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Five minutes with...

Name Thiago R L C Paixão

Affiliation University of São Paulo, Brazil

Co-editor of *Forensic Analytical Methods*

Publication date June 2019

ISBN 9781788014595

Tell us about your book:
Forensics is a hot topic in analytical chemistry at the moment and the body of forensic analysis literature has expanded rapidly in the past few years. However, forensic science books still tend to be organised in distinct areas: forensic DNA analysis, trace evidence, and drugs and poisons. These are not very common topics for undergraduate and graduate chemistry courses, so our aim was to cover these distinct areas, but concentrate on the analytical chemistry technique used. We have tried to show that the specific technique used is vital to understanding or explaining the case. Our approach describes current practice and the development of portable detectors which are needed for forensic science analysis.

What do you think will be the next big breakthrough in your subject area?
At this moment there is an urgent need for portable devices that can be used in the field, at crime scenes, to solve real cases. However, most research is focused on complicated laboratory procedures rather than field/portable tests. The development of in-field tests and intelligent devices that can be used in different areas of forensic chemistry would be a significant breakthrough since they are powerful tools that can provide reliable, fast and cheap results when compared to more traditional analytical procedures.

Looking back what is the biggest development in your area of research?
One of the biggest developments in this field has been to simplify forensic analysis so that it can be performed by non-experts, to solve crimes in the field. A recently reported example is for a novel approach using an inexpensive and disposable colorimetric paper sensor array for the detection and discrimination of five explosives. The colorimetric sensor comprised a disposable paper array that produced a unique color pattern for each explosive based on chemical interactions between the explosive species and the chemical reagents. The analytes were discriminated from one another as per the color change profiles. The colorimetric pattern values were extracted using a smartphone, custom-made software and a closed chamber to circumvent the illumination problems commonly found in other paper approach devices.

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Five minutes with...

Name N Jon Shah

Affiliation Forschungszentrum Jülich GmbH, Germany

Editor of *Hybrid MR-PET Imaging of the Brain*

Publication date December 2018

ISBN 9781788010740

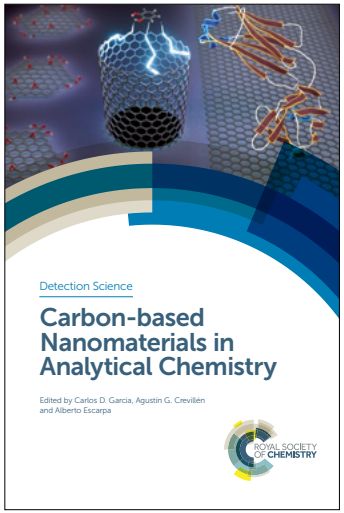
Tell us about your book
This book addresses questions relating to hybrid imaging that experienced MRI and PET professionals may have and also gives students a starting point from which to learn about both techniques. At the moment, it is necessary to consult two separate literature sources to learn about MRI and PET; there is really very little in the way of textbooks for explaining hybrid imaging. In contrast, this book is a 'one stop shop' with an introduction to MRI and an introduction to PET. In particular, it discusses the problems encountered in bringing these two technologies together. It is for experienced practitioners of one or the other field and for students joining the field.

What do you think will be the next big breakthrough in your subject area?
When examining brain function, people tend to look at different phenomena separated by time. But we know that the brain does not necessarily do the same thing twice, so taking two disparate measures of the same thing and putting them together is very difficult. When you take measurements using separate MRI and PET machines on separate days, you can never be sure that the physiological conditions are the same. With a hybrid instrument, because it is capable of simultaneous measurement, you can be sure that the conditions will remain the same. I think that this particular aspect will lead to breakthroughs in understanding the processes in the brain which might not have necessarily have appeared to be the same when measured in separate machines.

Looking back, what is the biggest development in your area of research?
The biggest development that has really enabled the area of hybrid imaging has been the advancement of MRI compatible PET detectors – specifically, integrating the two systems while shielding against the deleterious effects of one on the other and transferring it to higher magnetic fields such as 3T and even 7T. Building on the existing technology and making it hybrid-imaging feasible at higher field strengths will lead to breakthroughs in understanding the brain. Further development of new instrumentation and hardware is required to do that, alongside developments in new techniques for examining the brain.

In terms of clinical breakthroughs, I think hybrid MR-PET will enhance the search for imaging biomarkers leading to early diagnosis of neurodegenerative diseases.

What was the biggest challenge you faced when editing the book?
I think the biggest challenge was pitching the book at the right level for two distinct audiences. We didn't want the book to be too elementary for knowledgeable, seasoned scientists, but we had to recognise that students entering the field with a degree in physics or a technical subject would require more background information and guidance. We tried to reach a balance by including clear take-home messages so that if a student finds a particular section to be challenging, they can at least have a simple and straightforward overview which they can then build on with further reading.



About the series

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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 | 350 pages | 9781788014144 | 2019 | £159.00 | $220.00

ISBN 978-1-78801-414-4

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 | 2020 | £159.00 | $220.00

ISBN 978-1-78801-524-0

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.

Hardback | 250 pages | 9781788012713 | 2019 | £159.00 | $220.00

ISBN 978-1-78801-271-3

Forensic Analytical Methods

Thiago R L C Paixao University of Sao Paulo, Brazil | **Wendell K T Coltro** Federal University of Goias, Brazil | **Maiara Oliveira Salles** Federal University of Rio de Janeiro, Brazil

Forensic analysis is a hot topic that has seen extensive expansion in recent years. This book provides an introduction to chemical analysis for forensic applications, some forensic sampling and sample preparation and details analytical methods developed in order to carry out crime scene investigation from laboratory applications to in-field and in-situ applications. This is the first book that brings together an understanding of the analytical techniques and how these influence the outcome of a forensic investigation. Highlighting the cutting-edge research on forensic analytical methods and portable new devices, it is an excellent combination of current issues for the graduate and professional market.

Hardback | 300 pages | 9781788014595 | 2019 | £159.00 | $220.00

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Immunosensors

Minhaz Uddin Ahmed Universiti Brunei Darussalam | **Mohammed Zourob** Cranfield University, UK | **Eiichi Tamiya** Osaka University, Japan

Immunosensors are widely used and are particularly important for diagnosis of diseases in remote environments as well as point-of-care devices. This book is a compilation of recent advances in several areas of immunosensors for multiple target analysis using laboratory based or point-of-care set-up. A selection of high quality representative examples from the last five year will be covered by expert scientists. Filling a gap in the literature, it show cases the multidisciplinary, innovative developments in this highly important area and provide pointers towards commercialisation. Providing a single, comprehensive work, it appeals to graduate students, professional researchers across academia and industry.

Hardback | 450 pages | 9781788014373 | 2019 | £179.00 | $250.00

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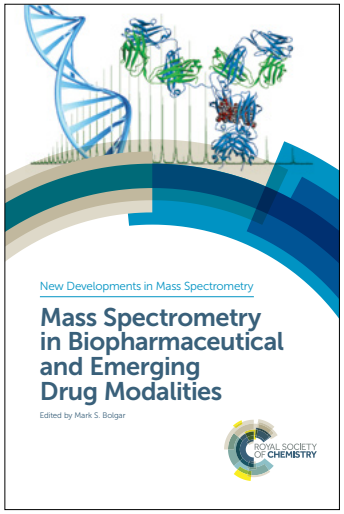

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ISSN: 2045-7545

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.

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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Mass Spectrometry in Biopharmaceutical and Emerging Drug Modalities

Mark S Bolgar Bristol-Myers Squibb, USA

The focus of this book is on the use of mass spectrometry (MS) for the assessment of alternative modes of drug efficacy and inclusion of information on the use of MS in the development of protein biosimilars. This topic is not included in competing books but is a key technological enabler of a rapidly growing sector of the biopharmaceutical industry. Providing a unique and up to date addition to the literature in this area, this volume is aimed at researchers, both new and established, looking into the applications of mass spectrometry in the pharmaceutical industry.

Hardback | 250 pages | 9781782629757 | 2019 | £159.00 | $220.00

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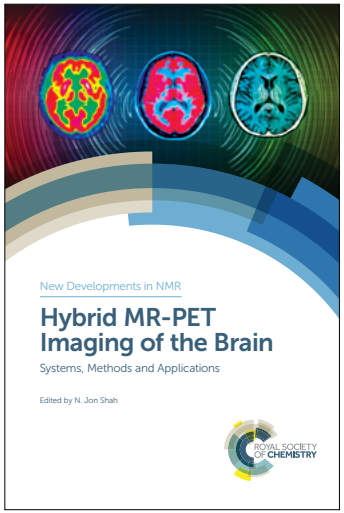

About the series

ISSN: 2044-253X

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.

Hybrid MR-PET Imaging of the Brain

Systems, Methods and Applications

N Jon Shah Forschungszentrum Juelich GmbH, Germany

The combination of two leading imaging techniques – magnetic resonance imaging (MRI) and positron emission tomography (PET) – has recently been a driver of research and clinical application. The hybrid instrument is capable of acquiring both datasets simultaneously and this affords a number of advantages ranging from the acquisition of two datasets in the normal time required for one through to novel applications. This book describes the issues involved in bringing together the two techniques into one machine and all the advantages in doing so. Novel applications in brain imaging are presented and the combined technique is poised to have a large impact on the industry. Aimed at students and scientists entering the field, it will provide practical details from experts working in the area.

Hardback | 300 pages | 9781788010740 | 2019 | £159.00 | $220.00

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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.

Hardback | 550 pages | 9781788012171 | 2019 | £199.00 | $275.00

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NMR Methods for Characterization of Synthetic and Natural Polymers

Pingchuan Sun Nankai University, China | **Toshikazu Miyoshi** University of Akron, USA

With the growing complexity of various polymer systems, NMR has become a unique and indispensable tool for precise characterization of microstructures and dynamics. This book specifically focuses on NMR investigation of complex polymers for the polymer community as well as NMR spectroscopists, and could push the development of both fields. It will cover the latest development and show how the novel NMR methods could be used to characterize various synthetic and natural polymers. It appeals to researchers of synthetic and natural polymers who require information on how to characterize polymer structures.

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Nuclear Magnetic Resonance

Volume 46

Robert Law Imperial College London

Applications of nuclear magnetic resonance span a wide range of scientific disciplines, from physics to medicine. For those wanting to become acquainted with NMR or seasoned practitioners, this is a valuable source of current methods and applications. With such rapid growth as both a technique and in its applications, this volume provides a distillation of this spectroscopic method which will be an invaluable addition to the literature.

Hardback | 300 pages | 9781782629986 | 2019 | £314.95 | $441.00

ISBN 978-1-78262-998-6

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.

Hardback | 1000 pages | 9781782629474 | 2019 | £199.00 | $279.00

Data Integrity and Data Governance

Practical Implementation in Regulated Laboratories

R D McDowall Director, R.D.McDowall Ltd

Data integrity is the hottest topic in the pharmaceutical industry at the moment. Global regulatory agencies have issued six guidance documents in the past couple of years, however all documents are vague and to not contain detailed examples or advice to help regulated laboratories to implement policies, procedures and processes to ensure integrity. The aim of this book is to provide practical and detailed advice on how to implement data governance and data integrity for regulated analytical laboratories working in the pharmaceutical and allied industries. It is designed for analytical chemists and scientists working in regulated laboratories, management and senior management roles, primarily in the pharmaceutical industry and consultants who will benefit from the practical guidance provided.

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Near Infrared Spectroscopy and Imaging for Cultural Heritage

Matija Strlič University College London, UK | **Tom Fearn** University College London, UK

Near infrared (NIR) spectroscopy offers a non-destructive, non-invasive, and portable solution for many problems associated with heritage material identification and characterisation. This book is intended as reference to this emerging technique for students and professionals wishing to adopt this ideal tool for rapid art and heritage collection surveys or for the conservation of heritage materials. The editors have brought together contributors at the forefront of this new technique, presenting its application to a wide range of cultural, historic, and archaeological materials.

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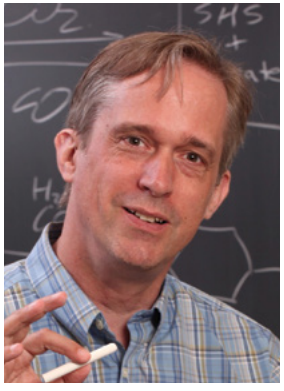

Name Philip Jessop

Affiliation Queen's University, Canada

Co-author of *CO_2 Switchable Materials*

Publication date April 2019

ISBN 9781782628767

Tell us about your book
Consider a light bulb. You can switch it on when you want light, and you can switch it off to save energy. That switchability allows the light bulb to be greener and yet still do its job. Stimuli-responsive materials are just like that – materials that can switch back and forth between two versions of themselves and that capacity makes them easier and often greener to use. The trigger that causes the change could be light, voltage, acids, bases, temperature, or CO_2. Previous books about stimuli-responsive materials have ignored CO_2, but it's cheap, nontoxic, nonflammable, easy to remove from the system and it's a recycled waste material.

What do you think will be the next big breakthrough in your subject area?
My biggest hope is that these materials will solve one of the big roadblocks for sustainable chemistry: water removal. So many methods for converting biomass into fuels or chemicals have water removal as the biggest energy cost. Reducing that is crucial to getting lots of biomass-derived products into the marketplace. Can CO_2-switchable materials help? I believe so! But it will take lots of creativity and research followed by life cycle assessments to find out the answer.

What are the biggest challenges research concepts face to be applied at an industrial scale?
I used to think that it was risk-aversion. But now, after some experience in commercialisation, I've realised that the problem is money. Getting a new technology into the marketplace is insanely expensive! At the early stage, when lots of risk remains, investors are reluctant to invest, but someone has to pay to build and run that pilot plant. Once the pilot plant is built and run, and the technology is proven at a significant scale, then investors feel more comfortable funding further steps.

What was the biggest challenge you faced when writing your book?
Time! Writing the book was a delight. I'm a storyteller at heart - that's why I enjoy being a teacher. But, while the writing wasn't a problem, finding the time to do the writing was. My collaborator and friend Prof. Michael Cunningham and I are both busy, like most professors – teaching, research, service, travel, refereeing, editing, mentoring, it's all worthwhile but there are only so many hours in the day.

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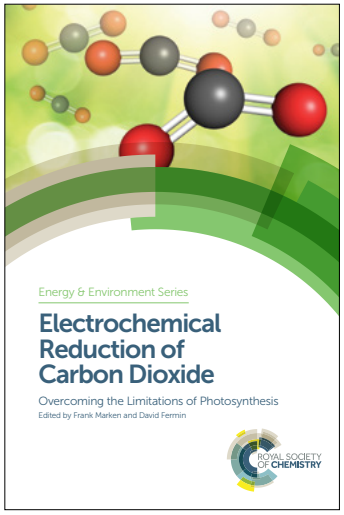

About the series

ISSN: 2044-0774

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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.

Carbon Capture and Storage

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

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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Future Lithium-ion Batteries

Ali Eftekhari Belfast Academy Ltd, UK

Lithium-ion batteries are an established technology with recent large-scale batteries finding emerging markets for electric vehicles and household energy storage. This book collects authoritative perspectives from global experts to project the emerging opportunities in the field of lithium-ion batteries. It will provide researchers with cutting-edge leads to advance the next generation of materials. With contributions from global experts, this book will be of use to graduate students and researchers in academia and industry interested in lithium-ion batteries and energy storage.

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Magnesium Batteries

Research and Applications

Maximilian Fichtner Helmholtz Institute Ulm, Germany

Magnesium batteries, in particular rechargeable non-aqueous systems, are an area of intense research as they present a sustainable energy storage system that has the potential to outperform Li-ion batteries. The book covers scientific and technical challenges, bringing together contributions in the field of anodes, cathodes, electrolytes and particularly promising systems such as the Mg-S cell. Edited by a leading name in the field, this title will appeal to students and researchers both new to and already working in battery materials across chemistry, physics, engineering and materials science.

Hardback | 300 pages | 9781788014342 | 2019 | £159.00 | $220.00

ISBN 978-1-78801-434-2

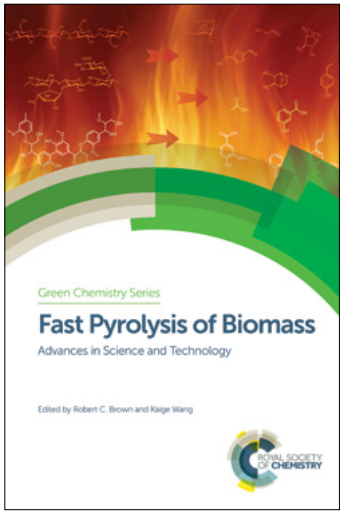
Organic Thermoelectric Materials

Zhiqun Lin Georgia Institute of Technology, USA | **Ming He** Peking University, China

Organic thermoelectric materials have gained attention in energy-harvesting and cooling applications due to their intrinsic low cost, energy efficient, and eco-friendly nature. This book summarises the significant progress in the molecular designs, physical characterizations, and performance optimizations of organic thermoelectric materials, focusing especially on the effective routes to minimize the thermal conductivity and maximize the power factor. This informative guide will appeal to graduate students as well as academic and industrial researchers across chemistry, materials science, physics and engineering interested in the materials and their applications.

Hardback | 400 pages | 9781788014700 | 2020 | £169.00 | $235.00

ISBN 978-1-78801-470-0



About the series

ISSN: 1757-7039

Green chemistry is one of the most important and 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.

Bioplastics and Biocomposites

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_2-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_2-responsive materials, this book explores the physical chemistry of CO_2-switching, including constraints on structural design and process conditions, together with applications. The book discusses the environmental, health, and safety advantages and disadvantages compared to conventional materials. It is ideal for researchers and industrialists working in green chemistry, chemical engineering, polymer chemistry and material science.

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Santiago Luis University Jaume I, Spain | **Eduardo Garcia-Verdugo** University Jaume I, Spain

In flow chemistry reactions are performed in a tube with the reactants pumped through the vessel. It has the benefit of being easily scaled up and it is straightforward to integrate synthesis, workup and analysis into one system. This volume provides an update on recent advances in the field of flow chemistry, with special emphasis on new, integrated approaches for green and efficient chemistry. This book is a valuable resource for researchers in green chemistry, chemical engineers and Industrial chemists working in the pharma and fine chemicals industries.

Hardback | 450 pages | 9781788014984 | 2020 | £179.00 | $250.00

Greener Analytical Techniques

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

As a key area of chemistry, improving the greenness of analytical techniques is of great interest to researchers. The last decade has seen some significant developments in this area, including the use of new smart materials as analytical tools. Covering topics including solvent selection, miniaturization and metrics for the evaluation of "greenness" this book will be of use to researchers, both in academia and in industry, interested in integrating safer and more sustainable analytical techniques into their work.

Hardback | 350 pages | 9781788015370 | 2019 | £169.00 | $235.00

Green Chemistry for Surface Coatings, Inks and Inks and Adhesives

Sustainable Applications

Rainer Höfer Editorial Ecosiris, Germany | **Avtar Singh Matharu** University of York, UK | **Zhanrong Zhang** Chinese Academy of Sciences, China

Highlighting sustainable technologies and applications of renewable raw materials within the framework of green and sustainable chemistry, circular economy and resource efficiency, provides a cradle-to-cradle perspective. From potential feedstocks to recycling/reuse opportunities and the de-manufacture of adhesives and solvents, the book applies green chemistry principles to all aspects of adhesive and sealant manufacture. The book is ideal for researchers and industrialists working in green chemistry, industrial coatings, adhesives and inks and printing technologies.

Hardback | 300 pages | 9781782629948 | 2019 | £179.00 | $250.00

Green Synthetic Processes and Procedures

Roberto Ballini University of Camerino, Italy

There has been great growth in the field of Green Chemistry over the past few years, but now one of the biggest challenges is to embed the green chemistry ideals of safety and sustainability as standard, both in industry and academia. Providing a thorough overview of the current green synthetic toolbox, from biocatalysis to sonochemistry, this book is a useful tool for any chemist wishing to design cleaner and safer processes.

Hardback | 300 pages | 9781788015127 | 2019 | £159.00 | $220.00

Renewable Resources for Surface Coatings, Inks and Adhesives

Rainer Höfer Editorial Ecosiris, Germany

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

Hardback | 300 pages | 9781782629931 | 2019 | £159.00 | $220.00

Resource Recovery from Wastes

Towards a Circular Economy

Lynne Macaskie University of Birmingham, UK | **D J Sapsford** University of Birmingham, UK |
Will Mayes University of Hull, UK

The concept of a circular economy has been gaining increasing attention in recent years. Many of the sources of chemicals we have become reliant on are dwindling and the accumulation of waste products poses a serious environmental problem. Recovering resources from these waste materials can reduce our dependence on less sustainable virgin feedstocks, as well as reducing the quantity of material going to landfill sites. Bringing together a broad range of cross-disciplinary topics on resource recovery this book provides a valuable resource for those working in circular economy research, green chemistry and waste management.

Hardback | 450 pages | 9781788013819 | 2019 | £179.00 | $251.00

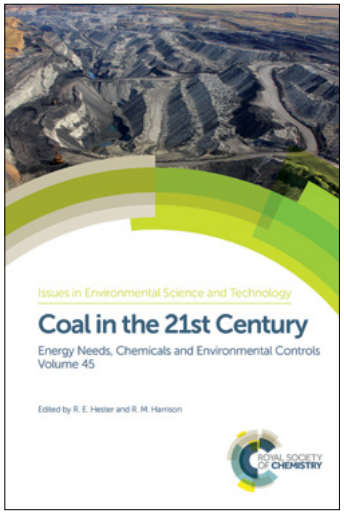
Transportation Biofuels

Pathways for Production

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.

Hardback | 250 pages | 9781788015042 | 2019 | £149.00 | $205.00



About the series

ISSN: 1350-7583

Series editors

R M Harrison University of Birmingham, UK | **R E Hester** University of York, UK

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

Energy Storage Options and Their Environmental Impact

R E Hester University of York, UK | **R M Harrison** University of Birmingham, UK

The growth of renewable energy technologies, mainly wind and solar, demands the development of practical and economically viable energy storage technologies. This book explores the current state-of-the-art of large-scale energy storage and examines the likely environmental impacts of the main categories based on the types of energy stored.

Hardback | 326 pages | 9781788013994 | 2019 | £70.00 | $95.00

ISBN 978-1-78801-399-4
9 781788 013994

Indoor Air Pollution

R E Hester University of York, UK | **R M Harrison** University of Birmingham, UK

Time-activity diaries kept by members of the general public indicate that on average people spend around 90% of their time indoors, this is associated with considerable exposure to air pollutants. Given its importance as a source of air pollution exposure, increasing attention is being given to pollution of the indoor environment. This volume will consider both chemical and biological pollutants in the indoor atmosphere from their sources to chemical and physical transformations, human exposure and potential effects on human health.

Hardback | 250 pages | 9781788015141 | 2019 | £70.00 | $95.00

ISBN 978-1-78801-514-1
9 781788 015141

Drinking Water Treatment for Developing Countries

Physical, Chemical and Biological Pollutants

Aniruddha Bhalchandra Pandit Institute of Chemical Technology, Mumbai, India | **Jyoti Kishen Kumar** Institute of Chemical Technology, Mumbai, India

Drinking water availability and safety is a major challenge faced globally and is highly pronounced in developing countries worldwide. This book shines a light on drinking water treatment methods and scale of operation specifically for the developing regions. Covering both conventional and emerging treatment technologies, the authors discuss the removal of chemical, physical and biological pollutants from drinking water, with a focus on developing countries. Conservation by rainwater harvesting, wastewater reuse, and selection criteria of feasible methods are considered in the context of issues relevant to Africa, Asia, Latin America and the Caribbean. With case studies connecting theory to real world matters, showcasing efficiencies and drawbacks, this book is ideal for graduate and postgraduate level course use in engineering departments or for self-study and research.

Hardback | 350 pages | 9781788010191 | 2019 | £86.99 | $122.00

ISBN 978-1-78801-019-1

Life Cycle Assessment

A Metric for The Circular Economy

Aiduan Borrion University College London, UK | **Onesmus Mwabonje** Imperial College London, UK | **Mairi Black** University of Surrey, 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. This title provides a robust systematic approach to the circular economy concept, using the established methodology of LCA. The book will provide 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

The Handbook of Environmental Remediation

Classic and Modern Techniques

Chaudhery Mustansar Hussain New Jersey Institute of Technology, USA

Remediation technologies to control or prevent pollution from hazardous waste material is a critical research area in academia and industry. This book brings together traditional and emerging techniques for waste management, combining chemical, biological and engineering methods.

Hardback | 600 pages | 9781788013802 | 2019 | £125.00 | $175.00

ISBN 978-1-78801-380-2

New in food science

The books in this portfolio provide thorough coverage of research developments, breakthroughs, reference information and opinion in a wide range of food science topics, from rapid antibody-based technologies in food analysis to nutrition and cancer prevention.

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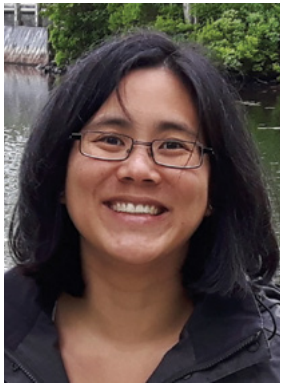

Name Marianne Su-Ling Brooks

Affiliation Dalhousie University Canada

Co-editor of *Anthocyanins from Natural Sources*

Book publication date February 2019

ISBN 9781788012157

Tell us about your book

The idea for this book came about when we were extracting anthocyanins from local haskap berries and looking at incorporating them into a controlled release system that would be beneficial to human health. As we embarked on that research, we realised that anthocyanins have a complex chemistry, and that there are many things that are still being discovered in regards to their fate in the body and how this relates to their associated health benefits. We also realised that designing effective controlled release systems for natural health compounds, that would be targeted to the appropriate parts of the body, required knowledge in various areas e.g. chemistry, pharmacokinetics, physiology, food science and technology, engineering, pharmaceutical science and human health. This book aims to bring together the latest research in different fields related to the extraction of anthocyanins from natural sources, their health-promoting properties, pharmacokinetics, and controlled release systems that can modulate the release of these compounds for application in functional foods and nutritional supplements. This book is unique in its discussion of diverse research areas that are seldom brought together for consideration. We hope it will be useful for people wanting to understand more about the many factors that need to be considered when designing an effective nutraceutical product

What do you think will be the next big breakthrough in your subject area?

I think as more research is done to determine what happens to the anthocyanins in the body and how they are broken down into metabolites, then we will have a better understanding of the dosage and frequency required to achieve certain health benefits and how to tailor controlled release systems to exploit this in a safe manner. There are still questions around what happens to these metabolites in the body and their impact on human health.

Looking back what is the biggest development in your area of research?

The first sustained release formulation for drug delivery was identified in 1952 (according to the *Journal of Controlled Release*). More recently, the rapid expansion of food supplements, nutraceuticals and related products that are now available to consumers has been a major development, and this has opened up research where there is cross-over between some of the controlled release technologies used in the pharmaceutical industry with the natural bioactive compounds present in foods and vegetables.

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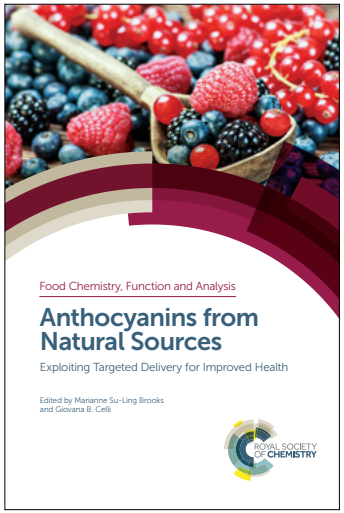

About the series

ISSN: 2398-0656

Series editors
Gary Williamson The University of Leeds, UK | **Alejandro G Marangoni** University of Guelph, Canada | **Juliet A. Gerrard** University of Auckland, New Zealand

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.

Advanced Gas Chromatography in Food Analysis

Peter Q Tranchida University of Messina, Italy

Gas chromatography is widely used in applications involving food analysis. Typical applications pertain to the quantitative and/or qualitative analysis of food composition, natural products, food additives, flavor and aroma components, a variety of transformation products, and contaminants, such as pesticides, fumigants, environmental pollutants, natural toxins, veterinary drugs, and packaging materials. This book is an up-to-date look at the significant advances in the technology and is suitable for professionals and postgraduate students learning about the technique in the food industry and research.

Hardback | 480 pages | 9781788011273 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-127-3

Anthocyanins from Natural Sources

Exploiting Targeted Delivery for Improved Health

Marianne Su-Ling Brooks Dalhousie University, Canada | **Giovana B Celli** Dalhousie University, Canada

Interest in anthocyanins has increased in the past few years, due to their potential health-promoting properties as dietary antioxidants, as well as their use as natural dyes. This book discusses ways of targeting the delivery of these compounds, through manipulation of exploitation mechanisms. It addresses all aspects from anthocyanin extraction, health benefits, and metabolism to specialized controlled release applications. This title serves as a reference to those specialising in pharmaceutical science, food engineering, food science or human health and nutrition.

Hardback | 400 pages | 9781788012157 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-215-7

Biogenic Amines in Food

Analysis, Occurrence and Toxicity

Bahruddin Saad Universiti Teknologi PETRONAS, Malaysia | **Rosanna Tofalo** Università degli Studi di Teramo, Italy

A precise analysis of biogenic amines is important as an indicator of food freshness or spoilage that can cause serious toxicity. This book provides comprehensive background information on biogenic amines and their occurrence in various foods and drinks. It gives a detailed description of both the established analytical methods and the emerging technologies for the analysis of them; this will help make the tests useful for both fermented and non-fermented foods. As the first book on the detection of biogenic amines in all types of food, it provides help to get a better understanding of the risks and how to avoid them. It serves as an excellent and up-to-date reference for food scientists, food chemists and food safety professionals.

Hardback | 350 pages | 9781788014366 | 2020 | £169.00 | $235.00

Carotenoid Esters in Foods

Physical, Chemical and Biological Properties

Adriana Z Mercadante University of Campinas, Brazil

Carotenoids are found in some food plants, flowers and animals, in free form and also esterified with fatty acids. Recent research has concentrated on the extent of carotenoid esters in these sources, how to measure their presence and the amount available for potential health effects. Focusing on the occurrence and assembly in foods, biosynthesis, analytical methods for identification and quantification, dietary intake and metabolism, the most recent research is represented and a balanced overview of what is known about carotenoid esters is provided. This book is a must have source for researchers in food science, nutrition and the food industry.

Hardback | 500 pages | 9781788012423 | 2019 | £179.00 | $250.00

DNA Techniques to Verify Food Authenticity

Applications in Food Fraud

Malcolm Burns LGC Limited, UK | **Lucy Foster** Defra, UK | **Michael Walker** Michael Walker Consulting Ltd, UK

Describing the science behind DNA as a target analyte, its extraction, amplification, detection and quantitation as applied to the detection of food fraud and food crime, this book covers this topical and growing area post the horsemeat scandal. Worldwide authorities in the area have been bought together to provide comprehensive coverage of all issues ranging from sampling of DNA through to emerging techniques such as next generation sequencing. It will appeal to a two-fold market – food-testing laboratories worldwide and food policy professionals and regulatory organisations who use these techniques to back up legislation.

Hardback | 320 pages | 9781788011785 | 2019 | £149.00 | $205.00

Eggs as Functional Foods and Nutraceuticals for Human Health

Jianping Wu University of Alberta, Canada

Often described as 'nature's perfect food', perceptions of egg consumption and human health have evolved substantially over the past decades. This book presents recent developments on the processing of eggs for nutritional, biomedical, functional food, nutraceutical and other value-added applications, as well as providing new evidence around egg consumption on cardiovascular diseases, metabolic syndrome, weight management, mental development, eye, muscle, and ageing health. It will appeal to food scientists, food chemists, researchers in human nutrition specialising in eggs and dairy nutrition, and those involved in egg production.

Hardback | 480 pages | 9781788012133 | 2019 | £179.00 | $250.00

Food Contact Materials Analysis

Mass Spectrometry Techniques

Michele Suman Barilla S.p.A, Italy

Mass spectrometric techniques have developed to provide increasing solutions to solve problems in food processing and packaging. Even the smallest amount of contamination in food can cause a problem for food production companies, thus they are keen to find speedy and efficient quality control methods. This book outlines how ingredients and their interrelationship with processing and packaging have developed with the exploitation of mass spectrometry and gives practical protocols to stake holders showing the flexibility of this technique. With huge relevance worldwide, it will appeal to food packaging scientist and mass spectrometry practitioners alike.

Hardback | 222 pages | 9781788011242 | 2019 | £149.00 | $205.00

Handbook of Food Structure Development

Fotis Spyropoulos University of Birmingham, UK | **Aris Lazidis** University of Birmingham, UK |
Ian Norton University of Birmingham, UK

The most useful properties of food, ie those detected through sight, touch and taste, are a manifestation of the food's structure. Studies about how this structure develops or can be manipulated during food production and processing are a vital part of research in food science. This book provides, in detail, the status of research on food structure and how this has developed through the interplay between processing routes and formulation elements. With world class and up-to-date contributions, it brings current knowledge on the subject together and points towards some exciting areas of research for the future. Every chemistry, chemical engineering, food processing and food and nutrition department needs to have a copy.

Hardback | 450 ages | 9781788012164 | 2019 | £125.00 | $175.00

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.

Hardback | 224 pages | 9781788010733 | 2019 | £149.00 | $205.00

Legumes

Nutritional Quality, Processing and Potential Health Benefits

Maria Ángeles Martín-Cabrejas Universidad Autónoma de Madrid, Spain

Legumes have high potential for improving the nutritional quality of foods, but limited data on their bioactive compounds exists. This book provides a comprehensive overview of the antioxidant activity and health aspects of legumes. The international spread of contributors will describe the key factors that influence consumer acceptance of legumes in the diet, as well as the known functional properties of legumes and legume based food products. It will serve as an excellent and up-to-date reference for food scientists, food chemists, researchers in human nutrition, dietetics and the chemistry of natural compounds.

Hardback | 360 pages | 9781788011617 | 2019 | £169.00 | $235.00

Mitigating Contamination from Food Processing

Catherine S Birch Food & Environmental Research Agency, UK | **Graham A Bonwick** Newcastle University, UK

Methods for identification and measurement of existing and newly discovered contaminants are required, especially those that are cheap, simple and rapid, so that testing may be more frequent within the food supply chain. It is also important to identify opportunities to prevent or minimise the formation of contaminants during various types of food processing, especially those recently introduced or proposed for use by the food and drink industries. This book captures recent developments in understanding the formation and occurrence of contaminants in a range of food materials, as well as advances in detection methods. It is aimed at graduate students studying Food Science and Technology or Food Engineering and food science professionals especially those working in food processing or analysis.

ISBN 978-1-78262-922-1

Hardback | 280 pages | 9781782629221 | 2020 | £149.00 | $205.00

Nutrimetabonomics

Principles and Techniques

Sandrine P Claus University of Reading, UK

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

ISBN 978-1-78262-777-7

Hardback | 250 pages | 9781782627777 | 2019 | £159.00 | $220.00

Nutrition and Cancer Prevention

From Molecular Mechanisms to Dietary Recommendations

Thomas Prates Ong University of São Paulo, Brazil | **Fernando Salvador Moreno** University of São Paulo, Brazil

Cancer is a major global public health problem. Among different environmental and lifestyle factors contributing to cancer risk, diet is a key one. Written by an influential, international team of experts, this book presents and discusses current topics on nutrition and cancer prevention. It covers both nutritional influences on all cancers plus specific chapters on the commonly occurring cancers. Nutritional genomics-based studies show that some dietary components modulate carcinogenesis through complex cellular and molecular mechanisms. A better understanding of these different mechanisms is needed to establish more efficient dietary interventions for cancer prevention. This book will provide such an understanding, serving as an important book for all those working in nutritional health, food science and cancer research.

ISBN 978-1-78801-341-3

Hardback | 420 pages | 9781788013413 | 2019 | £179.00 | $250.00

Rapid Antibody-based Technologies in Food Analysis

Richard O'Kennedy Dublin City University, Ireland

There is a worldwide problem with food contamination, with an increasing number of outbreaks, and food safety. Consequently, there is a need for rapid tracing of foods as well as requirements for food authentication. This book provides a description of antibody-based technologies used in food analysis. It focuses on key applications outlining the approaches used, their advantages and limitations, and future areas for development. An expert in the field has written each chapter and a number of case studies demonstrating the utility of each of the methods described is included. It is for researchers and scientists in the field who have to acquire, verify and use technologies for food analysis, food producers and processors, food safety and testing laboratories, and government agencies.

ISBN 978-1-78801-390-1

Hardback | 400 pages | 9781788013901 | 2019 | £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

ISBN 978-1-78801-555-4

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 | 2019 | £123.00 | $170.00

ISBN 978-1-78262-910-8

Tomato Chemistry, Industrial Processing and Product Development

Sebastiano Porretta Experimental Station for the Food Preserving Industry, Italy

This book looks at the many changes that are taking place in the tomato market and industry; producers are combining origin, tradition, territory, quality, service and supply chain to adapt to the needs of the new consumers. It deals with the topics that are pertinent to the current industry, for example rheology and mechanical properties; origin determination; innovation and new product development; volatile compounds and aroma; functional and healthy compounds; and sustainability and traditional products. Providing a comprehensive overview of the actual tomato industry; how it ensures product authenticity; consumer demand for new products; the presence of bio-active substances able to prevent chronic diseases (carotenoids, phenolic and flavonoids); and how to convert industrial waste into added value by-products; it will appeal to professionals and food product developers.

Hardback | 320 pages | 9781788013963 | 2019 | £159.00 | $220.00

ISBN 978-1-78801-396-3

Vitamin E

Chemistry and Nutritional Benefits

Etsuo Niki University of Tokyo, Japan

This book provides an overview of the state-of-the-art of the chemistry of vitamin E with regards properties and functions and also nutritional benefits. It summarizes information on the role and activity of vitamin E, the current understanding of the advantages and limitations of vitamin E, and also its application in promotion of health and prevention of diseases. Based on sound, solid scientific evidence, this is a timely addition to the literature as the centennial anniversary of the discovery of this important vitamin approaches.

Hardback | 400 pages | 9781788012409 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-240-9

Coffee

Complete Set

Adriana Farah Universidade Federal do Rio de Janeiro, Brazil

Hardback | 1150 pages | 9781782621065 | 2019 | £180.00 | $250.00

ISBN 978-1-78262-106-5

Coffee

Production, Quality and Chemistry

Adriana Farah Universidade Federal do Rio de Janeiro, Brazil

Coffee is one of the most popular drinks in the world but how does the chemistry influence the quality and what are the health advantages or disadvantages from consuming it? This book is unique in covering coffee production, quality, chemistry, and the health implications from its consumption in one volume. Written by an international collection of contributors in the field who concentrate on coffee research, it is aimed at advanced undergraduates, postgraduates and researchers. It provides an accessible reference to the current research in the field and information on the health aspects for nutritionists and other health professionals.

Hardback | 718 pages | 9781782620044 | 2019 | £99.99 | $140.00

ISBN 978-1-78262-004-4

Coffee

Consumption and Health Implications

Adriana Farah Universidade Federal do Rio de Janeiro, Brazil

Coffee is one of the most popular drinks in the world but what are the health advantages or disadvantages from consuming it? This book covers how health is influenced by the consumption of coffee from protective effects to potential contributions of bioactive compounds to health and potential risks involved. Written by an international collection of contributors in the field who concentrate on coffee research, it is edited expertly to ensure consistency and organization across the chapters.

Hardback | 542 pages | 9781788014977 | 2019 | £99.99 | $140.00

ISBN 978-1-78801-497-7

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Name Simon Hall

Affiliation University of Bristol, UK

Editor of *Bioinspired Inorganic Materials*

Book publication date July 2019

ISBN 9781788011464

Tell us about your book
Bioinspired Inorganic Materials will provide up-to-date reviews of research in the area of bioinspired inorganic materials, with some historical context. The emphasis is on how bioinspiration is being used for cutting-edge applications. This book will provide undergraduates, postgraduates and other researchers convenient and accessible introductions to these topics.

What do you think will be the next big breakthrough in your subject area?
There is virtually no field of scientific endeavour that has not felt the touch of the 'bioinspired' ethos and that is reflected in this book. In particular, big breakthroughs are coming for energy applications such as in batteries and artificial photosynthesis and also in bioinspired materials for regenerative medicine such as hydrophobic glues and self-healing structures.

Looking back what is the biggest development in your area of research?
In my opinion, it was the publication of the book On Growth and Form by D'Arcy Wentworth Thompson in 1917 that irrevocably changed the way biological structures were considered. Up to that point, there was a view that natural structures formed because of some 'vital' force. On Growth and Form however considered biological structures to be a consequence of the physical behaviour of matter, such as surface tension and compartmentalisation. Once this was realised, it was a logical step to use knowledge of the physics and chemistry of materials to replicate natural structures in the laboratory in a biomimetic way.

What was the biggest challenge you faced when editing the book?
The biggest challenge was deciding which of the multitude of fields using bioinspiration should be included in the book. I feel that by focussing the book on the use of bioinspiration in the creation of materials for technologies with the largest societal impact, this challenge was met and met well.

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Name Richard I Walton

Affiliation University of Warwick, UK

Editor of *Inorganic Materials series*

Tell us about the series

The *Inorganic Materials* series provides up-to-date reviews of topical and emerging areas of research in the broad field of functional materials. This is a fast-moving field that is driven by applications in many important and diverse technologies, such as electronic devices, energy storage, environmental clean-up and biomedicine. Our aim is to provide accessible introductions to contemporary topics for all researchers, from final-year undergraduate students upwards. We purposely chose the series title *Inorganic Materials* to emphasise that the subject covers chemical elements from all parts of the Periodic Table and is by no means limited to one subset of materials. In fact, the volumes highlight the interfaces of chemistry with other disciplines, ranging from physics and biosciences to medicine and electronics. We not only cover properties of materials but highlight their structures, their synthesis and methods for their study.

What do you think will be the next big breakthrough in your subject area?

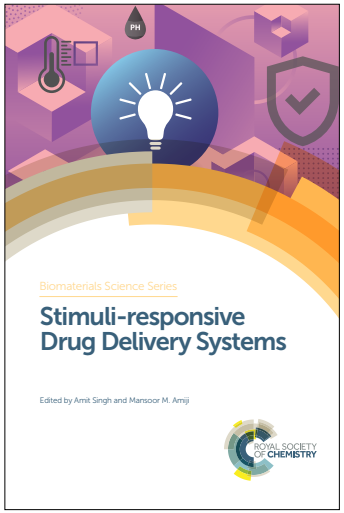
This is difficult to predict, given the huge scope of the subject, but what is particularly exciting is the rapid development of experimental methods for studying the structures of materials – not only under static conditions, but also reactive conditions and during their synthesis. Coupled with advances in computational methods for predicting new structures, the pace of discovery of new functional materials is rapidly increasing so the possibility of new substances with targeted properties suited for application could well become a reality.

What is the future looking like for Inorganic materials?

The potential of the subject is tremendous, especially given the current demands for high-performance materials for applications in energy and the environment. This includes batteries, fuel cells and solar devices for the capture and degradation of pollutants. These are well-publicised topics whose importance is globally recognised and for which innovative chemistry is needed. These demands are not likely to go away with increasing a global population, diminishing natural resources and climate changes. Although it is impossible to predict exactly which materials and properties will be required, there is no doubt the topic will continue to grow over the coming years.

How did you get into your field?

My first research project as a final year undergraduate at Oxford was in solid-state chemistry, studying the synthesis and structures of zeolite-type phosphates using organic templates. This not only led to the discovery of new structures but provided excellent training in the combination of materials synthesis and structural characterisation. That training was further developed in subsequent projects on amorphous chalcogenides during my PhD and then in using *in situ* methods for following crystallisation in solvothermal reactors back in Oxford. It was the mixture of synthesis, structural characterisation and property measurement that is involved in solid-state chemistry that appealed to me, and it led me to my current work in synthesis of materials with properties and applications guided via industrial collaboration.



About the series

2397-1401

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Series editors
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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.

Antimicrobial Materials for Biomedical Applications

Avi Domb Hebrew University of Jerusalem, Israel | **Konda Reddy** Kunduru University of Hyderabad, India

With the need to combat emerging infectious diseases, research around antimicrobial biomaterials and their applications is booming. This book provides the field with a much-needed fundamental overview of the science, addressing the chemistry of a broad range of biomaterial types, and their applications in the biomedical industry. Materials covered include polymers, from those with inherent antimicrobial activity to those which release antimicrobial agents, antimicrobial ceramics and inorganic compounds, such as metal based antimicrobial additives, and the developing field of biomimetic materials, are discussed. Surfaces, coatings and adhesives are covered, whilst the applications of these antimicrobial materials in biomedical applications, from catheters to orthopaedics, dentistry to ophthalmology, are explored.

Hardback | 400 pages | 9781788011884 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-188-4

Biomaterial Control of Therapeutic Stem Cells

Akon Higuchi National Central University, Taiwan

Covering both human embryonic stem cells (hESCs) and human induced pluripotent stem cells (hiPSCs), this book bridges the gap between biomaterials research of stem cells and their use in clinical trials. The differentiation of human pluipotent stem cells (hPSCs) can be regulated by biological and physical cues from the biomaterials they are cultured on. This book provides a systematic treatment of stem cell culture and differentiation on specific biomaterials covering: 2D and 3D culture of hPSCs; differentiation of stem cells into cardiomyocytes, osetoblasts, neural lineages and hepatocytes; and biomaterials for clinical trials of stem cell therapies. A closing chapter looks at future trends. Written by an international leader in the field, this book is suitable for researchers working in biomaterials science, bioengineering, regenerative medicine and drug design.

Hardback | 250 pages | 9781788012072 | 2019 | £149.00 | $205.00

ISBN 978-1-78801-207-2

Decellularized Extracellular Matrix

Characterization, Fabrication and Applications

Takashi Hoshiba University of Yamagata, Japan | **Tetsuji Yamaoka** National Cerebral and Cardiovascular Center 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 extracelluar 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

The Chemistry of Medical and Dental Materials

2nd Edition

John Nicholson Bluefield Centre for Biomaterials Ltd, UK and Queen Mary University of London, UK

Since the first edition of The Chemistry of Medical and Dental Materials was published (2002), the field has moved on apace. This new edition is a thorough update by one of the pioneers of the field. A new chapter on ethical perspectives has been added, with updates to all other chapters to include developments on nanotechnology, advancements in our understanding of biocompatibility and improvements in materials science for drug delivery and clinical use.

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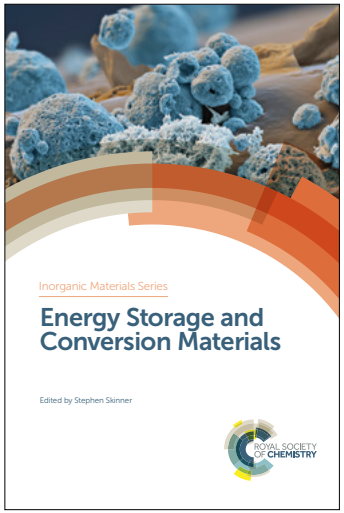

About the series

ISSN: 2472-3819

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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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Structure and Function

Simon R Hall University of Bristol, UK

This book showcases recent developments in inorganic biomaterials in an area of societal interest and importance. It covers areas such as functional surfaces, energy storage and metamaterials, with an emphasis on how inorganic biomaterials are being used for cutting-edge applications. With chapters written by expert researchers in their fields, Bioinspired Inorganic Materials will provide undergraduates, postgraduates and other researchers convenient and accessible introductions to these topics.

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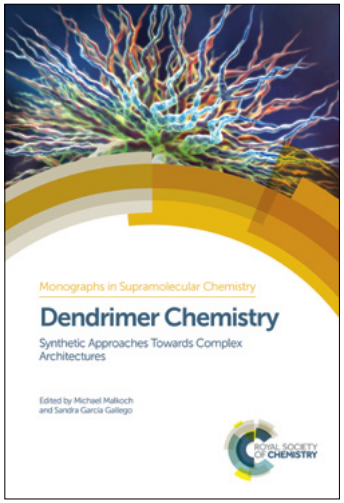

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Supramolecular chemistry concerns the structure and function of molecular assemblies formed through weak interactions. These complexes have found diverse applications in materials chemistry, nanoscience, catalysis, food sciences, and medicine, and 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.

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Structure and Function

Simon R Hall University of Bristol, UK

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Dendrimer Chemistry

Synthetic Approaches Towards Complex Architectures

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

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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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.

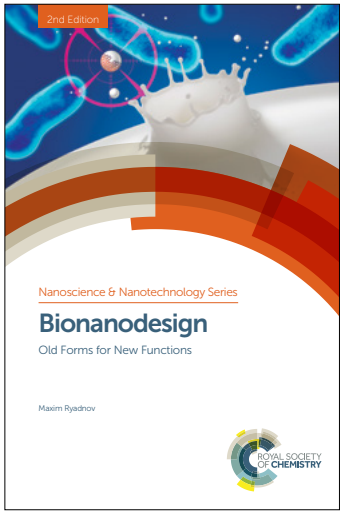
Hardback | 270 pages | 9781788014106 | 2019 | £159.00 | $220.00

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 and they are becoming prominent in supramolecular chemistry. This book will clarify the current understanding of these techniques. This publication 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 | 2019 | £159.00 | $220.00



About the series

ISSN: 1757-7136

The possible uses of nanotechnology span many fields from energy to health; as a result there is a wealth of scientific nanoscience research taking place all over the world. When there 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 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, materials science, engineering, biology and physics wanting to know more about nanoscience.

Bionanodesign

Old Forms for New Functions

2nd Edition

Maxim Ryadnov National Physical Laboratory, UK

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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. Surface Chemistry of Colloidal Nanocrystals will provide 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, this book 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.

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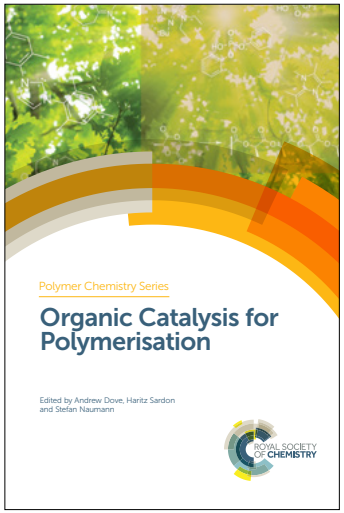

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Costas S Patrickios University of Cyprus, Cyprus

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Andrew Dove University of Birmingham, UK | **Haritz Sardon** University of the Basque Country UPV/EHU, Spain | **Stefan Naumann** University of Stuttgart, Germany

In recent years polymerisation using organocatalysts has become an appealing alternative to more traditional metal-based catalysts. This book provides a complimentary view of the field, with both an overview of state-of-the-art catalyst development as well as the best methodologies available to create specific polymer types. Edited by leading figures in the field, this title will serve as an excellent reference for postgraduate students and researchers in both academia and industry interested in polymer chemistry, organic chemistry, catalysis and materials science.

Hardback | 600 pages | 9781788011846 | 2019 | £199.00 | $275.00

ISBN 978-1-78801-184-6

Synthetic Polymer Chemistry

Innovations and Outlook

Ben Zhong Tang The Hong Kong University of Science and Technology, Hong Kong | **Anjun Qin** South China University of Technology, China | **Zheng Zhao** The Hong Kong University of Science & Technology, Hong Kong | **Rong Hu** South China University of Technology, China

The increasing demand for polymers with new structures and functions has inspired the development of new synthetic techniques. This book focuses on breakthroughs and progress in synthetic polymer chemistry, providing efficient tools for the synthesis of linear and topological polymers. Synthetic Polymer Chemistry will be a valuable reference for those working in polymer chemistry, as well as students and researchers interested in opto-electronic, biological and materials sciences.

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ISBN 978-1-78801-523-3

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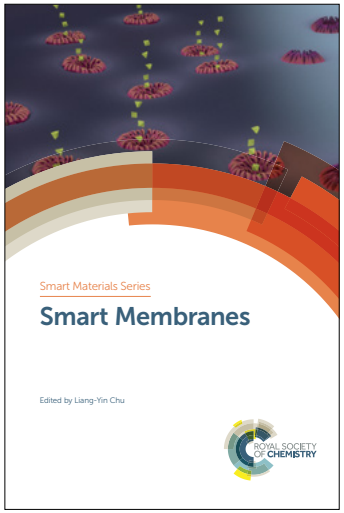

About the series

ISSN: 2046-0066

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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.

Cucurbituril-based Functional Materials

Dönüs Tuncel Bilkent University, Turkey

Smart materials constructed through supramolecular assemblies have been receiving considerable attention because of their potential applications including self-healing materials, energy storage, photonic devices, sensors and theranostics. This book will provide an overview of the synthesis, properties and application of cucurbituril (CB) based nanostructures, as well as recent advances in the field. It will appeal to graduate students and researchers working in materials science, as well as those working on CB materials in organic and physical chemistry.

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ISBN 978-1-78801-488-5

Electrochromic Smart Materials

Fabrication and Applications

Jian Wei Xu Institute of Materials Research and Engineering, A*STAR, Singapore | **Ming Hui Chua** Institute of Materials Research and Engineering, A*STAR, Singapore | **Kwok Wei Shah** National University of Singapore, Singapore

Electrochromic devices have a wide range of applications, including displays, self-dimming mirrors for automobiles, electrochromic e-skins, textiles, and smart windows for energy-efficient buildings. This title covers major topics related to the phenomenon of electrochromism, highlighting a broad range of existing and potential applications of electrochromic materials and devices. Providing a comprehensive overview of the field, it will be of interest to postgraduate students and researchers in both academia and industry interested in smart design, materials science and engineering.

Hardback | 500 pages | 9781788011433 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-143-3

Layered Materials for Energy Storage and Conversion

Dongsheng Geng University of Science and Technology Beijing, China |
Yuan Cheng Institute of High Performance Computing, A*STAR, Singapore |
Gang Zhang Institute of High Performance Computing, A*STAR, Singapore

The considerable interest in graphene and 2D materials is sparking intense research on layered materials due to their unexpected physical, electronic, chemical, and optical properties. After a brief introduction to layered materials, the chapters of this book gather various fascinating topics including electrocatalysis for fuel cells, lithium-ion and sodium-ion batteries, photovoltaic devices, thermoelectric devices, supercapacitors and water splitting. With contributions from key researchers, this book will be of interest to students, researchers and engineers worldwide who want a basic overview of the latest progress and future directions.

Hardback | 300 pages | 9781788014267 | 2019 | £159.00 | $220.00

ISBN 978-1-78801-426-7
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Smart Membranes

Liang-Yin Chu Sichuan University, China

Smart membranes that respond to environmental stimuli are gaining attention because of their potential use in a variety of applications, from drug delivery to water treatment. This book will cover topics such as novel design and fabrication strategies, approaches for controlling structure and performance, and novel applications of smart membranes. Edited by an internationally renowned expert and with contributions from key researchers, this book will appeal to students and researchers across materials science, chemistry, chemical engineering, pharmaceutical science and biomedical science.

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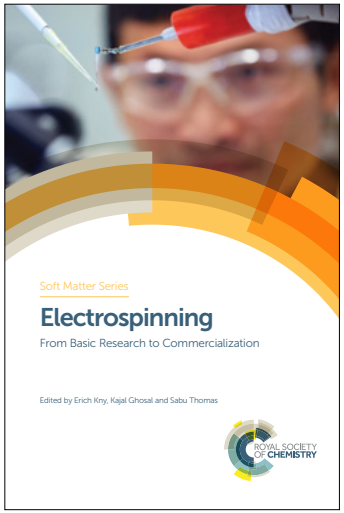

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ISSN: 2048-7681

Series editors
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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.

Polymer Colloids

Formation, Characterization and Applications

Rodney Priestley Princeton University, USA | **Robert Prud'homme** Princeton University, USA

Based on a specialised course by the editors, this book provides the reader with an invaluable single source of reference on polymer colloids. The first section describes formation, explaining basic properties of emulsions and dispersion polymerization, microfluidic approaches to produce polymer-based colloids and formation via directed self-assembly. The next section details characterisation methodologies from microscopy and small angle scattering, to surface science and simulations. Finally, the book finishes with chapters devoted to applications, including pickering emulsions, active matter, and molecular engineering for materials development.

Hardback | 400 pages | 9781788014175 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-417-5
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Polymer-modified Liquid Crystals

Ingo Dierking University of Manchester, UK

Bridging soft matter physics, materials science and engineering, polymer-modified liquid crystals are an exciting class of materials. They represent a vibrant field of research, promising advances in display technologies, as well as non-display uses. Describing all aspects of polymer-dispersed and polymer-stabilized liquid crystals, the broad coverage of this book makes it a must-have resource for anyone working in the area. The reader will find expert accounts covering basic concepts, materials synthesis and polymerization techniques, properties of various dispersed and stabilized phases, and critical overviews of their applications.

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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.

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3D Printing in Chemical Sciences

Applications Across Chemistry

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3D printing has rapidly established itself as an essential tool within research and industrial chemistry laboratories. Since the early 2000s, when the first research papers applying this technique began to emerge, the uptake by the chemistry community has been both diverse and extraordinary. This book will provide a timely overview of the capabilities of 3D printing and review the applications in various fields. It will be of interest across the chemical sciences in research and industrial settings for chemists and engineers.

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Theory, Characterisation and Application

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Powder flow has attracted increased attention in recent years as novel formulated and functional products are being developed in powder forms, particularly in pharmaceutical and high value additive manufacturing industries. This book meets a need for a truly integrated modern treatment of dry powder flow, covering theory, robust characterisation techniques, modelling tools and applications.

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The Handbook of Continuous Crystallization

Nima Yazdanpanah Massachusetts Institute of Technology, USA | **Zoltan Nagy** University of Purdue, USA

Improvements in continuous crystallization technologies offer chemical industries significant financial gains, through reduced expenditure and operational costs. This book is first authoritative guide to the field, covering fundamental and applied knowledge, process intensification, scaling up, best practice and regulatory considerations. With contributions from leading academics and researchers in industry, this definitive guide is ideal for those working in crystallization, particulate matters, pharmaceutical engineering, processing engineering, and advanced manufacturing.

Hardback | 600 pages | 9781788012140 | 2019 | £125.00 | $175.00

ISBN 978-1-78801-214-0

Science and Art

The Contemporary Painted Surface

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

Science and art are increasingly interconnected in the activities of the study and conservation of works of art. This new edition of Science and Art (2014) will cover works by largely living authors, protagonists of the development of innovative and meaningful techniques, new methodologies and artistic languages. With contributions from art historians, curators, scientists and artists, this book will appeal to those scientifically interested in the area, students studying art conservation as well as those actively working in conservation science of contemporary art.

Hardback | 500 pages | 9781788014694 | 2020 | £70.00 | $95.00

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Five minutes with...

Name Nathan Brown

Affiliation Benevolent AI, London, UK

Editor of *Artificial Intelligence in Drug Discovery*

Book publication date February 2019

ISBN 9781788015479

Tell us about your book
While the fields of AI and Drug Discovery have had significant overlap for many years, there has been renewed and concerted efforts to combine the strengths of both to make significant leaps forward. This book will cover the history and fundamentals of artificial intelligence and machine learning, with case studies from the literature that demonstrate their potential and their impact in the field. The book will then look at the wealth of chemistry data and the potential to learn from these data, before moving straight into predictive modelling and its impact in molecular design. These methods take advantage of both chemical and protein structural data to make better predictions and designs. The later sections of the book cover synthesis planning, in my opinion the holy grail of computational chemistry methods, and using AI in molecular simulations.

Which drug that has been discovered do you feel has had the most impact? e.g. improving people's lives?
Having been involved in many drug discovery projects myself that have reached the clinic, I am acutely aware of the contributions that these efforts from large teams make. I once met V. Craig Jordan, who discussed his work on Tamoxifen in the 1970s. His research led to improving the health of millions of women, and is estimated to have saved the lives of 500,000. It is astounding to think that relatively small groups of people can have such a positive impact on society.

How did you get into your field?
I had a somewhat atypical route into Chemoinformatics, but was fundamentally interdisciplinary before this was really a thing. I started out as a Computer Scientist, working on artificial life simulations, which got me interested in a certain class of evolutionary algorithms to optimise solutions using analogues of natural evolution. This research led me onto a PhD applying these algorithms to challenges in drug discovery. I found this research incredibly interesting and I could clearly see potential benefits to humanity. Roll on twenty years and I am now leading a team of Chemoinformatics Data Scientists working on challenges in Drug Discovery using Artificial Intelligence.

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ISBN 9781788014069

Tell us about your book

Within the RSC Metallobiology book series, "Metal-based Anticancer Agents" aims to emphasise the most significant experimental and conceptual progresses made during the last few years in the areas of inorganic medicinal chemistry and metallodrug discovery and development with a focus on cancer therapy. The content of the book is arranged according to (i) Main classes of anticancer metallodrugs, (ii) emerging concepts in metallodrugs discovery, (iii) method development and (iv) preclinical and clinical development. The book covers much of the vast spectrum of inorganic drug discovery and development, from synthetic approaches and novel supramolecular scaffolds to clinical evaluations. It's a unique overview of this exciting and highly interdisciplinary area of research and provides an overview/update of the pre-clinical and clinical evaluation of novel metal-based anticancer agents. It would be a valuable resource for experts, but also for people new to the field.

What do you think will be the next big breakthrough in your subject area?

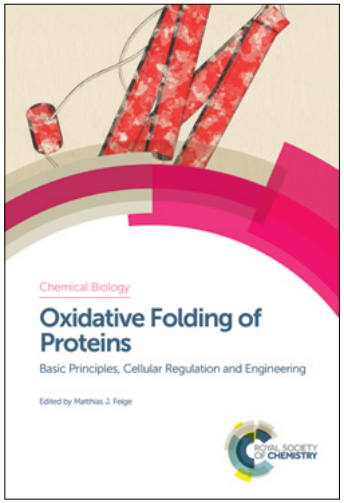
I am particularly intrigued by the new examples of metal-based radiopharmaceutical as ' theranostic' agents for both therapy and imaging of cancer. The field of supramolecular coordination complexes for biomedical applications is still in its infancy, but the latest examples hold promise for future advancements in drug discovery, as well as for the development of novel anticancer drug delivery systems.

You were listed as one of the world's most influential scientific minds of 2014 in pharmacology by Thomson Reuters, who would you say has been the biggest influence during your career?

The chance to collaborate over the years with colleagues from different areas in the drug discovery field, from chemistry, chemical biology, pharmacology and medicine. Instrumental to my academic career has been my participation in several EU COST (European Cooperation in Science and Technology) Actions. COST Actions are bottom-up science and technology networks, open to researchers and stakeholders with a duration of four years. They are active through a range of networking tools, such as workshops, conferences, training schools, short-term scientific missions (STSMs), and dissemination activities. These Actions are invaluable for early carer researchers to build up their international network of collaborations so as to achieve academic independence. Several of the contributors to my book (including the two co-editors) were also COST participants I met over the years.

What was the biggest challenge you faced when writing your book?

I did not write the entire book myself, so a challenge was to inspire the contributors to provide not only a chemistry perspective, but to combine it with a translational point of view in each chapter. So far the various authors have done a great job, and it was a real pleasure working with them on this volume.



About the series

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.

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 achiving 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 folustion. 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 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-172-3
9 781788 011723

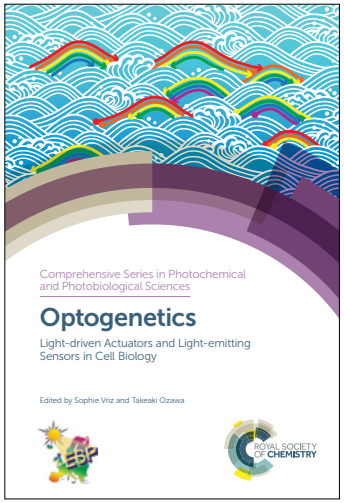
Synthetic Glycomes

Peng George Wang Georgia State University, USA | **Wanyi Guan** Hebei Normal University, China | **Lei Li** Georgia State University, USA

Glycans play essential roles in diverse biological and aetiological processes. Developments of the glycan microarray our knowledge of the function of glycans has increased, however the accessibility of glycans is a major obstacle to further study. To circumvent this limitation many synthetic strategies including chemical, enzymatic and chemo-enzymatic have been developed to produce libraries of structurally defined complex glycans. The objective of this book is to provide a comprehensive review of the current state of the synthetic glycome and introduce the application of synthetic glycomes in the glycan microarray. Synthetic glycomes is an ideal reference for students and chemical biologists interested in the development of synthetic glycomes and the study of glycans.

Hardback | 350 pages | 9781788011648 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-164-8
9 781788 011648



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ISSN: 2041-9716

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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.

Cutaneous Photoaging

Rachel E B Watson University of Manchester, UK | **Christopher E M Griffiths** University of Manchester, UK

Photoaging results from chronic exposure to UV radiation and is an increasingly common clinical feature, with an aging population the clinical burden is likely to increase despite advances in our understanding of the pathology and development of improved treatments. This book will present and review the latest progress from the forefront of translational research in cutaneous photoaging. With a global team of authors Cutaneous Photoaging provides an international perspective on the causes, consequences, pathophysiology and treatment of photoaging, ideal for dermatologists, students and professionals in photoscience.

Hardback | 350 pages | 9781788011266 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-126-6

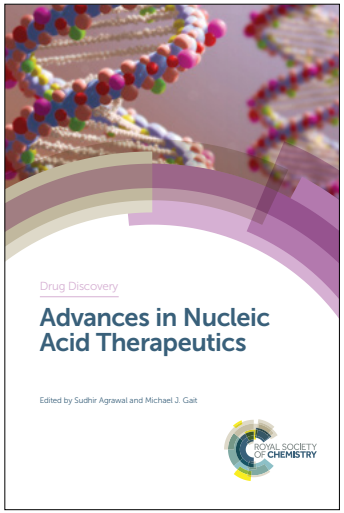
Optical Techniques in Biomedical and Biophysical Sciences

Franco Fusi Universita degli Studi di Firenze, 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 | 2020 | £169.00 | $235.00

ISBN 978-1-78801-529-5



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 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 technology. 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.

Advances in Nucleic Acid Therapeutics

Sudhir Agrawal Idera Pharmaceuticals, USA | **Michael J Gait** MRC Laboratory of Molecular Biology (LMB), UK

The sequencing of the human genome and subsequent elucidation of the molecular pathways that are important in the pathology of disease have provided unprecedented opportunities for the development of new therapeutics. Nucleic acid-based drugs have emerged in recent years to yield extremely promising candidates for drug therapy to a wide range of diseases. Advances in Nucleic Acid Therapeutics is a comprehensive review of the latest advances in the field, covering the background of the development of nucleic acids for therapeutic purposes to the array of drug development approaches currently being pursued. Bringing contributions together from leaders at the forefront of progress, this book depicts the many approaches currently being pursued in both academia and industry.

Hardback | 600 pages | 9781788012096 | 2019 | £199.00 | $275.00

ISBN 978-1-78801-209-6
9 781788 012096

Anti-fibrotic Drug Discovery

Jehrod Brenneman KSQ Therapeutics, USA | **Malliga 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

ISBN 978-1-78801-510-3
9 781788 015103

Artificial Intelligence in Drug Discovery

Nathan Brown Benevolent AI, London, 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

ISBN 978-1-78801-547-9

Drug Discovery for 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

ISBN 978-1-78801-564-6

Cytotoxic Payloads for Antibody–Drug Conjugates

David E Thurston King's College London, UK | **Paul J M Jackson** FemtoGenix Ltd, UK

The antibody–drug conjugates (ADCs) field is one of the fastest growing areas of drug discovery and represents a large body of research. ADCs deliver a cytotoxic payload, a key component of the overall ADC design, specifically to cancer cells by attaching it to an antibody targeted to antigens on the cell surface. This book discusses the range of payloads used to date along with their advantages and disadvantages, and describes novel payloads at the research stage that may be used clinically in the near future.

Hardback | 500 pages | 9781788010771 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-077-1

Medicinal Chemistry Optimization

A Guide to ADMET Challenges

Sarah Skerratt Vertex Pharmaceuticals, UK | **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 | 350 pages | 9781788012270 | 2019 | £110.00 | $150.00

ISBN 978-1-78801-227-0

MicroRNAs in Diseases and Disorders

Emerging Therapeutic Targets

Philip V Peplow University of Otago, New Zealand | **Bridget Martinez** University of California, USA | **George A Calin** University of Texas MD Anderson Cancer Center, USA | **Aurora E Kerscher** East Virginia Medical School, USA

MicroRNAs have a distinct role in the development and progression of a variety of diseases including cancer, neurological disease and metabolic disease amongst others. As such, there is considerable interest in the potential utilisation of microRNAs in precision and personalised medicine, by increasing our understanding of the role of microRNA in the pathology of disease it allows an opportunity to identify potential therapeutic targets. With an international team of authors this book covers the global perspective from pathology to treatment with a comprehensive review of how drugs can be designed to target microRNAs in a variety of diseases.

Hardback | 500 pages | 9781788013949 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-394-9

Peptide Therapeutics

Strategy and Tactics for Chemistry, Manufacturing, and Controls

Ved Srivastava Intarcia Therapeutics, USA

Peptide therapy has become a key strategy of innovative drug development, however one of the potential barriers for approval of novel peptide drugs in the clinic is their deficiencies in clearly defined CMC strategy from the beginning of the clinical development plan. Peptide Therapeutics comprehensively outlines the critical process parameters for efficient manufacturing processes for the peptide drug substances and peptide drug products, the key challenges in quality control, emerging analytical tools, aligning chemistry manufacture and control with clinical trials and current regulatory guidelines. This book will be an asset not only as a reference book for peptide researchers engaged in the pharmaceutical manufacturing setting but also a valuable resource to research and development scientists and graduate students to understand the development and manufacturing process of peptide based medicine.

Hardback | 400 pages | 9781788014335 | 2020 | £179.00 | $250.00

ISBN 978-1-78801-433-5

Precision Medicine

James W A Ritchie Cancer Research UK, UK | **Wendy Alderton** Precision Medicine Catapult, UK

Also referred to as personalised or stratified medicine, precision medicine has the potential to revolutionise medicine and healthcare through improved diagnoses, rational disease prevention and more effective, efficient treatment based on an understanding of genetic, environmental, and lifestyle factors. This book gives an overview of the importance, challenges and successes of personalised medicine from a drug discovery perspective. This is timely due to recent technological developments that have led to demonstrable successes, bringing the vision for personalised medicine closer to reality.

Hardback | 350 pages | 9781788011402 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-140-2

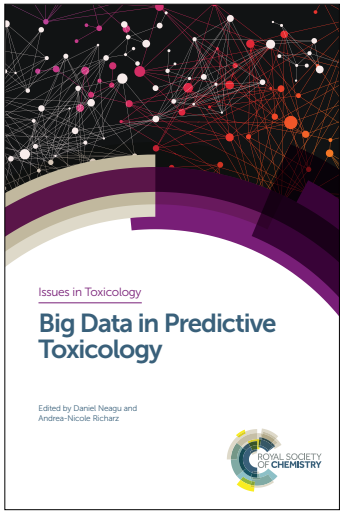
Protein-Protein Interaction Regulators

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

Molecular interations, Protein-Protein interactions play a crucial role in regulating many cellular functions. In many diseases, abberant 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 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-187-7



About the series

ISSN: 1757-7179

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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.

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 | 2019 | £159.00 | $220.00

ISBN 978-1-78262-298-7

Nanoparticle–Protein Corona

Biophysics to Biology

Ashutosh Kumar Ahmedabad Univeristy, India | **Alok Dhawan** Indian Institute of Toxicology Research (CSIR-IITR), India

Any nanomaterial is always covered by proteins immediately upon contact with a physiological environment, this phenomenon may be the key to understanding much of bionanoscience. This formation of the nanoparticle protein corona changes the behaviour of the nanoparticle and translates to issues in their transport and fate in the environment, animals and humans; this however, also offers a new route to study protein interactions. Ideal for toxicologists and researchers in nanoscience, this book provides a detailed understanding of the formation and biological significance of the corona, as well as the impact on biological assays, exotoxicity studies and proteomics research.

Hardback | 350 pages | 9781788013918 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-391-8

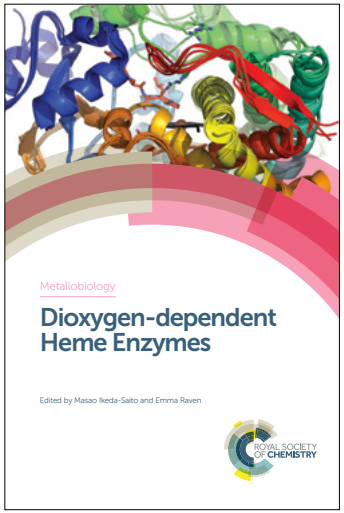
The Micronucleus Assay in Toxicology

Siegfried Knasmüller Medical University of Vienna, Austria | **Michael Fenech**
CSIRO Food and Nutrition, Australia, HUMN Project Coordinating Group, Australia

The micronucleus assay is one of the most widely used method in genetic toxicology and human biomonitoring. This book covers the detection of selected important genotoxic carcinogens, such as heavy metals, pesticides and radionuclides, using micronucleus assays and details the methods currently used for the analyses of different types of cells in studies. It will explains the molecular mechanisms of micronucleus formation, and provides advice on analysis of data. This will be a useful resource for postgraduate students and researchers in toxicology, oncology, chemical and environmental safety, DNA damage, nutrition, genetics, nutrigenomics, nutrigenetics and mutation research.

Hardback | 400 pages | 9781788011341 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-134-1



About the series

ISSN: 2045-547X

The Metallobiology Series is a collection of professional reference books covering all aspects of the roles of metals in biological systems. The scope includes metalloenzymes, metalloproteins, storage and transport of metal ions, bio-organometallic chemistry and interaction of metal ions with biomolecules. Books in this series provide authoritative perspectives from international experts and will be of interest to both academics and those working in industry in a wide range of disciplines, including medicinal chemistry, pharmaceutical science, biochemistry, metallomics and inorganic biochemistry.

Metal-based Anticancer Agents

Angela Casini Cardiff University, UK | **Anne Vessières** Pierre et Marie Curie Univeristy, France | **Samuel M Meier-Menches** University of Vienna, Austria

Metal-based anticancer drugs, notably platinum-based such as cisplatin, have a tremendous clinical impact: it is estimated that at least half of all cancer patients are treated with a platinum-based drug. Metal-based Anticancer Agents introduces the main classes of metallodrugs, their possible different biological targets, the major and concepts and methods. The book also provides an overview of the most significant experimental and conceptual progresses made during the last years in the areas of inorganic medicinal chemistry and metallodrug discovery and development. This book will be a valuable resource for experts in the field but also for those wishing to extend their expertise to metal-based cancer drugs.

Hardback | 500 pages | 9781788014069 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-406-9

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

ISBN 978-1-78801-689-6

Carbohydrate Chemistry

Chemical and Biological Approaches Volume 44

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

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 | 2019 | £314.95 | $440.00

ISBN 978-1-78801-368-0

Organophosphorus Chemistry

Volume 48

David W Allen Sheffield Hallam University, UK | **David Loakes** University of Cambridge, 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 chalcognides 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 | 350 pages | 9781788014991 | 2019 | £314.95 | $440.00

ISBN 978-1-78801-499-1

Synthetic Biology

Volume 3

Maxim Ryadnov National Physical Laboratory, UK | **Luc Brunsveld** Eindhoven University of Technology, The Netherlands

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

Hardback | 300 pages | 9781788010078 | 2019 | £314.95 | $440.00

ISBN 978-1-78801-007-8

New in physical chemistry

Written by internationally recognised authors, our physical chemistry books provide in-depth, reliable information on the ever-expanding range of subjects at the interface of physical chemistry and, chemical physics. in 2019 look out for the latest research in catalysis, and computational techniques.

Five minutes with...

Name Cerys Willoughby

Affiliation University of Southampton, UK

Author of *Recording Science in the Digital Era*

Book publication date September 2019

ISBN 9781788014205

Tell us about your book
For most of the history of scientific endeavour, science has been recorded on paper. In this digital era, however, there is increasing pressure to abandon paper in favour of digital tools. This book examines the importance of record-keeping in science, current record-keeping practices, and the role of technology for enabling the effective capture, storage, sharing, and preservation of scientific data. It focuses on the roles and design of Electronic Laboratory Notebooks (ELNs) and data management systems in particular, including an in-depth discussion of the barriers and potential pitfalls of these technologies together with some best practices for overcoming them.

What do you think will be the next big breakthrough in your subject area?
Personally, I think being able to use digital tools in a more naturalistic way will help to encourage adoption. Writing and drawing in a notebook is very easy and natural, but recording on a computer is harder. Now we are beginning to get interfaces, that allow detailed writing and drawing. Future developments could enable the user to talk directly to the ELN to call up previous results or to dictate observations and measurements during an experiment. Another area where I think important developments will be made is in the interaction between ELNs and other systems. I think there is huge value to be gained by enabling users to click a button that automatically packages and uploads all the appropriate data, metadata, and documentation for a research project directly to a repository or publisher.

What is the current take up of ELN and how has it been received?
The take up of ELNs is variable across different sectors. Although ELNs are widely used in industry, they are by no means ubiquitous. Within academia there is a lot of interest in implementing ELNs, but most researchers are still recording their research using paper notebooks. There are a number of challenges with ELNs, common concerns are the cost of licenses, issues around where the data is stored for privacy and security reasons, and the usability of the software itself. In my experience, users who collaborate in their research are most positive,
but other users only become positive once they use them and see the benefits of being able to easily organise and access their research.

Looking back what is the biggest development in your area of research?
There has been gradual progress over a long period of time, but I think the most significant is probably the development of web-based ELNs, particularly those using the Cloud. Although these are not suitable for all organisations, they are useful for individuals, small teams, and those wanting to try out ELNs. Many of the online ELNs are free to use or have a free trial option. The majority are quite generic, and can potentially be used by any discipline, overcoming the inflexibility of some of the more complex ELNs available. The generic design also means they tend to be relatively easy to use. Having the content accessible from anywhere, including on mobile, also provides the flexibility to create content without being tied to a particular machine that has an appropriate license.

Five minutes with...

Name Kamran T Mahmudov

Affiliation University of Lisbon, Portugal

Co-editor of *Noncovalent Interactions in Catalysis*

Book publication date April 2019

ISBN 9781788014687

Tell us about your book

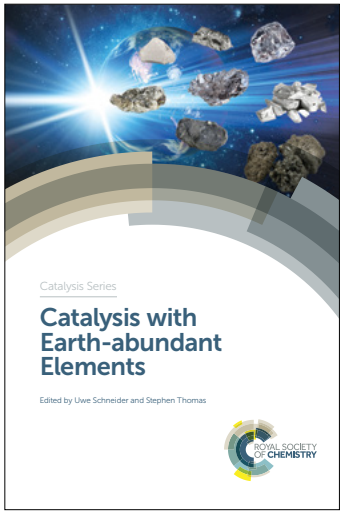
Noncovalent interactions can have an important impact on the energetics and structures of molecules, as well as on their reactivity and on the selectivity of their reactions. In fact, these weak forces can play an essential role in the action of nature's catalysts, enzymes, (as well as in organocatalysis, metal catalysed systems, cooperative catalysis, etc.), namely by lowering the kinetic barriers of reactions through transition state stabilisation(s). The crucial role of the majority of types of noncovalent interactions in the stabilisation of intermediates is highlighted in both homogenous and heterogeneous catalyses. We believe the book will be useful for synthetic chemists that are interested in the design of catalysts and discovery of new catalytic reaction pathways.

What do you think will be the next big breakthrough in your subject area?

A catalyst can bring reactants together and promote their reaction by noncovalent interactions (e.g., involving a transition state). Among these weak forces, hydrogen bonding, cation-ϖ and anion-ϖ interactions have already been well explored in some types of reactions of organocatalysis. We believe that other types of catalytic reactions, namely in cooperative catalysis and transition-metal catalysis, will also be found to be effectively assisted by noncovalent interactions. Additionally, other forms of noncovalent interactions, such as σ-hole bonds, could in the future hold an important position in synthesis and catalysis. We expect that the catalysis of this century will be largely driven by noncovalent interactions.

What was the biggest challenge you faced when writing your book?

The biggest challenge was to gather internationally renowned scientists, in the various areas of expertise, with complementary viewpoints, to cover all the important and promising fields concerning noncovalent interactions in catalysis. I'd like to take this opportunity to thank all the authors who accepted our invitation for their excellent contributions.



About the series

ISSN: 1757-6725

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Justin S J Hargreaves University of Glasgow, UK

Series editors
Jose Rodriguez Brookhaven National Laboratory, USA | **Bert Klein Gebbink** Utrecht University, The Netherlands

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

Catalysis with Earth-abundant Elements

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

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

Hardback | 350 pages | 9781788011181 | 2018 | £169.00 | $235.00

ISBN 978-1-78801-118-1

Enantioselective Cobalt-catalysed Transformations

Hélène Pellissier CNRS, France

Cobalt catalysts are a cheaper, more environmentally responsible alternative to many of the more commonly used transition metal catalysts. This book collects the major developments reported in the past thirty years in the field of enantioselective reactions promoted by chiral cobalt catalysts. It is a useful reference resource for chemists, both academic and industrial, working in organic synthesis and interested in greener or more economical catalytic alternatives.

Hardback | 224 pages | 9781788014625 | 2018 | £123.00 | $170.00

ISBN 978-1-78801-462-5

Nanoparticle Design and Synthesis for Catalytic Applications

Rafael Luque University of Córdoba, Spain | **Pepijn Prinsen** University of Córdoba, Spain

ISBN 978-1-78801-490-8

Nanoparticles exhibit a range of different properties when compared to bulk materials. Their high surface-area to volume ratio makes them particularly attractive for use as catalysts and recent years have seen an explosion of research in this area. This book presents an introduction to the preparation and characterisation of nanomaterials and their design for specific catalytic applications. It is a valuable resource for researchers working on catalytic reactions, industrial processes and nanomaterial applications.

Hardback | 270 pages | 9781788014908 | 2019 | £149.00 | $205.00

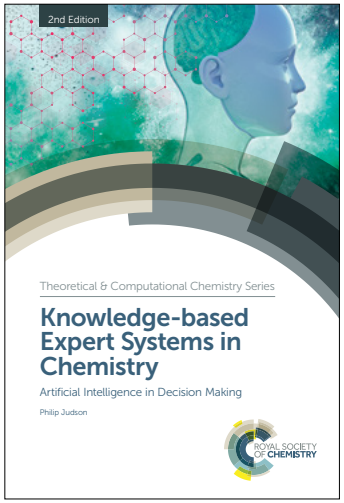
Noncovalent Interactions in Catalysis

Kamran T Mahmudov University of Lisbon, Portugal | **Maximilian N Kopylovich** University of Lisbon, Portugal | **M Fatima C Guedes da Silva** University of Lisbon, Portugal | **Armando Pombeiro** University of Lisbon, Portugal

ISBN 978-1-78801-468-7

Noncovalent interactions (such as hydrogen bonds, ϖ-ϖ stacking and lipophilic interactions) often provide the spine of biomolecular and material structures, and can therefore play a key role in biological and catalytic processes. This book provides an overview of the role of different types of noncovalent interactions in both homogenous and heterogeneous catalysis. With chapters contributed by experts from around the world it is a valuable resource for synthetic chemists who are interested in exploring and further developing noncovalent interaction-assisted synthesis and catalysis.

Hardback | 500 pages | 9781788014687 | 2019 | £179.00 | $250.00



About the series

ISSN: 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.

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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.

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ISBN 978-1-78801-461-8

Knowledge-based Expert Systems in Chemistry

Artificial Intelligence in Decision Making

2nd Edition

Philip Judson Consultant, Harrogate, UK

There have been significant developments in the use of knowledge-based expert systems in chemistry since the first edition of this book was published in 2009. This new edition has been thoroughly revised and updated to reflect the advances. Written by a pioneer in the field, this book provides an essential reference for anyone interested in the uses of artificial intelligence for decision making in chemistry.

Hardback | 250 pages | 9781788014717 | 2019 | £149.00 | $205.00

ISBN 978-1-78801-471-7

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 system, from small intermolecular complexes, to organic molecules and crystalline solids, through to biological macromolecules and nanostructures.

Hardback | 450 pages | 9781782620457 | 2019 | £179.00 | $250.00

ISBN 978-1-78262-045-7

Catalysis

Volume 31

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 industrialists and academics 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 direct methane conversion, nanocomposite catalysts for transformation of biofuels into syngas and hydrogen and catalytic wet air oxidation technology for industrial wastewater treatment.

Hardback | 300 pages | 9781788014540 | 2019 | £314.95 | $440.00

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Volume 15

Michael Springborg University of Saarland, Germany | **Jan-Ole Joswig** Dresden University of Technology, Germany

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

Hardback | 300 pages | 9781788013697 | 2019 | £314.95 | $440.00

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Volume 16

Craig Banks Manchester Metropolitan University, UK | **Steven McIntosh** Lehigh University, USA

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.

Hardback | 250 pages | 9781788016926 | 2020 | £314.95 | $440.00

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Volume 47

Angelo Albini University of Pavia, Italy | **Stefano Protti** 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 the molecules of colour, solar photocatalysis, photochemistry in cryogenic matrices, photoresponsive hydrogels and molecular photoswiches. 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 | 9781788015547 | 2019 | £314.95 | $440.00

Determining Stability Constants

A Handbook

Palli 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

ISBN 978-1-78801-165-5

Optimal Experimental Design for Chemical Engineers

Mechanistic Model-based Design with Case Studies

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 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-087-0

Recording Science in the Digital Era

From Paper to Electronic Notebooks and Other Digital Tools

Cerys Willoughby University of Southampton, UK

Electronic lab notebooks (ELNs) are tools that allow experimental protocols and data to be captured digitally; they are analogous to the more traditional paper and pen. In theory, they make it easier to capture, store and share experimental data. However, adoption has been slow in the academic sector. This book provides a description of how and why scientists record data, an overview of the current ELN technology available and the benefits and pitfalls of using them for those interested in implementing digital data solutions within their research groups or departments.

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Name Ryan C Fortenberry

Affiliation University of Mississippi

Author of *Complete Science Communication*

Book publication date October 2018

ISBN 9781788011105

Tell us about your book:
I am advocating a new way to write scientific papers and offer practical tips on how to give scientific presentations. The basic gist is: 'write like a journalist and talk like a caveman'. Journalistic writing has the most important information first with more detail and less broad appeal growing as the text continues. Scientific papers should be written this way in order for them to be easier to digest by a larger audience. Conversely, scientific talks should be like campfire stories where the flickering light of the screen is the faux campfire. The presenter is the most important thing in the room; nothing should ever go on screen that can be said; the slides exist to give only the information that cannot be easily spoken. Finally, in my book I also urge scientists to engage in public relations at various levels and provide some background and instruction in how to go about doing this.

What do you think will be the next big breakthrough in your subject area?
Writing papers in a more digestible fashion, like that done in journalism, will revolutionise the readability of scientific papers. More so, however, once science fully embraces the art of the presentation (we are well on our way), scientists are likely to become the preeminent communicators of our species.

What are your top tips for making science accessible to everyone?
First, in writing, put the most important thing at the very beginning – give it all away. Second, in speaking, tell a story full of characters, rising action, climax, and resolution. Third, read poetry, fiction, or news articles – reading anything makes you a better writer and speaker. Finally, have fun. When presenting, you are the most important thing – enjoy the spotlight. When writing, be clear, concise, and correct, but also be yourself – allow your personality to come through in the text.

What was the biggest challenge you faced when writing your book?
One challenge was writing the text in the same journalistic style discussed, another was simply writing the thing. It's one thing to write an article and a completely different animal to write scores of pages. I had to remind myself that having a style to follow actually helps to get the bones. Then, just putting words on the page is the hardest step. They can always be edited later.

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Mark T F Telling Rutherford Appleton Laboratory, UK | **Victoria Garcia** Sakai Science and Technologies Facility Council, 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

An Introduction to Ionic Liquids

2nd Edition

Jason Hallett Imperial College London, UK

Written in a clear, concise and consistent way, this textbook is a valuable introduction to ionic liquids for advanced undergraduate and graduate courses. It explores their nomenclature, history, properties and their wide ranging applications, from catalysis to electrochemistry and clean technology. This second edition covers major developments in ionic liquids science and its applications over recent years, such as the use of ionic liquids for carbon dioxide capture; biomass processing; making biofuels such as ethanol; biomedical applications including drug delivery; and surface science studies and applications including lubrication.

Hardback | 360 pages | 9781782623366 | 2019 | £49.95 | $69.99

Atmospheric Chemistry

2nd Edition

Richard Wayne University of Oxford, UK | **Ann M Holloway** | **John Burrows** Universität Bremen, Germany

Ideal for undergraduates in chemistry and environmental science, this book provides students with a basic knowledge of the chemistry of Earth's atmosphere, and an understanding of the role that chemical transformations play in this vital part of our environment. Restructured and updated, this second edition now includes tutorial sections providing scientific background to key concepts. Students are guided through the atmosphere, beginning at high altitudes and working down, to help them better understand how the atmosphere works.

Hardback | 320 pages | 9781782625148 | 2019 | £31.99 | $45.00

Biomolecular Analysis

Introductory Practical Techniques in Context

Sharon Williams Coventry University, UK

This textbook presents the main chemical techniques used to analyse biological macromolecules in a clear and accessible fashion. To help students put their learning in context whilst enhancing their awareness of possible careers and future employability, it highlights links between techniques learnt at university and those used in industry. The text is accompanied by a full set of resources to help lecturers prepare courses in biomolecular analysis or biochemistry for chemists.

Hardback | 300 pages | 9781782628125 | 2019 | £35.99 | $49.99

Characterization of Nanostructured Materials

Chemical, Physical and Biological Analysis

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 Jodphur, India

Pitched at an interdisciplinary audience with various scientific backgrounds, this textbook provides a broad overview of characterisation techniques applied to nanomaterials. Taking a survey style approach, microscopic, spectroscopic, diffraction, chromatographic and other tools are described, with their theoretical underpinnings explained alongside experimental details. Hints, tips and tricks, common mistakes and artefacts are covered in each chapter wherever relevant. With homework problems and solutions, this book is a complete package for instructors and students, as well as self-study.

Hardback | 375 pages | 9781788011853 | 2019 | £60.00 | $85.00

ISBN 978-1-78801-185-3

Chemistry for Sustainable Technologies

A Foundation 2nd Edition

Neil Winterton University of Liverpool, UK

Following the success of the first edition, this revised and rationalised book continues to provide an interdisciplinary introduction to sustainability issues in the context of chemistry and chemical technology. Remaining true to its prime objective, it will equip young chemists (and others) to better 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. Updated to reflect recent progress, with new citations and additional points, it puts Green Chemistry in a much wider context and addresses complexities and challenges associated with attitudes to science and technology. 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 a wide community of students, it is broad in scope, rather than deep. It is, therefore, appropriate to a wide audience including practising scientists and technologists.

Hardback | 550 pages | 9781788012058 | 2019 | £86.99 | $122.00

ISBN 978-1-78801-205-8

Complete Science Communication

A Guide to Connecting with Scientists, Journalists and the Public

Ryan C Fortenberry University of Mississippi, USA

Written as a textbook to support advanced level undergraduate and postgraduate courses, the book brings together all aspects of science communication. Focus is on the four key areas of writing for non-technical audiences and science journalism; writing for technical audiences and peer-reviewed journals; public speaking of science; and public relations. This text will provide science students with an appreciative understanding of accepted human communication theories and practices. Potential assignments are also provided at the end of each chapter as additional resources.

Paperback | 183 pages | 9781788011105 | 2019 | £29.99 | $41.99

ISBN 978-1-78801-110-5

Conservation Science

Heritage Materials

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 | 2019 | £44.99 | $63.00

ISBN 978-1-78801-093-1

Design of Experiments for Chemists

Introductory Statistical Methods

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 | 2019 | £42.99 | $60.00

ISBN 978-1-78262-657-2

Fundamentals of Smart Materials

Mohsen Shahinpoor University of Maine, USA

A new textbook consisting of a workbook and solutions manual covering 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, thermochromic materials, chemomechanical polymers and self-healing materials.

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ISBN 978-1-78262-645-9

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How Do I Get the Best Results?

Jason Creasey GlaxoSmithKline, UK | **Anthony Gachanja** Jomo Kenyatta University of Agriculture and Technology, Kenya | **Imran Janmohamed** Anthias Consulting Ltd, UK | **Steven Lancaster** Domino Printing Sciences, UK | **Mathias Schäfer** University of Cologne, Germany | **Diane Turner** Anthias Consulting Ltd, UK

Gas chromatography–mass spectrometry (GC-MS) can be used in everything from environmental monitoring and food safety to forensic science and medicine. This textbook introduces students and scientists who are new to GCMS to all of the steps involved in using this technique as part of a research process. Throughout the book, case studies illustrate the process, the techniques used and any common challenges. Newcomers can easily search for answers to the "how do I...?" question they may have and find basic and clear advice on how to get started. The book draws on extensive experience teaching GCMS courses in the developing world as part of the Royal Society of Chemistry's Pan Africa Network supported by GSK.

Paperback | 400 pages | 9781782629283 | 2019 | £37.99 | $53.00

ISBN 978-1-78262-928-3

Genomics and Clinical Diagnostics

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

With large genome initiatives being announced around the world, this book provides a timely graduate level introduction to molecular diagnostics technologies and applications to enable readers to embrace the subject and original literature. The first of four sections delivers readily accessible introductory information on the purposes, properties and drawbacks of diagnostic tests followed by chapters on the principal molecular technologies that underpin the information in the later sections. The following two sections provide more specialised examples of currently used diagnostic technologies and insights into selected key diagnostic challenges including specific examples, automation and point of care testing. The book concludes with a section on future prospects focusing on mutation detection for personalised medicine, for example in cancer.

Hardback | 470 pages | 9781782628217 | 2019 | £90.00 | $125.00

ISBN 978-1-78262-821-7

Global Energy

An Introduction

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 | 2019 | £65.00 | $90.00

ISBN 978-1-78801-517-2

Green Analytical Chemistry

2nd Edition

Mihkel Koel Tallinn University of Technology, Estonia | **Mihkel Kaljurand** Tallinn University of Technology, Estonia

The main goal of green analytical chemistry is to avoid or reduce the undesirable environmental side effects of chemical analysis, while preserving the classic analytical parameters of accuracy, sensitivity, selectivity and precision. This book portrays the current and changing situation concerning adoption of the principles of green chemistry as applied to analysis. Aimed at graduates and novices just entering the field also managers of analytical research laboratories, teachers of analytical chemistry and green public policy makers.

Hardback | 340 pages | 9781788014861 | 2019 | £60.00 | $85.00

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A Practical Guide

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.

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ISBN 978-1-78801-088-7

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Gil Garnier Monash University, Australia | **Vikram Singh** Raghuwanshi 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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Andrew Bond University of Cambridge, UK

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Paperback | 250 pages | 9781782629665 | 2019 | £35.99 | $50.00

ISBN 978-1-78262-966-5

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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 | 2020 | £80.00 | $110.00

ISBN 978-1-78801-431-1

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

ISBN 978-1-78801-415-1

Spectroscopy and Electronic Structure of Transition Metal Complexes

Dimitrios A Pantazis Max Planck Institute for Coal Research, Germany | **Serena DeBeer** Max Planck Institute for Chemical Energy Conversion, Germany | **Frank Neese** Max Planck Institute for Coal Research, Germany

The combination of spectroscopy and theory has developed considerably in the last two decades and has become a fundamental component of modern chemical research. The book provides a comprehensive and up-to-date resource on spectroscopic methods used in transition metal chemistry and explains the relationships between experimental techniques and electronic structure. Edited and written by world experts in the field, this title will be of interest to students, as well as those working in physical chemistry, physical inorganic chemistry, (bio) inorganic chemistry and spectroscopy.

Hardback | 500 pages | 9781788014243 | 2019 | £99.99 | $140.00

Tanning Chemistry

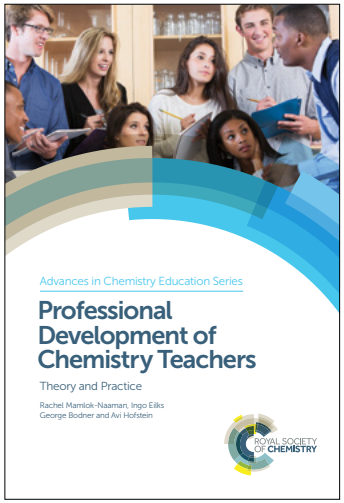
The Science of Leather

2nd Edition

Anthony D Covington The University of Northampton, UK | **William R Wise** The University of Northampton, UK

Providing excellent insight into the role of science in leather production, the first edition of this textbook was adopted for students and leather chemists. With a new co-author added, the text has been reviewed and brought up to date with regards to developments in technology and science over the last ten year. The revised text importantly reflects changes in the industry and deals with the need to increase sustainable production. Five new chapters are added, dealing with new science and technologies of reagent delivery, the polymer science of finishing (surface coatings), environmental impact and the future of processing.

Paperback | 550 pages | 9781788012041 | 2019 | £56.99 | $80.00



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Hardback | 250 pages | 9781782629641 | 2019 | £99.99 | $140.00

ISBN 978-1-78262-964-1
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Argumentation in Chemistry Education

Research, Policy and Practice

Sibel Erduran University of Oxford, UK

Many studies have highlighted the importance of discourse in scientific understanding. Argumentation is a form of scientific discourse that plays a central role in the building of explanations, models and theories. Scientists use arguments to relate the evidence that they select from their investigations and to justify the claims that they make about their observations. The implication is that argumentation is a scientific habit of mind that needs to be appropriated by students and explicitly taught through suitable instruction. Edited by Sibel Erduran, an internationally recognised expert in chemistry education, this book brings together leading researchers to draw attention to research, policy and practice around the inclusion of argumentation in chemistry education. Split into three sections: Research on Argumentation in Chemistry Education, Resources and Strategies on Argumentation in Chemistry Education, and Argumentation in Context, this book blends practical resources and strategies with research-based evidence. The book contains state of the art research and offers educators a balanced perspective on the theory and practice of argumentation in chemistry education.

Hardback | 350 pages | 9781788012126 | 2019 | £99.99 | $140.00

ISBN 978-1-78801-212-6
9 781788 012126

The Nature of the Chemical Concept

Re-constructing Chemical Knowledge in Teaching and Learning

Keith S Taber University of Cambridge, UK

Chemistry is considered to be a conceptual subject, but studies have shown that students struggle to learn many chemical concepts. This book discusses the difficulties in teaching chemical concepts that are commonly found to be challenging to learners. Ideal for researchers working in student learning or curriculum development, the book is also of interest to teachers wanting to better understand student learning.

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Five minutes with...

Name Ian Godwin

Affiliation University of Queensland, Australia

Author of *Good Enough to Eat*

Book publication date January 2019

ISBN 9781788010856

Tell us about your book

Good Enough to Eat? explores our relationship with food. It outlines the impacts genetic technologies such as GM crops and the newest gene editing techniques have had and may have on food production and sustainability. Each chapter includes interviews with those involved, including geneticists, agricultural scientists, molecular biologists, farmers, food scientists, economists, environmentalists, social scientists and others involved in the food industry.

From the early days of excitement over the first applications of GM crops, to the backlash led by environmental and consumer activists, the book highlights some of the common misconceptions about agriculture and the use of terms such as 'chemical-free' and 'organic'. As every scientist (whether a chemist or not) knows, all food is organic, and no food can possibly be chemical-free.

The book chronicles the dark days of GM crops and plant science research but espouses a confidence in the future. The data are irrefutable. GM crops have been embraced in many parts of the world because they are more productive and sustainable. The latest techniques of gene editing and synthetic biology are now being applied to the future of food production. The book concludes with an aspirational chapter, espousing scenarios in which gene edited plants and animals will be accepted as one means to a healthier, safer and more environmentally-friendly future for food and the planet.

Do you have an unusual or exciting story from your time working in plant science?

In my research group, we have been working on improving the food and feed quality of a cereal known as sorghum. Sorghum is one of the most drought and heat tolerant cereals, and over 500 million people eat it every day. We have developed sorghums with larger grain and more grain per plant (which translates into much higher yield, of course). Even more exciting, many of these sorghums also have higher protein contents, which makes them more desirable for human nutrition and as animal feeds. This has been achieved using genetic engineering and now we are developing ways to replicate these outcomes using CRISPR/Cas9.

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Five minutes with...

Name Lars Öhrström

Affiliation Chalmers University of Technology, Gothenburg, Sweden

Co-author of *The Rhubarb Connection and Other Revelations*

Book publication date December 2018

ISBN 9781788010948

Tell us about your book
It is about some of the hidden chemistry we do not often think about, how metal ions play a crucial role in vitamins, enzymes, forensic science, catalysis and how that relates to history, people, literature and other human endeavours.

What do you think will be the next big breakthrough in your subject area?
I think we will see metal-organic frameworks and new drugs with metal ions being used in important practical applications. Also very important is new photocatalysts than can help convert the plentiful energy we get from the sun into chemical fuels by transforming carbon dioxide or water.

Do you think science has become more popular in mainstream media, what do you think has influenced this?
Yes, I think so. Obviously the so-called CSI-effect, but also perhaps a younger generation of scientists who are more approachable. People like to discuss things like the chemistry and physics of Star Wars and super heroes and there are media people out there who are eager to get things right, like the Breaking Bad people.

Are there any RSC books you'd recommend?
We were happy to browse through Metal Chelation in Medicine which came out just as we began to write in earnest, and I see new titles in the subject are coming out this year, Metals in Biology and Medicine A Chemical Approach. But these are hard-core academic stuff. On the popular science side John Emsley's books are all excellent, More Molecules of Murder that came out last year looks very promising.

A History of Distillation

Ian Hornsey Nethergate Brewery, UK

Although early texts tend to be shrouded in mystery, one thing 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 | 2019 | £33.99 | $48.00

ISBN 978-1-78801-195-2

Discovering Cosmetic Science

Stephen Barton Skin Thinking Ltd., UK | **Brigitte West** Beauty by the Geeks Ltd, Newcastle University, 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 | 2019 | £19.99 | $28.00

ISBN 978-1-78262-472-1

Good Enough to Eat?

Next Generation GM Crops

Ian D Godwin The University of Queensland, Australia

How are genetically modified (GM) crops created and why? How will crops evolve in future with scientists using new gene editing tools? Ian Godwin, a professor in plant molecular genetics, explores these questions in a fun and accessible style in Good Enough to Eat. The book delves into the social, political, and philosophical arguments for and against GM crops as well as the science behind them and puts this knowledge into the context of global food security and sustainability. Godwin interviews biologists and farmers, nutritionists and activists along the way.

Paperback | 235 pages | 9781788010856 | 2019 | £24.00 | $35.00

ISBN 978-1-78801-085-6

The Chemistry of Money

Brian Rohrig

Did you know that some societies once used giant rocks for money? Why do some coins have holes in them? Will plastic soon replace paper currency? The history of money closely parallels the history of chemistry, with advances in material science leading to advances in our physical currency. From the earliest examples of money, through the rise of coins, paper, plastic and beyond, with excursions into corrosion and counterfeiting along the way, this book provides a chemist's eye view into the history of the cash in our pockets. Written in an accessible style that will appeal to the layperson and scientist alike, The Chemistry of Money will be sure to both enlighten and entertain. You will never look at money the same way again!

Paperback | 250 pages | 9781782629832 | 2019 | £19.99 | $28.00

ISBN 978-1-78262-983-2

The Horse Who Came to Dinner

The First Criminal Case of Food Fraud

Glenn Taylor

Science is at the forefront of uncovering some of the century's biggest food scams and this book details food fraud over many years giving unique insights from an enforcement point of view. Following Horse-gate, the substitution of beef with horse, the enforcement world has changed. There is now a team focussing on food fraud and a desire to put the perpetrators behind bars. This book will be timely, bringing the literature right up to date, and aimed at food professionals and lay readers studying food fraud, those with an interest in forensics and food forensics in particular and enforcement officers.

Paperback | 200 pages | 9781788011372 | 2019 | £21.99 | $31.00

The Polymer Revolution

How Polymer Scientists Made the Modern World

Peter Morris Science Museum London, UK

Through the lives of 24 polymer scientists and the fields in which they worked, this book presents an overview of the history of polymer science. It shows how polymer science transformed from the nineteenth century to today, how advances in polymer science were spurred on by developments in industry and at the same time, new polymers became possible. It also presents how certain key individuals from different countries played an important role in the history of polymer science. An important and interesting topic that is not well known or well understood by some chemists or the public, this book informs and entertains at the same time.

Paperback | 200 pages | 9781782628279 | 2019 | £23.99 | $34.00

The Rhubarb Connection and Other Revelations

The Everyday World of Metal Ions

Lars Öhrström Chalmers University of Technology, Sweden | **Jacques Covès** CNRS Universite Joseph Fourier Grenoble, France

Pink warships that vanish at dusk, urinary maladies of an emperor, and a gold test for cocaine – behold the chemistry of metal ions as never before. Expect to encounter a fair share of heroes and villains, real and fictional, scientist and layperson. Such characters include an ex-MI5 employee running a hospital ward in London amid falling German V1 rockets, a notorious racing cyclist, a proud butler and the lady who first proposed nuclear fission (it's not who you think it is). With engaging, humorous and intelligent prose, the reader will discover the fascinating back-stories of chemical discoveries and inventions where metal ions have played a major role.

Paperback | 170 pages | 9781788010948 | 2019 | £19.99 | $28.00

The Science and Commerce of Whisky

2nd Edition

Ian Buxton | **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 provide an up to date treatment of this fast developing area. Aimed at the popular market, it provides a leading text for students of distilling, industry practitioners, new craft distillers and whisky enthusiasts.

Paperback | 300 pages | 9781788015387 | 2020 | £29.99 | $42.00

Travels 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 - Travels 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

ISBN 978-1-78801-528-8

Molymod MMS-003

Organic Teacher 111 atom set

These popular molecular modelling sets can be used to make many different molecules. Designed for teachers, this set contains 111 colour-coded atoms and 140 links. The medium links can be used for single bonds, while the longer, flexible links can be used for double or triple bonds. Short links can be used to create compact models.

Using molecular models can help students to visualise concepts such as isomerism through hands-on learning. The models can also be used to learn about balancing equations and molecular geometry.

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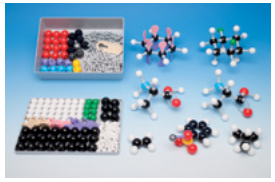
Non Book / Merchandise | 9781782624301 | 2015 | £33.95



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Molecular Set for Inorganic & Organic Chemistry, 72 atoms

These popular molecular modelling sets can be used to make many different molecules. This makes them ideal for student use and also for educators and researchers. The set contains 72 colour-coded atoms, 105 links and five lone pair electron clouds. The shorter links can be used for single bonds, while the longer, flexible links can be used for double or triple bonds. Using molecular models can help students to visualise concepts such as isomerism through hands-on learning. The models can also be used to learn about balancing equations and molecular geometry.

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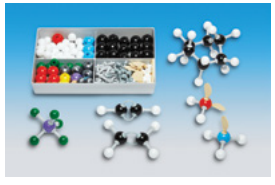


Top Trumps™

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 | 9781847559005 | 2008 | £6.00 | $9.60
Pack of six | 9781849739214 | 2008 | £60.00 | $96.00

RSC Periodic Table

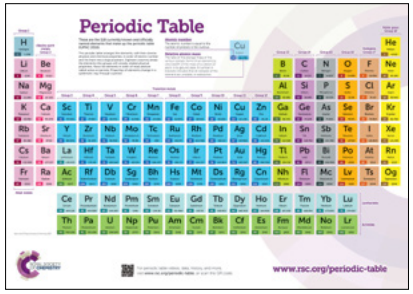
Wallchart, A0 - 2A0

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

A0 (1189 x 841 mm)



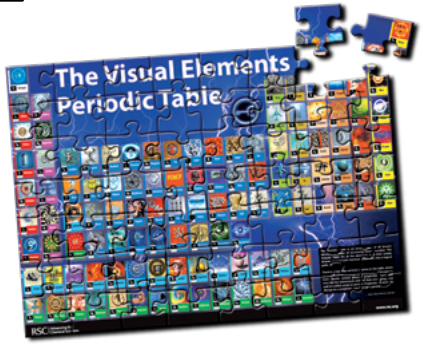
2A0 (1682 x 1189 mm)

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



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