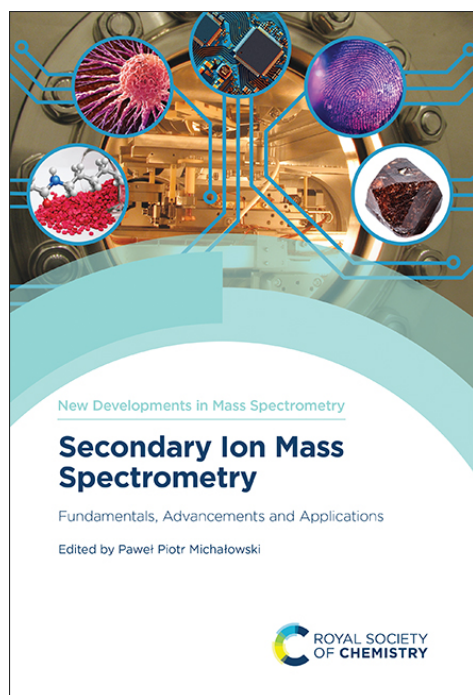


# Advance Book Information



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## Secondary Ion Mass Spectrometry Fundamentals, Advancements and Applications

**Paweł Piotr Michałowski** Institute of Microelectronics and Photonics,  
Poland

### Synopsis

Secondary ion mass spectrometry (SIMS) is a technique used to analyse the composition of solid surfaces and thin films by sputtering the surface of the specimen and collecting and analysing ejected secondary ions. This book briefly introduces the fundamentals of the SIMS technique and discusses in detail recent advancements and applications in various branches of science. From an extensive literature review, it provides a good overview of how to reproduce the most prominent experiments and what instruments are required or suited to the analysis. Appealing to graduates or postgraduates who want an overview of the field and how to use this technique, researchers new to this field will find innovative solutions and how to achieve them detailed herein.

### Brief Contents

- Introductory Chapter
- High Impact Energy
- Cluster Ion Beams and Sputtering
- High-performance Analysers in SIMS
- Hybrid System Combining SIMS and Scanning Probe Microscopy
- Hybrid System Combining SIMS and Focused Ion Beam-scanning Electron Microscopy
- Multivariate Data Analysis
- Simulations
- Electronic Materials and Devices
- Polymer Analysis by SIMS
- Bioscience
- Geochemistry and Cosmochemistry
- Forensics

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TEC021000  
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Spectrometry Volume 16

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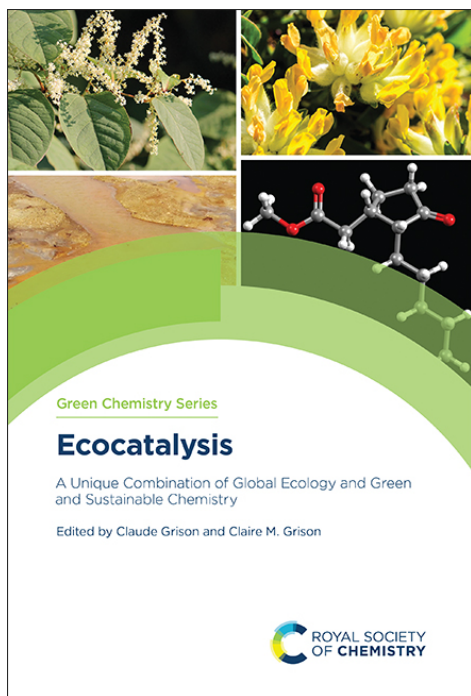
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## Ecocatalysis

### A Unique Combination of Global Ecology and Green and Sustainable Chemistry

Claude Grison CNRS, Montpellier, France

Claire M Grison

#### Synopsis

Ecocatalysis brings together chemistry and ecology to enable sound ecosystem management and restoration approaches of degraded land and aquatic ecosystems. Written by the pioneers of ecocatalysis, this book describes an innovative approach to ecological recycling that turns plant wastes of plants used in remediation and ecological restoration into catalysts useful for the synthesis of complex biomolecules. It is an interesting read for those excited by green chemistry, industrial chemistry, applied ecology and sustainable development.

**Publisher:** Royal Society of Chemistry

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**Audience:**

**Size:** 234 x 156 (Royal 8vo) mm

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**THEMA:** PNC, PNRD, RNC, RNU

**BISAC:** SCI013080, SCI013050,  
TEC010010, SCI020000

**Series:** Green Chemistry Series  
Volume 87

#### Brief Contents

- Concept of Ecocatalysis
- Ecology: Ecosystem Conservation and Restoration as the Starting Point for Ecocatalysis
- Materials Chemistry – From Plant Species to Ecocatalysts®
- Green Chemistry Revisited by Ecocatalysis
- Conclusion and Perspectives

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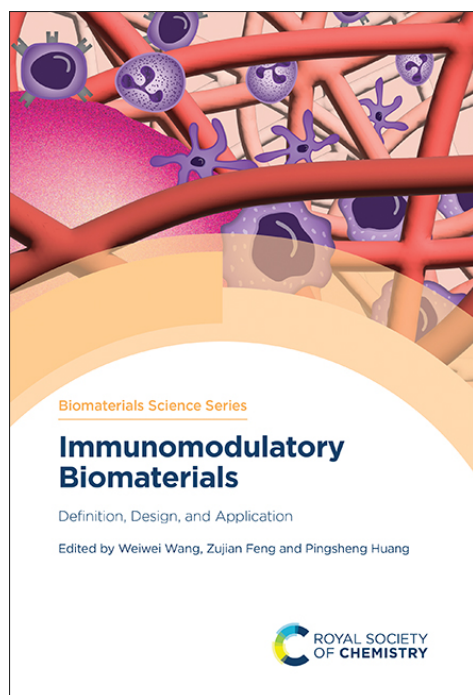
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## Immunomodulatory Biomaterials

### Definition, Design, and Application

**Weiwei Wang** Chinese Academy of Medical Sciences & Peking Union Medical College, China

**Zujian Feng** Chinese Academy of Medical Sciences & Peking Union Medical College, China

**Pingsheng Huang** Chinese Academy of Medical Sciences & Peking Union Medical College, China

### Synopsis

The ability to modulate the body's immune system can greatly assist the treatment of diseases and repair of injured tissues. Immunomodulatory biomaterials can promote adaptive immunity, without the need for drugs, cytokines or cell therapies.

The book includes an overview of the immune system, the immune response biomaterials may create, and various design strategies across a range of biomedical contexts. The book concludes with an outlook on the future of this topic and how it will translate to the clinic.

### Brief Contents

- Introduction
- Overview of the Body's Immune System
- The Immune Response Induced by Biomaterial Implantation
- The Design and Manipulation Principle of Immunomodulatory Biomaterials
- The Fundamentals of Cancer Immunity
- Biomaterials-based Vaccine for Cancer Immunotherapy
- Biomaterials-enhanced Adoptive Cell Transfer (ACT) Therapy
- Antigenic Peptide Hydrogel For Cancer Vaccination
- Gene Delivery for Cancer Immunotherapy
- Immunomodulatory Biomaterials for Treating Autoimmune Diseases
- Immunomodulatory Biomaterials for Cardiac Repair
- Bone Repair Using Immunomodulatory Biomaterials
- Healing Chronic Wounds with Immunomodulatory Biomaterials
- Immunomodulatory Biomaterials for Spinal Cord Injury
- Outlook

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**Series:** Biomaterials Science Series  
Volume 21

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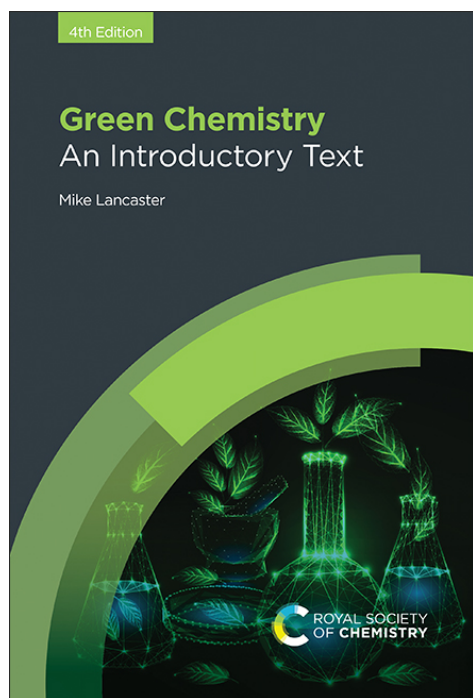
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## Green Chemistry

### An Introductory Text

**Mike Lancaster** Chemical Industries Association, UK

#### Synopsis

Updated throughout, the fourth edition of this fascinating textbook is suitable for undergraduate and postgraduate courses covering green chemistry. It still focuses on the core principles of green chemistry but has a new emphasis on how green chemistry can help solve many of the environmental problems facing society. In particular there is a new chapter on energy decarbonisation and climate change, bringing together sustainable energy solutions, possibilities for a fossil free chemical industry and showing how green chemistry can help other sectors such as transport and energy generation achieve net zero. There is also discussion of the UN Sustainability Goals and how green chemistry is helping achieve these goals. Green chemistry has moved on since the first edition of this book, whilst still covering the basics this latest edition also looks at the practical solutions provided.

#### Key Features and Highlights

- The 4th Edition of Green Chemistry still focuses on the core principles of green chemistry but has a new emphasis on how green chemistry can help solve many of the environmental problems facing society.
- There is a new chapter on energy decarbonisation and climate change, bringing together sustainable energy solutions, possibilities for a fossil free chemical industry and showing how green chemistry can help other sectors such as transport and energy generation achieve net zero.
- Includes a discussion of the UN Sustainability Goals and how green chemistry is helping achieve these goals.
- Suitable for undergraduates and post graduates as well as industrialists looking for new ways of thinking how more sustainable products and processes may be developed.

#### Brief Contents

- Principles and Concepts of Green Chemistry
- Waste: Production, Problems and Prevention
- Measuring and Controlling Environmental Performance
- Catalysis and Green Chemistry
- Organic Solvents: Environmentally Benign Solutions
- Renewable Resources
- Emerging Greener Technologies and Alternative Energy Sources
- Designing Greener Processes
- Energy, Decarbonisation and Climate Change
- 10 Industrial Case Studies
- The Future is Green: An Integrated Approach to a Greener Chemical Industry

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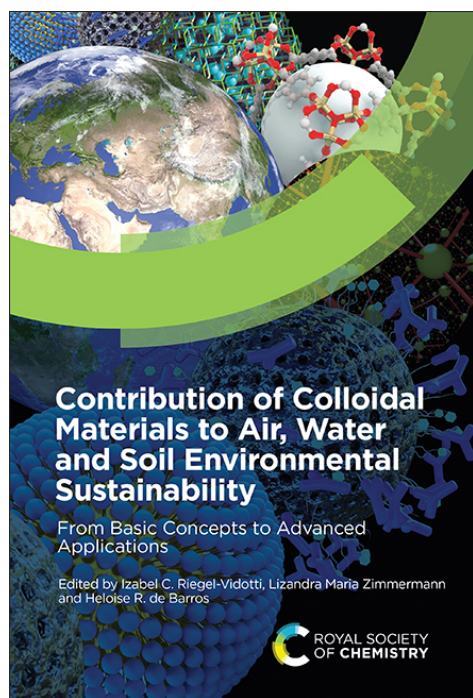
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## Contribution of Colloidal Materials to Air, Water and Soil Environmental Sustainability

### From Basic Concepts to Advanced Applications

**Izabel C Riegel-Vidotti** Federal University of Paraná (UFPR), Brazil

**Lizandra Maria Zimmermann** Fundação Universidade Regional de Blumenau, Brazil

**Heloise R de Barros** Federal University of Paraná, Brazil

### Synopsis

This book provides an integrated approach to solving and mitigating environmental problems using colloid science technologies and considers the relationship between air, water and soil. The introduction establishes the book scope and significance in the modern world including information on current applications of colloidal materials to environmental sustainability, basic concepts in colloidal science focused on the relevant physical chemistry and the main aspects related to their safe application. The following chapters are organized according to three main topics: application of colloids for air, water and soil monitoring and sustainable remediation. Contributing to the understanding of how colloidal materials can be used now and, in the future, this book will be of interest to a broad audience, from material scientists to environmental scientists.

### Brief Contents

- Introduction
- The Behaviour of Colloidal Particles at Environmental Compartments
- Development of Air Quality Sensors
- Advancing Air Sustainability: Light-induced Removal of Airborne Pollutants
- Air Purification by Means of Colloid-based Air Filters
- CO<sub>2</sub> Adsorption: Leveraging Colloidal Systems as a Strategic Approach
- Colloids and Solar Energy Interactions
- Origin and Composition of Main Water Contaminants
- Self-assembled Structures for Water Remediation
- Supramolecular Structures Containing Carbon Quantum Dots for Simultaneous Removal and Detection of Contaminants in Water
- Porous Structures for Water Remediation
- Nanocomposites for Magnetic Assisted Water Treatment Adsorption Technologies
- Colloidal Materials and Their Crucial Role in Soil Sustainability: An Integrated Approach
- Colloid-mediated Transport of Contaminants Through Soils
- Contribution of Colloids to Soil and Sustainability
- Aspects of Colloidal Technologies in Soil Nutrition
- Concluding remarks

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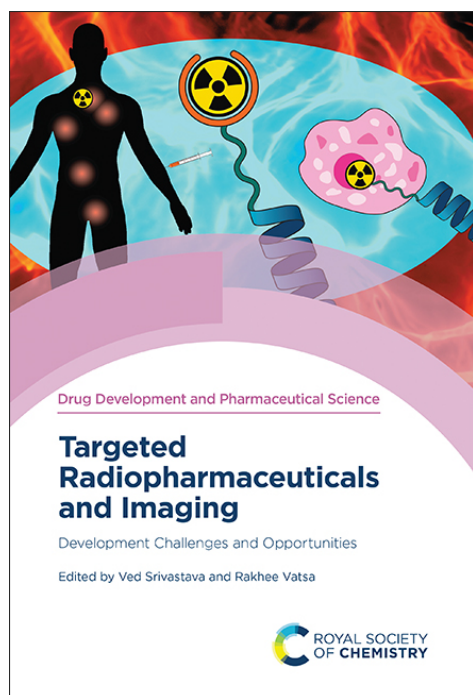
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**THEMA:** MKG, MKSH, PNB  
**BISAC:** MED071000, MED019010, MED080000  
**Series:** Drug Development and Pharmaceutical Science Volume 5

## Targeted Radiopharmaceuticals and Imaging

### Development Challenges and Opportunities

**Ved Srivastava** Global Peptide Science Institute (GPSi), USA  
**Rakhee Vatsa** Tata Memorial Centre, India

#### Synopsis

Targeted radiopharmaceutical therapy (RPT) is emerging as an innovative approach for treating a wide range of cancers. The book offers a comprehensive perspective on the different technologies and addresses the critical challenges in developing and commercializing radiopharmaceuticals. This resource is ideal for postgraduates and researchers in drug discovery and development in radionuclide therapy and imaging in cancer, as well as medical professionals engaged in nuclear medicine and radiology.

#### Brief Contents

- Targeted Radiopharmaceuticals: Clinical Development and Commercial Landscape
- Advances in Targeted Radiopharmaceuticals: Challenges and Opportunities
- Alpha-particle Emitting Radiopharmaceuticals in Targeted Therapy and Diagnostics: Challenges and Opportunities
- Chelator Design and Radiolabeling Chemistry of Radiometals
- Dosimetry Methods for Radiopharmaceuticals
- Glypican-3 (GPC3) Targeted Radiopharmaceuticals for Treatment of Liver Cancer
- Identifying New Molecular Modalities for Radiotherapy Using Macrocyclic Peptide Mimetics
- Peptides and Small Radiopharmaceuticals for Molecular Targeting
- Antibody Based Radiopharmaceuticals in Clinical Development
- PSMA Targeted Prostate Imaging and Therapy
- Radiotracers for Imaging of Breast Cancer and Targeted Radionuclide Therapy
- Neuroendocrine Tumors: Radiopharmaceuticals for Imaging and Therapy
- Radiopharmaceuticals for Imaging and Therapy in Neurology
- Thyroid Imaging and Radionuclide Therapy
- Radiopharmaceuticals for Skeletal Imaging and Therapy
- Radiopharmaceuticals in Dermatologic Imaging and Therapy
- Targeted Radiopharmaceuticals for Infection Imaging
- Manufacturing Challenges and Radiopharmaceutical Application of  $^{18}\text{F}$ -labeled Heterocycles for PET Imaging
- Quality Considerations in Radiopharmaceuticals

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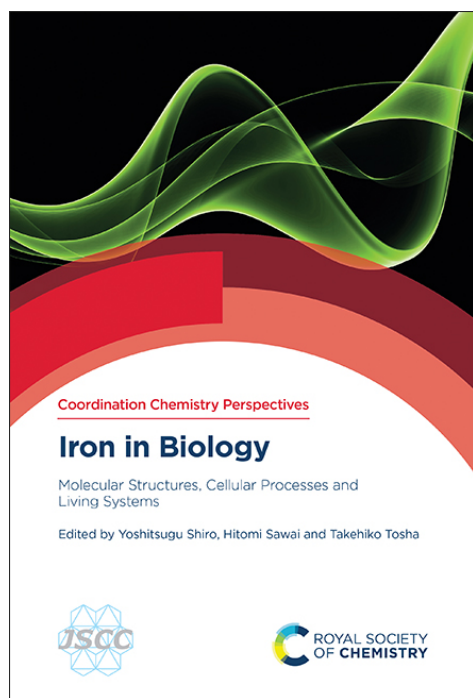
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## Iron in Biology

### Molecular Structures, Cellular Processes and Living Systems

**Yoshitsugu Shiro** University of Hyogo, Japan

**Hitomi Sawai** Nagasaki University, Japan

**Takehiko Toshi** University of Hyogo, Japan

#### Synopsis

This book focuses on iron (Fe) in cells, since it is the most abundant metal in living system and is involved in a variety of physiological events. Both excess and shortage of iron cause serious diseases such as anaemia, cancer and neuronal degeneration. The cellular systems consisting of specific proteins strictly control the iron contents through the iron dynamics in cells including absorption, sensing, storage, transport and usage. Resulting from a 5-year project on Integrated Biometal Science in Japan, this book not only documents the latest research but also fills a gap between chemical understanding and our real life.

#### Brief Contents

- Introduction to Iron Dynamics in Human Cells
- Dysregulated Iron Dynamics in Cancer
- Ferroptosis: Iron-dependent Non-apoptotic Cell Death
- Non-alcoholic Steatohepatitis: Pathophysiologic Role of Iron in Liver Fibrosis
- Iron Dynamics in Pathogens and Their Inhibition for Anti-pathogenic Drug Design
- Iron Absorption in Human Duodenum by Dcytb and DMT1
- Regulatory Systems of Iron Homeostasis in Human Cells with a Focus on IRPs
- Molecular Mechanisms of ABC Transporters Involved in Bacterial Heme Uptake and Efflux
- Proteins Associated with Haem Catabolism for Iron Utilisation and Other Functions in Mammals and Photosynthetic Organisms
- Allosteric Regulation of Heme-containing Respiratory Enzymes for Therapeutic Implications: Cytochrome
- Oxidases and Nitric Oxide Reductases
- Proteins Related to Iron Deficiency Responses and Iron Sensing in Plant Cells
- Iron-phytosiderophore and Mechanism of Its Uptake from the Soil
- Iron Complexes as Bio-inspired Catalysts for Efficient and Selective Oxidation of Organic Compounds-
- Development of Novel Catalyst of the Oxygenase Reactions Using Artificial Iron-containing Enzymes
- Recent Advances in Synthetic Models of Nitrogenase Cofactor
- Construction of Heme and Non-heme Iron Sensor Compounds, Which are Very Useful for Live-cell Imaging
- Artificial Haemoglobin
- Techniques for Characterization of Short-lived Intermediates Appearing in Catalytic Reaction of Iron-containing Proteins
- Computational Chemistry Studies on Iron-containing Proteins Toward Understanding Underlying Mechanisms
- Statistical Insight into Heme Structure and Its Diverse Utility in Proteins

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SCI007000

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Perspectives Volume 1

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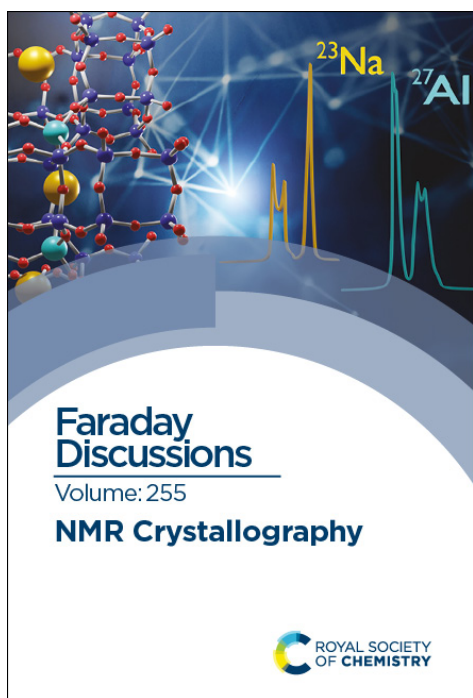
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## NMR Crystallography

### Faraday Discussion 255

#### Synopsis

A fundamental cornerstone of physical chemistry is knowledge of the structure of the chemical system in question. For the study of solid materials, nuclear magnetic resonance (NMR) spectroscopy and diffraction techniques are two of the most widely used structural probes in the physical chemistry toolkit and continue to see advances in hardware and methodology. This volume brings together physical chemistry researchers to discuss emerging computational and experimental methods in the field of NMR crystallography, as well as the current limitations and challenges that need to be overcome to broaden applications to increasingly complex materials.

#### Brief Contents

- Big Data and Simulations in NMR Crystallography
- Challenges and Opportunities for NMR Calculations
- Generating Models that Describe Complex Disorder
- Understanding Dynamics and Mechanisms

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**THEMA:** PNFR, PNT  
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## Data-driven Discovery in the Chemical Sciences

### Faraday Discussion 256

#### Synopsis

Big data, machine learning and artificial intelligence are becoming increasingly more central in the chemical sciences. Bringing together scientists from a wide range of chemical sciences to deliberate and examine the ongoing role of data-driven discovery in their fields, this volume offers valuable new insights into how data-driven discovery can advance the chemical sciences.

#### Brief Contents

- Discovering chemical structure
- Discovering structure–property correlations
- Discovering trends in big data
- Discovering synthesis targets

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**ISBN:** HB 9781837674428  
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**Pages:** 698  
**BIC:** PNR, UYM  
**THEMA:** PNRA, UP  
**BISAC:** SCI013070,  
**Series:** Faraday Discussions Volume 256

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**BISAC:** TEC021000, SCI013030

**Series:** Inorganic Materials Series  
Volume 16

## Non-oxide and Heteroanionic Materials

**Duncan Gregory** University of Glasgow, UK

### Synopsis

Much of traditional solid state chemistry invokes changes in the structures and properties of solids via addition or substitution of cations. This book considers the role and importance of pnictides, chalcogenides, carbides and halides, among others, in redefining modern solid state materials chemistry. Written in an accessible style, **Non-oxide and Heteroanionic Materials** provides a valuable resource for advanced undergraduates and postgraduates across solid state chemistry, catalysis and materials science, as well as researchers looking for an introduction to the subject.

### Brief Contents

- Contemporary Chalcogenide Materials Chemistry
- Pnictides: An Overview of Crystal Structures, Properties, and Applications
- Two-dimensional Transition Metal Carbides (Mxenes)
- Hydrides and Halides
- Heteroanionic Materials: The Structures and Applications of Mixed Anion Materials

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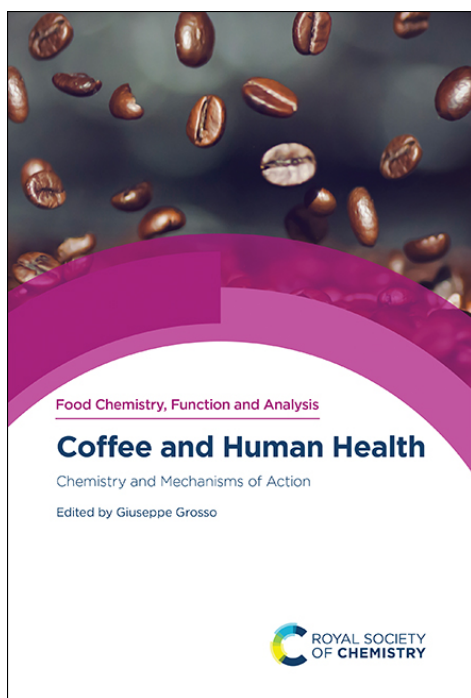
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## Coffee and Human Health

### Chemistry and Mechanisms of Action

**Giuseppe Grosso** University of Catania, Italy

#### Synopsis

This book provides an updated overview of existing evidence for the health effects of coffee consumption. Readers embark on a journey starting with the worldwide consumption of this beverage, its varieties, and main chemical characteristics, going through a detailed analysis of all its components and ending with its potential effects on human health - good and bad.

#### Brief Contents

- Introduction to Coffee History, Preparation Methods, and the Basic Chemistry of Its Bioactive Compounds
- Coffee Preparations and Roasting
- Recent Trends in Spent Coffee Grounds: Phytochemical Profiling and Valorization Opportunities
- Caffeine
- Cafestol and Kahweol
- The Main Coffee Polyphenols: Chlorogenic, Ferulic, and Caffeic Acids
- Coffee Melanoidins and Gut Health
- Coffee, the Metabolome and the Gut Microbiome
- Coffee and Oxidative Stress
- Coffee and Cardiovascular Disease
- Coffee and Metabolic Disorders
- Coffee and Liver Health
- Coffee and Neurodegenerative Diseases
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## Sensor Technologies for Food Quality and Safety

**Ashish Kapoor** SRM Institute of Science and Technology, India

**Anandhakumar Sundaramurthy** SRM Institute of Science and Technology, India

### Synopsis

The multidisciplinary field of food sensor development is evolving rapidly. Prompt detection of food contaminants is vital for public health protection. In this book, experts cover various recent developments in the field with illustrative descriptions of successful practical applications and identify existing challenges and prospects. Compiling current progress in food quality sensors, it fills a gap in the literature by laying down a framework for food sensor development from idea to implementation. With an emphasis on multidisciplinary aspects, the book appeals to students, academics, researchers and industry personnel from diverse backgrounds with an interest in food science and food quality assurance.

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