Emerging Eco-friendly Green Technologies for Wastewater Treatment From Sources to Solution | Advances in Research and Application: 2012 Edition

Emerging Eco-friendly Green Technologies for Wastewater Treatment Advances in Water Treatment and Pollution Prevention explores the most up-to-date studies in the field of water pollution. More specifically, this book examines the causes and effects of this threatening phenomenon and identifies the preventive measures that can be taken to contain, and even to defeat, water pollution worldwide. The papers gathered in this volume pinpoint the need to implement greener water treatments to prevent water pollution from impacting ecosystems, human well-being and economies any further. They also successfully outline the processes that have been studied, optimized and developed so far to sustain our environment. Advances in Water Treatment and Pollution Prevention will represent a valuable resource to academic researchers, students, institutions, environmentalists, and anyone interested in environmental policies aimed at safeguarding both the quality and the quantity of water.

From Sources to Solution Advanced Oxidation Processes – Applications, Trends, and Prospects constitutes a comprehensive resource for civil, chemical, and environmental engineers researching in the field of water and wastewater treatment. The book covers the fundamentals, applications, and future work in Advanced Oxidation Processes (AOPs) as an attractive alternative and a complementary treatment option to conventional methods. This book also presents state-of-the-art research on AOPs and heterogeneous catalysis while covering recent progress and trends, including the application of AOPs at the laboratory, pilot, or industrial scale, the combination of AOPs with other technologies, hybrid processes, process intensification, reactor design, scale-up, and optimization. The book is divided into four sections: Introduction to Advanced Oxidation Processes, General Concepts of Heterogeneous Catalysis, Fenton and Ferrate in Wastewater Treatment, and Industrial Applications, Trends, and Prospects.

Hematologic Agents—Advances in Research and Application: 2012 Edition This book is divided into seven chapters, which address various leachate landfill management issues such as the quality, quantity and management of municipal landfill leachate, together with new methods. There are many methods available for the treatment and management of municipal landfill leachate. The waste management methods presented here can be applied in most third-world countries, due to the lack of waste separation and high organic content of waste. The book provides descriptions and a hierarchy of waste management, reviews the history of solid waste disposal, and covers a range of topics, including: leachate and gas generation in landfills; natural attenuation landfills; landfill site selection; leachate and stormwater management, collection and treatment; landfill gas management; landfill cover requirements; leachate collection; types of natural treatment systems; and design procedure and considerations. In closing, it provides an overview of the current solid waste management status in Iran.
Advances in Wastewater Treatment I This volume includes the papers presented during the 1st Euro-Mediterranean Conference for Environmental Integration (EMCEI) which was held in Sousse, Tunisia in November 2017. This conference was jointly organized by the editorial office of the Euro-Mediterranean Journal for Environmental Integration in Sfax, Tunisia and Springer (MENA Publishing Program) in Germany. It aimed to give a more concrete expression to the Euro-Mediterranean integration process by supplementing existing North-South programs and agreements with a new multilateral scientific forum that emphasizes in particular the vulnerability and proactive remediation of the Euro-Mediterranean region from an environmental point of view. This volume gives a general and brief overview on current research focusing on emerging environmental issues and challenges and its applications to a variety of problems in the Euro-Mediterranean zone and surrounding regions. It contains over five hundred and eighty carefully refereed short contributions to the conference. Topics covered include (1) innovative approaches and methods for environmental sustainability, (2) environmental risk assessment, bioremediation, ecotoxicology, and environmental safety, (3) water resources assessment, planning, protection, and management, (4) environmental engineering and management, (5) natural resources: characterization, assessment, management, and valorization, (6) intelligent techniques in renewable energy (biomass, wind, waste, solar), (7) sustainable management of marine environment and coastal areas, (8) remote sensing and GIS for geo-environmental investigations, (9) environmental impacts of geo/natural hazards (earthquakes, landslides, volcanic, and marine hazards), and (10) the environmental health science (natural and social impacts on Human health). Presenting a wide range of topics and new results, this edited volume will appeal to anyone working in the subject area, including researchers and students interested to learn more about new advances in environmental research initiatives in view of the ever growing environmental degradation in the Euro-Mediterranean region, which has turned environmental and resource protection into an increasingly important issue hampering sustainable development and social welfare.

Best Practice Guide on Metals Removal from Drinking Water by Treatment Water Treatment Plants can be considered as the industries producing potable water & the sludge generated after coagulation-flocculation process is a type of waste effluent which is generally discharged into surface water without proper treatment causing Water Pollution. Aluminium salts are extensively used as a coagulant in water treatment plants and can cause adverse effects on living organisms in high concentration. Cumulative effect of Aluminium can cause Dementia, Alzheimer's & Parkinson's Disease etc. High Aluminum concentration not only affects the fishes, but also cause structural and functional problems in birds and animals that consume such contaminated organisms. The present research work emphasizes development of a green eco-friendly, clean and cost effective water treatment process to avoid the water pollution by non-judicious use of coagulant in Water Treatment Plants. It can be achieved by recovery and reuse of alum sludge by various methods or by effectively optimizing the coagulant dose using Artificial Neural Network model of the Water Treatment Plants. In the present work, reduction in the optimum alum dose by re-circulation of alum sludge has also been studied.

Characterization and Treatment of Textile Wastewater It is necessary to understand the extent of pollution in the environment in terms of the air, water, and soil in order for both humans and animals to live healthier lives. Poor waste treatment or pollution monitoring can lead to massive environmental issues, such as diminishing valuable resources, and cause a significant negative impact on society. Solutions, such as reuse of waste and sustainable waste management, must be explored to prevent these adverse effects. The Handbook of Research on Resource Management for Pollution and Waste Treatment is a collection of innovative research that examines waste and pollution treatment methods that can be adopted at local and international levels and examines appropriate resource management strategies for environmentally related issues. Featuring coverage on a wide range of topics such as soil washing, bioremediation, and runoff handling, this book is ideally designed for environmentalists, engineers, waste management professionals, natural resource regulators, environmental policymakers, scientists, academicians, researchers, and students seeking current research on viable resource management methods for the regeneration of their immediate environment.

Chitin-Chitosan Olive Mill Wastewater is a heavy polluted liquid stream exiting the olive oil production process. It is a critical environmental problem due to the quantity of organic and inorganic matter that contains. Lots of studies have been done in order to improve the treatment of this wastewater. This thesis has been focused in the treatment of OMWW by an ultrafiltration process preceded by different pretreatments as sieving, coagulation-flocculation or photocatalysis. Different variants of the treatments have been carried out; two samples of OMWW have been treated using HNO3 as reagent, one pretreated just by a coagulation-flocculation and the other also with a photocatalytic process, and two other samples using H2SO4, also one pretreated by just a coagulation-flocculation process and the other also by a photocatalytic process. Comparing the different variants of the treatment has been seen that for those treatments using HNO3 as reagent the COD of the Ultrafiltration feedstream is lower when besides the flocculation it has also been done the photocatalysis. This fact does not happen for the samples treated using H2SO4 because the photocatalysis carried out using H2SO4
has a really low COD reduction. Concerning the economic costs, it has been observed that the treatments using HNO3 are more expensive than the ones using H2SO4 and that the photocatalysis increases considerably the cost of the treatment. Moreover, has been studied the evolution of the treatment cost when the volume of OMWW treated increase, and it has been seen that the costs tend to stabilize quickly after an abrupt reduction at the beginning. After a comparison between the treatment costs and the cost of the OMWW scattering has been observed that from a small amount of OMWW, its treatment is more profitable than its scattering both in economic and environmental terms. Future research is needed for a better understanding of the behavior of H2SO4 as reagent because it could be a good economical alternative in the treatment of OMWW.

Hybrid Artificial Intelligent Systems K.J. Ives Professor of Public Health Engineering University College London The aggregation of small particles in liquids, to form flocs which are large enough to settle, or to be filtered, is a common operation in industrial processes, and water and wastewater treatment. This aggregation, given the general title flocculation in this book, may be brought about by the addition of chemicals to reduce the stability of the original suspension, by neutralising electrical forces of repulsion, by the addition of chemicals (polymers) to link particles by bridging action, by the addition of chemicals which form particles to increase collision probabilities, and by the input of energy leading to hydrodynamically induced collisions. The particles undergoing flocculation may range from colloid in the nanometer size range, through microscop (micron) size, up to visible particles in the millimeter size range; that is a total size range of six orders of magnitude. Consequently the colloid chemist and the hydrodynamicist are both concerned with the interactions that take place, and to them the engineer must turn, to obtain the fundamental information ne cessary for the process design and its associated hardware.

Water and Society IV This book gathers selected theoretical and applied science papers presented at the 2016 Regional Conference of Sciences, Technology and Social Sciences (RCSTSS 2016), organized biannually by the Universiti Teknologi MARA Pahang, Malaysia. Addressing a broad range of topics, including architecture, computer science, engineering, environmental and management, furniture, forestry, health and medicine, material science, mathematics, plantation and agrotechnology, sports science and statistics, the book serves as an essential platform for disseminating research findings, and inspires positive innovations in the region’s development. The carefully reviewed papers in this volume present work by researchers of local, regional and global prominence. Taken together, they offer a valuable reference guide and point of departure for all academics and students who want to pursue further research in their respective fields.

Technical and Economical Optimization of a Batch Membrane Process for Olive Mill Wastewater Treatment Characterized by Different Pretreatment Steps Featuring the theme, From Sources to Solution, this book is based on the research papers presented during the International Conference on Environmental Forensics 2013. It covers multi-disciplinary areas of environmental forensics featuring major themes: characterization, assessment, and monitoring; new approach, rapid assessment, and analytical techniques; pollution control technology; environmental health risk assessment; and policy, governance and management. It present information for researchers from the science and social sciences disciplines and contribute to the advancement of Environmental Forensics. It also aims at evaluating the environmental damages as the result of indiscriminating discharge of toxic environmental pollutants.

Proceedings of the Third International Symposium on Materials and Sustainable Development 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.

Water Pollution and Management Practices Soft Computing Techniques in Solid Waste and Wastewater Management is a thorough guide to computational solutions for researchers working in solid waste and wastewater management operations. This book covers in-depth analysis of process variables, their effects on overall efficiencies, and
optimal conditions and procedures to improve performance using soft computing techniques. These topics coupled with the systematic analyses described will help readers understand various techniques that can be effectively used to achieve the highest performance. In-depth case studies along with discussions on applications of various soft-computing techniques help readers control waste processes and come up with short-term, mid-term and long-term strategies. Waste management is an increasingly important field due to rapidly increasing levels of waste production around the world. Numerous potential solutions for reducing waste production are underway, including applications of machine learning and computational studies on waste management processes. This book details the diverse approaches and techniques in these fields, providing a single source of information researchers and industry practitioners. It is ideal for academics, researchers and engineers in waste management, environmental science, environmental engineering and computing, with relation to environmental science and waste management. Provides a comprehensive reference on the implementation of soft computing techniques in waste management, drawing together current research and future implications. Includes detailed algorithms used, enabling authors to understand and appreciate potential applications. Presents relevant case studies in solid and wastewater management that show real-world applications of discussed technologies.

Advanced Intelligent Systems for Sustainable Development (AI2SD’2019) Hematologic Agents—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Hematologic Agents. The editors have built Hematologic Agents—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews™. You can expect the information about Hematologic Agents in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Hematologic Agents—Advances in Research and Application: 2012 Edition has been produced by the world’s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Biotechnology for Biofuel Production and Optimization Biotechnology for Biofuel Production and Optimization is the compilation of current research findings that cover the entire process of biofuels production from manipulation of genes and pathways to organisms and renewable feedstocks for efficient biofuel production as well as different cultivation techniques and process scale-up considerations. This book captures recent breakthroughs in the interdisciplinary areas of systems and synthetic biology, metabolic engineering, and bioprocess engineering for renewable, cleaner sources of energy. Describes state-of-the-art engineering of metabolic pathways for the production of a variety of fuel molecules Discusses recent advances in synthetic biology and metabolic engineering for rational design, construction, evaluation of novel pathways and cell chassis Covers genome engineering technologies to address complex biofuel-tolerant phenotypes for enhanced biofuel production in engineered chassis Presents the use of novel microorganisms and expanded substrate utilization strategies for production of targeted fuel molecules Explores biohybrid methods for harvesting bioenergy Discusses bioreactor design and optimization of scale-up

Encyclopedia of Polymer Applications, 3 Volume Set This book summarizes the latest research on advanced intelligent systems in the fields of energy and electrical engineering, presented at the second edition of the International Conference on Advanced Intelligent Systems for Sustainable Development (AI2SD’2019), held in Marrakech from 8 to 11 July 2019, Morocco. This book is intended for researchers, professionals and anyone interested in the development of advanced intelligent systems in the electrical engineering sector. The solutions featured focus on three main areas: motion control in complex electromechanical systems, including sensorless control; fault diagnosis and fault-tolerant control of electric drives; and new control algorithms for power electronics converters. In addition, the book includes a range of research using new technologies and advanced approaches. Offering a platform for researchers in the field of energy to share their work related to the problem of management and optimization of energy, which is a major current concern, the book mainly focuses on areas that go hand in hand with the Industrial Revolution 4.0, such as solar energy computing systems, smart grids, hydroelectric power computing systems, thermal and recycling computing systems, eco-design intelligent computing systems, renewable energy for IT equipment, modeling green technology, and renewable energy systems in smart cities. The authors of each chapter report the state of the art in the topics addressed and the results of their own research, laboratory experiments, and successful applications in order to share the concept of advanced intelligent systems and appropriate tools and techniques for modeling, storage management, as well as decision support in the field of electrical engineering. Further, the book discusses a number of future trends and the potential for linking control theory, power electronics, artificial neural networks, embedded controllers and signal processing.
Optimizing Water Treatment Plant Performance Using the Composite Correction Program

This volume constitutes the refereed proceedings of the 11th International Conference on Hybrid Artificial Intelligent Systems, HAIS 2016, held in Seville, Spain, in April 2016. The 63 full papers published in this volume were carefully reviewed and selected from 150 submissions. They are organized in topical sections on data mining and knowledge discovery; time series; bio-inspired models and evolutionary computation; learning algorithms; video and image; classification and cluster analysis; applications; bioinformatics; and hybrid intelligent systems for data mining and applications.

Coagulation and Flocculation in Water and Wastewater Treatment

This completely updated version discusses such topics as raw water quality, treatment options, treatment chemicals, and drinking water regulations. It includes detailed illustrations, photographs, supplemental reading lists, a glossary, and an index.

Municipal Landfill Leachate Management Characterization and Treatment of Textile Wastewater

This book covers fundamental knowledge of characterization of textile wastewater and adsorbents; naturally prepared adsorption and coagulation process for removal of COD, BOD and color. This book is intended for everyone actively working on the environment, especially for researchers in textile wastewater, as the problem of disposal of textile influent is worldwide. Potential technical environmental persons like engineers, project managers, consultants, and water analysts will find this book immediately useful for fine-tuning performance and reliability. This book will also be of interest to individuals who want effective knowledge of wastewater, adsorption and coagulation. Includes definitions of pollutions, sources of wastewater in textile wastewater, various treatment methods, remedial measures and effect of waste. Examines research carried out and in progress worldwide by different researchers. Covers sampling procedures and determination of various parameters of textile wastewater.

Advanced Oxidation Processes

The third International Symposium on Materials and Sustainable Development ISMSD2017 (CIMDD2017) will include a 2-day Conferences (07 & 08 November). Organized by the Research Unit: Materials, Processes and Environment and University M'hamed Bougara of Boumerdes, this symposium follows the success of CIMDD 2013-2015 and continues the traditions of the highly successful series of International Conferences on the materials, processes and Environment. The Symposium will provide a unique topical forum to share the latest results of the materials and sustainable development research in Algeria and worldwide.

Biopolymers Wastewater Characteristics, Treatment and Disposal

This book covers the following topics: wastewater characteristics (flow and major constituents) impact of wastewater discharges to rivers and lakes, overview of wastewater treatment systems complementery items in planning studies. This book, with its clear and practical approach, lays the foundations for the topics that are analysed in more detail in the other books of the series. About the series: The series is based on a highly acclaimed set of best selling textbooks. This international version is comprised by six textbooks giving a state-of-the-art presentation of the science and technology of biological wastewater treatment. Other titles in the series are: Volume 2: Basic Principles of Wastewater Treatment; Volume 3: Waste Stabilisation Ponds; Volume 4: Anaerobic Reactors; Volume 5: Activated Sludge and Aerobic Biofilm Reactors; Volume 6: Sludge Treatment and Disposal.

Sustainable Agriculture Reviews 36

Photoinduced processes, caused by natural sunlight, are key functions for sustaining all living organisms through production and transformation of organic matter (OM) in the biosphere. Production of hydrogen peroxide (H2O2) from OM is a primary step of photoinduced processes, because H2O2 acts as strong reductant and oxidant. It is potentially important in many aquatic reactions, also in association with photosynthesis. Allochthonous and autochthonous dissolved organic matter (DOM) can be involved into several photoinduced or biological processes. DOM subsequently undergoes several physical, chemical, photoinduced and biological processes, which can be affected by global warming. This book is uniquely structured to overview some vital issues, such as: DOM; H2O2 and ROOH; HO•; Degradation of DOM; CDOM, FDOM; Photosynthesis; Chlorophyll; Metal complexation, and Global warming, as well as their mutual interrelationships, based on updated scientific results.

 Advances in Information Technology and Education

This volume in the Coulson and Richardson series in chemical engineering contains full worked solutions to the problems posed in volume 1. Whilst the main volume contains illustrative worked examples throughout the text, this book contains answers to the more challenging questions posed at
the end of each chapter of the main text. These questions are of both a standard and non-standard nature, and so will prove to be of interest to both academic staff teaching courses in this area and to the keen student. Chemical engineers in industry who are looking for a standard solution to a real-life problem will also find the book of considerable interest. * An invaluable source of information for the student studying the material contained in Chemical Engineering Volume 1 * A helpful method of learning - answers are explained in full

Advances in Water Treatment and Pollution Prevention Undoubtedly the applications of polymers are rapidly evolving. Technology is continually changing and quickly advancing as polymers are needed to solve a variety of day-to-day challenges leading to improvements in quality of life. The Encyclopedia of Polymer Applications presents state-of-the-art research and development on the applications of polymers. This groundbreaking work provides important overviews to help stimulate further advancements in all areas of polymers. This comprehensive multi-volume reference includes articles contributed from a diverse and global team of renowned researchers. It offers a broad-based perspective on a multitude of topics in a variety of applications, as well as detailed research information, figures, tables, illustrations, and references. The encyclopedia provides introductions, classifications, properties, selection, types, technologies, shelf-life, recycling, testing and applications for each of the entries where applicable. It features critical content for both novices and experts including, engineers, scientists (polymer scientists, materials scientists, biomedical engineers, macromolecular chemists), researchers, and students, as well as interested readers in academia, industry, and research institutions.

Photobiogeochemistry of Organic Matter This Best Practice Guide on Metals Removal From Drinking Water By Treatment describes drinking water standards and regulations, and explains the impact of a range of water treatment processes on metal levels in drinking water.

Recent Advances in Environmental Science from the Euro-Mediterranean and Surrounding Regions This two-volume set (CCIS 201 and CCIS 202) constitutes the refereed proceedings of the International Conference on Computer Science and Education, CSE 2011, held in Qingdao, China, in July 2011. The 164 revised full papers presented in both volumes were carefully reviewed and selected from a large number of submissions. The papers address a large number of research topics and applications: from artificial intelligence to computers and information technology; from education systems to methods research and other related issues; such as: database technology, computer architecture, software engineering, computer graphics, control technology, systems engineering, network, communication, and other advanced technology, computer education, and life-long education.

Soft Computing Techniques in Solid Waste and Wastewater Management

Chemical Engineering: Solutions to the Problems in Volume 1 This book reviews recent research and applications of chitin and chitosan, as natural alternatives of fossil fuel products, in medicine and pharmacy, agriculture, food science and water treatment. Chitin and chitosan products are polysaccharides derived from food waste of crustaceans and fungi, and thus are cheap, abundant, sustainable, non-toxic, recyclable and biocompatible. Remarkable applications include food additives and preservation, packaging materials, biopesticides and fertilisers, drug delivery, tissue engineering, bioflocculation and dye removal.


Advanced Intelligent Systems for Sustainable Development (AII2SD’2018) First published in 1993, Coagulation and Flocculation is a practical reference for the researchers in the field of the stabilization and destabilization of fine solid dispersions. By omitting chapters that remained unchanged from the first edition, the editors of this second edition completely update, rewrite, and expand upon all chapters to reflect a decade of the latest advances in both theoretical and application aspects of the field. The authors provide
expanded material that includes dissociation from a solid surface with independent sites; improvements to the Gouy-Chapman model; electrical double layer, surface ionization, and surface heterogeneity; thin liquid films and modeling of a semi-batch process using microprocesses probabilities; and clay mineral intracrystalline reactions, applications, and gelation. New chapters cover homopolymers and their effect on colloid stability, including never before published figures and equations; the stability of suspensions in the presence of surfactants, polymers, and mixtures; and the flocculation and dewatering of fine-particle suspensions, emphasizing floc formation, growth, structure, and applications. The second edition of Coagulation and Flocculation effectively captures both the theoretical and application aspects of the latest advances in the evolving field of solid dispersions, suspensions, and mixtures.

The Scientific Basis of Flocculation This volume presents papers from the 4th International Conference on Water & Society. The focus of the conference was to encourage trans-disciplinary communication on issues related to the nature of water, and its use and exploitation by society. The valuable research contained in this book demonstrates the need to bridge the gap between specialists in physical sciences, biology, environmental sciences and health. The availability of clean and inexpensive water can no longer be taken for granted as the need for water continues to increase due a growing global population. Heavy water consumers such as agriculture and industry often contribute to its contamination. Water distribution networks in urban areas and soiled water collection systems, present serious problems as well as the need to maintain ageing infrastructures. Possible technologically solutions, such as desalination or pumping systems are energy demanding but, as costs rise, the techniques currently developed may need to be re-assessed. The following list covers some of the subjects included in this book: Water resources management; Agribusiness; Water as a human right; Water quality; Water resources contamination; Sanitation and health; Water and disaster management; Policy and legislation; Future water demands; Irrigation and water management; Management of catchments; Groundwater management and conservation.

Anaerobic Sewage Treatment Industrial Water Treatment Process Technology begins with a brief overview of the challenges in water resource management, covering issues of plenty and scarcity-spatial variation, as well as water quality standards. In this book, the author includes a clear and rigorous exposition of the various water resource management approaches such as: separation and purification (end of discharge pipe), zero discharge approach (green process development), flow management approach, and preservation and control approach. This coverage is followed by deeper discussion of individual technologies and their applications. Covers water treatment approaches including: separation and purification—end of discharge pipe; zero discharge approach; flow management approach; and preservation and control approach Discusses water treatment process selection, trouble shooting, design, operation, and physico-chemical and treatment Discusses industry-specific water treatment processes

Handbook of Research on Resource Management for Pollution and Waste Treatment This handbook focuses on biopolymers for both environmental and biomedical applications. It shows recent advances in technology in all areas from chemical synthesis or biosynthesis to end use applications. These areas have not been covered in a singlebook before and they include biopolymers for chemical andbiotechnological modifications, material structures,characterization, processing, properties, and applications. After the introduction which summarizes the importance ofbiopolymer in the market, the book covers almost all the topicsrelated to polysaccharides, biofibers, bioplastics, biocomposites,natural rubber, gums, bacterial and blood compatible polymers, andapplications of biopolymers in various fields.

Water Treatment

Jar Tests for Water Treatment Optimization: A handbook on how to perform jar tests correctly 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.
Coagulation and Flocculation, Second Edition

Anaerobic Sewage Treatment: Optimization of Process and Physical Design of Anaerobic and Complementary Processes

focuses on process design and deals with start-up procedures and steady state performance of UASB reactors, as well as the influence of operation on reactor performance.

Prospects of Fresh Market Wastes Management in Developing Countries

As we know, rapid industrialization is a serious concern in the context of a healthy environment and public health due to the generation of huge volumes of toxic wastewater. Although various physicochemical and biological approaches are available for the treatment of this wastewater, many of them are not effective. Now, there a number of emerging ecofriendly, cost-effective approaches utilizing microorganisms (bacterial/fungi/algae), green plants or their enzymes, and constructed wetland treatment systems in the treatment of wastewaters containing pollutants such as endocrine disrupting chemicals, toxic metals, pesticides, dyes, petroleum hydrocarbons and phenolic compounds. This book provides a much-needed, comprehensive overview of the various types of wastewater and their ecotoxicological effects on the environment, humans, animals and plants as well as various emerging and eco-friendly approaches for their treatment. It provides insights into the ecological problems and challenges in the treatment and management of wastewaters generated by various sources.

Optimization of Potable Water Treatment Technologies

The book is intended as a handbook providing detailed instructions for the correct conducting of jar tests, which are needed for the optimisation of the coagulation/flocculation process. It contains the essential theoretical background of coagulation/flocculation, including a description of the influence of different parameters on the coagulation efficiency of various impurities (e.g. pH value and type/dose of coagulant), and floc properties and their separation (e.g. mixing intensity, mixing time, but also type/concentration of coagulant and impurities). The principle of jar tests is explained and parameters possible to optimize (i.e. coagulation pH, coagulant dose, flocculation aid dose, mixing intensity and mixing time) are discussed. Laboratory equipment for jar tests is proposed, including mixers and instructions for calculating a mixing intensity (necessarily expressed by the global shear rate/velocity gradient G). Mixing intensities for various purposes are recommended. Detailed practical instructions of how to perform jar tests follow, including a determination of the dose of reagents for pH adjustment and coagulant dose, dosing sequence, floc separation after jar tests by sedimentation and/or centrifugation simulating sand filtration, sampling, measuring necessary parameters (pH, coagulant residuals, alkalinity, residual impurity concentrations etc.), data recording, data processing and jar test evaluation (with specific examples). The handbook also contains a supplementary part with tables for conversion of the molar to mass concentration (and vice versa) of coagulants, and instructions for diluting coagulants and reagents for pH adjustment.

Regional Conference on Science, Technology and Social Sciences (RCSTSS 2016)

Chitin is the second most abundant biopolymer after cellulose and is a resourceful copious and cheap biomaterial discovered in 1859 owing to significant industrial and technological utility. Raw chitin-chitosan resembles keratin in its biological functions. Chitin chemistry vastly developed via innate unparalleled biological features and exceptional physiochemical characteristics. Chitosan endures assorted chemical/physical modifications easily at free proactive functionalities, yet intact bulk properties are achieved through processing, viz., film, membrane, composite, hybrid, nanofibre, nanoparticle, hydrogel and scaffolds. Rapidly lessen bioresources signify chitosan as an option due to renewable eco-friendliness and drive embryonic myriad applications in S

Wastewater Characteristics, Treatment and Disposal

This book focuses on the prospects of fresh market waste management in developing countries. It characterizes fresh market wastewater and solid wastes, and highlights the human health impact of corresponding waste management practices. With regard to treatment technologies, the book discusses the anaerobic digestion of fresh solid wastes; the application of natural coagulants for wastewater treatment; the remediation of xenobiotics in wastewater using nanotechnology; and biofilter aquaponic systems for nutrient removal. All of these technologies are recent innovations, offer several concrete advantages, and can be applied in developing countries as non-central treatment systems. In addition, the book covers electricity production from fresh solid wastes using microbial fuel cells, demonstrating the potential held by recycling fresh market wastewater and solid wastes.

Coagulation and Flocculation

This book gathers papers presented at the International Conference on Advanced Intelligent Systems for Sustainable Development (AII2SD-2018), which was held in Tangiers, Morocco on 12–14 July 2018. It highlights how advanced intelligent systems have successfully been used to develop tools and techniques for modeling, prediction and decision support in connection with the environment. Though chiefly intended for researchers and practitioners in advanced intelligent systems for sustainable development, the book will also be of interest to those working in environment and the Internet of Things, environment and big data analysis,
summarization, prediction, remote sensing & geo-information, geophysics, marine and coastal environments, and sensor networks for environment services.

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