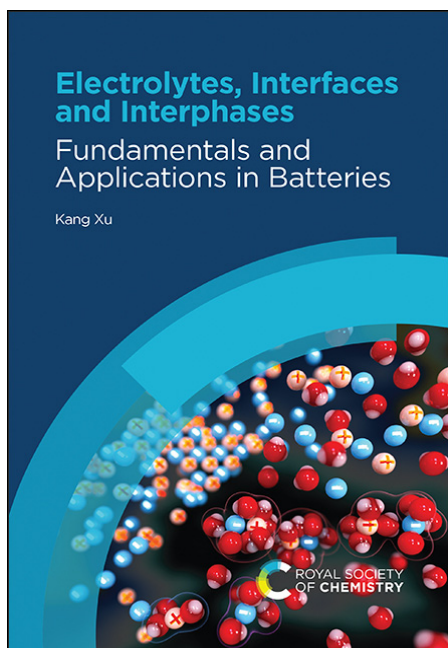


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Electrolytes, Interfaces and Interphases Fundamentals and Applications in Batteries

Kang Xu CCDC US Army Research Laboratory, USA

Synopsis

Research in electrochemical energy storage has witnessed exponential growth in recent years, with rapid development in new electrolyte systems. Authored by a leader in the field, this authoritative textbook is for those who are entering the area of electrochemical energy storage research. Chapters will first cover the fundamental knowledge before moving onto recent important findings in the field. Suitable for advanced undergraduates and postgraduate students studying electrochemical energy storage, electrochemistry, materials science and engineering, as well as researchers new to the subject.

Brief Contents

- What is Electrolyte?
- Modern Electrolytes
- In Bulk Electrolytes: Ionics
- Quantification of Ion-Ion Interaction: Debye-Hückel Theory
- Ion Transport in Electrolytes
- When Electrolyte Meets Electrodes: Interface
- Linking Ionics with Electrode
- When Electrode Operates Beyond Electrolyte Stability Limits: Interphase
- Electrochemical Devices
- Lithium-metal, Lithium-ion and Other Batteries
- Phase Diagrams of Liquid Electrolytes
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- Static Stability of Electrolytes
- Ion Transport
- Interfaces
- Interphases
- New Concepts and Tools
- Outlooks

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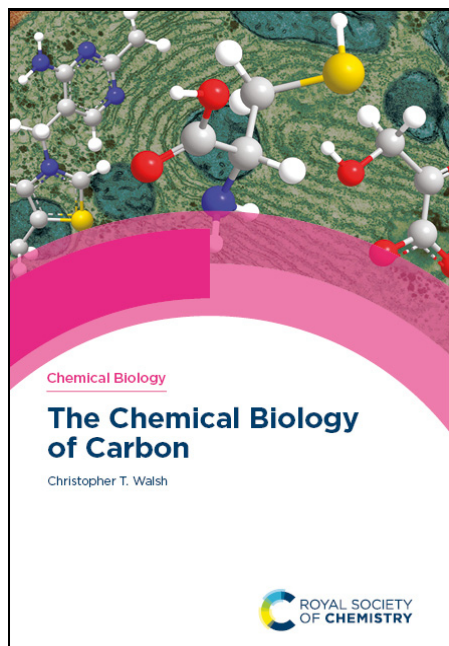
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The Chemical Biology of Carbon

Christopher T Walsh Stanford University, USA

Synopsis

Building upon the previous volumes, *The Chemical Biology of Sulfur*, *The Chemical Biology of Phosphorus*, and *The Chemical Biology of Nitrogen*, this book examines the organic chemistry of life. It explores chemical biology open to carbon-containing natural metabolites that allow both retrospective and predictive behaviours of both biosynthetic and degradative metabolism in primary and secondary pathways. This book also notes the centrality of a core set of heterocycles in metabolites and coenzyme forms of vitamins and how that chemistry enables life. The organic chemical fundamental considerations are always tied to specific metabolites and metabolic transformations. This context makes this volume not a classical organic or even bioorganic approach to organic chemistry *in vivo* but instead a unique analysis of how the rules and reactivities of organic chemistry underlie the organic chemistry of life. An ideal reference and guide for medicinal chemists, chemical biologists and organic chemists as well as postgraduate, graduate and advanced undergraduate students in these areas and related disciplines.

Brief Contents

- Introduction to Carbon Chemical Biology
- Olefin and Alkyne Functional Groups
- C–O Bond Formation and Reactivity
- Carbon–Sulfur Bonds: Adding to Functional Group Inventory
- Carbon–Nitrogen Functional Groups
- Purines and Pyrimidines: Essential Nitrogen Heterocycles
- Carbacyclic Metabolites: Alicyclic and Aromatic Rings
- Heterocycles-I
- Heterocycles in Chemical Biology-II: Vitamins
- Routes That Make and Break C–H and C–C Bonds In Vivo
- Routes to Make and Break C–C Bonds II: Carbon Electrophiles
- Carbon Radicals
- Cascades vs. Concerted Reactions
- Glucose Chemical Biology
- C–C Bonds: Squalene and the Sterol Biosynthetic Pathway
- Chemical Biology of the Nitrogen Heterocycle Porphobilinogen

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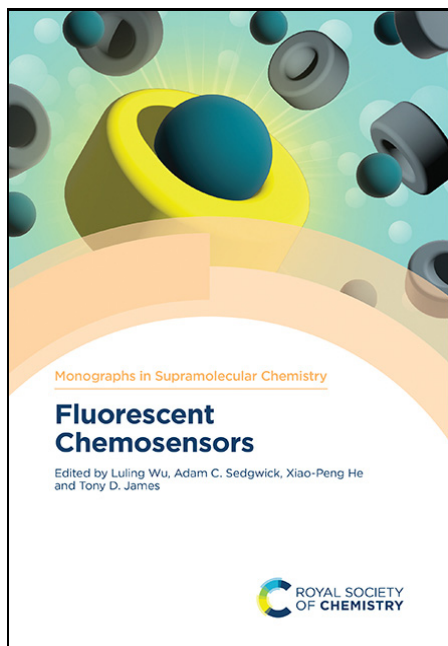
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BISAC: SC1013020

Fluorescent Chemosensors

Luling Wu University of Bath, UK

Adam C Sedgwick The University of Texas at Austin, USA

Xiao-Peng He East China University of Science and Technology, China

Tony D James University of Bath, UK

Synopsis

This book brings together world-leading experts to describe the current state of play in the field of fluorescent chemosensors design introducing cutting-edge research and considering future directions. Chapters focus on the basic principles involved in the design of chemosensors for specific analytes, problems and challenges in the field. Concentrating on advanced techniques and methods, the book is tailored to academics and researchers across a number of disciplines.

Brief Contents

- Introduction: Welcome to Fluorescent Chemosensors
- Supramolecular Chemistry, Fluorescence, and Sensing
- Activity-based Sensing: Principles and Probes for Selective Bioimaging
- AIE-based Fluorescent Systems
- Diversity Orientated Fluorescence Library Approach: Accelerating the Probe Development for Biological and Environmental Applications
- Two-photon Fluorescent Probes
- Ratiometric Fluorescent Chemosensors: Photo-physical/Chemical Mechanism Principles and Design Strategies
- Chirality Sensing with UV-visible Absorbance, Fluorescence, and Circular Dichroism Spectroscopy
- Fluorescent Carbon Nanoparticles
- Fluorescent Chemosensors for Phosphates
- Fluorescent Sensors for Reactive Oxygen Species
- Subcellular Compartment-targeting Fluorescent Zn²⁺ Probes
- Molecular Fluorescent Probes for the Detection and Imaging of Sulfane Sulfur and Reactive Selenium Species
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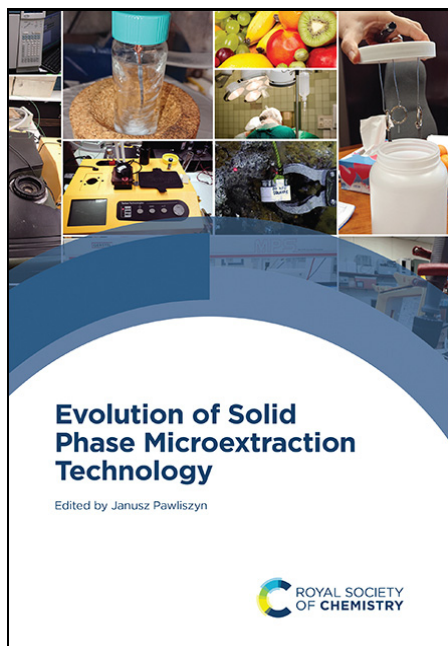
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BISAC: SC1013010

Evolution of Solid Phase Microextraction Technology

Janusz Pawliszyn University of Waterloo, Canada

Synopsis

Solid phase microextraction (SPME) is a flexible and convenient sampling/sample preparation technique that extracts different kinds of analytes, including both volatile and non-volatile, without the use of a solvent. This book will enable the reader to learn the basic principles and advantages of different SPME formats. This informative new book is suitable for analytical chemists and practitioners utilising SPME tools in their research.

Brief Contents

- SPME Fundamentals
- Determination of Binding Constants using SPME
- Vacuum-assisted Headspace SPME
- Inorganics by SPME
- New Directions in SPME Coating Developments
- Matrix-compatible SPME Coatings in Food Analysis: A Game-changer
- SPME for the Determination of Amino Acids and Peptides
- Thin Film SPME
- Direct Coupling of SPME to Mass Spectrometry
- Ambient Ionization and Microextraction: A Perfect Complement
- Practical Aspects for SPME Method Development in Complex Samples
- Stir Bar Sorptive Extraction
- Fabric Phase Sorptive Extraction
- Innovative and Automated SPME Methods in Analysis
- SPME for the Determination of Personal Care Products
- SPME in Food Analysis: Overview on the Last 10 Years
- SPME Applied to the Characterization of Beer, Hop and Related Samples
- Analysis of Veterinary Drug Residues in Animal Origin Food by SPME
- Tropical Flower Scent Study by SPME
- Applications of SPME for Bioanalysis
- Application of In-tube SPME to Stress Biomarker Analysis
- Applications of SPME in Lipidomics
- SPME and Related Techniques in Biomedical Research
- Noninvasive Sampling of Human Body Using *In Vivo* SPME
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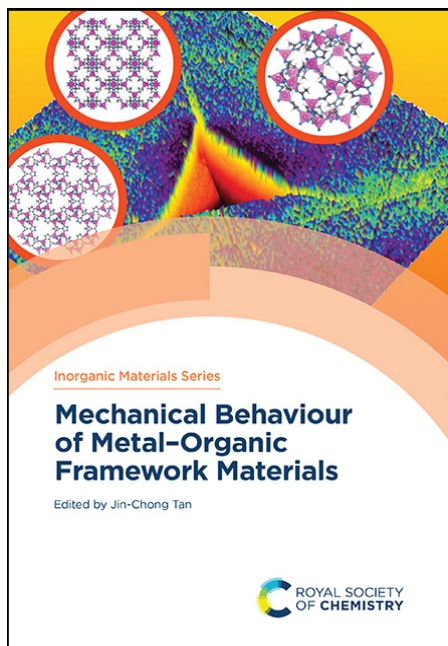
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BISAC: SCI013030, TEC021000

Mechanical Behaviour of Metal-Organic Framework Materials

Jin-Chong Tan University of Oxford, UK

Synopsis

In the first book dedicated to this rapidly expanding research area, **Mechanical Behaviour of Metal-Organic Framework Materials**, provides a convenient introduction to how chemistry determines structure-mechanical property relationships and functional performance. Readers will learn through key experimental and theoretical techniques for studying MOF mechanical properties including elastic and plastic behaviour, framework dynamics, high-pressure response, rate effects, anomalous mechanical behaviour and failure mechanisms. Edited by a pioneer of the field and with contributions by leading researchers developing the new science of “MOF mechanics”, this book is suitable for both students and researchers who are new to the field.

Brief Contents

- Fundamentals of MOF Mechanics and Structure-Mechanical Property Relationships
- Anomalous Mechanical Behaviour Arising from Framework Flexibility
- Computational Modelling of MOF Mechanics: From Elastic Behaviour to Phase Transformations
- High-pressure Mechanical Behaviour Under Hydrostatic Compression
- Mechanical Energy Absorption of Metal-Organic Frameworks

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