Innovations in Green Chemistry and Green Engineering
Selected Entries from the Encyclopedia of Sustainability Science and Technology

Processes that meet the objectives of green chemistry and chemical engineering minimize waste and energy use, and eliminate toxic by-products.

Features
- Covers fundamentals and cutting-edge developments in a field that spans chemistry, engineering, and environmental science
- Appeals to a broad audience of undergraduate and graduate students, researchers, and industry professionals
- Edited and written by acknowledged leaders in the field
- Includes a glossary of key terms and a concise definition of the subject for each contribution
- Offers practical case studies that are ideal for use in green chemistry and chemical engineering courses at the advanced undergraduate and graduate levels

Contents
1. Green Chemistry and Chemical Engineering, Introduction
2. Gas Expanded Liquids for Sustainable Catalysis
3. Green Catalytic Transformations
4. Green Chemistry Metrics: Material Efficiency and Strategic Synthesis Design
5. Green Chemistry with Microwave Energy
6. Nanotoxicology in Green Nanoscience
7. New Polymers, Renewables as Raw Materials
8. Organic Batteries
9. Oxidation Catalysts for Green Chemistry
10. Supercritical Carbon Dioxide (CO2) as Green Solvent

Fields of interest
Industrial Chemistry/Chemical Engineering; Industrial Pollution Prevention; Organic Chemistry

Target groups
Upper undergraduate

Discount group
Professional Non-Medical

Due October 2012
2013. X, 350 p. 171 illus., 47 in color. Hardcover
$99.00

Handbook on Sourdough Biotechnology

In the last few decades, many efforts have been made to exploit sourdough’s potential for making baked goods. Through the biotechnology of this traditional baking method, many sensory, rheological, nutritional, and shelf-life properties have been discovered and/or rediscovered. Bakery industries are greatly attracted by the potentials that sourdough presents, and new industrial protocols are being developed. To the best of our knowledge, there has been no single book dedicated to sourdough biotechnology, and which clearly demonstrate its potential.

Features
- First reference guide on sourdough biotechnology
- Highlights the microbiological, technological, nutritional, and chemical aspects of sourdough biotechnology
- The first book of its kind dedicated wholly to sourdough biotechnology

Contents
1. Historical and Social Aspects of Sourdough
2. Chemistry of Cereal Grains
3. Technology of Sourdough
4. Green Chemistry Metrics: Material Efficiency and Strategic Synthesis Design
5. Yang and Strategic Synthesis Design
6. Taxonomy and Biodiversity of Sourdough Yeasts and Lactic Acid Bacteria
7. Physiology and Biochemistry of Sourdough Yeasts
8. Sourdough: A Tool to Improve Bread Structure
9. Nutritional Aspects of Sourdough Fermentation with Lactic Acid Bacteria and Yeasts
10. Sourdough and Gluten-Free Products
11. Sourdough and Cereal Beverages
12. Perspectives

Fields of interest
Food Science; Biochemistry, general; Biotechnology

Target groups
Professional/practitioner

Discount group
Professional Non-Medical

Due November 2012
2013. VIII, 262 p. 45 illus., 24 in color. Hardcover
$129.00

Bacterial Communication in Foods
It is generally assumed that microorganisms synthesize, release, detect and respond to small signaling hormone-like molecules. These molecules are used for a process termed “quorum sensing” (QS), a phenomenon that enables bacteria to sense when the minimal number of cells, or “quorum,” is achieved for a concerted response to be initiated. Words such as “language” and “behavior” are frequently used to depict QS in the literature. More simply put, language and cross-talk between bacteria, and between bacteria and animal or plant hosts, determines the behavior (e.g., beneficial or pathogenic effects) of bacteria. Currently, the major concern is to understand and decode this language. Overall, bacterial cross-talk was mainly studied on environmental, plant, and human pathogenic bacteria. Few studies considered food-related lactic acid bacteria. The cross-talk between bacteria influences the behavior and, in turn, the environmental adaptation and phenotypes. Therefore, it is understood that bacterial cross-talk has important applicative repercussions.

Features
- Unique reference on quorum sensing in food fermentation
- Important resource on quorum quenching
- An overview of the “language” of lactic acid bacteria

Contents
1. The Language
2. The Phenotypes
3. The Behavior in Foods
4. The Probiotic Message
5. The New Perspective

Fields of interest
Food Science; Bacteriology; Microbiology

Target groups
Professional/practitioner

Discount group
Professional Non-Medical

Due October 2012
2012. IV, 102 p. 21 illus., 19 in color. (SpringerBriefs in Food, Health, and Nutrition) Softcover
$49.95
ISBN 978-1-4614-5655-1
Transport and Fate of Chemicals in the Environment

Selected Entries from the Encyclopedia of Sustainability Science and Technology

What happens when a chemical is released into the environment? It diffuses, disperses, adsorbs, reacts, and/or changes state. To predict and analyze this process, the mathematics of diffusion is applied to lakes, rivers, groundwater, the atmosphere, the oceans, and transport between these media.

Features
- Provides detailed background on environmental chemistry, diffusion, and transport
- Examines transport and fate in single media as well as inter-media transfer of chemicals
- Covers transport and fate in rivers, lakes, the oceans, and groundwater
- Demonstrates key applications of transport and fate analyses within the ecosphere

Contents
8. Transport and Fate of Chemicals in the Environment, Diffusive Transport.
12. Oceanic Fate and Transport of Chemicals.
13. Subsurface Fate and Transport of Chemicals.

Fields of interest
Physical Chemistry; Environmental Chemistry; Geochemistry

Target groups
Upper undergraduate

Discount group
Professional Non-Medical

Complexity in Chemistry and Beyond: Interplay Theory and Experiment

New and Old Aspects of Complexity in Modern Research
Proceedings of the NATO Advanced Study Institute / Advanced Research Workshop on (Title/Meeting, Place, Date)

Contents
Challenges of Complexity in Chemistry and Beyond: K. Mainzer.- Emergence, breaking symmetry and neurophenomenology as pillars of chemical tenets; A. Dei.- Complexity in Molecular Magnetism; D. Gatteschi.- Rational Design of Single-Molecule Magnets; T. Glaser.- Emergence in Inorganic Polyoxometalate Cluster Systems: From Dissipative Dynamics to Artificial Life; L. Cronin.- [..]

Fields of interest
Inorganic Chemistry; Theoretical and Computational Chemistry

Target groups
Research

Discount group
Professional Non-Medical

Laboratory Exercises for Sensory Evaluation

Features
- Complements the flagship textbook
- Sensory Evaluation of Foods Easily adaptable to coursework
- Includes problem sets

Contents

Fields of interest
Food Science; Receptors; Analytical Chemistry

Target groups
Upper undergraduate

Discount group
Professional Non-Medical

Due December 2012

Hardcover
2013. III, 291 p. 100 illus., 39 in color. (NATO Science for Peace and Security Series B: Physics and Biophysics)
- $189.00

Softcover
2013. III, 291 p. 100 illus., 39 in color. (NATO Science for Peace and Security Series B: Physics and Biophysics)
- $89.95

Due October 2012

2013. X, 350 p. 111 illus., 29 in color. Hardcover
- $179.00

Due December 2012

2013. X, 200 p. 10 illus., 2 in color. (Food Science Text Series, Volume 2) Spiral binding
- $59.95
Fluorescent Methods to Study Biological Membranes

Contents
Laurdan Fluorescence Properties in Membranes - A Journey from the Fluorimeter to the Microscope. - Application of NBD-labeled Lipids in Membrane and Cell Biology. - 3-Hydroxychro-
mone Probes Precisely Located and Oriented in Lipid Bilayers: a Toolkit for Biomembrane Research. - Lateral Membrane Heterogeneity Probed by FRET Spectroscopy and Microscopy. - FRET Analysis of Protein-Lipid Interactions. - Hydration and Mobility in Lipid Bilayers Probed by Time-Dependent Fluorescence Shifts. - Visual Discrimination of Membrane Domains in Live Cells by Wide-Field Microscopy. - Quantita-

Features
- Nominated by the University of Cardiff as an outstanding PhD thesis
- Careful investigation of carbon nucleophiles in selenocyclisations
- Description and development of excellent new synthetic routes

Contents
General Introduction on Selenium. - The Synthesis of Novel Dihydronaphthalenes and Benzofluorenes. - The Synthesis of Naphthalenes and Bia-
ryls. - Synthesis of Isocoumarins and Dihydroiso-
coumarins. - Experimental Section.

Contents
Part I. Principles of Proteomics. - 1. Understanding the proteome. - 2. Extraction/fractionation techniques for proteins and peptides and Protein digestion. - 3. Primary separation: 2-D electro-
phoresis. - 4. Primary Separation: Chromatogra-

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Fields of interest
Food Science; Proteomics; Biotechnology

Target groups
Professional/practitioner

Discount group
Professional Non-Medical
β-Lactams: Unique Structures of Distinction for Novel Molecules

Features
- Heterocyclic chemistry is the biggest branch of chemistry covering two-thirds of the chemical literature
- The series covers hot topics of frontier research summarized by reputed scientists in the field
- Our review series is topic-related Online version available on SpringerLink.com

Contents

Fields of interest
Organic Chemistry; Medicinal Chemistry; Pharmacy

Target groups
Research

Discount group
Professional Non-Medical