Electrochemistry

Volume 15

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

Synopsis
Providing the reader with an up to date digest of the most important research currently carried out in the field, Electrochemistry Volume 15 is compiled and written by leading experts from across the globe. This volume is a key reference for researchers providing a timely overview of this exciting and developing area.

Brief Contents

- Ethanol Electrooxidation Reaction in Alkaline Media for Direct Ethanol Fuel Cells
- Modified Electrodes for Sensing
- Electrochemiluminescence Fundamentals and Analytical Applications
- Wearable Miniaturized Electrochemical Sensors: Benefits and Challenges
- The Application of Electrochemical Impedance Spectroscopy to Electrochemical Sensor Devices

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Energy Storage Options and Their Environmental Impact

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

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

Brief Contents
- Energy Sources and Supply Grids – the Growing Need for Storage
- Mechanical Systems for Energy Storage – Scale and Environmental Issues
- Electrochemical Storage
- Electrical Storage
- Photochemical Storage
- Thermal and Thermochemical Storage
- Smart Energy Systems
- Life Cycle Analysis for Assessing Environmental Impact
- Business Opportunities and the Regulatory Framework
Plastics and the Environment

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

Synopsis
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.

Brief Contents
- The Nature of Plastics and their Societal Usage
- The Biodegradibility of Plastics
- Nanoplastics in the Environment
- Plastics in Marine Litter, Microplastics in the Ocean
- Plasticisers and their Impact on Wildlife
- Plasticisers and Human Exposure
- Recycling of Plastics
Raman Spectroscopy in Archaeology and Art History

Volume 2

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

Synopsis

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.

Brief Contents

- Analytical Raman Spectroscopy of Inks
- Raman Spectroscopic Analysis of Romano-British Wall Paintings: A Comparison Between Geographically Different Sites at the Northern Fringe of the Roman Empire
- Evidence of Pentimenti for the Authentication of Paintings: A Challenge for Analytical Science at the Interface with Art History
- Dancing on Eggshells: A Holistic Analytical Study of a Ballet Dancer on Regency Porcelain
- Pigments and Colourants
- Micro Raman Spectroscopy of Epipalaeolithic decorated pebbles from Arroyo Moreras 2 (Parque Darwin, Madrid)

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Kinase Drug Discovery
Modern Approaches
Richard A Ward AstraZeneca, UK
Frederick W Goldberg AstraZeneca, UK

Synopsis
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.

Brief Contents
- Introduction to Kinase Drug Discovery - Modern Approaches
- New Screening Approaches for Kinases
- The Screening and Design of Allosteric Kinase Inhibitors
- Covalent Inhibition of Kinases
- Small Molecule Macroyclic Kinase Inhibitors
- The Design of Brain Penetrant Kinase Inhibitors
- Cutting Edge Approaches to Structure-based Computational Modelling of Kinases
- The Properties of Kinase Inhibitors
- Assessment and Optimization of Kinase Inhibitor Selectivity to Achieve Candidates with an Appropriate Safety Profile
- Drugging the Kinome
- The Importance of Kinase Mutations in Cancer Drug Discovery

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The Science of Sugar Confectionery

William P Edwards Bardfield Consultants

Synopsis
Since the first edition of The Science of Sugar Confectionery (2000), the confectionery industry has responded to ever-changing consumer habits. This new edition has been thoroughly revised to reflect industry’s response to market driven nutrition and dietary concerns, as well as changes in legislation, labelling, and technology. Building on the strengths of the first edition, the author’s personal knowledge and experience of the sugar confectionery industry is used to provide a thorough and accessible account of the field. Requiring the reader to have no more than a rudimentary level of chemistry, this book covers the basic definitions and commonly used and new ingredients in the industry, before discussing the various types of sugar confectionery. These include “sugar glasses” (boiled sweets), “grained sugar products” (fondants), toffees and fudges, “hydrocolloids” (gums, pastilles and jellies) and concludes with a new chapter on future outlooks. Featuring expanded coverage of special dietary needs, covering topics such as vegetarianism and veganism, religious requirements, and supplemented products, this new edition reflects current and evolving needs in the sugar confectionery field.

Brief Contents
- Basic Science
- Nutrition
- Ingredients
- Emulsifiers, Colours and Flavours
- Confectionery Plant; Sugar Glasses in the Chemistry of Boiled Sweets
- Grained Sugar Products
- Pan Coating
- Toffees and Caramels
- Gums, Gelled Products and Liquorice
- Chewing Gum

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Steviol Glycosides
Cultivation, Processing, Analysis and Applications in Food

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

Synopsis
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 to food scientists, analytical chemists and health professionals.

Brief Contents
- Crop and Steviol Glycoside Improvement in Stevia by Breeding
- Biosynthesis of Steviol Glycosides and Related Diterpenes in Leaves and Glandular Trichomes of Stevia Rebaudiana Bertoni
- Steviol Glycosides Production: Traditional versus New Technologies
- Analysis of Steviol Glycosides
- Presentation and Analysis of further Constituents in the Leaves:
  - Part A. Polyphenolics in Stevia rebaudiana Leaves
- Presentation and Analysis of further Constituents in the Leaves:
  - Part B. Analysis of Lipids and Volatile Terpenes in Stevia rebaudiana
- Antioxidant Capacity of Stevia Leaves