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Waste Management: Concepts, Methodologies, Tools, and Applications - Management Association, Information Resources 2019-12-06
As the world's population continues to grow and economic conditions continue to improve, more solid and liquid waste is being generated by society. Improper disposal methods can not only lead to harmful environmental impacts but can also negatively affect human health. To prevent further harm to the world's ecosystems, there is a dire need for sustainable waste management practices that will safeguard the environment for future generations. Waste Management: Concepts, Methodologies, Tools, and Applications is a vital reference source that examines the management of different types of wastes and provides relevant theoretical frameworks about new waste management technologies for the control of air, water, and soil pollution. Highlighting a range of topics such as contaminant removal, landfill treatment, and recycling, this multi-volume book is ideally designed for environmental engineers, waste authorities, solid waste management companies, landfill operators, legislators, environmentalists, policymakers, government officials, academicians, researchers, and students.
Chemistry in Context - Bradley D. Fahlman 2020
"Climate change. Water contamination. Air pollution. Food shortages. These and other global issues are regularly featured in the media. However, did you know that chemistry plays a crucial role in addressing these challenges? A knowledge of chemistry is also essential to improve the quality of our lives. For instance, faster electronic devices, stronger plastics, and more effective medicines and vaccines all rely on the innovations of chemists throughout the world. With our world so dependent on chemistry, it is unfortunate that most chemistry textbooks do not provide significant details regarding real-world applications. Enter Chemistry in Context-"the book that broke the mold." Since its inception in 1993, Chemistry in Context has focused on the presentation of chemistry fundamentals within a contextual framework"--
Packaging of High Power Semiconductor Lasers - Xingsheng Liu 2014-07-14
This book introduces high power semiconductor laser packaging design. The challenges of the design and various packaging and testing techniques are detailed by the authors. New technologies and current applications are described in detail.
Food Bites - Richard W Hartel 2009-03-01
Food Bites is an easy-to-read, often humorous book on the scientific basis of the foods we eat, and answers those pesky, niggling questions such as: Is the quality of beer really affected by the type of water used? and Processed foods: good or bad? Readers will be captivated by this superbly written book, especially so as their guides are Professor Richard Hartel, professor of Food Engineering at UW-Madison, along with his daughter, AnnaKate Hartel. Professor Hartel has for the last four years penned a witty and illuminating column on all aspects of food science for the Capital Times of Madison, and his weekly wisdom has now been collected into a single publication. With a huge and growing interest in the science of food, this treasure trove of knowledge and practical information, in 60 bite-sized chunks, is sure to be a bestseller.

Nanotechnology Applications in Coatings - Raymond H. Fernando 2009-09-10
This book highlights scientific advancements and recent applications of nanotechnology in polymeric coatings. Key focus areas are nanocomposite coatings, nanostructured specialty coatings, and advanced characterization techniques.
Cleaner Production Assessment in Dairy Processing - United Nations 2000

Fifty Materials That Make the World - Ian Baker 2018-06-21
This book introduces materials and how advances in materials result in advances in technology and our daily lives. Each chapter covers a particular material, how the material was discovered or invented, when it was first used, how this material has impacted the world, what makes the material important, how it is used today, and future applications. The list of materials covered in this book includes stone, wood, natural fibers, metals, clay, lead, iron, steel, silicon, glass, rubber, composites, polyethylene, rare earth magnet, and alloys.
Tailored Light 2 - Reinhart Poprawe 2011-01-22
The present book covers the application technology of lasers, focusing more on the vast range of processes than on individual applications, in order to motivate and enable future innovations. The physical basics are presented in the first half of the book. The following examination of application categories and their processes is documented by experts from their practical points of view but always refers back to the underlying physical principles. In this way, readers are free to choose their own individual level of depth in understanding this globally relevant field of innovation.
Bio-Based Solvents - François Jérôme 2017-06-29
A multidisciplinary overview of bio-derived solvent applications, life cycle analysis, and strategies required for industrial commercialization This book provides the first and only comprehensive review of the state-of-the-science in bio-derived solvents. Drawing on their own pioneering work in the field, as well as an exhaustive survey of the world literature on the subject, the authors cover all the bases—from bio-derived solvent applications to life cycle analysis to strategies for industrial commercialization—for researchers and professional chemists working across a range of industries. In the increasingly critical area of sustainable chemistry, the search for new and better green solvents has become a top priority. Thanks to their renewability, biodegradability and low toxicity, as well as their potential to promote advantageous organic reactions, green solvents offer the promise of significantly reducing the pernicious effects of chemical processes on human health and the environment. Following an overview of the current solvents markets and the challenges and opportunities presented by bio-derived solvents, a series of dedicated chapters cover all significant classes of solvent arranged by origin and/or chemical structure. Throughout, real-world examples are used to help demonstrate the various advantages, drawbacks, and limitations of each class of solvent. Topics covered include: The commercial potential of various renewably sourced solvents, such as glycerol The various advantages and disadvantages of bio-derived versus petroleum-based solvents Renewably-sourced and waste-derived solvents in the design of eco-efficient processes Life cycle assessment and predictive methods for bio-based solvents Industrial and commercial viability of bio-based solvents now and in the years ahead Potential and limitations of methodologies involving bio-derived solvents New developments and emerging trends in the field and the shape of things to come Considering the vast potential for new and better products suggested by recent developments in this exciting field, Bio-Based Solvents will be a welcome resource among students and researchers in catalysis, organic synthesis, electrochemistry, and pharmaceuticals, as well as industrial chemists involved in manufacturing processes and formulation, and policy makers.
Production of Biofuels and Chemicals with Pyrolysis - Zhen Fang 2021-10-28
This book presents a collection of studies on state-of-art techniques for converting biomass to chemical products by means of pyrolysis, which are widely applicable to the valorization of biomass. In addition to discussing the fundamentals and mechanisms for producing

bio-oils, chemicals, gases and biochar using pyrolysis, it outlines key reaction parameters and reactor configurations for various types of biomass. Written by leading experts and providing a broad range of perspectives on cutting-edge applications, the book is a comprehensive reference guide for academic researchers and industrial engineers in the fields of natural renewable materials, biorefinery of lignocellulose, biofuels, and environmental engineering, and a valuable resource for university students in the fields of chemical engineering, material science and environmental engineering.

E & MJ International Directory of Mining - 1985

Automotive Paints and Coatings - Hans-Joachim Streitberger 2008-09-08

Now in its second edition and still the only book of its kind, this is an authoritative treatment of all stages of the coating process -- from body materials, paint shop design, and pre-treatment, through primer surfacers and top coats. New topics of interest covered are color control, specification and testing of coatings, as well as quality and supply concepts, while valuable information on capital and legislation aspects is given. Invaluable for engineers in the automotive and paints and coatings industry as well as for students in the field.

Industrial Chemistry - Mark Anthony Benvenuto 2015-02-24

Along with the first volume on "Industrial Chemistry" this book discusses, illustrates and explains many of the major chemical processes performed by industry, looks at how transformations affect the quality of our lives, examines the various types of waste produced as necessary products are developed and marketed, and shows techniques and practices in which many industries have made strides to improve or "green" specific chemical processes.

Ethnic Diversity in New Zealand - Barbara Thomson 1999

Coatings Technology - Arthur A. Tracton 2006-11-07

Drawn from the third edition of The Coatings Technology Handbook, this book focuses entirely on testing, experimental design, and strategies for selecting processing techniques in the coatings, adhesives, paints, and inks industries. Coatings Technology: Fundamentals, Testing, and Processing Techniques contains the latest coating and processing met

Reactive and Membrane-Assisted Separations - Philip Lutze 2016-07-28

Process intensification aims for increasing efficiency and sustainability of (bio-)chemical production processes. This book presents strategies for improving fluid separation such as reactive distillation, reactive absorption and membrane assisted separations. The authors discuss computer simulation, model development, methodological approaches for synthesis and the design and scale-up of final industrial processes.

Printing Ink Handbook - 1988

Keystone Coal Industry Manual - 1986

Handbook on Tall Oil Rosin Production, Processing and Utilization - Dr. H. Panda 2013-10-03

Tall oil, a by-product of kraft pulping of pine wood, is formed by acidifying black liquor soap skimmings. It consists of resin acids or rosin, fatty acids, and neutrals. Crude tall oil is an excellent source of rosin and tall oil fatty acid, an industrial-grade oleic and linoleic acid blend. The bulk of the neutrals, largely esters of fatty acids, sterols, resin and wax alcohols, and hydrocarbons, boil at either lower or higher temperatures than the boiling range of the fatty and resin acids. Tall oil itself has a variety of uses in industry. It is used as a frothing agent in the flotation process for reclaiming low grade copper- lead- and zinc-bearing ores, and as a solvent or wetting agent in a variety of textile and synthetic fibre manufacturing processes. The distilled fatty acids are used in soaps, detergents and disinfectants and as a base for lubricating greases, textile oils, cutting oils and metal polishes. They are also used as drying agents in paint, although synthetic substances are widely used. The fatty acids are unsaturated and on exposure to air undergo autoxidation and polymerization to form resin-like materials which form a tough protective coating. Resin acids are used in rubber polymerization and compounding, as size to impart water resistance to paper, and

in adhesives and printing inks. Resin acids are the major component of a substance known as rosin, which is used by musicians to improve the grip of bows used for string instruments. The book contains production details of different products like recovery of crude tall oil, Composition and properties of crude tall oil, Lab. Scale fractional vacuum distillation, tall oil soap acidulation, purification of sulphate soap, hydrodynamic separation of CTO, dimerization of tall oil fatty acid, black liquor soap recovery methods, tall oil in asphalt products and petroleum uses, tall oil in liquid soaps, tall oil in rubber, paper and printing inks etc. This book is very useful for scientists, scholars, consultants and technical institutions.

Handbook of Forensic Science - Jim Fraser 2013-01-11

Forensic science has become increasingly important within contemporary criminal justice, from criminal investigation through to courtroom deliberations, and an increasing number of agencies and individuals are having to engage with its contribution to contemporary justice. This Handbook aims to provide an authoritative map of the landscape of forensic science within the criminal justice system of the UK. It sets out the essential features of the subject, covering the disciplinary, technological, organizational and legislative resources that are brought together to make up contemporary forensic science practice. It is the first full-length publication which reviews forensic science in a wider political, economic, social, technological and legal context, identifying emerging themes on the current status and potential future of forensic science as part of the criminal justice system. With contributions from many of the leading authorities in the field it will be essential reading for both students and practitioners.

Laser Cleaning II - D. M. Kane 2007

Laser Cleaning II is the second of a series of books reporting research on the use of lasers for cleaning material surfaces and related micro-scale and nano-scale laser processing. It follows Laser Cleaning, edited by Boris LukOCOyanchuk, published in 2002. The primary focus is on contaminant particle removal, nano-scale sized particles in particular, which represents a major cleaning challenge in industrial contexts and poses a broad range of research questions. The contributions provide stimulating answers to these questions, spanning the essential areas: the fundamental theoretical and experimental physics of light/particle/interface interactions, invention and development of laser cleaning techniques and diagnostics, simulations for important material and process systems, and laser cleaning and processing applications. Laser cleaning for art and cultural heritage conservation is a related, mature field of research which is also treated."

Methanol: The Basic Chemical and Energy Feedstock of the Future - Martin Bertau 2014-02-18

Methanol - The Chemical and Energy Feedstock of the Future offers a visionary yet unbiased view of methanol technology. Based on the groundbreaking 1986 publication "Methanol" by Friedrich Asinger, this book includes contributions by more than 40 experts from industry and academia. The authors and editors provide a comprehensive exposition of methanol chemistry and technology which is useful for a wide variety of scientists working in chemistry and energy related industries as well as academic researchers and even decision-makers and organisations concerned with the future of chemical and energy feedstocks.

Nanosols and Textiles -

Price Formation in Commodities Markets - Diego Valiante 2013

This report attempts to demystify the sphere of commodities markets worldwide by providing an in-depth examination of the major commodity groups, focusing on product characteristics, supply chains, pricing, liquidity, financial intermediation, industry players and the interplay between derivatives markets and the underlying physical goods. In so doing, the report contributes to the international debate with important information about the diverse market structures across commodities, including supply and demand elasticities, concentration of ownership, infrastructure organisation and layers of financial participation. While describing the endogenous factors, it also examines the increasing role of exogenous factors now impacting commodities. Finally, it

assesses the drivers of the growth of derivatives markets and their impact on price formation.

Environmental Nanotechnology - M. H. Fulekar 2017-10-30

Environmental nanotechnology is considered to play a key role in shaping of current environmental engineering and science practices. This book titled "Environmental Nanotechnology" covers the advanced materials, devices, and system development for use in the environmental protection. The development of nano-based materials, understanding their chemistry and characterization using techniques like X- Ray diffraction, FT-IR, EDX, scanning electron microscope (SEM), transmission electron microscope (TEM), high resolution-TEM, etc is included. It also highlights the scope for their applications in environmental protection, environmental remediation and environmental biosensors for detection, monitoring and assessment. Key Features: Covers basic to advanced Nano-based materials, their synthesis, development, characterization and applications and all the updated information related to environmental nanotechnology. Discusses implications of nanomaterials on the environment and applications of nanotechnology to protect the environment. Illustrates specific topics such as ethics of nanotechnology development, Nano-biotechnology, and application in wastewater technology. Includes applications of nanomaterials for combating global climate change and carbon sequestration. Gives examples of field applications of environmental nanotechnology. This book covers advanced materials, devices, and system developments for use in environmental protection. The development of nano-based materials, understanding its chemistry and characterization by the use of X-Ray diffraction, FT-IR, EDX, scanning electron microscope (SEM), transmission electron microscope (TEM), and high resolution-TEM give the scope for their application in environmental protection, environmental remediation, and environmental biosensors for detection, monitoring, and assessment. The green chemistry based on nano-based materials prevents pollution and controls environmental contaminants.

Blast Cleaning Technology - A. Momber 2007-12-15

The first comprehensive monograph in blast cleaning technology, this book provides a comprehensive review of the technology, with an emphasis on practical applications. The author first systematically and critically reviews the theory behind the technology. Next you'll learn about the state of current blast cleaning, surface quality aspects, and the effects of blast cleaning on the performance of applied coatings. You'll also discover many of today's cutting-edge applications, including micro-machining, polishing, maintenance, and surface preparation for coating applications. Finally, the author describes recent advanced applications in the machining industry, including blast cleaning-assisted laser milling.

Laser Precision Microfabrication - Koji Sugioka 2010-08-13

Miniaturization and high precision are rapidly becoming a requirement for many industrial processes and products. As a result, there is greater interest in the use of laser microfabrication technology to achieve these goals. This book composed of 16 chapters covers all the topics of laser precision processing from fundamental aspects to industrial applications to both inorganic and biological materials. It reviews the sate of the art of research and technological development in the area of laser processing.

Dairy-Derived Ingredients - M Corredig 2009-10-26

Advances in technologies for the extraction and modification of valuable milk components have opened up new opportunities for the food and nutraceutical industries. New applications for dairy ingredients are also being found. Dairy-derived ingredients reviews the latest research in these dynamic areas. Part one covers modern approaches to the separation of dairy components and manufacture of dairy ingredients. Part two focuses on the significant area of the biological functionality of dairy components and their nutraceutical applications, with chapters on milk oligosaccharides, lactoferrin and the role of dairy in food intake and metabolic regulation, among other topics. The final part of the book surveys the technological functionality of dairy components and their applications in food and non-food products. Dairy ingredients and food flavour,

applications in emulsions, nanoemulsions and nanoencapsulation, and value-added ingredients from lactose are among the topics covered. With its distinguished editor and international team of contributors, Dairy-derived ingredients is an essential guide to new developments for the dairy and nutraceutical industries, as well as researchers in these fields. Summarises modern approaches to the separation of dairy components and the manufacture of dairy ingredients Assesses advances in both the biological and technological functionality of dairy components Examines the application of dairy components in both food and non-food products

Energy Performance Indicator Report - Canadian Industry Program for Energy Conservation 2001

This report begins by providing some background information on the Canadian fluid milk industry, including production, employment, & value produced. The report then describes the method used to develop & apply energy efficiency & cost-related benchmarks to this sector. These benchmarks are established at the plant level and by stage of production. Principal findings are reported, starting with an outline of the benchmark targets. Results for 17 participating fluid milk plants representing over 50% of Canadian output are analyzed at the plant level, and data from these participants are analyzed by eight categories (five stages of production and three plant services) at the sub-plant level. Total incentives for achieving the benchmark targets on efficiency & unit costs are then estimated. The final chapter summarizes potential energy-saving ideas identified in recent analyses of the fluid milk sector.

Process Technology - André B. de Haan 2015-04-24

Process Technology provides a general overview about chemical and biochemical process technology. It focuses on the structure and development of production processes, main technological operations and the important aspects of process economics. The theoretical foundations in each chapter are supplemented by case studies and examples in a clear and instructive manner to illustrate the practical aspects. The author highlights operating principles, reasons for application and available industrial equipment of technological operations. Aim is to facilitate those without a process technology background in multi-disciplinary cooperation with (bio-) chemical engineers by providing an overview of this exciting field. The textbook is organized into seven distinct parts: Structure of the chemical industry and (bio-) chemical processes (Bio-) Chemical reaction engineering Molecular separations (distillation, extraction, absorption, adsorption) Mechanical separations (filtration, sedimentation, membranes) Particle and final product manufacturing Development, scale-up, design and safety of processes Major industrial process descriptions

Handbook of Climate Change Mitigation - Wei-Yin Chen 2011-12-21

There is a mounting consensus that human behavior is changing the global climate and its consequence could be catastrophic. Reducing the 24 billion metric tons of carbon dioxide emissions from stationary and mobile sources is a gigantic task involving both technological challenges and monumental financial and societal costs. The pursuit of sustainable energy resources, environment, and economy has become a complex issue of global scale that affects the daily life of every citizen of the world. The present mitigation activities range from energy conservation, carbon-neutral energy conversions, carbon advanced combustion process that produce no greenhouse gases and that enable carbon capture and sequestion, to other advanced technologies. From its causes and impacts to its solutions, the issues surrounding climate change involve multidisciplinary science and technology. This handbook will provide a single source of this information. The book will be divided into the following sections: Scientific Evidence of Climate Change and Societal Issues, Impacts of Climate Change, Energy Conservation, Alternative Energies, Advanced Combustion, Advanced Technologies, and Education and Outreach.

Veterans and Agent Orange - Institute of Medicine 2014-03-06

From 1962 to 1971, the US military sprayed herbicides over Vietnam to strip the thick jungle canopy that could conceal opposition forces, to destroy crops that those forces might depend on, and to clear tall grasses and bushes from the

perimeters of US base camps and outlying fire-support bases. Mixtures of 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), picloram, and cacodylic acid made up the bulk of the herbicides sprayed. The main chemical mixture sprayed was Agent Orange, a 50:50 mixture of 2,4-D and 2,4,5-T. At the time of the spraying, 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), the most toxic form of dioxin, was an unintended contaminant generated during the production of 2,4,5-T and so was present in Agent Orange and some other formulations sprayed in Vietnam. Because of complaints from returning Vietnam veterans about their own health and that of their children combined with emerging toxicologic evidence of adverse effects of phenoxy herbicides and TCDD, the National Academy of Sciences (NAS) was asked to perform a comprehensive evaluation of scientific and medical information regarding the health effects of exposure to Agent Orange, other herbicides used in Vietnam, and the various components of those herbicides, including TCDD. Updated evaluations are conducted every two years to review newly available literature and draw conclusions from the overall evidence.Veterans and Agent Orange: Update 2012 reviews peer-reviewed scientific reports concerning associations between health outcomes and exposure to TCDD and other chemicals in the herbicides used in Vietnam that were published in October 2010-September 2012 and integrates this information with the previously established evidence database. This report considers whether a statistical association with herbicide exposure exists, taking into account the strength of the scientific evidence and the appropriateness of the statistical and epidemiological methods used to detect the association; the increased risk of disease among those exposed to herbicides during service in the Republic of Vietnam during the Vietnam era; and whether there exists a plausible biological mechanism or other evidence of a causal relationship between herbicide exposure and the disease.

NANOTECHNOLOGY AND THE ENVIRONMENT. - 2023

Dense Phase Carbon Dioxide - Murat O. Balaban 2012-04-05

Dense phase carbon dioxide (DPCD) is a non-thermal method forfood and pharmaceutical processing that can ensure safe productswith minimal nutrient loss and better preserved quality attributes.Its application is quite different than, for example, supercriticalextraction with CO 2 where the typical solubility of materials inCO 2 is in the order of 1% and therefore requires large volumes ofCO 2. In contrast, processing with DPCD requires much less CO 2(between 5 to 8% CO 2 by weight) and the pressures used are atleast one order of magnitude less than those typically used inultra high pressure (UHP) processing. There is no noticeabletemperature increase due to pressurization, and typical processtemperatures are around 40°C. DPCD temporarily reduces the pH of liquid foods and becauseoxygen is removed from the environment, and because the temperatureis not high during the short process time (typically about fiveminutes in continuous systems), nutrients, antioxidant activity,and vitamins are much better preserved than with thermaltreatments. In pharmaceutical applications, DPCD facilitates theproduction of micronized powders of controlled particle size anddistribution. Although the capital and operating costs are higherthan that of thermal treatments, they are much lower than othernon-thermal technology operations. This book is the first to bring together the significant amountof research into DPCD and highlight its effectiveness againstmicroorganisms and enzymes as well as its potential in particleengineering. It is directed at food and pharmaceutical industryscientists and technologists working with DPCD and othertraditional or non-thermal technologies that can potentially beused in conjunction with DPCD. It will also be of interest topackaging specialists and regulatory agencies.

Ethnic Groups in New Zealand - Barbara Thomson 1993

Ludwig's Applied Process Design for Chemical and Petrochemical Plants - A. Kayode Coker, PhD 2010-07-19

The Fourth Edition of Applied Process Design for Chemical and Petrochemical Plants Volume 2

builds upon the late Ernest E. Ludwig's classic chemical engineering process design manual. Volume Two focuses on distillation and packed towers, and presents the methods and fundamentals of plant design along with supplemental mechanical and related data, nomographs, data charts and heuristics. The Fourth Edition is significantly expanded and updated, with new topics that ensure readers can analyze problems and find practical design methods and solutions to accomplish their process design objectives. A true application-driven book, providing clarity and easy access to essential process plant data and design information Covers a complete range of basic day-to-day petrochemical operation topics Extensively revised with new material on distillation process performance; complex-mixture fractionating, gas processing, dehydration, hydrocarbon absorption and stripping; enhanced distillation types

Recent Applications in Sol-Gel Synthesis - Usha Chandra 2017-07-05

Versatility, extended compositional ranges, better homogeneity, lesser energy consumption, and requirement of nonexpensive equipments have boosted the use of sol-gel process on top of the popularity in the synthesis of nanosystems. The sol-gel technique has not only revolutionized oxide ceramics industry and/or material science but has also extended widely into multidimensional applications. The book Recent Applications in Sol-Gel Synthesis comprises 14 chapters that deal mainly with the application-oriented aspects of the technique. Sol-gel prepared metal oxide (MO) nanostructures like nanospheres, nanorods, nanoflakes, nanotubes, and nanoribbons have been employed in biomedical applications involving drug deliveries, mimicking of natural bone, and antimicrobial activities. The possibility of controlling grain size in aerogel and preparation of ultrahigh-temperature ceramic (UHTC)-based materials, fluorescent glasses, ultraviolet photosensors, and photocatalysts have been discussed in detail by the experts in the field. The usefulness of sol-gel materials as active GRIN, as textile finisher, and as leather modifier with water-repellent and oil-resistive properties would be an incentive for researchers keen to pursue the field.

Coal Gasification and Its Applications - David A. Bell 2010-12-08

Skyrocketing energy costs have spurred renewed interest in coal gasification. Currently available information on this subject needs to be updated, however, and focused on specific coals and end products. For example, carbon capture and sequestration, previously given little attention, now has a prominent role in coal conversion processes. This book approaches coal gasification and related technologies from a process engineering point of view, with topics chosen to aid the process engineer who is interested in a complete, coal-to-products system. It provides a perspective for engineers and scientists who analyze and improve components of coal conversion processes. The first topic describes the nature and availability of coal. Next, the fundamentals of gasification are described, followed by a description of gasification technologies and gas cleaning processes. The conversion of syngas to electricity, fuels and chemicals is then discussed. Finally, process economics are covered. Emphasis is given to the selection of gasification technology based on the type of coal fed to the gasifier and desired end product: E.g., lower temperature gasifiers produce substantial quantities of methane, which is undesirable in an ammonia synthesis feed. This book also reviews gasification kinetics which is informed by recent papers and process design studies by the US Department of Energy and other groups, and also largely ignored by other gasification books. • Approaches coal gasification and related technologies from a process engineering point of view, providing a perspective for engineers and scientists who analyze and improve components of coal conversion processes • Describes the fundamentals of gasification, gasification technologies, and gas cleaning processes • Emphasizes the importance of the coal types fed to the gasifier and desired end products • Covers gasification kinetics, which was largely ignored by other gasification books Provides a perspective for engineers and scientists who analyze and improve components of the coal conversion processes Describes the fundamentals of gasification, gasification technologies, and gas cleaning processes Covers gasification kinetics, which was largely ignored

by other gasification books

Tanning Chemistry - Anthony D Covington 2015-11-09

Even in the 21st Century, the manufacture of leather retains an air of the dark arts, still somewhat shrouded in the mysteries of a millennia old, craft based industry. Despite the best efforts of a few scientists over the last century or so, much of the understanding of the principles of tanning is still based on received wisdom and experience. Leather is made from (usually) the hides and skins of animals - large animals such as cattle have hides, small animals such as sheep have skins. The skin of any animal is largely composed of the protein collagen, so it is the chemistry of this fibrous protein and the properties it confers to the skin with which the tanner is most concerned. In addition, other components of the skin impact on processing, impact on the chemistry of the material and impact on the properties of the product, leather. Therefore, it is useful to understand the relationships between skin structure at the molecular and macro levels, the changes imposed by modifying the chemistry of the material and the eventual properties of the leather. This book aims to contribute to changing the thinking in the industry, to continue building a body of scientific understanding, aimed at enhancing the sustainability of an industry which produces a unique group of materials, derived from a natural source. The Science of Leather is the only current text on tanning science, and addresses the scientific principles which underpin the processes involved in making leather. It is concerned with the chemical modification of collagen, prior to tanning and the tanning reactions in particular. The subject is covered in the following order: collagen chemistry, collagen structure, skin structure, processing to prepare for tanning, the tanning processes and processing after tanning. The aim of the book is to provide leather scientists and technologists with an understanding of how the reactions work, the nature of their outcomes and how the processes can be controlled and changed. The objective is to synthesise a scientific view of leather making and to arrive at an understanding of the nature of tanning - how the wide range of chemistries employed in the art can change the properties of collagen, making leather with different properties, especially conferring different degrees of stabilisation as measured by the hydrothermal stability. Environmental issues are not treated as a separate theme - the impact of leather making on the environment is a thread running through the text, with the assumption that better understanding of the science of leather making will lead to improved processing. The book also reflects on the ways leather technology may develop in the future based on the foundation of understanding the scientific principles which can be exploited. It also includes a subject index, references and a glossary. The book provides the reader with insights into the role science plays in leather technology and provides fundamental understanding, which should be the basis for scientific and technological research and development for the benefit of the global leather industry. The book is aimed at students, leather scientists and technologists, in both academia and industry, in leather production and in chemical supply houses.

Alternative Fuels for Transportation - A S Ramadhas 2016-04-19

Exploring how to counteract the world's energy insecurity and environmental pollution, this volume covers the production methods, properties, storage, engine tests, system modification, transportation and distribution, economics, safety aspects, applications, and material compatibility of alternative fuels. The esteemed editor highlights the importance of moving toward alternative fuels and the problems and environmental impact of depending on petroleum products. Each self-contained chapter focuses on a particular fuel source, including vegetable oils, biodiesel, methanol, ethanol, dimethyl ether, liquefied petroleum gas, natural gas, hydrogen, electric, fuel cells, and fuel from nonfood crops.