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New in analytical science

The books in our analytical science portfolio detail the latest research advances in analytical science, highlight groundbreaking technology and provide reference information, opinions and perspective on a broad range of subjects, from carbon-based nanomaterials to the latest developments in GC-MS.

Five minutes with...

Name William S Price

Affiliation Western Sydney University, Australia

Editor-in-chief *New Developments in NMR*

Editor *Hands-on NMR*

Publication date November 2018

Tell me about yourself
I am professor of medical imaging physics at Western Sydney University. I specialise in the 'physical side' of magnetic resonance, including how to probe molecular dynamics using diffusion and relaxation measurements and also magnetic resonance imaging (MRI). These magnetic resonance techniques are applicable to an extraordinarily diverse range of applications – you can use the same techniques for studying cancer biopsies as you can for grape development.

What can readers expect from your series?
New Developments in NMR is becoming a very large series of books, written by leading magnetic resonance experts. The six series editors select renowned scientists to edit volumes in their special area of magnetic resonance. The volumes cover the latest developments in virtually every area of magnetic resonance, from hardware and fast data acquisition to contrast agent development and glycoscience. There are currently 13 volumes in the series and the number is growing rapidly. It is developing into the preeminent reference series on magnetic resonance.

In your opinion, what is the biggest unanswered question in chemistry?
It seems to me that as soon as you answer one question, another equally challenging question arises. Perhaps this is what makes chemistry so interesting. It's very satisfying to answer one question, but it is nice to know that there is always more to do. And I am sure (without bias) that magnetic resonance will be part of many of the solutions to such questions.

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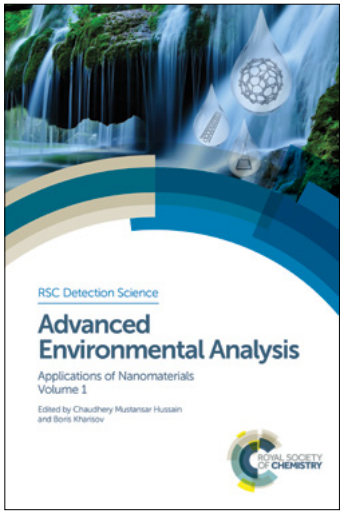

About the series

ISSN: 2052-3068

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.

Carbon-based Nanomaterials in Analytical Chemistry

Carlos D Garcia Clemson University, USA | **Agustín G Crevillén** Universidad Nacional de Educación a Distancia, Spain | **Alberto Escarpa** Universidad of Alcalá, Spain

This book serves as a reference manual which guides readers through the possibilities of carbon nanomaterials in various fields of chemical analysis. It provides current guidance to selecting the most appropriate material for targeted analytical application whilst considering the future trends in this field. Presenting the most relevant advances in employing carbon-based nanostructured materials for analytical purposes, this book fills a gap in the literature for graduate students and professional researchers across analytical chemistry in industry and academia.

Hardback | 250 pages | 9781788011020 | 2018 | £159.00 | $223.00

ISBN 978-1-78801-102-0

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 which 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 | $223.00

ISBN 978-1-78801-271-3

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Applications in Life Sciences

Dmitri B Papkovsky University College Cork, Ireland | **Ruslan I Dmitriev** University College Cork, Ireland

Providing an overview of the recent developments in oxygen sensing employing quenching of phosphorescent materials including dyes, polymers and pigments, this book will bring the literature up to date as this field has seen major progress and deployment of advanced sensor chemistry, materials and detection systems. The applications are broad and developing particularly in biomedical, food packaging and environmental areas open to commercialisation. Aimed at researchers in academia and industry interested in oxygen measurement and technologies, it delivers practical guidance for potential new users and researchers.

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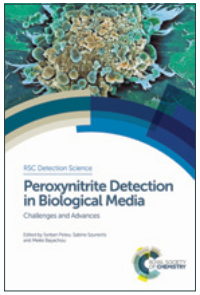

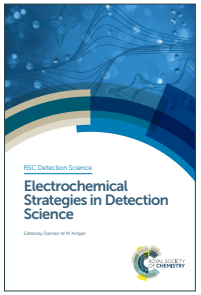

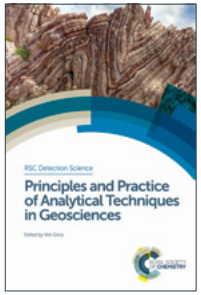

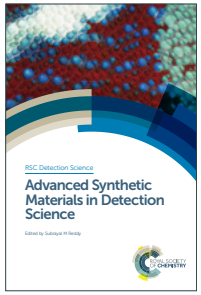

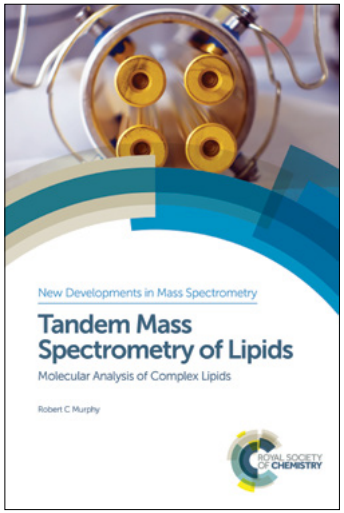

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Examining instrument and method development and new applications of mass spectrometry, this series is an important resource for graduate students, researchers and analytical chemists interested in the respective instrumentation and techniques. The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

Capillary Electrophoresis-Mass Spectrometry for Metabolomics

Rawi Ramautar Leiden University, The Netherlands

Capillary electrophoresis-mass spectrometry (CE-MS) has become a very useful analytical technique for the profiling of highly polar and charged metabolites in biological samples. In this book, the unique features of CE-MS for metabolomics studies are highlighted and a comprehensive overview of recent technological developments is given. CE-MS can be considered a relatively new technique in the field of metabolomics and it is therefore important to inform the scientific community about the possibilities of advanced CE-MS approaches for metabolomics studies. This book is suitable for to researchers working in metabolomics, bioanalytics and biomarker analysis.

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Current and Emerging Techniques

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

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Mass Spectrometric Characterisation of Lignin and Related Compounds

New Techniques

Joseph Banoub Memorial University of Newfoundland, Canada

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Hardback | 350 pages | 9781782628286 | 2017 | £169.00 | $237.00

ISBN 978-1-78262-828-6

Mass Spectrometry in Biopharmaceutical and Emerging Drug Modalities

Mark 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 | 2018 | £159.00 | $223.00

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Miniature Mass Spectrometry Systems

Zheng Ouyang Purdue University, USA | **Xiaoyu Zhou** Tsinghua University, China | **Dalton Snyder** Purdue University,USA | **Graham Cooks** Purdue University, USA

The potential for miniature mass spectrometry (MS) systems is large and the book provides an overview on aspects of the technology and instruments, as well as their applications including areas such as medical diagnostics and pharmaceutical research. Intended for readers interested in miniature MS and related technology, and analytical applications of mass spectrometry which might include developers and funders of these instruments. It can be used as supplementary reading materials for undergraduate and graduate students, and can also help professional researchers understand the history and the future development of the field.

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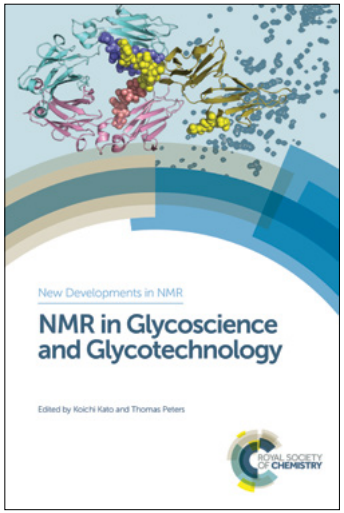

About the series

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.

Field-cycling NMR Relaxometry

Instrumentation, Model Theories and Applications

Rainer Kimmich University of Ulm, Germany

Field-cycling NMR relaxometry is evolving into a methodology of widespread interest with recent technological developments resulting in powerful and versatile commercial instruments. Many materials can be studied by this tool. This book will summarise the expertise of leading scientists in the area and the editor is well placed, after four decades of working in this field, to edit a book on this area being familiar with both the contributors' work and them personally. Newcomers to the field will find this book invaluable for successful use of the technique and excellent background reading. Researchers in academic and industrial settings interested in molecular dynamics and magnetic resonance are finding it an invaluable addition to the literature.

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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.

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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 on cell biological techniques and NMR spectroscopy, as well as applications, and future perspectives. Researchers in biochemistry, biophysics, molecular biology, cell biology, structural biology as well as NMR analysts interested in biological applications will all find this book valuable reading.

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Modern Methods in Solid-State NMR

A Practitioner's Guide

Paul Hodgkinson Durham University, UK

Solid-state NMR covers an enormous range of material types and experimental techniques. In this unique volume, a range of experts in different areas of modern solid-state NMR explain about their area of expertise, emphasising the 'practical aspects' of implementing different techniques, and illustrating what questions can and cannot be addressed. Later chapters address complex materials, showing how different NMR techniques discussed in earlier chapters can be brought together to characterise important materials types. This book is an ideal complement to existing introductory texts and is equivalent to spending time in the laboratory of an internationally leading expert, learning the hints and tips that make the difference between knowing about a technique and being ready to put it into action.

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Non-conventional NMR Detection Methods

Xin Zhou Wuhan Institute of Physics and Mathematics (WIPM), China

NMR and MRI have been applied to various disciplines, but the sensitivity of NMR is intrinsically lower comparing to other analytical or imaging methods. This has caused many non-conventional developments looking at improving NMR sensitivity, such as SQUID (Superconducting QUantum Interference Device), atomic magnetometer, MRFM (Magnetic Resonance Force Microscopy) and remote detection. The NMR detection threshold has been largely boosted by these methods, resulting in the emergence of novel applications. This book will describe the recent advances in non-conventional NMR detection methods and their applications, and also summarise the challenges facing the next generation of users. Aimed at both academia and industry, readers should buy this publication to broaden their knowledge beyond conventional NMR.

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ISBN 978-1-84973-906-1

NMR of Gels

Shingo Matsukawa Tokyo University of Marine Science and Technology, Japan | **Tom Brenner** Sophia University, Japan

NMR measurement of gels is complex due to their lack of rigidity. This book has been developed to discuss new developments in NMR measurements for gels and soft materials. Gels are encountered in a broad range of products and applications eg nappies, drug delivery systems and many foods where texture is important. NMR measurements for gels gives information on gel structure and mobility helping with the quality assessment of products. Researchers in soft materials both in academic and industrial research environments should buy this publication to broaden their knowledge.

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Optimizing NMR Methods for Structure Elucidation

Characterizing Natural Products and Other Organic Compounds

Darcy C Burns University of Toronto, Canada | **William F Reynolds** University of Toronto, Canada

This book is aimed at informing organic chemists and natural products chemists on the use of NMR for structure elucidation to enable them to ensure they yield the most reliable possible data in the minimum possible time. It covers the latest pulse sequences, acquisition and processing methods, practical areas not covered in most texts eg detailed consideration of the relative advantages and disadvantages of different pulse sequences, choosing acquisition and processing parameters to get the best possible data in the least possible time, pitfalls to avoid and how to minimize the risks of getting wrong structures. Useful in industrial, pharma or research environments, this reference book is for anyone involved with organic chemistry research and, in particular, natural products research requiring advice for getting the best results from the NMR facilities.

Hardback | 250 pages | 9781782625391 | 2018 | £159.00 | $223.00

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Paramagnetism in Experimental Biomolecular NMR

Claudio Luchinat University of Florence | **Giacomo Parigi** University of Florence, Italy | **Enrico Ravera** University of Florence, Italy

Paramagnetic NMR is a growing technique which represents an increasingly important tool for the investigation of biomolecules. This book presents an update and overview of the paramagnetic NMR effects as well as protocols for practical implementation of state-of-the-art experiments. All experiments are backed up by a solid theoretical foundation. Compiled by experts in the field, this book has international appeal for researchers as well as students interested in magnetic resonance and structural biology who require experimental support.

Hardback | 300 pages | 9781788010863 | 2018 | £159.00 | $223.00

ISBN 978-1-78801-086-3

Practical NMR for Oil and Gas Exploration

Lizhi Xiao China University of Petroleum, Beijing, China

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Nuclear Magnetic Resonance

Volume 46

Robert Law Imperial College London

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Compendium of Terminology in Analytical Chemistry

D Brynn Hibbert University of New South Wales, Australia

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

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Practical Implementation in Regulated Laboratories

Robert 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 last 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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Fatty Alcohols

Anthropogenic and Natural Occurrence in the Environment, 2nd edition

Stephen Mudge Exponent, UK | **Scott Belanger** Proctor and Gamble | **Paul DeLeo** The Soap and Detergent Association

Fatty alcohols are mainly used in the production of detergents and surfactants. They are components also of cosmetics, foods, and as industrial solvents. This expanded edition includes new information regarding synthesis together with many aspects relating to the inclusion of these compounds in the EU bio-based economy drive. Significant advances have been made since the first edition and no other book brings together all the disparate information regarding this group of chemicals that are of interest to environmental scientist (as biomarkers), to industry (as surfactants) and regulators.

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ISBN 978-1-78801-362-8

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.

Hardback | 250 pages | 9781849739252 | 2018 | £149.99 | $210.00

ISBN 978-1-84973-925-2

Raman Spectroscopy in Archaeology and Art History

Volume 2

Peter Vandenabeele University of Ghent, Belgium | **Howell Edwards** University of Bradford, UK

Ten years after the first volume, this book highlights the important contribution Raman spectroscopy makes as a non-destructive method for characterising the chemical composition of objects with archaeological and historical importance. The original book was ground-breaking in its concept, but the last ten years has seen some advancement into new areas, consolidation of some of the older ones and novel applications involving portable instrumentation, on site in museums and in the field. This new volume maintains the topic at the cutting edge with the editors having approached prominent contributors to provide case-studies. Aimed at scientists involved in conservation, conservators/curators who want to better understand their collections at a material level and researchers of cultural heritage.

Hardback | 500 pages | 9781788011389 | 2018 | £199.00 | $279.00

ISBN 978-1-78801-138-9

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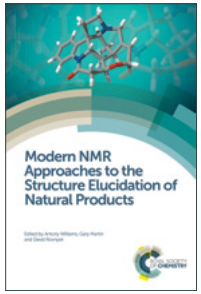

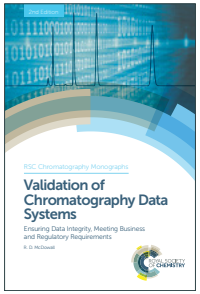

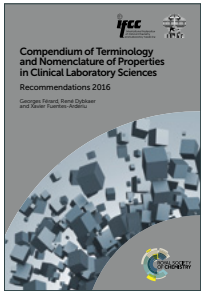

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Five minutes with...

Name David Tilley

Affiliation University of Zurich

Author of *Advances in Photoelectrochemical Water Splitting*

Publication date December 2017

ISBN 9781782629252

What are your research priorities at the moment?
Discovering new high performance materials for solar energy conversion.

What do you think the future looks like for your field?
Well predictions are hard, especially about the future, but I feel that considering the wide range of subdisciplines and interdisciplinarity within PEC water splitting, we can look forward to many more years of creative discovery within the field.

What can we expect from your book?
My hope is to provide a broad perspective on the field as it stands today, and to provide students and researchers with a chance to see how they might contribute to tackling one part of the challenge, to see what most interests them and where they could have an impact.

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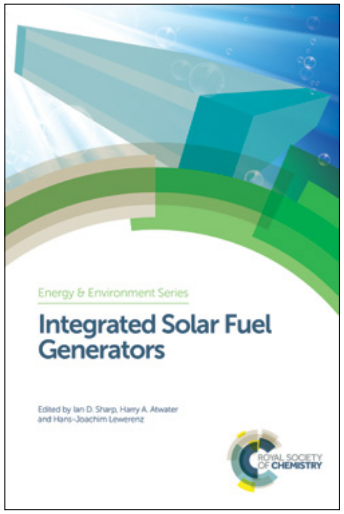


About the series

ISSN: 2044-0774

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.

Advances in Photoelectrochemical Water Splitting

Theory, Experiment and Systems Analysis

S David Tilley University of Zurich, Switzerland | **Stephan Lany** National Renewable Energy Laboratory, USA | **Roel van de Krol** Helmholtz Zentrum Berlin, Germany

With a strong focus on theory, this book is an up-to-date review of photoelectrochemical water splitting. The book discusses prediction of band alignments, the discovery of novel materials with attractive band gaps and stability; recent developments such as protective overlayers for photoanodes and in operando X-ray measurements of PEC cells; and concludes with a systems analysis of photoelectrochemical water splitting technologies. It is an important reference for researchers working in solar fuels as well as those working in theoretical chemistry.

Hardback | 250 pages | 9781782629252 | 2018 | £149.00 | $209.00

ISBN 978-1-78262-925-2

Carbon Capture and Storage

Niall Mac Dowell Imperial College London, UK

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

Hardback | 350 pages | 9781788011457 | 2018 | £159.00 | $223.00

ISBN 978-1-78801-145-7

Electrochemical Reduction of Carbon Dioxide

Overcoming the Limitations of Photosynthesis

David Fermin University of Bristol, UK | **Frank Marken** University of Bath, UK

One of the crucial challenges in the energy sector is the efficient capture and utilisation of CO2 generated from fossil fuels. This book covers the most recent developments in the field of electrochemical reduction of CO2, from first-principle mechanistic studies to technological perspectives. An introduction to basic concepts in electrochemistry and electrocatalysis is included to provide a background for newcomers to this field. This book provides a comprehensive overview for researchers and industrial chemists working in environmental science, electrochemistry and chemical engineering.

Hardback | 300 pages | 9781782620426 | 2018 | £149.00 | $209.00

ISBN 978-1-78262-042-6

Integrated Solar Fuel Generators

Ian D Sharp Lawrence Berkeley National Laboratory, USA | **Harry A Atwater** California Institute of Technology, USA | **Hans-Joachim Lewerenz** Helmholtz-Zentrum Berlin, Germany

Exploring integrated artificial photosystems, this book discusses the scientific and engineering efforts to overcome the formidable challenges involved with this solar fuels technology. It describes the critical areas of research and development towards viable integrated solar fuels systems, the current state of the art of these efforts, and outlines the future research needs that will accelerate progress towards a deployable technology. It is an important reference for researchers and industrialists in chemistry and engineering working in solar energy conversion.

Hardback | 350 pages | 9781782625551 | 2018 | £169.00 | $237.00

ISBN 978-1-78262-555-1

Lignin Valorization

Emerging Approaches

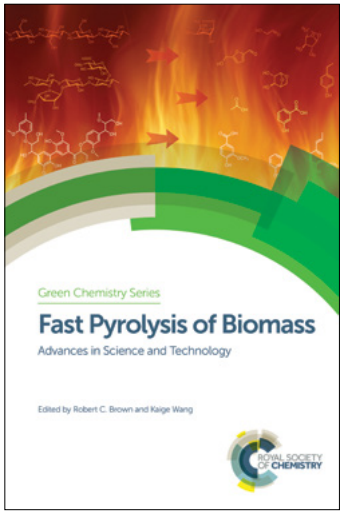
Gregg T Beckham National Renewable Energy Laboratory, USA

Lignocellulosic biomass represents a vast resource for the sustainable production of renewable fuels, chemicals, and materials. This book reviews the latest breakthroughs and challenges in upgrading lignin to fuels and chemicals. Bringing together biology, catalysis, engineering, and analytical chemistry, it presents a comprehensive picture of how lignocellulosic biorefineries could potentially employ lignin valorization technologies. It is ideal for graduate students and researchers working in lignin as well as industrialists working in biorefinery technologies.

Hardback | 500 pages | 9781782625544 | 2018 | £179.00 | $251.00

ISBN 978-1-78262-554-4

Also in the series



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ISSN: 1757-7039

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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.

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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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Continuous Flow Reactors

From an Emerging Tool to a Mainstream Technology

Charlotte Wiles Chemtrix BV, The Netherlands

From the perspective of a synthetic organic chemist, this book looks at the advantages and challenges associated with the development of continuous flow processes for both reactions and downstream processing. With rapid growth in interest within the field of continuous flow reactions, this book provides readers with a one-stop resource on new trends and techniques. Where possible, industrial examples of the technologies implementation is also given. This book is of interest to practising chemists and researchers as well as graduate students new to this field.

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CO2-switchable Materials

Solvents, Surfactants, Solutes and Solids

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

Summarising recent progress in the preparation, self-assembly, and functional applications of CO2-responsive materials, this book explores physical chemistry of CO2-switching, including constraints on structural design and process conditions, together with applications. The book emphasises 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, and polymer chemistry.

Hardback | 250 pages | 9781782628767 | 2018 | £149.00 | $209.00

ISBN 978-1-78262-876-7

Green Chemistry for Surface Coatings and Adhesives

Sustainable Technologies and Applications

Avtar Matharu University of York, UK | **Rainer Hofer** Editorial Ecosiris, Germany | **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 | 2018 | £179.00 | $223.00

ISBN 978-1-78262-994-8

Green Surface Coatings, Inks, and Adhesives

Renewable Raw Materials

Rainer Hofer 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 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-993-1

Rubber Recycling

Challenges and Developments

Jin Kuk Kim Gyeongsang National University, South Korea | **Prosenjit Saha** Indian Institute of Engineering Science and Technology, Shibpur, India | **Sabu Thomas** Mahatma Gandhi University, India | **Józef T Haponiuk** Gdansk University of Technology, Poland

This book presents an up-to-date overview of the fundamental and applied aspects of renewability and recyclability of rubber materials, emphasising existing recycling technologies with significant potential for future applications along with a detailed outline to new technology-based processing of rubber to reuse and recycle. This book will be of interest to postgraduates and researchers in academia and industry in polymer chemistry, materials processing, materials science and engineering.

Hardback | 400 pages | 9781788010849 | 2018 | £169.00 | $237.00

ISBN 978-1-78801-084-9

Supercritical and Other High-pressure Solvent Systems

For Extraction, Reaction and Material Processing

Andrew J Hunt University of York, UK | **Thomas M Attard** University of York, UK

Exploring the range and utility of high-pressure solvent systems across a variety of different chemical applications, this book brings together recent advances in supercritical technology and other pressurised-solvent systems. It provides an in-depth overview of the latest advances and developments and discusses the limitations and drawbacks that need to be addressed. Wherever possible, the greenness and economic viability of the different solvent systems is highlighted. This book is ideal for researchers and industrialists working in environmental science, green chemistry and biorefineries.

Hardback | 350 pages | 9781782628804 | 2018 | £169.00 | $237.00

ISBN 978-1-78262-880-4

Sustainable Catalysis for Biorefineries

Francesco Frusteri Institute for Advanced Energy Technologies "Nicola Giordano", Italy | **Donato Aranda** Universidade Federal do Rio de Janeiro, Brazil | **Giuseppe Bonura** Institute for Advanced Energy Technologies "Nicola Giordano", Italy

Biorefineries are becoming increasingly important in providing sustainable routes for chemical industry processes. This book explores the most effective or promising catalytic processes for the conversion of biobased components into high added value products, as platform chemicals and intermediates. With a focus on heterogeneous catalysis, this book is ideal for researchers working in catalysis and in green chemistry.

Hardback | 350 pages | 9781782629634 | 2018 | £169.00 | $237.00

ISBN 978-1-78262-963-4

Sustainable Synthesis of Pharmaceuticals

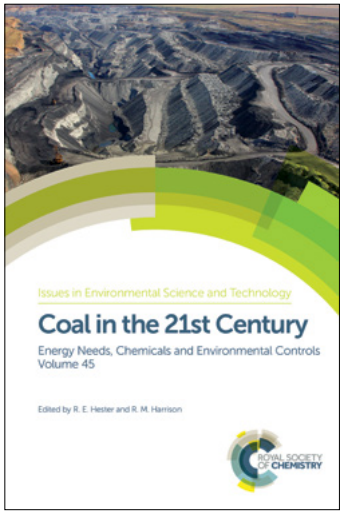
Using Transition Metal Complexes as Catalysts

Mariette M Pereira University of Coimbra, Portugal | **Mario J F Calvete** University of Coimbra, Portugal

There is a growing interest in the development of sustainable processes for the synthesis of pharmaceuticals and this book bridges the divide between industrial examples and the fundamental chemistry. It explains the basic principles of using transition metal catalysis with several green approaches for the synthesis of pharmaceuticals. Written by leading experts in the field, it provides a valuable and easy tool for scientists and industrialists who require information regarding this topic.

Hardback | 260 pages | 9781782629344 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-934-4



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ISSN: 1350-7583

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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.

Coal in the 21st Century

Energy Needs, Chemicals and Environmental Controls

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

Coal has been the fastest growing energy resource in recent years, especially in developing nations where demand for electricity is growing rapidly. This book examines the impacts that the ongoing mining and burning of coal is having on our environment. It is an important reference for students studying energy and the environment; researchers and industrialists working in energy; and policy-makers involved in the regulations surrounding energy and the environment.

Hardback | 216 pages | 9781782628606 | 2018 | £70.00 | $98.00

ISBN 978-1-78262-860-6

Plastics and the Environment

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

As the call to ban plastic microbeads from cosmetics grows, *Plastics and the Environment* casts a timely light over the societal usage and potential environmental impact of plastics. Written by leading experts, this book provides a scientifically informed overview of the key issues surrounding the topic, from discussions on marine litter, to the impact on wildlife and human exposure. Aimed at policy makers, students, environmental scientists and thinkers, it will be an important review bringing the reader right up to date.

Hardback | 200 pages | 9781788012416 | 2018 | £70.00 | $98.00

ISBN 978-1-78801-241-6

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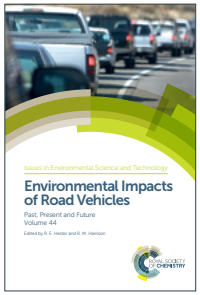

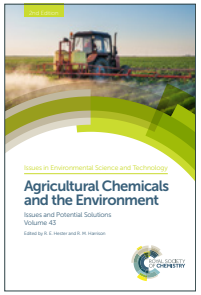

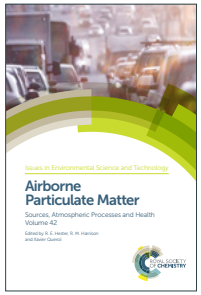

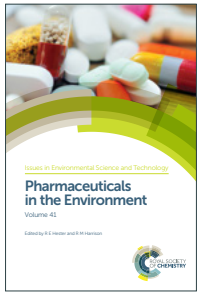

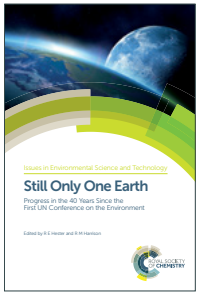

Photochemistry

Volume 46

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

Reviewing photo-induced processes that have relevance to a wide ranging number of academic and commercial disciplines and interests, this volume reflects the current interests in chemistry, physics, biology and technology. Essential reading for postgraduates, academics and industrialists working in the field of photochemistry, enabling them to keep on top of the literature.

Hardback | 350 pages | 9781788013369 | 2019 | £314.95 | $441.00

ISBN 978-1-78801-336-9

Drinking Water Treatment for Developing Countries

Physical, Chemical and Biological Pollutants

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

Taking an engineering approach, this book discusses the treatment of chemical, physical and biological pollutants in drinking water, covering both piped and household water. With a firm focus on developing countries, treatments and selection criteria are considered in the context of issues relevant to African, Asian, Latin American continents, and the Caribbean. With the use of case studies, the authors show how theory translates to real world matters, comparing and contrasting treatments, and underlining the efficiencies and drawbacks of each. This book is perfect for graduate level course use, and as a self-study guide for researchers and practitioners working in the field.

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

ISBN 978-1-78801-019-1

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 food packaging to nutrition and allergens. This year, look out for books on the principles of nutrimetabonomics, food labelling and food contact materials analysis.

Five minutes with...

Name Siân Astley

Affiliation EuroFIR AISBL

Editor *Health Claims and Food Labelling*

Book publication date June 2018

ISBN 9781788010733

Why did you become a scientist?
Several reasons. I was good at it, it was interesting and my grades were not good enough to be a vet. In fact, I am not sure I had any idea what research was about, certainly I wasn't offered any advice about it in school and I don't recall wanting to pursue a career because of any heroes. To the horror of some of my more organised colleagues, I have never planned my career; I have ended up doing what I do because I was interested and willing to take a risk, and work hard to make things work, especially if someone said it couldn't be done.

What are your research priorities at the moment?
The projects I am working on, which means consumer-generated data, exploitation of food waste, food allergy, food labelling, etc. and how these can best be used to benefit everyone.

Tell me about your book
The book came about because of new EU law on food information to consumers and the culmination of several EU-funded projects (including BACCHUS and CYMBOL) that offer insights into the putative health benefits of bioactive (non-nutrient) compounds in foods and how consumers use the information provided via packaging. However, food labelling and health claim legislation is different across the globe. The aim is to provide a practical introduction for those exploring these aspects of food labelling.

In your opinion, what is the biggest unanswered question in chemistry?
Us. Humans. We are a bunch of fairly well understood chemical reactions in a bag of water and yet we understand so little about how individuals function.

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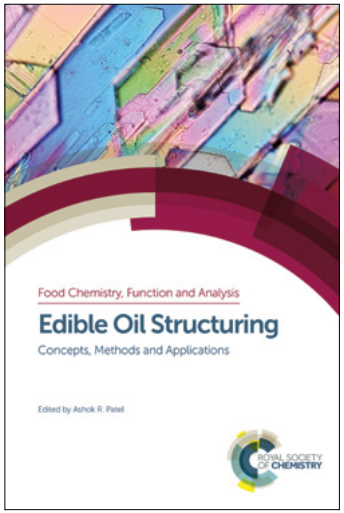

About the series

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 Cheese Chemistry

Manufacture and Ripening

J J Sheehan Teagasc Food Research Centre, Ireland

The manufacture of cheese is a global industry, with production and consumption continuing to increase. Giving a fresh perspective on cheese science, this title provides a specific focus on the chemistry of the complexities of cheese manufacture and ripening. With a multidisciplinary approach, drawing on soft matter theory and material sciences, this book is unique in the breadth of information presented. Written by recognised experts in the field, it will be a great source of information for researchers and practitioners in food science.

Hardback | 352 pages | 9781788011051 | 2019 | £169.00 | $237.00

ISBN 978-1-78801-105-1

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 last 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 specialised 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 | $251.00

ISBN 978-1-78801-215-7

Cereal Grain-based Functional Foods

Carbohydrate and Phytochemical Components

Trust Beta University of Manitoba, Canada | **Mary Ellen Camire** University of Maine, USA

The last decade has seen much new research into determining which carbohydrates and phytochemicals are present in grains, and how to make these nutritionally available. This book covers the chemical composition of cereal grains, with special emphasis on new techniques to improve their functionality. Including topics such as the composition and functionality of oligosaccharides and sugars, polysaccharide types, and the role and definition of dietary fibre, this title provides researchers, clinicians and students with a comprehensive compendium on aspects of whole grain components.

Hardback | 352 pages | 9781788011488 | 2018 | £169.00 | $237.00

ISBN 978-1-78801-148-8

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 | 2018 | £179.00 | $251.00

ISBN 978-1-78801-213-3

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 scientists and mass spectrometry practitioners alike.

Hardback | 288 pages | 9781788011242 | 2018 | £149.00 | $209.00

ISBN 978-1-78801-124-2

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 | 2018 | £149.00 | $209.00

ISBN 978-1-78801-073-3

Non-extractable Polyphenols and Carotenoids

Importance in Human Nutrition and Health

Fulgencio Saura-Calixto ICTAN-CSIC, Spain | **Jara Pérez-Jiménez** ICTAN-CSIC, Spain

Polyphenols are the most abundant antioxidants in our diet and are widespread constituents of fruits, vegetables, cereals, dry legumes, chocolate, and beverages such as tea, coffee and wine. Recent research has shown that non-extractable polyphenols are a major part of dietary polyphenols and improving our knowledge of intakes and physiological properties of these will be useful for a better understanding of the potential health effects of dietary polyphenols. Aimed at food chemists and scientists, this will be the first book to cover this important area.

Hardback | 300 pages | 9781788011068 | 2018 | £149.00 | $209.00

ISBN 978-1-78801-106-8

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.

Hardback | 250 pages | 9781782627777 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-777-7

Steviol Glycosides

Cultivation, Processing, Analysis and Applications in Food

Ursula Wölwer-Rieck Friedrich-Wilhelms-Universität Bonn, Germany

The visibility of the plant *Stevia rebaudiana* has increased in the last few years due to its sweet constituents called steviol glycosides. As they were approved all over the world as food additives in the category sweetener, they received more attention and their use in food has increased significantly. This book presents some of the new techniques for growing stevia which have resulted in varieties with interesting steviol glycoside profiles, new techniques to analyse the content of sweeteners in different matrices, the use of the sweeteners in new food formulations and last but not least totally new manufacturing methods to produce well tasting sweeteners. Unique in the breadth of information presented, this book will appeal food scientists, analytical chemists and health professionals.

Hardback | 250 pages | 9781782628309 | 2018 | £149.00 | $209.00

ISBN 978-1-78262-830-9

Professional Reference

Coffee

Chemistry, Quality and Health Implications

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 | 300 pages | 9781782620044 | 2018 | £59.99 | $84.00

ISBN 978-1-78262-004-4

New in materials science

From reference works written for chemical engineering initiatives to comprehensive volumes that provide in-depth analysis of biodegradable thermogels, this year's titles are the latest in an established line of valuable materials science resources within our books portfolio.

Five minutes with...

Name Jintao Zhang

Affiliation Shandong University, China

Author of *Chemically Derived Graphene*

Book publication date March 2018

ISBN 9781788010801

Why is your research important?
Diminishing fossil fuel reserves and climate change are increasingly driving the world towards the development of sustainable and clean energy, such as wind, tide, and solar energies. High-performance energy devices play crucial roles for making harvested energy portable. Our research is aimed at the development of advanced energy storage and conversion devices via electrode materials design and mechanism exploitation, to generate efficient solutions for maximising electrochemical performance.

What question or challenge were you setting out to address with your book?
Our research looks at enhancing the energy density, power density, and cycling stability of batteries and supercapacitors through the use of chemically derived graphene as an advanced electrode material. More generally, we wanted to look at chemically derived graphene as a two-dimensional carbon platform, to understand the charge storage and/or catalytic mechanisms from a fundamental viewpoint. The basic principles obtained can be used with other materials, diversifying the functions of currently existing materials and the design of new two-dimensional materials.

In your opinion, what is the biggest unanswered question in chemistry?
How to establish an efficient sustainable energy cycle would be one of them. In nature, plants can smoothly convert solar energy and carbon dioxide into diverse natural products and biomaterials, releasing oxygen essential for life. Carbon materials including heteroatom doped graphene have been used for the electrocatalytic reduction of carbon dioxide into organic fuels. Learning from nature, we may incorporate proper catalysts to modulate the carbon cycle for achieving an eco-friendly energy cycle.

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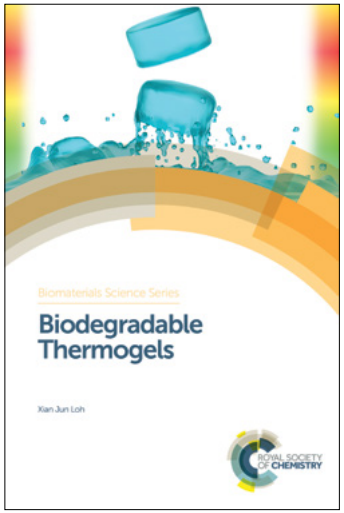

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ISSN: 2397-1401

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.

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Xian Jun Loh Institute of Materials Research & Engineering, Singapore

Biodegradable thermogels are a promising class of stimuli-responsive polymers. This book summarises recent developments in thermogel research with a focus on synthesis and self-assembly mechanisms, gel biodegradability, and applications for drug delivery, cell encapsulation and tissue engineering. A closing chapter on commercialisation shows the challenges faced bringing this new material to market. Written by a leading authority on the subject, this book offers a comprehensive overview for academics and professionals across polymer science, materials science and biomedical and chemical engineering.

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Biofabrication and 3D Tissue Modeling

Dong-Woo Cho Pohang University of Science and Technology (POSTECH), Korea

3D tissue modelling is an emerging field of investigation for disease mechanisms, as well as drug development and studying therapeutic effects. This book presents the principles, fabrication technologies, and applications from tissue engineering for regenerative medicine to in vitro tissue models to screen drugs and study diseases. With contributions from international leading scientists, providing insights on strategy, design and future perspectives, it is a comprehensive guide for academics and practitioners.

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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.

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ISBN 978-1-78801-207-2

Stimuli-responsive Drug Delivery Systems

Amit Singh AllExcel Inc., USA | **Mansoor M. Amiji** Northeastern University, USA

Providing an essential grounding to the booming area of smart materials, this book applies core materials chemistry and material design principles across a range of stimuli-responsive and triggered drug delivery systems, including pH-responsive, enzyme-responsive, and light responsive. Throughout the book attention is paid to pertinent examples, connecting theory with real-world applications. With a closing chapter on regulatory and commercial challenges to set the scene for successful clinical translation, this is a must-have guide for the field for graduates, academic researchers and practitioners.

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Tribology of Medical Devices

Zhongmin Jin Southwest Jiaotong University, China | **Jing Zheng** Southwest Jiaotong University, China | **Wei Li** Southwest Jiaotong University, China | **Zhongrong Zhou** Southwest Jiaotong University, China

Tribology deals with wear, stress, friction and lubrication of solids and fluids. These are important issues to consider when designing medical implants. This book is the first authored book to focus on tribology related to medical devices, bringing together fundamental principles, including tribocorrosion, and characterization tools applied across a broad range of devices and systems including, musculoskeletal, dental, cardiovascular, ocular and skin systems. It will appeal to graduates and researchers in the fields of materials science, biomedical engineering and mechanical engineering.

Hardback | 350 pages | 9781788011471 | 2019 | £169.00 | $237.00

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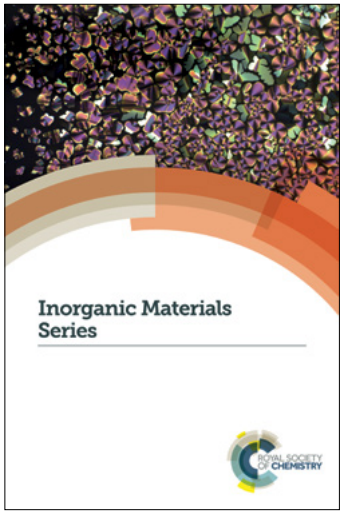

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This new series will provide authoritative coverage of topical and emerging research areas in inorganic materials chemistry and its related disciplines in physics, biology and materials science. The series will cover the three key areas of materials 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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Stephen Skinner Imperial College London, UK

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Qiang Wang Beijing Forestry University, China

The use of inorganic materials for post-combustion carbon dioxide capture materials, including carbon-based adsorbents; zeolite and silica based adsorbents; metal organic frameworks (MOFs) based adsorbents; alkali metal carbonate and ionic liquid-based adsorbents, are covered in this book. The emphasis is on the design, synthesis, characterization, performance, mechanism, and application of these different inorganic materials.

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Qiang Wang Beijing Forestry University, China

Pre-combustion carbon dioxide capture materials, including layered double hydroxides derived sorbents; magnesium oxide based sorbents; calcium oxide based sorbents; and alkali ceramics based sorbents are described in this book from an inorganic material perspective. The emphasis is on the design, synthesis, characterised, performance, mechanism, and application of these different inorganic materials.

Hardback | 350 pages | 9781788011082 | 2018 | £99.99 | $140.00

ISBN 978-1-78801-108-2
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Solar Energy Capture Materials

Elizabeth A Gibson Newcastle University, UK

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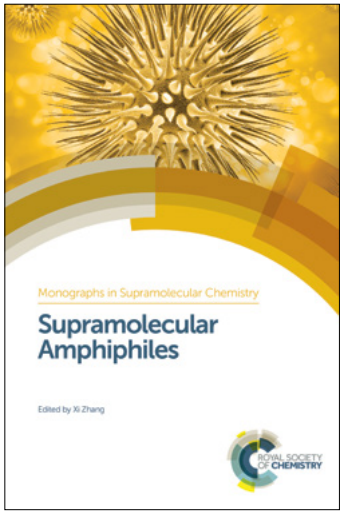

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Supramolecular chemistry concerns the structure and function of molecular assemblies formed through weak interactions. These complexes have found diverse applications in materials chemistry, nanoscience, catalysis, food sciences, and medicine, and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

Chemical Topology, Tilings and Entanglement

Charlotte Bonneau Kingston University London, UK | **Toen Castle** University of Pennsylvania, USA |
Myfanwy Evans Technische Universität Berlin, Germany | **Stephen Hyde** Australian National University, Australia

Structural entanglement in molecular graphs and nets is relevant to many chemical materials, from fullerenes to DNA complexes. This book explores the concepts of two-dimensional topology, geometry, and reticulations of surfaces of varying topology as a means to generate and describe tangled structures. Orbifolds, knot theory and chirality are discussed as modern approaches to symmetry, concepts that were pioneered by the authors of this new book. The book maintains a focus on the latest chemical applications througout.

Hardback | 300 pages | 9781782626480 | 2018 | £159.00 | $223.00

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Co-crystals

Preparation, Characterization and Applications

Christer B Aakeröy Kansas State University, USA | **Abhijeet S Sinha** Kansas State University, USA

Applications of co-crystals are varied and in the past decade this area of research has received tremendous attention from academia and industry alike. This book not only focuses on the effective design of co-crystals based on hydrogen- or halogen-bonds, but it also provides insights into practical synthesis and characterisation of co-crystals. It also highlights the more recent but increasingly important practical applications of co-crystallization in, for example, pharmaceuticals, energetic materials, and separation technology. Postgraduate students and researchers new to applied co-crystal research and crystal engineering will find this a useful resource.

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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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Metallomacrocycles

From Structures to Applications

Hai-Bo Yang East China Normal University, China

Metallomacrocycles are organic macrocycles with metal moieties that endow interesting properties and allow diverse applications, such as in sensing, drug delivery and catalysis. This book will provide the background, design and construction, higher order systems, and applications of metallomacrocycles. This will be primarily useful for postgraduate students and researchers, and particularly to those interested in coordination driven self-assembly, supramolecular chemistry and nanoscience.

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Molecular Gels

Structure and Dynamics

Richard Weiss Georgetown University, USA

Edited and authored by leading researchers, this book provides a timely update of the molecular gels field which has expanded and progressed rapidly in the last decade. Chapters examine the physical chemistry of molecular gels, including the most recent theories, experimental techniques and computational approaches. Final chapters on applications of molecular gels illustrate, with modern case studies, the principles developed in previous chapters. This will be an indispensable resource for postgraduate students and researchers in supramolecular chemistry, materials science, polymer chemistry and soft matter, chemical engineering.

Hardback | 350 pages | 9781788011112 | 2019 | £159.00 | $223.00

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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.

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Understanding Intermolecular Interactions in the Solid State

Approaches and Techniques

Deepak Chopra IISER Bhopal, India

Technological and computational advances in the last decade have meant a vast increase in knowledge about crystalline matter. This book will focus on the role of intermolecular interactions in the assembly of molecules in periodic arrangements in crystals. It highlights experimental and computational approaches to understanding weak intermolecular interactions in the solid state. This will be a useful resource for postgraduates and researchers in crystal engineering, crystallography, physical chemistry, solid-state chemistry, supramolecular chemistry and materials science.

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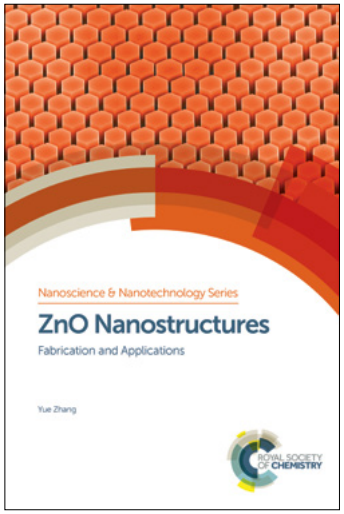

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The possible uses of nanotechnology span many fields from energy to health; as a result there is a wealth of scientific nanoscience research taking place all over the world. When there is so much information available on the topic, it can be difficult 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.

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Functionalization, Properties and Applications

Jintao Zhang Shandong University, China

There is great interest in chemically derived graphene due to its unique properties and various potential applications including energy storage. The book provides a comprehensive overview of the recent and state-of-the-art research on chemically derived graphene materials for different applications. The key researchers in the field have contributed chapters and the book will attract a broad readership from students and researchers across materials science, chemistry, nanoengineering and related fields.

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Graphene-Based Membranes for Mass Transport Applications

Hongwei Zhu Tsinghua University, China | **Pengzhan Sun** Tsinghua University, China

Graphene-based membrane materials are gaining much interest, especially for environmental applications. The book focuses on the research area of graphene membrane-based filtration and separation technologies covering the structure, composition and general properties of graphene and its derivatives as well as the selective mass transport properties of the membranes. The book provides an introduction and reference to physicists, chemists, material scientists, chemical engineers and students who are entering or already working in the field of graphene-based membrane materials.

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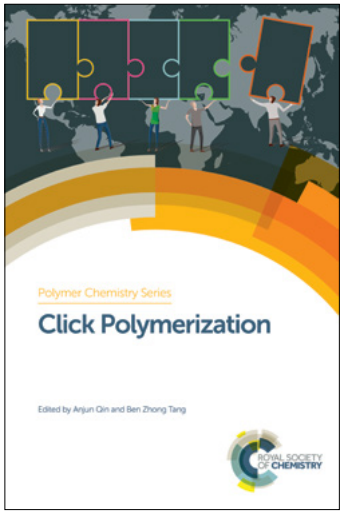

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Macromolecules Incorporating Transition Metals

Tackling Global Challenges

Alaa Abd-El-Aziz University of Prince Edward Island, Canada | **Christian Agatemor** University of Prince Edward Island, Canada | **Wai-Yeung Wong** Hong Kong Baptist University, Hong Kong

New materials are required to solve global challenges such as the growing energy demand and reducing the threat of new and re-emerging diseases and infections. Metallopolymers is an exciting and promising area of research and this book focuses on the strategy of incorporating transition metals into macromolecules to design functional materials for addressing such problems. The book appeals to those interested in polymer chemistry, organometallic chemistry and materials science as well as the applications of the materials for example optoelectronic systems, sensors, energy harvesting and biomedical research.

Hardback | 350 pages | 9781782628996 | 2018 | £169.00 | $237.00

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Molecularly Imprinted Polymers for Analytical Chemistry Applications

Wlodzimierz Kutner Polish Academy of Sciences, Poland | **Piyush Sindhu Sharma** Polish Academy of Science, Poland

There is great interest in the preparation and application of synthetic receptor-based recognition units for chemical sensors. The book summarises the latest developments and applications of molecular imprinting for selective chemical sensing. Specific chapters include: designing of molecular cavities aided by computational modelling, application of molecularly imprinted polymers (MIPs) for separation as well as sensing of pharmaceuticals and nucleotides. The book is suitable for analytical and biomedical scientists as well as polymer and materials scientists.

Hardback | 350 pages | 9781782626473 | 2018 | £179.00 | $251.00

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Photopolymerisation Initiating Systems

Jacques Lalevee Institut de Science des Matériaux de Mulhouse, France | **Jean-Pierre Fouassier** ENSCMu-UHA, France

Edited by experienced editors and leading names in the field, the book provides an update on the latest developments in the research of photoinitiating systems along with their applications. The book is suitable for postgraduate students and researchers in academia and industry interested in polymer chemistry, organic chemistry, materials science and the applications of the materials.

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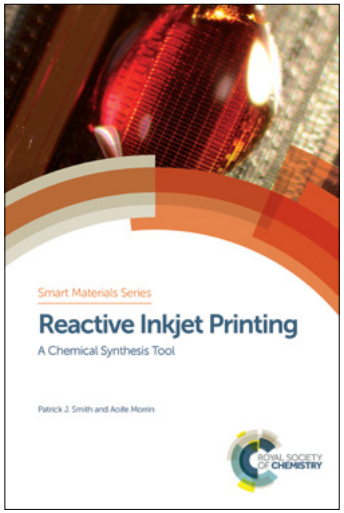

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ISSN: 2046-0066

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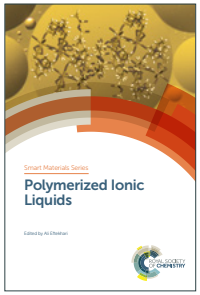

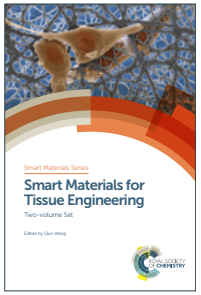

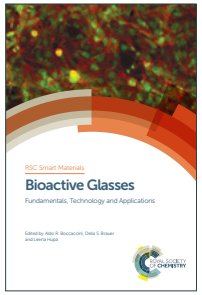

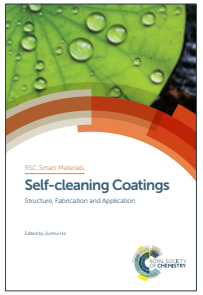

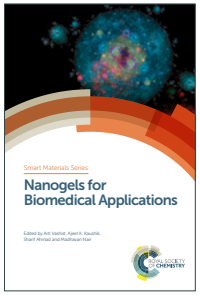

Biobased Smart Polyurethane Nanocomposites

From Synthesis to Applications

Niranjan Karak Tezpur University, India

Polyurethane nanocomposites present an attractive and sustainable way for designing smart materials that can be used in packaging, health and energy applications. The book brings together the most recent research in the field from the basic concepts through to their application in paints and surface coatings, shape memory, self-healing, self-cleaning, biomaterials and packaging materials. Written by a leading expert on polyurethane nanocomposites, the book is a great introduction to this smart material and its applications.

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Reactive Inkjet Printing

A Chemical Synthesis Tool

Patrick J Smith University of Sheffield, UK | **Aoife Morrin** Dublin City University, Ireland

Edited by two leading experts, the book describes the use of inkjet printing as a chemical synthesis tool in which an inkjet printer dispenses one or more reactants to form a product in situ. The book is suitable for advanced undergraduates, graduates and researchers in materials science, specifically those interested in tissue engineering, materials synthesis and additive manufacture.

Hardback | 250 pages | 9781782627678 | 2018 | £149.00 | $209.00

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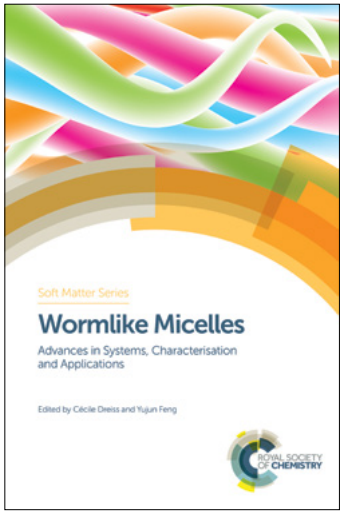

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With contributions from experts in the field, the books in this series provide an essential overview of the latest developments in soft matter research. Each title covers a specific aspect of soft matter, from the fundamental concepts of soft matter 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.

Electrospinning

Basic Research to Commercialization

Erich Kny Austrian Institute of Technology, KEMYK, Austria | **Kajal Ghosal** Dr. B. C. Roy College of Pharmacy and Allied Health Sciences, India | **Sabu Thomas** Mahatma Gandhi University, India

Electrospinning is a technique used to produce nanofibres from a polymer solution using an electrostatic force. The technology is now being used to create materials for a wide variety of uses. This new book focuses on recent developments and understanding the commercial applications of electrospinning. The book will be suitable for graduate students, academics and industrial entrepreneurs in materials science, polymer science and chemical engineering as well as those interested in the energy and health applications of the materials.

Hardback | 350 pages | 9781788011006 | 2018 | £159.00 | $223.00

Polymer Modified Liquid Crystals

Ingo Dierking University of Manchester, UK

The book will cover the whole range of polymer dispersed liquid crystals and polymer stabilized liquid crystals from materials synthesis and polymerization, through to the physical properties of the composites involving a range of different phases, theoretical aspects, all the way to the wide range of applications (both display and non-display uses eg heat repellent foils and paints). The book will appeal to graduate students and academic and industrial researchers interested in the materials research aspects as well as from the applications point of view.

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Nanoscience

Volume 5

P John Thomas Bangor University, UK | **Neerish Revaprasadu** University of Zululand, South Africa

The field of nanoscience continues to grow at an impressive rate and, with such a vast landscape of material, careful distillation of the most important discoveries will help researchers find the key information they require. nanoscience volume 5 provides a critical and comprehensive assessment of the most recent research and opinion from across the globe. Anyone practising in any nano-allied field, or wishing to enter the nano-world will benefit from this resource, presenting the current thought and applications of nanoscience.

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Organometallic Chemistry

Volume 42

Nathan Patmore University of Huddersfield, UK | **Paul Elliot** University of Huddersfield, UK

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

Hardback | 250 pages | 9781788010054 | 2019 | £314.95 | $441.00

ISBN 978-1-78801-005-4

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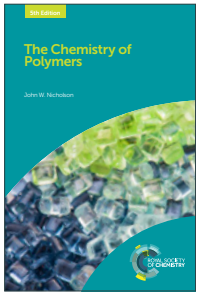

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Five minutes with...

Name Emma Raven

Affiliation University of Leicester

Co-editor of *Dioxygen-dependent Heme Enzymes* (alongside Masao Saito, Tohoku University, Japan)

Book publication date June 2018

ISBN 9781782629917

Tell me about yourself
I am Professor of Chemical Biology at the University of Leicester and I work on heme proteins and their role in biology.

What were you trying to achieve in Dioxygen-dependent Heme Enzymes?
Aerobic organisms have evolved to utilise the intrinsic oxidizing power of oxygen from the atmosphere. This so-called 'activation' of oxygen is catalysed by a metal centre (usually iron or copper) buried within a protein. Professor Masao Saito (my co-editor) and I wanted to highlight the many and varied catalytic activities of O2-dependent heme-iron enzymes.

What do you think the future looks like for your field?
I think that we are only just beginning to learn about the important role that heme and heme proteins play in biology.

How do you relax?
By voluntarily subjecting myself to intense physical pain three times a week with my running club.

What are you really excited about at the moment?
My running club is not meeting this week.

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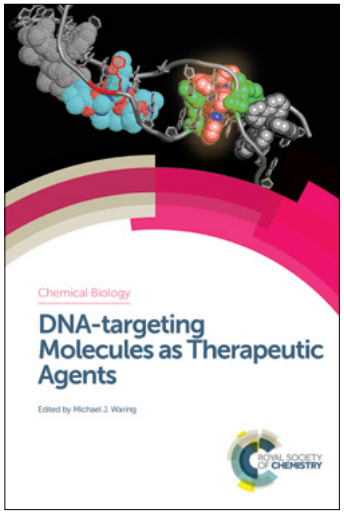

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Kira J Weissman Université de Lorraine, France |
Nick J Westwood University of St Andrews, UK

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.

Chemical and Biological Synthesis

Enabling Approaches for Understanding Biology

Nick J Westwood University of St Andrews, UK | **Adam Nelson** University of Leeds, UK

Through a series of recent case studies, this book summarises and showcases the ways in which the preparation of new chemical tools by synthesis has had a major impact in chemical biology. The book provides synthetic chemists with the broader context to which their work contributes and the biological questions that can be addressed through it. It also introduces synthetic techniques and methods to those who wish to incorporate synthesis for the first time into their biology-focused research programmes. It will be a useful guide to postgraduate students and researchers in synthetic organic chemistry and chemical biology.

Hardback | 350 pages | 9781782629481 | 2019 | £169.00 | $237.00

ISBN 978-1-78262-948-1

Cyclic Peptides

From Bioorganic Synthesis to Applications

Wilfred A van der Donk University of Illinois, USA | **Jesko Koehnke** Helmholtz Centre for Infection Research, Germany | **James Naismith** University of St Andrews, UK

Cyclic peptides are increasingly being employed as a chemical tool in biology and drug discovery.
This book provides the reader with a comprehensive overview of the synthesis and applications of these useful molecules. Following an introduction to cyclic peptides, biosynthetic and traditional chemical routes to cyclic peptides are reviewed, analysis of cyclic peptides is discussed and, finally, a number of chapters are dedicated to their applications. A timely collection of chapters by leading researchers in the field, this book will be an essential resource for students, researchers and industrialists in medicinal, bioorganic, natural product and analytical chemistry.

Hardback | 300 pages | 9781782625285 | 2018 | £159.00 | $237.00

ISBN 978-1-78262-528-5

DNA-targeting Molecules as Therapeutic Agents

Michael J Waring University of Cambridge, UK

This book explains key aspects of the remarkable progress that has been made towards understanding how drugs can bind specifically to nucleic acids, and thus underpin the endeavour to make gene targeting a reality. The binding of drugs to DNA is a fast developing area of research with important applications in medicine, particularly the treatment of cancer. This book will be a valuable resource for postgraduate students and researchers in chemical biology, biochemistry, structural biology and medicinal fields. It will also be of interest to supramolecular chemists and biophysicists.

Hardback | 300 pages | 9781782629924 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-992-4

Mechanisms of Primary Energy Transduction in Biology

Marten Wikström University of Helsinki, Finland

Written and edited by leading experts in the field, this book describes the events of primary energy transduction in life processes. It focusses in particular on recent structural results and new biophysical insights that have been made possible by recent advances in high-resolution protein structures, in physical techniques to study reactions in real time, and in computational methods to study and refine both structures and their dynamics. Biochemists, biophysicists and chemical biologists will find this book an essential resource for a complete understanding of the molecular machines of bioenergetics.

Hardback | 400 pages | 9781782628651 | 2018 | £169.00 | $237.00

ISBN 978-1-78262-865-1

Mass Spectrometry in Chemical Biology

Evolving Applications

Norberto Peporine Lopes University of Sao Paulo, Brazil | **Ricardo Roberto da Silva** University of Sao Paulo, Brazil

Mass spectrometry is one of the most widespread technologies in chemistry and has been increasingly used in biology with the rise of omics sciences. This book summarizes important mass spectrometry related methodological approaches and applications in the field of chemical biology. It provides an important compendium of theoretical and experimental techniques that can be applied to study a wide range of problems in biological systems and would therefore be of great interest to students and researchers in the fields of analytical chemistry, biochemistry and chemical biology.

Hardback | 275 pages | 9781782625278 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-527-8

Oxidative Folding of Proteins and Peptides

Basic Principles, Cellular Regulation and Engineering

Matthias Feige TU Munchen, Germany

Disulphide bonds are important post-translational modifications of proteins that can covalently link cysteine residues far apart in the primary sequence of a protein. This can convey the needed stability to protein structures, but when incorrectly formed, these bonds interfere with folding or even cause aggregation, leading to disease. This book will begin with basic principles of disulphide bond formation. It then connects these to recent cell biological developments and ultimately the engineering of biomolecules and cells. This book will be an essential reference for advanced students and researchers in chemical biology and related fields who wish to gain the latest overview of this field.

Hardback | 500 pages | 9781782629900 | 2018 | £179.00 | $251.00

ISBN 978-1-78262-990-0

Protein Crystallography

Challenges and Practical Solutions

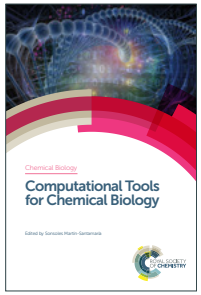
Konstantinos Beis Imperial College London, UK | **Gwyndaf Evans** Diamond Light Source, UK

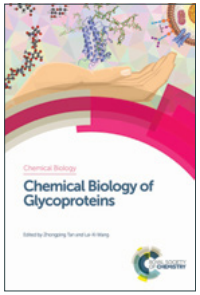
Protein crystallography has become vital to further understanding the structure and function of many complex biological systems. With contributions from leading researchers whose software are used worldwide, this book provides a coherent approach on how to handle difficult crystallographic data and assess its quality. Chapters will cover all key aspects of protein crystallography from instrumentation and data processing through to model building. This book is ideal for both academics and researchers in industry looking for a comprehensive guide to protein crystallography.

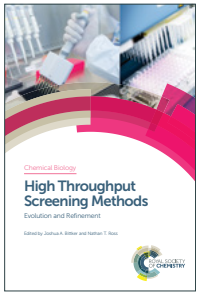
Hardback | 275 pages | 9781782627289 | 2018 | £159.00 | $223.00

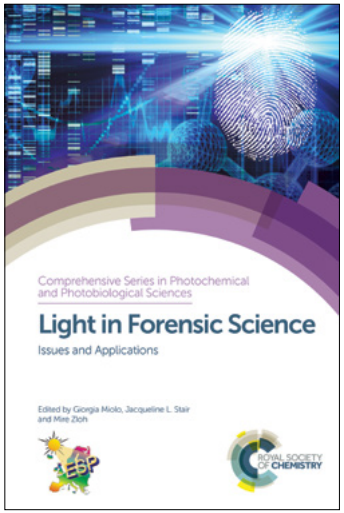
ISBN 978-1-78262-728-9

Also in the series









About the series

ISSN: 2041-9716

Series editors
Evelyne Sage, Institut Curie, France | **Lesley Rhodes,** University of Manchester, UK | **Massimo Trotta,** Istituto per i Processi Chimico Fisici-CNR, Italy

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.

Light in Forensic Science

Issues and Applications

Giorgia Miolo University of Padova, Italy | **Jacqueline L Stair** University of Hertfordshire, UK | **Mire Zloh** University of Hertfordshire, UK

The identification and quantification of material present and collected at a crime scene are critical requirements in investigative analyses. In this book, the use of light and lab technicians' tools based on light to provide proof of evidence are presented, with various examples of light-based techniques. Equally covered are the negative effects of light in the degradation of forensic evidence. Edited by active forensic scientists, this book will be of interest to students and researchers in the fields of photochemistry, photobiology, toxicology and forensic science.

Hardback | 350 pages | 9781782627685 | 2018 | £179.00 | $251.00

ISBN 978-1-78262-768-5

Optogenetics

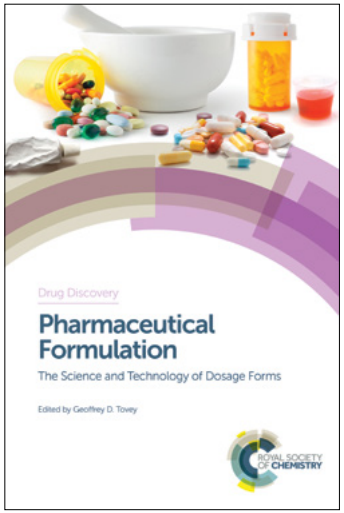
Light-driven Actuators and Light-emitting Sensors in Cell Biology

Sophie Vriz Paris Diderot University, France | **Takeaki Ozawa** The University of Tokyo, Japan

Optogenetic tools have allowed significant advances in understanding biological problems particularly in the neurosciences field so far. Biological tools as well as optical set-ups have evolved and a wide range of probes is now available. This book provides a comprehensive overview of optogenetic tools and their more recently growing application in areas of cell biology outside of the neurosciences. With detailed information on different illumination and data analysis methods, this will be a valuable manual for photobiologists, cell biologists, biophysicists and those involved in biological imaging.

Hardback | 300 pages | 9781788012379 | 2019 | £159.00 | $223.00

ISBN 978-1-78801-237-9



About the series

ISSN: 2041-3203

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

Acute Brain Impairment

Scientific Discoveries and Translational Research

Philip Peplow University of Otago, New Zealand | **Svetlana Dambinova** Kennesaw State University | **Thomas A Gennarelli** George Washington University, USA | **Bridget Martinez** University of California, Merced, USA

A rise in the number of young and old patients with stroke has led to the need for better drug development and treatment, as well as diagnosis and prevention for ischemic stroke and mild traumatic brain injury. This book provides a comprehensive overview of advancements in the development of neuroprotective drugs, chemical biomarkers for detection, imaging and preventative strategies. This book will be useful to postgraduate students and researchers in medicinal chemistry and pharmacology as well as specialists in the acute brain injury field.

Hardback | 300 pages | 9781782629504 | 2018 | £149.00 | $209.00

ISBN 978-1-78262-950-4

Cytotoxic Payloads for Antibody-Drug Conjugates

Paul J M Jackson FemtoGenix Ltd, UK | **David Thurston** King's College London, 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 a tumour by attaching it to an antibody targeted to antigens on the surface of tumour cells. 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 | $251.00

ISBN 978-1-78801-077-1

Kinase Drug Discovery

Modern Approaches

Richard A Ward AstraZenaca, UK | **Frederick Goldberg** AstraZenaca, UK

Kinase targets and drugs remain an area of significant interest across academia and in the pharmaceutical industry. There are now many marketed drugs which target kinases and a growing number of compounds are currently in various stages of clinical development. This book covers the key areas for kinase inhibition that will be important over the coming years. This will be an important reference for scientists involved in drug discovery in academia or industry, particularly in oncology research.

Hardback | 300 pages | 9781788010832 | 2018 | £159.00 | $223.00

Pharmaceutical Formulation

The Science and Technology of Dosage Forms

Geoffrey D Tovey Visiting Professor King's College London and Chief Executive Geoff Tovey Associates, UK

This book will provide the reader with the latest information on the principles and practice of pharmaceutical formulation. Covering a wide range of dosage forms intended for human administration of pharmaceuticals, this text also takes into account modern processing methods and recent changes in the regulatory and quality demands of the industry. *Pharmaceutical Formulation* will be an essential book for students and researchers working both in academia and in the pharmaceutical industry.

Hardback | 350 pages | 9781849739412 | 2018 | £169.00 | $237.00

Precision Medicine

James W A Ritchie Cancer Research 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 | $237.00

Small-molecule Transcription Factor Inhibitors in Oncology

Khondaker Miraz Rahman King's College London, UK | **David Thurston** King's College London, UK

This title highlights recent progress in the development of small-molecule inhibitors of oncogenic transcription factors. It also presents the evidence that this important protein class can be modulated in a number of ways to develop novel classes of therapeutic agents for anticancer treatments. This book is a unique reference book for postgraduates, academic researchers and practitioners working in the fields of biochemistry, biotechnology, cell and molecular biology and bio-inorganic chemistry.

Hardback | 250 pages | 9781782621454 | 2018 | £149.00 | $209.00

Theranostics and Image Guided Drug Delivery

Maya Thanou King's College London, UK

Understanding drug bio-distribution is a crucial step in developing new methods and mechanisms for targeted drug delivery. Molecular imaging of drugs and drug carriers is a valuable tool that can provide important information on their spatiotemporal distribution, allowing improved drug distribution at the target sites. This book introduces the topic of image guided drug delivery and covers the latest imaging techniques and developments in theranostics, highlighting the interdisciplinary nature of this field.

Hardback | 400 pages | 9781782624660 | 2018 | £179.00 | $251.00

ISBN 978-1-78262-466-0

Therapies for Retinal Degeneration

Targeting Common Processes

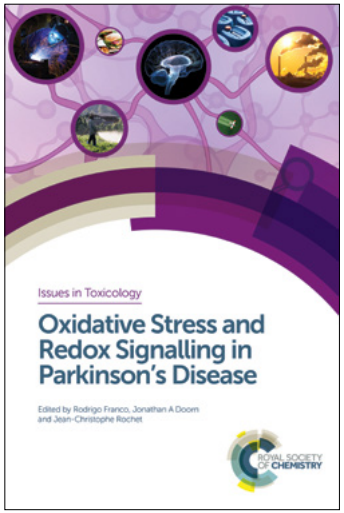
Enrique J de la Rosa Centro de Investigaciones Biológicas CSIC, Spain

Sight loss and blindness affects many worldwide and the search for adequate drugs remains a challenge and an important area of interest in the drug discovery field. This book addresses approaches to the treatment of ocular diseases, a common component of which is neurodegeneration. The book discusses common cellular processes across disease pathways and common targets for drugs that target ocular disease as well as the newest approaches, such as cell and gene therapies.

Hardback | 250 pages | 9781782629498 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-949-8

Also in the series



About the series

ISSN: 1757-7179

Editor-in-chief
Diana Anderson, University of Bradford, UK

Series editors
Tim Marrs Edentox Associates, UK | **Michael D. Waters** Consultant, Integrated Laboratory Systems (ILS) Inc., USA

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

Big Data in Predictive Toxicology

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

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

Hardback | 300 pages | 9781782622987 | 2018 | £159.00 | $223.00

ISBN 978-1-78262-298-7

Chemical Health Threats

Assessing and Alerting

Raquel Duarte-Davidson Public Health England, UK | **Tom Gaulton** Public Health England, UK | **Stacey Wyke** Public Health England, UK | **Samuel Collins** Centre for Radiation, Chemical and Environmental Hazards, Public Health England, UK

This book covers recent developments in the implementation of a European collaboration for assessing cross-border toxicological threats. It discusses the European guidelines for the risk assessment and management of serious international public health dangers. It covers REACH (Registration, Evaluation, Authorisation & Restriction of Chemicals) directives and the work of the ASHT (Alerting System for Chemical Health Threats) project. It will be useful for to public health regulators, toxicologists, poisons centres, industrialists and COSHH (Control of Substances Hazardous to Health) specialists.

Hardback | 400 pages | 9781782620716 | 2018 | £179.00 | $251.00

ISBN 978-1-78262-071-6

Drinking Water Safety and Contamination

Methods to Assess Health Risks

Margaret Whittaker ToxServices LLC, USA

This book highlights the ways in which risk assessment methods can be used to mitigate the impacts of emerging contaminants, unplanned chemical releases, and pathogens in drinking water supplies on human health. This book is useful primarily for academics and industrialists working in fields related to safety and hazards, toxicology, environmental science and sustainable industrial methods, but it is also a valuable resource for postgraduates and institutional libraries.

Hardback | 250 pages | 9781782621232 | 2018 | £149.00 | $209.00

ISBN 978-1-78262-123-2

Formaldehyde

Exposure, Toxicity and Health Effects

Luoping Zhang University of California Berkeley, USA

Formaldehyde is virtually ubiquitous in the modern environment due to its cost-effective nature, its use in resin formation, and its preservative properties. Though formaldehyde is necessary for many products and processes important to the world's economy, this economic dependence on formaldehyde comes at a cost to public health. Scientific inquiry into formaldehyde exposure has grown in response to this public health problem. This book consolidates these developments and will be a valuable source of information for postgraduates and researchers in environmental and occupational exposure as well as regulators.

Hardback | 250 pages | 9781782629733 | 2017 | £149.00 | $209.00

ISBN 978-1-78262-973-3

Regulatory Toxicology in the European Union

Tim Marrs Edentox Associates, UK | **Kevin Woodward** TSGE Consulting Limited, UK

Consumer and environmental protection depends on the careful regulation of all classes of chemicals. Toxicology is the key science used to evaluate safety and so underpins regulatory decisions on chemicals. This book is the first to cover regulatory toxicology in Europe and addresses the need for a wider understanding of the principles of regulatory toxicology and their application. It will be an essential reference to regulatory authorities, industry, and toxicologists working across the European Union and for those based in other countries trying to understand and comply with European Union regulations.

Hardback | 500 pages | 9781782620662 | 2018 | £179.00 | $251.00

ISBN 978-1-78262-066-2

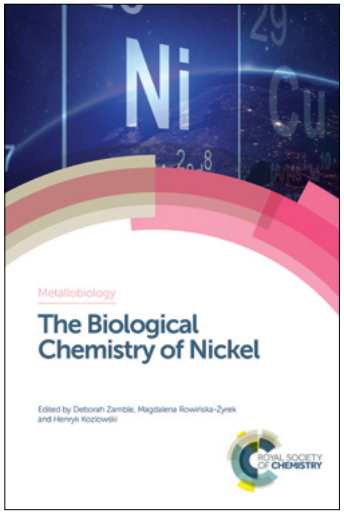
The Micronucleus Assay in Toxicology

Siegfried Knasmueller 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 | $251.00

ISBN 978-1-78801-134-1

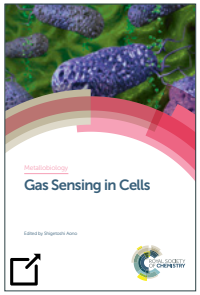


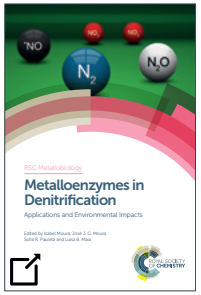
About the series

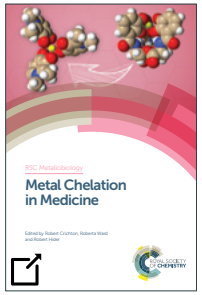
ISSN: 2045-547X

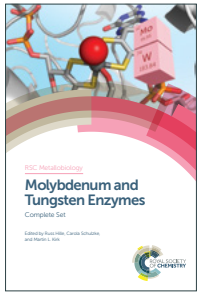
The Metallobiology Series is a collection of professional reference books covering all aspects of the roles of metals in biological systems. The scope includes metalloenzymes, metalloproteins, storage and transport of metal ions, bio-organometallic chemistry and interaction of metal ions with biomolecules. 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.

Also in the series









Dioxygen-dependent Heme Enzymes

Masao Ikeda Saito Tohoku University, Japan | **Emma Raven** University of Leicester, UK

This book covers the varied catalytic activities of dependent heme enzymes. Heme proteins are distributed widely in biological systems and are involved in a wide range of processes that are essential to the cell. Edited and authored by the leading global researchers in this area, this text will be a useful resource for postgraduate students and researchers in biochemistry and metallobiology working in or moving into research areas involving heme proteins.

Hardback | 350 pages | 9781782629917 | 2018 | £169.00 | $237.00

Gasotransmitters

Rui Wang Laurentian University of Sudbury, Canada

Building on the complementary information presented in *Gas Sensing in Cells*, this will be the first book to address the structurally independent but functionally intertwined molecular and cellular event that is gasotransmitter signalling. This book will be of interest to postgraduates and researchers in biochemistry, molecular biology and metallobiology. It will also be useful to pharmacologists and medicinal chemists investigating drugs that act by altering the production and signalling of gaseous mediators as well as toxicologists studying the toxic mechanisms of gasotransmitters in the environment.

Hardback | 400 pages | 9781782629245 | 2018 | £179.00 | $251.00

Amino Acids, Peptides and Proteins

Volume 43

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 | 9781788013673 | 2019 | £314.95 | $441.00

ISBN 978-1-78801-367-3

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 | $441.00

ISBN 978-1-78801-368-0

Organophosphorus Chemistry

Volume 47

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

Coverage in this annual review of the literature presents a comprehensive and critical survey of the vast field of study involving organophosphorus compounds, from phosphines and phosphonium salts through to phosphorus acids, mononucleotides, pentacoordinated and hexacoordinated compounds and phosphazenes. 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 | 300 pages | 9781788011679 | 2018 | £314.95 | $441.00

ISBN 978-1-78801-167-9

Synthetic Biology

Volume 3

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

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 | 2018 | £314.95 | $441.00

ISBN 978-1-78801-007-8

Preventing Chemical Weapons

Arms Control and Disarmament as the Sciences Converge

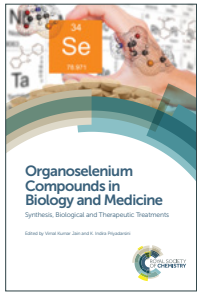
Michael Crowley University of Bradford, UK | **Malcolm Dando** University of Bradford, UK |
Lijun Shang University of Bradford, UK

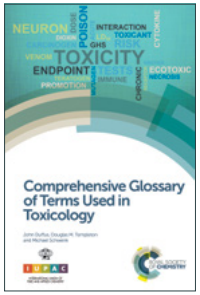
In this book, international leaders in various aspects of weapons prevention assess likely future trajectories in the chemical and life sciences alongside the risks of their application in the development of chemical or biological weapons. The current capabilities and limitations of existing international control regimes tasked with the prevention and elimination of chemical and toxin weapons are analysed. This book will be of interest to academic and research communities in the fields of pharmacology, toxicology, social science and those with an interest in the legal and ethical aspects of chemical and biological weapons prevention.

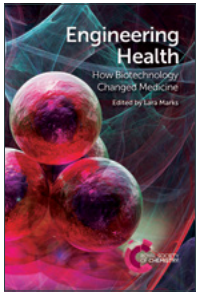
Hardback | 400 pages | 9781782626497 | 2018 | £66.99 | $94.00

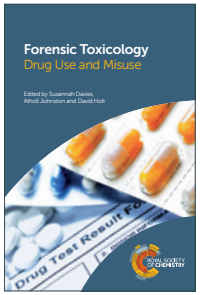
ISBN 978-1-78262-649-7

Also of interest









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 2018, look out for the latest research using catalysts in renewable energy, physical models and computational methods, astrochemistry and more.

Five minutes with...

Name Marc Vrakking

Affiliation Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy

Author of *Attosecond Molecular Dynamics*

Book publication date June 2018

ISBN 9781782629955

When did you first become interested in your field?
My interest in ultrafast dynamics, and eventually, attosecond science, was really triggered by a year that I spent in Ottawa. At the time, there was quite a unique mix of students and postdocs there, many of whom have gone on to highly successful careers, and the discussion climate was probably the best I have ever witnessed. People were talking about ideas all day, and I got a lot of inspiration there that I could capitalise on when I had the opportunity to establish my own research group.

What do you think the future looks like for attosecond science?
It looks extremely bright. Attosecond experiments are now being performed investigating electron dynamics in almost any form of matter that we can consider, including atoms, molecules and the condensed phase. Moreover, we can see that techniques originating within attosecond science are branching out in novel research directions. The clearest example of this is perhaps the increasingly widespread use of XUV/softX-ray transient absorption spectroscopy, which provides unique insights into electronic dynamics from the point-of-view of individual atoms within a sample.

In your opinion, what is the biggest unanswered question in chemistry?
For now, in attosecond science, we are – by necessity – forced to work on problems that are, from a chemistry point-of-view, relatively simple. We are still at the stage of developing our techniques and honing our skills. My hope is that the maturation of attosecond science and the various spin-offs that it has already triggered will help to contribute to the age-old question of better understanding structure-function relationships in chemistry. But we have a long way to go before we will be able to do that.

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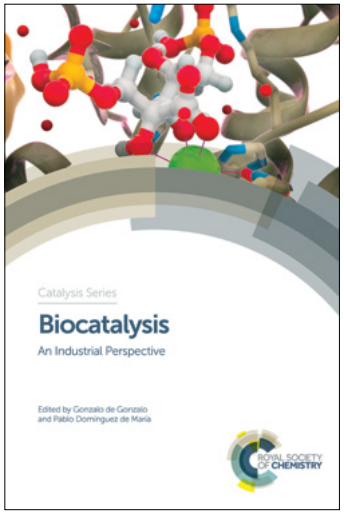

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Synthesis, Characterization and Applications

Alberto Villa Università degli Studi di Milano, Italy | **Nikolaos Dimitratos** Cardiff University, UK

Metal-free carbons have recently shown great efficiencies in several catalytic processes. Providing an overview on the preparation, characterisation and application of metal-free functionalized carbons, this book looks at carbon nanotubes, graphene, carbon nitride and covalent organic frameworks (COF). It is ideal for researchers and industrialists working in catalysis, gas sensing and carbon dioxide storage.

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Fundamentals and Industrial Applications

Luca Lietti Poltecnico di Milano, Italy | **Lidia Castoldi** Poltecnico di Milano, Italy

For the first time, this book provides a review of the current state of the technology in NOx traps. Covering both the fundamental and applied issues, the book features chapters from people within academia and industry. The book concludes with case studies demonstrating how these technologies are currently put into practice. This book is a fascinating reference for researchers and industrialists working in the treatment of exhaust fumes, as well as people in catalysis and in environmental monitoring.

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Carbides, Nitrides, Phosphides and Amorphous Boron Alloys

Justin Hargreaves University of Glasgow, UK | **Andrew McFarlane** University of Glasgow, UK |
Said Laassiri University of Glasgow, UK

Focussing on carbides, nitrides, phosphides and amorphous boron alloys, this book provides a comprehensive account of the preparation, characterisation and application catalytic materials. It is an important reference for researchers and industrialists working in heterogeneous catalysis and materials chemistry.

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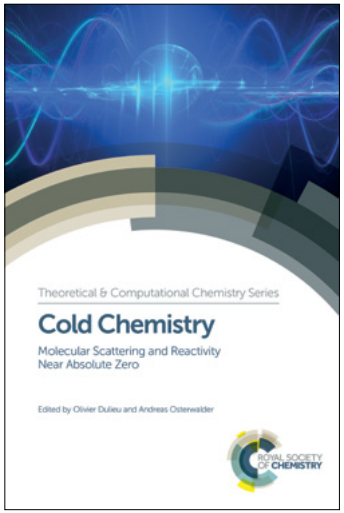

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Marc J J Vrakking Max Born Institute, Germany | **Franck Lepine** Université Lyon/ CNRS, France

Presenting an overview of theory behind attosecond science, this book explains and predicts manifestations of attosecond timescale dynamics in molecular systems. It is ideal for theoretical chemists wanting to better understand molecular dynamics at the ultrafast scale.

Hardback | 300 pages | 9781782629955 | 2018 | £149.00 | $209.00

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London Dispersion Forces in Molecules, Solids and Nano-Structures

An Introduction to Physical Models and Computational Methods

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

Providing an overview of 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 | 2017 | £179.00 | $251.00

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István Lagzi Budapest University of Technology and Economics, Hungary |
Hiroyuki Kitahata Chiba University, Japan | **Nobuhiko J Suematsu** Meiji University, Japan

The book covers the self-propelled motion of chemical objects far from their thermodynamic equilibrium at various spatial scales and its applications. The book will discuss theoretical aspects, the characteristics of the motion, and design procedures of such systems from the viewpoint of nonlinear dynamics. The book is suitable for graduate students and researchers interested in physical and theoretical chemistry as well as soft matter.

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Artem R Oganov Skolkovo Institute of Science and Technology, Russia | Gabriele Saleh Moscow Institute of Physics and Technology, Russia | Alexander G Kvashnin Skolkovo Institute of Science and Technology, Russia

Until a few years ago, new materials could only be discovered experimentally. Now the situation is dramatically different with advances in computational techniques. This is the first book to provide a systematic review of computational materials discovery, covering different methods and materials discovery for specific classes of materials including low-dimensional materials. The book is a convenient introduction for young researchers and industrial scientists to the topic of computational materials design.

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ISBN 978-1-78262-961-0

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David A Williams University College London, UK | Thomas W Hartquist University of Leeds, UK | Jonathan C Rawlings University College London, UK | C Cecchi-Pestellini Osservatorio Astronomico di Palermo, Italy | Serena Viti University College London, UK

Astrochemistry is a well-established interdisciplinary subject. Existing astrochemical books normally describe the subject in terms of chemistry in static or slowly-varying astronomical situations but the most significant astronomical regions are those in which the physical conditions change on timescales that are comparable to or shorter than chemical timescales. This is the first book specifically devoted to the astrochemistry of dynamically evolving astronomical regions. It provides a comprehensive description of this important area of science, stressing in particular the methods that have been developed for specific purposes. It will be of interest to researchers in astrochemistry, including both chemists and physicists and could form the basis of a postgraduate course for research students in chemistry and physics.

Hardback | 250 pages | 9781782627760 | 2018 | £159.00 | $223.00

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

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Federico Galvanin University College London, UK

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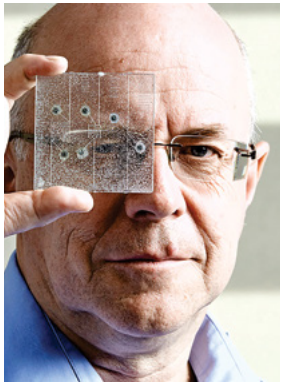

Name Andreas Manz

Affiliation University des Saarlandes, Germany

Author of *Microfluidics and Lab on a Chip*

Book publication date April 2018

ISBN 9781782628330

Tell me about yourself
I studied chemistry at ETH Zurich Switzerland, finishing with a PhD in analytical chemistry. Besides research in Japan (Hitachi), Basel (Ciba-Geigy, Novartis), London (Imperial College) and Germany (Dortmund, Freiburg and Saarbrucken), I helped to start the Royal Society of Chemistry's journal Lab on a Chip. I also helped to establish the MicroTAS conference series and am involved in a Silicon Valley start-up company (Caliper Technologies – now part of Perkin Elmer).

What are you really excited about at the moment?
The Human Document Project. This is an attempt to store information about us and our culture for one million years into the future. My interest – is storage in of a microorganism competitive? Is storage in a monocrystal better?

What question or challenge did you set out to address with your book?
Initially, it was an environmental monitoring project of a Swiss pharma industry: identify and quantify a given set of chemicals in water, which should not be in water on a manufacturing site. Conventional analytical chemistry was too slow, and sensors not available for those compounds. These days, the focus has changed to clinical diagnostics and also some aspects of drug discovery.

In your opinion, what is the biggest unanswered question in chemistry?
I would be truly intrigued if somebody came up with a convincing reason why all biochemistry uses L amino acids and D glucose, and not its mirror images.

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Matthew Linsley Newcastle University, UK

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

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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** | **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 GC-MS 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 GC-MS courses in the developing world as part of the Royal Society of Chemistry's Pan Africa Network supported by GlaxoSmithKline.

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ISBN 978-1-78262-928-3

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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.

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

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Andreas Manz Universität des Saarlandes, Germany | **Mark D Tarn** University of Leeds, UK | **Giuseppina Simone** University of Naples "Federico II", Italy | **Eric R Castro**

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

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Richard Cooper University of Oxford, UK | **Andrew Goodwin** University of Oxford, UK | **Paul Raithby** University of Bath, UK

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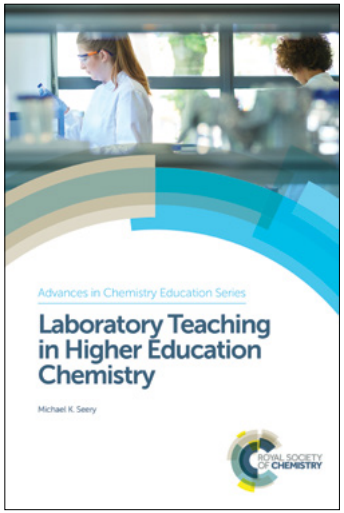
Hardback | 350 pages | 9781782624622 | 2018 | £76.99 | $108.00



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Michael K Seery University of Edinburgh, UK

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George Bodner Purdue University, USA | **Rachel Mamlok-Naaman** Weizmann Institute of Science, Israel | **Avi Hofstein** The Weizmann Institute of Science, Israel | **Ingo Eilks** University of Bremen, Germany

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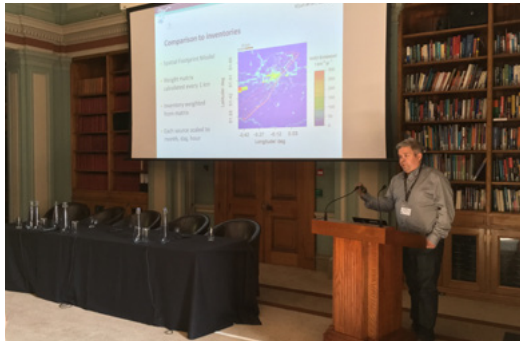

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Artificial Water Channels

Faraday Discussion

Evolving rapidly, the field of artificial water channels is expected to offer new strategies to generate highly selective, advanced materials for water purification systems. The development of synthetic biomimetic artificial water-channels and pores is key to a better understanding of the natural function of protein channels. This book will have a strong emphasis on the key challenges in the area for example in the biophysics of protein water channels, biomimetics and what we may learn from natural proteins and synthesis and design of highly selective water channels.

Hardback | 450 pages | 9781788013741 | 2019 | £170.00 | $238.00

ISBN 978-1-78801-374-1
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Designing Nanoparticle Systems for Catalysis

Faraday Discussion

Heterogeneous catalysis is a core area of contemporary physical chemistry posing major fundamental and conceptual challenges, and nanoparticles are ubiquitous in many heterogeneous catalysts. It is now opportune to focus a Faraday Discussion concerning key aspects of their synthesis characterisation and use. This Faraday Discussion will explore the modern methods being used to design, synthesise and characterise nanoparticles and how these bridge across the disciplines of physical science and chemical engineering. The core aim of this discussion is to develop a fundamental understanding of these crucial aspects of catalytic science, especially relating to nanoparticle synthesis and its use in catalytic reactions, knowledge of which is essential for the design of new catalysts.

Hardback | 450 pages | 9781788011594 | 2018 | £170.00 | $238.00

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Electrochemistry at Nano-interfaces

Faraday Discussion

The active nano-interface is important in electrochemistry because it constitutes the place where electron/ion transfer reactions occur coupled to extremely fast mass transport and under exquisite control of local conditions. Electrochemistry at nano-interfaces poses major fundamental and conceptual challenges in physical electrochemistry, while also being central to the emergence of real applications. This volume discusses the theme of understanding the electrochemistry at nano-interfaces, including electron- and ion-transfer. Topics explored include the modern methods used to design new nano-interfaces, probe the charge/energy transferring processes at the nano-interface, and promote applications including those involving single-molecule studies, single-nanoparticle electrochemistry and single-cell analysis.

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Ionic Liquids: From Fundamental Properties to Practical Applications

Faraday Discussion

Understanding of the fundamental aspects of ionic liquids has grown rapidly in recent years, with significant advances being made in their utilisation. This Faraday Discussion discusses a range of topics, such as ionicity, structure, electrochemistry, phase behaviour, and interactions with liquid and solid interfaces. The book provides a foundation for future fundamental challenges and theories which need to be developed to move the subject area forward.

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Methods and Applications of Crystal Structure Prediction

Faraday Discussion

The prediction of crystal structures from first principles has been one of the grand challenges for computational methods in chemistry and materials science. They have been used to study organic molecules such as polymorphism of pharmaceutical molecules or inorganic materials where the discovery and computational design are necessary. However, the communities addressing methods and applications in organic and inorganic crystal structure prediction have largely remained separate, due to the different approaches that have been used in these two areas. This book will encompass the cross-fertilisation of ideas and methods that result from a Faraday Discussion meeting which brought together these theoreticians and interested experimentalists. It will appeal to researchers from computational chemistry, crystallography and crystal engineering and materials science in the development of methods.

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Photoinduced Processes in Nucleic Acids and Proteins

Faraday Discussion

Light induced chemical and physical processes in small organic-/inorganic-/bio-molecules have been a subject of experimental and theoretical research for several decades. Photochemical and photophysical processes in biomolecules are intimately involved in a multitude of functional processes, that include vision, photosynthesis, molecular recognition, gene replication, etc., and can be used in areas such as photodynamic therapy. Such processes in DNA are also of interest to both the biological and materials communities as memory devices and structural building blocks. In this volume, the topics covered include light induced charge and energy transport in nucleic acids and proteins, photocrosslinking between nucleic acids and proteins, light induced damage and repair in nucleic acids and proteins and bionanophotonics.

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Surface Enhanced Raman Scattering - SERS

Faraday Discussion

Academic and industrial interest in surface-enhanced Raman scattering (SERS) has grown over the past decade. This book discusses SERS enhancement from plasmonic and possibly non-plasmonic enhancing surfaces; applications in biological studies, including immunoassays and ultrasensitive biomolecular detection; single molecule detection; tip-enhanced Raman scattering (TERS); and analytical applications. This Faraday Discussion introduces new emerging areas and explores the diverse range of approaches and disciplines contributing to the growth and understanding of this optical phenomenon.

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Five minutes with...

Name John Emsley

Occupation Science writer

Author of *More Molecules of Murder*

Book publication date June 2017

ISBN 978-1-78801-103-7

Before you became a science writer, what did your career look like?
I joined Kings College Chemistry Department in 1966 as a junior lecturer specialising in non-metal chemistry. In 1984 I was promoted to Reader in Chemistry and got a DSc degree on the basis of my years of research with several PhD students and writing more than 100 original research papers.

What inspired you to write your Molecules of Murder books?
When I wrote the *The Shocking History of Phosphorus* in 2000 I included a chapter about its misuse in domestic murders. People said that they found this to be the most interesting chapter in the book! I then suggested to my agent that I write a series of books about those elements of the periodic table which are inherently dangerous. He said I should write a single book devoted to them all and this came out in 2005 as *Elements of Murder*. But why just stick to elements? Why not extend the story to cover molecules? So I wrote *Molecules of Murder*.

What advice would you give someone wanting to become a science writer?
Don't be afraid of having a go. Write something and let your non-chemist family and friends read it before you submit it for publication, even if it's only to the student magazine. Always remember that people are more interesting than facts, so emphasise the human-interest aspect. If you want to write a book then maybe approach an agent first and see if he or she will take you on, but they will want to see evidence that you can write for the wider public. Some book publishers won't look at your manuscript unless it comes via an agent whom they will assume will have read it and liked it.

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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 | 200 pages | 9781788010856 | 2018 | £21.99 | $31.00

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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.

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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 focusing 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 | 2018 | £21.99 | $31.00

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More Molecules of Murder

John Emsley

How can a plant as beautiful as the foxglove be so deadly and yet so useful to treat heart disease? What will kill a rat may also kill a human so it is not, necessarily, surprising to find that murderers have resorted to rat poison but what happens when the rat poison doesn't work? Eight years after the highly acclaimed *Molecules of Murder*, John Emsley is again applying his winning formula to writing a book about crimes of murder and attempted murder carried out with natural and man-made poisons. Every chapter will feature one molecule and begin with an explanation of the molecule itself, followed by details of its discovery, history and use in medicine, before analysing murders which have been carried out using it. This book will not disappoint anyone interested in substances that are poisonous.

Paperback | 250 pages | 9781788011037 | 2017 | £17.99 | $25.00

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The Science of Chocolate 3rd Edition

Stephen Beckett

Now in its third edition, this bestselling book describes the complete chocolate making process from growing the beans to the sale in the shops. It has been ten years since the last edition was published and Stephen Beckett has improved and expanded the text to bring it up to date. Revisions include a new chapter 'How do they make that?' which details, for example, how air is incorporated into Aero, how chocolate shapes are filled and other distinctive products. This popular title will appeal to anyone with a fascination for chocolate including food scientists and those working in the confectionery industry.

Paperback | 270 pages | 9781788012355 | 2018 | £26.99 | $38.00

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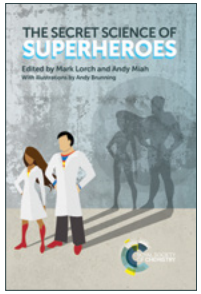

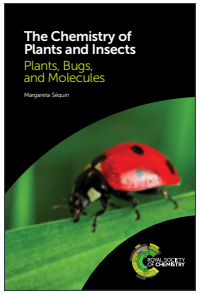

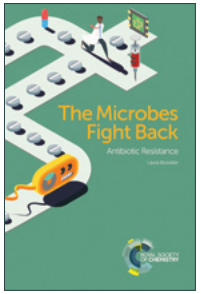

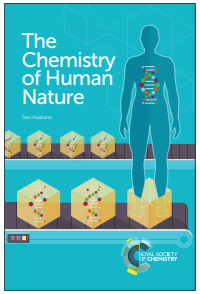

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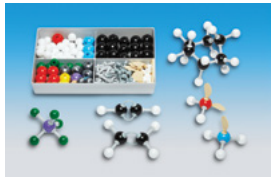

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Elements Top Trumps is an entertaining, fast-paced chemistry card game. With eye-catching imagery and fascinating facts about the elements, it's a great way to have fun and learn about the elements. Recommended for children aged 7-14, the game can 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™.

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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
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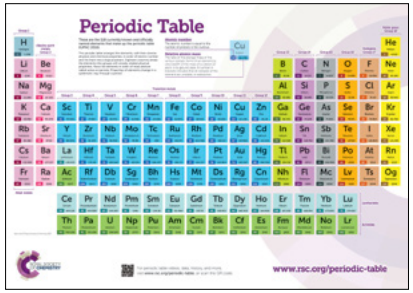

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Visual Elements Jigsaw

Murray Robertson Visual Elements, UK

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

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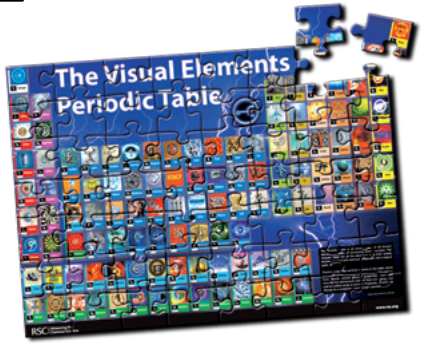

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