Emerging Compounds Removal From Wastewater Natural And Solar Based Treatments Springerbriefs In Molecular Science

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Green Technologies for Wastewater Treatment - Giusy Lofrano 2012-04-02
In order to analyse the challenges posed by the quest for sustainability, Green Technologies for Wastewater treatment: Energy Recovery and Emerging Compounds Removal evaluates water management together with energy use. The strong effects that the release of emerging pollutants such as endocrine disruptors (EDCs), pharmaceuticals and personal care products (PPCPs) have in wastewater reuse applications are examined, as well as the need to optimize the energy consumption in wastewater treatment. More specifically, this volume focuses on: - Presenting the advantages linked to the application of chemically assisted primary sedimentation (CAPS) that enables energy optimization of wastewater treatment plants and points to the possibility of wastewater as a possible resource; - Discussing the analytical problems related to the analytical detection of emerging pollutants and of their transformation products; - Comparing the efficiency of MBR plants for removing trace pollutants with conventional systems; - Evaluating the application of Wet Oxidation (WO) for the treatment of aqueous effluents to remove trace pollutants; - Reviewing the application of Photo-Fenton process and complementary treatment systems (H2O2/UV-C and Fenton's reagent) for the degradation of two industrial pollutant categories with significant endocrine disrupting properties: alkyl phenols (nonyl and octyl phenols) and bisphenol A. Green Technologies for Wastewater treatment: Energy Recovery and Emerging Compounds Removal will be of great interest to students, technicians, and academics alike who are interested in evaluating and selecting the technologies that lead to better and more sustainable treatment of these huge classes of pollutants.
Materials that Change Color - Marinella Ferrara

2013-11-18
This book presents a design-driven investigation into smart materials developed by chemists, physicists, materials and chemical engineers, and applied by designers to consumer products. Introducing a class of smart materials, that change colors, the book presents their characteristics, advantages, potentialities and difficulties of applications of this to help understanding what they are, how they work, how they are applied. The books also present a number of case studies: products, projects, concepts and experiments using smart materials, thus mapping out new design territories for these innovative materials. These case studies involve different fields of design, including product, interior, fashion and communication design. Within the context of rising sustainable and human-centered design agendas, the series will demonstrate the role and influence of these new materials and technologies on design, and discuss how they can implement and redefine our objects and spaces to encourage more resilient environments.

Dyes and Pigments - Ahmet Gürses 2016-05-04
In this book the authors go back to basics to describe the structural differences between dyes and pigments, their mechanisms of action, properties and applications. They set the scene by explaining the reasons behind these differences and show how dyes are predominately organic compounds that dissolve or react with substrates, whereas pigments are (predominantly) finely ground inorganic substances that are insoluble and therefore have a different mode of coloring. They also describe the role of functional groups and their effect on dyeing ability, contrasting this with the way in which pigments cause surface reflection (or light absorption) depending on their chemical and crystalline structure and relative particle size. The book explores the environmental impact of dyes in a section that covers the physical, chemical, toxicological, and ecological properties of dyes and how these are used to assess their effect on the environment and to estimate whether a given product presents a potential hazard. Lastly, it assesses how, in addition to their traditional uses in the textile, leather, paper, paint and varnish industries, dyes and pigments are indispensable in other fields such as microelectronics, medical diagnostics, and in information recording techniques.

Biogas Energy - Tasneem Abbasi 2011-11-03
In recent years, the importance of biogas energy has risen manifold and has become universal. This is due to the realization that biogas capture and utilization has great potential in controlling global warming. By capturing biogas wherever it is formed, we not only tap a source of clean energy, but we also prevent the escape of methane to the atmosphere. Given that methane has 25 times greater global warming potential than CO2, methane capture through biogas energy in this manner can contribute substantially towards global warming control.

Microalgae-Based Biofuels and Bioproducts - Raul Muñoz 2017-06-13
Microalgae-Based Biofuels and Bioproducts: From Feedstock Cultivation to End Products compiles contributions from authors from different areas and backgrounds who explore the cultivation and utilization of microalgae biomass for sustainable fuels and chemicals. With a strong focus in emerging industrial and large scale applications, the book summarizes the new achievements in recent years in this field by critically evaluating developments in the field of algal biotechnology, whilst taking into account sustainability issues and techno-economic parameters. It includes information on microalgae cultivation, harvesting, and conversion processes for the production of liquid and gaseous biofuels, such as biogas, bioethanol, biodiesel and biohydrogen. Microalgae biorefinery and biotechnology applications, including for pharmaceuticals, its use as food and feed, and value added bioproducts are also covered. This book's comprehensive scope makes it an ideal reference for both early stage and consolidated researchers, engineers and

graduate students in the algal field, especially in energy, chemical and environmental engineering, biotechnology, biology and agriculture. Presents the most current information on the uses and untapped potential of microalgae in the production of bio-based fuels and chemicals Critically reviews the state-of-the-art feedstock cultivation of biofuels and bioproducts mass production from microalgae, including intermediate stages, such as harvesting and extraction of specific compounds Includes topics in economics and sustainability of large-scale microalgae cultivation and conversion technologies

Emerging Compounds Removal from Wastewater - 2012-03-31

The CME Group Risk Management Handbook - CME Group 2010-05-25

Praise for The CME Group Risk Management Handbook "Wow! The CME Group Risk Management Handbook is a 'ten strike' and long overdue. A must-read and reference for the risk management industry!" —Jack Sandner, retired chairman of CME Group, member of the Executive Committee "This is a powerful book for its integration of futures and options markets with an understanding of the whole economy. It is an eye-opener to see how central these markets are to our economic lives." —Robert J. Shiller, Okun Professor of Economics, Yale University; Chief Economist, MacroMarkets LLC "Risk management is essential to successful investing, and The CME Group Risk Management Handbook provides the essentials for understanding risk management. In the wake of the financial turmoil of the last few years, managing risk should be part of any investment program. Among the key elements of risk management are stock index, bond, currency, and commodity futures as well as a growing number of futures, options, swaps, and other financial instruments built on indices tracking housing prices, weather conditions, and the economy. The CME Group Risk Management Handbook offers a comprehensive guide for using all of these to better manage financial risks." —David M. Blitzer, PhD, Managing Director and Chairman of the Index Committee, S&P Indices "Dare we ignore the advice of a financial institution, the largest of its kind in the world, that navigated the recent financial crisis without the aid of a single TARP dollar or access to the Fed's cheap loans? For CME Group, risk management has meant risk minimization as it enters its 151st year of life and its 85th year of central counterparty clearing without a single trading debt unpaid. It has been, and continues to be, a leader by example." —Philip McBride Johnson, former CFTC chairman "For the first time, a comprehensive handbook outlining the futures market in today's world is available. The CME Group Risk Management Handbook covers futures basics for the novice trader, while the veterans will benefit from an in-depth look at options and hedging. This handbook is a necessity for any professional, investor, or other market participant seeking to manage risk in the perpetually changing futures market." —H. Jack Bouroudjian, CEO, Index Futures Group

Photocatalysis - Jenny Schneider 2016

Combining basic concepts with the synthesis of new catalysts, reactor and reaction engineering, this book is a comprehensive resource for researchers.

Microwave-Induced Synthesis of Aromatic Heterocycles - Abdul Rauf 2011-09-18

For more than a century, heterocycles have played a crucial role in the biological and industrial development of society, becoming one of the most researched areas within organic chemistry. The first chapter of Microwave-Induced Synthesis of Aromatic Heterocycles is based on microwave theory, the latest developments in instrumentation technology, and the various microwave technologies used for synthesis. The remainder of the chapters are divided into two sections. Section A deals with the five-membered heterocycles (pyrazoles, isoxazoles, triazoles, oxadiazoles, thiazoles, imidazoles, oxazoles, oxazolines etc.) and in Section B, various six-membered heterocycles (triazines, benzoxazoles, benzimidazoles, benzothiazoles) are presented. Both sections contain a detailed, recent

literature review of microwave assisted synthesis and its applicability to various aromatic heterocyclics.

Wetland Technology - Guenter Langergraber 2019-10-15

Water quality standards across the world are being re-written to promote healthier ecosystems, ensure safe potable water sources, increased biodiversity, and enhanced ecological functions. Treatment wetlands are used for treating a variety of pollutant waters, including municipal wastewater, agricultural and urban runoff, industrial effluents, and combined sewer overflows, among others. Treatment wetlands are particularly well-suited for sustainable water management because they can cope with variable influent loads, can be constructed of local materials, have low operations and maintenance requirements compared to other treatment technologies, and they can provide additional ecosystem services. The technology has been successfully implemented in both developed and developing countries. The first IWA Scientific and Technical Report (STR) on Wetland Technology was published in 2000. With the exponential development of the technology since then, the generation of a new STR was facilitated by the IWA Task Group on Mainstreaming Wetland Technology. This STR was conceptualized and written by leading experts in the field. The new report presents the latest technology applications within an innovative planning framework of multi-purpose wetland design. It also includes practical design information collected from over twenty years of experience from practitioners and academics, covering experiments at laboratory and pilot-scale up to full-scale applications. Scientific and Technical Report No.27

Self-Assembled Nanomaterials I - Toshimi Shimizu 2008-09-09

This text was ranked by ISI as having the Highest Impact Factor of all publications within Polymer Science. It is a collection of concise reports on the physics and chemistry of polymers.

Anaerobic Technology in Pulp and Paper Industry - Pratima Bajpai 2017-03-14

This book presents a state-of-the-art report on the treatment of pulp and paper industry effluents using anaerobic technology. It covers a comprehensive range of topics, including the basic reasons for anaerobic treatment, comparison between anaerobic and aerobic treatment, effluent types suitable for anaerobic treatment, design considerations for anaerobic treatment, anaerobic reactor configurations applied for treatment of pulp and paper industry effluents, present status of anaerobic treatment in pulp and paper industry, economic aspects, examples of full scale installations and future trends.

Emerging Compounds Removal from Wastewater - Giusy Lofrano 2012-03-31

In the last years the release of emerging pollutants such as Endocrine Disruptors (EDCs), Pharmaceuticals and Personal Care Products (PPCPs) into the environment has raised great concern. While investigating how to treat emerging pollutants from water and wastewater, researchers have drawn attention on the implementation of more environmentally friendly technologies able to achieve high removal efficiency at low costs. Emerging Compounds Removal from Wastewater by Green Technologies: Natural and Solar Based Treatments introduces green chemistry in relation to these treatment technologies. More specifically, this volume: • Reviews the suitability of alternative adsorption processes that use natural adsorbents natural materials or agricultural waste in light of the inefficiency of conventional wastewater treatment plants; • Evaluates the potential of constructed wetlands for the removal of some categories of trace contaminant of worldwide relevance in view of their application as decentralized systems; • Highlights the promising role of a special class of oxidation techniques defined as Advanced Oxidation Processes (AOPs) supported by sunlight. This volume will be of great interest to students, technicians, and academics alike who are interested in evaluating and selecting the technologies that lead to better and more sustainable treatment of this huge class of pollutants.

Emerging Trends of Nanotechnology in Environment and Sustainability - Karthiyayini Sridharan 2018-01-04
This book discusses nanotechnology, its benefits and risks affecting the environment we live in today, and is divided into three parts: Part-I dealing with Sustainability, Part-II describing Toxicological Impacts, and Part-III discussing Nanomaterial-based Adsorbents. The crucial challenge of sustainability in various environmental elements is a global problem. This draws upon various issues of nanotechnology which impact sustainability of food, clean environment, green house gases, raw materials extraction, manufacturing and automobile industry. Growth in the production of nanomaterials to suit any of these applications is commendable. However, this does not negate the growth in their toxic effects. The nanotoxicity research in areas like medicine and agriculture industry is reviewed in detail in this book. Part-II discusses the toxic nature of widely used nanomaterials. Nanomaterials are enormously used in environmental remediation due to some of their distinct properties. These properties are described and discussed. Part-III of the book highlights the highly reactive and adsorbent properties of nanomaterials that enable them to be a competent agent in water and pollutant remediation. This book is mainly intended for researchers and students to acquire fairly comprehensive understanding and appreciation of nanotechnology dominance in sustainability challenges, with the aim to give the anticipatory governance of nanomaterials in our society and environment.
Environmental Nanotechnology Volume 3 - Nandita Dasgupta 2019-11-18
This third volume on environmental nanotechnology includes chapters dealing with topics such nanoremediation, waste water purification, nanosensors, nanomedicine, and nanofiltration. It also highlights the safety aspects and risk assessment and management related to several toxins, as well as nanotechnology related solutions for these challenges. The book also discusses new nanomaterials from the nexus of environment, water, remediation and total environment.
Human Pharmaceuticals, Hormones and Fragrances - Thomas Ternes 2007-01-30
The observed concentrations of pharmaceuticals and personal care products (PPCPs) in raw wastewater confirm that municipal wastewater represents the main disposal pathway for the PPCPs consumed in households, hospitals and industry. In sewage treatment plant effluents most PPCPs are still present, since many of these polar and persistent compounds are being removed only partially or, in some cases, not at all. Treated wastewater therefore represents an important point source for PPCPs into the environment. After passing a sewage treatment plant the treated wastewater is mostly discharged into rivers and streams or sometimes used to irrigate fields. If drinking water is produced using resources containing a substantial proportion of treated wastewater (e.g. from river water downstream of communities) the water cycle is closed and indirect potable reuse occurs. Human Pharmaceuticals, Hormones and Fragrances provides an overview of the occurrence, analytics, removal and environmental risk of pharmaceuticals and personal care products in wastewater, surface water and drinking water. The book covers all aspects of the fate and removal of PPCPs in the whole water cycle: consumption and occurrence, analytical methods, the legal background, environmental risk assessment, human and animal toxicology, source control options, wastewater and drinking water treatment as well as indirect reuse. The book presents a summary of the results obtained during the EU project "Poseidon", combined with further expert knowledge on the field, and is written at a level appropriate for professionals involved in management of water resource quality. Professionals in the field including decision makers, engineers and scientists, as well as students entering the field, will find this an invaluable source of information. First comprehensive study on the assessment, fate and removal of pharmaceuticals and personal care products in wastewater and drinking water treatment. Emphasises the importance

of micropollutants in the water cycle, provides methods for quantifying their fate and technologies for their removal.

Graphene Oxide in Environmental Remediation Process - Flavio Pendolino 2017-06-24

This book discusses the remediation process using graphene oxide as removal agent from a chemical point of view. State of the art, properties of graphene oxide and its preparation methods are reported in the introduction. Environmental issues and regulations are presented in view of applying graphene oxide dispersion to the purification of aqueous medium, especially for industrial wastewater. The remediation process, for removal organic molecules, inorganic/metallic ions, covers the last part of the book. Future prospective for graphene oxide in the environmental remediation approach is commented.

Wastewater Treatment and Reuse in the Food Industry - Marcella Barbera 2017-10-11

This Brief is devoted to clean drinking water, which is (one of) the most important asset(s) in the food and beverage industry. In the present time of increasing water scarcity in many areas of the world, supply of clean water especially in the production and packaging chain of foods and beverages, is a crucial issue. This Brief hence outlines why functioning purification and reuse systems for wastewater are becoming more and more interesting and promising technologies in solving the challenge. Readers find in this Brief an introduction to different innovative treatment methodologies. The authors discuss key parameters (such as the water volume to be treated, types and chemical and physico-chemical characteristics of pollutants, but also the intended use of the recycled water) and present various methodologies, such as separation or concentration systems, centrifugation, evaporation, filtration, flotation, gravity separation, membrane techniques, aerobic and anaerobic biological treatments, as well as combined or hybrid systems. Selected specific methods are presented in detail, specifically a new adsorption method for the removal of metal ions.

Handbook on Sustainability Transition and Sustainable Peace - Hans Günter Brauch 2016-08-10

In this book 60 authors from many disciplines and from 18 countries on five continents examine in ten parts: Moving towards Sustainability Transition; Aiming at Sustainable Peace; Meeting Challenges of the 21st Century: Demographic Imbalances, Temperature Rise and the Climate-Conflict Nexus; Initiating Research on Global Environmental Change, Limits to Growth, Decoupling of Growth and Resource Needs; Developing Theoretical Approaches on Sustainability and Transitions; Analysing National Debates on Sustainability in North America; Preparing Transitions towards a Sustainable Economy and Society, Production and Consumption and Urbanization; Examining Sustainability Transitions in the Water, Food and Health Sectors from Latin American and European Perspectives; Preparing Sustainability Transitions in the Energy Sector; and Relying on Transnational, International, Regional and National Governance for Strategies and Policies Towards Sustainability Transition. This book is based on workshops held in Mexico (2012) and in the US (2013), on a winter school at Chulalongkorn University, Thailand (2013), and on commissioned chapters. The workshop in Mexico and the publication were supported by two grants by the German Foundation for Peace Research (DSF). All texts in this book were peer-reviewed by scholars from all parts of the world.

Graphene Oxide: Physics and Applications - Jijun Zhao 2014-10-23

This book gives a comprehensive overview of graphene oxides (GO) from atomic structures and fundamental properties to technological applications. Atomic structural models, electronic properties, mechanical properties, optical properties, and functionalizing and compositing of GO are illustrated. Moreover, the excellent physical and chemical properties offer GO promising applications in electronic nanodevices, chemical sensors and catalyst, energy storage, and

biotechnology, which are also presented in this book. Therefore, this book is of interest to researchers in physics, chemistry, materials science, and nanoscience.

Integrated Spatial and Energy Planning - Gernot Stoeglehner 2016-04-02

This book focuses on spatial planning - an important determinant of energy saving and renewable energy supply. Revealing the key driving forces for spatial development supporting the shift towards energy efficiency and renewable energy supplies, it shows the importance of integrated spatial and energy planning approaches for a timely and sustainable change of energy systems, thus supporting policies of climate protection. As operating within the context of renewable energy sources is becoming a major policy issue at the international, European and national level, spatial dimensions of renewable energy systems as well as challenges, barriers and opportunities in different spatial contexts become more important. This book analyses not only the fundamental system interrelations between resources, technologies and consumption patterns with respect to energy, but also the links to the spatial context, and provides guidelines for researchers as well as practitioners in this new, emerging field. It presents innovative analytical tools to solve real-world problems and discusses the most important fields of action in integrated spatial and energy planning including planning contents, planning visions and principles as well as planning process design and planning methodology.

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.

Biodegradation of Azo Dyes - Hatice Atacag Erkurt 2010-04-21

Azo dyes play an important role as coloring agents in the textile, food, and pharmaceutical industry. Due to the toxicity, mutagenicity and carcinogenicity of azo dyes and their breakdown products, their removal from industrial wastewaters has been an urgent challenge. Promising and cost-effective methods are based on their biodegradation, which is treated in this volume. The topics presented by experts in the field include: the classification of azo dyes; toxicity caused by azo dyes; aerobic and anaerobic azo dye biodegradation mechanisms; the role of bacteria, fungi, algae and their enzymes in biodegradation; the impact of redox mediators on azo dye reduction; the integration of biological with physical and chemical processes; the biotransformation of aromatic amines; reactor modelling for azo dye conversion; the biodegradation of azo dyes by immobilized bacteria and fungi; and factors affecting the complete mineralization of azo dyes.

Principles and Applications of Fermentation Technology - Arindam Kuila 2018-07-30

The book covers all aspects of fermentation technology such as principles, reaction kinetics, scaling up of

processes, and applications. The 20 chapters written by subject matter experts are divided into two parts: Principles and Applications. In the first part subjects covered include: Modelling and kinetics of fermentation technology Sterilization techniques used in fermentation processes Design and types of bioreactors used in fermentation technology Recent advances and future prospect of fermentation technology The second part subjects covered include: Lactic acid and ethanol production using fermentation technology Various industrial value-added product biosynthesis using fermentation technology Microbial cyp450 production and its industrial application Polyunsaturated fatty acid production through solid state fermentation Application of oleaginous yeast for lignocellulosic biomass based single cell oil production Utilization of micro-algal biomass for bioethanol production Poly-lactide production from lactic acid through fermentation technology Bacterial cellulose and its potential impact on industrial applications

Treatment Wetlands - Gabriela Dotro 2017-11-15

Contents: Overview of Treatment Wetlands; Fundamentals of Treatment Wetlands; Horizontal Flow Wetlands; Vertical Flow Wetlands; French Vertical Flow Wetlands; Intensified and Modified Wetlands; Free Water Surface Wetlands; Other Applications; Additional Aspects.

Mapping research and innovation in the State of Israel - Lemarchand, Guillermo A. 2016-03-10

Marine Macro- and Microalgae - F. Xavier Malcata 2018-12-07

The marine environment accounts for most of the biodiversity on our planet, while offering a huge potential for the benefit and wellbeing of mankind. Its extensive resources already constitute the basis of many economic activities - but many more are expected in coming years. This book covers current knowledge on uses of marine algae to obtain bulk and fine chemicals, coupled with optimization of the underlying production and purification processes. Major gaps and potential opportunities in this field are discussed in a critical manner. The currrent trends pertaining to marine macro- and microalgae are explained in a simple and understandable writing style. This book covers a wide variety of topics, and as such it will be appropriate as both student text and reference for advances researchers in the field.

REWAS 2016 - Randolph Kirchain 2016-11-22

Topics covered in this collection include the following: •Enabling & Understanding Sustainability - Ferrous & Non-ferrous Metals Processing •Understanding & Enabling Sustainability - (Rechargeable) Batteries •Enabling & Understanding Sustainability - Rare Earth Element Applications •Enabling & Understanding Sustainability - Building Materials & Slag Valorisation •Designing Materials and Systems for Sustainability •Understanding & Enabling Sustainability - Light Metals Recycling & Waste Valorisation •Understanding & Enabling Sustainability - Education Research Innovation I •Understanding & Enabling Sustainability - Education Research Innovation II + Electronic Equipment

Waste Biorefineries: Future Energy, Green Products and Waste Treatment - Mohammad Rehan 2019-09-24

Energy recovery from waste resources holds a significant role in the sustainable waste management hierarchy to support the concept of circular economies and to mitigate the challenges of waste originated problems of sanitation, environment, and public health. Today, waste disposal to landfills is the most widely used methodology, particularly in developing countries, because of limited budgets and lack of efficient infrastructure and facilities to maintain efficient and practical global standards. As a consequence, the dump-sites or non-sanitary landfills have become the significant sources of greenhouse gases emissions, soil and water contamination, unpleasant odors, leachate, and disease spreading vectors, flies, and rodents. However, waste can be utilized to produce a range of potential products such as energy, fuels and value-added products under waste biorefineries. A holistic and quantitative

view, such as waste biorefinery, on waste management must be linked to the actual country, taking into account its socio-economic situation, local waste sources, and composition, as well as the available markets for the recovered energy and products. Therefore, it is critical to understand that solutions cannot be just copied from one region to the others. In fact, all waste handling, transportation, and treatment can represent a burden to the cities' environment and macro and micro economics, except for the benefits obtained from recovered materials and energy. Equally significant is a clear and quantitative understanding of the industrial, and public potential of utilizing recovered materials and energy in the markets as these can be reached without exacerbating the environmental issues using excessive transport. The book explores new advancements and discoveries on the development of emerging waste-to-energy technologies, practical implementation, and lessons learned from sustainable wastemanagement practices under waste biorefinery concept, which will accelerate the growth of circular economies in the world. The articles presented in this book have been written by expert researchers and academics working in institutions at different countries across the world including Germany, Greece, Japan, South Korea, China, Saudi Arabia, Pakistan, Indonesia, Malaysia, Iran, and India. The research articles have been arranged into three main subject categories; 1) Resource recovery from waste, 2) Waste to energy technologies and 3) Waste biorefineries. This book will serve as an important resource for research students, academics, industry, policy makers, and government agencies working in the field of integrated waste management, energy and resource recovery, waste to energy technologies, waste biorefineries etc. The editorial team of this book is very grateful to all the authors for their excellent contributions and making the book successful.

Treatment and Valorisation of Saline Wastewater - Anuska Mosquera Corral 2021-05-15

This book covers the principles and practices of processes and technologies applied for the treatment of saline wastewater with discharge and reuse purpose, and those applied for its valorisation. Saline wastewater was considered to present electrical conductivities over 2 mS/cm, which is the limit for crop irrigation. Saline wastewater management is described with respect to: Basics about salinity characterisation and environmental impact Effects of salinity on the wastewater physical-chemical treatments Effects of salinity on biological treatment processes Valorisation of saline wastewater for energy and materials production Technologies for saline wastewater treatment and salt recovery Urban and industrial saline wastewater treatment Treatment and Valorisation of Saline Wastewater includes two case studies evaluating the treatment of the effluents from a fish cannery and from a WWTP with seawater intrusions in the collecting system. This book is intended as a text reference book for post-graduate, PhD students and researchers interested in the effects of salinity on the wastewater treatment and valorisation processes. It also serves as a reference text for professionals working in the industrial and urban wastewater sector that deal with saline wastewater.

Activated Sludge Models - The IWA Task Group on Mathematical Modelling for Design and Operation of Biological Wastewater Treatment 2000-05-31

This book has been produced to give a total overview of the Activated Sludge Model (ASM) family at the start of 2000 and to give the reader easy access to the different models in their original versions. It thus presents ASM1, ASM2, ASM2d and ASM3 together for the first time. Modelling of activated sludge processes has become a common part of the design and operation of wastewater treatment plants. Today models are being used in design, control, teaching and research. Contents ASM3: Introduction, Comparison of ASM1 and ASM3, ASM3: Definition of compounds in the model, ASM3: Definition of processes in the Model, ASM3: Stoichiometry, ASM3: Kinetics, Limitations of ASM3, Aspects of application of

ASM3, ASM3C: A Carbon based model, Conclusion ASM 2d: Introduction, Conceptual Approach, ASM 2d, Typical Wastewater Characteristics and Kinetic and Stoichiometric Constants, Limitations, Conclusion ASM 2: Introduction, ASM 2, Typical Wastewater Characteristics and Kinetic and Stoichiometric Constants, Wastewater Characterization for Activated Sludge Processes, Calibration of the ASM 2, Model Limitations, Conclusion, Bibliography ASM 1: Introduction, Method of Model Presentation, Model Incorporating Carbon Oxidation Nitrification and Denitrification, Characterization of Wastewater and Estimation of Parameter Values, Typical Parameter Ranges, Default Values, and Effects of Environmental Factors, Assumptions, Restrictions and Constraints, Implementation of the Activated Sludge Model Scientific and Technical Report No.9

Microbial Life of Cave Systems - Annette Summers Engel 2015-10-16

The earth's subsurface contains abundant and active microbial biomass, living in water, occupying pore space, and colonizing mineral and rock surfaces. Caves are one type of subsurface habitat, being natural, solutionally- or collapse-enlarged openings in rock. Within the past 30 years, there has been an increase in the number of microbiology studies from cave environments to understand cave ecology, cave geology, and even the origins of life. By emphasizing the microbial life of caves, and the ecological processes and geological consequences attributed to microbes, this book provides the first authoritative and comprehensive account of the microbial life of caves for students, professionals, and general readers.

Handbook of Nanofibers - Ahmed Barhoum 2019-09-10

This Handbook covers all aspects related to Nanofibers, from the experimental set-up for their fabrication to their potential industrial applications. It describes several kinds of nanostructured fibers such as metal oxides, natural polymers, synthetic polymers and hybrid inorganic-polymers or carbon-based materials. The first part of the Handbook covers the fundamental aspects, experimental setup, synthesis, properties and physico-chemical characterization of nanofibers. Specifically, this part details the history of nanofibers, different techniques to design nanofibers, self-assembly in nanofibers, critical parameters of synthesis, fiber alignment, modeling and simulation, types and classifications of nanofibers, and signature physical and chemical properties (i.e. mechanical, electrical, optical and magnetic), toxicity and regulations, bulk and surface functionalization and other treatments to allow them to a practical use. Characterization methods are also deeply discussed here. The second part of the Handbook deals with global markets and technologies and emerging applications of nanofibers, such as in energy production and storage, aerospace, automotive, sensors, smart textile design, energy conversion, tissue engineering, medical implants, pharmacy and cosmetics. Attention is given to the future of research in these areas in order to improve and spread the applications of nanofibers and their commercialization.

Breakthroughs in Space Life Science Research - Günter Ruyters 2021-06-10

This last volume of the SpringerBriefs in Space Life Sciences series is setup in 5 main parts. The 1st part shortly summarizes the history of life science research in space from the late 40s until today with focus on Europe and Germany, followed by a part on describing flight opportunities including the Space Shuttle/Spacelab system and the International Space Station ISS; in the 3rd part it focuses on extraordinary success stories of this constantly challenging research program and highlights some important key findings in space life science research. The book introduces in the 4th part innovative developments in non-invasive biomedical diagnostics and training methods for astronauts that emerge from this program and are of benefit for people on Earth especially in the aging society. Last but not least in its 5th part it closes with an outlook on the future of space life sciences in the upcoming era of space exploration. The book is

intended for students and research scientists in the life sciences and biomedicine as well as for interested lay persons, who wish to get an overview of space life science research: its´ early days, current status and future directions.

Algae – Laura Barsanti 2005-11-14

An exhaustive review on all things algae would require a multi-volume encyclopedic work. Even then, such a tome would prove to be of limited value, as in addition to being quite complex, it would soon be outdated, as the field of phycology is full of continual revelations and new discoveries. Algae: Anatomy, Biochemistry, and Biotechnology o

Metal-Organic Frameworks for Environmental Sensing – Smita S. Kumar 2021

Water Pollution and Management Practices – Anita Singh 2021-04-12

Water pollution is a matter of concern for both developing and developed parts of the world. This book presents an overview on water pollution and its sustainable management. The book discusses the fundamental aspects of water pollution as well as advanced sustainable technologies for abating water pollution. It is a comprehensive collection of information related with water pollutants which are extremely harmful to man, other living organisms and to the ecosystems. It is all-inclusive coverage of technical, socio-political, scientific as well as social issues revolving around water pollution and management. The book brings out innovative ideas promoting sustainable technologies and extensively covers the diversity of modern technologies related to prevention of water pollution. Book also covers social aspects of water related issues. It is an essential reading for upper level graduates and undergraduates pursuing environmental studies and researchers in the field of waste water management

Environmental Contaminants in Biota – W. Nelson Beyer 2011-02-23

Discussing the interpretation of tissue concentrations of contaminants in wildlife, this updated edition of a bestseller draws on current scientific research and includes new chapters and greater emphasis on aquatic organisms. Each chapter provides a summary and review of a specific chemical along with direction on research methods and the interpretation of conflicting or insufficient data. Chapters include a comprehensive history of contaminant interpretation in wildlife and fish, the use of tissue residues in ecological risk assessment, and detailed coverage of all bioaccumulative contaminants and their physiologic affects.

The United Nations world water development report 2018 – WWAP 2018-03-26

Environmental Biotechnology Volume 4 – K. M. Gothandam 2021-09-24

This book reviews the production of bioplastic from various raw materials and recycling wastewater into useful bioproducts by bacteria. In addition, it also addresses the recent advancement in pest control in rice plants, different methods to analyse genotoxicity on soil samples and the effect of phytocompounds on acrylamide-induced toxicity in Drosophilla. Interestingly, this book also discusses mesoporous silica nanoparticles' role as nanocarrier material for inhibiting the cancer cell, especially breast cancer and various biotechnological applications of marine fungal exopolysaccharides.