
Department Of Civil Engineering Indian Institute Of

Proceedings of the 2nd International Civil Engineering and Architecture Conference

Biomass, Biofuels, Biochemicals

Urban Air Quality Monitoring, Modelling and Human Exposure Assessment

Current Developments in Biotechnology and Bioengineering

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Contaminants in Drinking and Wastewater Sources

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Integrated Microbial Fuel Cells for Wastewater Treatment

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Risk, Reliability and Sustainable Remediation in the Field of Civil and Environmental Engineering

Pollutants from Energy Sources

Analysis and Design of Plated Structures

Public Works Department, India Civil Engineer grievances in the Department, as set forth in the columns of the 'Engineer' and 'Engineering'; supported by extracts from official documents, etc

Nature-Inspired Methods for Metaheuristics Optimization

Smart Technologies for Energy, Environment and Sustainable Development, Vol 1

Recent Advances in Civil Engineering

Flood Handbook

Transportation Research in India

Trends in Civil Engineering and Challenges for Sustainability

Food Waste to Valuable Resources

Groundwater Assessment, Modeling, and Management
Sustainability Issues in Civil Engineering
Occupational Outlook Handbook
Advances in Sustainable Materials and Resilient Infrastructure
Plastics to Energy
Measurement, Analysis and Remediation of Environmental Pollutants
Pollution Control Technologies
Geocells
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Fracture Failure Analysis of Fiber Reinforced Polymer Matrix Composites
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Proceedings of the 2nd International Civil
Engineering and Architecture Conference
Springer Nature

This compilation on sustainability issues in civil engineering comprises contributions from international experts who have been working in the area of sustainability in civil engineering. Many of the contributions have been presented as keynote lectures

at the International Conference on Sustainable Civil Infrastructure (ICSCI) held in Hyderabad, India. The book has been divided into core themes of Sustainable Transportation Systems, Sustainable Geosystems, Sustainable Environmental and Water Resources and Sustainable Structural Systems. Use of sustainability principles in engineering has become an important component of the process of design and in this context, design and analysis approaches in civil engineering are being reexamined to incorporate the principles of sustainable designs and

construction in practice. Developing economies are on the threshold of rapid infrastructure growth and there is a need to compile the developments in various branches of civil engineering and highlight the issues. It is this need that prompted the composition of this book. The contents of this book will be useful to students, professionals, and researchers working on sustainability related problems in civil engineering. The book also provides a perspective on sustainability for practicing civil engineers who are not directly researching the problems but are affected

by the concerns in the course of their profession. The book can also serve to highlight to policy makers and governing bodies the need to have a mandate for sustainable infrastructural development. *Biomass, Biofuels, Biochemicals* Woodhead Publishing

Plastics to Energy: Fuel, Chemicals, and Sustainability Implications covers important trends in the science and technology of polymer recovery, such as the thermo-chemical treatment of plastics, the impact of environmental degradation on mechanical recycling, incineration and thermal unit design, and new options in biodegradable plastics. The book also introduces product development opportunities from waste materials and discusses the main processes and pathways of the conversion of polymeric materials to energy, fuel and chemicals. A particular focus is placed on industrial case studies and academic reviews, providing a practical emphasis that enables plastics practitioners involved in end-of-life aspects to employ these processes. Final sections examine lifecycle and cost analysis of different plastic waste management processes, exploring the

potential of various techniques in modelling, optimization and simulation of waste management options. Introduces new pathways for the end-of-life treatment of plastics and polymers, including conversion to energy, fuel and other chemicals Compares different options to assist materials scientists, engineers and waste management practitioners to choose the most effective and sustainable option Covers the latest trends in the science and technology of polymer energy recovery

Urban Air Quality Monitoring, Modelling and Human Exposure Assessment William Andrew

The anaerobic process is considered to be a sustainable technology for organic waste treatment mainly due to its lower energy consumption and production of residual solids coupled with the prospect of energy recovery from the biogas generated. However, the anaerobic process cannot be seen as providing the 'complete' solution as its treated effluents would typically not meet the desired discharge limits in terms of residual carbon, nutrients and pathogens. This has given impetus to subsequent post treatment in order to

meet the environmental legislations and protect the receiving water bodies and environment. This book discusses anaerobic treatment from the perspective of organic wastes and wastewaters (municipal and industrial) followed by various post-treatment options for anaerobic effluent polishing and resource recovery. Coverage will also be from the perspective of future trends and thoughts on anaerobic technologies being able to support meeting the increasingly stringent disposal standards. The resource recovery angle is particularly interesting as this can arguably help achieve the circular economy. It is intended the information can be used to identify appropriate solutions for anaerobic effluent treatment and possible alternative approaches to the commonly applied post-treatment techniques. The succeeding discussion is intended to lead on to identification of opportunities for further research and development. This book can be used as a standard reference book and textbook in universities for Master and Doctoral students. The academic community relevant to the subject, namely faculty, researchers, scientists, and practicing

engineers, will find the book both informative and as a useful source of successful case studies.

Current Developments in Biotechnology and Bioengineering Springer Nature Strategic Perspectives in Solid Waste and Wastewater Management explores conventional and advanced biotechnologies for waste management, including socio-economic aspects, techno-economic feasibility, models and modeling tools, and a detailed life-cycle assessment approach in solid waste (SW) and wastewater (WW). These innovative technologies are highly applicable to current real-world situations. The enormous increase in the quantum and diversity of SW and WW - including waste materials generated due to human activity and their potentially harmful effects on the environment and public health - have led to increasing awareness about an urgent need to adopt novel technologies for appropriate management of both SW and WW. While there is an obvious need to minimize the generation of wastes and to reuse and recycle them, the technologies for managing such wastes can play a vital role in mitigating problems. Besides

recovery of substantial energy, these technologies can lead to a considerable reduction in the overall waste quantities requiring final disposal, which can be better managed for safe disposal in a controlled manner while meeting pollution control standards. Outlines appropriate technologies for solid waste and wastewater management systems and their applications Presents and evaluates the Best Available Technology (BAT) and includes global case studies Provides methods for evaluating the way to use appropriate technological systems to develop the best technically and economically feasible projects worldwide Offers an excellent resource for university students to use for their research and dissertations

Current Developments in Biotechnology and Bioengineering Springer Nature Current wastewater treatment technologies are not sustainable simply due to their high operational costs and process inefficiency. Integrated Microbial Fuel Cells for Wastewater Treatment is intended for professionals who are searching for an innovative method to improve the efficiencies of wastewater

treatment processes by exploiting the potential of Microbial Fuel Cells (MFCs) technology. The book is broadly divided into four sections. It begins with an overview of the "state of the art" bioelectrochemical systems (BESs) as well as the fundamentals of MFC technology and its potential to enhance wastewater treatment efficiencies and reduce electricity generation cost. In section two, discusses the integration, installation, and optimization of MFC into conventional wastewater treatment processes such as activated sludge process, lagoons, constructed wetlands, and membrane bioreactors. Section three outlines integrations of MFCs into other wastewater processes. The final section provides explorative studies of MFC integrated systems for large scale wastewater treatment and the challenges which are inherent in the upscaling process. Clearly describes the latest techniques for integrating MFC into traditional wastewater treatment processes such as activated sludge process, lagoons, constructed wetlands, and membrane bioreactors Discusses the fundamentals of bioelectrochemical systems for degrading

the contaminants from the municipal and industrial wastewater Covers methods for the optimization of integrated systems
Contaminants in Drinking and Wastewater Sources Springer Nature

p="" This monograph is based on pollution control technologies available to deal with water and air pollution. It includes removal of variety of pollutants including arsenic, chromium, uranium, pesticides and arsenic from water using adsorption technique. In addition, this book deals with the sampling and removal of microplastics using various techniques. The contents also focus on the role of membrane technology in water and wastewater treatment, and particulate matter air pollution and its control techniques. This volume will be a useful guide for researchers, academics and scientists. ^

Journal of the Institution of Engineers (India). Academic Press

This co-edited book focuses on the state-of-the-art research in transportation in India. Exploring the need for a sustainable transport paradigm in India, this timely book offers solution concepts for mobility and infrastructure challenges faced by local, state, and national transport

authorities. The contents provide a holistic understanding of the paradigm, considering several case-studies and study findings from the leading transportation researchers in India. At the same time, it also addresses the pressing transportation related challenges such as road user safety, traffic operation efficiency, economic and social development, non-motorized transport planning, environmental impact mitigation, energy consumption reduction, land-use, equity, freight transport planning, multimodal coordination, access for the diverse range of travellers' needs, sustainable pavement construction, and emerging vehicle technologies. The existing practices and policies in all the sectors and levels of transport are highlighted in this book with an emphasis on a broader vision for achieving sustainable and inclusive development. The information and data-driven inferences compiled in the book will be useful for practitioners, policymakers, educators, researchers, students, and individual learners.

Integrated Microbial Fuel Cells for Wastewater Treatment CRC Press

This book discusses contamination of

water, air, and soil media. The book covers health effects of such contamination and discusses remedial measures to improve the situation. Contributions by experts provide a comprehensive discussion on the latest developments in the detection and analysis of contaminants, enabling researchers to understand the evolution of these pollutants in real time and develop more accurate source apportionment of these pollutants. The contents of this book will be of interest to researchers, professionals, and policy makers alike.

Current Developments in Biotechnology and Bioengineering

Butterworth-Heinemann

Analysis and Design of Plated Structures: Stability, Second Edition covers the latest developments in new plate solutions and structural models for plate analysis.

Completely revised and updated by its distinguished editors and international team of contributors, this edition also contains new chapters on GBT-based stability analysis and the finite strip and direct strength method (DSM). Other sections comprehensively cover bracing systems, storage tanks under wind loading, the analysis and design of light

gauge steel members, applications of high strength steel members, cold-formed steel pallet racks, and the design of curved steel bridges. This is a comprehensive reference for graduate students, researchers and practicing engineers in the fields of civil, structural, aerospace, mechanical, automotive and marine engineering. Features new chapters on the stability behavior of composite plates such as laminated composite, functionally graded, and steel concrete composite plate structures Includes newly developed numerical simulation methods and new plate models Provides generalized beam theory for analyzing thin-walled structures

Smart Nanoconcretes and Cement-Based Materials Springer Nature

This book collects the scientific proceedings presented during the “2022 The 2nd International Civil Engineering and Architecture Conference” held in Singapore in March 2022 with the aim of showing the latest advancements in theoretical and applied research in the architecture, engineering, and construction sector (AEC). The book is organized into 4 main parts, namely (1) Sustainable Urban Planning and

Architecture; (2) Architectural and Environmental Design; (3) Built Environment Materials and Construction Technology; and (4) Civil Engineering and Construction Management. The goal of the book is to provide readers with an overview of the ongoing transformation of the AEC industry presenting a thorough investigation of the emerging trends in the fields of green building design, construction, and operation.

Recent Advances in Civil Engineering

Springer Nature

New Materials in Civil

Engineering Butterworth-Heinemann

Recent Advances in Civil Engineering

Springer Nature

Smart Nanoconcretes and Cement-Based Materials: Properties, Modelling and Applications explores the fundamental concepts and applications of smart nanoconcretes with self-healing, self-cleaning, photocatalytic, antibacterial, piezoelectrical, heating and conducting properties and how they are used in modern high-rise buildings, hydraulic engineering, highways, tunnels and bridges. This book is an important reference source for materials scientists

and civil engineers who are looking to enhance the properties of smart nanomaterials to create stronger, more durable concrete. Explores the mechanisms through which active agents are released from nanocontainers inside concrete Shows how embedded smart nanosensors, including carbon cement-based smart sensors and micro/nano strain-sensors, are used to increase concrete performance Discusses the major challenges of integrating smart nanomaterials into concrete composites Geotechnical Characteristics of Soils and Rocks of India Elsevier

Clean Energy and Resource Recovery: Wastewater Treatment Plants as Bio-refineries, Volume 2, summarizes the fundamentals of various treatment modes applied to the recovery of energy and value-added products from wastewater treatment plants. The book addresses the production of biofuel, heat, and electricity, chemicals, feed, and other products from municipal wastewater, industrial wastewater, and sludge. It intends to provide the readers an account of up-to-date information on the recovery of biofuels and other value-added products

using conventional and advanced technological developments. The book starts with identifying the key problems of the sectors and then provides solutions to them with step-by-step guidance on the implementation of processes and procedures. Titles compiled in this book further explore related issues like the safe disposal of leftovers, from a local to global scale. Finally, the book sheds light on how wastewater treatment facilities reduce stress on energy systems, decrease air and water pollution, build resiliency, and drive local economic activity. As a compliment to Volume 1: Biomass Waste Based Biorefineries, Clean Energy and Resource Recovery, Volume 2: Wastewater Treatment Plants as Biorefineries is a comprehensive reference on all aspects of energy and resource recovery from wastewater. The book is going to be a handy reference tool for energy researchers, environmental scientists, and civil, chemical, and municipal engineers interested in waste-to-energy. Offers a comprehensive overview of the fundamental treatments and methods used in the recovery of energy and value-added products from

wastewater. Identifies solutions to key problems related to wastewater to energy/resource recovery through conventional and advanced technologies and explore the alternatives. Provides step-by-step guidance on procedures and calculations from practical field data. Includes successful case studies from both developing and developed countries. Clean Energy and Resource Recovery New Materials in Civil Engineering This book is designed to serve as a comprehensive resource on cellular confinement systems or geocells, covering technologies and their applications in geotechnical engineering. The book discusses all aspects of geocells and related technologies, and covers the subjects from conceptual basics to recent advances. The chapters of this book are written by renowned international experts and its contents include detailed case studies from both academic and industry experts. This book is a one-stop reference work for academicians, students, and practicing engineers in the global geotechnical community. Risk, Reliability and Sustainable Remediation in the Field of Civil and

Environmental Engineering Elsevier Your Guide to Effective Groundwater Management Groundwater Assessment, Modeling, and Management discusses a variety of groundwater problems and outlines the solutions needed to sustain surface and ground water resources on a global scale. Contributors from around the world lend their expertise and provide an international perspective on groundwater management. They address the management of groundwater resources and pollution, waste water treatment methods, and the impact of climate change on groundwater and water availability (specifically in arid and semi-arid regions such as India and Africa). Incorporating management with science and modeling, the book covers all areas of groundwater resource assessment, modeling, and management, and combines hands-on applications with relevant theory. For Water Resource Managers and Decision Makers The book describes techniques for the assessment of groundwater potential, pollution, prevention, and remedial measures, and includes a new approach for groundwater modeling based on connections (network

theory). Approximately 30 case studies and six hypothetical studies are introduced reflecting a range of themes that include: groundwater basics and the derivation of groundwater flow equations, exploration and assessment, aquifer parameterization, augmentation of aquifer, water and environment, water and agriculture, the role of models and their application, and water management policies and issues. The book describes remote sensing (RS) applications, geographical information systems (GIS), and electrical resistivity methods to delineate groundwater potential zones. It also takes a look at: Inverse modeling (pilot-points method) Simulation optimization models Radionuclide migration studies through mass transport modeling Modeling for mapping groundwater potential Modeling for vertical 2-D and 3-D groundwater flow Groundwater Assessment, Modeling, and Management explores the management of water resources and the impact of climate change on groundwater. Expert contributors provide practical information on hydrologic engineering and groundwater resources management for

students, researchers, scientists, and other practicing professionals in environmental engineering, hydrogeology, irrigation, geophysics, and environmental science.

Springer Nature

This book comprises select proceedings of the First International Conference on Geomatics in Civil Engineering (ICGCE 2018). This book presents latest research on applications of geomatics engineering in different domains of civil engineering, like structural engineering, geotechnical engineering, hydraulic and water resources engineering, environmental engineering and transportation engineering. It also covers miscellaneous applications of geomatics in a wide range of technical and societal problems making use of geospatial information, engineering principles, and relational data structures involving measurement sciences. The book proves to be very useful for the scientific and engineering community working in the field of geomatics and geospatial technology.

Pollutants from Energy Sources

Springer Nature

This volume takes a multidisciplinary

approach to study and evaluate the global human vulnerability to the exposure of contaminants of emerging concern (CECs) in the natural environment. It provides a comprehensive resource on structurally diverse groups of chemical compounds that have adverse effects on the aquatic environment. It explores the global strength, environmental status, chemical risk assessment and management strategies of CECs with relevant modern techniques. The principle focus is on concurrent emerging water quality issues. It defines the impacts of the environmental exposure of trace concentrations of CECs and/or their metabolites and discusses possible technological advances to combat the emerging pollutants. It will be useful to researchers, multi-stakeholder expert groups, policymakers, and graduate students.

Analysis and Design of Plated Structures

Springer Nature

This book discusses different aspects of energy consumption and environmental pollution, describing in detail the various pollutants resulting from the utilization of natural resources and their control

techniques. It discusses diagnostic techniques in a simple and easy-to-understand manner. It will be useful for engineers, agriculturists, environmentalists, ecologists and policy makers involved in area of pollutants from energy, environmental safety, and health sectors.

Public Works Department, India Civil Engineer grievances in the Department, as set forth in the columns of the 'Engineer' and 'Engineering'; supported by extracts from official documents, etc Springer
This book brings high-quality selected research articles from the international conference on Sustainable Water Resources Management (SWARM 2020), held at Assam Engineering College,

Guwahati, Assam, India, during 19–21 June 2020. The book focuses on water management and planning, urban water management, climate change and global warming, management of groundwater and aquifer remediation, water conservation, water quality, pollution control, management of trans-boundary rivers, advanced hydrological modelling and hydro-disaster risk management of sustainable water management.

Nature-Inspired Methods for Metaheuristics Optimization Elsevier
This book presents a unified approach to fracture behavior of natural and synthetic fiber-reinforced polymer composites on the basis of fiber orientation, the addition

of fillers, characterization, properties and applications. In addition, the book contains an extensive survey of recent improvements in the research and development of fracture analysis of FRP composites that are used to make higher fracture toughness composites in various applications. The FRP composites are an emerging area in polymer science with many structural applications. The rise in materials failure by fracture has forced scientists and researchers to develop new higher strength materials for obtaining higher fracture toughness. Therefore, further knowledge and insight into the different modes of fracture behavior of FRP composites are critical to expanding the range of their application.

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