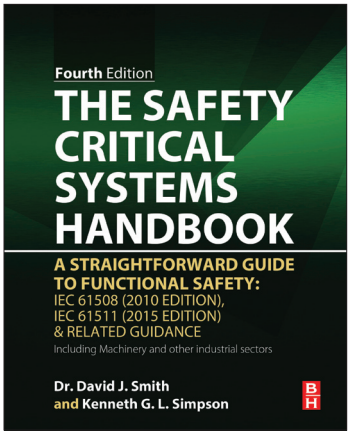
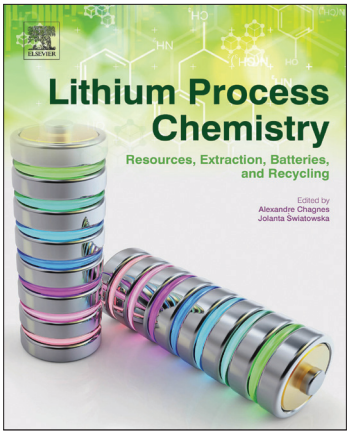
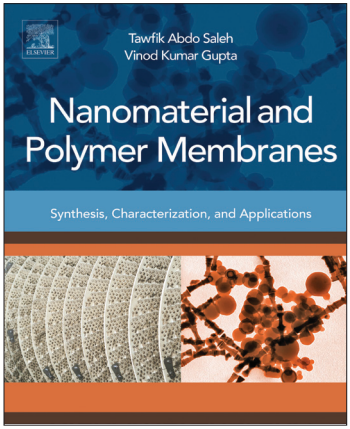
CHEMICAL ENIGINEERING







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Environment and Development

Basic Principles, Human Activities, and Environmental Implications

Edited by: ***Stavros Poulopoulos*** National Technical University of Athens, School of Chemical Engineering, Athens, Greece
Vassilis Inglezakis National Technical University of Athens, School of Chemical Engineering, Athens, Greece

ELSEVIER

This thorough book focuses on the adverse impacts of human activities and development on both natural and inhabited environments. Covers associated problems and recommends solutions for achieving harmonic sustainable development in a range of environments. Presents the latest research findings and trends in global environmental policy for each issue.

ISBN: 978-0-444-62733-9

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 500

AUDIENCE

The book suits students in all engineering disciplines (particularly chemical, mechanical, and environmental engineering), environmental science and technology professionals (including ecologists, environmentalists, and professional engineers dealing with environmental issues), and policy makers and government officials.

KEY FEATURES

- Offers a discussion of the extraterrestrial environment and waste in earth orbit as one of the distinctive topics of the book
- Addresses global environmental policy issues and policies
- Presents tabulated data to support the analysis and explain the issues presented
- Includes case studies covering many topics of current interest
- Analyzes environmental issues and proposes solutions grounded in recent research findings
- Discusses the various interpretations of the development concept as well as alternative pathways to sustainable development

DESCRIPTION

Environment and Development: Basic Principles, Human Activities, and Environmental Implications focuses on the adverse impact that human activities, developments, and economic growth have on both natural and inhabited environments. The book presents the associated problems, along with solutions that can be used to achieve a harmonic, sustainable development that provides for the co-existence of man and natural life. Chapters provide detailed information on a range of environments including: atmospheric, aquatic, soil, natural, urban, energy, and extraterrestrial, as well as the relationship between the environment and development. In addition, this comprehensive book presents the latest research findings and trends in global environmental policy for each issue.

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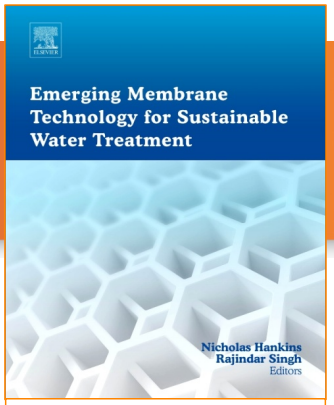

Emerging Membrane Technology for Sustainable Water Treatment

Edited by: ***Rajindar Singh*** Membrane Ventures, LLC, Colorado Springs, CO, USA
Nick Hankins The Centre for Sustainable Water Technology, Department of Engineering Science, The University of Oxford, Oxford, UK

ISBN: 978-0-444-63312-5
PUB DATE: June 2016
FORMAT: Hardback
PAGES: c. 462

AUDIENCE

Chemical and environmental engineers working in membrane treatment of water and wastewater; graduate and postgraduate students and researchers in academia; government and corporate labs; and water treatment equipment and global engineering companies.

This timely, practical guide discusses how membrane technology—a viable solution to the problems of water stress and poor sanitation—can be an economically and environmentally friendly approach to address the escalating problem of water availability and shortages on a global scale

KEY FEATURES

- Provides a unique source on membrane technology and its application for water treatment
- Focuses on technologies designed for the treatment of seawater and brackish water
- Highlights the most economically and environmentally friendly membrane technologies
- Lists various technologies and emphasizes their link to renewable energy, energy efficiency, nanotechnology, reuse, and recycle

DESCRIPTION

Emerging Membrane Technology for Sustainable Water Treatment provides the latest information on the impending crisis posed by water stress and poor sanitation, a timely issue that is one of the greatest human challenges of the 21st century. The book also discusses the use of membrane technology, a serious contender that can be used to confront the crisis on a global scale, along with its specific uses as a solution to this escalating problem.

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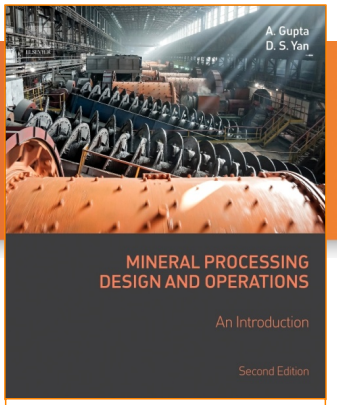


Mineral Processing Design and Operations, 2e

An Introduction

Ashok Gupta Carine-Perth, Australia
Dennis S Yan Minerals Engineering and Extractive Metallurgy, Curtin University of Technology, Kalgoorlie, Australia

ELSEVIER

ISBN: 978-0-444-63589-1

PREVIOUS EDITION ISBN: 9780444516367

PUB DATE: June 2016

FORMAT: Hardback

PAGES: c. 800

AUDIENCE

metallurgists and process engineers as well as university students as an introductory guide to large scale industrial operations to liberate and recover commercially minerals from ores. Students and engineers interested in the disciplines of metallurgy, chemical engineering, mechanical and electrical engineering (including electronic engineering), both in operation and research are expected to benefit.

The practical resource describes the basic theory and current practices behind separating and concentrating minerals of economic interest such as iron ores, beach sand minerals, and rare earth minerals

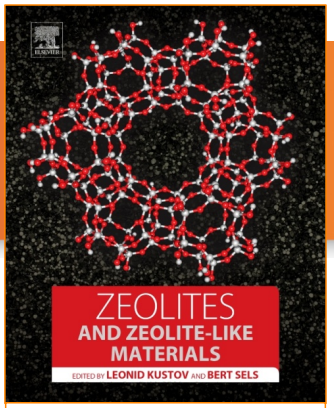
KEY FEATURES

- Outlines the theory and practice in the design of flow sheets and operation of an integrated mineral processing plant
- Introduces the basic magnetism, electrostatic, conductivity, and dielectrophoresis properties of minerals and related separation techniques
- Describes automation in mineral processing plants allowing maximum yields and consistent high concentrate grades
- Outlines problems and offers solutions in the form of various examples

DESCRIPTION

Mineral Processing Design and Operations: An Introduction, Second Edition, helps further understanding of the various methods commonly used in mineral beneficiation and concentration processes. Application of theory to practice is explained at each stage, helping operators understand associated implications in each unit process. Covers the theory and formulae for unit capacities and power requirements to help the designer develop the necessary equipment and flow-sheets to economically attain maximum yield and grade.

This second edition describes theories and practices of design and operation of apparatus and equipment, including an additional chapter on magnetic, electrostatic, and conductivity modes of mineral separation. Basics of process controls for efficient and economic modes of separation are introduced.



Zeolites and Zeolite-like Materials

Edited by: ***Bert Sels*** Center for Surface Chemistry and Catalysis, Catholic University of Leuven, Leuven, Belgium
Leonid Kustov Head of Laboratory of Polyfunctional Catalysts, N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Head of Laboratory of Green Chemistry Chemistry Department, Moscow State University, Moscow, Russia

ELSEVIER

This comprehensive book reviews important aspects of the synthesis, characterization and applications of zeolites, zeolite-like materials and new micro/mesoporous systems, including novel catalytic processes related to the conversion of renewable raw materials, applications in drug delivery, sorption/separations, non-linear optics, and new membrane systems.

ISBN: 978-0-444-63506-8
PUB DATE: April 2016
FORMAT: Hardback
PAGES: c. 600

AUDIENCE

(Physical) chemists and chemical engineers, graduate and post graduate students working in the field of zeolites, MOFs, micro/mesoporous materials, catalysis, optoelectronic materials, laser techniques, drug delivery, adsorption/separation of complicated mixtures, organic synthesis

KEY FEATURES

- Provides a comprehensive review of the literature pertaining to zeolites and zeolite-like materials since 2000
- Covers the chemistry of novel zeolite-like materials such as Metal-Organic Frameworks (MOFs), Covalent Organic Frameworks (COFs), hierarchical zeolite materials, new mesoporous and composite zeolite-like micro/mesoporous materials
- Presents essential information of the new zeolite-like structures, with a balanced coverage of the most important areas of the zeolite research (synthesis, characterization, adsorption, catalysis, new applications of zeolites and zeolite-like materials)
- Contains chapters prepared by known specialists who are members of the International Zeolite Association

DESCRIPTION

Zeolites and Zeolite-like Materials offers a comprehensive and up-to-date review of the important areas of zeolite synthesis, characterization, and applications. Its chapters are written in an educational, easy-to-understand format for a generation of young zeolite chemists, especially those who are just starting research on the topic and need a reference that not only reflects the current state of zeolite research, but also identifies gaps and opportunities.

The book demonstrates various applications of zeolites in heterogeneous catalysis and biomass conversion and identifies the endless possibilities that exist for this class of materials, their structures, functions, and future applications. In addition, it demonstrates that zeolite-like materials should be regarded as a living body developing towards new modern applications, thereby responding to the needs of modern technology challenges, including biomass conversion, medicine, laser techniques, and nanomaterial design, etc.

The book will be of interest not only to zeolite-focused researchers, but also to a broad scientific and non-scientific audience.

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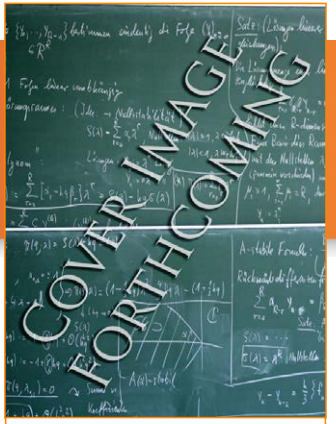

High Temperature Oxidation and Corrosion of Metals, 2e

David John Young David John Young School of Materials Science and Engineering University of New South Wales New South Wales, Australia

ELSEVIER

ISBN: 978-0-08-100101-1

PREVIOUS EDITION ISBN: 9780080445878

PUB DATE: May 2016

FORMAT: Hardback

PAGES: c. 650

AUDIENCE

The book is intended for post-graduate students and others taking up research or seeking an understanding in the field of high temperature corrosion resistance. It is relevant to the power generation, waste incineration and petrochemical industries, as well as gas turbine, fuel cell and solar thermal technologies.

Beginning with a high level understanding of the fundamental mechanisms of high temperature alloy oxidation, this book presents a combination of the physical chemistry and materials science methodologies used to analyze alloy corrosion mechanisms and how they can provide quantitative predictions for reaction rates

KEY FEATURES

- Emphasizes quantitative calculations for predicting reaction rates and the effects of temperature, oxidant activities, and alloy compositions
- Uses phase diagrams and diffusion paths to analyze and interpret scale structures and internal precipitation distributions
- Presents a detailed examination of corrosion in industrial gases (water vapor effects, carburization and metal dusting, sulphidation)
- Contains numerous micrographs, phase diagrams, and tabulations of relevant thermodynamic and kinetic data
- Combines physical chemistry and materials science methodologies
- Provides two completely new chapters (chapters 11 and 13), and numerous other updates throughout the text

DESCRIPTION

High Temperature Oxidation and Corrosion of Metals, Second Edition, provides a high level understanding of the fundamental mechanisms of high temperature alloy oxidation. It uses this understanding to develop methods of predicting oxidation rates and the way they change with temperature, gas chemistry, and alloy composition.

The book focuses on the design and selection of alloy compositions which provide optimal resistance to attack by corrosive gases, providing a rigorous treatment of the thermodynamics and kinetics underlying high temperature alloy corrosion.

In addition, it emphasizes quantitative calculations for predicting reaction rates and the effects of temperature, oxidant activities, and alloy compositions. Users will find this book to be an indispensable source of information for researchers and students who are dealing with high temperature corrosion.

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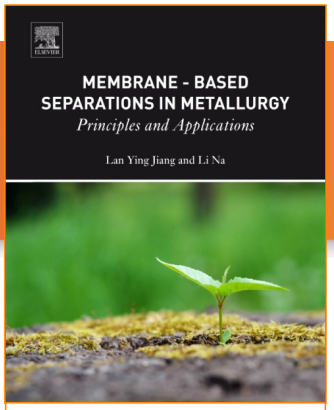

Membrane-Based Separations in Metallurgy

Principles and Applications

Edited by: ***Lan Ying Jiang*** School of Metallurgy and Environment, Central South University (Main Campus), Hunan, China
Li Na Department of Chemical Engineering, School of Chemical Engineering and Technology, Xi'an Jiaotong University, Shannxi, China

ISBN: 978-0-12-803410-1
PUB DATE: April 2016
FORMAT: Hardback
PAGES: c. 300

AUDIENCE

Chemists; chemical and metallurgical engineers; membrane technologists; environmental engineers in academia, research and industry, developers and manufacturers of membranes

The book is a unique reference to the application of membrane separations in the metallurgical industry that comprehensively outlines metallurgy background, the fundamentals of membrane separations, separation process design, and all of the socioeconomic and environmental benefits of these technologies

KEY FEATURES

- Outlines membrane separation processes and their use in the field of metallurgy
- Includes case studies and examples of various processes
- Describes individual unit operations and sectors of extractive metallurgy in a clear and thorough presentation for students and engineers
- Provides a quick reference to wastewater treatment using membrane technology in the metallurgical industry
- Outlines the design of flowsheets, a topic that is not covered in academic studies, but is necessary for the design of working process
- Provides examples and analysis of the economic implications and environmental and social impacts

DESCRIPTION

Membrane-Based Separation in Metallurgy: Principles and Applications begins with basic coverage of the basic principles of the topic and then explains how membrane technology helps in the development of new environmentally friendly and sustainable metallurgical processes.

The book features the principles of metallurgical process and how widely the membrane-based technology has been applied in metallurgical industry, including the basic principles of membrane-based separation in terms of material science, membrane structure engineering, transport mechanisms, and module design, detailed metallurgical process flowcharts with emphasis on membrane separations, current process designs, and describes problems and provides possible solutions.

In addition, the book includes specific membrane applications, molecular design of materials, fine tuning of membrane's multi-scale structure, module selection and process design, along with a final analysis of the environmental and economic benefits achieved by using these new processes.

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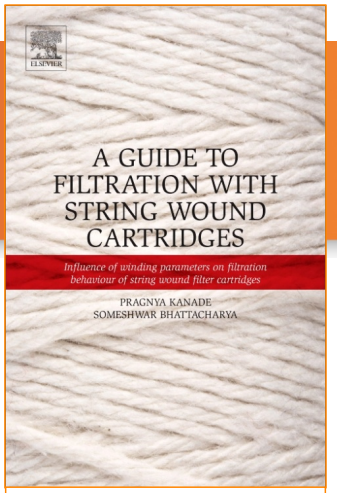

A Guide to Filtration with String Wound Cartridges

Influence of Winding Parameters on Filtration Behavior of String Wound Filter Cartridges

Pragnya S. Kanade Textile Engineering Department, Faculty of Technology and Engineering, The M.S. University of Baroda, Gujarat, India
Someshwar S. Bhattacharya Textile Engineering Department, Faculty of Technology and Engineering, The M.S. University of Baroda, Gujarat, India

ELSEVIER

The book provides a concise but comprehensive reference that explains the science behind winding phenomena with reference to the use of string wound cartridges in various environments and their necessity as a tool to help quell the ever-increasing scarcity of water reserves

ISBN: 978-0-12-804847-4
PUB DATE: April 2016
FORMAT: Paperback
PAGES: c. 250

AUDIENCE

Researchers, scientists and chemical engineers working in filtration and separation industry

KEY FEATURES

- Presents data and conclusions that are based on actual experimental work
- Provides explanations on why winding parameters influence the performance of wound cartridges
- Describes problems encountered during cartridge formation and during its use in filter testing

DESCRIPTION

A Guide to Filtration with String Wound Cartridges: Influence of Winding Parameters on Filtration Behavior of String Wound Filter Cartridges explains the science behind winding phenomena with reference to the use of string wound cartridges in various environments, and is helpful in educating aspiring researchers and technicians on these new technologies that seek to quell the ongoing scarcity of water through the use of new and emerging filtration techniques.

The book provides detailed information about cartridge winding parameters, the number of layers put on the cartridge, their necessary availability, and the retention capacity and pressure drop. In addition, the book provides guidelines regarding the selection of winding variables so that new cartridges that cater to the specific porosity of different sized particles can be developed.

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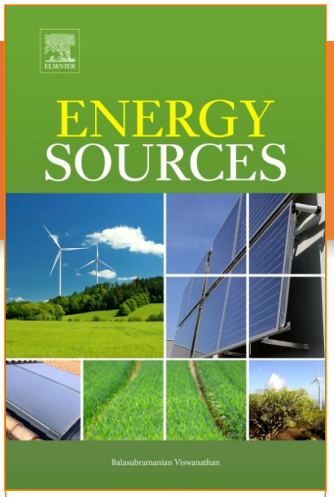

Energy Sources

Fundamentals of Chemical Conversion Processes and Applications

Balasubramanian Viswanathan Head, National Center for Catalysis Research, Indian Institute of Technology, Chennai, India

ELSEVIER

By providing an overview of the chemistry behind all potential energy sources, this book compares their potential applications and outlines research directions that can be used by chemists/chemical engineers working in the development of future energy sources, with an equal focus on environmental concerns.

ISBN: 978-0-444-56353-8

PUB DATE: March 2016

FORMAT: Hardback

PAGES: c. 450

AUDIENCE

Academics and Researchers, graduate students in energy engineering courses, energy technocrats, energy policy makers.

KEY FEATURES

- Compiles, in a single source, all energy conversion processes, enabling easy evaluation and selection
- Explains the science behind each conversion process and facilitates understanding
- Contains many illustrations, diagrams, and tables enabling a clear and comprehensible understanding of the pros and cons of the various processes
- Includes an exhaustive glossary of all terms used in the conversion processes which makes the understanding easy and facilitates better communication across all groups in this multidisciplinary area
- Presents the current status and future directions, thus enabling good identification of future research needs and planning new research
- Presents a concise and comprehensive overview of all energy sources

DESCRIPTION

Energy Sources: Fundamentals of Chemical Conversion Processes and Applications provides the latest information on energy and the environment, the two main concerns of any progressive society. Continuous efforts have to be exercised in both these areas by any of the developing communities. Energy conversion has evolved as the main concern today due to various ecological imbalances, including climate change. Only a well-informed society on energy can be a sustainable in the future.

This book attempts to inform and provide the fundamentals behind all energy conversion processes, identifies future research needs, and discusses the potential application of each process in a clear and concise manner. It is a valuable source for both chemists and chemical engineers who are working to improve current and developing future energy sources, and is a single source that deals with almost all energy sources for these purposes, reviewing the fundamentals, comparing the various processes, and suggesting future research directions.

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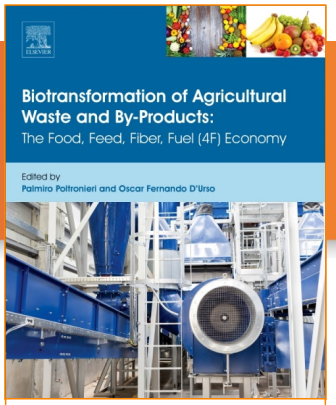

Biotransformation of Agricultural Waste and By-Products

The Food, Feed, Fibre, Fuel (4F) Economy

Edited by: ***P Poltronieri*** Institute of Sciences of Food Production, National Research Council (ISPA-CNR), Lecce, Italy
Oscar Fernando D'Urso Food Safety and Technology Research Group, Bioesplora, San Michele Salentino, Italy

ISBN: 978-0-12-803622-8
PUB DATE: March 2016
FORMAT: Hardback
PAGES: c. 450

AUDIENCE

Biotechnologists, biochemical engineers, biochemists, microbiologists, plant biochemists, agronomists, research students in these areas, entrepreneurs, policy makers, stakeholders, and politicians

Discusses advances in technology and plant design which support the exploitation and valorization of vegetable and fruit by-products through fermentation (feed-batch liquid fermentation, solid state fermentation) in bio-based bio-chemicals/biofuels production

KEY FEATURES

- Provides an overview of all plant based biosources
- Includes examples of biochemical/biofuel production from plant waste
- Discusses the production of enzymes used in the plant fermentation processes
- Explores the new fermentation technologies and production of chemicals and fuels from various plants

DESCRIPTION

Biotransformation of Agricultural Waste and By-Products in the 4F Economy: The Food, Feed, Fiber, Fuel (4F) Economy presents an evaluation of plant species better exploitable for a particular transformation. As crops are already covering large parts of cultivable soils, is it is not conceivable to try to extend the cultures beyond the limit of available soils, but a further increase in productivity is not easy to obtain.

The book discusses advances in technology and plants design which support the exploitation and valorization of vegetable and fruit by-products through fermentation (feed-batch liquid fermentation, solid-state fermentation) in bio-based bio-chemicals/biofuels production. Pathways in the biosynthesis of fibers, sugars, and metabolites are provided with a focus on the lifecycle of bacteria, yeasts, and even plant species. The text analyzes cellular structures and the organization of cell walls in order to show which polysaccharides offer more favorable fermentative processes and which are detrimental.

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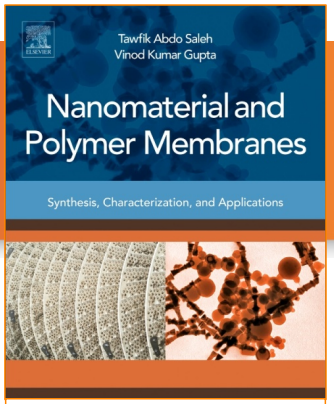

Nanomaterial and Polymer Membranes

Synthesis, Characterization, and Applications

Tawfik A Saleh Chemistry Department, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
Vinod Kumar Gupta Department of Chemistry, Indian Institute of Technology, Roorkee, India, and Department of Chemistry, King Fahad University of Petroleum and Minerals, Dhahran, Saudi Arabia

ELSEVIER

Through a comprehensive but concise reference on the theory, characterization, and applications of the synthesis of polymeric nanocomposite membranes, this book offers a perfect source to document state-of-the-art developments and innovations in the field

ISBN: 978-0-12-804703-3
PUB DATE: March 2016
FORMAT: Paperback
PAGES: c. 330

AUDIENCE

Graduate and postgraduate students, researchers in academia and industry, and chemical engineers working in the field of membrane science and nanomaterials and their applications in water treatment, desalination, and adsorption

KEY FEATURES

- Presents a powerful single source for the development of new, rapid, and highly efficient membrane composites
- Offers a perfect source to document state-of-the-art developments and innovations in nanocomposite membranes, ranging from materials development and characterization of properties to membrane applications
- Covers applications in membrane science, water treatment, and the removal of pollutants from waste water
- Provides theoretical and practical information about the synthesis and application of polymeric nanocomposite membranes

DESCRIPTION

Nanomaterial and Polymer Membranes: Synthesis, Characterization, and Applications presents a unique collection of up-to-date polymeric nanomaterial membranes. The book offers a perfect source to document state-of-the-art developments and innovations in nanocomposite membranes, ranging from materials development and characterization of properties to membrane applications.

The book discusses applications that encompass the enhancement of sorption and degradation processes and their usage for the removal of different pollutants, including heavy metals, dyes, pesticides, and other organic and inorganic pollutants from the industry.

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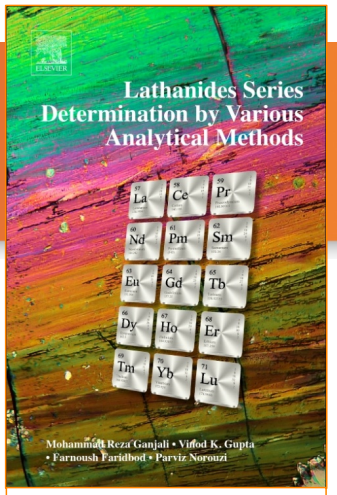

Lanthanides Series Determination by Various Analytical Methods

Mohammad Reza Ganjali Centre of Excellence in Electrochemistry, Faculty of Chemistry, University of Tehran, Tehran, Iran; ***Vinod Kumar Gupta*** Department of Chemistry, Indian Institute of Technology, Roorkee, India, and Department of Chemistry, King Fahad University of Petroleum and Minerals, Dhahran, Saudi Arabia; ***Farnoush Faridbod*** Faculty of Chemistry, University of Tehran, Tehran, Iran; ***Parviz Norouzi*** Centre of Excellence in Electrochemistry, Faculty of Chemistry, University of Tehran, Tehran, Iran

ELSEVIER

Comprehensive and concise overview of recent advances in the determination and application of lanthanides in catalysis, chemical industry, aerospace, materials and life sciences, and in sustainable energy technologies

ISBN: 978-0-12-804704-0

PUB DATE: March 2016

FORMAT: Paperback

PAGES: c. 438

AUDIENCE

Researchers in academia and industry working on lanthanide applications in chemical engineering, chemistry, physics, materials, and environmental and life sciences, and postgraduate students in these areas

KEY FEATURES

- Written by world-leading experts in research on lanthanide determination
- Discusses determination methods that range from very advanced and expensive techniques to simple and inexpensive methods
- A single source of information for a broad collection of lanthanide detection techniques and applications
- Includes a complete list of reports and patents on lanthanide determination
- Discusses both advantages and disadvantages of each determination method, giving a well-balanced overview

DESCRIPTION

Lanthanides Series Determination by Various Analytical Methods describes the different spectroscopic and electrochemical methods used for the determination and measurement of lanthanides. Numerous examples of determination methods used in real sample analysis are gathered and explained, and the importance of lanthanides as applied in chemical industry, agriculture, clinical and pharmaceutical industry, and biology is discussed, with many applications and recent advantages given.

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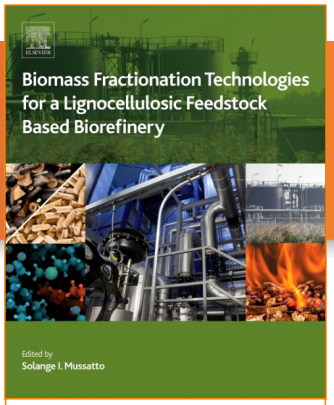

Biomass Fractionation Technologies for a Lignocellulosic Feedstock Based Biorefinery

Edited by: ***Solange Inês Mussatto*** Department of Biotechnology Delft University of Technology Delft, The Netherlands

ELSEVIER

ISBN: 978-0-12-802323-5

PUB DATE: February 2016

FORMAT: Hardback

PAGES: c. 670

AUDIENCE

Chemical Engineers, biotechnologists, microbiologists, biologists, agricultural chemists, environmental engineers

Through the presentation of extensive research and tremendous scientific and technological developments, this book covers the most important topics relating to biomass fractionation, including the most recent advances, challenges, and perspectives for each fractionation technique

KEY FEATURES

- Provides information on the most advanced and innovative pretreatment processes and technologies for biomass
- Reviews numerous valuable products from lignocellulose
- Discusses integration of processes for complete biomass conversion with minimum waste generation
- Identifies the research gaps in scale-up
- Presents an indispensable reference for all professionals, students, and workers involved in biomass biorefinery, assisting them in establishing efficient and economically viable process technologies for biomass fractionation

DESCRIPTION

Biomass Fractionation Technologies for a Lignocellulosic Feedstock-based Biorefinery reviews the extensive research and tremendous scientific and technological developments that have occurred in the area of biorefinering, including industrial processes and product development using 'green technologies', often referred as white biotechnology.

As there is a huge need for new design concepts for modern biorefineries as an alternative and amendment to industrial crude oil and gas refineries, this book presents the most important topics related to biomass fractionation, including advances, challenges, and perspectives, all with references to current literature for further study.

Presented in 26 chapters by international field specialists, each chapter consists of review text that comprises the most recent advances, challenges, and perspectives for each fractionation technique. The book is an indispensable reference for all professionals, students, and workers involved in biomass biorefinery, assisting them in establishing efficient and economically viable process technologies for biomass fractionation.

CHEMISTRY

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New and Future Developments in Microbial Biotechnology and Bioengineering

Microbial Cellulase System Properties and Applications

Edited by: ***Vijai G. Gupta*** Biochemistry School of Natural Sciences, National University of Ireland, Galway, Ireland

ELSEVIER

An indispensable reference source for chemists, biochemical engineers/bioengineers, biochemists, biotechnologists and researchers who want to know about the unique properties of microbial cellulose and its future applications

ISBN: 978-0-444-63507-5

PUB DATE: February 2016

FORMAT: Hardback

PAGES: c. 276

AUDIENCE

Bioengineers, Biochemical Engineers, Biochemist, Biotechnologists

KEY FEATURES

- Compiles the latest developments made and currently undergoing in the area of microbial cellulase system.
- Chapters are contributed from top researchers on this area around the globe
- Includes information related to almost all areas of microbial cellulase system
- Extensive cover of current industrial applications and discusses potential future applications

DESCRIPTION

New and Future Developments in Microbial Biotechnology and Bioengineering: Microbial Cellulase System Properties and Applications covers the biochemistry of cellulase system, its mechanisms of action, and its industrial applications. Research has shed new light on the mechanisms of microbial cellulase production and has led to the development of technologies for production and applications of cellulose degrading enzymes.

The biological aspects of processing of cellulosic biomass have become the crux of future research involving cellulases and cellulolytic microorganisms, as they are being commercially produced by several industries globally and are widely being used in food, animal feed, fermentation, agriculture, pulp and paper, and textile applications. The book discusses modern biotechnology tools, especially in the area of microbial genetics, novel enzymes, and new enzyme and the applications in various industries.

As a professional reference, this new book is useful to all researchers working with microbial cellulase system, both academic institutions and industry-based research bodies, as well as to teachers, graduate, and postgraduate students with information on continuous developments in microbial cellulase system. The book provides an indispensable reference source for chemists, biochemical engineers/bioengineers, biochemists, biotechnologists and researchers who want to know about the unique properties of this microbe and explore its future applications.

CHEMISTRY

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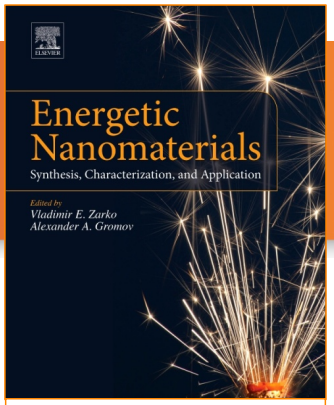

Energetic Nanomaterials

Synthesis, Characterization, and Application

Edited by: ***Vladimir E Zarko*** Institute of Chemical Kinetics and Combustion, Siberian Branch, Academy of Sciences, Novosibirsk, Russia
Alexander Gromov Nuremberg Technical University Georg Simon Ohm, Nuremberg, Germany; Solid Propulsion Laboratory, Aerospace Engineering Department, Milan Polytechnic University, Milan, Italy

ELSEVIER

Fills the current gap in book publications on nanoenergetics, the energetic nanomaterials that are applied in explosives, gun and rocket propellants, and pyrotechnic devices, covering their unique properties and future applications

ISBN: 978-0-12-802710-3

PUB DATE: February 2016

FORMAT: Paperback

PAGES: c. 374

AUDIENCE

Researchers in academia and industry working in the fields of energetic materials, combustion chemistry, and chemical engineering; and graduate students in these areas

KEY FEATURES

- Written by high-level experts in the field of nanoenergetics
- Covers the hot topic of energetic nanomaterials, including nanometals and their applications in nanoexplosives
- Fills a gap in energetic nanomaterials book publications

DESCRIPTION

Energetic Nanomaterials: Synthesis, Characterization, and Application provides researchers in academia and industry the most novel and meaningful knowledge on nanoenergetic materials, covering the fundamental chemical aspects from synthesis to application.

This valuable resource fills the current gap in book publications on nanoenergetics, the energetic nanomaterials that are applied in explosives, gun and rocket propellants, and pyrotechnic devices, which are expected to yield improved properties, such as a lower vulnerability towards shock initiation, enhanced blast, and environmentally friendly replacements of currently used materials.

The current lack of a systematic and easily available book in this field has resulted in an underestimation of the input of nanoenergetic materials to modern technologies. This book is an indispensable resource for researchers in academia, industry, and research institutes dealing with the production and characterization of energetic materials all over the world.

CHEMISTRY

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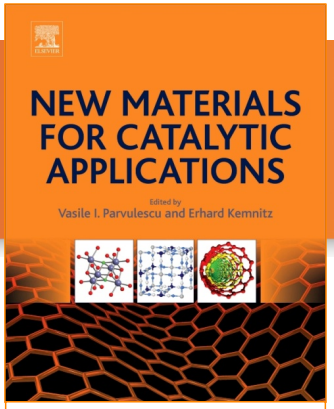

New Materials for Catalytic Applications

Vasile I. Parvulescu Department of Organic Chemistry, Biochemistry and Catalysis, University of Bucharest, Bucharest, Romania
Erhard Kemnitz Institut für Chemie, Humboldt-Universität zu Berlin, Berlin, Germany

ELSEVIER

ISBN: 978-0-444-63587-7
PUB DATE: February 2016
FORMAT: Hardback
PAGES: c. 374

AUDIENCE

Academics researching catalytic phenomena, materials scientists, industrial researchers working with solid state materials to invent new chemicals, industrial development scientists

This comprehensive book on the topic of the use of new materials in catalytic applications discusses new materials for applications in which heterogeneous catalysts are less investigated and suggests new catalytic uses for these materials

KEY FEATURES

- Presents organometallic concepts for the synthesis of nanocatalysts
- Provides a synthesis of new materials following the fluorolytic sol-gel concept
- Covers electronic and photocatalytic properties via synthesis of nano-oxide materials
- Details the nature of sites in MOFs generating catalytic properties immobilization of triflates in solid matrices for organic reactions

DESCRIPTION

New Materials for Catalytic Applications proposes the use of both new and existing materials for catalytic applications, such as zeolites, metal oxides, microporous and mesoporous materials, and monocrystals. In addition, metal-oxides are discussed from a new perspective, i.e. nano- and photocatalytic applications.

The material presents these concepts with a new focus on strategies in synthesis, synthesis based on a rational design, the correlation between basic properties/potential applications, and new catalytic solutions for acid-base, redox, hydrogenation, photocatalytic reactions, etc.

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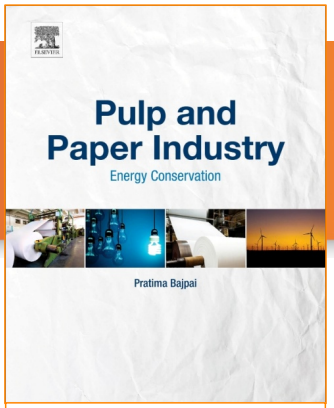


Pulp and Paper Industry

Energy Conservation

Pratima Bajpai Consultant-Pulp and Paper, Thapar Centre for Industrial R&D, Patiala, India

ELSEVIER

Presents a number of energy-efficient technologies and practices that are cost-effective and available for implementation today in the pulp and paper industry.

ISBN: 978-0-12-803411-8

PUB DATE: January 2016

FORMAT: Hardback

PAGES: c. 280

AUDIENCE

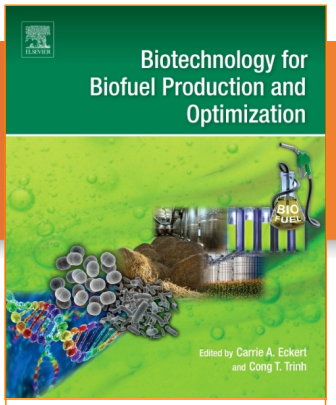
Pulp and Paper technologist/ Engineers, Paper manufacturers, Paper mill personnel, Senior Paper Scientists and R&D Professionals, Academics, Analysts and Consultants

KEY FEATURES

- Thorough and in-depth coverage of energy-efficient technologies and practices in paper and pulp industry
- Presents cost-effective and available for implementation today technologies
- Discusses Biotechnological processes, especially enzymatic processes in the pulp and paper industry to reduce the energy consumption and improve the product quality
- Presents qualitative and quantitative results/data on energy savings for various steps of pulp and paper making process

DESCRIPTION

Pulp and Paper Industry: Energy Conservation presents a number of energy-efficient technologies and practices that are cost-effective and available for implementation today. Emerging energy-efficient technologies and future prospects in this field are also dealt with. Qualitative and quantitative results/data on energy savings for various steps of pulp and paper making process are presented. There is no specific book on this topic. This will be a comprehensive reference in the field.



Biotechnology for Biofuel Production and Optimization

Edited by: ***Carrie E Eckert*** National Renewable Energy Laboratory (NREL); University of Colorado, Boulder; the Renewable and Sustainable Energy Institute (RASEI), Golden, CO, USA
Cong T Trinh Dept of Chemical and Biomolecular Engineering, University of Tennessee Knoxville, TN, USA

ELSEVIER

Presents the process engineering and enzyme pathways for the production of a variety of biofuels and biofuels precursors, providing the most recent research

ISBN: 978-0-444-63475-7
PUB DATE: January 2016
FORMAT: Hardback
PAGES: c. 552

AUDIENCE

Chemical Engineers, Biochemical Engineers, Microbiologists, Biotechnologists working in academic institutes, research institutes, industries and governmental agencies; MS/M Tech students; Ph D scholars; researchers studying Biohydrogen production, Wastewater treatment for value-addition, Alternate energy sources, and/or Renewable energy from biomass

KEY FEATURES

- Provides the latest information on biofuel production, an important field of research that seeks to help us reduce our dependence on fossil fuels and decrease our impact on the environment
- Compiles a variety of biofuels pathways
- Discusses a variety of microorganisms with biomass conversion potential
- Presents a large selection of engineering strategies

DESCRIPTION

Biotechnology for Biofuel Production and Optimization presents the latest information on biofuel production, an important field of research that seeks to help us reduce our dependence on fossil fuels and decrease our impact on the environment. The book provides an overview of the variety of biofuels and biofuel precursors currently being produced and the technologies developed that are important to improving production rates and titers to become financially relevant for large-scale production.

The field of biofuel production has experienced a surge in recent years in response to the imminent need for renewable and cleaner sources of energy. The use of metabolic engineering is imperative for the development of efficient pathways for the production of a number of biofuels in both model and novel organisms. Numerous breakthroughs have developed in the field of biofuel production in recent years, many due to the advent of synthetic biology technologies used for metabolic engineering of microbes. Herein, this book describe the pathways utilized for the production of a variety of promising biofuels, as well as the techniques that are being employed for the improvement of construction, use, titers, and tolerance in a variety of organisms.

CHEMISTRY

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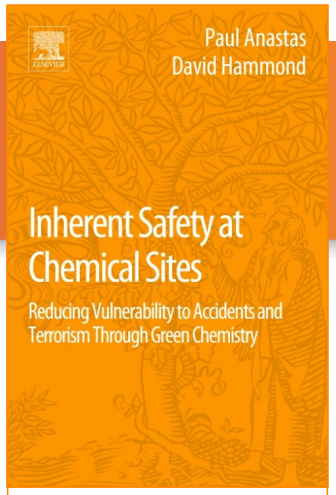

Inherent Safety at Chemical Sites

Reducing Vulnerability to Accidents and Terrorism Through Green Chemistry

Paul Anastas
David G Hammond

ELSEVIER

Primer highlighting practical solutions and real world examples for implementing Green process changes to improve Chemical Site security by reducing the use and storage of harmful chemicals

ISBN: 978-0-12-804190-1

PUB DATE: October 2015

FORMAT: Paperback

PAGES: c. 124

AUDIENCE

Chemists and chemical engineers interested in Green Chemistry, site safety and process improvement

KEY FEATURES

- Addresses security at chemical plants, manufacturers, water utilities and other facilities utilizing and storing hazardous chemical
- Provides practical suggestions and insightful case studies for green chemistry innovations from replacement processes and new technologies
- Covers multiple important chemicals and categories, including: Chlorine, Hydrogen cyanide, Hydrogen fluoride (hydrofluoric acid), Phosgene, Sulfur Dioxide, Sulfuric Acid, Ammonia, Benzene, Pesticides, and cleaning technologies

DESCRIPTION

Inherent Safety at Chemical Sites: Reducing Vulnerability to Accidents and Terrorism Through Green Chemistry highlights the use of green chemistry principles to identify and address serious threats and potential consequences caused by accidental and deliberate industrial chemical releases. Through valuable case studies, the book suggests wholesale replacements of hazardous chemicals with benign and inherently safer, or "greener," materials. More than physical security barriers and plans, such preventative measures better guarantee the safety of industrial employees and nearby residents.

This valuable primer begins with an introduction to the concepts of green chemistry and outlines the various ways that a green approach to chemical design, production, and management is not only good for the planet, but also serves to protect people and infrastructure from terrorist acts. Specific examples and case studies are cited to illustrate what has been done to advance this cause, and offer guidance to those decision-makers who similarly aspire to greater safety and security for the people and resources they manage.

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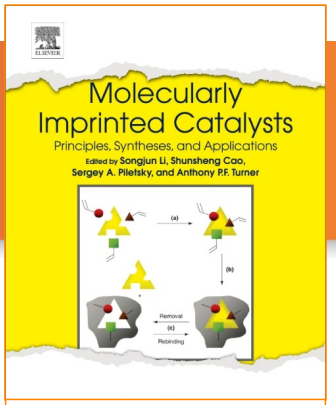

Molecularly Imprinted Catalysts

Principles, Syntheses, and Applications

Edited by: ***Songjun Li*** School of Materials Science & Engineering, Jiangsu University, Zhenjiang, China; ***Shunsheng Cao*** School of Materials Science & Engineering, Jiangsu University, Zhenjiang, China; and Cranfield Health, Cranfield University, Cranfield, Bedfordshire, UK; ***Sergey A. Piletsky*** Cranfield Health, Cranfield University, Cranfield, Bedfordshire, UK
Anthony P.F. Turner Biosensors & Bioelectronics Centre, IFM-Linköping University, Linköping, Sweden

ISBN: 978-0-12-801301-4
PUB DATE: October 2015
FORMAT: Hardback
PAGES: c. 300

AUDIENCE

Researchers in academia and industry working in molecular imprinting, catalysis, molecular recognition, materials science, biotechnology, and nanotechnology

A comprehensive reference for scientists, students, and researchers working in the fields of molecular imprinting, (selective) catalysis, molecular recognition, materials, biotechnology, and nanotechnology

KEY FEATURES

- The first book in the field on molecularly imprinted catalysts (MIPs)
- Provides a systematic background to selective catalysis, especially the basic concepts and key principles of the different MIP-based catalysts
- Features state-of-the art presentation of preparation methods and applications of MIPs
- Written by scientists from prestigious universities and industries across the world, and edited by veteran researchers in molecular imprinting and selective catalysis

DESCRIPTION

Molecularly Imprinted Catalysts: Principle, Synthesis, and Applications is the first book of its kind to provide an in-depth overview of molecularly imprinted catalysts and selective catalysis, including technical details, principles of selective catalysis, preparation processes, the catalytically active polymers themselves, and important progress made in this field. It serves as an important reference for scientists, students, and researchers who are working in the areas of molecular imprinting, catalysis, molecular recognition, materials science, biotechnology, and nanotechnology.

Comprising a diverse group of experts from prestigious universities and industries across the world, the contributors to this book provide access to the latest knowledge and eye-catching achievements in the field, and an understanding of what progress has been made and to what extent it is being advanced in industry.

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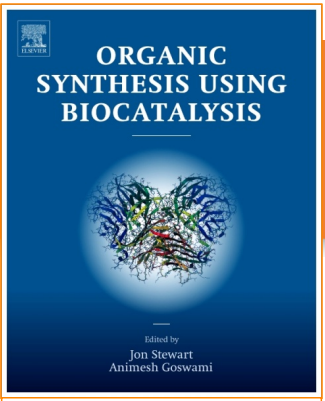

Organic Synthesis Using Biocatalysis

Edited by: ***Animesh Goswami*** Chemical Development, Bristol-Myers Squibb, New Brunswick, NJ, USA
Jon Stewart University of Florida, Gainesville, FL, USA

ELSEVIER

A concise background of the application of biocatalysis for the synthesis of organic compounds, including biocatalysis in organic synthesis, biocatalysis for selective organic transformation, and enzymes as catalysis for organic synthesis

ISBN: 978-0-12-411518-7
PUB DATE: September 2015
FORMAT: Hardback
PAGES: c. 432

AUDIENCE

Designed for postgraduates in chemistry or chemical engineering and industry professionals who need to understand the use of enzymes to perform synthetic organic transformations.

KEY FEATURES

- Provides a concise background of the application of biocatalysis for the synthesis of organic compounds
- Expert contributors present recipes for carrying out biocatalytic reactions, including subject worthy discussions on biocatalysis in organic synthesis, biocatalysis for selective organic transformation, enzymes as catalysis for organic synthesis, biocatalysis in Industry, including pharmaceuticals, and more
- Contains detailed, separate chapters that describe the application of biocatalysis

DESCRIPTION

Organic Synthesis Using Biocatalysis provides a concise background on the application of biocatalysis for the synthesis of organic compounds, including the important biocatalytic reactions and application of biocatalysis for the synthesis of organic compounds in pharmaceutical and non-pharmaceutical areas.

The book provides recipes for carrying out various biocatalytic reactions, helping both newcomers and non-experts use these methodologies. It is written by experts in their fields, and provides both a current status and future prospects of biocatalysis in the synthesis of organic molecules.

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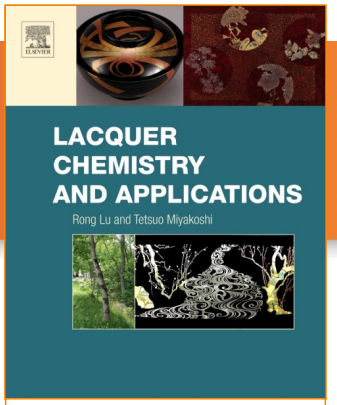

Lacquer Chemistry and Applications

Rong Lu Meiji University, Japan
Tetsuo Miyakoshi Meiji University, Japan

ISBN: 978-0-12-803589-4
PUB DATE: August 2015
FORMAT: Hardback
PAGES: c. 300

AUDIENCE

Chemists, chemical engineers, materials scientists, students, and researchers in lacquer and its applications. Lacquer workers including restoration and protection of lacquerwares, lacquer painting majors student, and the people who use lacquer as a material.

This book provides a unique reference and history on lacquer chemistry, presenting users with a go-to resource on its origins, synthesis, properties, and how the applications of lacquer as a coating material have been used in artwork and other mediums in Asian countries for thousands of years.

KEY FEATURES

- Covers the chemistry and properties of lacquer, including synthesis of its various components
- Provides up-to-date analytical techniques for lacquer identification and characterization
- Discusses possible toxicity effects
- Outlines new modification techniques for developing higher performance material
- Presents the history of this versatile coating material that has evolved from its origins in Asian countries over thousands of years

DESCRIPTION

Lacquer Chemistry and Applications explores the topic of lacquer, the only natural product polymerized by an enzyme that has been used for a coating material in Asian countries for thousands of years.

Although the human-lacquer-culture, including cultivation of the lacquer tree, harvesting, and the use of lacquer sap, has a long history of more than thousand years, there is very little information available on the modern scientific methods to study lacquer chemistry.

This book, based on the results of the authors' 30 years of research on lacquer chemistry, offers lacquer researchers a unique reference on the science and applications of this extremely important material.

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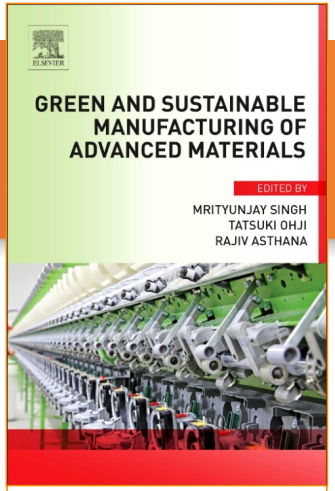

Green and Sustainable Manufacturing of Advanced Material

Edited by: ***Mrityunjay Singh*** Chief Scientist, Ohio Aerospace Institute, NASA Glenn Research Center
Tatsuki Ohji Advanced Manufacturing Research Institute National Institute of Advanced Industrial Science and Technology (AIST) Nagoya, Japan
Rajiv Asthana Manufacturing Engineering Technology Department, University of Wisconsin-Stout, USA

An in-depth cutting-edge treatment of topics of critical importance to the future of green manufacturing

KEY FEATURES

- A one-stop compendium of new research and technology of green manufacturing of metals, ceramics and their composites.
- In-depth cutting-edge treatment of synthesis, processing, fabrication, process optimization, testing, performance evaluation and reliability which are of critical importance to green manufacturing.
- Stimulates fresh thinking and exchange of ideas and information on approaches to green materials processing across disciplines

DESCRIPTION

Sustainable development is a globally recognized mandate and it includes green or environment-friendly manufacturing practices. Such practices orchestrate with the self-healing and self-replenishing capability of natural ecosystems. Green manufacturing encompasses synthesis, processing, fabrication, and process optimization, but also testing, performance evaluation and reliability. The book shall serve as a comprehensive and authoritative resource on sustainable manufacturing of ceramics, metals and their composites. It is designed to capture the diversity and unity of methods and approaches to materials processing, manufacturing, testing and evaluation across disciplines and length scales. Each chapter incorporates in-depth technical information without compromising the delicate link between factual data and fundamental concepts or between theory and practice. Green and sustainable materials processing and manufacturing is designed as a key enabler of sustainable development.

ISBN: 978-0-12-411497-5
PUB DATE: August 2015
FORMAT: Hardback
PAGES: c. 668

AUDIENCE

Practicing engineers and technologists at major manufacturing companies and R&D establishments with current or emerging interest in green and sustainable manufacturing; these include nuclear industry, automotive industry, aerospace, defense, and general manufacturing. Also, researchers at companies and organizations such as Honeywell, Lockheed-Martin, Boeing, Siemens, IBM, Intel, Department of Energy (DoE), Department of Defense (DoD), NASA, Sandia, Oak Ridge and their contractors. Also advanced graduate students at universities worldwide with departments and/or degree programs in Materials Science and Engineering, Manufacturing, Ceramics, Chemistry, Chemical Engineering and Electronics.

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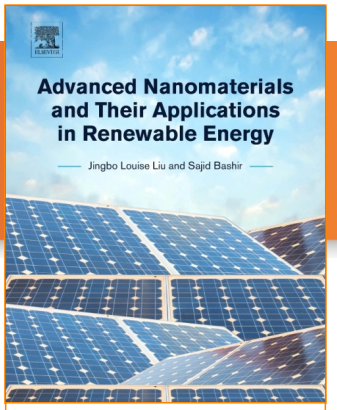


Advanced Nanomaterials and Their Applications in Renewable Energy

Louise Jingbo Liu Texas A&M University, Kingsville, TX, USA
Sajid Bashir Texas A&M University, Kingsville, TX, USA

ISBN: 978-0-12-801528-5
PUB DATE: August 2015
FORMAT: Hardback
PAGES: c. 426

AUDIENCE

Graduate Students, Chemical Engineers, Materials Scientists, Facility and Characterization Center Managers

Researchers at the department of energy research laboratories (Argonne National Laboratory, Lawrence Berkeley National Laboratory, DARPA, etc)

Researchers at Engineering and State Universities who work in the field (MIT, GIT, Cornell University, UC Berkeley etc)

Timely topics related to nano-materials' feasibility synthesis and characterization, and their application in the energy fields

KEY FEATURES

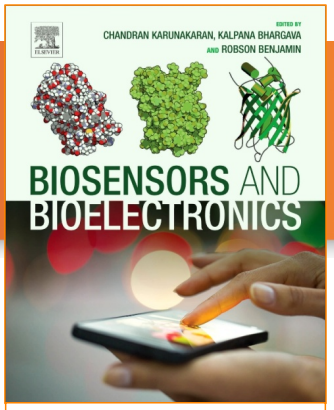
- Provides a comprehensive review of solar energy, fuel cells, and gas storage from 2010 to the present
- Reviews feasible synthesis and modern analytical techniques used in alternative energy
- Explores examples of research in alternative energy, including current assessments of nanomaterials and safety
- Contains a glossary of terms, units, and historical benchmarks
- Presents a useful guide that will bring readers up to speed on historical developments in alternative fuel cells

DESCRIPTION

Advanced Nanomaterials and Their Applications in Renewable Energy presents timely topics related to nanomaterials' feasible synthesis and characterization, and their application in the energy fields. In addition, the book provides insights and scientific discoveries in toxicity study, with information that is easily understood by a wide audience.

Advanced energy materials are important in designing materials that have greater physical, electronic, and optical properties. This book emphasizes the fundamental physics and chemistry underlying the techniques used to develop solar and fuel cells with high charge densities and energy conversion efficiencies.

New analytical techniques (synchronous X-ray) which probe the interactions of particles and radiation with matter are also explored, making this book an invaluable reference for practitioners and those interested in the science.



Biosensors and Bioelectronics

CHANDRAN KARUNAKARAN Associate Professor of Chemistry, Biomedical Research Lab, VHNSN College, Tamilnadu, India
KALPANA BHARGAVA Defence Institute of Physiological and Allied Sciences (DIPAS), Defence Research and Development Organization (DRDO), Ministry of Defence, Government of India,Delhi, India
ROBSON BENJAMIN Department of Physics, American College, Tamilnadu, India

ELSEVIER

An interdisciplinary reference that reflects the latest developments in biosensors and bioinstrumentation

ISBN: 978-0-12-803100-1
PUB DATE: July 2015
FORMAT: Hardback
PAGES: c. 340

AUDIENCE

Chemical Engineers (primarily those in the R&D sector), Electronics Engineers, and Materials Scientists. Secondary audience includes students at the upper undergraduate and graduate level taking related coursework

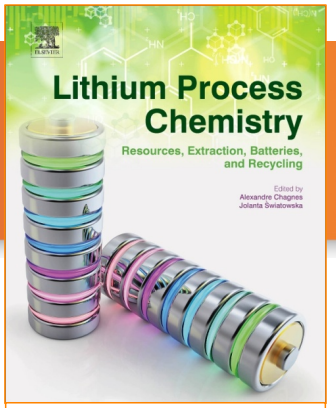
KEY FEATURES

- Features descriptions of functionalized nanocomposite materials and carbon fibre electrode-based biosensors for field and in vivo applications
- Presents a range of interwoven contributing subjects, including electrochemistry, nanoparticles, and conducting polymers
- Includes more than 70 figures and illustrations that enhance key concepts and aid in retention
- Ideal reference for those studying bioreceptors, transducers, bioinstrumentation, nanomaterials, immunosensors, nanotubes, nanoparticles, and electrostatic interactions
- Authored by a collaborative team of scientists with more than 50 years of experienced in field research and instruction combined

DESCRIPTION

Biosensors and Bioelectronics presents the rapidly evolving methodologies that are relevant to biosensors and bioelectronics fabrication and characterization. The book provides a comprehensive understanding of biosensor functionality, and is an interdisciplinary reference that includes a range of interwoven contributing subjects, including electrochemistry, nanoparticles, and conducting polymers.

Authored by a team of bioinstrumentation experts, this book serves as a blueprint for performing advanced fabrication and characterization of sensor systems—arming readers with an application-based reference that enriches the implementation of the most advanced technologies in the field.



Lithium Process Chemistry

Resources, Extraction, Batteries, and Recycling

Edited by: ***Alexandre Chagnes*** Chimie ParisTech-CNRS, Institut de Recherche de Chimie Paris, Paris, France
Jolanta Swiatowska PSL Research University, Chimie ParisTech-CNRS, Institut de Recherche de Chimie Paris, Paris, France

ELSEVIER

Presents, for the first time, the most recent developments and state-of-the-art of lithium production, lithium-ion batteries, and their recycling

ISBN: 978-0-12-801417-2
PUB DATE: June 2015
FORMAT: Hardback
PAGES: c. 300

AUDIENCE

Chemical engineers, metallurgists, academic researchers in these areas

Scientific libraries in universities and research institutes

KEY FEATURES

- Provides fundamental and theoretical knowledge on hydrometallurgy and electrochemistry in lithium-ion batteries
- Represents the first time that hydrometallurgy and electrochemistry on lithium-ion batteries are assembled in one unique source.
- Ideal for both electrochemists who usually have no knowledge in hydrometallurgy and hydrometallurgists not familiar with electrochemistry applied to Li-ion batteries
- Presents recent developments, as well as challenges in lithium production and lithium-ion battery technologies and their recycling
- Covers examples of Li processes production with schematics, also including numerous graphical presentations of different battery systems and their electrochemical performances

DESCRIPTION

Lithium Process Chemistry: Resources, Extraction, Batteries and Recycling presents, for the first time, the most recent developments and state-of-the-art of lithium production, lithium-ion batteries, and their recycling.

The book provides fundamental and theoretical knowledge on hydrometallurgy and electrochemistry in lithium-ion batteries, including terminology related to these two fields. It is of particular interest to electrochemists who usually have no knowledge in hydrometallurgy and hydrometallurgists not familiar with electrochemistry applied to Li-ion batteries.

It is also useful for both teachers and students, presenting an overview on Li production, Li-ion battery technologies, and lithium battery recycling processes that is accompanied by numerous graphical presentations of different battery systems and their electrochemical performances. The book represents the first time that hydrometallurgy and electrochemistry on lithium-ion batteries are assembled in one unique source.

CHEMISTRY

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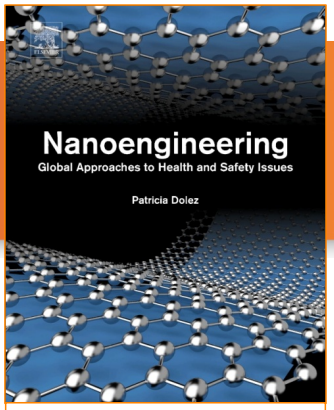


Nanoengineering

Global Approaches to Health and Safety Issues

Edited by: ***Patricia Dolez*** CTT Group, Saint-Hyacinthe, QC, Canada

ISBN: 978-0-444-62747-6

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 720

AUDIENCE

Academic and research institute scientists doing research on nanomaterials; Professors teaching about nanotechnologies; Researchers and engineers in companies manufacturing and using nanomaterials; Health and Safety preventionists; Public Health personnel; Consumer protection analysts; Company directors and supervisors; Worker protection advisors.

Secondary: Workers and consumers concerned about nanomaterials; legislators and law makers

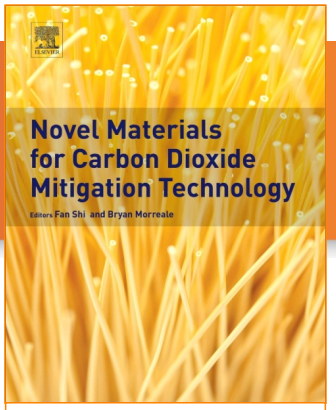
Looks at the impact of engineered nanomaterials on health, safety, and the environment for the general public and for the workforce

KEY FEATURES

- Provides a global vision on the different aspects related to nanosafety and a synthesis of the information available
- Gives all the information required for precision decision-making in a single book, offering both general public and occupational aspects
- Contains separate chapters on each subject written by world-renowned contributors
- Presents a complete vision of the problem, with perspectives on global approaches
- Includes case studies that illustrate important processes

DESCRIPTION

Nanoengineering: Global Approaches to Health and Safety Issues provides a global vision on the impact of engineered nanomaterials both for the consumer/general public and in occupational settings. The book also presents a hint on what can be expected for the future from nanomaterials and their effects on our lives, both at home and at work. In addition, users will find valuable information on nanomaterials' irreplaceable value and their risks for health, safety, and environmental issues. Case studies illustrate key points and provide information on important processes.



Novel Materials for Carbon Dioxide Mitigation Technology

Edited by: ***Bryan Morreale*** National Energy Technology Laboratory, US Department of Energy, Pittsburgh, PA, USA
Fan Shi U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL), Pittsburgh, PA, USA

ELSEVIER

This book presents experts' view of the current state of play and prospects for the development of novel materials dedicated to carbon mitigation technologies

ISBN: 978-0-444-63259-3

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 404

AUDIENCE

Chemical, material, or environmental engineers who need to design, develop, or configure an effective material for CO_2 mitigation. Chemical, material, or environmental engineers, researchers and professionals in the energy industry. It could also be used as supplemental text for graduate courses in chemical, material, or environmental engineering in carbon mitigation technology

KEY FEATURES

- Emphasizes material development for carbon mitigation technologies rather than regulations
- Provides a fundamental understanding of the underpinning science as well as technological approaches to implement carbon capture, utilization and storage technologies.
- Introduces the driving force behind novel materials, their performance and applications for carbon dioxide mitigation
- Contains figures, tables and an abundance of examples clearly explaining the development, characterization and evaluation of novel carbon mitigation materials
- Includes hundreds of citations drawing on the most recent published works on the subject
- Provides a wealth of real-world examples, illustrating how to bridge nano-scale materials to bulk carbon mitigation properties.

DESCRIPTION

Materials for Carbon Dioxide Mitigation Technology offers expert insight and experience from recognized authorities in advanced material development in carbon mitigation technology and constitutes a comprehensive guide to the selection and design of a wide range of solvent/sorbent/catalyst used by scientists globally. It appeals to chemical scientists, material scientists and engineers, energy researchers, and environmental scientists from academia, industry, and government in their research directed toward greener, more efficient carbon mitigation processes.

CHEMISTRY

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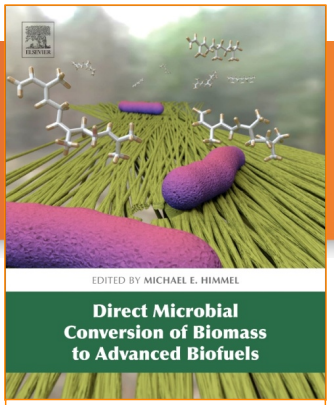

Direct Microbial Conversion of Biomass to Advanced Biofuels

Edited by: ***Michael E Himmel*** Group Manager, National Renewable Energy Laboratory

ELSEVIER

ISBN: 978-0-444-59592-8

PUB DATE: May 2015

FORMAT: Hardback

PAGES: c. 404

AUDIENCE

This book will appeal not only to biochemists, molecular biologists, chemists, and microbiologists working to understand the fundamental problems associated with biomass conversion research, but also chemical and mechanical engineers working to design new conversion processes for advanced biofuels. A secondary market will be DOE and other government staff looking for expert advice in the field of Biofuels production.

This book describes an important new field in biotechnology, the consolidated conversion of lignocellulosic feedstocks to advanced fuels, bringing the latest research and experiments to the forefront

KEY FEATURES

- Describes an important new field in biotechnology, the consolidated conversion of lignocellulosic feedstocks to advanced fuels
- Up-to-date views of promising technologies used in the production of advanced biofuels
- Presents the newest ideas, well-designed experiments, and outcomes
- Provides outstanding illustrations from NREL and contributing researchers
- Contains contributions from leaders in the field that provide numerous examples and insights into the most important aspects of the topic

DESCRIPTION

'Direct Microbial Conversion of Biomass to Advanced Biofuels' is a stylized text that is rich in both the basic and applied sciences. It provides a higher level summary of the most important aspects of the topic, addressing critical problems solved by deep science.

Expert users will find new, critical methods that can be applied to their work, detailed experimental plans, important outcomes given for illustrative problems, and conclusions drawn for specific studies that address broad based issues.

A broad range of readers will find this to be a comprehensive, informational text on the subject matter, including experimentalists and even CEOs deciding on new business directions.

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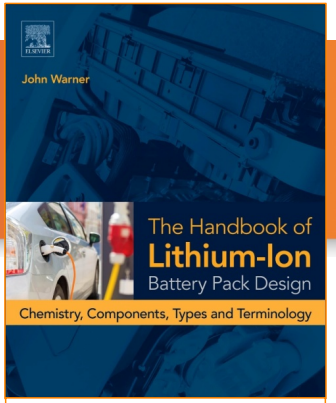

The Handbook of Lithium-Ion Battery Pack Design

Chemistry, Components, Types and Terminology

John T Warner Grand Blanc, MI USA

ELSEVIER

A clear and concise description of Li-ion battery development for the professional who is dealing with their design and applications

ISBN: 978-0-12-801456-1

PUB DATE: May 2015

FORMAT: Hardback

PAGES: c. 240

AUDIENCE

Engineering designers, manufacturing managers, engineering technicians, chemical and mechanical engineers, thermal engineers, battery chemists, and anyone working in the Li-ion battery industry who is not an engineer by training

KEY FEATURES

- Offers an easy explanation of battery terminology and enables better understanding of batteries, their components and the market place.
- Demonstrates simple battery scaling calculations in an easy to understand description of the formulas
- Describes clearly the various components of a Li-ion battery and their importance
- Explains the differences between various Li-ion cell types and chemistries and enables the determination which chemistry and cell type is appropriate for which application
- Outlines the differences between battery types, e.g., power vs energy battery
- Presents graphically different vehicle configurations: BEV, PHEV, HEV
- Includes brief history of vehicle electrification and its future

DESCRIPTION

The Handbook of Lithium-Ion Battery Pack Design: Chemistry, Components, Types and Terminology offers to the reader a clear and concise explanation of how Li-ion batteries are designed from the perspective of a manager, sales person, product manager or entry level engineer who is not already an expert in Li-ion battery design. It will offer a layman's explanation of the history of vehicle electrification, what the various terminology means, and how to do some simple calculations that can be used in determining basic battery sizing, capacity, voltage and energy. By the end of this book the reader has a solid understanding of all of the terminology around Li-ion batteries and is able to do some simple battery calculations.

The book is immensely useful to beginning and experienced engineer alike who are moving into the battery field. Li-ion batteries are one of the most unique systems in automobiles today in that they combine multiple engineering disciplines, yet most engineering programs focus on only a single engineering field. This book provides you with a reference to the history, terminology and design criteria needed to understand the Li-ion battery and to successfully lay out a new battery concept. Whether you are an electrical engineer, a mechanical engineer or a chemist this book helps you better appreciate the inter-relationships between the various battery engineering fields that are required to understand the battery as an Energy Storage System.

CHEMISTRY

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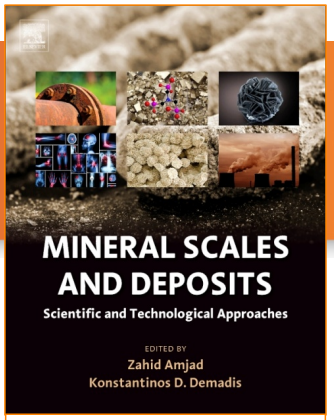

Mineral Scales and Deposits

Scientific and Technological Approaches

Edited by: ***Zahid Amjad*** School of Arts and Sciences, Walsh University, N. Canton, OH, USA
Kostas Demadis Department of Chemistry, University of Crete, Heraklion, Greece

ISBN: 978-0-444-63228-9
PUB DATE: May 2015
FORMAT: Hardback
PAGES: c. 26

AUDIENCE

For scientists/experts working in academia, it offers a number of crystal growth topics with emphasis on mechanistic details, prediction modules, inhibition/dispersion chemistry, etc. For technologists, chemists, chemical engineers, water technologists, consultants, plant managers, plant engineers, plant designers working in industry, it provides a more field-friendly overview of scale-related challenges and technological options to mitigate them.

All fundamental and applications aspects of scale deposits in industrial water systems and selected biological systems, with formation mechanisms and prevention methods

KEY FEATURES

- Provides a unique, detailed focus on scale deposits, includes the basic science and mechanisms of scale formation
- Present a field-friendly overview of scale-related challenges and technological options for their mitigation
- Correlates chemical structure to performance
- Provides guidelines for easy assessment of a particular case, also including solutions
- Includes an extensive list of industrial case studies for reference

DESCRIPTION

Mineral Scales and Deposits: Scientific and Technological Approaches presents, in an integrated way, the problem of scale deposits (precipitation/crystallization of sparingly-soluble salts) in aqueous systems, both industrial and biological.

It covers several fundamental aspects, also offering an applications' perspective, with the ultimate goal of helping the reader better understand the underlying mechanisms of scale formation, while also assisting the user/reader to solve scale-related challenges.

It is ideal for scientists/experts working in academia, offering a number of crystal growth topics with an emphasis on mechanistic details, prediction modules, and inhibition/dispersion chemistry, amongst others. In addition, technologists, consultants, plant managers, engineers, and designers working in industry will find a field-friendly overview of scale-related challenges and technological options for their mitigation.

Industrial Biorefineries & White Biotechnology

Edited by: ***Ashok Pandey*** CSIR, National Institute for Interdisciplinary Science and Technology, Trivandrum, India
Rainer Hofer Editorial Ecosiris, Düsseldorf, Germany
Mohammad Taherzadeh University of Borås in Sweden
Madhavan Nampoothiri CSIR-NIIST, Trivandrum, India
Christian Larroche Blaise Pascal University, Aubiére Cedex, France

ELSEVIER

Presents the latest scientific and technological developments used in biomass conversion, covering the most up-to-date information and technological perspectives

*"Intended for post-graduate students and researchers in applied biology, biotechnology and chemical engineering, this guide to state of the art of biofuel processes and techniques showcases current scholarship and real world implementations of this important and emerging alternative energy technology. The volume is divided into sections covering general principles of biorefining, production of bioethanol from feedstocks, production of biodiesel from vegetable oils, production of biofuels from algae, biohydrogen and biobutanol and other green fuels and individual chapters address specific aspects of the production process, raw materials, and assessments of the efficiency and practicality of each technology."**--SciTech Book News***

ISBN: 978-0-444-63453-5
PUB DATE: May 2015
FORMAT: Hardback
PAGES: c. 716

AUDIENCE
Chemical Engineers, Biotechnologists, microbiologists/biologists, Agricultural Chemists, Environmental Engineers, Petroleum Engineers and graduate and postgraduate students in these areas

KEY FEATURES

- Provides information on the most advanced and innovative pretreatment processes and technologies for biomass
- Covers information on lignocellulosic and algal biomass to work on the principles of biorefinery
- Provides information on integration of processes for the pretreatment of biomass
- Designed as a textbook for both graduate students and researchers

DESCRIPTION

Industrial Biorefineries and White Biotechnology provides a comprehensive look at the increasing focus on developing the processes and technologies needed for the conversion of biomass to liquid and gaseous fuels and chemicals, in particular, the development of low-cost technologies.

During the last 3-4 years, there have been scientific and technological developments in the area; this book represents the most updated information and technological perspective on the topic.

CHEMISTRY
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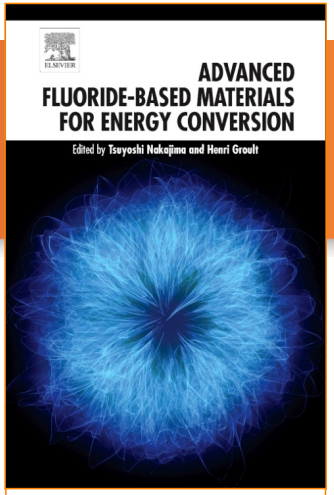

Advanced Fluoride-Based Materials for Energy Conversion

Edited by: ***Tsuyoshi Nakajima*** Aichi Institute of Technology, Toyota, Japan
Henri Groult University of Pierre and Marie Curie, Paris, France

ELSEVIER

An all-encompassing look at the properties and functions of fluorinated materials, including guidance on fluorination reactions and techniques for chemical energy devices

ISBN: 978-0-12-800679-5

PUB DATE: May 2015

FORMAT: Hardback

PAGES: c. 440

AUDIENCE

Inorganic fluorine chemists and electrochemists: industry researchers and technicians, university professors and graduate students, researchers and technicians of research institutes

KEY FEATURES

- Provides thorough and applied information on new fluorinated materials for chemical energy devices
- Describes the emerging role of stable energy devices with high-level functions and the research surrounding the technology
- Ideal for the chemist, research, technician, or academic seeking current insights into the synthesis of fluorine compounds and fluorination reactions using fluorinating agents

DESCRIPTION

Advanced Fluoride-Based Materials for Energy Conversion provides thorough and applied information on new fluorinated materials for chemical energy devices, exploring the electrochemical properties and behavior of fluorinated materials in lithium ion and sodium ion batteries, fluoropolymers in fuel cells, and fluorinated carbon in capacitors, while also exploring synthesis applications, and both safety and stability issues.

As electronic devices, from cell phones to hybrid and electric vehicles, are increasingly common and prevalent in modern lives and require dependable, stable chemical energy devices with high-level functions are becoming increasingly important. As research and development in this area progresses rapidly, fluorine compounds play a critical role in this rapid progression. Fluorine, with its small size and the highest electronegativity, yields stable compounds under various conditions for utilization as electrodes, electrolytes, and membranes in energy devices.

The book is an ideal reference for the chemist, researcher, technician, or academic, presenting valuable, current insights into the synthesis of fluorine compounds and fluorination reactions using fluorinating agents.

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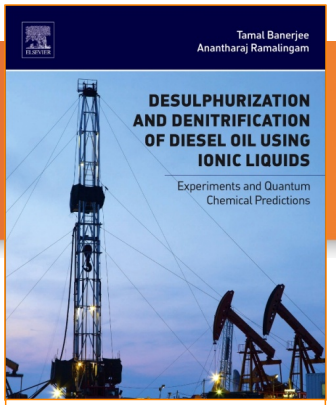

Desulphurization and Denitrification of Diesel Oil Using Ionic Liquids

Experiments and Quantum Chemical Predictions

Tamal Banerjee Department of Chemical Engineering, Indian Institute of Technology Guwahati, Guwahati, India
Anantharaj Ramalingam Senior Lecturer Department of Chemical Engineering Faculty of Engineering Building University of Malaya Kuala Lumpur Malaysia

ISBN: 978-0-12-801347-2
PUB DATE: May 2015
FORMAT: Hardback
PAGES: c. 330

AUDIENCE

Post-graduate students, researchers in academia and industry and chemical engineers working in the field of desulphurization and ionic liquids, using *ab initio*, quantum and COSMO techniques

Comprehensive but concise evaluation of the usage of ionic liquids for desulphurization and denitrification of diesel oil using quantum chemical calculations

KEY FEATURES

- Provides current research on green solvents, such as ionic liquids, used in desulphurization and denitrification of fuels
- Discusses the COSMO-RS model in predicting the properties of ionic liquids to aid in the design of separation processes
- Includes real-world applications of desulphurization and denitrification using ionic liquids

DESCRIPTION

Desulphurization and Denitrification of Diesel Oil using Ionic Liquids: Experiments and Quantum Chemical Predictions discusses how quantum chemical calculations are applied to investigate the fundamental nature of the IL-sulphur-nitrogen systems at atomic and molecular levels.

The book will help readers understand the nature of the structural relationship between molecules such as ionic liquid + aromatic sulphur + aromatic nitrogen system(s).

In addition, COSMO-RS (Conductor Like Screening Model for Real Solvents) predictions and subsequent experimentation are discussed to evaluate the performance of ionic liquids for desulphurization and denitrification of diesel oil.

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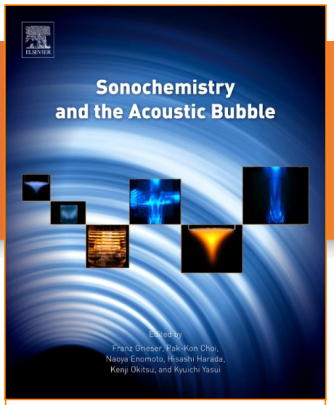

Sonochemistry and the Acoustic Bubble

Edited by: ***Franz Grieser*** University of Melbourne, Victoria, Australia
Pak-Kon Choi Meiji University, Kawasaki, Japan
Naoya Enomoto Kyushu University Fukuoka, Japan
Hisashi Harada Meisei University, Tokyo, Japan
Kenji Okitsu Osaka Prefecture University, Osaka, Japan
Kyuichi Yasui National Institute of Advanced Industrial Science and Technology (AIST), Nagoya Japan

ISBN: 978-0-12-801530-8
PUB DATE: April 2015
FORMAT: Hardback
PAGES: c. 282

AUDIENCE

Primarily readers are Students in Science and Engineering, Researchers, Chemical Engineers, Engineers in Ultrasonic Cleaning, Ultrasonic Atomization, Food Processing, Chemists, Physicists, Libraries

The book will also have value to Engineers in Medical and Environmental Technology, Medical Doctors, High School Teachers, Journalists in Science and Engineering

This book is a comprehensive introduction and fundamental guide to the field of acoustic cavitation and sonochemistry and its (potential) applications with respect to industrial and medical technologies.

KEY FEATURES

- Experimental methods on acoustic cavitation and sonochemistry
- Helps users understand how to readily begin experiments in the field
- Provides an understanding of the physics behind the phenomenon
- Contains examples of (possible) industrial applications in chemical engineering and environmental technologies
- Presents the possibilities for adopting the action of acoustic cavitation with respect to industrial applications

DESCRIPTION

Sonochemistry and the Acoustic Bubble provides an introduction to the way ultrasound acts on bubbles in a liquid to cause bubbles to collapse violently, leading to localized 'hot spots' in the liquid with temperatures of 5000° celcius and under pressures of several hundred atmospheres.

These extreme conditions produce events such as the emission of light, sonoluminescence, with a lifetime of less than a nanosecond, and free radicals that can initiate a host of varied chemical reactions (sonochemistry) in the liquid, all at room temperature.

The physics and chemistry behind the phenomena are simply, but comprehensively presented. In addition, potential industrial and medical applications of acoustic cavitation and its chemical effects are described and reviewed.

The book is suitable for graduate students working with ultrasound, and for potential chemists and chemical engineers wanting to understand the basics of how ultrasound acts in a liquid to cause chemical and physical effects.

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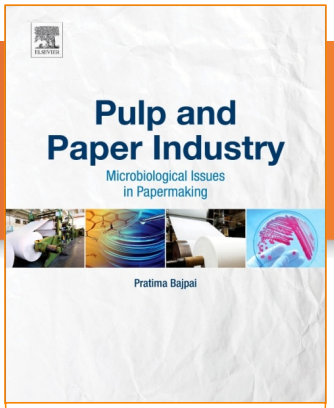

Pulp and Paper Industry

Microbiological Issues in Papermaking

Pratima Bajpai Consultant-Pulp and Paper, Thapar Centre for Industrial R&D, Patiala, India

ELSEVIER

Focuses on microbial problems and their consequences in paper mill systems, chemistry of paper machines deposits and strategies for control, and methods for biofouling analysis

ISBN: 978-0-12-803409-5

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 210

AUDIENCE

Researchers, Scientists, Graduate students, Teachers in Pulp and Paper technology, Biotechnology, Microbiology, Environmental pollution, Pulp and Paper Technologist/ Engineers, Paper manufacturers, Paper mill personnel, Senior Paper Scientists and R&D Professionals, Academics, Analysts and Consultants

KEY FEATURES

- In-depth coverage of microbiological issues in papermaking and their consequences
- Discusses eco-efficient processes **(green processes)** for biofilm/slime control
- Offers a thorough review of the current literature with links to the primary literature
- Comprehensive indexing
- Author is an authority in the pulp and paper industry

DESCRIPTION

Pulp and Paper Industry: Microbiological Issues in Papermaking features in-depth and thorough coverage of microbiological issues in papermaking and their consequences and the current state of the different alternatives for prevention, treatment and control of biofilm/slime considering the impact of the actual technological changes in papermaking on the control programmes. The microbial issues in paper mill systems, chemistry of deposits on paper machines, the strategies for deposit control and methods used for the analysis of biofouling are all dealt in this book along with various growth prevention methods. The traditional use of biocides is discussed taken into account the new environmental regulations regarding their use. Finally, discusses the trends regarding the future of the microbiological control in papermaking systems.

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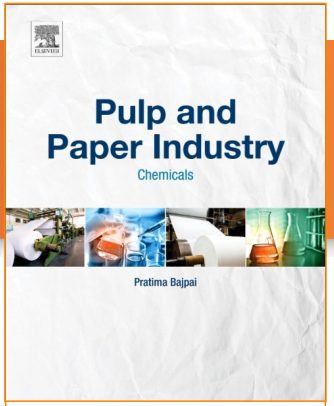


Pulp and Paper Industry

Chemicals

Pratima Bajpai Consultant-Pulp and Paper, Thapar Centre for Industrial R&D, Patiala, India

ELSEVIER

Up-to-date information on chemicals in the pulp and paper industry, describing chemical demand by end users and key and niche players and what the future holds

ISBN: 978-0-12-803408-8

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 324

AUDIENCE

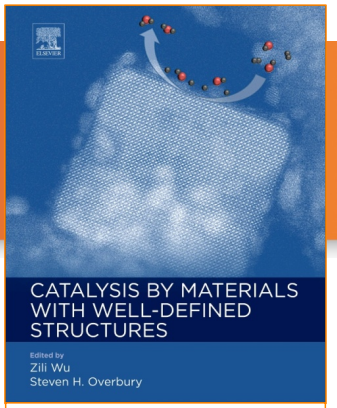
Chemists, chemical engineers, Chemicals suppliers, Chemicals manufacturers, Pulp and Paper technologist/ Engineers, Paper manufacturers, Paper mill personnel, Senior Paper Scientists and R&D Professionals, Academics, Analysts and Consultants

KEY FEATURES

- Detailed and up-to-date coverage of Chemicals in Pulp and Paper Industry
- Authoritative, thorough, and comprehensive content on a wide variety of Enzymes "Green Chemicals"
- Comprehensive list of Paper and Pulp Related Chemicals
- Comprehensive list of all Pulp and paper Suppliers
- Comprehensive Indexing

DESCRIPTION

Pulp and Paper Industry: Chemicals features in-depth and thorough coverage of Chemical additives in the Pulp and Paper Industry. It discusses use of Enzymes "Green Chemicals" that can improve operations in pulp and paper, describes Chemicals demanded by the end user and many key and niche players such as Akzo Nobel NV, Eka Chemicals AB, Ashland, Inc., BASF, Buckman Laboratories International, Inc., Clariant, Cytec Industries, Inc., Enzymatic Deinking Technologies, LLC, ERCO Worldwide, FMC Corporation, Georgia-Pacific Corporation, Georgia-Pacific Chemicals LLC, Imerys SA, Momentive Specialty Chemicals, Inc., Novozymes, Kemira Chemicals, Nalco Holding Company, Omya AG, Solvay AG, and Solvay Chemicals, Inc.. Paper and pulp processing and additive chemicals are an integral part of the total papermaking process from pulp slurry, through sheet formation, to effluent disposal. Environmental concerns, increased use of recycled waste paper as a replacement for virgin pulp, changes in bleaching and pulping processes, increased efficiency requirements for the papermaking process, limits on effluent discharge as well as international competitiveness have greatly impacted the paper and pulp chemical additive market. This book features in-depth and thorough coverage of Chemical additives in Pulp and Paper Industry.



Catalysis by Materials with Well-Defined Structures

Edited by: ***Zili Wu*** Chemical Science Division and Center for Nanophase Materials Sciences, Oak Ridge National Lab, Oak Ridge, TN, USA
Steven H. Overbury Chemical Science Division and Center for Nanophase Materials Sciences, Oak Ridge National Lab, Oak Ridge, TN, USA

ELSEVIER

A concise reference work on nanomaterials catalysts, their synthesis, characterization, and use in developing new and efficient heterogeneous catalytic processes

ISBN: 978-0-12-801217-8

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 376

AUDIENCE

Academic researchers, industrial professionals in catalysis science, inorganic and physical chemistry, chemical engineering, material science, and physics. Graduate and undergraduate students in catalysis, material science, chemistry and chemical engineering.

KEY FEATURES

- Outlines the importance of nanomaterials and their potential as catalysts
- Provides detailed information on synthesis and characterization of nanomaterials with well-defined structures, relating surface activity to catalytic activity
- Details how to establish the structure-catalysis relationship and how to reveal the surface chemistry and surface structure of catalysts
- Offers examples on various in situ characterization instrumental techniques
- Includes in-depth theoretical modeling utilizing advanced Density Functional Theory (DFT) methods

DESCRIPTION

Catalysis by Materials with Well-Defined Structures examines the latest developments in the use of model systems in fundamental catalytic science. A team of prominent experts provides authoritative, first-hand information, helping readers better understand heterogeneous catalysis by utilizing model catalysts based on uniformly nanostructured materials.

The text addresses topics and issues related to material synthesis, characterization, catalytic reactions, surface chemistry, mechanism, and theoretical modeling, and features a comprehensive review of recent advances in catalytic studies on nanomaterials with well-defined structures, including nanoshaped metals and metal oxides, nanoclusters, and single sites in the areas of heterogeneous thermal catalysis, photocatalysis, and electrocatalysis.

Users will find this book to be an invaluable, authoritative source of information for both the surface scientist and the catalysis practitioner

CHEMISTRY

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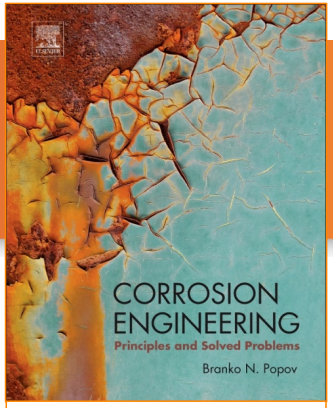

Corrosion Engineering

Principles and Solved Problems

Branko N Popov Carolina Distinguished Professor and Director of the Center for Electrochemical Engineering, University of South Carolina, Columbia, SC, USA

ELSEVIER

The book focuses on extensive theoretical description of the principles of corrosion theory, passivity, material selections and design and engineering of corrosion prevention strategies

ISBN: 978-0-444-62722-3

PUB DATE: March 2015

FORMAT: Hardback

PAGES: c. 774

AUDIENCE

Graduate students who take corrosion engineering courses in chemical engineering, mechanical engineering, civil engineering, chemistry and materials science courses. Also intended for practicing corrosion engineers, chemical engineers, mechanical engineers, civil engineers, materials scientists and energy engineers.

KEY FEATURES

- Addresses the corrosion theory, passivity, material selections and designs
- Covers extensively the corrosion engineering protection strategies
- Contains over 500 solved problems, diagrams, case studies and end of chapter problems
- Could be used as a text in advanced/graduate corrosion courses as well self-study reference for corrosion engineers

DESCRIPTION

Corrosion Engineering: Principles and Solved Problems covers corrosion engineering through an extensive theoretical description of the principles of corrosion theory, passivity and corrosion prevention strategies and design of corrosion protection systems. The book is updated with results published in papers and reviews in the last twenty years. Solved corrosion case studies, corrosion analysis and solved corrosion problems in the book are presented to help the reader to understand the corrosion fundamental principles from thermodynamics and electrochemical kinetics, the mechanism that triggers the corrosion processes at the metal interface and how to control or inhibit the corrosion rates. The book covers the multidisciplinary nature of corrosion engineering through topics from electrochemistry, thermodynamics, mechanical, bioengineering and civil engineering.

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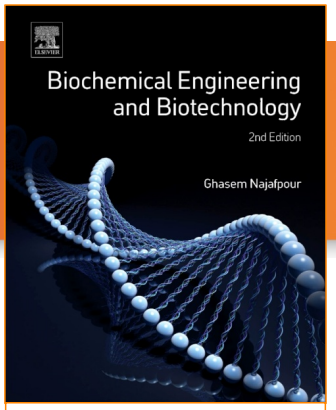

Biochemical Engineering and Biotechnology, 2e

Ghasem Najafpour University of Mazanadaran, Faculty of Chemical Engineering, Babol, Iran

ELSEVIER

Presents the principles and applications of biochemical and biotechnology concepts in a clear and easy to understand way using numerous examples and case studies

ISBN: 978-0-444-63357-6

PREVIOUS EDITION ISBN: 978-0-444-52845-2

PUB DATE: late February 2015

FORMAT: Hardback

PAGES: c. 660

AUDIENCE

The book is appropriate as a college and university text book for undergraduate senior courses and postgraduate course. Students and research scientists in biochemical engineering and biological sciences will find this reference particularly useful for gaining an overview of the subject and planning research activities. It is also useful for research institutes and postgraduates who are involved in practical research in biochemical engineering and biotechnology.

KEY FEATURES

- Covers major concepts of biochemical engineering and biotechnology, including applications in bioprocesses, fermentation technologies, enzymatic processes, and membrane separations, amongst others
- Accessible to chemical engineering students who need to both learn, and apply, biological knowledge in engineering principals
- Includes solved problems, examples, and demonstrations of detailed experiments with simple design equations and all required calculations
- Offers many graphs that present actual experimental data, figures, and tables, along with explanations

DESCRIPTION

Biochemical Engineering and Biotechnology, 2nd Edition, outlines the principles of biochemical processes and explains their use in the manufacturing of every day products. The author uses a diirect approach that should be very useful for students in following the concepts and practical applications. This book is unique in having many solved problems, case studies, examples and demonstrations of detailed experiments, with simple design equations and required calculations.

CHEMISTRY

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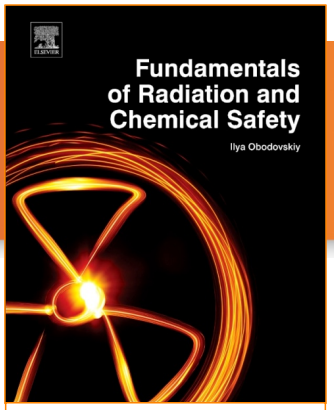


Fundamentals of Radiation and Chemical Safety

Ilya Obodovskiy Frankfurt, Germany

ELSEVIER

Provides for the first time a common biophysical basis for radiation and chemical safety with special attention to low doses of both radiation and chemical exposure

ISBN: 978-0-12-802026-5

PUB DATE: February 2015

FORMAT: Hardback

PAGES: c. 250

AUDIENCE

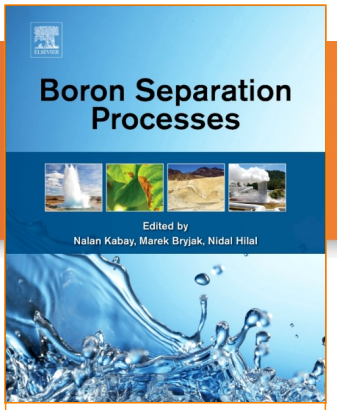
Chemists, physical chemists, chemical engineers, physicists, biologists and radiation experts and safety officers, governments and radiation protection agents.

KEY FEATURES

- Brings together, for the first time, the problems of radiation and chemical safety on a common biophysical basis.
- Relates hazards caused by ionizing radiation and chemicals and discusses the common effective mechanisms
- Outlines common methodology and data processing between radiation and regular chemical hazards
- Concerns primarily with low levels of radiation and chemical exposure

DESCRIPTION

Fundamentals of Radiation and Chemical Safety covers the effects and mechanisms involved in radiation and chemical exposure on humans. The mechanisms and effects of these damaging factors have many aspects in common, as do their research methodology and the methods used for data processing. In many cases of these types of exposures the same final effect can also be noted: Cancer. Low doses of radiation and small doses of chemical exposure are continuously active and they could influence the entire population. The analysis of these two main source hazards on the lives of the human population is covered here for the first time in a single volume determining and demonstrating their common basis. *Fundamentals of Radiation and Chemical Safety* includes the necessary knowledge from nuclear physics, chemistry and biology, as well the methods of processing the experimental results. This title focuses on the effects of low radiation dosage and chemical hormesis as well as the hazards associated with, and safety precautions in radiation and chemicals, rather than the more commonly noted safety issues high level emergencies and disasters of this type.



Boron Separation Processes

Edited by: ***Nalan Kabay*** Ege University, Turkey
Marek Bryjak Wroclaw University of Technonolgy, Poland
Nidal Hilal Centre for Water Advanced Technologies and Environmental Research (CWATER,) Swansea University, U.K.

ELSEVIER

ISBN: 978-0-444-63454-2
PUB DATE: January 2015
FORMAT: Hardback
PAGES: c. 400

AUDIENCE

Chemical and environmental engineers working in membrane treatment of water and waste-water as well as professionals in companies related to water treatment equipment, global engineering, mining, geothermal energy, and seawater desalination. Also for undergraduate and graduate students, postdoctoral researchers, and professors.

A comprehensive picture of the boron based membrane separation technologies and their contribution to solving the problem of water stress and poor sanitation, two of the greatest challenges of the 21st century.

KEY FEATURES

- Provides in one source a state-of-the-art overview of this compelling area
- Reviews the environmental impact of boron before introducing emerging boron separation processes
- Includes simulation and optimization studies for boron separation processes
- Describes boron separation processes applicable to specific sources, such as seawater, geothermal water and wastewater

DESCRIPTION

The impending crisis posed by water stress and poor sanitation represents one of greatest human challenges for the 21st century, and membrane technology has emerged as a serious contender to confront the crisis. Yet, whilst there are countless texts on wastewater treatment and on membrane technologies, none address the boron problem and separation processes for boron elimination. ***Boron Separation Processes*** fills this gap and provides a unique and single source that highlights the growing and competitive importance of these processes. For the first time, the reader is able to see in one reference work the state-of-the-art research in this rapidly growing field. The book focuses on four main areas:

- Effect of boron on humans and plants
- Separation of boron by ion exchange and adsorption processes
- Separation of boron by membrane processes
- Simulation and optimization studies for boron separation

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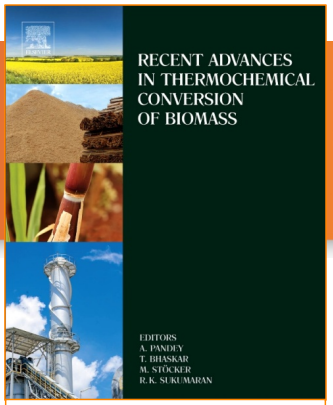

Recent Advances in Thermochemical Conversion of Biomass

Edited by: ***Ashok Pandey*** CSIR, National Institute for Interdisciplinary Science and Technology, Trivandrum, India
Thallada Bhaskar CSIR, Indian Institute of Petroleum, India
M. Stöcker SINTEF Materials and Chemistry, Oslo, Norway
Rajeev Sukumaran CSIR, National Institute for Interdisciplinary Science and Technology, Trivandrum, India

ISBN: 978-0-444-63289-0
PUB DATE: January 2015
FORMAT: Hardback
PAGES: c. 484

AUDIENCE

Chemical engineers, biochemical engineers, microbiologists, biotechnologists working in academic and research institutes, or in industry or governmental agencies.MS/M Tech students, Ph D scholars, and researchers studying biohydrogen production, wastewater treatment for value-addition, alternate energy sources, renewable energy from biomass.

Current state-of-art information on the processes, product development, and perspectives for future R&D and applications

KEY FEATURES

- Provides the most advanced and innovative thermochemical conversion technology for biomass
- Provides information on large scales such as thermochemical biorefinery
- Useful for researchers intending to study scale up
- Serves as both a textbook for graduate students and a reference book for researchers
- Provides information on integration of process and technology on thermochemical conversion of biomass

DESCRIPTION

This book provides general information and data on one of the most promising renewable energy sources: biomass for its thermochemical conversion. During the last few years, there has been increasing focus on developing the processes and technologies for the conversion of biomass to liquid and gaseous fuels and chemicals, in particular to develop low-cost technologies.

This book provides date-based scientific information on the most advanced and innovative processing of biomass as well as the process development elements on thermochemical processing of biomass for the production of biofuels and bio-products on (biomass-based biorefinery). The conversion of biomass to biofuels and other value-added products on the principle biorefinery offers potential from technological perspectives as alternate energy. The book covers intensive R&D and technological developments done during the last few years in the area of renewable energy utilizing biomass as feedstock and will be highly beneficial for the researchers, scientists and engineers working in the area of biomass-biofuels- biorefinery.

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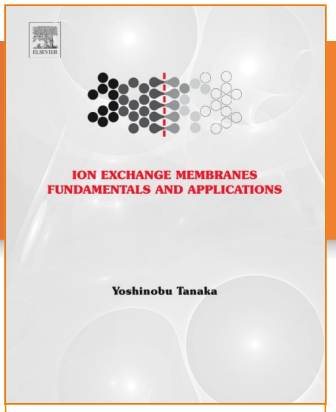

Ion Exchange Membranes, 2e

Fundamentals and Applications

Yoshinobu Tanaka Representative, IEM Research Ibaraki Prefecture, Japan

ELSEVIER

This revised and fully updated new edition includes a computer simulation program for designing, manufacturing and operating practical-scale electrodialyzers.

ISBN: 978-0-444-63319-4

PREVIOUS EDITION ISBN: 978-0-444-51982-5

PUB DATE: January 2015

FORMAT: Hardback

PAGES: c. 510

AUDIENCE

Membranologists; research scientists, graduate students, plant managers and process engineers in chemical engineering, environmental engineering, biotechnology, technical chemistry, chemical technology, biotechnology, water desalination and waste water treatment, pollution control, etc.

KEY FEATURES

- New edition features ten revised and expanded chapters, providing the latest developments in ion exchange membrane technology
- Computer simulation program, accessible through a companion website, provides a guideline for designing, manufacturing and operating practical-scale electrodialyzers
- Attractive visual presentation, including many figures and diagrams

DESCRIPTION

Fundamental study and industrial application of ion exchange membranes started over half a century ago. Through ongoing research and development, ion exchange membrane technology is now applied to many fields and contributes to the improvement of our standard of living. *Ion Exchange Membranes, 2nd edition* states the ion exchange membrane technology from the standpoint of fundamentals and applications. It discusses not only various phenomena exhibited by membranes but also their applications in many fields with economical evaluations.

This second edition is updated and revised, featuring ten expanded chapters. New to this edition is a computer simulation program of ion-exchange membrane electrodialysis for water desalination that provides a guideline for designing, manufacturing and operating a practical-scale electrodialyzer. Meant to replace experiments, this program will be an important asset to those with time and monetary budgets.

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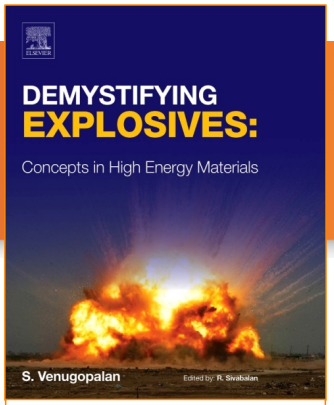

Demystifying Explosives

Concepts in High Energy Materials

Sethuramasharma Venugopalan High Energy Materials Research Laboratory, Pune, India

ELSEVIER

Comprehensive overview of the basic concepts of and science behind the entire spectrum of high energy materials

ISBN: 978-0-12-801576-6

PUB DATE: January 2015

FORMAT: Hardback

PAGES: c. 224

AUDIENCE

Graduate students, chemistry researchers in academia and industry, and chemical engineers

KEY FEATURES

- Explains the concept of high energy materials in simple language and down-to-earth examples
- Worked examples and problems are given wherever required
- Demystifies the concept of explosives
- Limited use of big and complex equations
- Questions and Suggested Reading are given at the end of each chapter

DESCRIPTION

Demystifying Explosives: Concepts in High Energy Materials explains the basic concepts of and the science behind the entire spectrum of high energy materials (HEMs) and gives a broad perspective about all types of HEMs and their interrelationships. *Demystifying Explosives* covers topics ranging from explosives, deflagration, detonation, and pyrotechnics to safety and security aspects of HEMS, looking at their aspects, particularly their inter-relatedness with respect to properties and performance. The book explains concepts related to the molecular structure of HEMs, their properties, performance parameters, detonation and shock waves including explosives and propellants. The theory-based title also deals with important (safety and security) and interesting (constructive applications) aspects connected with HEMs and is of fundamental use to students in their introduction to these materials and applications.

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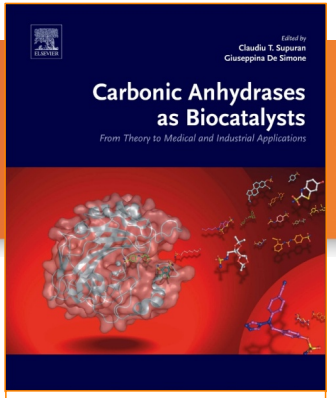

Carbonic Anhydrases as Biocatalysts

From Theory to Medical and Industrial Applications

Edited by: ***Claudiu T Supuran*** University of Florence, Italy
Giuseppina De Simone Institute of Biostructures and Bioimaging (IBB) of the Italian National Research Council, Napoli, Italy

ELSEVIER

An exhaustive description of the carbonic anhydrase enzyme family focusing attention on their main medical and biotechnological applications

ISBN: 978-0-444-63258-6

PUB DATE: January 2015

FORMAT: Hardback

PAGES: c. 382

AUDIENCE

It can be useful for many type of readers: biochemists, chemists and specialists in drug design, but also medical doctors and students of life sciences.

KEY FEATURES

- Offers comprehensive coverage of the carbonic anhydrases enzyme family and their properties as biocatalysts
- Includes current applications of carbonic anhydrases in biotechnology on the basis of their catalytic efficiency, including new technologies for CO_2 capture processes
- Identifies new targets for drug design studies
- Provides a selectivity profile for the different carbonic anhydrases and their related biomedical applications

DESCRIPTION

Carbonic anhydrases (CAs, EC 4.2.1.1) are ubiquitous metalloenzymes, present throughout most living organisms and encoded by five evolutionarily unrelated gene families. *The Carbonic Anhydrases as Biocatalysts: From Theory to Medical and Industrial Applications* presents information on the growing interest in the study of this enzyme family and their applications to both medicine and biotechnology.

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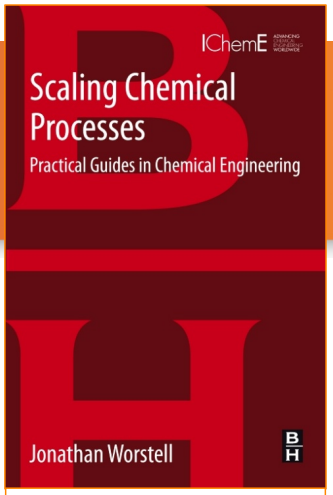

Scaling Chemical Processes

Practical Guides in Chemical Engineering

Jonathan Worstell Shell Chemical Company, Houston, TX, USA

This comprehensive guide to the manufacture and application of chemically bonded phosphate ceramics (CBPCs) covers CBPC use in nuclear and hazardous waste storage, oil-well cements, advanced structural materials, anticorrosion coatings, biomedical implants, and other petrochemical products

ISBN: 978-0-12-804635-7

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 130

AUDIENCE

Practicing engineers (primarily chemical engineers) who need to quickly learn key facts about a topic. Specific audience will be different for each short format.

KEY FEATURES

- Offers practical, short, concise information on the basics to help you get an answer or teach yourself a new topic quickly
- Includes industry examples to help you solve real world problems
- Provides key facts for professionals in convenient single subject volumes
- Discusses scaling chemical processes from a laboratory through a pilot plant to a commercial plant

DESCRIPTION

Scaling Chemical Processes: Practical Guides in Chemical Engineering is one of a series of short texts that each provides a focused introductory view on a single subject. The full library spans the main topics in the chemical process industries for engineering professionals who require a basic grounding in various related topics. They are 'pocket publications' that the professional engineer can easily carry with them or access electronically while working. Each text is highly practical and applied, and presents first principles for engineers who need to get up to speed in a new area fast.

The focused facts provided in each guide will help you converse with experts in the field, attempt your own initial troubleshooting, check calculations, and solve rudimentary problems. This book discusses scaling chemical processes from a laboratory through a pilot plant to a commercial plant. It bases scaling on similarity principles and uses dimensional analysis to derive the dimensionless parameters necessary to ensure a successful chemical process development program. This series is fully endorsed and co-branded by the IChemE, and they help to promote the series.

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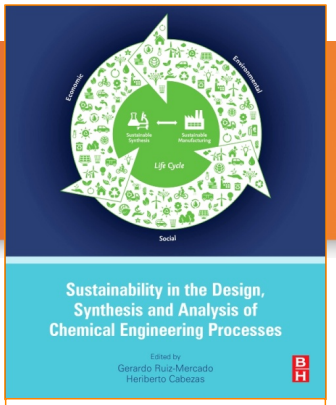

Sustainability in the Design, Synthesis and Analysis of Chemical Engineering Processes

Gerardo Ruiz Mercardo Chemical Engineer, Sustainable Technology Division (STD), National Risk Management Research Laboratory (NRMRL), Office of Research and Development (ORD), U.S. EPA
Heriberto Cabezas Senior Science Advisor, STD, NRMRL, ORD, U.S. EPA

This practical guide includes input from current leaders in the field to offer a holistic approach for creating sustainable plants and processes using the latest chemical engineering process design principles

ISBN: 978-0-12-802032-6
PUB DATE: June 2016
FORMAT: Paperback
PAGES: c. 340

AUDIENCE

Practicing chemical and process engineers; environmental and energy engineers; academics, researchers and students of chemical engineering

KEY FEATURES

- Improve plants, processes, and products with sustainability in mind; from conceptual design to life cycle assessment
- Illustrates how to avoid retro fitting costs by planning for sustainability concerns at the start of the design process
- Links sustainability to chemical engineering fundamentals
- Incorporates economic analysis and human dimensions for a holistic view of sustainability in chemical and process engineering design

DESCRIPTION

Sustainability in the Design, Synthesis and Analysis of Chemical Engineering Processes is an edited collection of contributions from leaders in their field. It takes a holistic view of sustainability in chemical and process engineering design, and incorporates economic analysis and human dimensions. Ruiz- Mercardo and Cabeza have brought to this book their experience of researching sustainable process design and life cycle sustainability evaluation to assist with development in government, industry and academia.

This book takes a practical, step-by-step approach to designing sustainable plants and processes by starting from the foundational chemical engineering fundamentals. This method enables readers to achieve new process design approaches with high influence and less complexity. It will also help you to incorporate sustainability at the early stages of project life, and build up multiple systems level perspectives. Ruiz-Mercardo and Cabeza's book is the only book on the market that looks at process sustainability from a chemical engineering fundamentals perspective.

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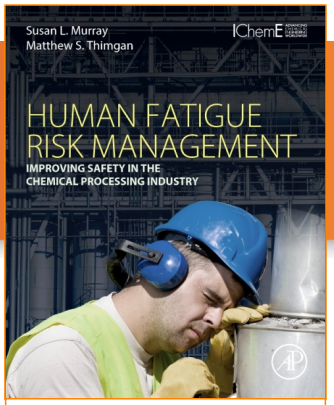

Human Fatigue Risk Management

Improving Safety in the Chemical Processing Industry

Susan Murray Ph.D., P.E., Engineering Management & Systems Engineering, Missouri University of Science and Technology, Rolla, MO, USA

Matthew,S Thimgan Ph.D., Assistant Professor, Biological Sciences, Missouri University of Science and Technology, Rolla, MO, USA

Including valuable examples that show how to put theory into practice, this comprehensive book addresses human fatigue in the chemical processing industry and gives users everything they need to know to mitigate risk through a thorough accounting of the API RP 755 guidelines created to reduce fatigue-related incidents

ISBN: 978-0-12-802412-6

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 192

AUDIENCE

Engineers, managers, trainers, and workers in the chemical processing industry. HSE managers, plant and project managers, occupational safety professionals

KEY FEATURES

- Covers sleep, sleep disorders, and the consequences of fatigue as related to high-hazard industries
- Helps improve safety standards at the plant level
- Provides information on how to comply with API RP 755 and related OSHA 29CFR1910 articles
- Relates fatigue and human performance to accidents, helping readers make a case for implementing a human fatigue risk management policy, which, in turn, prevents loss of property and life

DESCRIPTION

Human Fatigue Risk Management: Improving Safety in the Chemical Processing Industry teaches users everything they need to know to mitigate the risk of fatigued workers in a plant or refinery. As human fatigue has been directly linked to several major disasters, the book explores the API RP 755 guidelines that were released to reduce these types of incidents. This book will help users follow API RP 755 and/or implement a fatigue risk management system in their organization.

Susan Murray, a recognized expert in the field of sleep deprivation and its relation to high hazard industries, has written this book to be useful for HSE managers, plant and project managers, occupational safety professionals, and engineers and managers in the chemical processing industry. As scheduling of shifts is an important factor in reducing fatigue and accident rates, users will learn the benefits of more frequent staff rotation and how to implement an ideal scheduling plan.

The book goes beyond API RP 755, offering more detailed understanding of why certain measures for managing fatigue are beneficial to a company, including examples of how theory can be put into practice. It is a simple, digestible book for managers who are interested in addressing human factor issues at their workplace in order to raise safety standards.

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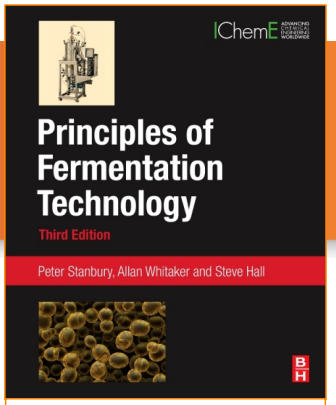

Principles of Fermentation Technology, 3e

Peter F Stanbury Visiting Lecturer at University of Hertfordshire, UK
Stephen J. Hall Senior Lecturer at University of Hertfordshire, UK

ISBN: 978-0-08-099953-1

PREVIOUS EDITION ISBN: 9780750645010

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 430

AUDIENCE

Students and Professionals in chemical engineering, applied biology, biotechnology, and microbiology

Principles of Fermentation Technology **has been expanded and revised in this third edition in order to provide up to date and comprehensive coverage of this subject**

KEY FEATURES

- Features the most complete and accurate information about fermentation and bioprocess technology
- Expands coverage to plant design and environmental topics
- Includes new chapters on both enzyme and solid-state fermentation
- Includes discussions of SCADA, DELTAV, and MFCS
- Serves as an ideal reference for fermentation scientists and students

DESCRIPTION

Principles of Fermentation Technology, Third Edition, is a complete, accurate, and accessible book on the subject of fermentation and bioprocess technology. It covers a wide variety of topics, including sterilization, media development, monitoring and control, aeration and agitation, fermenter vessels and design, downstream processing, and economics.

As the most comprehensive and up-to-date reference available on the topic, it is ideally suited for newcomers to the industry, providing essential, fundamental information on fermentation from a methodical and logical viewpoint. The authors recount their collective experience, collating all the fermentation facts the reader will need into one concise reference. The text is ideal for both fermentation scientists and students alike.

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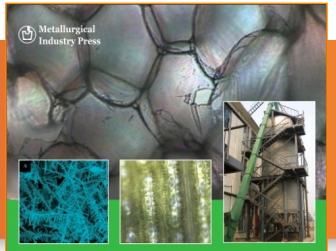

Technologies for Biochemical Conversion of Biomass

Hongzhang Chen Institute of Process Engineering, Chinese Academy of Sciences, China
Lan Wang

Introduces the basic principles and applications of biomass biochemical conversion technology using the latest scientific research and industrial applications from the field

ISBN: 978-0-12-802417-1
PUB DATE: July 2016
FORMAT: Hardback
PAGES: c. 282

AUDIENCE

This book is suitable for those in the field of biomass biochemical conversion including engineers, managers, technicians, as well as those who are interested in this field.

KEY FEATURES

- Combines descriptions of these technologies to provide strategies and a platform for biochemical conversion in terms of basic knowledge, research advances, and key problems
- Summarizes models of biomass biochemical conversion for multiple products
- Presents products of biomass biochemical conversion from C1 to C10

DESCRIPTION

Technologies for Biochemical Conversion of Biomass introduces biomass biochemical conversion technology, including the pretreatment platform, enzyme platform, cell refining platform, sugar platform, fermentation platform, and post-treatment platform. Readers will find a systematic treatment, not only of the basics of biomass biochemical conversion and the introduction of each strategy, but also of the current advances of research in this area.

Researchers will find the key problems in each technology platform for biomass biochemical conversion identified and solutions offered. This valuable reference book features new scientific research—and the related industrial application of biomass biochemical conversion technology—as the main content, and then systematically introduces the basic principles and applications of biomass biochemical conversion technology.

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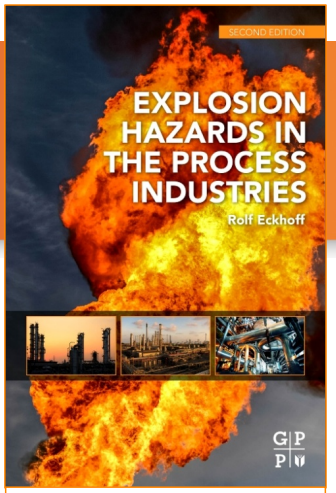


Explosion Hazards in the Process Industries, 2e

Rolf Eckhoff Professor Emeritus of Process Safety Technology, The University of Bergen, Norway

This definitive source for process safety and petrochemical engineers is the go-to reference and training guide for learning the principles of explosions, their causes, and mitigation and prevention strategies

ISBN: 978-0-12-803273-2

PREVIOUS EDITION ISBN: 9780976511342

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 525

AUDIENCE

Process Engineers, Safety Engineers, Chemical Engineers, Mechanical Engineers in the Process Industries, Managers in the Process Industries, and Safety Consultants

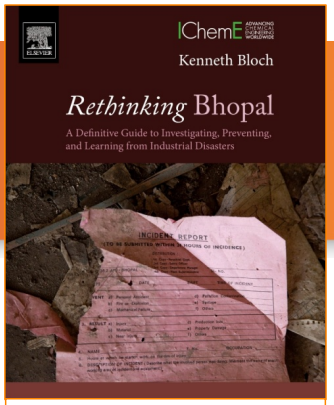
KEY FEATURES

- Offers a comprehensive introduction to process safety
- Includes updated new chapters on Boiling Liquid Expanding Vapor Explosions (BLEVE), water vapor explosions, and destructive effects for accidental explosions
- Gains new case studies, references, and standards to stay on top of what is new and critical
- Establishes the starting point to process safety and understanding the fundamentals of explosions and how to mitigate them

DESCRIPTION

Explosion Hazards in the Process Industries, Second Edition, delivers the most current and comprehensive content for today's process engineer. Process safety and petrochemical engineers inherently accept that there is a risk of explosions when working on process facilities such as plants and refineries. Yet many that enter this field do not have a fundamental starting point to understand the nature of explosions, and there are a lot of misconceptions and impartial information in the market.

Explosion Hazards in the Process Industries, Second Edition, answers this need by providing engineers and consultants a go-to reference and training guide to understand the principles of explosions, what causes them, and how to mitigate and prevent them from reoccurring. Enhanced to include new chapters on BLEVE (Boiling Liquid Expanding Vapor Explosions), water vapor explosions, and destructive effects from accidental explosions, this guide continues to fulfill a comprehensive introduction to the subject, rounded out with new case studies, references, and a discussion on methods of hazard and risk analysis.



Rethinking Bhopal

A Definitive Guide to Investigating, Preventing, and Learning from Industrial Disasters

Kenneth Bloch Senior HES Professional

ELSEVIER

Explaining how to improve process safety management (PSM) through a careful examination of mistakes made and lessons learned in the 1984 Bhopal, India, industrial disaster, this go-to resource helps you identify similar risk and exposure in your own organization and apply solutions to prevent catastrophic industrial failures

ISBN: 978-0-12-803778-2

PUB DATE: June 2016

FORMAT: Paperback

PAGES: c. 320

AUDIENCE

Process Engineers, Chemical Engineers, Plant managers, Industrial process trainers, Process technologists (operators), Process consultants, Reliability engineers, Safety Managers

KEY FEATURES

- Learn how to improve Process Safety Management (PSM) performance by applying fundamental asset reliability and incident investigation concepts
- Understand your personal role in detecting and preventing Loss of Primary Containment (LOPC) incidents before they occur
- Take immediate action to stabilize processes under your control while promoting a systematic approach to eliminating persistent failure mechanisms
- Includes case histories to helpfully illustrate how to detect potentially destructive patterns in your own organization

DESCRIPTION

Rethinking Bhopal: A Definitive Guide to Investigating, Preventing, and Learning from Industrial Disasters is the go-to source for anyone seeking to learn how to improve process safety management (PSM) through applying fundamental asset reliability and incident investigation concepts.

The seeds that unified PSM on a global scale were planted in Bhopal, India on December 3, 1984. Since then, considerable progress has been made to protect both workers and communities from catastrophic industrial failures. Industry acknowledges its responsibility to create value with accrued operating experience and that using information received from previous failures is a direct way to prevent future incidents. With this principle in mind, Bloch evaluates modern references related to the Bhopal Disaster, using recognized industrial asset reliability and incident investigation concepts.

The practice of objective incident investigation offers a compelling insight into specific decisions and actions that resulted in history's worst industrial disaster. Recording a fully transparent sequence of events promotes a personal sense of accountability for anyone involved in the manufacturing industry. Lessons learned can be immediately implemented by those with direct PSM, management, engineering, and operating responsibilities. Case histories demonstrate how patterns observed in the timeline leading up to the Bhopal Disaster can be detected in modern incidents and by recognizing these patterns in present-day processes avoids counterproductive operating decisions and unprecedented destruction.

This text is instrumental in helping existing organizations re-evaluate their own exposures and risks, and would be a valuable read for any member of a process safety management team. *Rethinking Bhopal: A Definitive Guide to Investigating, Preventing, and Learning from Industrial Disasters* provides an expansion of knowledge and understanding for the novice in PSM while also providing depth and application considerations to challenge more experienced industry professionals. Note: All royalties from this book go to the Process Safety Heritage Trust Scholarship at Lamar University in Beaumont, Texas, USA.

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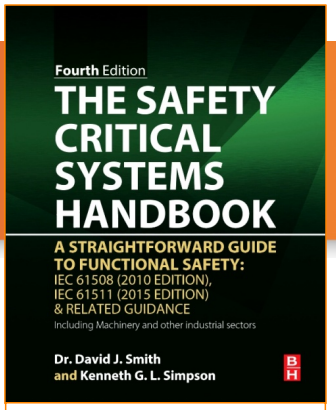


The Safety Critical Systems Handbook, 4e

A Straightforward Guide to Functional Safety: IEC 61508 (2010 Edition), IEC 61511 (2015 Edition) & Related Guidance

David J. Smith Independent Consultant, Technis, Tonbridge, UK

Shows engineers and safety professionals how to design and assess safety critical plant and process systems to comply with the 2010 revision of the IEC 61508 and the 2015 revision of IEC 61511 functional safety standards, enabling users to determine if a proposed or existing piece of equipment meets the safety integrity levels (SIL) required by the various standards and new guidance

ISBN: 978-0-12-805121-4

PREVIOUS EDITION ISBN: 9780080967813

PUB DATE: May 2016

FORMAT: Hardback

PAGES: c. 330

AUDIENCE

Chemical, Process, Plant, Oil & Gas and related systems safety engineers.

KEY FEATURES

- Provides the only comprehensive guide to IEC 61508, updated to cover the 2010 amendments, that will ensure engineers are compliant with the latest process safety systems design and operation standards
- Addresses the 2015 updates to IEC 61511 to helps readers understand the processes required to apply safety critical systems standards and guidance
- Presents a real-world approach that helps users interpret new standards, with case studies and best practice design examples throughout

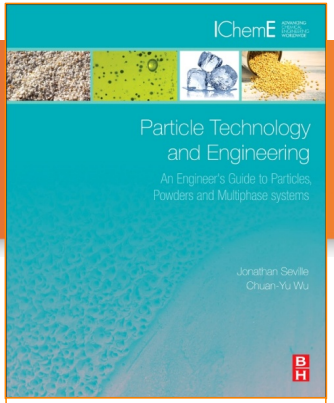
DESCRIPTION

The Safety Critical Systems Handbook: A Straightforward Guide to Functional Safety: IEC 61508 (2010 Edition), IEC 61511 (2015 Edition) & Related Guidance, Fourth Edition, presents the latest on the electrical, electronic, and programmable electronic systems that provide safety functions that guard workers and the public against injury or death, and the environment against pollution.

The international functional safety standard IEC 61508 was revised in 2010, and authors David Smith and Kenneth Simpson provide a comprehensive guide to the revised standard, as well as the revised IEC 61511 (2015). The book enables engineers to determine if a proposed or existing piece of equipment meets the safety integrity levels (SIL) required by the various standards and guidance, and also describes the requirements for the new alternative route (route 2H), introduced in 2010.

A number of other areas have been updated by Smith and Simpson in this new edition, including the estimation of common cause failure, calculation of PFDs and failure rates for redundant configurations, societal risk, and additional second tier guidance documents.

As functional safety is applicable to many industries, this book will have a wide readership beyond the chemical and process sector, including oil and gas, machinery, power generation, nuclear, aircraft, and automotive industries, plus project, instrumentation, design, and control engineers.



Particle Technology and Engineering

An Engineer's Guide to Particles, Powders and Multiphase Systems

Jonathan P.K. Seville Department of Chemical Engineering, The University of Birmingham, Edgbaston, Birmingham, UK
Chuan-Yu Wu Department of Chemical and Process Engineering, Faculty of Engineering and Physical Sciences, University of Surrey, Guildford, UK

An essential guide for all engineers working with the particle and powder systems, that make up over 50% of all chemical products

ISBN: 978-0-08-098337-0
PUB DATE: March 2016
FORMAT: Hardback
PAGES: c. 288

AUDIENCE
Chemical Engineers, Mechanical Engineers, Process Engineers.

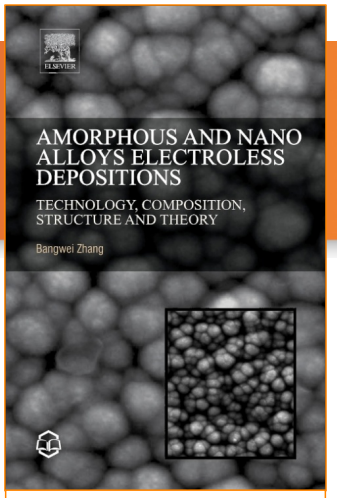
KEY FEATURES

- Explores core topics including particle properties and interactions, characteristics of bulk solids, multiphase systems, and advanced particle engineering
- Emphasizes quantitative explanation and theoretical concepts
- Provides numerous helpful case studies
- Enables engineers to develop their knowledge and skills to work with particle systems

DESCRIPTION

Particle Technology and Engineering: An Engineer's Guide to Particles, Powders, and Multiphase Systems presents the basic knowledge and fundamental concepts needed by engineers who work with particles and powders. Users will find a comprehensive reference and introduction to important topics, ranging from single particle characterization to bulk powder properties and complex multiphase gas-solid-liquid systems.

This helpful guide emphasizes quantitative explanation and theoretical concepts, and contains numerous case studies of practical applications. The book is structured into four parts beginning with basic information on single particle properties and their interaction with solids and gas/liquids, the fundamental characteristics of bulk solids (powders), the principles of multiphase systems (including fluidization and pneumatic conveying), and advanced numerical methods and measurement techniques for particle engineering.



Amorphous and Nano Alloys Electroless Depositions

Technology, Composition, Structure and Theory

Bangwei Zhang Professor, College of Physics, Hunan University, Changsha, China

ELSEVIER

New ways to resolve unsolved and new problems in EP by a enabling a thorough grasp of the underpinning theory

KEY FEATURES

- Focus on the fundamental scientific and academic problems (principles, mechanisms and theory) in electroless plating
- The book gives a very good overview of the research and development in this field and each chapter is fully referenced
- Detailed analysis and review of the current data, logically structured for ease of use

DESCRIPTION

Amorphous and Nano Alloys Electroless Depositions: Technology, Theory, Structure and Property describes the whole development and the most important subjects (technology, theory, structure and property) up to date of electroless plating (EP). The author concentrates on the fundamental scientific and academic problems (principle, mechanism and theory) in EP today.

Based on the history of EP, this valuable reference describes lots of new EP processes, including electroless Fe based alloy system deposits, formation and theoretical description of electroless alloys, microscopic theory of electroless plating deposits, microscopic structures and surface morphology of electroless deposits, and weldability property of electroless deposits.

ISBN: 978-0-12-802685-4

PUB DATE: December 2015

FORMAT: Hardback

PAGES: c. 750

AUDIENCE

Undergraduate and graduate students, teachers and professors, researchers and specialists in chemical, chemical engineering, materials, mechanical engineering. Technicians, engineers and managers in the surface finishing industry and other industries using electroless coatings.

ENGINEERING

CHEMICAL

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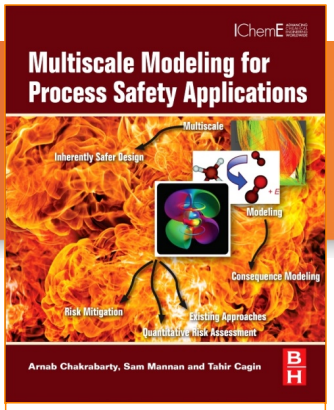


Multiscale Modeling for Process Safety Applications

Arnab Chakrabarty PSE, Process Systems Enterprise
Sam Mannan Artie McFerrin Department of Chemical Engineering, Texas A&M University , College Station, USA
Tahir Cagin Artie McFerrin Department of Chemical Engineering, Texas A&M University , College Station, TX, USA

This book demonstrates how to practically apply multiscale modeling to process safety, including problem-solving techniques and troubleshooting on topics such as how a flammable vapor cloud might behave if ignited, and on toxicity and air expulsion modeling and modeling jet and pool fires using computational fluid dynamics.

ISBN: 978-0-12-396975-0
PUB DATE: December 2015
FORMAT: Hardback
PAGES: c. 430

AUDIENCE
Chemical and Process Safety professionals, faculty and graduate researchers.

KEY FEATURES

- Provides the only comprehensive source addressing the use of multiscale modeling in the context of process safety
- Bridges multiscale modeling with process safety, enabling the reader to understand mapping between problem detail and effective usage of resources
- Presents an overall picture of addressing safety problems in all levels of modeling and the latest approaches to each in the field
- Features worked out examples, case studies, and a question bank to aid understanding and involvement for the reader

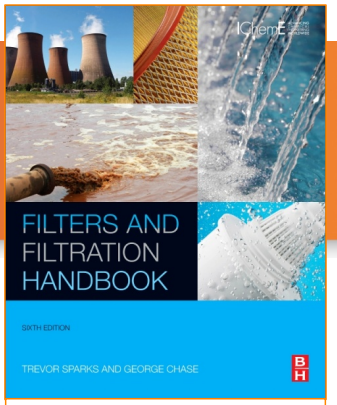
DESCRIPTION

Multiscale Modeling for Process Safety Applications is a new reference demonstrating the implementation of multiscale modeling techniques on process safety applications. It is a valuable resource for readers interested in theoretical simulations and/or computer simulations of hazardous scenarios.

As multi-scale modeling is a computational technique for solving problems involving multiple scales, such as how a flammable vapor cloud might behave if ignited, this book provides information on the fundamental topics of toxic, fire, and air explosion modeling, as well as modeling jet and pool fires using computational fluid dynamics.

The book goes on to cover nanomaterial toxicity, QPSR analysis on relation of chemical structure to flash point, molecular structure and burning velocity, first principle studies of reactive chemicals, water and air reactive chemicals, and dust explosions.

Chemical and process safety professionals, as well as faculty and graduate researchers, will benefit from the detailed coverage provided in this book.



Filters and Filtration Handbook, 6e

Trevor Sparks Managing Director, Filter-Ability Ltd., Limerick, Ireland
George Chase Professor & Associate Chair for Research, the Department of Chemical and Biomolecular Engineering, The University of Akron, OH, USA

ISBN: 978-0-08-099396-6

PREVIOUS EDITION ISBN: 978-1-85617-322-3

PUB DATE: November 2015

FORMAT: Hardback

PAGES: c. 432

AUDIENCE

chemical engineers, plant and maintenance engineers, designers and manufacturers of filtration systems, water companies, oil and gas companies, consultants

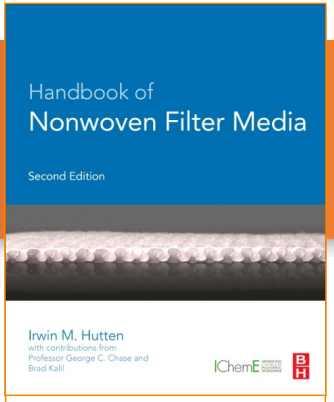
Practical information for the plant engineer

KEY FEATURES

- An up-to-date and comprehensive reference covering essential theory of filters and filtration, and including types of filter, media, filtration, equipment, techniques and systems.
- Helps you decide the best filtration methods and materials for the task at hand
- Includes new material on basic principles, filter media and the application of filtration within production systems

DESCRIPTION

Filters are used in most industries, especially the water, sewage, oil, gas, food and beverage, and pharmaceutical industries. The new edition of *Filters and Filtration Handbook* is an all-encompassing practical account of standard filtration equipment and its applications. Completely revised and rewritten, it is an essential book for the engineer working in a plant situation, who requires guidance and information on what's available and whether it's suitable for the job. Co-published with the Institution of Chemical Engineers.



Handbook of Nonwoven Filter Media, 2e

Irwin M. Hutten Filtration Consultant, Delray Beach, USA

The new edition of this must-have industry handbook presents updated technologies for nonwoven filter media, filtration, nanofiber technology, membrane filter technology, and filter related technologies.

ISBN: 978-0-08-098301-1

PREVIOUS EDITION ISBN: 9781856174411

PUB DATE: October 2015

FORMAT: Hardback

PAGES: c. 650

AUDIENCE

Chemical Engineers, Process Engineers, Mechanical Engineers.

KEY FEATURES

- Presents the latest information on legislative, regulatory, environmental and sustainability issues affecting the nonwovens and filtration industries
- Includes a comprehensive discussion of Computational Flow Dynamics (CFD) by Dr. George Chase, University of Akron, USA
- Includes the latest Global and North American marketing statistics for filters and filter media prepared by Brad Kalil of INDA.

DESCRIPTION

The Handbook of Nonwoven Filter Media, Second Edition provides readers with a fundamental understanding of nonwoven filter media. It is one of the few books dealing exclusively with the subject, and is primarily intended as a reference for people in the nonwovens industry (industry and academic researchers, technical, marketing , and quality control personnel) and universities offering courses in filtration theory and practice and nonwovens technology.

The book includes applications for gas, liquid, and engine filtration, and identifies the types of filter media used in these applications. The various separation technologies that can be achieved with nonwoven filter media are revealed and discussed. Theoretical presentation is based on flow through porous media, and is developed around a nonwovens or engineered fabrics orientation.

Heat Exchanger Design Guide

A Practical Guide for Planning, Selecting and Designing of Shell and Tube Exchangers

Manfred Nitsche Independent Consultant, Hamburg, Germany
Raji Olayiwola Gbadamosi RAM Systeme PRO SIM Ingenieurbüro GmbH, Hamburg, Germany

This book provides readers with a hands-on, illustrated guide to the design and operation of heat exchangers that presents step-by-step tactics on how to determine the effective driving temperature differences for heat transfer. It is designed to help engineers solve typical problems they might encounter in their day-to-day work.

ISBN: 978-0-12-803764-5
PUB DATE: October 2015
FORMAT: Paperback
PAGES: c. 270

AUDIENCE

Chemical engineers, mechanical engineers, process engineers, chemical and mechanical engineering students.

KEY FEATURES

- Covers design method and practical correlations needed to design practical heat exchangers for process application
- Includes geometrical calculations for the tube and shell side, also covering boiling and condensation heat transfer
- Explores heat transfer coefficients and temperature differences
- Designed to help engineers solve typical problems they might encounter in their day-to-day work, but also ideal as a useful reference for students learning about the field

DESCRIPTION

Heat Exchanger Design Guide: A Practical Guide for Planning, Selecting and Designing of Shell and Tube Exchangers takes users on a step-by-step guide to the design of heat exchangers in daily practice, showing how to determine the effective driving temperature difference for heat transfer.

Users will learn how to calculate heat transfer coefficients for convective heat transfer, condensing, and evaporating using simple equations. Dew and bubble points and lines are covered, with all calculations supported with examples.

This practical guide is designed to help engineers solve typical problems they might encounter in their day-to-day work, and will also serve as a useful reference for students learning about the field. The book is extensively illustrated with figures in support of the text and includes calculation examples to ensure users are fully equipped to select, design, and operate heat exchangers.

ENGINEERING
CHEMICAL
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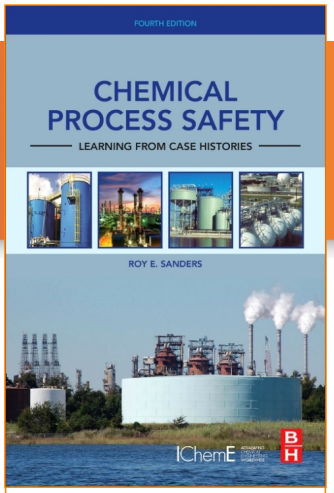

Chemical Process Safety, 4e

Learning from Case Histories

Roy E. Sanders Chemical Engineer and freelance Process Safety Consultant

This insightful book reviews the latest OSHA regulations and discusses how to eliminate hazards in the design, operation, and maintenance of chemical process plants and petroleum refineries.

"The emphasis in this book is on accidents that have occurred as the result of the unforeseen effects of changes to chemical plants. The descriptions are well written, easy to read and bring out the essentials of each incident. Everyone who works in the process industries, from operator to operations director, should read the book". -Trevor Kletz, ICI, IChemE

It is very welcome to see that Sanders has published this collection of cases, and he provides very valuable lessons for the chemical process industry… This book should be essential reading for not just chemical engineers but engineers and safety managers worldwide.- Dr. P.R. Lewis, Lecturer in Materials Engineering at the Open University

ISBN: 978-0-12-801425-7

PREVIOUS EDITION ISBN: 9781493303021

PUB DATE: August 2015

FORMAT: Hardback

PAGES: c. 486

AUDIENCE

Employees of the chemical manufacturing industries, petroleum refineries, specialty chemical industries, engineering companies and consultants who serve the chemical and petroleum industries, and academics interested in including process safety into their curriculums.

KEY FEATURES

- Features additional new chapters covering safety culture, maintaining a sense of vulnerability, and additional learning opportunities from recent incidents and near misses
- Contains updated information from the US Bureau of Labor Statistics and the National Safety Council, with concise summaries of some of the most important case histories of the twenty-first century
- Includes significantly expanded information from the US Chemical Safety Board, US OSHA, American Institute of Chemical Engineers, and the UK Health and Safety Executive (HSE)
- Provides a completely updated chapter to guide readers to a wealth of reference material available on the web and elsewhere

DESCRIPTION

Chemical Process Safety: Learning from Case Histories, Fourth Edition gives insight into eliminating specific classes of hazards while also providing real case histories with valuable lessons to be learned. This edition also includes practical sections on mechanical integrity, management of change, and incident investigation programs, along with a list of helpful resources.

The information contained in this book will help users stay up-to-date on all the latest OSHA requirements, including the OSHA-required *Management of Change, Mechanical Integrity, and Incident Investigation* regulations. Learn how to eliminate hazards in the design, operation, and maintenance of chemical process plants and petroleum refineries.

World-renowned expert in process safety, Roy Sanders, shows how to reduce risks in plants and refineries, including a summary of case histories from high profile disasters and recommendations for how to avoid repeating the same mistakes. Following the principles outlined in this text will help save lives and reduce loss.

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CHEMICAL
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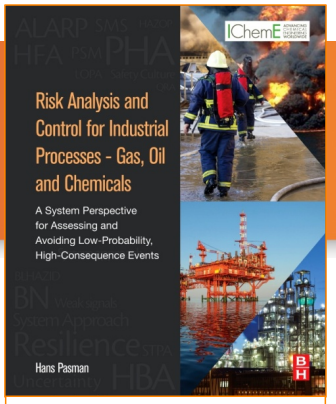

Risk Analysis and Control for Industrial Processes - Gas, Oil and Chemicals

A System Perspective for Assessing and Avoiding Low-Probability, High-Consequence Events

Hans J Pasman Mary Kay O'Connor Process Safety Center, Texas A&M University, Texas, USA.

ISBN: 978-0-12-800057-1

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 18

AUDIENCE

Safety professionals and consultants, risk analysts, process safety academics, engineering professionals

Make safety a long-term investment against risk

KEY FEATURES

- Presents new methods on how to identify hazards of low probability/high consequence events
- Contains information on how to develop and install safeguards against such events, with guidance on how to quantify risk and its uncertainty, and how to make economic and societal decisions about risk
- Demonstrates key concepts through the use of examples and relevant case studies

DESCRIPTION

Risk Analysis and Control for Industrial Processes - Gas, Oil and Chemicals provides an analysis of current approaches for preventing disasters, and gives readers an overview on which methods to adopt.

The book covers safety regulations, history and trends, industrial disasters, safety problems, safety tools, and capital and operational costs versus the benefits of safety, all supporting project decision processes.

Tools covered include present day array of risk assessment, tools including HAZOP, LOPA and ORA, but also new approaches such as System-Theoretic Process Analysis (STPA), Blended HAZID, applications of Bayesian data analytics, Bayesian networks, and others. The text is supported by valuable examples to help the reader achieve a greater understanding on how to perform safety analysis, identify potential issues, and predict the likelihood they may appear.

ENGINEERING
CHEMICAL
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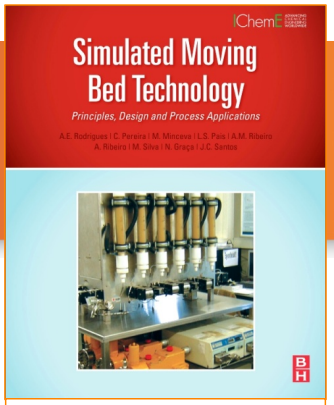

Simulated Moving Bed Technology

Principles, Design and Process Applications

Alirio Rodrigues Laboratory of Separation and Reaction Engineering, Associate, Laboratory Department of Chemical Engineering, Faculty of Engineering, University of Porto, Portugal

A clear and comprehensive guide to help you design, model and operate simulated moving bed technology

ISBN: 978-0-12-802024-1

PUB DATE: June 2015

FORMAT: Hardback

PAGES: c. 292

AUDIENCE

Process and R&D engineers in industry (chemical, refining and petrochemistry, sugar and pharma/bio). Chemical Engineering postgraduates.

KEY FEATURES

- Will provide you with the tools and predictive approaches for use in SMB design and performance assessment
- Covers SMB modelling, simulation, design and operation as applied to separation and reaction processes
- Discusses process intensification through coupling SMB and reaction in SMBR, membrane permeation and SMBR in PermSMBR and introduces the design of SCPC

DESCRIPTION

Simulated Moving Bed Technology is one of only a few books solely dedicated to SMB. It aims to equip you with the tools and skills needed for SMB modelling, simulation, design and operation. The theory presented is supported by real-world examples from the petrochemical, sugar and pharma industries.

The core of the book focuses on SMB process development and model validation. It explains basic process concepts and definitions, fundamental principles and equations, as well as typical applications and recent advances made to address challenges. Its specialist content makes it a must have book for people working with SMB technology, chemical engineering post-graduate students and process and R&D engineers in industry.

ENGINEERING
CHEMICAL
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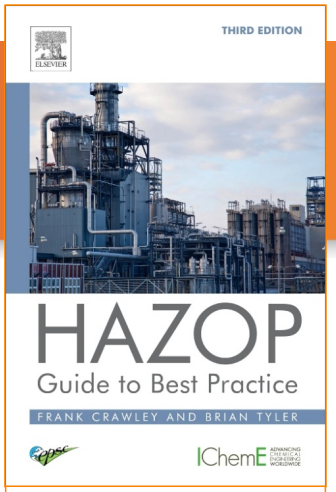

HAZOP: Guide to Best Practice, 3e

Frank Crawley University of Strathclyde and Atkins, UK
Brian Tyler S&T Consultants, UK

ELSEVIER

A new edition of the go-to book on the performance of HAZOPs

KEY FEATURES

- A concise and clear guide to the do's and don'ts in HAZOP
- New edition brings additional experience to help you deliver optimum safety and efficiency of performance.
- Updated material includes a section on HAZOP study of a procedure with a detailed example, new sections on pre-meeting with the client auditing a study, human factors and linking HAZOP study to LOPA. A section on start-up and shutdown has been added to the chapter on specific applications of HAZOP.

DESCRIPTION

HAZOP: Guide to Best Practice, 3rd Edition describes and illustrates the HAZOP study method, highlighting a variety of proven uses and approaches. This updated edition brings additional experience with which to assist the reader in delivering optimum safety and efficiency of performance of the HAZOP team. HAZOP is the most widely-used technique in the process industries for the identification of hazards and the planning of safety measures.

This book explains how to implement HAZOP techniques in new facilities and apply it to existing facilities. The content covers many of the possible applications of HAZOP and takes you through all the stages of a study. This simple, easily digestible book is a favorite in the chemical and process industries.

ISBN: 978-0-323-39460-4
PUB DATE: April 2015
FORMAT: Paperback
PAGES: c. 154

AUDIENCE

Functional safety professionals; process engineers; chemical engineers; engineering managers; junior engineers; university students.

ENGINEERING
CHEMICAL
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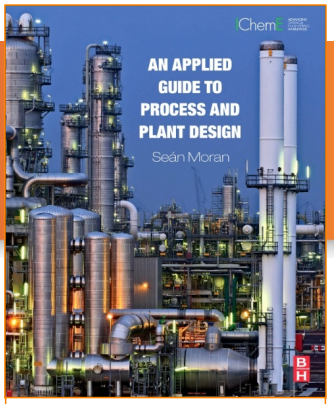


An Applied Guide to Process and Plant Design

Sean Moran Fellow of the Institution of Chemical Engineers (UK), Associate Professor of Chemical/Environmental Engineering & Coordinator of Design Teaching, University of Nottingham, UK

ISBN: 978-0-12-800242-1

PUB DATE: April 2015

FORMAT: Hardback

PAGES: c. 376

AUDIENCE

Process Engineers and Designers. Students of process engineering, technical chemistry, plant safety.

A concise, focused guide to process design

"invaluable for students and recent graduates, or their tutors or mentors...this text could become an established classic, to be continually revised in the manner of Perry's Handbook. Rating: 4.5 Stars"--**The Chemical Engineer, *An Applied Guide to Process and Plant Design***

KEY FEATURES

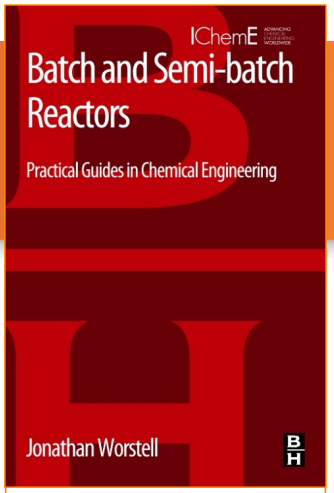
- Explains how to deliver a process design that meets both business and safety criteria
- Covers plant layout and the use of spreadsheet programmes and key drawings as aids to design
- Includes a comprehensive set of selection tables, covering those aspects of professional plant design which early-career designers find most challenging

DESCRIPTION

An Applied Guide to Process and Plant Design is a guide to process plant design for both students and professional engineers.

The book covers plant layout and the use of spreadsheet programmes and key drawings produced by professional engineers as aids to design; subjects which are usually learned on the job rather than in education. You will learn how to produce smarter plant design through the use of computer tools, including Excel and AutoCAD, "What If Analysis", statistical tools, and Visual Basic for more complex problems. The book also includes a wealth of selection tables, covering the key aspects of professional plant design which engineering students and early-career engineers tend to find most challenging.

Professor Moran draws on over 20 years' experience in process design to create an essential foundational book ideal for those who are new to process design, compliant with both professional practice and the IChemE degree accreditation guidelines.



Batch and Semi-batch Reactors

Practical Guides in Chemical Engineering

Jonathan Worstell Shell Chemical Company, Houston, TX, USA

Provides the engineering professional with a variety of quick-reference topics, allowing readers to easily get up-to-speed on important knowledge relating to the chemical process industries

KEY FEATURES

- Practical, short, concise information on the basics in a variety of topics related to chemical engineering
- Supported by industry examples to help readers solve real-world problems
- Single subject volumes provide key facts for professionals
- Pocket publication format can be easily carried or accessed electronically

DESCRIPTION

Batch and Semi-batch Reactors: Practical Guides in Chemical Engineering is a cluster of short texts that provide a focused introductory view on a single subject.

The full library presents a basic understanding of the main topics in the chemical process industries, allowing engineering professionals to quickly access information.

Each 'pocket publication' can be easily carried or accessed electronically, giving users a highly practical and applied presentation of the first principles engineers need know on a moment's notice.

The focused facts provided in each guide help users converse with experts in the field, attempt their own initial troubleshooting, check calculations, and solve rudimentary problems.

ISBN: 978-0-12-801305-2

PUB DATE: March 2015

FORMAT: Paperback

PAGES: c. 100

AUDIENCE

Practicing engineers (primarily chemical engineers).

ENGINEERING

CHEMICAL

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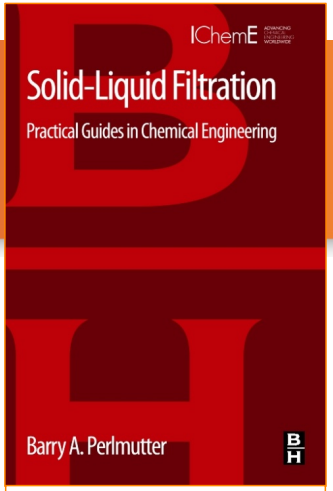

Solid-Liquid Filtration

Practical Guides in Chemical Engineering

Barry Perlmutter President & Managing Director Filtration, Mixing & Recycling Divisions BHS-Sonthofen Inc. USA.

An essential guide to the basic principles and mechanisms of filtration, to ensure you make the right filtration choices

KEY FEATURES

- Practical, short, concise information on the basics will help you get an answer or teach yourself a new topic quickly
- Supported by industry examples to help you solve a real world problem
- Single subject volumes provide key facts for professionals

DESCRIPTION

Practical Guides in Chemical Engineering are a cluster of short texts that each provides a focused introductory view on a single subject. The full library spans the main topics in the chemical process industries that engineering professionals require a basic understanding of. They are 'pocket publications' that the professional engineer can easily carry with them or access electronically while working. Each text is highly practical and applied, and presents first principles for engineers who need to get up to speed in a new area fast. The focused facts provided in each guide will help you converse with experts in the field, attempt your own initial troubleshooting, check calculations, and solve rudimentary problems.

Solid-Liquid Filtration covers the basic principles and mechanisms of filtration, filtration testing including filter aids and filter media, types of filtration systems, selection of filtration systems and typical operating and troubleshooting approaches. This guide also discusses general applications and tips for process filtration and can be utilized by process engineers as a framework for "idea-generation" when analyzing filtration for an operating bottleneck issue or a new process development problem.

ISBN: 978-0-12-803053-0

PUB DATE: February 2015

FORMAT: Paperback

PAGES: c. 122

AUDIENCE

Process engineers, plant engineers, researchers, professionals.

ENGINEERING

CHEMICAL

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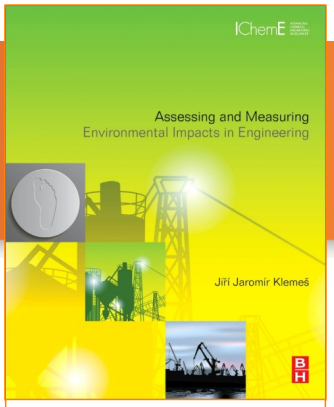


Assessing and Measuring Environmental Impact and Sustainability

Edited by: ***Jiri Klemes*** University of Pannonia, Hungary

ISBN: 978-0-12-799968-5

PUB DATE: January 2015

FORMAT: Hardback

PAGES: c. 560

AUDIENCE

Chemical engineers, students and academics, plus any engineers with an interest in environmental impact.

Helping engineers create sustainable products and processes

"...offers a comprehensive review of the current state of the assessment and measurement of sustainability and provides valuable source material and recommended applications software to design engineers seeking sustainable solutions. Rating: 4 Stars out of 5"--**tce, Assessing and Measuring Environmental Impact and Sustainability**

KEY FEATURES

- Helps engineers to assess, evaluate, and measure sustainability in industry
- Provides workable approaches to environmental and sustainability assessment
- Readers learn tools to assess the sustainability of a process or product and to design it in an environmentally friendly way

DESCRIPTION

Assessing and Measuring Environmental Impact and Sustainability answers the question "what are the available methodologies to assess the environmental sustainability of a product, system or process?" Multiple well-known authors share their expertise in order to give a broad perspective of this issue from a chemical and environmental engineering perspective. This mathematical, quantitative book includes many case studies to assist with the practical application of environmental and sustainability methods. Readers learn how to efficiently assess and use these methods.

This book summarizes all relevant environmental methodologies to assess the sustainability of a product and tools, in order to develop more green products or processes. With life cycle assessment as its main methodology, this book speaks to engineers interested in environmental impact and sustainability.

High Integrity Systems and Safety Management in Hazardous Industries

J.R Thomson Independent consultant, www.safetyinengineering.com, specializing in high integrity systems and safety management.

ISBN: 978-0-12-801996-2

PUB DATE: January 2015

FORMAT: Paperback

PAGES: c. 344

AUDIENCE

Chemical engineers, design engineers, safety practitioners, safety engineers.

This concise reference explains best practices in design engineering and operational safety management of high-hazard process plants.

"...easy to read, has plenty of case studies to illustrate the issues being discussed and includes personal experiences.
It is this personal element in the book that makes it so accessible. Rating: 4 Stars"--**The Chemical Engineer, *High Integrity Systems and Safety Management in Hazardous Industries***

KEY FEATURES

- An overview of design standards and processes for high integrity systems
- An overview of safety management processes as applied to hazardous industries
- Best practices in design, operations, maintenance and regulation

DESCRIPTION

This book is about the engineering management of hazardous industries, such as oil and gas production, hydrocarbon refining, nuclear power and the manufacture of chemicals and pharmaceuticals. Its scope includes an overview of design standards and processes for high integrity systems,safety management processes as applied to hazardous industries and details best practices in design, operations, maintenance and regulation.

Selected case studies are used to show how the complex multidisciplinary enterprises to design and operate hazardous plant can sometimes fail. This includes the subtlety and fragility of the robust safety culture that is required.

It is aimed at professional engineers who design, build and operate these hazardous plants. This book is also written for business schools and university engineering departments where engineering management is studied.

Oral Communication Skills for Scientific Presentations

William B. Krantz President's Teaching Scholar and Professor Emeritus, University of Colorado, Boulder, CO, USA;Rieveschl Ohio Eminent Scholar and Professor Emeritus, University of Cincinnati, Cincinnati,OH, USA

A practical, compact guidebook covering the 'nuts and bolts' of effective public speaking

ISBN: 978-0-12-805418-5

PUB DATE: April 2016

FORMAT: Paperback

PAGES: c. 160

AUDIENCE

Students and researchers across the sciences interested in improving their oral communication skills; in particular non-native English speakers

KEY FEATURES

- Discusses best practices in putting together an effective talk
- Focuses on leveraging the speaker's existing skill sets to develop the delivery style that works best for that individual
- Features one-page quick reference guides for giving formal oral and informal poster presentations
- Addresses cross-cultural communication as well as particular concerns for non-native English speakers
- Includes a companion site with tools and video examples of formal and informal presentations for further self-guidance

DESCRIPTION

Oral Communication Skills for Scientific Presentations is intended for inexperienced speakers as well as those aspiring to improve their communication skills in making either formal or informal presentations on a technical subject. A complement to having good organization for a technical presentation is to have an effective delivery style. This book provides a template for organizing a technical talk that will include a discussion of various ways to effectively develop each part of a technical presentation.

A special feature of *Oral Communication Skills for Scientific Presentations* is the focus on making presentations to a cross-cultural audience. This relates to relatively minor considerations such as how to list the names of the co-authors on your presentation as well as to more substantive considerations such as how to handle eye contact and use humor, both of which can differ across the global spectrum of cultures. The cross-cultural focus of this book relates not only to the audience, but also to the speaker. This book also includes helpful tips for non-native English speakers.

Graduate Research, 4e

A Guide for Students in the Sciences

Robert V. Smith Collaborative Brain Trust University Consulting (CBT UC), Sacramento, CA, USA
Llewellyn D. Densmore Department of Biological Sciences, Texas Tech University, Lubbock, TX, USA
Edward F. Lener University Libraries, Virginia Tech, Blacksburg, VA, USA

This newly revised go-to resource is for graduate researchers at all stages of study and covers a range of topics including writing and preparation of research proposals, developing and refining teaching skills, and ethics and compliance areas such as research involving human subjects and animals

ISBN: 978-0-12-803749-2
PREVIOUS EDITION ISBN: 9780295977058
PUB DATE: February 2016
FORMAT: Paperback
PAGES: c. 288

AUDIENCE
Graduate student, graduate advisors, and mentors across the Sciences

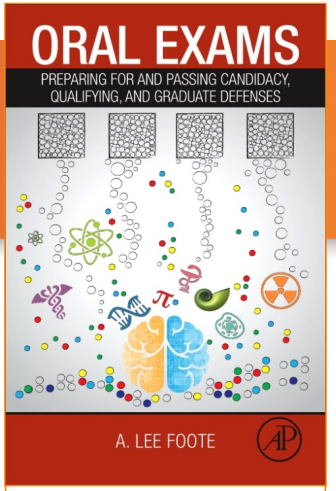
KEY FEATURES

- Discusses a broad range of topics including time management, library and literature work, and grant support
- Includes a new chapter on career planning and development with advice on careers in academia, government, and the private sector
- Contains chapters that promote the development of a varied set of communication skills
- Greatly expanded treatment of graduate study and research in international settings

DESCRIPTION

Graduate Research is an all-in-one resource for prospective and matriculated graduate students in the sciences. The newly revised edition includes updates to every chapter. *Graduate Research* covers a range of topics including writing and preparation of research proposals, developing and refining teaching skills, and ethics and compliance areas such as research involving human subjects and animals.

Graduate Research helps readers navigate the multidimensional and interdisciplinary world of scientific research and it is an invaluable resource for graduate researchers as well as those in advising or mentoring roles.



Oral Exams

Preparing For and Passing Candidacy, Qualifying, and Graduate Defenses

Lee A Foote Professor and Director, Devonian Botanic Garden, University of Alberta, Edmonton, AB, Canada

This book provides students with a great resource to help them prepare for oral comprehensive and viva voca exams, and is also valuable for faculty as they prepare new questions.

ISBN: 978-0-12-802578-9

PUB DATE: September 2015

FORMAT: Paperback

PAGES: c. 192

AUDIENCE

Graduate students, postdoctoral fellows and faculty in every discipline

KEY FEATURES

- Describes in detail the general format of oral comprehensive exams, viva voce examinations and defenses, what to expect, and what the requirements are that students need to fulfill to pass.
- Includes appendices with numerous practice questions sourced from a range of disciplines and countries for individual or group learning
- Useful for Early Career academics that are supervising, supporting, and examining PhD students

DESCRIPTION

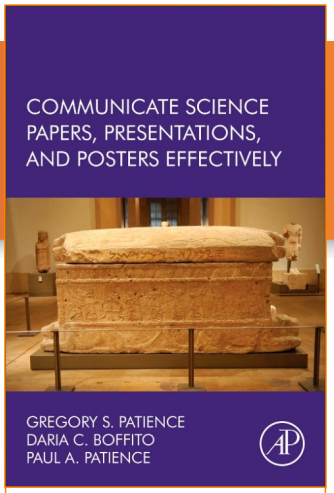
Oral Exams: Preparing For and Passing Candidacy, Qualifying, and Graduate Defenses provides guidance on how to prepare for oral comprehensive and viva voce exams.

Topics discussed include the supervisory committee, preparing the seminar, arranging content, mental preparation, question framing, and the types of questions to expect.

At its core, the book prepares students to be the best they can be by offering insights into how to interpret and appropriately respond to explicit and implied oral comps questions.

This book benefits faculty by helping them prepare new questions, also providing tips on how to mentor their students in preparation for exams.

The training included can be used to prepare for intensive qualifying or certification exams, job interviews, and presentations.



Communicate Science Papers, Presentations, and Posters Effectively

Gregory S Patience Department of Chemical Engineering, Ecole Polytechnique de Montreal, Canada
Daria C. Boffito Department of Chemical Engineering, Ecole Polytechnique de Montreal, Canada
Paul Patience Ecole Polytechnique de Montreal, Canada

The tools readers need to become better writers, presenters, and communicators

KEY FEATURES

- Covers how to accurately and clearly exhibit results, ideas, and conclusions
- Identifies phrases common in scientific literature that should never be used
- Discusses the theory of presentation, including “before and after” examples highlighting best practices
- Provides concrete, step-by-step examples on how to make camera ready graphs and tables

DESCRIPTION

Communicate Science Papers, Presentations, and Posters Effectively is a guidebook on science writing and communication that professors, students, and professionals in the STEM fields can use in a practical way. This book advocates a clear and concise writing and presenting style, enabling users to concentrate on content.

The text is useful to both native and non-native English speakers, identifying best practices for preparing graphs and tables, and offering practical guidance for writing equations. It includes content on significant figures and error bars, and provides the reader with extensive practice material consisting of both exercises and solutions.

ISBN: 978-0-12-801500-1
PUB DATE: August 2015
FORMAT: Paperback
PAGES: c. 264

AUDIENCE

Graduate students, research fellows, post-docs, professors, scientists and researchers in STEM fields.

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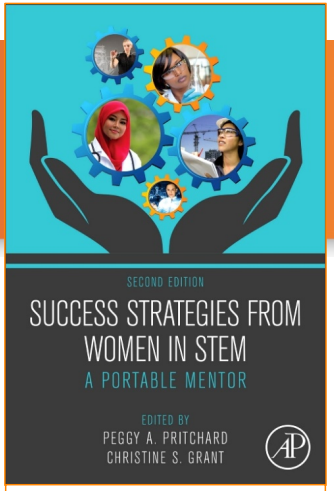

Success Strategies From Women in STEM, 2e

A Portable Mentor

Edited by: ***Peggy A. Pritchard*** Associate Librarian, Learning and Curriculum Support Team, University of Guelph, Guelph, ON, Canada
Christine Grant PhD, Full Professor of Chemical and Biomolecular Engineering and Associate Dean of Faculty Advancement, North Carolina State University, College of Engineering, Raleigh, NC, USA

A comprehensive and accessible manual that provides valuable strategies, tools, and sucess tips for women pursuing and involved in STEM careers

"...we need women to fully participate in this industry...morally and ethically, it's simply the right thing to do. This book will undoubtedly help."--**Network Security,** ***Success Strategies from Women in STEM, Second Edition***

ISBN: 978-0-12-397181-4
PREVIOUS EDITION ISBN: 978-0-12-088411-7
PUB DATE: June 2015
FORMAT: Paperback
PAGES: c. 460

AUDIENCE
Women pursuing careers or involved in careers in science, technology, engineering and mathematics

KEY FEATURES

- Preserves the style and tone of the first edition by bringing together mentors, trainees and early-career professionals in a series of conversations about important topics related to careers in STEM fields, such as leadership, time stress, negotiation, networking, social media and more
- Identifies strategies that can improve career success along with stories that elucidate, engage, and inspire
- Companion website provides authoritative information from successful women engaged in STEM careers, including annotated links to key organizations, associations, granting agencies, teaching support materials, and more

DESCRIPTION

Success Strategies from Women in Stem: A Portable Mentor, Second Edition, is a comprehensive and accessible manual containing career advice, mentoring support, and professional development strategies for female scientists in the STEM fields.

This updated text contains new and essential chapters on leadership and negotiation, important coverage of career management, networking, social media, communication skills, and more. The work is accompanied by a companion website that contains annotated links, a list of print and electronic resources, self-directed learning objects, frequently asked questions, and more.

With an increased focus on international relevance, this comprehensive text contains shared stories and vignettes that will help women pursuing or involved in STEM careers develop the necessary professional and personal skills to overcome obstacles to advancement.

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