

Environmental Engineering By N N Basak Soucheore

Appropriate for undergraduate engineering and science courses in Environmental Engineering. Balanced coverage of all the major categories of environmental pollution, with coverage of current topics such as climate change and ozone depletion, risk assessment, indoor air quality, source-reduction and recycling, and groundwater contamination.

Air pollution control can be approached from a number of different engineering disciplines environmental, chemical, civil, and mechanical. To that end, Noel de Nevers has written an engaging overview of the subject. While based on the fundamentals of chemical engineering, the treatment is accessible to readers with only one year of college chemistry. In addition to discussions of individual air pollutants and the theory and practice of air pollution control devices, de Nevers devotes about half the book to topics that influence device selection and design, such as atmospheric models and U.S. air pollution law. The generous number of end-of-chapter problems are designed to develop more complex thinking about the concepts presented and integrate them with readers personal experience increasing the likelihood of deeper understanding.

Completely covers the diploma syllabus of various State Boards of Technical Education and AMIE Section – B for the course in Environmental Engineering.

The awareness of environment protection is a great achievement of humans; an expression of self-awareness. Even though the idea of living while protecting the environment is not new, it has never been so widely and deeply practiced by any nations in history like it is today. From the late 90s in the last century, the surprisingly fast dev

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

A rigorous and thorough analysis of the production of air pollutants and their control, this text is geared toward chemical and environmental engineering students. Topics include combustion, principles of aerosol behavior, theories of the removal of particulate and gaseous pollutants from effluent streams, and air pollution control strategies. 1988 edition. Reprint of the Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1988 edition.

Primarily intended as a text for undergraduate students of engineering for their core course in environmental studies, this book gives a clear introduction to the fundamental principles of ecology and environmental science and aptly summarizes the relationship between ecology and environmental engineering. Divided into three parts, the book begins by discussing the biosphere, natural resources, ecosystems, biodiversity, and community health. Then it goes on to give detailed description on topics such as pollution and control, environmental management, and sustainable development. Finally, it focuses on environmental chemistry, environmental microbiology, and monitoring and analysis of pollutants.

Two critical questions arise when one is confronted with a new problem that involves the collection and analysis of data. How will the use of statistics help solve this problem? Which techniques should be used? *Statistics for Environmental Engineers, Second Edition* helps environmental science and engineering students answer these questions when the goal is to understand and design systems for environmental protection. The second edition of this bestseller is a solutions-oriented text that encourages students to view statistics as a problem-solving tool. Written in an easy-to-understand style, *Statistics for Environmental Engineers, Second Edition* consists of 54 short, "stand-alone" chapters. All chapters address a particular environmental problem or statistical technique and are written in a manner that permits each chapter to be studied independently and in any order. Chapters are organized around specific case studies, beginning with brief discussions of the appropriate methodologies, followed by analysis of the case study examples, and ending with comments on the strengths and weaknesses of the approaches. New to this edition: Thirteen new chapters dealing with topics such as experimental design, sizing experiments, tolerance and prediction intervals, time-series modeling and forecasting, transfer function models, weighted least squares, laboratory quality assurance, and specialized control charts Exercises for classroom use or self-study in each chapter Improved graphics Revisions to all chapters Whether the topic is displaying data, t-tests, mechanistic model building, nonlinear least squares, confidence intervals, regression,

or experimental design, the context is always familiar to environmental scientists and engineers. Case studies are drawn from censored data, detection limits, regulatory standards, treatment plant performance, sampling and measurement errors, hazardous waste, and much more. This revision of a classic text serves as an ideal textbook for students and a valuable reference for any environmental professional working with numbers.

Novel Nanomaterials for Biomedical, Environmental, and Energy Applications is a comprehensive study on the cutting-edge progress in the synthesis and characterization of novel nanomaterials and their subsequent advances and uses in biomedical, environmental and energy applications. Covering novel concepts and key points of interest, this book explores the frontier applications of nanomaterials. Chapters discuss the overall progress of novel nanomaterial applications in the biomedical, environmental and energy fields, introduce the synthesis, characterization, properties and applications of novel nanomaterials, discuss biomedical applications, and cover the electrocatalytical and photothermal effects of novel nanomaterials for efficient energy applications. The book will be invaluable to academic researchers and biomedical clinicians working with nanomaterials. Offers comprehensive details on novel and emerging nanomaterials Presents a comprehensive view of new and emerging tactics for the synthesis of efficient nanomaterials Describes and monitors the functions of applications of new and emerging nanomaterials in the biomedical, environmental and energy fields

With global inequalities becoming more pronounced, ingredient costs climbing, and global warming a major political issue, food producers must now address environmental concerns, social responsibility and economic viability when designing their food processing techniques for the future. Sustainable food processing is all about finding new ways of meeting present needs without comprising future viability, given constantly changing economic and environmental conditions. This is not just a corporate social responsibility issue, but relates directly to efficiency, cost-saving and profitability, and so the food industry must increasingly embrace sustainable food processing in order to succeed. This book provides a comprehensive overview on both economic sustainability and environmental concerns relating to food processing. It promotes ways of increasing sustainability in all the major sectors of the food industry, and will establish itself as a standard reference book on sustainable food processing. It will be of great interest to academic and industrial professionals. Opening chapters cover the concept and principles of sustainable food processing, with reference to various food processing sectors (dairy, meat, seafood, grain, fruit and vegetables). Further chapters on brewing, cold chain, consumption and packaging provide a comprehensive guide to making these key processes more sustainable. Issues such as cleaning, sanitation, and carbon footprint are discussed, before dedicated chapters covering energy and water consumption in the food industry address economic sustainability. Environmental impact assessment and food

processing, waste utilization, risk assessment, and regulatory and legislative issues are also addressed. Contributors include a combination of leading academic and industrial experts, to provide informed and industrially relevant perspectives on these topics.

Environmental Engineering Tata McGraw-Hill Education

Designing buildings and physical environments depends on social structure, social needs, economic data, environment, and technological development. Planning these environments is heavily influenced by cultural and regional need, the existing environment, and the materials available. Reusable and Sustainable Building Materials in Modern Architecture is an essential reference source that discusses the shaping of building design through culture and materials as well as the influence of environment on building design. Featuring research on topics such as passive design, ecological design, and urban design, this book is ideal for academicians, specialists, and researchers seeking coverage on culture, environment, and building design.

This book contains papers presented in the 6th International Conference on Civil, Offshore & Environmental Engineering (ICCOEE2020) under the banner of World Engineering, Science & Technology Congress (ESTCON2020) will be held from 13th to 15th July 2021 at Borneo Convention Centre, Kuching, Sarawak, Malaysia. This proceeding contains papers presented by academics and industrial practitioners showcasing the latest advancements and findings in civil engineering areas with an emphasis on sustainability and the Industrial Revolution 4.0. The papers are categorized under the following tracks and topics of research: 1. Resilient Structures and Smart Materials 2. Advanced Construction and Building Information Modelling 3. Smart and Sustainable Infrastructure 4. Advanced Coastal and Offshore Engineering 5. Green Environment and Smart Water Resource Management Systems

Expanding a port, deepening a navigation channel or creating new land for development, introduces changes to our physical, social, economic and political environment. Changes may result from events during the construction process, or relate to the nature of the completed structure. Changes can be positive or negative, short-term or long-term, and may affect the immediate vicinity of the project or a larger geographical area. Predicting and assessing all possible effects of a planned dredging activity in a scientifically-sound and reliable manner is essential, so that appropriate control measures can be taken to avoid or mitigate unwelcome impacts. This book provides guidance for a complete holistic environmental evaluation procedure and for the design and implementation of environmental control measures. The book is of particular interest to engineers, government agencies and port authorities, as well as civil engineering consultants and contractors involved in planning and designing dredging, maritime infrastructure and fluvial projects.

Use of Recycled Plastics in Eco-efficient Concrete looks at the processing of plastic waste, including techniques for

separation, the production of plastic aggregates, the production of concrete with recycled plastic as an aggregate or binder, the fresh properties of concrete with plastic aggregates, the shrinkage of concrete with plastic aggregates, the mechanical properties of concrete with plastic aggregates, toughness of concrete with plastic aggregates, modulus of elasticity of concrete with plastic aggregates, durability of concrete with plastic aggregates, concrete plastic waste powder with enhanced neutron radiation shielding, and more, thus making it a valuable reference for academics and industrial researchers. Describes the main types of recycled plastics that can be applied in concrete manufacturing Presents, for the first time, state-of-the art knowledge on the properties of conventional concrete with recycled plastics Discusses the technological challenges for concrete manufactures for mass production of recycled concrete from plastic waste

This classic text, now in its sixth edition, combines a thorough coverage of the basic principles of civil engineering hydraulics with a wide-ranging treatment of practical, real-world applications. It now includes a powerful online resource with worked solutions for chapter problems and solution spreadsheets for more complex problems that may be used as templates for similar issues. Hydraulics in Civil and Environmental Engineering is structured into two parts to deal with principles and more advanced topics. The first part focuses on fundamentals, such as hydrostatics, hydrodynamics, pipe and open channel flow, wave theory, physical modelling, hydrology and sediment transport. The second part illustrates engineering applications of these principles to pipeline system design, hydraulic structures, river and coastal engineering, including up-to-date environmental implications, as well as a chapter on computational modelling, illustrating the application of computational simulation techniques to modern design, in a variety of contexts. New material and additional problems for solution have been added to the chapters on hydrostatics, pipe flow and dimensional analysis. The hydrology chapter has been revised to reflect updated UK flood estimation methods, data and software. The recommendations regarding the assessment of uncertainty, climate change predictions, impacts and adaptation measures have been updated, as has the guidance on the application of computational simulation techniques to river flood modelling. Andrew Chadwick is an honorary professor of coastal engineering and the former associate director of the Marine Institute at the University of Plymouth, UK. John Morfett was the head of hydraulics research and taught at the University of Brighton, UK. Martin Borthwick is a consultant hydrologist, formerly a flood hydrology advisor at the UK's Environment Agency, and previously an associate professor at the University of Plymouth, UK.

A collection of Bogolubov's papers on dynamical theory, which introduce the key concept of the hierarchy of relaxation times in statistical physics. A method of obtaining a system of coupled equations for the probability densities for groups of one or more particles is proposed. This has proved to be the most effective method in statistical mechanics for

equilibrium and non-equilibrium to date. In his papers, Bogolubov clarifies how stochastic behaviour, which is specific for a macroscopic description, arises in a purely mechanistic approach, in which microscopic equations of dynamical theory are used.

Utilizes both Computer- and Hand-Based Calculations... Modern practice in geomechanics is becoming increasingly reliant on computer-based software, much of which can be obtained through the Internet. In *Geomechanics in Soil, Rock, and Environmental Engineering* the application of these numerical techniques is examined not only for soil mechanics, but also for rock mechanics and environmental applications. ... For Use in Complex Analysis It deals with the modern analysis of shallow foundations, deep foundations, retaining structures, and excavation and tunneling. In recent years, the environment has become more and more important, and so it also deals with municipal and mining waste and solutions for the disposal and containment of the waste. Many fresh solutions to problems are presented to enable more accurate and advanced designs to be carried out. A Practical Reference for Industry Professionals, This Illuminating Book: Offers a broad range of coverage in soil mechanics, rock mechanics, and environmental engineering Incorporates the author's more than 40 years of academic and practical design experience Describes the latest applications that have emerged in the last ten years Supplies references readily available online for further research *Geomechanics in Soil, Rock, and Environmental Engineering* should appeal to students in their final undergraduate course in geomechanics or master's students, and should also serve as a useful reference to practitioners in the field of geomechanics, reflecting the author's background in both industry and academia.

The Congress "Arsenic in the Environment" offers an international, multi- and interdisciplinary discussion platform for research and innovation aimed towards a holistic solution to the problem posed by the environmental toxin arsenic, with significant societal impact. The Congress has focused on cutting edge and breakthrough research in physical, chemical, toxicological, medical, agricultural and other specific issues on arsenic across a broader environmental realm. The Biennial Congress "Arsenic in the Environment" was first organized in Mexico City (As2006) followed by As2008 in Valencia (Spain), As2010 in Tainan (Chinese Taiwan), As2012 in Cairns (Australia), As2014 in Buenos Aires (Argentina) and As2016 in Stockholm (Sweden). The 7th International Congress As2018 was held July 1-6, 2018, in Beijing, P. R. China and was entitled Environmental Arsenic in a Changing World. The Congress addressed the broader context of arsenic research aligned on the following themes: Theme 1: Arsenic Behaviour in Changing Environmental Media Theme 2: Arsenic in a Changing Agricultural Ecosystem Theme 3: Health Impacts of Environmental Arsenic Theme 4: Technologies for Arsenic Immobilization and Clean Water Blueprints Theme 5: Sustainable Mitigation and Management Arsenic in drinking water (mainly groundwater) has emerged as an issue of global health concern. During last decade,

the presence of arsenic in rice, possibly also other food of plant origins, has attained increasing attention. This is particularly true in the Asian countries, where the use of high arsenic groundwater as source of irrigation water and drinking water has been flagged as severe health concern. This has been accentuated by elevating arsenic concentrations in deep groundwater recharged from shallow high arsenic groundwater, which may have further detrimental effects on public health. Notably, China has been in the forefront of research on arsenic biogeochemical cycling, health effects of arsenic, technologies for arsenic removal, and sustainable mitigation measures. The Congress has attracted professionals involved in different segments of interdisciplinary research on arsenic in an open forum, and strengthened relations between academia, research institutions, government and non-governmental agencies, industries, and civil society organizations to share an optimal ambience for exchange of knowledge.

This volume contains a collection of topical chapters that promote interdisciplinary approaches to biological systems, focusing on fundamental and relevant connections between chemistry and life. Included are studies and experiments as well as invited lectures and notes by prominent leaders on a wide variety of topics in biology and biochemistry. B Connects a qualitative perspective of environmental management with the quantitative skills used by engineering and applied science students.

Migration has become business, big business. Over the last few decades a host of new business opportunities have emerged that capitalize both on the migrants' desires to migrate and the struggle by governments to manage migration. From the rapid growth of specialized transportation and labour immigration companies, to multinational companies managing detention centres or establishing border security, to the organized criminal networks profiting from human smuggling and trafficking, we are currently witnessing a growing commercialization of international migration. This volume claims that today it is almost impossible to speak of migration without also speaking of the migration industry. Yet, acknowledging the role the migration industry plays prompts a number of questions that have so far received only limited attention among scholars and policy makers. The book offers new concepts and theory for the study of international migration by bringing together cross-disciplinary theoretical explorations and original case studies. It also provides a global coverage of the phenomena under study, covering migrant destinations in Europe, the United States and Asia, and migrant sending regions in Africa, Asia and Latin America.

Designed for a first-course in environmental engineering for undergraduate engineering and postgraduate science students, the book deals with environmental pollution and its control methodologies. It explains the basic environmental technology - environmental sanitation, water supply, waste management, air pollution control and other related issues - and presents a logical and systematic treatment of topics. The book, an outgrowth of author's long experience in teaching

the postgraduate science and engineering students, is presented in a student-oriented approach. It is interspersed with solved examples and illustrations to reinforce many of the concepts discussed and apprise the readers of the current practices in areas of water processing, water distribution, collection and treatment of domestic sewage and industrial waste water, and control of air pollution. It emphasizes fundamental concepts and basic applications of environmental technology for management of environmental problems. Besides students, the book will be useful to the academia of environmental sciences, civil/environmental engineering as well as to environmentalists and administrators working in the field of pollution control.

Long-term Environmental Effects of Offshore Oil and Gas Development contains 14 chapters by different authors which focus on the US.

Optimizing Thermal, Chemical and Environmental Systems treats the evaluation of power or energy limits for processes that arise in various thermal, chemical and environmental engineering systems (heat and mass exchangers, power converters, recovery units, solar collectors, mixture separators, chemical reactors, catalyst regenerators, etc.). The book is an indispensable source for researchers and students, providing the necessary information on what has been achieved to date in the field of process optimization, new research problems, and what kind of further studies should be developed within quite specialized optimizations. Summarizes recent achievements of advanced optimization techniques Links exergy definitions in reversible systems with classical problems of extremum work Includes practical problems and illustrative examples to clarify applications Provides a unified description of classical and work-assisted heat and mass exchangers Written by a first-class expert in the field of advanced methods in thermodynamics

For microbiology and environmental microbiology courses, this leading textbook builds on the academic success of the previous edition by including a comprehensive and up-to-date discussion of environmental microbiology as a discipline that has grown in scope and interest in recent years. From environmental science and microbial ecology to topics in molecular genetics, this edition relates environmental microbiology to the work of a variety of life science, ecology, and environmental science investigators. The authors and editors have taken the care to highlight links between environmental microbiology and topics important to our changing world such as bioterrorism and national security with sections on practical issues such as bioremediation, waterborne pathogens, microbial risk assessment, and environmental biotechnology. WHY ADOPT THIS EDITION? New chapters on: Urban Environmental Microbiology Bacterial Communities in Natural Ecosystems Global Change and Microbial Infectious Disease Microorganisms and Bioterrorism Extreme Environments (emphasizing the ecology of these environments) Aquatic Environments (now devoted to its own chapter- was combined with Extreme Environments) Updates to Methodologies: Nucleic Acid -Based

Methods: microarrays, phyloarrays, real-time PCR, metagomics, and comparative genomics Physiological Methods: stable isotope fingerprinting and functional genomics and proteomics-based approaches Microscopic Techniques: FISH (fluorescent in situ hybridization) and atomic force microscopy Cultural Methods: new approaches to enhanced cultivation of environmental bacteria Environmental Sample Collection and Processing: added section on air sampling

This book discusses a broad range of statistical design and analysis methods that are particularly well suited to pollution data. It explains key statistical techniques in easy-to-comprehend terms and uses practical examples, exercises, and case studies to illustrate procedures. Dr. Gilbert begins by discussing a space-time framework for sampling pollutants. He then shows how to use statistical sample survey methods to estimate average and total amounts of pollutants in the environment, and how to determine the number of field samples and measurements to collect for this purpose. Then a broad range of statistical analysis methods are described and illustrated. These include: * determining the number of samples needed to find hot spots * analyzing pollution data that are lognormally distributed * testing for trends over time or space * estimating the magnitude of trends * comparing pollution data from two or more populations New areas discussed in this sourcebook include statistical techniques for data that are correlated, reported as less than the measurement detection limit, or obtained from field-composited samples. Nonparametric statistical analysis methods are emphasized since parametric procedures are often not appropriate for pollution data. This book also provides an illustrated comprehensive computer code for nonparametric trend detection and estimation analyses as well as nineteen statistical tables to permit easy application of the discussed statistical techniques. In addition, many publications are cited that deal with the design of pollution studies and the statistical analysis of pollution data. This sourcebook will be a useful tool for applied statisticians, ecologists, radioecologists, hydrologists, biologists, environmental engineers, and other professionals who deal with the collection, analysis, and interpretation of pollution in air, water, and soil.

Because of the ubiquitous nature of environmental problems, a variety of scientific disciplines are involved in the development of environmental solutions. The Handbook of Chemical and Environmental Engineering Calculations provides approximately 600 real-world, practical solutions to environmental problems that involve chemical engineering, enabling engineers and applied scientists to meet the professional challenges they face day-to-day. The scientific and mathematical crossover between chemical and environmental engineering is the key to solving a host of environmental problems. Many problems included in the Handbook are intended to demonstrate this crossover, as well as the integration of engineering with current regulations and environmental media such as air, soil, and water. Solutions to the problems are presented in a programmed instructional format. Each problem contains a title, problem statement, data, and solution, with the more difficult problems located near the end of each problem set. The Handbook offers material not

only to individuals with limited technical background but also to those with extensive industrial experience. Chapter titles include: Chemical Engineering Fundamentals Chemical Engineering Principles Air Pollution Control Equipment Solid Waste Water Quality and Wastewater Treatment Pollution Prevention Health, Safety, and Accident Management Ideal for students at the graduate and undergraduate levels, the Handbook of Chemical and Environmental Engineering Calculations is also a comprehensive reference for all plant and environmental engineers, particularly those who work with air, drinking water, wastewater, hazardous materials, and solid waste.

Textbook of Environmental Chemistry has been designed to provide fundamental knowledge of the principles related to environment and its chemistry so as to meet the challenging requirements of students as well as teachers of Environmental Sciences, Environmental Chemistry and Environmental Studies at graduate, postgraduate, polytechnic, and engineering levels at all Indian Universities. This book is also useful for the students and professors of general science. The book explores biological resources and their relationship with physical and chemical aspects of the environment. Due emphasis has been given to the regional as well as global environmental problems like water, air, soil and noise pollution, their types and sources, effects on the ecosystem. Key Features * The book deals with principles and chemical reactions that govern the behaviour of water, air and soil environment. * The book emphasizes on the origin of various pollutants and their control. * New and current fields of environmental science - Green Chemistry, Environmental Biotechnology, Polymers for Environment. * It covers environmental impact, planning and laws to help readers understand how policies and plans are formulated to protect our environment. * Environmental pollution abatement engineering and technology has been discussed in-depth

"This book covers a multitude of newly developed hardware and software technology advancements in urban and spatial planning and architecture, drawing on the most current research and studies of field practitioners who offer solutions and recommendations for further growth, specifically in urban and spatial developments"--

Green Sustainable Process for Chemical and Environmental Engineering and Science: Solid State Synthetic Methods cover recent advances made in the field of solid-state materials synthesis and its various applications. The book provides a brief introduction to the topic and the fundamental principles governing the various methods. Sustainable techniques and green processes development in solid-state chemistry are also highlighted. This book also provides a comprehensive literature on the industrial application using solid-state materials and solid-state devices. Overall, this book is intended to explore green solid-state techniques, eco-friendly materials involved in organic synthesis and real-time applications. Provides a broad overview of solid-state chemistry Outlines an eco-friendly solid-state synthesis of modern nanomaterials, organometallic, coordination compounds and pure organic Gives a detailed account of solid-state

chemistry, fundamentals, concepts, techniques and applications Deliberates cutting-edge recent advances in industrial technologies involved in energy, environmental, medicinal and organic chemistry fields

A panel of respected air pollution control educators and practicing professionals critically survey the both principles and practices underlying control processes, and illustrate these with a host of detailed design examples for practicing engineers. The authors discuss the performance, potential, and limitations of the major control processes-including fabric filtration, cyclones, electrostatic precipitation, wet and dry scrubbing, and condensation-as a basis for intelligent planning of abatement systems,. Additional chapters critically examine flare processes, thermal oxidation, catalytic oxidation, gas-phase activated carbon adsorption, and gas-phase biofiltration. The contributors detail the Best Available Technologies (BAT) for air pollution control and provide cost data, examples, theoretical explanations, and engineering methods for the design, installation, and operation of air pollution process equipment. Methods of practical design calculation are illustrated by numerous numerical calculations.

This book covers the latest in recycling and reuse research focused toward greater sustainability and includes chapters authored by the world's leading thinkers and practitioners in the field. Topics covered include recycling and reuse, solid waste management, renewable energy, environmental studies, and wastewater management. This text contains environmental issues with an experimental focus, making this a useful resource to students, researchers, and professionals working in solid waste management, energy and water sustainability issues within the geoscience, engineering, and chemistry fields.

The book covers the important aspects of water, air and noise pollution. Using a multidisciplinary approach, it highlights the impact of environmental pollution in the world. It also suggests methods for controlling and scientific monitoring of pollution-causing agents. Also included are chapters on efficient guidelines and standards, radioactive waste, solid waste disposal and sewage treatment, oil pollution and role of insecticides. Pollution in tanneries, fertilizer industry, and pulp and paper industries is also covered. The last few chapters are devoted to environmental management, benefit-cost analysis and mathematical modelling for environmental pollution control

The 2016 International Conference on Materials Science, Energy Technology and Environmental Engineering (MSETEE 2016) took place May 28-29, 2016 in Zhuhai City, China. MSETEE 2016 brought together academics and industrial experts in the field of materials science, energy technology and environmental engineering. The primary goal of the conference was to promote research and developmental activities in these research areas and to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working around the world. The conference will be held every year serving as platform for researchers to share views and experience in materials science, energy technology and environmental engineering and related areas.

This book provides a general survey of Geocryology, which is the study of frozen ground called permafrost. Frozen ground is the product of cold climates as well as a variety of environmental factors. Its major characteristic is the accumulation of large quantities of ice which may exceed 90% by volume. Soil water changing to ice results in ground heaving, while thawing of this ice produces ground subsidence often accompanied by soil flowage. Permafrost is very susceptible to changes in weather and climate as well as to changes in the microenvironment. Cold weather produces contraction of the ground, resulting in cracking of the soil as well as breakup of concrete, rock, etc.

Thus permafrost regions have unique landforms and processes not found in warmer lands. The book is divided into three parts. Part 1 provides an introduction to the characteristics of permafrost. Four chapters deal with its definition and characteristics, the unique processes operating there, the factors affecting it, and its general distribution. Part 2 consists of seven chapters describing the characteristic landforms unique to these areas and the processes involved in their formation. Part 3 discusses the special problems encountered by engineers in construction projects including settlements, roads and railways, the oil and gas industry, mining, and the agricultural and forest industries. The three authors represent three countries and three language groups, and together have over 120 years of experience of working in permafrost areas throughout the world. The book contains over 300 illustrations and photographs, and includes an extensive bibliography in order to introduce the interested reader to the large current literature. Finalist of the 2019 PROSE Awards.

Considered the definitive text for the first course in chemistry for environmental engineers. This text has a two-fold purpose: 1) bring into focus those aspects of chemistry which are particularly valuable to environmental engineering practices, and 2) lay a groundwork of understanding in the area of specialized quantitative analysis, commonly referred to as "water and wastewater analysis."

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