

Environmental Science And Engineering Author Ravi Krishnan

Completely revised and updated, Encyclopedia of Environmental Science and Engineering, Fifth Edition spans the entire spectrum of environmental science and engineering. Still the most comprehensive, authoritative reference available in this field, the monumental two-volume encyclopedia has expanded to include 87 articles on topics ranging from acid

This monograph contains recent studies in eco-informatics, promising ideas and new challenges in information management for supporting sustainability in companies and other organization. The scope of this book includes sets of solutions which show different stakeholders' viewpoints on sustainability. In individual chapters, authors discuss the role which Environmental Information Systems (EIS) play in the environmental conscious functioning of enterprise. New models, methods and tools supporting sustainability are presented. Emphasis is placed on the innovative approach to eco-friendly organization and coordination of transport, logistics processes and operations management. The information management and decision making in manufacturing and service organizations is highlighted. The scope of this monograph also encompasses topics related to the modeling and monitoring of climate change.

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As digital technologies are expanding the power and reach of research, they are also raising complex issues. These include complications in ensuring the validity of research data; standards that do not keep pace with the high rate of innovation; restrictions on data sharing that reduce the ability of researchers to verify results and build on previous research; and huge increases in the amount of data being generated, creating severe challenges in preserving that data for long-term use. Ensuring the Integrity, Accessibility, and Stewardship of Research Data in the Digital Age examines the consequences of the changes affecting research data with respect to three issues - integrity, accessibility, and stewardship-and finds a need for a new approach to the design and the management of research projects. The report recommends that all researchers receive appropriate training in the management of research data, and calls on researchers to make all research data, methods, and other information underlying results publicly accessible in a timely manner. The book also sees the stewardship of research data as a critical long-term task for the research enterprise and its stakeholders. Individual researchers, research institutions, research sponsors, professional societies, and journals involved in scientific, engineering, and medical research will find this book an essential guide to the principles affecting

research data in the digital age.

It is essential for today's students to learn about science and engineering in order to make sense of the world around them and participate as informed members of a democratic society. The skills and ways of thinking that are developed and honed through engaging in scientific and engineering endeavors can be used to engage with evidence in making personal decisions, to participate responsibly in civic life, and to improve and maintain the health of the environment, as well as to prepare for careers that use science and technology. The majority of Americans learn most of what they know about science and engineering as middle and high school students. During these years of rapid change for students' knowledge, attitudes, and interests, they can be engaged in learning science and engineering through schoolwork that piques their curiosity about the phenomena around them in ways that are relevant to their local surroundings and to their culture. Many decades of education research provide strong evidence for effective practices in teaching and learning of science and engineering. One of the effective practices that helps students learn is to engage in science investigation and engineering design. Broad implementation of science investigation and engineering design and other evidence-based practices in middle and high schools can help address present-day and future

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national challenges, including broadening access to science and engineering for communities who have traditionally been underrepresented and improving students' educational and life experiences. Science and Engineering for Grades 6-12: Investigation and Design at the Center revisits America's Lab Report: Investigations in High School Science in order to consider its discussion of laboratory experiences and teacher and school readiness in an updated context. It considers how to engage today's middle and high school students in doing science and engineering through an analysis of evidence and examples. This report provides guidance for teachers, administrators, creators of instructional resources, and leaders in teacher professional learning on how to support students as they make sense of phenomena, gather and analyze data/information, construct explanations and design solutions, and communicate reasoning to self and others during science investigation and engineering design. It also provides guidance to help educators get started with designing, implementing, and assessing investigation and design.

Coping with Global Environmental Change, Disasters and Security - Threats, Challenges, Vulnerabilities and Risks reviews conceptual debates and case studies focusing on disasters and security threats, challenges, vulnerabilities and risks in Europe, the Mediterranean and other regions. It

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discusses social science concepts of vulnerability and risks, global, regional and national security challenges, global warming, floods, desertification and drought as environmental security challenges, water and food security challenges and vulnerabilities, vulnerability mapping of environmental security challenges and risks, contributions of remote sensing to the recognition of security risks, mainstreaming early warning of conflicts and hazards and provides conceptual and policy conclusions.

Designed for both professional and student use, the new Second Edition includes recent improvements in the application of new technologies and materials on the environment. It also places greater emphasis on the three environmental media of air, water, and soil and discusses how technology can be used to mitigate contamination of all three.

A successful modern heavy metal control program for any industry will include not only traditional water pollution control, but also air pollution control, soil conservation, site remediation, groundwater protection, public health management, solid waste disposal, and combined industrial-municipal heavy metal waste management. In fact, it should be a total environmental control program. Comprehensive in scope, Heavy Metals in the Environment provides technical and economical information on the development of a feasible total heavy metal control program that can benefit industry and local municipalities. The book discusses the importance and

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contamination of metals such as lead, chromium, cadmium, zinc, copper, nickel, iron, and mercury. It covers important research of metals in the environment, the processes and mechanisms for metals control and removal, the environmental behavior and effects of engineered metal and metal oxide nanoparticles, environmental geochemistry of high arsenic aquifer systems, nano-technology applications in metal ion adsorption, biosorption of metals, and heavy metal removal by exopolysaccharide-producing cyanobacteria. The authors delineate technologies for metals treatment and management, metal bearing effluents, metal-contaminated solid wastes, metal finishing industry wastes and brownfield sites, and arsenic-contaminated groundwater streams. They also discuss control, treatment, and management of metal emissions from motor vehicles. The authors reflect the breadth of the field and draw on personal experiences to provide an in-depth presentation of environmental pollution sources, waste characteristics, control technologies, management strategies, facility innovations, process alternatives, costs, case histories, effluent standards, and future trends for each industrial or commercial operation. The methodologies and technologies discussed are directly applicable to the waste management problems that must be met in all industries.

Handbook of Refinery Desulfurization describes the operation of the various desulfurization process units in a petroleum refinery. It also explains the processes that produce raw materials for the petrochemical industry. It

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illustrates all the possible processes to lower the sulfur contents in petroleum and its fractions to decrease emissions of sulfur oxides. This book introduces you to desulfurization concepts, including biodesulfurization, as well as technology, giving guidance on how to accomplish desulfurization in various refining processes. It contains background chapters on the composition and evaluation of feedstocks and includes diagrams and tables of feedstocks and their respective produce. It also outlines how to decide which method should be employed to remove sulfur from different feedstocks. A practical and thorough discussion of the field, Handbook of Refinery Desulfurization gives you a strong grasp of the various processes involved with industrial desulfurization while giving you pointers on which procedures to use under certain conditions.

Microbial Extremozymes: Novel Sources and Industrial Applications is a unique resource of practical research information on the latest novel sources and technologies regarding extremozymes in bioremediation, waste management, valorization of industrial by-products, biotransformation of natural polymers, nutrition, food safety and diagnosis of disease. The book's broad knowledge and varying applications are useful to the food industry, dairy industry, fruit and vegetable processing, and baking and beverages industries, as well as the pharmaceutical and biomedical industries. This is a concise, all-encompassing resource for a range of scientists needing knowledge of extremozymes to enhance and research. Furthermore, it provides an updated knowledge of microbial enzymes isolated from

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extreme environments (temperatures, etc.) and their biotechnological applications. It will be useful to researchers, scientists and students in enzyme research. In addition, users from the dairy and baking industries will benefit from the presented content. Explores recent scientific research on extremophiles and extremozymes technologies that help innovate novel ideas Provides innovative technologies for enzyme production from extremophilic microbes Includes cutting-edge research for applications in various industries where extreme temperature conditions exist Presents novel microorganisms and their enzymes from extreme environments (Thermophilic, Psychrophilic, Acidophilic, Alkaliphilic, Anaerobic, Halophilic, Barophilic, Metallotolerant, Radioresistant, etc.)

This book is intended to meet the academic requirements of the subject 'Environmental Studies' for undergraduate students in Indian and overseas universities. The contents have been prepared keeping in mind the widest possible variations in the background of the users. The entire UGC syllabus and supplementary materials are in the nine chapters. Chapter 1 describes the multidisciplinary nature of environmental studies. Chapter 2 and 3 comprehensively elaborate the forest, water, minerals, food, energy and land resources. Chapter 4 explains various aspects of biodiversity. Chapter 5 discusses the science of ecology and concepts of ecosystem. Chapter 6 is an exhaustive description of environmental pollution, its sources, effects and control measures. The sustainable development has been discussed in Chapter 7. Issues

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on environment and health, human rights, AIDS, women & child welfare and role of IT industry have been addressed in great length in Chapter 8. Key features of this book include authentic, simple to the point and latest account of each and every topic besides well sketched illustrations and various case studies. The book also contains glossary of terms which can be of particular use to students with little or no science background, and appendices and abbreviations commonly used in describing environmental studies

Waste: A Handbook for Management gives the broadest, most complete coverage of waste in our society. The book examines a wide range of waste streams, including: Household waste (compostable material, paper, glass, textiles, household chemicals, plastic, water, and e-waste) Industrial waste (metals, building materials, tires, medical, batteries, hazardous mining, and nuclear) Societal waste (ocean, military, and space) The future of landfills and incinerators Covering all the issues related to waste in one volume helps lead to comparisons, synergistic solutions, and a more informed society. In addition, the book offers the best ways of managing waste problems through recycling, incineration, landfill and other processes. Co-author Daniel Vallero interviewed on NBC's Today show for a segment on recycling Scientific and non-biased overviews will assist scientists, technicians, engineers, and government leaders Covers all main types of waste, including household, industrial, and societal Strong focus on management and recycling provides solutions During the last two decades, the environmental pollution

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regulations have undergone a vast change. Attempts have been made to refine the conventional technologies and to develop new technologies to meet increasingly more stringent environmental quality criteria. The challenge that one faces today is to meet these stringent requirements in an environmentally acceptable and cost effective manner. The present book addresses the application of the state-of-the-art technology to the solutions to today's problems in industrial effluent pollution control and environmental protection. The highlight of this book is the inclusion of the salient features of process modifications and other important methods and techniques for the minimization of wastes. The chapter on process modification for waste minimization provides new technical features and tools, latest technologies and techniques, and other industrial operations. Besides, the text covers the role of an environmental engineer in the methodology for making pollution control decisions. KEY FEATURES : Includes numerous self-explanatory tabular and diagrammatic representations. Presents pollution problems of few chemical and processing industries. Provides case studies on environmental pollution problems and their prevention. Analyzes thoroughly the planning and strategies of environmental protection. Designed as a textbook for the undergraduate students of civil and chemical engineering, this book will also be useful to the postgraduate students of environmental science and engineering.

A comprehensive book for UGC-NET, FCI, SSC, RRB, UPSC, PCS, Banking, CPCB and other Recruitment and

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Entrance Examinations

The Second Edition of Introduction to Electrochemical Science and Engineering outlines the basic principles and techniques used in the development of electrochemical engineering related technologies, such as fuel cells, electrolyzers, and flow-batteries. Covering topics from electrolyte solutions to electrochemical energy conversion systems and corrosion, this revised and expanded edition provides new educational material to help readers familiarize themselves with some of today's most useful electrochemical concepts. The Second Edition includes a new Appendix C with a detailed description of how the most common electrochemical laboratories can be organized, what data should be collected, and how the data should be treated and presented in a report. Video demonstrations for these laboratories are available on YouTube. In addition, the author has added conceptual and numerical exercises to all of the chapters to help with the understanding of the book material and to extend the important aspects of the electrochemical science and engineering. Finally, electrochemical impedance spectroscopy is now used in most electrochemical laboratories, and so a new section briefly describes this technique in Chapter 7. This new edition Ensures readers have a fundamental knowledge of the core concepts of electrochemical science and engineering, such as electrochemical cells, electrolytic conductivity, electrode potential, and current–potential relations related to a variety of electrochemical systems Develops the initial skills needed to understand an electrochemical experiment and successfully evaluate experimental data without visiting a laboratory Promotes an appreciation of the capabilities and applications of key electrochemical techniques Features eight lab descriptions and instructions that can be used to develop the labs by instructors for a university electrochemical

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engineering class Integrates eight online videos with lab demonstrations to advise instructors and students on how the labs can be carried out Features a solutions manual for adopting instructors The Second Edition is an ideal and unique text for undergraduate engineering and science students and readers in need of introductory-level content. Graduate students and engineers looking for a quick introduction to the subject will benefit from the simple structure of this book. Instructors interested in teaching the subject to undergraduate students can immediately use this book without reservation.

Environmental Science in Building covers the science, technology and services that relate to the comfort of humans and the environmental performance of buildings. This popular text is designed to be useful, at all levels, to students and practitioners of architecture, construction studies, building services, surveying, and environmental science. This new edition has been thoroughly updated and the contents reorganised to ensure optimum presentation and understanding of topics. Covering a range of topical areas including climate change, carbon and energy management, sustainability in construction, and sick and green buildings, this remains the key introductory text for understanding the principles and theories of the environmental science behind construction. Key features of the seventh edition are:

- Clear and accessible text layout for ease of use
- Minimum prior knowledge of science and mathematics assumed
- Worked examples explained step-by-step
- Fully updated dynamic illustrations and figures
- Large resource sections of supporting information and references

Visit the companion website for this book at

www.palgrave.com/engineering/builtenvironment/mcmullan for investigative questions, supplementary exercises, useful weblinks and an online glossary.

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Sustainable value management reveals a new space for studying business models. The traditional approach is based on the assumption that the goal of any business is to make money. All decisions regarding supply and production should be made to maximize profit. The discrepancy in creating non-economic value is sometimes the result of separating ownership from control over an enterprise. Although shareholders are interested in maximizing profit, management that actually makes decisions can also pursue other goals. In addition to economic aspects, the management intentions of modern managers are also influenced by factors arising from the organizational culture built, co-created within the organization and sometimes with the participation of external actors such as suppliers and customers. The sources of the creation of social values will be the management intentions of top management, often initiated by the adopted values and rules on the basis of which resources are bound within the structure of the business model. The value of sustainability is based on the identification of those creative sources that relate to economic and social value. Economic value is created through social value and vice versa. This allows the complementarity of the value created to be mutually supportive. The business model that integrates both of these values should be more resistant to crises than the one that is oriented only toward producing economic value. Concurrent implementation of economic and social goals increases resilience and affects the success of modern business models. This is due to the specificity of the business ecosystem that is built as part of the business model, which, in essence, is based on the use of social factors to merge the business model into a complex ecosystem capable of producing value.

This text focuses on current environmental problems, their causes, effects and solutions. The book explores the basic

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nature of the natural systems, using a quantitative approach in order to give a broad perspective.

This new volume presents a wealth of practical experience and research on new methodologies and important applications in chemical nanotechnology. It also includes small-scale nanotechnology-related projects that have potential applications in several disciplines of chemistry and nanotechnology. In this book, contributions range from new methods to novel applications of existing methods to gain understanding of the material and/or structural behavior of new and advanced systems. Topics cover computational methods in chemical engineering and chemoinformatics, studies of some of physico-chemical properties of several important nanoalloy clusters, the use of 3D reconstruction of nanofibrous membranes, nanotechnology research for green engineering and sustainability, nanofiltration and carbon nanotubes applications in water treatment, and much more.

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Environmental Studies (Jntu)Tata McGraw-Hill
EducationData Analysis and Statistics for
Geography, Environmental Science, and
EngineeringCRC Press

Industrial and Municipal Sludge: Emerging Concerns and Scope for Resource Recovery begins with a characterization of the types of sludge and their sources and management strategies. This section is followed by specific chapters that cover Emerging contaminants in sludge (Endocrine disruptors, Pesticides and Pharmaceutical residues, including illicit drugs/controlled substances), Bioleaching of

sludge [with an enriched sulfur-oxidizing bacterial community, Recovery of valuable metals (Bioleaching and use of sulfur-oxidizing bacterial community, and Biogas production by continuous thermal hydrolysis and thermophilic anaerobic digestion of waste activated sludge. In addition, the book includes numerous tables and flow diagrams to help users further comprehend the subject matter. Includes numerous tables and flow diagrams to assist in the comprehension of new and existing sludge treatments and resource recovery technology Covers biogas production by continuous thermal hydrolysis and thermophilic anaerobic digestion of waste activated sludge Presents information on the recovery of valuable metals from sludge (bioleaching and the use of a sulfur-oxidizing bacterial community) Includes opportunities and challenges in the biorefinery-based valorization of pulp and paper sludge

This new volume focuses on different aspects of composite systems that are associated with research and development, helping to bridge the gap between classical analysis and modern real-life applications. The chapters look at the experimental and theoretical aspects of composite materials, regarding preparation, processing, design, properties, and practical implications. It also presents recent advancements, research, and development prospects of advanced composite materials that

provide new solutions for advanced technologies. An introduction to the principles and practices of soil and groundwater remediation Soil and Groundwater Remediation offers a comprehensive and up-to-date review of the principles, practices, and concepts of sustainability of soil and groundwater remediation. The book starts with an overview of the importance of groundwater resource/quality, contaminant sources/types, and the scope of soil and groundwater remediation. It then provides the essential components of soil and groundwater remediation with easy-to-understand design equations/calculations and the practical applications. The book contains information on remediation basics such as subsurface chemical behaviors, soil and groundwater hydrology and characterization, regulations, cost analysis, and risk assessment. The author explores various conventional and innovative remediation technologies, including pump-and-treat, soil vapor extraction, bioremediation, incineration, thermally enhanced techniques, soil washing/flushing, and permeable reactive barriers. The book also examines the modeling of groundwater flow and contaminant transport in saturated and unsaturated zones. This important book: Presents the current challenges of remediation practices Includes up-to-date information about the low-cost, risk-based, sustainable remediation practices, as well as institutional control and

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management Offers a balanced mix of the principles, practices, and sustainable concepts in soil and groundwater remediation Contains learning objectives, discussions of key theories, and example problems Provides illustrative case studies and recent research when remediation techniques are introduced Written for undergraduate seniors and graduate students in natural resource, earth science, environmental science/engineering, and environmental management, Soil and Groundwater Remediation is an authoritative guide to the principles and components of soil and groundwater remediation that is filled with worked and practice problems.

Challenges beliefs about technology's assumed potential for enabling a continuation of current consumption rates, arguing for extensive reform while explaining that technological advances are hastening an environmental collapse. Original. Ideal for anyone interested in environmental issues, this dictionary draws together information from a variety of sources to better facilitate understanding of this wide-ranging subject. Detailed explanations help to promote clearer communication between professionals and provide a standardized reference point for technical translation, a quick-reference guide for researchers and professionals, and an invaluable knowledge base for cross-disciplinary readers from the fields of health, politics, economics and engineering. Providing a solid foundation for twenty-first-century scientists and engineers, Data Analysis and Statistics for Geography,

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Environmental Science, and Engineering guides readers in learning quantitative methodology, including how to implement data analysis methods using open-source software. Given the importance of interdisciplinary work in sustain

For the Nonengineering Professional Perfect for anyone without a background in science or engineering who wants to take a closer look at how water is processed and treated, Reverse Osmosis: A Guide for the Nonengineering Professional relates reverse osmosis in its most basic form and addresses growing concerns about the quality of tap water. What is reverse osmosis? Not to be confused with filtration—which involves straining or size exclusion—reverse osmosis involves a diffusive mechanism and separation process that is dependent on solute concentration, pressure, and the water flux rate. This book describes all of the basic processes involved in reverse osmosis operations. Presented in a conversational style—using jargon-free language—it discusses in detail the drinking water purification, wastewater reuse, desalination processes, and other freshwater applications used to ensure the safe consumption of water. The book also places special emphasis on pharmaceuticals and personal care product (PPCP) contaminants, which are not typically removed from wastewater by conventional treatment processes, however, they can be removed by processes using sophisticated membrane filtration. The author provides a basic understanding of membrane technology, and explains the membrane treatment process. He details how the processes fit together within a drinking water or wastewater treatment system and presents concepts that make up water and wastewater treatment processes as a whole. He also highlights advances in reverse osmosis technology and discusses relevant applications. Presents a comprehensive coverage of reverse osmosis Discusses

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fundamental processes and equipment used in reverse osmosis Provides technical terminology in simplified form Reverse Osmosis: A Guide for the Nonengineering Professional explains how reverse osmosis is used in drinking water purification and provides readers with step-by-step instruction on the pretreatment, treatment, and post-treatment technology used in the purification of drinking water.

In his latest book, the Handbook of Environmental Engineering, esteemed author Frank Spellman provides a practical view of pollution and its impact on the natural environment. Driven by the hope of a sustainable future, he stresses the importance of environmental law and resource sustainability, and offers a wealth of information based on real-worl

Pollution Control and Resource Recovery: Sewage Sludge discusses several traditional and new environmentally friendly technologies for sewage sludge treatment and disposal. In addition, the book covers a range of new initiatives that are underway to promote and accelerate the development of related sciences and techniques. The book's authors builds a framework for developing various sustainable technologies for sewage sludge treatment and disposal, including advanced dewatering through chemical conditioning, solidification/stabilization, reuse for the development of construction and building materials, anaerobic bioenergy recovery, sanitary landfill, and odor control. Explains environmentally friendly technologies for sewage sludge treatment and disposal, including advanced dewatering through chemical conditioning, solidification/stabilization, and anaerobic bioenergy recovery Includes valuable guidelines for engineers to address sludge issues, such as sanitary landfill and odor control Presents new developments and techniques that are on the horizon

An overview of the current state of nanotechnology-based

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devices with applications in environmental science, focusing on nanomaterials and polymer nanocomposites. The handbook pays special attention to those nanotechnology-based approaches that promise easier, faster and cheaper processes in environmental monitoring and remediation. Furthermore, it presents up-to-date information on the economics, toxicity and regulations related to nanotechnology in detail. The book closes with a look at the role of nanotechnology for a green and sustainable future. With its coverage of existing and soon-to-be-realized devices this is an indispensable reference for both academic and corporate R&D.

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