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### Books to drive progress

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*.

### Books to enlighten

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*.

In *Good Chemistry*, we provide a textbook that goes beyond experimental procedure, to help practising scientists develop the skills to recognise the ethical and social dimensions of their own work and act appropriately.

### Books to inspire

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](mailto:books@rsc.org) to talk to the team.

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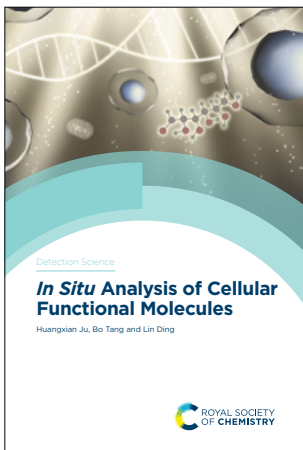
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Providing a comprehensive look at the state of the art in detection technologies and materials used in the development of diagnostics for clinical, medicinal, and environmental applications, the books in this Series are a valuable reference for graduate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

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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.

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**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**



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## Challenges in Detection Approaches for Forensic Science



**Lynn Dennany** University of Strathclyde, UK

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

**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

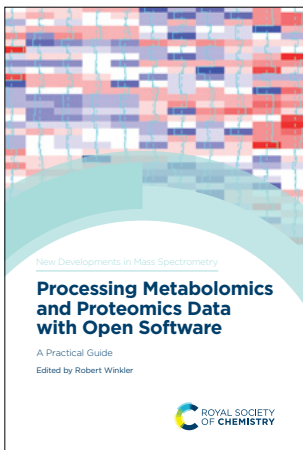
In situ analysis of cellular functional molecules has attracted considerable interest as it can provide spatially or temporally resolved information of these essential molecules on/within living cells through non-invasive methods. This book introduces the tailor-made design of detection probes as well 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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**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.

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## 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.

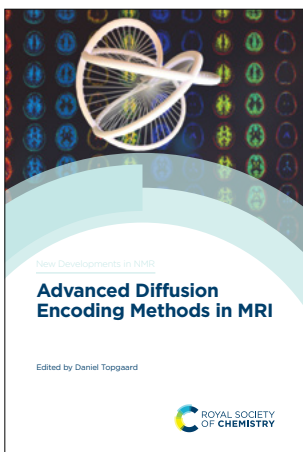
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Focusing on novel aspects of method and instrumentation development, applications in emerging fields and new techniques and technologies, this Series documents the important advances being made in this field. The books provide comprehensive introductions 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.

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

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

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

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## Electrochemistry



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## Advances in Portable X-ray Fluorescence Spectrometry

Instrumentation, Application and Interpretation

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

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## Compendium of Terminology in Analytical Chemistry

4th Edition

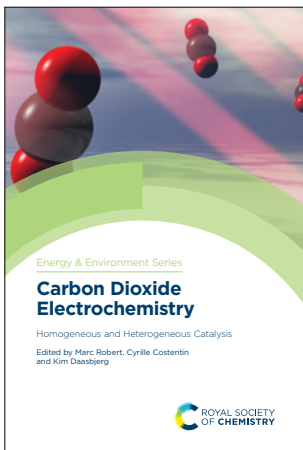
**D Brynn Hibbert** University of New South Wales, Australia

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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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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## 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

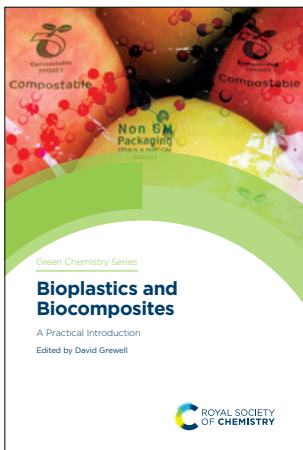
**Yulong Ding** University of Birmingham, UK

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.

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



Solvents, Surfactants, Solutes and Solids

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

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

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**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

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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



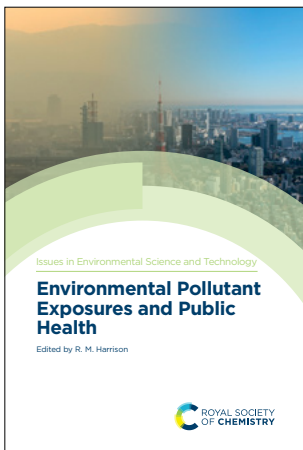
Pathways for Production, 2nd Edition

**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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## Electronic Waste Management



2nd Edition

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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.

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## Life Cycle Assessment

A Metric for The Circular Economy

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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.

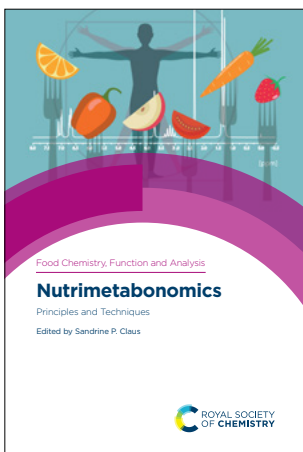
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Food Chemistry, Function and Analysis provides a suite of reference books focusing on food chemistry, the functions of food in relation to health and the analytical methods and approaches used by scientists in the area. Providing comprehensive coverage 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

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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**



## 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.

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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.

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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.

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## Nutritional Signalling Pathway Activities in Obesity and Diabetes

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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.

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## The Chemistry and Bioactive Components of Turmeric

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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.

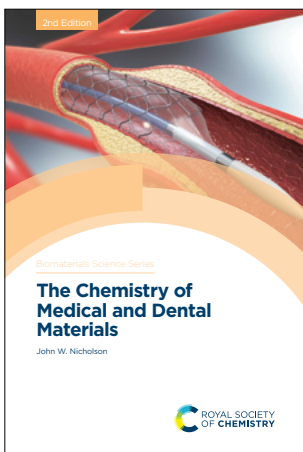
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Elastomeric proteins are ubiquitous in nature and exhibit an exceptionally broad range of material properties which are necessary for many biological functions including normal cardiac development and function, elasticity in human arterial walls as 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.

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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

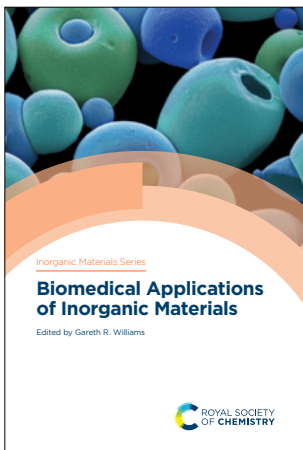
Takashi Hoshiba and Tetsuji Yamaoka have brought together, for the first time, leading contributors to provide a fundamental guide to the decellularized extracellular matrix. Focussing on the sources of dECM, preparation, characterization and applications of dECM in regenerative medicine and biological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

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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.

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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.

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## Inorganic Thermoelectric Materials

From Fundamental Concepts to Materials Design

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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

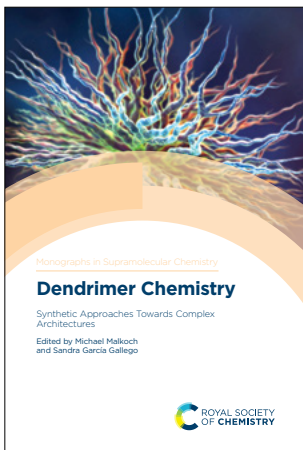


**Christopher Spicer** University of York, UK

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.

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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



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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.

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## Dendrimer Chemistry



Synthetic Approaches Towards Complex Architectures

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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.

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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.

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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.

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## Supramolecular Chemistry in Biomedical Imaging



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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



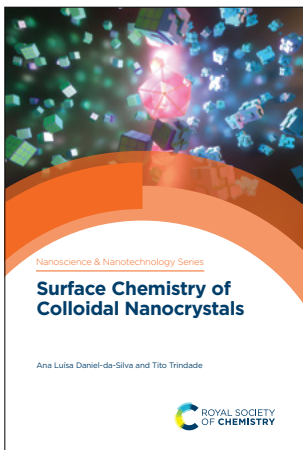
Assembly, Architecture and Application

**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.

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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.

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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**



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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**



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## Nanotubes and Nanowires



3rd Edition

**C N Ram Rao** Jawaharlal Nehru Centre for Advanced Science Research, India | **A**

**Govindaraj** Jawaharlal Nehru Centre for Advanced Scientific Research, India | **Leela**

**Srinivas Panchakarla** Indian Institute of Technology Bombay, India

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

**Hardback | 600 pages | 9781788017824 | 2020 | £179.00 | \$250.00**



ISBN 978-1-78801-782-4

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## Surface Chemistry of Colloidal Nanocrystals



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

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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**



ISBN 978-1-78801-401-4

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## Titanate and Titania Nanotubes



2nd Edition

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

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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.

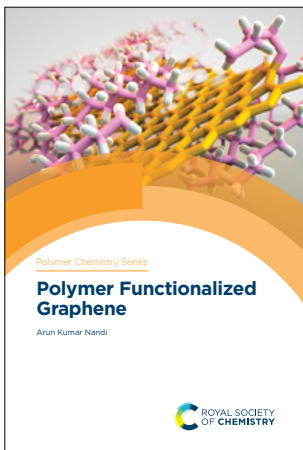
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ISSN: 2044-0790

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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.

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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

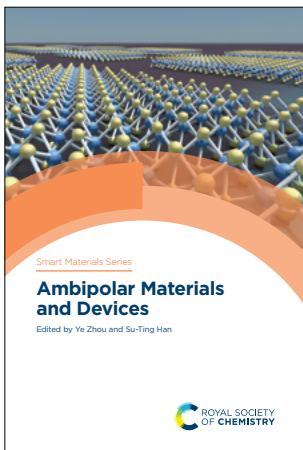
Polymers with redox properties are electroactive macromolecules containing localized sites or groups that can be oxidized and reduced. *Redox Polymers for Energy and Nanomedicine* highlights trends in the chemistry, characterization and application of polymers with redox properties. Chapters cover batteries, 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**



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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.

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Volume 6

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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.

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## Organometallic Chemistry



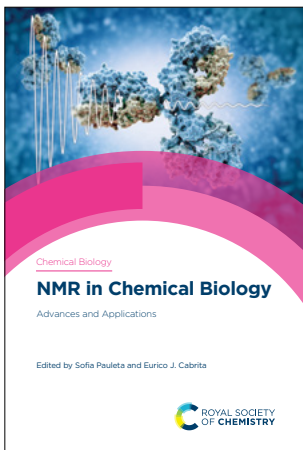
Volume 43

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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.

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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.

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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.

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## Inhibitors of Protein-Protein Interactions



Small Molecules, Cyclic Peptides, Macrocycles and Antibodies

**Ali Tavassoli** University of Southampton, UK

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

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Advances and Applications

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

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

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## RNA Polymerases as Molecular Motors



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.

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



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

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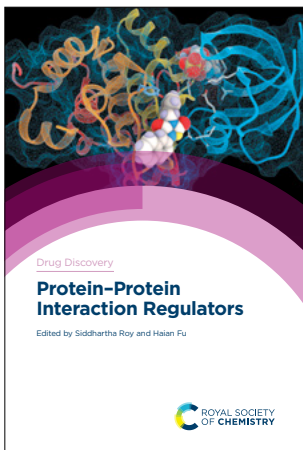
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**Franco Fusi** University of Florence, Italy | **Giovanni Romano** University of Florence, Italy

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.

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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.

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New antivirals are urgently needed. Recent outbreaks caused by viruses with great epidemiological impact such as Zika, or extraordinary virulence such as Ebola, Nipah, Lassa, Crimean-Congo Haemorrhagic fever highlight the current lack of clinically proven vaccines and treatments for these potentially catastrophic agents. 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.

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## Anti-fibrotic Drug Discovery

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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.

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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.

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## DNA-encoded Library Technology for Drug Discovery

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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.

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

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## Phenotypic Drug Discovery

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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.

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Successful Strategies in Drug Discovery and Chemical Biology

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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.

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

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## The Medicinal Chemist's Guide to Solving ADMET Challenges

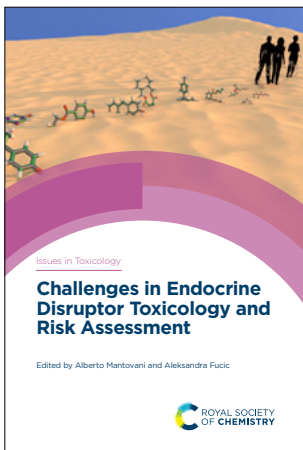


**Patrick Schnider** Roche, Switzerland

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.

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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.

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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.

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## Challenges in Endocrine Disruptor Toxicology and Risk Assessment



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

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## Conference on Drug Design and Discovery Technologies

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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.

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Volume 44

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

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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.

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## 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

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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

ee

**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.

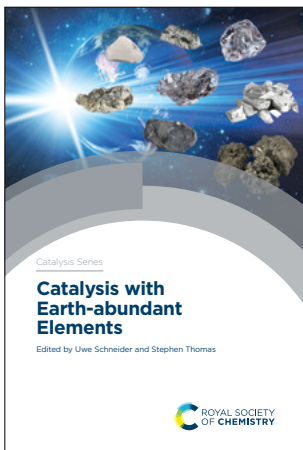
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Catalysis is a major area of scientific research covering numerous fields of chemistry, and is a key factor in tackling many of the scientific challenges faced today, such as renewable energy systems and environmental protection. The books in this 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

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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.

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## Catalytic Aerobic Oxidations



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

Catalytic reactions that are selective and efficient and allow the replacement of common stoichiometric oxidants with molecular oxygen from air at atmospheric pressure provide higher atom efficiency and water as the only side product. Focusing on the use of molecular oxygen as the terminal oxidant this book covers recent advances in the “taming” of the highly reactive oxygen gas by use of micro-flow reactors and membranes.

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## 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.

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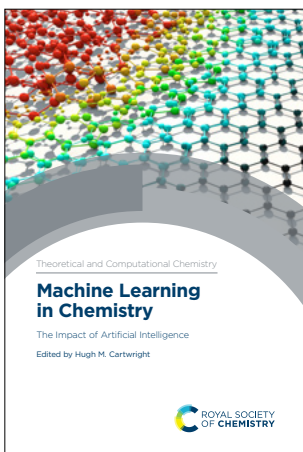


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Volume 32

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

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

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

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

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

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



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**William P Edwards** Bardfield Consultants, UK

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Stereoelectronics and Catalytic Mechanisms

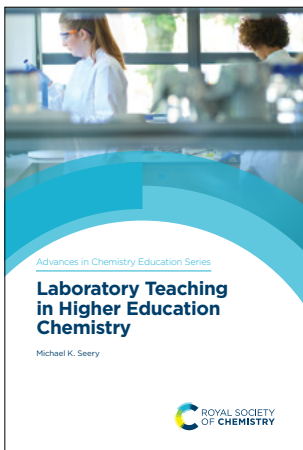
**G Michael Blackburn** University of Sheffield, UK | **Nigel G J Richards** Cardiff University, UK

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.

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**Charles Sell**

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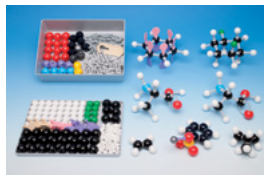
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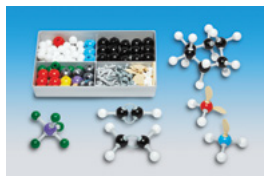
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Wallchart, A0 - 2A0

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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.

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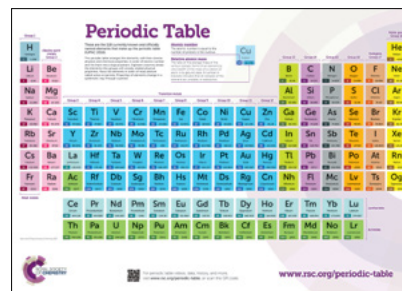
## Visual Elements Jigsaw

**Murray Robertson** Visual Elements, UK

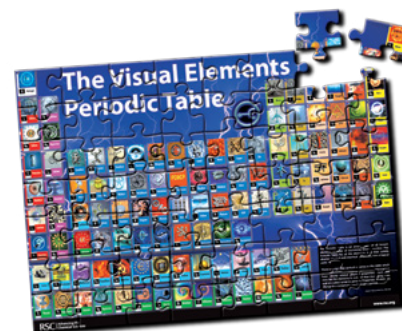
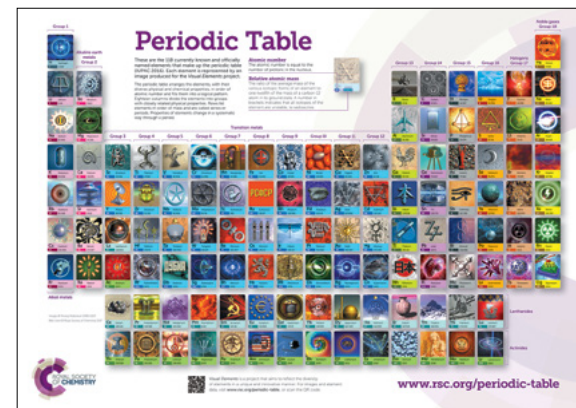
With 550 pieces and a stunning full-colour design, this jigsaw puzzle beautifully illustrates the periodic table in all its glory. The jigsaw would be an attractive gift for any puzzle-loving friends or relatives, and might even spark an interest in chemistry. Price shown does not include VAT in the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

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