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Integrated Pollution Prevention and Control for the Municipal Water Cycle in a River Basin Context - Alberto Galvis-Castaño 2019-08-14

The protection of water resources from deterioration in quality by pollution discharges is probably the biggest challenge in sustainable water resources management in the recent decades. In practice, most countries have adopted pollution control strategies and measures which are based on 'end-of-pipe' solutions: wastewater treatment plants and adjustments to the regulations, including taxes for wastewater discharges (Conventional Strategy). Although this approach involves very high costs, on many occasions, this strategy has been a complete failure. The research described in this book contribute to the development of sustainable solutions for the previously outlined problem. It was based on the validation of the Three-Step Strategic Approach concept (3-SSA), which includes: 1) prevention or minimisation of waste production; 2) treatment aimed at recovery and reuse of waste components, and 3) disposal of remaining waste with stimulation of natural self-purification of the receiving water body. The study showed overall positive effects of

the 3-SSA, in comparison of Conventional Strategy, on wastewater management in the Upper Basin (389 km) of the Cauca river, the second most important river in Colombia. The Cost Benefit Analysis clearly favoured the 3-SSA, generating a major impact on the river water quality at lower cost compared to the Conventional Strategy.

Recent Advances in Environmental Management - Ram Naresh Bharagava 2018-10-25

This book focuses on the toxicity of various organic and inorganic pollutants, their eco-toxicological effects and eco-friendly approaches for remediation of environmental pollutants. Extensive focus has been relied on the recent advances in ecofriendly approaches such as bioremediation and phytoremediation technologies, including the use of various group of microbes for remediation of environmental pollutants, etc. Researchers working in the field of bioremediation, phytoremediation, waste management and related fields will find this compilation most useful for further study to learn about the subject matter.

Sugarcane - Alexandre De Oliveira 2018-05-16

Sugarcane (*Saccharum officinarum* L.) is considered one of the major

bioenergy crops grown globally. Thus, sugarcane research to improve sustainable production worldwide is a vital task of the scientific community, to address the increasing demands and needs for their products, especially biofuels. In this context, this book covers the most recent research areas related to sugarcane production and its applications. It is composed of 14 chapters, divided into 5 sections that highlight fundamental insights into the current research and technology on this crop. *Sugarcane: Technology and Research* intends to provide the reader with a comprehensive overview in technology, production, and applied and basic research of this bioenergy species, approaching the latest developments on varied topics related to this crop.

Emerging and Eco-Friendly Approaches for Waste Management Ram Naresh Bharagava 2018-05-25

Rapid industrialization is a serious concern in the context of a healthy environment. With the growth in the number of industries, the waste generated is also growing exponentially. The various chemical processes operating in the manufacturing industry generate a large number of by-products, which are largely harmful and toxic pollutants and are generally discharged into the natural water bodies. Once the pollutants enter the environment, they are taken up by different life forms, and because of bio-magnification, they affect the entire food chain and have severe adverse effects on all life forms, including on human health.

Although, various physico-chemical and biological approaches are available for the removal of toxic pollutants, unfortunately these are often ineffective and traditional clean up practices are inefficient. Biological approaches utilizing microorganisms (bacterial/fungi/algae), green plants or their enzymes to degrade or detoxify environmental pollutants such as endocrine disruptors, toxic metals, pesticides, dyes, petroleum hydrocarbons and phenolic compounds, offer eco-friendly approaches. Such eco-friendly approaches are often more effective than traditional practices, and are safe for both industry workers as well as environment. This book provides a comprehensive overview of various toxic environmental pollutants from a variety natural and anthropogenic sources, their toxicological effects on the environment, humans, animals

and plants as well as their biodegradation and bioremediation using emerging and eco-friendly approaches (e.g. Anammox technology, advanced oxidation processes, membrane bioreactors, membrane processes, GMOs), microbial degradation (e.g. bacteria, fungi, algae), phytoremediation, biotechnology and nanobiotechnology. Offering fundamental and advanced information on environmental problems, challenges and bioremediation approaches used for the remediation of contaminated sites, it is a valuable resource for students, scientists and researchers engaged in microbiology, biotechnology and environmental sciences.

Frontiers on Separation Science and Tech. . - Sung Hyun Kim 2004

This book presents the latest achievements of separation science and technology. It highlights the application of separation with regard to problems of current interest, such as the protection of the environment and the development of emerging technology, including chemical engineering, biotechnology, renewable energy sources and recycling of materials.

Environmental Impacts of Sugar Production - Oliver Cheesman 2004

This book contains 8 chapters on the environmental impact of the cultivation and processing of sugarcane and sugarbeet. The chapters are entitled: (1) background; (2) overview; (3) water consumption; (4) impacts on water quality and aquatic ecosystems; (5) impacts on terrestrial biodiversity; (6) impacts on soils; (7) atmospheric impacts; and (8) use and impacts of byproducts. This book will be of significant interest to policymakers, industry practitioners and researchers in sugar, crop, soil, water and environmental sciences.

Biochar for Environmental Management - Johannes Lehmann

2012-05-16

Biochar is the carbon-rich product when biomass (such as wood, manure or crop residues) is heated in a closed container with little or no available air. It can be used to improve agriculture and the environment in several ways, and its stability in soil and superior nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable

biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. This book is the first to synthesize the expanding research literature on this topic. The book's interdisciplinary approach, which covers engineering, environmental sciences, agricultural sciences, economics and policy, is a vital tool at this stage of biochar technology development. This comprehensive overview of current knowledge will be of interest to advanced students, researchers and professionals in a wide range of disciplines.

Biodegradation of Hazardous and Special Products - Rolando Chamy 2013-06-14

This book contains a collection of different research activities that include the biodegradation compounds with contaminant characteristics and special products of different interests as an added value product or that allows following up various biological processes. The chapters consider the degradation of contaminant compounds generated by industrial activities, i.e., oil industry by-product compounds and halogen compounds or compound generated by natural phenomena such as tsunamis, which require interventions to recover damaged soils. In addition, the book contains chapters that involve special product degradation processes such as chlorophyll, which corresponds to a biological process indicator as photosynthesis.

Wastewater Treatment - D. G. Rao 2012-07-05

Due to the heterogeneous nature of water streams from diverse domestic and industrial sources, and the equally diverse nature of pollutants that can be physical, chemical, and biological in nature, their treatment methods also must be varied in nature. Responding to this complex situation, *Wastewater Treatment: Advanced Processes and Technologies*

Recent Advances in Distillery Waste Management for Environmental Safety - Vineet Kumar 2021-08-30

The safe disposal of distillery waste into the environment, as well as its

recycling and management, has become a hot topic in developing countries including India. This gross misconduct creates serious environmental and public health hazards. Thus, adequate management of waste has become a priority of environmental engineers and biotechnologists for environmental safety and sustainable development. *Recent Advances in Distillery Waste Management for Environmental Safety* covers specific, advanced, and updated knowledge on various developed individual and/or innovative, green, and emerging plant-microbe-based technologies' uses for the management and recycling of distillery waste in an environmentally friendly and cost-effective manner for sustainable development. Moreover, this book provides comprehensive, state-of-the-art information on the physicochemical properties, chemical composition, and environmental risks associated with distillery waste. Furthermore, the book also discusses various existing methods and technologies; up-gradation of existing technologies; the advent of newer technologies for the treatment, processing, and disposal of distillery waste; and focus areas for further development. This broad and unique coverage allows treatment firms and regulatory authorities to determine and develop appropriate treatment strategies for site-specific problems of distillery waste remediation. Features: Provides practical solutions for the treatment and recycling of distillery waste illustrated by specific case studies Focuses on recent industry practices and preferences, along with newer approaches for wastewater treatment An instructive compilation of treatment approaches, including advanced physicochemical and integrated/sequential methods Covers biocomposting of sludge and effluent, and biodiesel production from distillery waste for recycling and sustainable development Emphasizes the relationship of metagenomics with organometallic compounds of distillery waste Discusses the role of ligninolytic enzymes and bioreactors in distillery wastewater treatment This book serves as an accessible reference to assist engineering consultants, industrial waste managers, policy makers, environmental engineers, government implementers, researchers, scientists, and a wide range of professionals responsible for regulating, monitoring, and designing industrial

wastewater treatment techniques, who aspire to work on the reclamation, recycling, and management of distillery waste or wastewater pollutants for environmental safety and sustainable development.

Current Literature on Science of Science - 1984

Chemical Oxidation Treatment - Margaret M. Groeber 1991

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1. These books are modelled on the updated syllabus and guidelines as per the CBSE Board. 2. All chapters consist of Important Terms and Events (History). 3. The chapters include a variety of questions: Multiple Choice, Correct and Rewrite Statements, Sequencing Questions, Assertion-Reason, Competency-based Questions, Pictorial Questions and Source-based and Case-based Questions - all with answers. 4. It also consists of NCERT Questions, Very Short Answer Questions and Short Answer Questions, Long Answer Questions - all with complete solutions. 5. It is supplemented with maps and sample project works based on CBSE topics.

Treatment of Molasses waste water using chitosan and activated carbon Humphrey Mutuma 2021-01-27

Project Report from the year 2016 in the subject Engineering - Chemical Engineering, grade: 87, Moi University, language: English, abstract: This degree thesis studied the viability of treating molasses waste water using a combination of chitosan and activated carbon. Chitosan is obtained by deacetylation of chitin and is an important polymer in water treatment. Activated carbon is a powerful absorbent that is used in filtration. Effects of temperature, time, oh and agitation was studied. The research pointed important leads to embracing chitosan in waste water treatment. Kenya is a major sugar producer with a sugar production output of 591,658 tonnes. The sugar industry encompasses sugar refining which yields molasses used in molasses distilleries to produce ethanol. The molasses

distillery produces distillery waste known as spent wash which has a high BOD/COD, bad odor and brown color. The high BOD/COD can be removed by conventional means such as aerobic and anaerobic digesters, but it is this brown caramelized compounds known as melanoidins that must be removed by unconventional means since they are recalcitrant and difficult to biodegrade biologically. This project aims to explore options of removing recalcitrant compounds in molasses waste water by adsorption process using powdered activated carbon and chitosan a biopolymer derived from chitin. Sugarcane molasses is the by-product of the sugar production industry which are generated during sugar production. Sugarcane molasses contains 50% fermentable sugar is dark brown, putrid and viscous liquid. Sugarcane molasses is a feedstock for ethanol production and is used in a ratio of 1:1 for fermentation and purification of spirit. The product collected as bottom products form spent wash which is the major constituent of molasses waste water.

Properties of molasses include high acidity, strong odor, coloring pigments due to presence of melanoidins, metal sulfides and phenolics giving it brown color. Spent wash is one of the serious pollution problems of countries producing alcohol from fermentation and subsequent distillation of cane molasses. According to distillery spent wash is characterized as one of the caramelized and recalcitrant wastes containing extremely high Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), inorganic solids and low in pH 1-2. The post methanation distillery effluent produced from treatment is characterized by high BOD, COD, intense brown colour due to presence of melanoidin pigments and high levels of salts and nutrient rich.

Integrated Environmental Technologies for Wastewater Treatment and Sustainable Development Vineet Kumar 2022-04-29

Integrated Environmental Technologies for Wastewater Treatment and Sustainable Development provides comprehensive and advanced information on integrated environmental technologies and their limitations, challenges and potential applications in treatment of environmental pollutants and those that are discharged in wastewater from industrial, domestic and municipal sources. The book covers

applied and recently developed integrated technologies to solve five major trends in the field of wastewater treatment, including nutrient removal and resource recovery, recalcitrant organic and inorganic compounds detoxification, energy saving, and biofuel and bioenergy production for environmental sustainability. The book provides future directions to young researchers, scientists and professionals who are working in the field of bioremediation and phytoremediation to remediate wastewater pollutants at laboratory and field scale, for sustainable development. Illustrates the importance of various advanced oxidation processes in effluent treatment plants Describes underlying mechanisms of constructed wetland-microbial fuel cell technologies for the degradation and detoxification of emerging organic and inorganic contaminants discharged in wastewater Highlights the reuse and recycling of wastewater and recovery of value-added resources from wastewater Focuses on recent advances and challenges in integrated environmental technologies, constructed wetland-microbial fuel cell, microbial electrochemical-constructed wetlands, biofilm reactor-constructed wetland, and anammox- microbial fuel cell technology for sustainable development Illustrates the importance of microbes and plants in bio/phytoremediation and wastewater treatment

Handbook of Research on Water Sciences and Society - Vaseashta, Ashok
2022-03-11

Water supports three basic pillars of our life and survival: safety, security, and sustainability. Hence, it is extremely important to revisit the fundamental characteristics of water in order to discover additional information and the characteristics water has that will help uncover pathways to support the United Nations Sustainable Development Goals (UN SDG) to reduce inequality and make cities and human settlements more inclusive, safe, resilient, and sustainable. Clean water is a critical component to meet such goals. While the fundamental physical and chemical properties of water continue to reveal new aspects, it is critical that we review these properties in the context of several recent applications and by case studies. The Handbook of Research on Water Sciences and Society provides the basics of water science, ways to

sense/detect and mitigate contaminants, several regional case studies, and societal aspects of water, including the human right to access water. The book serves as a comprehensive knowledge base on the latest fundamental and applied research and scientific innovations regarding the relationships between society and water resources, safe and sustainable use of water, watershed stewardship, industrial application, and public health awareness. Covering a wide range of topics, it is an ideal resource for researchers, professionals, policymakers, scientists, practitioners, instructors, and students.

Selected Water Resources Abstracts 1991

Organic Pollutants - M. Vasanthi 2021-10-23

This volume describes the identification of emerging organic pollutants, mainly from industrial sources, their associated toxicological threats, and the latest green methods and biotechnological solutions to abate harmful impacts on people and the environment. The chapters present reviews on current applied toxicology research, occupational health hazards and green remedial solutions for pollution control in terrestrial and aquatic environments, with the aim of raising public awareness of these issues and providing chemists, toxicologists and environmental scientists with the knowledge to combat organic pollutants through sustainable means. Readers will learn about the multi-dimensional applications of materials and processes which harvest energy out of environmental remediation technologies, as well as the roles of biotechnology and nanotechnology in addressing high pollutant load. Specific attention is paid to technologies that draw energy through wastewater remediation, as this covers the primary means by which organic pollutants are introduced into the environment from industry and other sources. The book will be of use to pollution control boards, industry regulators, and students and researchers in the fields of biotechnology, biomedical science, hydrology and water chemistry.

INDUSTRIAL WASTE WATER TREATMENT - A. D. PATWARDHAN
2008-05-07

All industrial production processes generate waste waters, which can

pollute water bodies into which they are discharged without adequate treatment. It is, therefore, essential to treat such wastes and eliminate their harmful effects on the environment. This book discusses sources, characteristics and treatment of waste waters produced in industries such as textiles, dairy, tanneries, pulp and paper, fertilizer, pesticide, organic and inorganic chemicals, engineering and fermentation. Many flow diagrams have been included to illustrate industrial processes and to indicate the sources of waste water in such processes. After describing treatment for individual factories, the author discusses the more advanced and economical common effluent plants. The text uses simple and straightforward language and makes the presentation attractive. This book should prove extremely useful to undergraduate students of civil and chemical engineering and postgraduate students of environmental science and engineering. Industrial design consultants will also find the book very handy. To the Greens, it may offer some of the solutions to their concerns.

Biological Wastewater Treatment in Warm Climate Regions - Marcos Von Sperling 2005-09-30

Biological Wastewater Treatment in Warm Climate Regions gives a state-of-the-art presentation of the science and technology of biological wastewater treatment, particularly domestic sewage. The book covers the main treatment processes used worldwide with wastewater treatment in warm climate regions given a particular emphasis where simple, affordable and sustainable solutions are required. This comprehensive book presents in a clear and informative way the basic principles of biological wastewater treatment, including theory and practice, and covering conception, design and operation. In order to ensure the practical and didactic view of the book, 371 illustrations, 322 summary tables and 117 examples are included. All major wastewater treatment processes are covered by full and interlinked design examples which are built up throughout the book, from the determination of wastewater characteristics, the impact of discharge into rivers and lakes, the design of several wastewater treatment processes and the design of sludge treatment and disposal units. The 55 chapters are divided into 7

parts over two volumes: Volume One: (1) Introduction to wastewater characteristics, treatment and disposal; (2) Basic principles of wastewater treatment; (3) Stabilisation ponds; (4) Anaerobic reactors; Volume Two: (5) Activated sludge; (6) Aerobic biofilm reactors; (7) Sludge treatment and disposal. As well as being an ideal textbook, Biological Wastewater Treatment in Warm Climate Regions is an important reference for practising professionals such as engineers, biologists, chemists and environmental scientists, acting in consulting companies, water authorities and environmental agencies.

Waste Treatment in the Biotechnology, Agricultural and Food Industries - Lawrence K. Wang 2022-09-07

This book and its 2 sister books (Volumes 2 and 3) of the Handbook of Environmental Engineering (HEE) series have been designed to serve as a mini-series covering agricultural and green biotechnologies. It is expected to be of value to advanced undergraduate and graduate students, to designers of sustainable biological resources systems, and to scientists and researchers. The aim of these books is to provide information on treatment and management of agricultural, pharmaceutical and food wastes and to serve as a basis for advanced study or specialized investigation of the theory and analysis of various integrated environmental control and waste recycle systems. Volume 1 covers topics on: treatment and management of livestock wastes; waste treatment in the pharmaceutical biotechnology industry using green environmental technologies; vermicomposting process for treating agricultural and food wastes; the impacts of climate change on agricultural, food, and public utility industries; innovative PACT activated sludge, CAPTOR activated sludge, activated bio-filter, vertical loop reactor, and PHOSTRIP processes; agricultural waste treatment by water hyacinth aquaculture, wetland aquaculture, evapotranspiration, rapid rate land treatment, slow rate land treatment, and subsurface infiltration; production and applications of crude polyhydroxyalkanoate-containing bioplastic from agricultural and food-processing wastes; optimization processes of biodiesel production from pig and neem seeds blend oil using alternative catalysts from waste biomass; making castor

oil a promising source for the production of flavor and fragrance through lipase mediated biotransformation; and waste treatment and minimization in baker's yeast industry.

Treatment of Industrial Effluents - Mihir Kumar Purkait 2019-09-06

To address the issue of discharge of untreated industrial effluent in the water body causing pollution, adoption of cleaner production technologies and waste minimization initiatives are being encouraged. The book explains each related technology elaborately and critically analyses the same from practical application point of view. In-depth characterization, environmental and health effects and treatment of various industrial effluents are discussed with case studies. Limitations, challenges and remedial actions to be taken are included at the end of each chapter. Chapters are arranged as per specific type of effluents from various industries like textile, tannery/leather plant, and oil refinery.

Safe Use of Wastewater in Agriculture - Hiroshan Hettiarachchi 2018-03-09

This book offers a broad and global level description of the current status of wastewater use in agriculture and then brings the readers to various places in the MENA Region and Europe to explain how some countries and regions have addressed the challenges during implementation. On a global scale, over 20 million hectares of agricultural land are irrigated using wastewater. This is one good, and perhaps the most prominent, example of the safe use potential of wastewater. Water scarcity and the cost of energy and fertilisers are among the main factors driving millions of farmers and other entrepreneurs to make use of wastewater. In order to address the technical, institutional, and policy challenges of safe water reuse, developing countries and countries in transition need clear institutional arrangements and more skilled human resources, with a sound understanding of the opportunities and potential risks of wastewater use. Stakeholders in wastewater irrigation who need to implement from scratch or improve current conditions, find it difficult to gather the necessary information on practical implementation aspects. The main objective of this book is to bridge that gap.

Selected Water Resources Abstracts - 1991

Sustainable Gold Mining Wastewater Treatment by Sorption Using Low-Cost Materials - Mike Agbesi Acheampong 2020-10-29

Sorption technique was employed to remove heavy metals from gold mining effluent using natural and plant materials for sustainability. An assessment of the effluent quality of a gold mining company in Ghana indicated that arsenic, copper and cyanide were the major pollutants in the process effluent. Arsenic and copper were successfully removed from the effluent by the studied materials. The research showed that the down-flow fixed-bed treatment configuration is an ideal system for the simultaneous removal of copper and arsenic from low concentration gold mining effluent, in addition to other heavy metals present in very low concentrations.

Coagulation and Flocculation in Water and Wastewater Treatment - John Bratby 2006-10-15

Coagulation and Flocculation in Water and Wastewater Treatment provides a comprehensive account of coagulation and flocculation techniques and technologies in a single volume covering theoretical principles to practical applications. Thoroughly revised and updated since the 1st Edition it has been progressively modified and increased in scope to cater for the requirements of practitioners involved with water and wastewater treatment. A thorough gamut of treatment scenarios is attempted, including turbidity, color and organics removal, including the technical aspects of enhanced coagulation. The effects of temperature and ionic content are described as well as the removal of specific substances such as arsenic and phosphorus. Chemical phosphorus removal is dealt with in detail, Rapid mixing for efficient coagulant utilization, and flocculation are dealt with in specific chapters. Water treatment plant waste sludge disposal is dealt with in considerable detail, in an Appendix devoted to this subject. Invaluable for water scientists, engineers and students of this field, Coagulation and Flocculation in Water and Wastewater Treatment is a convenient reference handbook in the form of numerous examples and appended

information.

Microbial Ecology of Wastewater Treatment Plants - Maulin P. Shah
2021-05-15

Microbial Ecology of Wastewater Treatment Plants presents different methods and techniques used in microbial ecology to study the interactions and evolution of microbial populations in WWTPs, particularly the new molecular tools developed in the last decades. These molecular biology-based methods (e.g. studies of DNA, RNA and proteins) provide a high resolution of information compared to traditional ways of studying microbial wastewater populations, such as microscopic examination and culture-based methods. In addition, this book addresses the ability of microorganisms to degrade environmental pollutants. Describes application of different Omics tools in Wastewater treatment plants (WWTPs) Demonstrates the role of microorganisms in WWTPs Includes discussions on the microbial ecology of WWTPs Covers the microbial diversity of activated sludge Emphasizes cutting-edge molecular tools

Industrial and Municipal Sludge - Majeti Narasimha Vara Prasad
2019-04-16

Industrial and Municipal Sludge: Emerging Concerns and Scope for Resource Recovery begins with a characterization of the types of sludge and their sources and management strategies. This section is followed by specific chapters that cover Emerging contaminants in sludge (Endocrine disruptors, Pesticides and Pharmaceutical residues, including illicit drugs/controlled substances), Bioleaching of sludge [with an enriched sulfur-oxidizing bacterial community, Recovery of valuable metals (Bioleaching and use of sulfur-oxidizing bacterial community, and Biogas production by continuous thermal hydrolysis and thermophilic anaerobic digestion of waste activated sludge. In addition, the book includes numerous tables and flow diagrams to help users further comprehend the subject matter. Includes numerous tables and flow diagrams to assist in the comprehension of new and existing sludge treatments and resource recovery technology Covers biogas production by continuous thermal hydrolysis and thermophilic anaerobic digestion of waste

activated sludge Presents information on the recovery of valuable metals from sludge (bioleaching and the use of a sulfur-oxidizing bacterial community) Includes opportunities and challenges in the biorefinery-based valorization of pulp and paper sludge

Advances in Biological Treatment of Industrial Waste Water and their Recycling for a Sustainable Future - Ram Lakhan Singh
2018-10-12

With rampant industrialization, the management of waste generated by various industries is becoming a mammoth problem. Wastewater discharges from industrial and commercial sources may contain pollutants at levels that could affect the quality of receiving waters or interfere with potable water supplies. Thousands of small and large-scale industrial units dump their waste, which is often toxic and hazardous, in open spaces and nearby water sources. Over the last three decades, many cases of serious and permanent damage to the environment and human health on the part of these industries have come to the fore. This book mainly focuses on the biological treatment of wastewater from various industries, and provides detailed information on the sources and characteristics of this wastewater, followed by descriptions of the biological methods used to treat them. Individual chapters address the treatment of wastewater from pulp and paper mills; tanneries; distilleries, sugar mills; the dairy industry; wine industry; textile industry; pharmaceutical industry; food processing industry; oil refinery/petroleum industry; fertilizer industry and beverage/ soft drink bottling industry; and include the characteristics of wastewater, evaluation of biological treatment methods, and recycling of wastewater. Easy to follow, with simple explanations and a good framework for understanding the complex nature of biological wastewater treatment processes, the book will be instrumental to quickly understanding various aspects of the biological treatment of industrial wastewater. It will serve as a valuable reference book for scientists, researchers, educators, and engineers alike.

Biovalorisation of Wastes to Renewable Chemicals and Biofuels - R. Navanietha Krishnaraj
2019-10-25

Biovalorisation of Wastes to Renewable Chemicals and Biofuels addresses advanced technologies for converting waste to biofuels and value-added products. Biovalorisation has several advantages over conventional bioremediation processes as it helps reduce the costs of bioprocesses. Examples are provided of several successfully commercialized technologies, giving insight into developing, potential processes for biovalorisation of different wastes. Different bioprocess strategies are discussed for valorising the wastes coming from the leather industry, olive oil industry, pulp and paper, winery, textile, and food industries, as well as aquaculture. A section on biorefinery for hydrocarbons and emerging contaminants is included to cover concepts on biodesulfurization of petroleum wastes, leaching of heavy metals from E - waste, and bioelectrochemical processes for CO₂. Chapters on algal biorefinery are also included to focus on the technologies for conversion of CO₂ sequestration and wastewater utilization. Biovalorisation of Wastes to Renewable Chemicals and Biofuels can be used as course material for graduate students in chemical engineering, chemistry, and biotechnology, and as a reference for industrial professionals and researchers who want to gain a basic understanding on the subject. Covers a wide range of topics, from the conversion of wastes to organic acids, biofuels, biopolymers and industrially relevant products Bridges the gap between academics and industry Written in a lucid and self-explanatory style Includes activities/quiz/critical questions

Constructed Wetlands for Industrial Wastewater Treatment - Alexandros I. Stefanakis 2018-08-20

A groundbreaking book on the application of the economic and environmentally effective treatment of industrial wastewater Constructed Wetlands for Industrial Wastewater Treatment contains a review of the state-of-the-art applications of constructed wetland technology for industrial wastewater treatment. This green technology offers many economic, environmental, and societal advantages. The text examines the many unique uses and the effectiveness of constructed wetlands for the treatment of complex and heavily polluted wastewater from various industrial sources. The editor — a noted expert in the field — and the

international author team (93 authors from 22 countries) present vivid examples of the current state of constructed wetlands in the industrial sector. The text is filled with international case studies and research outcomes and covers a wide range of applications of these sustainable systems including facilities such as the oil and gas industry, agro-industries, paper mills, pharmaceutical industry, textile industry, winery, brewery, sludge treatment and much more. The book reviews the many system setups, examines the different removal and/or transformational processes of the various pollutants and explores the overall effectiveness of this burgeoning technology. This important resource: Offers the first, groundbreaking text on constructed wetlands use for industrial wastewater treatment Provides a single reference with summarized information and the state-of-the-art knowledge of the use of Constructed Wetlands in the industrial sector through case studies, research outcomes and review chapters Covers a range of industrial applications such as hydrocarbons/oil and gas industry, food and beverage, wood and leather processing, agro-industries, pharmaceuticals and many others Includes best practices drawn by a collection of international case studies Presents the latest technological developments in the industry Written for civil and environmental engineers, sustainable wastewater/water managers in industry and government, Constructed Wetlands for Industrial Wastewater Treatment is the first book to offer a comprehensive review of the set-up and effectiveness of constructed wetlands for a wide range of industrial applications to highlight the diverse economic and environmental benefits this technology brings to the industry.

Advances in Environmental Pollution Management: Wastewater Impacts and Treatment Technologies - Vinod Kumar 2020-12-05
Advances in Environmental Pollution Management: Wastewater Impacts and Treatment Technologies has been designed to bind novel knowledge of wastewater pollution-induced impacts on various aspects of our environment. The book also contains novel methods and tools for the monitoring and treatment of produced wastewater.

Theory and Practice of Water and Wastewater Treatment - Donald L.

Droste 2018-07-31

Provides an excellent balance between theory and applications in the ever-evolving field of water and wastewater treatment Completely updated and expanded, this is the most current and comprehensive textbook available for the areas of water and wastewater treatment, covering the broad spectrum of technologies used in practice today—ranging from commonly used standards to the latest state of the art innovations. The book begins with the fundamentals—applied water chemistry and applied microbiology—and then goes on to cover physical, chemical, and biological unit processes. Both theory and design concepts are developed systematically, combined in a unified way, and are fully supported by comprehensive, illustrative examples. Theory and Practice of Water and Wastewater Treatment, 2nd Edition: Addresses physical/chemical treatment, as well as biological treatment, of water and wastewater Includes a discussion of new technologies, such as membrane processes for water and wastewater treatment, fixed-film biotreatment, and advanced oxidation Provides detailed coverage of the fundamentals: basic applied water chemistry and applied microbiology Fully updates chapters on analysis and constituents in water; microbiology; and disinfection Develops theory and design concepts methodically and combines them in a cohesive manner Includes a new chapter on life cycle analysis (LCA) Theory and Practice of Water and Wastewater Treatment, 2nd Edition is an important text for undergraduate and graduate level courses in water and/or wastewater treatment in Civil, Environmental, and Chemical Engineering.

Solar Energy Update - 1981

Waste Management for the Food Industry - Ioannis S. Arvanitoyannis
2010-07-28

The continuously increasing human population, has resulted in a huge demand for processed and packaged foods. As a result of this demand, large amounts of water, air, electricity and fuel are consumed on a daily basis for food processing, transportation and preservation purposes. Although not one of the most heavily polluting, the food industry does

contribute to the increase in volume of waste produced as well as to the energy expended to do so. For the first time, nine separate food industry categories are thoroughly investigated in Waste Management for the Food Industries in an effort to help combat this already acute problem. The current state of environmental management systems is described, offering comparisons of global legislation rarely found in other resources. An extensive review of commercial equipment, including advantages and disadvantages per employed waste management technique, offers a unique perspective for any academic, student, professional, and/or consultant in the food, agriculture and environmental industries. Thoroughly examines the most prevalent and most polluting industries such as Meat, Fish, Dairy, Olive Oil, Juice and Wine industries Includes synoptical tables [methods employed, physicochemical or microbiological parameters altered after treatment etc] and comparative figures of the effectiveness of various waste management methods Contains nearly 2500 of the most up-to-date references available

Green Chemistry and Technology - Mark Anthony Benvenuto 2021-03-23
The 6th volume of Green Chemical Processing considers sustainable chemistry in the context of innovative and emerging technologies, explaining how they can support the “greening” of industry processes. The American Chemical Society’s 12 Principles of Green Chemistry are woven throughout this text as well as the series to which this book belongs.

Chemistry and Processing of Sugarbeet and Sugarcane - M.A. Clarke
2013-10-22

The world of sugar production has undergone massive changes in the last decade which have resulted in the emergence of many technological changes as technologists strive to develop more efficient and cheaper processes. This is the first book to be published for several years which describes the current state of sugar technology. It presents the recent developments in beet and cane sugar manufacturing; describes the chemistry of sugar processing and products; and considers trends and future possibilities in sugar production systems and products. The book

comprises two sections: beet and cane. The overview of the crop and the production systems that begins each section serves as a framework for the papers that follow. Several papers, i.e. those on sucrose chemistry - are relevant to both sugarcane and sugarbeet. The authors of the papers are all invited speakers well known in their respective fields. The book should be on the shelf of all sugarcane and sugarbeet factories and refiners around the world as well as those companies who are sugar users or who supply goods and services to the sugar industry. It can also be used as a text by universities offering training courses in sugar processing technology.

Industrial Engineering, Management Science and Applications 2015
Mitsuo Gen 2015-05-18

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applications related fields.

Environmental Waste Management - Ram Chandra 2016-04-19

Rapid industrialization has resulted in the generation of huge quantities of hazardous waste, both solid and liquid. Despite regulatory guidelines and pollution control measures, industrial waste is being dumped on land and discharged into water bodies without adequate treatment. This gross misconduct creates serious environmental and public health

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