

## Green Technologies For Environmental Management And Sustainable Development Giving Better Quality O

In the present scenario, green technologies are playing significant role in changing the course of nation's economic growth towards sustainability and providing an alternative socio-economic model that will enable present and future generations to live in a clean and healthy environment, in harmony with nature. Green technology, which is also known as clean technology, refers to the development and extension of processes, practices, and applications that improve or replace the existing technologies facilitating society to meet their own needs while substantially decreasing the impact of human on the planet, and reducing environmental risks and ecological scarcities. The concepts of Green Technologies, if endorsed and pervaded into the lives of all societies, will facilitate the aim of the Millennium Development Goals of keeping the environment intact and improve it for the civilization to survive. Green Technologies and Environmental Sustainability is focused on the goals of green technologies which are becoming increasingly important for ensuring sustainability. This book provides different perspectives of green technology in sectors like energy, agriculture, waste management and economics and contains recent advancements made towards sustainable development in the field of bioenergy, nanotechnology, green chemistry, bioremediation, degraded land reclamation. This book is written for a large and broad readership, including researchers, scientists, academicians and readers from diverse backgrounds across various fields such as nanotechnology, chemistry, agriculture, environmental science, water engineering, waste management and energy. It could also serve as a reference book for graduates and post-graduate students, faculties, environmentalist and industrial personnel who are working in the area of green technologies.

Emerging Technologies in Environmental Bioremediation introduces emerging bioremediation technologies for the treatment and management of industrial wastes and other environmental pollutants for the sake of environmental sustainability. Emerging bioremediation approaches such as nano-bioremediation technology, electro-bioremediation technology, microbial fuel cell technology, Modified Ludzack-Ettinger Process, Modified Activated Sludge Process, and phytotechnologies for the remediation of industrial wastes/pollutants are discussed in a comprehensive manner not found in other books. Furthermore, the book includes updated information as well as future directions for research in the field of bioremediation of industrial wastes. This book will be extremely useful to students, researchers, scientists and professionals in the field of microbiology and biotechnology, Bio (chemical) engineers, environmental researchers, ecotoxicology, and many more. Includes the recovery of resources from wastewater Describes the importance of microorganisms in environmental bioremediation technologies Points out the reuse of treated wastewater through emerging technologies Pays attention to the occurrence of novel micro-pollutants Emphasizes the role of nanotechnology in pollutant bioremediation

Sustainable Environmental Clean-up: Green Remediation includes some natural, clean, and eco-sustainable technologies that have undergone the process of gradual development in past few decades. These technologies include a range of innovative natural and viable materials and offer a clean solution of environmental pollution. It includes case studies of phytoremediation, bioremediation (microbial removal of pollutant), constructed wetlands, natural media filtration for the sustainable environmental cleanup. Sustainable Environmental Clean-up: Green Remediation includes coverage of: Recent trends in eco-sustainable green remediation, Role of constructed wetlands in green remediation, Factor responsible for biodegradation of organic pollutants, Remediation through natural media (Sand, gravel, stone-chips), Microbes and their role in green remediation. Presents recent trends in eco-sustainable green remediation Covers the role of constructed wetlands in green remediation Outlines the factors responsible for biodegradation of organic pollutants Discusses remediation through natural media (Sand, gravel, stone-chips) Explains microbes and their role in green remediation Includes the role of endophytic microbes in organic contamination management

"This book examines waste management practices in developing countries such as waste generation and waste composition. It also explores the roadblocks and potential opportunities involved in achieving integrated waste management in developing countries"--

Environmental Technology and Sustainability: Physical, Chemical and Biological Technologies for Clean Environmental Management provides a dependable source of information on the fundamental scientific evidence involved in environmental protection and sustainable development. The book provides the basic natural sciences that underpin the understanding, development and application of environment technologies that support a clean inhabitable world that includes environmental technologies and sustainable, renewable energy systems. It considers the science and technology for environmental benefits, including the development of both smarter, cleaner technologies for environmental protection, conservation, and more. Provides methods and processes for CO<sub>2</sub> Sequestration Focuses on technologies for reducing greenhouse gases and for biofuel production Outlines issues surrounding contaminated water and provides solutions for water management Describes problems facing air pollution, including sources and mitigation Includes contaminated soil management

The world faces significant challenges as the population and consumption continue to grow while nonrenewable fossil fuels and other raw materials are depleted at ever-increasing rates. Moreover, environmental consciousness and a penchant for thinking in terms of material cycles have caught on with consumers: the use of environmentally compatible materials and production methods is desired. This volume, Green Materials and Environmental Chemistry: New Production Technologies, Unique Properties, and Applications takes a technical approach to address these issues using green design and analysis. This book provides an overview of the latest developments in environmental chemistry and sustainable materials written by experts in their respective research areas. This interdisciplinary volume offers research with the aim to minimize environmental impacts across all lifecycle phases in the design and engineering of products,

processes, and systems as just one possible approach to addressing the larger issue of sustainability that includes environmental, economic, and social aspects.

The 28 chapters in this collection describe science-based principles and technological advances behind green technologies that can be effective solutions to pressing problems in sustainable water management.

Industrial ecology is a concept that has emerged in response to growing public concern about the impact of industry on the environment. In this framework the natural flow (or circulation) of materials and energy that takes place in biological ecosystems becomes a model for more efficient industrial "metabolism." What industrial ecology is and how it may be applied to corporate environmentalism are the subject of *The Industrial Green Game*. This volume examines industrial circulation of materials, energy efficiency strategies, "green" accounting, life-cycle analysis, and other approaches for preventing pollution and improving performance. Corporate leaders report firsthand on "green" efforts at Ciba-Geigy, Volvo, Kennecott, and Norsk Hydro. And an update is provided on the award-winning industrial symbiosis project in Kalundborg, Denmark. *The Industrial Green Game* looks at issues of special concern to business, such as measuring and shaping public perceptions and marketing "green" products to consumers. It offers discussions of the appropriate roles of government and private business.

*Sustainable Construction Technologies: Life-Cycle Assessment* provides practitioners with a tool to help them select technologies that are financially advantageous even though they have a higher initial cost. Chapters provide an overview of LCA and how it can be used in conjunction with other indicators to manage construction. Topics covered include indoor environment quality, energy efficiency, transport, water reuse, materials, land use and ecology, and more. The book presents a valuable tool for construction professionals and researchers that want to apply sustainable construction techniques to their projects. Practitioners will find the international case studies and discussions of worldwide regulation and standards particularly useful. Provides a framework for analyzing sustainable construction technologies and economic viability Introduces key credit criteria for different sustainable construction technologies Covers the most relevant construction areas Includes technologies that can be employed during the process of construction, or to the product of the construction process, i.e. buildings Analyzes international rating systems and provides supporting case studies

This book discusses the innovative and efficient technological solutions for sustainable smart societies in terms of alteration in industrial pollution levels, the effect of reduced carbon emissions, green power management, ecology, and biodiversity, the impact of minimal noise levels and air quality influences on human health. The book is focused on the smart society development using innovative low-cost advanced technology in different areas where the growth in employment and income are driven by public and private investment into such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy, and resource efficiency and prevention of the loss of biodiversity and ecosystem services. The book also covers the paradigm shift in the sustainable development for the green environment in the post-pandemic era. It emphasizes and facilitates a greater understanding of existing available research i.e., theoretical, methodological, well-established and validated empirical work, associated with the environmental and climate change aspects.

*Environmental Management: Science and Engineering for Industry* consists of 18 chapters, starting with a discussion of International Environmental Laws and crucial environmental management tools, including lifecycle, environmental impact, and environmental risk assessments. This is followed by a frank discussion of environmental control and abatement technologies for water, wastewater, soil, and air pollution. In addition, this book also tackles Hazardous Waste Management and the landfill technologies available for the disposal of hazardous wastes. As managing environmental projects is a complex task with vast amounts of data, an array of regulations, and alternative engineering control strategies designed to minimize pollution and maximize the effect of an environmental program, this book helps readers further understand and plan for this process. Contains the latest methods for Identifying, abating, or eliminating pollutants from air, water, and land Presents up-to-date coverage on environmental management tools, such as risk assessment, energy management and auditing, environmental accounting, and impact assessments Includes methods for collecting and synthesizing data derived from environmental assessments

This book highlights topics ranging from green chemistry and engineering to bioremediation, smart technologies, and sustainable business practices. The common threads running through this volume are the need for urgent action, a vision for a sustainable future, and the awareness that solutions must be widely accessible and advance the welfare of all nations, especially in the face of climate change. The authors delineate how we can protect and restore natural ecosystem potential to achieve environmental sustainability. They provide a clear idea of today's environmental challenges and solutions, focus on energy use patterns and the reduction of energy consumption, advocate for increased environmental awareness, and discuss environmental monitoring systems. The book contains many domestic and international case studies and showcases visionary ideas in action to illustrate sustainability principles. This volume provides an in-depth reference for stakeholders from academia, government, and industry on the latest research in environmental sustainability solutions. Inspired by the common wisdom that we do not inherit this Earth from our ancestors but instead borrow it from our children, the authors offer solutions to emergent problems. This research comprises an important contribution to the global effort to build a more sustainable tomorrow.

In recent years the widely held misconception of the media as an 'ephemeral' industry has been challenged by research on the industry's significant material footprint. Despite this material turn, no systematic study of this sector has been conducted in ways that considers the role of the media industries as consumers and users of a range of natural resources. Filling this gap, *Environmental Management of the Media* discusses the environmental management of the media industries in the UK and the Nordic countries. These Nordic countries, both as a set of small nations and as a

regional constellation, are frequently perceived as some of the 'greenest' in the world, yet, not only is the footprint of the media industries practically ignored in academic research, but the very real stakes of the industries' global impact are not comprehensively understood. Here, the author focuses on four key areas for investigating the material impact of Nordic media: (1) resources used for production and dissemination; (2) regulation of the media; (3) organizational management; and (4) labour practices. By adopting an interdisciplinary perspective that combines ecocritical analysis with interrogation of the political economy of the creative industries, Kääpä argues that taking the industries to task on their environmental footprint is a multilevel resource and organizational management issue that must be addressed more effectively in contemporary media studies. This book will be of great interest to students and scholars of media, communication and environmental studies.

In the last fifty years, the Earth has experienced rapid changes in climate, increasingly severe droughts, rising seawater levels, seawater acidification, increased depletion of groundwater reserves, and global rise of temperature. Green technologies for recycling waste, particularly electronic waste, which is increasing at an alarming rate, may be a potential solution to environmental pollution. Divided into three sections, this book presents comprehensive information on green technologies. Section 1 presents innovations in green electronic technologies, Section 2 discusses recycling and waste management, and Section 3 discusses innovation and economics in global green technologies.

The remediation of environmental pollutants has become a relevant topic within the field of waste management. Advances in biological approaches are a potential tool for contamination and pollution control. The Handbook of Research on Microbial Tools for Environmental Waste Management is a critical scholarly resource that explores the advanced biological approaches that are used as remediation for pollution cleanup processes. Featuring coverage on a broad range of topics such as biodegradation, microbial dehalogenation, and pollution controlling treatments, this book is geared towards environmental scientists, biologists, policy makers, graduate students, and scholars seeking current research on environmental engineering and green technologies.

Assessing and Measuring Environmental Impact and Sustainability answers the question "what are the available methodologies to assess the environmental sustainability of a product, system or process? Multiple well-known authors share their expertise in order to give a broad perspective of this issue from a chemical and environmental engineering perspective. This mathematical, quantitative book includes many case studies to assist with the practical application of environmental and sustainability methods. Readers learn how to efficiently assess and use these methods. This book summarizes all relevant environmental methodologies to assess the sustainability of a product and tools, in order to develop more green products or processes. With life cycle assessment as its main methodology, this book speaks to engineers interested in environmental impact and sustainability. Helps engineers to assess, evaluate, and measure sustainability in industry Provides workable approaches to environmental and sustainability assessment Readers learn tools to assess the sustainability of a process or product and to design it in an environmentally friendly way

Sustainable Green Technologies for Environmental Management Springer

When generating electronic products, manufacturing enterprises are producing pollution and waste that is harmful to the environment. As a result of this increasing event, green production has become a valuable research topic. Green Production Strategies for Sustainability is an essential reference source for the latest empirical research and relevant theoretical frameworks on creating profit through environmentally friendly operating processes. Including coverage on a range of topics such as corporate social responsibility, environmental performance, and green supply chain, this book is ideally designed for managers, professionals, and researchers seeking current research on green production use in sustainability.

This book will review the current status of the agriculture and agri-food sector in regard to green processing and provide strategies that can be used by the sector to enhance the use of environmentally-friendly technologies for production, processing. The book will look at the full spectrum from farm to fork beginning with chapters on life cycle analysis and environmental impact assessment of different agri-food sectors. This will be followed by reviews of current and novel on-farm practices that are more environmentally-friendly, technologies for food processing that reduce chemical and energy use and emissions as well as novel analytical techniques for R&D and QA which reduce solvent, chemical and energy consumption. Technologies for waste treatment, "reducing, reusing, recycling", and better water and energy stewardship will be reviewed. In addition, the last section of the book will attempt to look at technologies and processes that reduce the generation of process-induced toxins (e.g., trans fats, acrylamide, D-amino acids) and will address consumer perceptions about current and emerging technologies available to tackle these processing and environmental issues.

The four volumes of the book series "Engineering Tools for Environmental Risk Management" deal with environmental management, assessment & monitoring tools, environmental toxicology and risk reduction technologies. This last volume focuses on engineering solutions usually needed for industrial contaminated sites, where nature's self-remediation is inefficient or too slow. The success of remediation depends on the selection of an increasing number of conventional and innovative methods. This volume classifies the remedial technologies and describes the reactor approach to understand and manage in situ technologies similarly to reactor-based technologies. Technology types include physicochemical, biological or ecological solutions, where near-natural, sustainable remediation has priority. A special chapter is devoted to natural attenuation, where natural changes can help achieve clean-up objectives. Natural attenuation and biological and ecological remediation establish a serial range of technologies from monitoring only to fully controlled interventions, using 'just' the natural ecosystem or sophisticated artificial living systems. Passive artificial ecosystems and biodegradation-based remediation – in addition to natural attenuation – demonstrate the use of these 'green' technologies and how engineering intervention should be kept at a minimum to limit damage to the environment and create a harmonious ecosystem. Remediation of sites contaminated with organic substances is analyzed in detail including biological and physicochemical methods. Comprehensive management of pollution by inorganic contaminants from the mining industry, leaching and bioleaching and acid mine drainage is studied in general and specifically in the case of an abandoned mine in Hungary where the innovative technology of combined chemical and phytostabilization has been applied. The series of technologies is completed by electrochemical remediation and nanotechnologies. Monitoring, verification and sustainability analysis of remediation provide a comprehensive overview of the management aspect of environmental risk reduction by remediation. This book series focuses on the state of knowledge about the environment and its conscious and structured application in environmental engineering, management and decision making.

There are many factors to be considered when examining the current state of environmental problems in the modern world. By addressing these causes, the preservation of ecosystems and environmental resources can be maintained. Environmental Issues Surrounding Human

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Overpopulation is an authoritative reference source for the latest scholarly research on the depletion of natural resources due to overpopulation and presents insights on how these environmental threats can be addressed. Highlighting technological, economic, and social perspectives, this book is ideally designed for policymakers, researchers, academics, students, and practitioners interested in better understanding the current state of the global environment.

Environmental Sustainability Using Green Technologies explains the role of green engineering and social responsibility in the development of chemicals, processes, products, and systems. Examining the relationship between economy, ecology, and equality—key factors in developing a sustainable society—this book covers several aspects of environmental sustainability, explores ways to use resources and processes more responsibly, and describes the tools required to overcome various challenges. It outlines the biotechnological applications, techniques, and processes needed to secure sustainable development and ensure long-lasting future success. Insightful and highly comprehensive, this body of work addresses: Wastewater treatment technologies Nanomaterials in environmental applications Green synthesis of ecofriendly nanoparticles The role of phytoremediation in maintaining environmental sustainability Algal biosorption of heavy metals Mass production of microalgae for industrial applications Integrated biological system for the treatment of sulfate rich wastewater Anaerobic digestion of pharmaceutical effluent Treatment of textile dye using bioaccumulation techniques Production of biosurfactants and their applications in bioremediation Biodegradable polymers Microbial fuel cell (MFC) technology Biodiesel from nonedible oil using a packed bed membrane reactor Production of ecofriendly biodiesel from marine sources Pretreatment techniques for the enhancement of biogas production A review of source apportionment of air pollutants by receptor models and more Environmental Sustainability Using Green Technologies provides excellent reference material that aids and supports sustainability, and offers practical guidance for professors, research scholars, industrialists, biotechnologists, and workers in the applied field of environmental engineering.

Green Technology for Bioremediation of Environmental Pollution has significant importance in its fields, since it comprises the current information of basic concepts and various advanced research aspects of bioremediation related green technologies for controlling environmental pollution. In order to combat the severe environmental problems, a comprehensive treatise on bioremediation dealing with updated relevant novel green technologies is, thus, in great demand for application in a practical field. Keeping this in mind, the idea of the present book has been conceived by the editors. This issue focuses particularly on the recently developed environmental friendly novel green technology that detoxifies and decontaminates the pollutants in different domains of the environment using the potential biological agents. The book covered the following topics: A modern applied concept of the green bioremediation process, genomics, metagenomics and proteomics in green bioremediation, advanced biochemical and molecular approaches of pollutant detoxification, ecological engineering in bioremediation, microbial remediation, bioleaching, various phytoremediation approaches, novel remediation technologies of various hazardous pollutants, etc. The salient features of this book include: (i) Peer revision of each chapter by expert scientists; (ii) the basic applied concepts of bioremediation; (iii) in-depth updated concepts and research findings; (iv) relevant graphical and pictorial illustrations for understanding the text; (v) bioremediation of several emerging and hazardous pollutants; and (vi) a vivid description of bioremediation characteristics of various biological agents. Therefore, the book will be of considerable use to the environmental engineers, researchers, scientists, professionals, teachers and students working in the fields of environmental science, pollution bioremediation, environmental engineering, environmental management, environmental microbiology, environmental biotechnology and biochemistry, life sciences, proteomics, genomics and metagenomics, toxicity, waste treatment industries, etc.

This open access book discusses current thinking and presents the main issues and challenges associated with climate change in Africa. It introduces evidences from studies and projects which show how climate change adaptation is being - and may continue to be successfully implemented in African countries. Thanks to its scope and wide range of themes surrounding climate change, the ambition is that this book will be a lead publication on the topic, which may be regularly updated and hence capture further works. Climate change is a major global challenge. However, some geographical regions are more severely affected than others. One of these regions is the African continent. Due to a combination of unfavourable socio-economic and meteorological conditions, African countries are particularly vulnerable to climate change and its impacts. The recently released IPCC special report "Global Warming of 1.5o C" outlines the fact that keeping global warming by the level of 1.5o C is possible, but also suggested that an increase by 2o C could lead to crises with crops (agriculture fed by rain could drop by 50% in some African countries by 2020) and livestock production, could damage water supplies and pose an additional threat to coastal areas. The 5th Assessment Report produced by IPCC predicts that wheat may disappear from Africa by 2080, and that maize—a staple—will fall significantly in southern Africa. Also, arid and semi-arid lands are likely to increase by up to 8%, with severe ramifications for livelihoods, poverty eradication and meeting the SDGs. Pursuing appropriate adaptation strategies is thus vital, in order to address the current and future challenges posed by a changing climate. It is against this background that the "African Handbook of Climate Change Adaptation" is being published. It contains papers prepared by scholars, representatives from social movements, practitioners and members of governmental agencies, undertaking research and/or executing climate change projects in Africa, and working with communities across the African continent. Encompassing over 100 contributions from across Africa, it is the most comprehensive publication on climate change adaptation in Africa ever produced.

Information technology is a powerful tool for meeting environmental objectives and promoting sustainable development. This collection of papers by leaders in industry, government, and academia explores how information technology can improve environmental performance by individual firms, collaborations among firms, and collaborations among firms, government agencies, and academia. Information systems can also be used by nonprofit organizations and the government to inform the public about broad environmental issues and environmental conditions in their neighborhoods. Several papers address the challenges to information management posed by the explosive increase in information and knowledge about environmental issues and potential solutions, including determining what information is environmentally relevant and how it can be used in decision making. In addition, case studies are described and show how industry is using information systems to ensure sustainable development and meet environmental standards. The book also includes examples from the public sector showing how governments use information knowledge systems to disseminate "best practices" beyond big firms to small businesses, and from the world of the Internet showing how knowledge is shared among environmental advocates and the general public.

Our Earth is considered as a natural system which organizes and controls itself. However, the present scale of anthropogenic activity is unprecedented in the history of mankind compelling the intelligentia to ponder over the scientific causes of the problems, processes and sustainable and pragmatic solutions. The current rate of resource use and consumption pattern are depleting the planet's finite resources and damaging life-supporting ecosystems. A large number of toxic substances are increasingly found in air, water, soil, and flora and fauna. We are in the midst of a period of increasing interconnected and complex global challenges that seek action across temporal and spatial scales, diverse sectors, and concerted efforts from global citizens. The environment on account of human's action has been experiencing imbalances and ecological catastrophe. Environmental issues like global climate change, biodiversity loss, the rapid depletion of natural resources, degradation of global commons, stratospheric ozone depletion have been restricting the safe operating space and transgressing the planetary boundaries endangering the existence of

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human societies. The global environmental problems if not scientifically managed may end up in the civilizational collapse. Nevertheless, the underlying commonality among these environmental issues is interrelatedness, complexity, and difficulty in identifying and implementing solutions. The global environmental challenges can be managed by adopting sustainable green technologies which dovetails the principles of environmental sustainability with social and ecological sustainability. Green growth is construed as a new development paradigm that sustains economic growth while at the same time ensuring environmental sustainability.

This handbook guides the user to hundreds of technologies, practices, partnership opportunities, and funding resources. Presented in non-technical language, it covers hundreds of publicly available resources for pollution prevention, control, remediation, and assessment. Environmental Technology Resources Handbook will help you: REDUCE-time, effort, and money to search for innovative technologies LOCATE-federal dollars to support development of innovative technologies ANTICIPATE-environmental compliance problems by early adoption of technology UNDERSTAND-the process of forming partnerships to develop or market your "green" products or solutions PARTICIPATE-in verifying technologies under development. The Handbook is a highly cost-effective tool for environmental policymakers, corporate EHS personnel, engineers, consultants, governmental program managers, technology vendors, international development assistance professionals, and academics teaching environmental courses. Environmental Technology Resources Handbook indexes information by key words, 12 technology and environmental media areas, 15 types of resources offered, and major industry and government sectors. Contacts, including URLs, e-mail addresses, and phone and fax numbers allow you to access more detailed information.

This book is a compilation of detailed and latest knowledge on the various types of environmental pollutants released from various natural as well as anthropogenic sources, their toxicological effects in environments, humans, animals and plants as well as various bioremediation approaches for their safe disposal into the environments. In this book, an extensive focus has been made on the various types of environmental pollutants discharged from various sources, their toxicological effects in environments, humans, animals and plants as well as their biodegradation and bioremediation approaches for environmental cleanup.

As global waste generation increases at a rapid rate, there is a dire need for waste management practices such as collection, disposal, and recycling to protect from environmental pollution. However, developing countries generate two to three times more waste, resort to open dumps more often than developed countries, and are slower to integrate waste management standards. There is a need for studies that examine the waste generation and practices of countries that share similar economic backgrounds as they strive to implement successful waste management techniques. Sustainable Waste Management Challenges in Developing Countries is an essential reference source that discusses the challenges and strategies of waste management practices and the unique waste issues faced by developing countries that prevent them from achieving the goal of integrated waste management. While highlighting topics including e-waste, transboundary movement, and consumption patterns, this book is ideally designed for policymakers, legislators, waste company managers, environmentalists, students, academicians, and municipal planners seeking current research on the global waste management problem.

Environmental Management of Air, Water, Agriculture, and Energy brings together the most current state of knowledge on four major elements for sustaining life on planet Earth: air, water, food, and energy. It examines how green technology aids in mitigating the global water, energy, and climate change crises, including the use of electrostatic force and green infrastructure. The concepts of underwater vegetation and aquatic cultivation, as well as vertical farms, are presented to spark discussion on emerging water-energy-food nexus lessons, experiences, and opportunities. This book takes a comprehensive global-scale approach to examining potential future environmental scenarios and outcomes. Features: Analyzes the most recent research findings in each of the areas covered Synthesizes the state-of-the-art understanding Recommends ways to strive forward and to shape future research Serves as an educational tool for educators and students Supported by detailed examples and case studies, this book serves not only as an up-to-date source of information for environmental experts and researchers in the field, but also as an educational tool for relevant undergraduate and graduate courses. It is also suitable for industry professionals concerned with preserving planet Earth for generations to come.

Innovation Strategies in Environmental Science introduces and examines economically viable innovations to optimize performance and sustainability. By exploring short and long-term strategies for the development of networks and platform development, along with suggestions for open innovation, chapters discuss sustainable development ideas in key areas such as urban management/eco-design and conclude with case studies of end-user-inclusive strategies for the water supply sector. This book is an important resource for environmental and sustainability scientists interested in introducing innovative practices into their work to minimize environmental impacts. Presents problem-oriented research and solutions Offers strategies for minimizing or avoiding the environmental impacts of industrial production Includes case studies on topics such as end user-inclusive innovation strategies for the water supply sector

Covers different categories of green technologies (e.g. biofuels, renewable energy sources, phytoremediation etc.) in a nutshell -Focuses on next generation technologies which will help to attain the sustainable development -The chapters widely cover for students, faculties and researchers in the scientific arena of Environmentalists, Agriculturalists, Engineers and Policy Makers The World Environment Day 2012 is prepared to embrace green economy. The theme for 2012 encompasses various aspects of human living, ranging from transport to energy to food to sustainable livelihood. Green technology, an eco-friendly clean technology contributes to sustainable development to conserve the natural resources and environment which will meet the demands of the present and future generations. The proposed book mainly focuses on renewable energy sources, organic farming practices, phyto/bioremediation of contaminants, biofuels, green buildings and green chemistry. All of these eco-friendly technologies will help to reduce the amount of waste and pollution and enhance the nation's economic growth in a sustainable manner. This book is aimed to provide an integrated approach to sustainable environment and it will be of interest not only to environmentalists but also to agriculturists, soil scientists and bridge the gap between the scientists and policy-makers.

Bioremediation for Environmental Sustainability: Approaches to Tackle Pollution for Cleaner and Greener Society discusses many recently developed and successfully applied bio/phytoremediation technologies for pollution control and minimization, which are lacking more comprehensive coverage in previous books. This book describes the scope and applications of bio/phytoremediation technologies and especially focuses on the associated eco-environmental concerns, field studies, sustainability issues, and future prospects. The book also examines the feasibility of environmentally

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friendly and sustainable bio/phytoremediation technologies to remediate contaminated sites, as well as future directions in the field of bioremediation for environmental sustainability. Illustrates the importance of microbes and plants in bio/phytoremediation and wastewater treatment Includes chapters on original research outcomes pertaining to pollution, pollution abatement, and associated bioremediation technologies Covers emerging bioremediation technologies, including electro-bioremediation, microbial fuel cell, nano-bioremediation, constructed wetlands, and more Highlights key developments and challenges in bioremediation and phytoremediation technologies Describes the roles of relatively new approaches in bio/phytoremediation, including molecular engineering and omics technologies, microbial enzymes, biosurfactants, plant-microbe interactions, genetically engineered organisms, and more

Although green innovation and technology is not new, so far very limited information is available regarding the diversified approaches for green technologies and engineering. This book highlights the challenges and opportunities, offering a roadmap for using various approaches in the most cost effective way. The book discusses the interrelationship between a circular economy and green technologies. It presents the dimensions of green innovations and illustrates the challenges of industrialization, especially in terms of material synthesis and utilized processes. It covers the current environmental and health challenges of societies and describes the role of stakeholders in developing sustainable societies and industries. This book provides a line of approach to core and interdisciplinary students, academicians, research scientists, and various industry personnel to present their ideas of green innovations with a common vision of sustainable development of community and industries in mind. Features Discusses the interrelationship between a circular economy and green technologies Presents the dimensions of green innovations Illustrates the challenges of industrialization, especially in terms of material synthesis and utilized processes Covers the current environmental and health challenges of societies Offers the identification and role of stakeholders in the sustainable development of societies and industries

Winner of an Outstanding Academic Title Award from CHOICE Magazine Encyclopedia of Environmental Management gives a comprehensive overview of environmental problems, their sources, their assessment, and their solutions. Through in-depth entries and a topical table of contents, readers will quickly find answers to questions about specific pollution and management issues. Edited by the esteemed Sven Erik Jørgensen and an advisory board of renowned specialists, this four-volume set shares insights from more than 500 contributors—all experts in their fields. The encyclopedia provides basic knowledge for an integrated and ecologically sound management system. Nearly 400 alphabetical entries cover everything from air, soil, and water pollution to agriculture, energy, global pollution, toxic substances, and general pollution problems. Using a topical table of contents, readers can also search for entries according to the type of problem and the methodology. This allows readers to see the overall picture at a glance and find answers to the core questions: What is the pollution problem, and what are its sources? What is the "big picture," or what background knowledge do we need? How can we diagnose the problem, both qualitatively and quantitatively, using monitoring and ecological models, indicators, and services? How can we solve the problem with environmental technology, ecotechnology, cleaner technology, and environmental legislation? How do we address the problem as part of an integrated management strategy? This accessible encyclopedia examines the entire spectrum of tools available for environmental management. An indispensable resource, it guides environmental managers to find the best possible solutions to the myriad pollution problems they face. Also Available Online This Taylor & Francis encyclopedia is also available through online subscription, offering a variety of extra benefits for researchers, students, and librarians, including: Citation tracking and alerts Active reference linking Saved searches and marked lists HTML and PDF format options Contact us to inquire about subscription options and print/online combination packages. US: (Tel) 1.888.318.2367 / (email) e-reference@taylorandfrancis.com International: (Tel) +44 (0) 20 7017 6062 / (email) online.sales@tandf.co.uk

Encyclopedia of Sustainable Technologies provides an authoritative assessment of the sustainable technologies that are currently available or in development. Sustainable technology includes the scientific understanding, development and application of a wide range of technologies and processes and their environmental implications. Systems and lifecycle analyses of energy systems, environmental management, agriculture, manufacturing and digital technologies provide a comprehensive method for understanding the full sustainability of processes. In addition, the development of clean processes through green chemistry and engineering techniques are also described. The book is the first multi-volume reference work to employ both Life Cycle Analysis (LCA) and Triple Bottom Line (TBL) approaches to assessing the wide range of technologies available and their impact upon the world. Both approaches are long established and widely recognized, playing a key role in the organizing principles of this valuable work. Provides readers with a one-stop guide to the most current research in the field Presents a grounding of the fundamentals of the field of sustainable technologies Written by international leaders in the field, offering comprehensive coverage of the field and a consistent, high-quality scientific standard Includes the Life Cycle Analysis and Triple Bottom Line approaches to help users understand and assess sustainable technologies

Bhuvan Unhelkar takes you on an all-encompassing voyage of environmental sustainability and Green IT. Sharing invaluable insights gained during two battle-tested decades in the information and communication technologies industry, he provides a comprehensive examination of the wide-ranging aspects of Green IT—from switching-off monitors, virtualizing Environmental chemistry is a fast developing science aimed at deciphering fundamental mechanisms ruling the behaviour of pollutants in ecosystems. Applying this knowledge to current environmental issues leads to the remediation of environmental media, and to new, low energy, low emission, sustainable processes. Nanotechnology applications for alternative energies such as solar power, fuel cells, hydrogen and lithium batteries are reviewed in the first section. Recent investigations on carbon nanotubes, nanocatalysts and cyclodextrins disclose unprecedented techniques to

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monitor and clean pollutants such as greenhouse gases, heavy metals, pesticides, pathogens occurring in water, air and soil. The second section reviews the risks for human health of critical pollutants such as endocrine disruptors, dioxins and heavy metals contaminating seafood and sediments. An exhaustive review of DDT isomers reveals unexpected mechanisms of DDT transfer to fishes. A chapter on pollutant geochronology using river sedimentary archives provides novel insights on pollution history since the beginning of the anthropocene. This book will be a valuable source of information for engineers and students developing novel applied techniques to monitor and clean pollutants in air, wastewater, soils and sediments.

Renewable Materials and Green Technology Products: Environmental and Safety Aspects looks at the design, manufacture, and use of efficient, effective, safe, and more environmentally benign chemical products and processes. It includes a broad range of application-based solutions to the development of renewable materials and green technology. The latest trends in the green synthesis and properties of CNs are presented in the first chapter of this book for generating social awareness about sustainable developments. The book goes on to highlight the naissance and progressive trail of microwave-assisted synthesis of metal oxide nanoparticles, for a clean and green technology tool. Chapters discuss green technological alternatives for the global abatement of air pollution, effective use and treatment of water and wastewater, renewable power generation from solar PV cells, carbon-based nanomaterials synthesized using green protocol for sustainable development, green technologies that help to achieve economic development without harming the environment, technical solutions to cut down the quantum of N losses, conventional processing techniques in developing the bionanocomposites as the biocatalyst, and more.

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