of Spintronics gives the reader an in depth look at the field, providing targeted information on how the property of the electron spin can influence chemical phenomena and processes. The book covers how the nature of the electron spin can influence chemical properties, and in turn, enable clever material design. With contributions from global specialists, this title will be of interest to those working in materials science, spintronics, organic chemistry, physical chemistry, computational chemistry and organometallic chemistry.

Hardback | 400 pages | 9781788017169 | 2021 | £179.00 | \$250.00



ISBN 978-1-78801-716-9
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About the series

ISSN: 2048-7681

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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.

Bijels

Bicontinuous Particle-stabilized Emulsions

Paul S Clegg University of Edinburgh, UK

Bicontinuous interfacially jammed emulsion gels, now commonly termed ‘bijels’, are a class of soft materials, in which interpenetrating, continuous domains of two immiscible fluids are maintained in a rigid arrangement by a jammed layer of colloidal particles at their interface. Such gels have unusual material properties that promise exciting applications across diverse fields from energy materials and catalysis, to food science. This is the first book on the subject and provides the reader with a fundamental introduction. Edited by a recognised authority on bijels, the reader will learn about the bijel and its formation. Bringing together current understanding, this book aims to bring the potential application of bijels to diverse materials challenges closer to fruition. This is a must-have resource for anyone working in soft matter and applied fields.

Hardback | 400 pages | 9781788015202 | 2020 | £179.00 | \$250.00



Drying of Complex Fluid Drops

Fundamentals and Applications

David Brutin Aix-Marseille University, France | **Khelil Sefiane** University of Edinburgh, UK

Addressing the fundamental underpinnings of wetting, spreading and drying, this book then takes the reader through key applications grouped into themes including, colloidal droplets (used in printing), surfactants (agriculture and pesticides), and biological (e.g. bloodstain analysis for forensics). With a section on modelling and simulation to balance experiment with computational tools, this book will appeal to anyone working in complex fluids across classical fluid mechanics, soft matter, and chemical, biological and mechanical engineering.

Hardback | 275 pages | 9781788017909 | 2021 | £149.00 | \$205.00



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 | 9781788017299 | 2021 | £179.00 | \$250.00



Soft Matter for Biomedical Applications



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

Recent advances in chemistry and nanoscience are enabling the fabrication of sophisticated soft biomaterials, which are finding applications ranging from sensors and drug delivery, to soft robotics as tools for precise surgeries. It represents an area of intense research across chemistry, materials science, physics and engineering. This book is the first to concentrate on the basics of soft matter systems, biological soft matter properties across natural, synthetic soft matter and hybrid systems, and applications to biomedicine and biomedical engineering.

Hardback | 500 pages | 9781788017572 | 2021 | £179.00 | \$250.00



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



Nanoscience



Volume 6

P John Thomas Bangor University, UK | **Neerish Revaprasadu** 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 | 9781788016933 | 2020 | £314.95 | \$440.00



Organometallic Chemistry



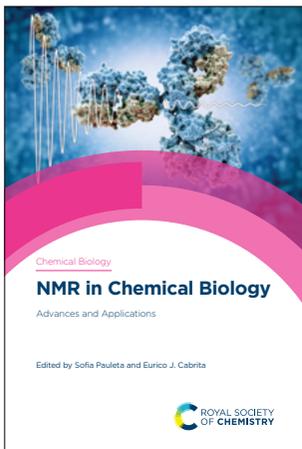
Volume 43

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 | 2020 | £314.95 | \$440.00





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ISSN: 2055-1975

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The Chemical Biology Series is a new venture that 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 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, Repair and Disease



Miral Dizdaroglu NIST, USA | **R Stephen Lloyd** Oregon Health & Science University, USA

DNA in living organisms is constantly undergoing damage from a wide range of factors and understanding the mechanisms involved in the detection of DNA damage and its repair provides promising new avenues for disease management. This book provides a comprehensive overview of the interdisciplinary area of DNA damage and repair and their relevance to disease pathology. Edited by recognised leaders in the field, this book is an appealing resource to a variety of readers from geneticists, chemical biologists and cancer researchers to drug discovery scientists with an interest in gene therapy.

Hardback | 450 pages | 9781788018890 | 2020 | £179.00 | \$250.00



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.

Hardback | 300 pages | 9781788015691 | 2020 | £159.00 | \$220.00



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.

Hardback | 450 pages | 9781788011723 | 2020 | £179.00 | \$250.00

ISBN 978-1-78801-172-3



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RNA Polymerases as Molecular Motors



2nd Edition

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

The cell can be viewed as a 'collection of protein machines' and understanding these molecular machines requires sophisticated cooperation between cell biologists, geneticists, enzymologists, crystallographers, chemists and physicists. To observe these machines in action, researchers have developed entirely new methodologies for the detection and the nanomanipulation of single molecules. This book, written by expert scientists in the field, analyses how these diverse fields of research interact on a specific example - RNA polymerase.

Hardback | 350 pages | 9781788013659 | 2020 | £169.00 | \$235.00

ISBN 978-1-78801-365-9



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The Discovery and Utility of Chemical Probes in Target Discovery



Paul Brennan University of Oxford, UK

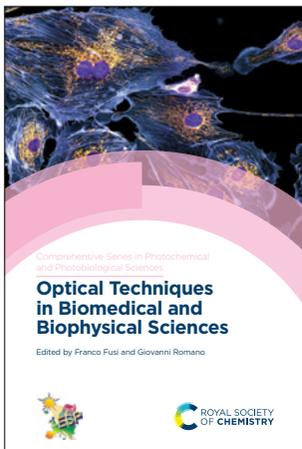
Numerous genetic methods can be utilised to link a phenotype to a single molecular target but annotated small molecule chemical probes and even entire chemogenomic libraries are increasingly being used as a complementary approach. This book will comprehensively cover the state of the art in chemical 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.

Hardback | 300 pages | 9781788015899 | 2020 | £159.00 | \$220.00

ISBN 978-1-78801-589-9



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Initiated by the European Society for Photobiology this series provides comprehensive overviews on specific areas of photoscience, giving in-depth coverage of the very different fields related to light effects. It embraces both well-established and emerging fields and allows investigators, physicians, industrialists and postgraduate students to obtain an updated account in specific areas and a ready access to the recent literature. Importantly, books in this series provide a critical evaluation of the directions that the field is taking.

Optical Techniques in Biomedical and Biophysical Sciences

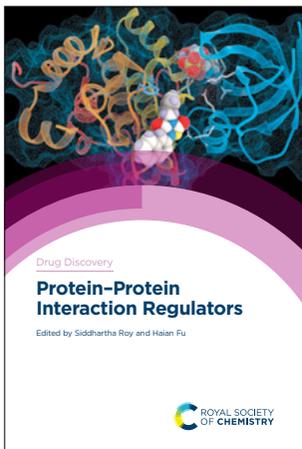
ee

Franco Fusi University of Florence, Italy | **Giovanni Romano** University of Florence, Italy

Optical Techniques in Biomedical and Biophysical Sciences aims to provide an overview of light sources, together with an extensive and authoritative description of the optical techniques in bio-medicine. This book is designed to give biomedical researchers a strong feel for the capability of physical approaches, promote new interdisciplinary interests and persuade more practitioners to take advantage of optical techniques. Supplemented with videos providing a hands-on description of the techniques and procedures, this book has a technique focused approach ideal for anyone working in this interdisciplinary field.

Hardback | 350 pages | 9781788015295 | 2021 | £169.00 | \$235.00





About the series

ISSN: 2041-3203

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The Drug Discovery Series covers all aspects of drug discovery and medicinal chemistry and contains over sixty 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.

Antiviral Discovery for Highly Pathogenic Emerging Viruses

César Muñoz-Fontela Bernhard Nocht Institute for Tropical Medicine, Germany |

Rafael Delgado Hospital Universitario 12 de Octubre, Spain

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. Drug Discovery for 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.

Hardback | 340 pages | 9781788015646 | 2020 | £159.00 | \$220.00



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Anti-fibrotic Drug Discovery

Jehrod Brenneman KSQ Therapeutics, USA | **Malliga R Iyer** National Institutes of

Health, USA

Fibrosis is a condition with globally high unmet medical need, and as such is a highly active area of academic and pharmaceutical research covering multiple treatment targets, organs, tissues and therapeutic approaches. Anti-fibrotic Drug Discovery is a single source reference for the latest drug-discovery approaches to tackle fibrosis in various tissues, comprehensively covering recent success and future perspectives on emerging therapeutic intervention points. This book is ideal for practitioners in fibrosis drug discovery and research as well as clinicians specialising in liver, kidney, heart and lung disease, in which fibrosis plays a key role in pathology.

Hardback | 450 pages | 9781788015103 | 2020 | £179.00 | \$250.00



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Artificial Intelligence in Drug Discovery

Nathan Brown Benevolent AI, UK

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.

Hardback | 500 pages | 9781788015479 | 2020 | £179.00 | \$250.00



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 DEL.

Hardback | 350 pages | 9781788014878 | 2020 | £179.00 | \$250.00



New Tools to Interrogate Endocannabinoid Signalling

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.

Hardback | 300 pages | 9781788018012 | 2021 | £159.00 | \$220.00



Phenotypic Drug Discovery

Beverley Isherwood AstraZeneca, UK | **Angelique Augustin** Roche, Switzerland

Phenotypic drug discovery has been highlighted in the last 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 | £159.00 | \$220.00



Protein Degradation with New Chemical Modalities



Successful Strategies in Drug Discovery and Chemical Biology

Hilmar Weinmann Bayer AG, Germany | **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 | 2020 | £179.00 | \$250.00



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.

Hardback | 350 pages | 9781788011877 | 2020 | £169.00 | \$235.00



The Medicinal Chemist's Guide to Solving ADMET Challenges

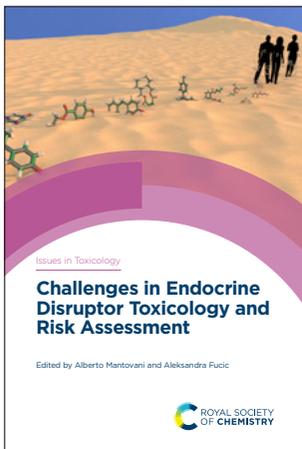


Patrick Schnider Roche, Switzerland

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

Hardback | 300 pages | 9781788012270 | 2020 | £159.00 | \$220.00





About the series

ISSN: 1757-7179

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

Big Data in Predictive Toxicology

Daniel Neagu University of Bradford, UK | **Andrea-Nicole Richarz** European Commission - Joint Research Centre, Italy

The rate and volume of toxicological data generation is continually growing due to novel techniques and software. The amplified pace and capacity of data generation has repercussions for organising and analysing data output. This book discusses these challenges as well as the nature, storage, analysis and interpretation of toxicological big data. It details how these data are applied in toxicity prediction, modelling and risk assessment. This title is relevant for researchers and postgraduates in the fields of computational methods, applied and physical chemistry, cheminformatics, biological sciences, predictive toxicology, and safety and hazard assessment.

Hardback | 300 pages | 9781782622987 | 2020 | £159.00 | \$220.00



Challenges in Endocrine Disruptor Toxicology and Risk Assessment

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

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.

Hardback | 350 pages | 9781788017411 | 2021 | £169.00 | \$235.00



Conference on Drug Design and Discovery Technologies

Manikanta Murahari MS Ramaiah University of Applied Sciences, India | **Lakshmi Sundar** MS Ramaiah University of Applied Sciences, India | **Soma Chaki** MS Ramaiah University of Applied Sciences, India | **Vasanthanathan Poongavanam** Uppsala University, Sweden | **Pritesh Bhat** Schrodinger, Bangalore, India | **Usha Y Nayak** Manipal University, India

This publication is based on peer-reviewed manuscripts from the 2019 Conference on Drug Design and Discovery Technologies (CDDT) held at Ramaiah University of Applied Sciences, India. Providing a wide range of up to date topics on the latest advancements in drug design and discovery technologies, this book ensures the reader receives a good understanding of the scope of the field. Aimed at scientists, students, regulators, academics and consultants throughout the world, this book is an ideal resource for anyone interested in the state of the art in drug design and discovery.

Hardback | 300 pages | 9781788018623 | 2020 | £125.00 | \$175.00



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.

Hardback | 250 pages | 9781788016896 | 2020 | £314.95 | \$440.00



Carbohydrate Chemistry



Chemical and Biological Approaches Volume 44

Amelia Pilar Rauter Universidade de Lisboa, Portugal | **Thisbe K Lindhorst** Kiel University, Germany |

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This invaluable volume contains analysed, evaluated and distilled information on the latest in carbohydrate research. The discovery and synthesis of novel carbohydrates and mimetics with diverse applications continues to be a major challenge for carbohydrate chemists. The understanding of the structure and function of carbohydrates and glycoconjugates remains vital in medicine and molecular biology. Covering both chemical and biological science related to the particular volume topic, this series demonstrates the interdisciplinary nature of modern carbohydrate research, and benefits any researcher who wishes to learn about the latest developments in the carbohydrate field.

Hardback | 300 pages | 9781788013680 | 2021 | £314.95 | \$440.00



Organophosphorus Chemistry



Volume 49

David W Allen Sheffield Hallam University, UK | **David Loakes** University of Cambridge, UK |

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

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 nucleotides. The Editors have added to the content with a timely chapter on the recent developments in green synthetic approaches in organophosphorus chemistry to reflect current interests in the area.

Hardback | 370 pages | 9781788018647 | 2020 | £314.95 | \$440.00



Photochemistry



Volume 48

Stefano Protti University of Pavia, Italy | **Angelo Albini** 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.

Hardback | 400 pages | 9781839161407 | 2020 | £314.95 | \$440.00



Glossary of Terms Used in Molecular Toxicology



Douglas Templeton University of Toronto, Canada | **John Duffus** The Edinburgh Centre for Toxicology, UK | **Michael Schwenk** Federal Public Health Department, Germany

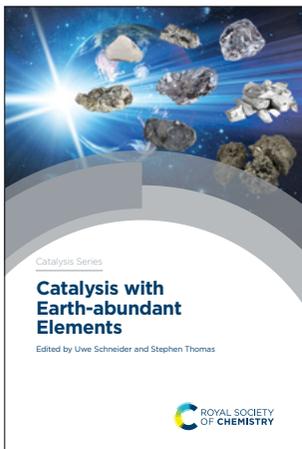
Molecular toxicology is a rapidly expanding subject area that is very interdisciplinary, the requirement for both toxicologists and non-toxicologists to familiarise themselves with the terminology used in a variety of contexts is important to ensure the topic's continued expansion. This book is an ideal reference for students of toxicology interested in cellular and molecular mechanisms of toxicology and pathology as well as biologists, medicinal chemists and researchers in drug development interested in the molecular-level aspects of toxicology.

Hardback | 450 pages | 9781788017718 | 2020 | £70.00 | \$95.00

ISBN 978-1-78801-771-8



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About the series

1757-6725

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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.

Carbon Nanomaterials in Hydrogenation Catalysis

Edward Furimsky IMAF Group, Canada

In the past decade numerous studies on the development of catalysts on carbon nano-supports have appeared in scientific literature and these have shown remarkable activity and specificity for hydrogenation reactions. Carbon Nanomaterial in Hydrogenation Catalysis is a valuable reference for researchers and chemical engineers working on improving hydrogenation processes or interested in applications for carbon nanomaterials. Covering their production, modification and applications as a catalyst support this book provides an in-depth review of the current state-of-the art in using carbon nanomaterials for hydrogenation.

Hardback | 201 pages | 9781788017237 | 2019 | £149.00 | \$205.00



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.

Hardback | 350 pages | 9781788011181 | 2020 | £169.00 | \$235.00



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 the “taming” of the highly reactive oxygen gas by use of micro-flow reactors and membranes.

Hardback | 350 pages | 9781788017206 | 2020 | £169.00 | \$235.00



Vanadium Catalysis



Manas Sutradhar University of Lisbon, Portugal | **Armando J L Pombeiro** University of Lisbon, Portugal | **José Armando L da Silva** University of Lisbon, Portugal

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.

Hardback | 450 pages | 9781788018579 | 2020 | £179.00 | \$250.00





About the series

1359-6640

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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.

Chemistry of 2-Dimensional Materials

Beyond Graphene

Graphene has extraordinary chemical and physical properties ensuring its use in optoelectronics, energy and biomedical applications. One of the greatest challenges is to develop and master chemical strategies for other 2D materials such as transition metal dichalcogenides. This Faraday Discussion covers all areas related to other 2D materials' chemistry spanning from their theoretical/computational prediction to their synthesis and functionalization yielding 2D and 3D systems with tailor made physical properties for a wide range of applications.

Hardback | 450 pages | 9781788019118 | 2020 | £170.00 | \$235.00



Cooperative Phenomena in Framework Materials

There has been exponential growth in the number of nanoporous framework materials reported in the scientific literature over recent years. These novel families of materials open up new horizons in practically all branches of engineering, physics, chemistry, biology, and medicine. With their numerous applications as selective adsorbents and catalysts, substrates for biosensors and drug delivery, membranes and films in various nanotechnologies this Faraday Discussion discusses both the fundamentals and the applied aspects of framework materials.

Hardback | 450 pages | 9781788019101 | 2020 | £170.00 | \$235.00



Luminescent Silicon Nanostructures

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.

Hardback | 450 pages | 9781788019088 | 2020 | £170.00 | \$235.00



Mechanistic Processes in Organometallic Chemistry

Organometallic chemistry underpins the majority of homogeneous catalysis. Mechanistic investigations have played a key role in the field of organometallic chemistry since its early days and there have been many significant developments recently in the physical methods that can be used to gain mechanistic understanding in organometallic chemistry. This Faraday Discussion focuses on mechanistic studies coupled with novel experimental and computational methods, bringing together experts with a wide range of interests and backgrounds, including those developing new physical methods for mechanistic investigations and potential end users of these methods.

Hardback | 450 pages | 9781788016773 | 2020 | £170.00 | \$235.00



New Horizons in Density Functional Theory

Density functional theory (DFT) is today's most widely used method for practical computational electronic structure calculations across chemistry, physics and materials science. Fuelled by a rapid increase in computational power and the advent of linear scaling technologies the systems to which DFT may be applied have become ever larger, more complex. This Faraday Discussion brings together chemists, physicists, materials scientists and applied mathematicians who develop new density-functional methods and rely on this approach as a key tool in their research.

Hardback | 450 pages | 9781788019132 | 2020 | £170.00 | \$235.00



Peptide-membrane Interactions

It is difficult to overstate the importance of improving our understanding of how macromolecules interact with membranes as this is a fundamental aspect of how living systems operate. These processes are involved in protein folding, cell signalling, biogenesis, morphogenesis, disease and medical therapy. This Discussion addresses several related aspects of peptide interactions with membranes, discussing model theoretical and experimental systems in order to define the 'reaction space' that is possible and how this applies to fundamental questions in cell biology.

Hardback | 450 pages | 9781788019149 | 2020 | £170.00 | \$235.00



Quantum Effects in Complex Systems

Nuclear quantum effects such as zero-point energy conservation, tunnelling, non-adiabaticity and coherence play an important role in many complex chemical systems of technological and biological importance. This Faraday Discussion brings together both computational and experimental researchers who are interested in developing and applying methods that can be used to understand the role of quantum effects in complex systems. This volume provides a useful resource for researchers focussed on “many-particle” systems, including liquids, solids, biological complexes, and nanoparticles.

Hardback | 450 pages | 9781788016780 | 2020 | £170.00 | \$235.00

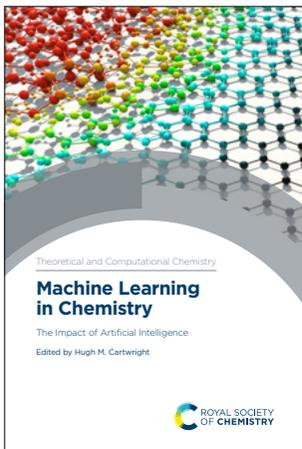


Reaction Mechanisms in Catalysis

Heterogeneous catalysis is a core area of contemporary physical chemistry posing major fundamental and conceptual challenges. It lies at the heart of the chemical industry - an immensely successful and important part of the overall UK economy, and catalysis plays a crucial part in the production of 80% of all manufactured goods. This Faraday Discussion discusses key aspects of reaction mechanism studies and how this can drive rational design of catalysts.

Hardback | 450 pages | 9781788019095 | 2020 | £170.00 | \$235.00





About the series

2041-3181

Editor-in-chief

Jonathan Hirst University of Nottingham, UK

Covering all aspects of theoretical and computational chemistry, from current theoretical methods and techniques to new developments in emerging areas, this series comprises up-to-date and timely references for postgraduate students and practising chemists. Books in the series cover both the methodologies at the core of the discipline and applications at the interface with physics, materials, computer science, biological and life sciences. They provide timely, in-depth treatments at the frontiers of theoretical and computational chemistry.

Computational Techniques for Analytical Chemistry and Bioanalysis

Philippe B Wilson De Montfort University, UK | **Martin Grootveld** De Montfort University, UK

As analysis in chemical and biological fields has developed so computational techniques have advanced enabling greater understanding of the data. This work will serve as a definitive overview of the field of computational simulation as applied to analytical chemistry and biology, drawing on recent advances as well as describing essential, established theory. Computational approaches provide additional depth to biochemical problems, as well as offering alternative explanations to atomic scale phenomena. Highlighting the innovative and wide-ranging breakthroughs made by leaders in computational spectrum prediction and the application of computational methodologies to analytical science, this book is for graduates and postgraduate researchers showing how computational analytical methods have become accessible across disciplines.

Hardback | 500 pages | 9781788014618 | 2020 | £179.00 | \$250.00



ISBN 978-1-78801-461-8
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London Dispersion Forces in Molecules, Solids and Nano-structures

An Introduction to Physical Models and Computational Methods

Janos Angyan University of Lorraine, France | **John Dobson** Griffith University, Australia | **Georg Jansen** University of Duisburg-Essen, Germany | **Tim Gould** Griffith University, Australia

Summarising current understanding of the physical origin and modelling of London dispersion forces manifested at an atomic level, this book provides theoretical, physical and synthetic chemists, as well as solid-state physicists, with a systematic understanding of the origins and consequences of these ubiquitous interactions. It covers a wide range of systems, from small intermolecular complexes, to organic molecules and crystalline solids, through to biological macromolecules and nanostructures.

Hardback | 450 pages | 9781782620457 | 2020 | £179.00 | \$250.00



ISBN 978-1-78262-045-7
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Machine Learning in Chemistry



The Impact of Artificial Intelligence

Hugh M Cartwright

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.

Hardback | 450 pages | 9781788017893 | 2020 | £179.00 | \$250.00



Understanding Hydrogen Bonds



Slawomir Grabowski University of the Basque Country and Donostia International Physics Center (DIPC), Spain

The area of hydrogen bonding is one that is well studied but our understanding continues to develop as the power of both computational and experimental techniques has improved. This book presents an up-to-date overview of our theoretical and experimental understanding of the hydrogen bond. It covers both well-established and novel approaches, new types of interaction that might be classified as hydrogen bonds and a comparison of hydrogen bonds to other types of non-covalent interactions.

Hardback | 450 pages | 9781788014793 | 2020 | £179.00 | \$250.00



Tunnelling in Molecules



Johannes Kästner University of Stuttgart, Germany | **Sebastian Kozuch** Ben-Gurion University of the Negev, Israel

There has been a lot of progress in the field of quantum tunnelling in the last few decades yet there are no books on its applications in chemistry that are less than a decade old. Including theoretical and experimental chapters, from the physical chemistry to the biochemistry fields this new book provides a broad and conceptual perspective of the reactivity of molecules based on quantum mechanical tunnelling.

Hardback | 300 pages | 9781788018708 | 2020 | £159.00 | \$220.00



Catalysis

Volume 32

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

Catalysts are required for a variety of applications and researchers are increasingly challenged to find cost effective and environmentally benign catalysts to use. This volume looks at modern approaches to catalysis and reviews the extensive literature including metal-support interactions of Ru-based catalysts under conditions of CO and CO₂ hydrogenation, electrocatalytic applications of heteroatom-doped carbon nanostructures and catalytic decomposition of gas-phase benzene.

Hardback | 300 pages | 9781788017749 | 2020 | £314.95 | \$440.00



ISBN 978-1-78801-774-9



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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.

Hardback | 400 pages | 9781788011655 | 2020 | £125.00 | \$175.00



Optimal Experimental Design for Chemical Engineers

Federico Galvanin University College London, UK

Model building procedures have been proposed for developing, improving and validating mechanistic models in more efficient ways by managing and guiding the information obtained from experimental activities. These procedures heavily rely on the use of efficient computational techniques for model identification based on the use of optimal design of experiments techniques. This book guides the reader through statistical tools and methods for building mechanistic mathematical models in chemical engineering using design of experiment techniques. Relevant chemical engineering case studies are used throughout the book to provide a practical approach to this complex topic. Ideal for experimenters, who will find useful tips for driving experiments, and modellers who will find useful information on model development, selection and validation, this book is essential for chemical engineers across academia and industry.

Hardback | 450 pages | 9781788010870 | 2020 | £179.00 | \$250.00



Quantities, Units and Symbols in Physical Chemistry

Abridged Version 2019

E Richard Cohen | **Tom Cvitas** University of Zagreb | **Jeremy G Frey** University of Southampton | **Bertil Holström** | **Kozo Kuchitsu** Tokyo University of Agriculture | **Roberto Marquardt** Université Louis Pasteur | **Ian Mills** University of Reading | **Franco Pavese** Istituto Nazionale di Ricerca Metrologica | **Martin Quack** Laboratorium für Physikalische Chemie der ETH Zürich | **Jürgen Stohner** Zürich University of Applied Sciences | **Herbert L Strauss** University of California at Berkeley | **Michio Takami** | **Anders J Thor** SIS Swedish Standards Institute

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.

Paperback | 120 pages | 9781839161506 | 2020 | £30.99 | \$42.99



Adhesion Science

2nd Edition

John Comyn

The use of adhesives is widespread and growing, and there are few modern artefacts, from the simple cereal packet, to the jumbo jet, that are without this means of joining. Adhesion Science 2nd Edition is fully updated and revised to provide an illuminating account of the science underlying the use of adhesives, a branch of chemical technology which is fundamental to the science of coatings and composite materials and to the performance of all types of bonded structures. This concise and yet detailed book is an ideal guide to students, from the essential basic polymer science to the chemistry of adhesives in use, it is the primary resource for any reader interested in adhesion science and the applications of adhesives.

Paperback | 200 pages | 9781788018883 | 2020 | £29.99 | \$42.00



ISBN 978-1-78801-888-3
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A Chemist's Guide to Intellectual Property

From Concept to Commercial Reality

Joseph Lenthall Haseltine Lake LLP, UK

The global Intellectual Property (IP) market is worth billions of dollars and yet input errors, cultural and literal translation, technical jargon and acronyms in filings can all contribute to incorrect IP data. Within the chemistry and pharmaceutical sectors these risks are amplified by the complex names and compounds being protected. The goal of this book is to provide postgraduate students and early career professionals with a practical guide to using IP in an effective way, focusing primarily on why and when (and when not) to use the IP system rather than simply how. Illustrated throughout with both hypothetical and real world examples this book is a vital guide for chemists with an "everything you need to know" approach.

Hardback | 300 pages | 9781788017343 | 2021 | £70.00 | \$95.00



ISBN 978-1-78801-734-3
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A Practical Guide to Quasi-elastic Neutron Scattering

Mark T F Telling Rutherford Appleton Laboratory, UK

Quasi-elastic neutron scattering (QENS) is an extremely powerful experimental technique for extracting temporal, spatial and energy information about soft and condensed matter systems on the nanoscale. This title provides an accessible introduction to the technique, which clearly and succinctly highlights all key conceptual, theoretical and data interpretation aspects of the method. Real research examples and worked analysis are used to illustrate the concepts addressed. The book will be of interest to students and researchers in academia and industry across chemistry, biology, physics, materials science and nanoscience.

Paperback | 200 pages | 9781788012621 | 2020 | £45.00 | \$63.00



ISBN 978-1-78801-262-1
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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.

Hardback | 450 pages | 9781788017831 | 2021 | £95.00 | \$130.00



ISBN 978-1-78801-783-1
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Characterization of Nanostructured Materials

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.

Hardback | 375 pages | 9781788011853 | 2020 | £60.00 | \$85.00



Chemistry for Sustainable Technologies

2nd Edition

Neil Winterton University of Liverpool, UK

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.

Hardback | 550 pages | 9781788012058 | 2020 | £86.99 | \$122.00



Conservation Science

2nd Edition

Paul Garside British Library, UK | **Emma Richardson** University College London, UK

With contributions by scientists working in the museum and heritage sector, this textbook provides an overview of the analytical techniques and data processing methods used in modern conservation science. Each chapter deals with one of the common types of conservation materials in turn and provides case study examples of the techniques employed. It will interest students, scientists involved in conservation, and conservators who want to develop their understanding of their collections at a material level.

Hardback | 400 pages | 9781788010931 | 2021 | £44.99 | \$63.00



Controlled Drug Analysis

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

Hardback | 350 pages | 9781788015349 | 2020 | £60.00 | \$85.00



Design of Experiments for Chemists

Matthew Linsley Newcastle University, UK

Design of Experiments (DoE) is recognised as an essential skill by many organisations. Its application ensures robust processes with quality output and is beneficial for improving the efficiency of lab-based academic research. In response to concerns over the lack of chemists with statistical and DoE skills, this book provides a very accessible and practical introduction to the topic written by a statistician with vast experience training chemists and relating to the needs of the chemical science community. It explores real life case studies and experiences to bring the theory to life and readers are given practical advice on applying the techniques presented within their own environments throughout.

Hardback | 300 pages | 9781782626572 | 2020 | £42.99 | \$60.00



Fundamentals of Smart Materials

Mohsen Shahinpoor University of Maine, USA

This textbook covers the fundamentals of different functional material systems aimed at advanced undergraduate and postgraduate students. Each chapter includes an introduction to the material, its applications and uses with example problems, fabrication and manufacturing techniques, conclusions, homework problems and a bibliography. Edited by a leading researcher in smart materials, topics include piezoelectric materials, magnetostrictive materials, shape memory alloys, mechanochromic materials, chemomechanical polymers and self-healing materials.

Hardback | 300 pages | 9781782626459 | 2020 | £75.00 | \$105.00



Global Energy

Peter Hall University of Sheffield, UK

Global Energy provides an approachable introduction to the often-complex global energy industry. Throughout the book, thumbnail sketches are given of energy systems in certain countries that illustrate different approaches to energy provision. It will give the reader a broad vision of how different energy generation and distribution systems function together to provide global energy. Written by an authority in the field, this title will be of interest to students on advanced courses in energy, engineering, environment and materials, as well as academic professionals and policy makers.

Paperback | 300 pages | 9781788015172 | 2020 | £65.00 | \$90.00



Good Chemistry

Methodological, Ethical, and Social Dimensions

Jan Mehlich

Practicing chemists face a number of ethical considerations, from issues of attribution of authorship through the potential environmental impact of a new process to the decision to work on chemicals that could be weaponised. This textbook provides an accessible resource to help chemists recognise the ethical and social dimensions of their own work and act appropriately. Divided into three parts, methodological aspects, research ethics, and social and environmental implications, it is a valuable reference for students and researchers alike.

Hardback | 250 pages | 9781788017435 | 2020 | £50.00 | \$70.00



Greener Organic Transformations



James H Clark University of York, UK | **Anwar Jardine** University of Cape Town, South Africa | **Avtar Matharu** University of York, UK | **Christian Stevens** Ghent University, Belgium

Green chemistry has progressed from being a driver for change in the chemical and allied industries to being a critical part of chemical education at all levels. Future Chemists must be able to practice their trade in the light of increasing concerns about waste and resources, the safety of chemicals in consumer products, and increasingly restrictive legislation. Covering a variety of well-known reactions that commonly feature in standard organic textbooks this book supplements and supports the standard organic chemistry texts.

Paperback | 300 pages | 9781788012034 | 2021 | £70.00 | \$95.00



Green Chemistry



Principles and Case Studies

Felicia Etzkorn Virginia Tech, USA

Targeted at advanced undergraduate students and first-year graduate students with a background in General and Organic Chemistry this textbook illustrates the principles of Green Chemistry with real-world case studies.

Paperback | 430 pages | 9781788017985 | 2020 | £70.00 | \$95.00



Hands on NMR



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

Presenting important practical aspects of NMR spectroscopy, this book will be useful for explaining and facilitating the successful set up of a wide variety of NMR experiments. It will enlighten readers with the relevant information on the basic concepts in NMR, how it works, and how to trouble-shoot artefacts that may be encountered. Bringing books that present practical NMR up to date, this book fills the gap in the literature and provides a new comprehensive practical NMR book for teaching and research at all levels – graduates, postgraduates, industry and research.

Hardback | 500 pages | 9781788010887 | 2020 | £86.99 | \$122.00



Histological Techniques



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

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

Paperback | 334 pages | 9781839161476 | 2020 | £40.00 | \$56.00



Introduction to Glass Science and Technology e

3rd Edition

James E Shelby Alfred University, USA

This new edition provides a concise and inexpensive introduction for an undergraduate course in glass science and technology. The contents cover the fundamental topics of importance in glass science and technology, including glass formation, crystallization, phase separation and structure of glasses. Additional chapters discuss the most important properties of glasses, the composition and properties of vitreous and doped vitreous silicas and a final chapter provides an introduction to a number of methods used to form technical glasses. Although intended primarily as a textbook, it is also invaluable to the engineer or scientist who desires more knowledge regarding the formation, properties and production of glass.

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Microfluidics and Lab-on-a-chip e

Andreas Manz Universität des Saarlandes, Germany | **Giuseppina Simone** Northwestern Polytechnical University, China | **Pavel Neuzil** Northwestern Polytechnical University, China

Covering the fast and dynamic development of miniaturization, μ 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.

Paperback | 200 pages | 9781782628330 | 2020 | £35.99 | \$50.00



Macromolecules at the Interface e

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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Mimicking the Extracellular Matrix e

Gregory A Hudalla University of Florida, USA | **William L Murphy** University of Wisconsin - Madison, USA

Materials which are able to mimic the properties of the extracellular matrix are of great interest for many therapeutic and biomedical applications. Edited by leading experts in the field, this book brings together the current knowledge of extracellular matrix biology with the state-of-the-art of extracellular matrix-mimicking biomaterials. The book is suitable for both biologists and bioengineers interested in the extracellular matrix, and provides material scientists with a benchmark for future efforts to develop synthetic biomaterials as extracellular matrix mimics.

Paperback | 405 pages | 9781839161483 | 2020 | £45.00 | \$63.00



Molecular Biology and Biotechnology

7th Edition

Ralph Rapley University of Hertfordshire, UK

This popular textbook has been revised and updated to provide a comprehensive overview and to reflect the latest developments in this rapidly developing area. Advances in basic research at the molecular level have provided many insights into biological processes and allowed the production of new developments across the fields of genome editing, proteomics, agriculture, microbial biotechnology, bioinformatics and therapeutics. This new edition provides the reader with a number of key areas in discrete chapters either updated from the previous edition or written as entirely new chapters concerning emerging fields. By presenting information in an easily assimilated form, this book makes an ideal undergraduate text for students of biology and chemistry, as well as appealing to postgraduates.

Hardback | 500 pages | 9781788017862 | 2020 | £59.99 | \$85.00



ISBN 978-1-78801-786-2
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Petroleum Engineering Explained

David Shallcross University of Melbourne, Australia

Featuring the same non-mathematical, informal style of Chemical Engineering Explained: Basic Concepts for Novices by D. Shallcross, this book will introduce basic petroleum engineering concepts to chemists and engineers, exemplified with pertinent real-life case studies. It is intended to be used as the main textbook on specialised courses introducing petroleum engineering to non-petroleum engineers working in the petroleum, oil and gas, and chemical process industries. It can also be used as a supplementary text for mainstream introductory petroleum engineering courses and more traditional chemical engineering courses.

Hardback | 450 pages | 9781788016681 | 2020 | £80.00 | \$115.00



ISBN 978-1-78801-668-1
9 781788 016681 >

Principles and Applications of Artificial Photosynthesis

Shunichi Fukuzumi Osaka University, Japan

Harnessing light energy from the sun is already possible and widely used to produce electricity via photovoltaic cells, however there is a fundamental issue in finding a suitable way of storing electricity. Photosynthesis in green plants locks energy from the sun within the chemical bonds of glucose molecules, not only producing energy but storing it. Molecular mimicry of the fundamental processes occurring in photosynthesis has thus attracted much attention. This book will comprehensively review the molecular-based artificial photosynthesis systems and provide a unified view and future perspective of real artificial photosynthesis by a single author covering the different approaches.

Paperback | 350 pages | 9781788014311 | 2021 | £80.00 | \$110.00



ISBN 978-1-78801-431-1
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Richard Cooper University of Oxford, UK | **Andrew Goodwin** University of Oxford, UK | **Paul Raithby** University of Bath, UK

Embracing crystal structure analysis and materials science, this textbook provides students with a broad view of diffraction and its applications. By using this book, the student will learn the key theories, techniques, analysis and modeling tools needed to build confidence in modern structural science. Highlights of the book include diffraction principles with underpinning theories emphasised, core techniques such as single crystal, powder X-Ray and neutron diffraction and their applications, modeling methods and PDF analysis and emerging techniques and developments. With worked examples, this book offers advanced undergraduates and graduates a concise and thorough guide to the subject.

Hardback | 250 pages | 9781782624622 | 2020 | £60.00 | \$85.00



ISBN 978-1-78262-462-2
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Printed Electronic Technologies

Wei Wu Wuhan University, China

Modern printing technology has paved the way for the fabrication of thin inexpensive electronics, with applications including wearable devices, smart packaging, healthcare, and the automotive industry. This textbook describes the key printing technologies for printed electronics, including explanations of the materials, mechanisms, printing methods and processes along with examples of printed devices and their applications. This title will be essential reading for students on courses across materials science, electronic science, manufacturing and engineering, as well as those with an interest in printed electronics.

Paperback | 360 pages | 9781788014151 | 2020 | £75.00 | \$105.00



Solid Rocket Propellants

Haridwar Singh Defense Research and Development Organisation, India | **Himanshu Shekhar** Defense Research and Development Organisation, India

Presenting up-to-date practical and theoretical aspects of rocket propellants and propulsion, this book is a much needed addition to the post graduate level literature. Covering all relevant information including formulation, processing and evaluation, it will be vital for students and researchers working in the area of solid rocket propellants in all sectors namely academics, the propellant industry, propellant production, quality control and associated agencies such as the armed forces, defence and space organisations. The authors bring together a wealth of accumulated knowledge into one book aiding future generations to meet the challenges in this area.

Paperback | 223 pages | 9781839161490 | 2020 | £30.00 | \$42.00



The Science of Running a Consultancy

William P Edwards Bardfield Consultants, UK

Aimed at chemical consultancy, although the principles can be applied more broadly, this book shows the reader how to set themselves up as an independent consultant. The author focusses not only on the essential business functions, from being a sole trader, accounting and marketing, but also pays attention to the necessary mind set needed, with particular respect to those making the move from employee to consultant. Various other activities, such as those which raise your international profile like writing, to running training courses and acting as an expert witness are included.

Hardback | 300 pages | 9781788017787 | 2021 | £45.00 | \$60.00



Transition States in Biological Chemistry

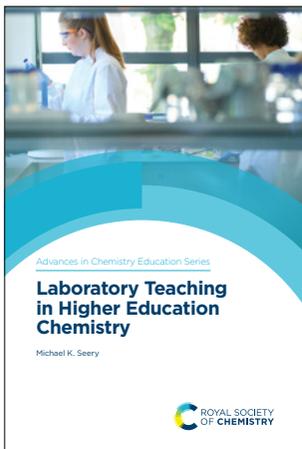
Stereoelectronics and Catalytic Mechanisms

G Michael Blackburn University of Sheffield, UK | **Nigel G J Richards** Cardiff University, UK

Transition states play a significant role in the function of enzymes but to make use of this fact in the design of novel catalysts it is necessary to understand the underlying chemistry of these states. This book provides the first comprehensive overview of transition states in enzyme catalysis, discussing how an understanding of transition states impacts drug discovery and the engineering of novel biocatalysts, and identifying key problems in the field that remain to be addressed.

Hardback | 300 pages | 9781788017961 | 2020 | £75.00 | \$105.00





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Creative Chemists



Simon Rees University of Durham, UK | **Douglas Newton** University of Durham, UK

Addressing the importance of making time for creativity in science, this book will empower chemistry teachers to incorporate creativity in teaching. Providing practical teaching strategies and exemplars to equip teachers with the confidence to encourage creative thinking in chemistry, users of this book will engage students with a rich learning experience.

Hardback | 175 pages | 9781788015110 | 2020 | £99.99 | \$140.00



Engaging Learners with Chemistry



Projects to Stimulate Interest and Participation

Ilka Parchmann The Leibniz Institute for Science and Mathematics Education, Germany | **Shirley Simon** University College London, UK | **Jan Apotheker** University of Groningen, Netherlands

Describing context-based learning and engagement tools, applied to the fostering of long-term student engagement with chemistry, this book is ideal for those involved in professional development, chemistry teaching, chemistry education research, and practitioners in the chemical industry seeking to attract students to careers in the chemical sector. The editors set out a context-based theoretical framework and ask contributors to explore different approaches, discussing the design and implementation of projects that stimulate, foster and sustain student interest with the subject.

Hardback | 225 pages | 9781788015080 | 2020 | £99.99 | \$140.00



A History of Distillation

Ian Hornsey Nethergate Brewery, UK

Although early texts tend to be shrouded in mystery, it is certain that in the alchemist's quest for the elixir of life, distillation played a central role. There is no modern book that deals with the history of distillation and there is a wealth of new material to report particularly around the early alchemists and into the origins of distillation from other civilisations. With the growth of the craft distillation industry internationally, both producers and the layman with a specialist interest in distilling will find this book of interest. Ian Hornsey has extensively researched the literature and brings his topic to life through his contagious enthusiasm and excellent writing.

Paperback | 300 pages | 9781788011952 | 2020 | £33.99 | \$48.00



Discovering Cosmetic Science

A Journey through the Personal Care Industry

Stephen Barton Skin Thinking Ltd., UK

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.

Paperback | 200 pages | 9781782624721 | 2020 | £19.99 | \$28.00



Dust in Galaxies

David A Williams University College London, UK | **Cesare Cecchi-Pestellini**
Osservatorio Astronomico di Palermo, Italy

Without interstellar dust, the Universe as we see it today would not exist. Yet this vital ingredient was first considered merely an irritating fog that prevented a clear view of stars and nebulae in the Milky Way and other galaxies. We now know that interstellar dust has essential roles in physics and chemistry, in the formation of stars and planetary systems, in the creation of the building blocks related to the origin of life, and in the movement of those molecules to new planets. This is the story the authors tell in this book. Appealing to a general audience, it is the first attempt to discuss interstellar dust at an accessible level with any chemical presentations kept to a minimum.

Paperback | 230 pages | 9781788015059 | 2020 | £24.99 | \$35.00



Perfume in the Bible

Charles Sell

The stories around the perfumes of the Bible are as abundant as the contemporary fragrances that are available. Identifying the ingredients used in biblical times is difficult when information and meaning is lost in ancient languages. Biblical perfumes might be expected to be made from natural products with the majority of ingredients from flower oils providing heart notes to the fragrances but although flowers are mentioned in the Bible it is never as part of a perfume. The biblical ingredients are base notes; their natural origins are either as defensive substances or as products of decay, which opens up an avenue of speculation as to why this is so! Aimed at a broad audience from chemists and general scientists to historians and those interested in religious studies also lay readers with an interest in exploring chemistry in the world of art and creative professions.

Hardback | 154 pages | 9781788017305 | 2019 | £19.99 | \$28.00



Sticking Together

The Science of Adhesion

Steven Abbott University of Leeds, UK

This popular science title will cover adhesion science in an easily accessible entertaining manner. As well as outlining types of adhesion and their importance in everyday life, the book covers interesting future applications of adhesion and inspiration taken from nature. Ideal for students and the scientifically minded reader this book provides a fascinating introduction to the science of what makes things stick.

Paperback | 220 pages | 9781788018043 | 2020 | £19.99 | \$27.99



ISBN 978-1-78801-804-3
9 781788 018043 >

The Science and Commerce of Whisky

2nd Edition

Ian Buxton Brollachan Ltd, UK | **Paul S Hughes** Oregon State University, USA

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 provides 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.

Hardback | 300 pages | 9781788015387 | 2020 | £34.99 | \$49.00



ISBN 978-1-78801-538-7
9 781788 015387 >

Traveling with the Atom

Glen E Rodgers Allegheny College, USA

The atomic concept is perhaps one of the most significant and enduring ideas in the history of humankind and to truly appreciate the labour that the great minds of the age expended upon atomic theory one can scarcely do better than trace their footsteps throughout Europe and across the globe. From Parisian museums to the legendary Cavendish laboratory - via Christchurch, Montreal and Pennsylvania Traveling with the Atom sketches the development of the atomic concept through the places and people central to the advances in our understanding of the particles forming our entire physical universe. An ideal travelling companion or fireside read, this book will intrigue and amuse anyone with an interest in the history of science.

Paperback | 450 pages | 9781788015288 | 2020 | £29.99 | \$41.99



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Top Trumps™

Single pack / Pack of six

Royal Society of Chemistry

Elements Top Trumps is an entertaining, fast-paced chemistry card game. With eye-catching imagery and fascinating facts about the elements, it's a great way to have fun and learn about the elements. Recommended for children aged 7-14, the game can be played by two or more players. Each of the 30 cards represents an element. Players compare numerical properties of the elements (melting point, density, price, discovery date and the size of the atom) and choose the category they think will win. Elements Top Trumps is created by the Royal Society of Chemistry in partnership with Winning Moves Ltd, the makers of Top Trumps™.

Single pack | 9781782620747 | 2014 | £6.00 | \$8.50

Pack of six | 9781782620754 | 2014 | £36.00 | \$50.00



RSC Periodic Table

Wallchart, A0 - 2A0

Murray Robertson Visual Elements, UK

Updated for 2017, the Royal Society of Chemistry's bold and clear representation of the periodic table now includes the four new elements, completing the seventh period. The poster is two-sided: on one side, a Visual Elements version, with fascinating element artwork by Murray Robertson based on scientific data provided by the chemist and science writer John Emsley; on the other, a bold colour-coded version, emphasising readability and clarity. Printed in full colour, the wallchart measures A0. Information for each element includes the name, chemical symbol, atomic number, and relative atomic mass.

The groups are readily identifiable by colour. We've designed the wallchart to be readable, visually engaging, and an excellent addition to any classroom, laboratory, or office. Price shown does not include VAT in the EU.

A0 Poster | 9781788011938 | 2014 | £10.95 | \$16.00

2A0 Poster | 9781788011921 | 2014 | £33.00 | \$49.50

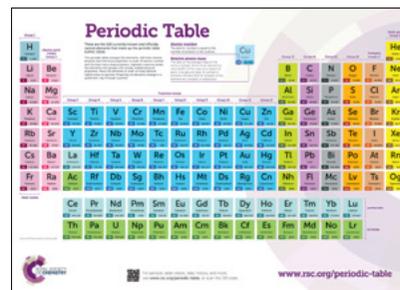
Visual Elements Jigsaw

Murray Robertson Visual Elements, UK

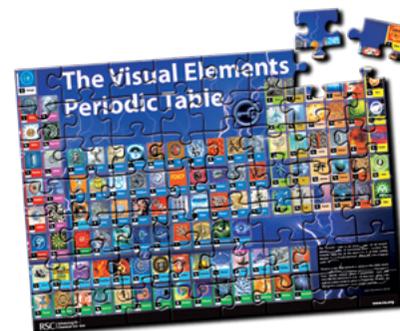
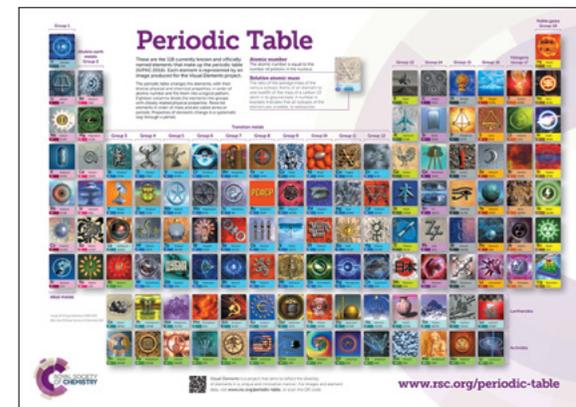
With 550 pieces and a stunning full-colour design, this jigsaw puzzle beautifully illustrates the periodic table in all its glory. The jigsaw would be an attractive gift for any puzzle-loving friends or relatives, and might even spark an interest in chemistry. Price shown does not include VAT in the EU.

Non Book / Merchandise | 9780854048434 | 2006 | £12.08 | \$24.00

A0 (1189 x 841 mm)



2A0 (1682 x 1189 mm)



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