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# Alternative Catalytic Materials

## Carbides, Nitrides, Phosphides and Amorphous Boron Alloys

Justin S J Hargreaves University of Glasgow, UK  
Andrew R McFarlane University of Glasgow, UK  
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### Synopsis

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

### Brief Contents

- Preface; Introduction to the application of nitrides, carbides, phosphides and amorphous boron alloys in catalysis
- Preparation methods for nitride and carbide catalysts
- Metal Phosphides and their Applications in Catalysis
- Metal carbide catalysts
- Metal nitride catalysts
- Amorphous Boron Alloys and their catalytic behaviour
- Alternative materials for chemical looping applications
- Applications of transition metal nitrides as electrocatalysts
- Electrocatalysis with metal phosphides

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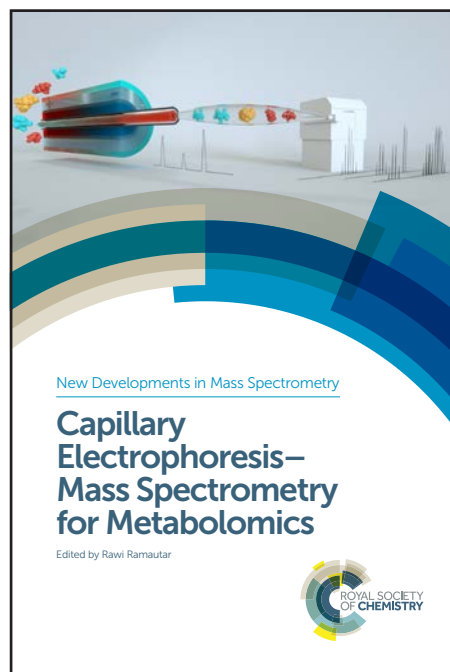
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# Capillary Electrophoresis–Mass Spectrometry for Metabolomics

Rawi Ramautar Leiden University, The Netherlands

## Synopsis

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 researchers working in metabolomics, bioanalytics and biomarker analysis.

## Brief Contents

- The Role of CE-MS in Metabolomics – An Introduction
- CE-MS Workflows for Metabolomics
- Metabolic Profiling of Biological Samples by CE-MS Using Coated Capillaries
- Utility of Novel CE-MS Interfacing Techniques for Metabolomics
- Utility of Stacking Techniques for CE(-MS)-Based Metabolomics Studies
- Potential of SPE-CE-MS for Metabolomics
- CE-MS for Anionic and Cationic Metabolic Profiling: System Optimization and Applications
- CE-MS for Chiral Metabolomics
- CE-MS for Single-Cell Metabolomics

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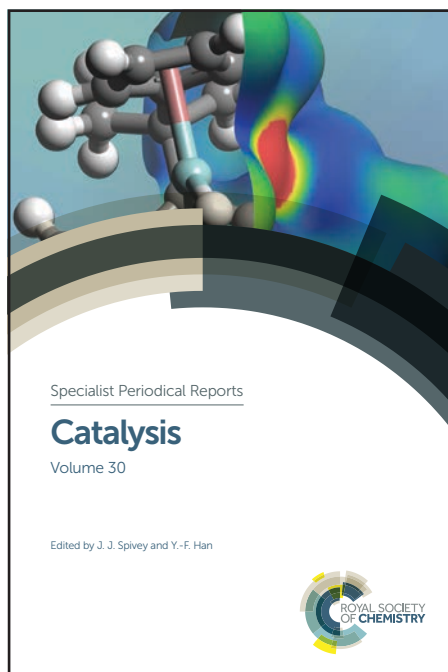
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# Catalysis

## Volume 30

**James Spivey** Louisiana State University, USA  
**Yi-Fan Han** East China University of Science and Technology, China

### Synopsis

Catalysts are required for a variety of applications and industrialists and academics are increasingly challenged to find cost effective and environmentally benign catalysts to use. This volume looks at modern approaches to catalysis and reviews the extensive literature on areas such as catalysts derived from waste materials, determining the pore structure of activated carbon by nitrogen gas adsorption and catalytic aftertreatment systems for trucks fueled by biofuels.

### Brief Contents

- Ligand-free Subnanometre Gold Metal Clusters and their Applications
- Catalytic Aftertreatment Systems for Trucks Fueled by Biofuels – Aspects on the Impact of Fuel Quality on Catalyst Deactivation
- The Catalytic Shock Tube: A New Tool to Explore Catalytic Reaction Mechanisms
- Determining the Pore Structure of Activated Carbon by Nitrogen Gas Adsorption
- Recent Advances on the Conversion of Glycerol to Acrolein, 1,3-Propanediol, Propanol and Propylene using Acidic Heterogeneous Catalysts

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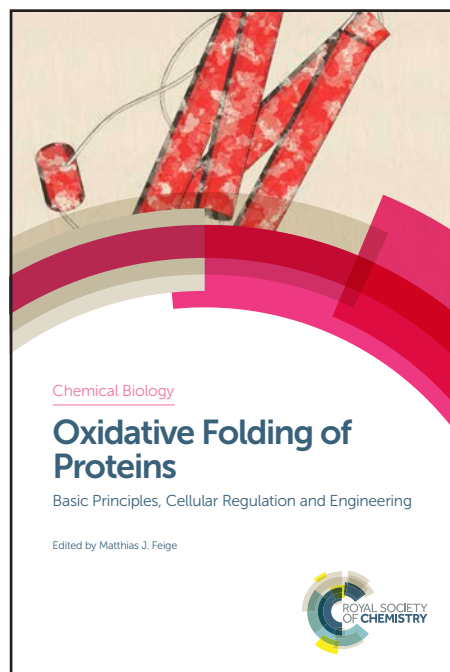
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# Oxidative Folding of Proteins

## Principles, Biological Regulation and Design

Matthias J Feige TU Munchen, Germany

### Synopsis

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.

### Brief Contents

- Principles and Analysis of Disulphide Bond Formation
- Disulphide bonds in protein folding and stability
- Techniques to monitor disulphide-bond formation and the reduction potential of cysteine–cystine couples in vitro and in vivo
- Real Time Detection of Thiol Chemistry in Single Proteins
- Analysis of disulphide bond formation in therapeutic proteins
- Disulphide Bonds In Peptides And Proteins: Structure, Function And Evolution
- Evolutionary adaptations to cystine-rich peptide folding
- In vitro refolding of proteins

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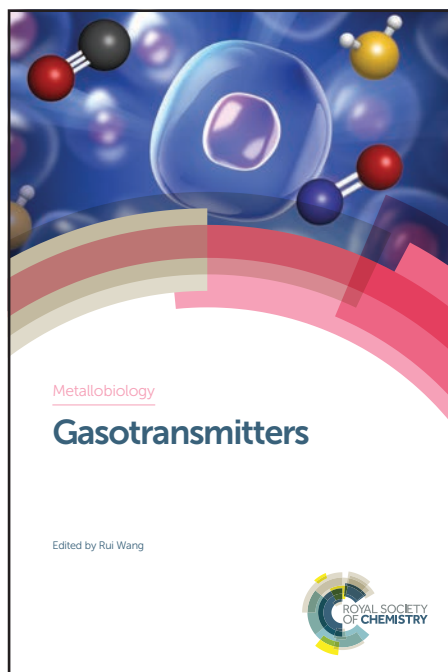
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# Gasotransmitters

Rui Wang Laurentian University of Sudbury, Canada

## Synopsis

Building on the complementary information presented in Gas Sensing in Cell, 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.

## Brief Contents

- Overview of gasotransmitters and the related signaling network
- Production of NO – The L-arginine/NOS/NO System
- Production of H<sub>2</sub>S – The L-cysteine/CSE-CBS-MST/H<sub>2</sub>S System
- HO-1-derived CO is a Regulator of Vascular Function and Metabolic Syndrome
- Production and Signalling Functions of Ammonia in Mammalian Cells
- The interaction of NO and H<sub>2</sub>S signaling systems in biology and medicine
- Signaling by CO: Molecular and Cellular Functions
- The Production and Signalling of Methane
- Gasotransmitters in Plants

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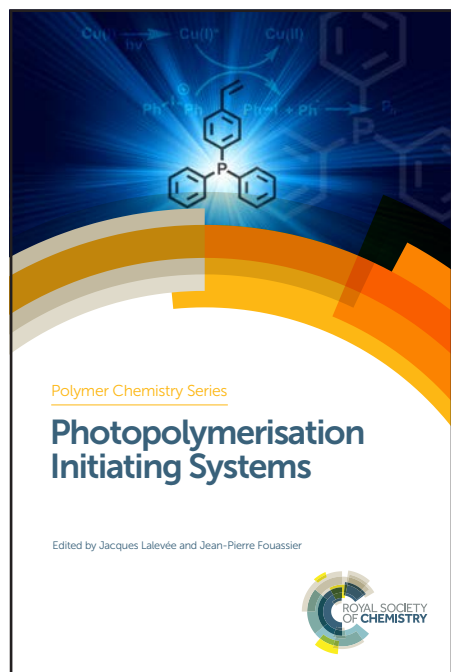
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# Photopolymerisation Initiating Systems

**Jacques Lalevée** Institut de Science des Matériaux de Mulhouse, France

**Jean-Pierre Fouassier** ENSCMu-UHA, France

## Synopsis

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.

## Brief Contents

- UV Radical Photoinitiators
- Long Wavelength Sensitive Radical Photoinitiators
- Cationic Photoinitiators
- Macromolecular Photoinitiators
- Photoinitiators for Blue to Red Led Exposures
- How to Design Novel Photoinitiators
- Photocatalysts as Photoinitiators
- Light Controlled Polymerization
- Two Photon Photopolymerization
- Photoinitiators for the Manufacture of Nanoparticle Containing Matrices

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