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**Eddy-Current Characterization of Materials and Structures** IGI Global
Emerging technologies in wastewater treatment plant is an ecological, profitable and natural technology designed to eliminate heavy metals, radionuclides, xenobiotic compounds, organic waste, pesticides, etc. from contaminated sites or industrial downloads through biological means. Since this technology is used in conditions on site, it does not physically disturb the site unlike conventional methods, that is, chemical or mechanical methods. In this technology, higher plants or microbes are used alone or in combination for the phytoextraction of heavy metals from sites contaminated with metals. Through microbial interventions, metals are immobilized or mobilized through redox conversions in contaminated sites. If they are mobilized, accumulating metal plants are placed to accumulate metals in their bodies. Next, metal-loaded plants are collected and recycled to reduce the volume of waste and then, disposed of as hazardous materials or used for the recovery of precious metals, if possible. In case of immobilization, metals are no longer available to be toxic to organisms. There are very few books published on the proposed theme. A good number of books have been published on environmental bioremediation, but the proposed book is a new and an innovative proposal specifically in wastewater treatment. Looking into the importance of emerging technologies in wastewater treatment research, the book will have a high and applicable value in industrial wastewater treatment research. Features: The book highlights the importance of emerging technologies in the wastewater treatment plant to clean up the environment from pollution caused by human activities. It assesses the potential application of several existing bioremediation techniques and introduces new emerging technologies. It is an updated vision of the existing emerging technologies in environmental bioremediation strategies with their limitations and challenges and their potential application to remove environmental pollutants. It also introduces the new trends and advances in environmental bioremediation with a thorough discussion of recent developments in this field. Highlights the importance of bioremediation to deal with the ever-increasing number of environmental pollutants.
**Hybrid-Renewable Energy Systems in Microgrids** John Wiley & Sons
Data Science and Engineering Volume 9: Proceedings of the 39th IMAC, A Conference and Exposition on Structural Dynamics, 2021, the ninth volume of nine from the Conference, brings together contributions to this important area of research and engineering. The collection presents early findings and case studies on fundamental and applied aspects of Data Science in Engineering, including papers on: Data Science in Engineering Applications Engineering Mathematics Computational Methods in Engineering
*Corrosion Mitigation* World Scientific
This book presents the select proceedings of International Conference on Innovations in Thermo-Fluid Engineering and Sciences (ICITFES 2020). It covers the theoretical and experimental research works carried out in the field of energy and power engineering. Various topics covered include fluid mechanics, gas turbines and dynamics, heat transfer, humidity and control, multiphase flow, ocean engineering, power and energy, refrigeration and air conditioning, renewable energy, and thermodynamics. The book will be helpful for the researchers, scientists, and professionals working in the field of energy, power engineering, and thermal engineering.
*Basic Electrical and Instrumentation Engineering* World Scientific
Originally published: New York: J. Wiley, c1986.
*Pervasive Computing and Social Networking* Elsevier
The present work aims to cover the perspectives of biosurfactants, which can be of interest in food-related industries and biomedical applications. Biosurfactants are a structurally diverse group of surface-active molecules extensively produced by bacteria, yeast and fungi. Despite having significant potential associated with emulsion formation, anti-adhesive and antimicrobial activities, considerably few applications have been reported regarding applications of biosurfactants in food formulations and processing. The utilization of biosurfactants, which are highly functional in food and biomedical applications, has become more and more significant. Along with providing an overview of biosurfactant properties, the book suggests how these properties could be applicable in the food industry.
**Data Science in Engineering, Volume 9** Walter de Gruyter GmbH & Co KG
Edited by internationally recognized authorities in the field, this expanded and updated new edition of the bestselling Handbook, containing more than 100 new articles, is aimed at the design and operation of modern particle accelerators. It is intended as a vade mecum for professional engineers and physicists engaged in these subjects. With a collection of more than 2000 equations, 300 illustrations and 500 graphs and tables, here one will find, in addition to the common formulae of previous compilations, hard-to-find, specialized formulae, recipes and material data pooled from the lifetime experience of many of the world"s most able practitioners of the art and science of accelerators.The eight chapters include both theoretical and practical matters as well as an extensive glossary of accelerator types. Chapters on beam dynamics and electromagnetic and nuclear interactions deal with linear and nonlinear single particle and collective effects including spin motion, beam-environment, beam-beam, beam-electron, beam-ion and intrabeam interactions. The impedance concept and related calculations are dealt with at length as are the instabilities associated with the various interactions mentioned. A chapter on operational considerations includes discussions on the assessment and correction of orbit and optics errors, real-time feedbacks, generation of short photon pulses, bunch compression, tuning of normal and superconducting linacs, energy recovery linacs, free electron lasers, cooling, space-charge compensation, brightness of light sources, collider luminosity optimization and collision schemes. Chapters on mechanical and electrical considerations present material data and important aspects of component design including heat transfer and refrigeration. Hardware systems for particle sources, feedback systems, confinement and acceleration (both normal conducting and superconducting) receive detailed treatment in a subsystems chapter, beam measurement techniques and apparatus being treated therein as well. The closing chapter gives data and methods for radiation protection computations as well as much data on radiation damage to various materials and devices.A detailed name and subject index is provided together with reliable references to the literature where the most detailed information available on all subjects treated can be found.
Medical Image Processing for Improved Clinical Diagnosis Elsevier
As information resources migrate to the Cloud and to local and global networks, protecting sensitive data becomes ever more important. In the modern, globally-interconnected world, security and privacy are ubiquitous concerns. Next Generation Wireless Network Security and Privacy addresses real-world problems affecting the security of information communications in modern networks. With a focus on recent developments and solutions, as well as common weaknesses and threats, this book benefits academicians, advanced-level students, researchers, computer scientists, and software development specialists. This cutting-edge reference work features chapters on topics including UMTS security, procedural and architectural solutions, common security issues, and modern cryptographic algorithms, among others.
Biosurfactants in Food CRC Press
Biopolymer and Biopolymer Blends: Fundamentals, Processes, and Emerging Applications showcases the potential of biopolymers as alternative sources to conventional nonbiodegradable petroleum-based polymers. It discusses fundamentals of biopolymers and biopolymer blends from natural and synthetic sources, synthesis, and characterization. It also describes development of desired performance for specific applications in 3D printing and other emerging applications in industry, including packaging, pulp and paper, agriculture, biomedical, and marine. Introduces the fundamentals, synthesis, processing, and structural and functional properties of biopolymers and biopolymer blends Explains the fundamental framework of biopolymer blends in 3D printing, featuring current technologies, printing materials, and commercialization of biopolymers in 3D printing Reviews emerging applications, including active food packaging, electronic, antimicrobial, environmental, and more Discusses current challenges and futures prospects. Providing readers with a detailed overview of the latest advances in the field and a wealth of applications, this work will appeal to researchers in materials science and engineering, biotechnology, and related disciplines.
**Review of Progress in Quantitative Nondestructive Evaluation** CRC Press
Advanced Hybrid Composite Materials and Their Applications provides a basic understanding of the engineering of hybrid composite materials. The main topics covered include the fundamental principles of hybrid composite materials, their properties, chemistry, fabrication, and applications. New and modern ways of synthetic engineering are also discussed in detail. The book brings together two very important classes of engineering materials and explains their properties in an easy-to-understand manner. It also covers the latest research outcomes and new technologies from synthetic processes right though to recent applications in different industrial sectors. This book will benefit those with no previous background knowledge as well as the expert working in this field. It will serve as a single comprehensive information resource on various types of engineering materials. - Covers fundamental principles, properties, fabrication and applications - Provides detailed information on various types of composite materials in a single resource - Covers the latest information and recent research outcomes
Optical Engineering CRC Press
Advanced Two-Dimensional Material-Based Heterostructures in Sustainable Energy Storage Devices provides a detailed overview of advances and challenges in the development of 2D materials for use in energy storage devices. It offers deep insight into the synthesis, characterization, and application of different 2D materials and their heterostructures in a variety of energy storage devices, focusing on new phenomena and enhanced electrochemistry. This book: Introduces 2D materials, synthesis methods, and characterization techniques Discusses application in a wide range of batteries and supercapacitors Offers perspectives on future investigations necessary to overcome existing challenges This comprehensive reference is written to guide researchers and engineers working to advance the technology of energy-efficient energy storage devices.
Advanced Engineering Optimization Through Intelligent Techniques Springer Nature
Book of Abstracts The seminar was organized to emphasize the role and applications of "Advanced polymers" in meeting the demands of researchers and industrialists, by providing a platform for discussions among the polymer scientists, engineers, technologists, industrialists and academicians across the country, and educating students and budding scientists to equip them in order to cater to the needs of industries.
*Innovative Nanocomposites for the Remediation and Decontamination of Wastewater* IGI Global
Publishes papers reporting on research and development in optical science and engineering and the practical applications of known optical science, engineering, and technology.
*Profiles in Scientific Research: Mathematical sciences, physics, chemical sciences, engineering & technology, and earth sciences* IGI Global
Electrical and instrumentation engineering is changing rapidly, and it is important for the veteran engineer in the field not only to have a valuable and reliable reference work which he or she can consult for basic concepts, but also to be up to date on any changes to basic equipment or processes that might have occurred in the field. Covering all of the basic concepts, from three-phase power supply and its various types of connection and conversion, to power equation and discussions of the protection of power system, to transformers, voltage regulation, and many other concepts, this volume is the one-stop, "go to" for all of the engineer's questions on basic electrical and instrumentation engineering. There are chapters covering the construction and working principle of the DC machine, all varieties of motors, fundamental concepts and operating principles of measuring, and instrumentation, both from a "high end" point of view and the point of view of developing countries, emphasizing low-cost methods. A valuable reference for engineers, scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library.
**Swarm Intelligence** Springer
ARTIFICIAL INTELLIGENCE-BASED SMART POWER SYSTEMS Authoritative resource describing artificial intelligence and advanced technologies in smart power systems with simulation examples and case studies Artificial Intelligence-based Smart Power Systems presents advanced technologies used in various aspects of smart power systems, especially grid-connected and industrial evolution. It covers many new topics such as distribution phasor measurement units, blockchain technologies for smart power systems, the application of deep learning and reinforced learning, and artificial intelligence techniques. The text also explores the potential consequences of artificial intelligence and advanced technologies in smart power systems in the forthcoming years. To enhance and reinforce learning, the editors include many learning resources throughout the text, including MATLAB, practical examples, and case studies. Artificial Intelligence-based Smart Power Systems includes specific information on topics such as: Modeling and analysis of smart power systems, covering steady state analysis, dynamic analysis, voltage stability, and more Recent advancement in power electronics for smart power systems, covering power electronic converters for renewable energy sources, electric vehicles, and HVDC/FACTs Distribution Phasor Measurement Units (PMU) in smart power systems, covering the need for PMU in distribution and automation of system reconfigurations Power and energy management systems Engineering colleges and universities, along with industry research centers, can use the in-depth subject coverage and the extensive supplementary learning resources found in Artificial Intelligence-based Smart Power Systems to gain a holistic understanding of the subject and be able to harness that knowledge

within a myriad of practical applications.

Proceedings of the ... International Conference on Offshore Mechanics and Arctic Engineering Allied Publishers

Edited by internationally recognized authorities in the field, this handbook focuses on Linacs, Synchrotrons and Storage Rings and is intended as a vade mecum for professional engineers and physicists engaged in these subjects. Here one will find, in addition to the common formulae of previous compilations, hard to find specialized formulae, recipes and material data pooled from the lifetime experiences of many of the world's most able practitioners of the art and science of accelerator building and operation.

*Energy Research Abstracts* Woodhead Publishing

This book comprises peer-reviewed papers presented at the International Conference on Advanced Engineering Optimization Through Intelligent Techniques (AEOTIT) 2022. The book combines contributions from academics and industry professionals and covers advanced optimization techniques across all major engineering disciplines like mechanical, manufacturing, civil, automobile, electrical, chemical, computer, and electronics engineering. The book discusses different optimization techniques and algorithms such as genetic algorithm, non-dominated sorting genetic algorithm-II, and III, differential search, particle swarm optimization, fruit fly algorithm, cuckoo search, teaching – learning-based optimization algorithm, grey wolf optimization, Jaya algorithm, Rao algorithms, and many other latest meta-heuristic techniques and their applications. Various multi-attribute decision-making methods such as AHP, TOPSIS, ELECTRE, PROMETHEE, DEMATEL, R-method, fuzzy logic, and their applications are also discussed. This book serves as a valuable reference for students, researchers, and practitioners and helps them in solving a wide range of optimization problems.

Biohydrometallurgical Processes Springer Nature

Microbially derived surfactants, called biosurfactants, provide a promising alternative to synthetic surfactants, displaying better availability and being generally nontoxic and biodegradable. Biosurfactants also have the advantage of diverse chemical properties and the potential to be less expensive. They demonstrate properties such as reducing surface tension, stabilizing emulsions, and promoting foaming. With many promising research results, a consolidated resource of biosurfactant knowledge is needed to build a framework for further development of applications. Biosurfactants: Research Trends and Applications fills this need, covering the latest research and development on relevant aspects of biological, biochemical, and physical processes and applications of biosurfactants. This book reviews current knowledge and the latest advances, strategies for improving production processes, and the status of biosynthetic and genetic regulation mechanisms for microbial surfactants. Chapters present research findings on specific biosurfactants, such as high surface activity rhamnolipids, yeast-derived sophorolipids, lipopeptides, and trehalose lipids that have potential for environmental, industrial, and medical uses. The book also describes sources and characteristics of marine microbial biosurfactants, biosurfactants made from food processing by-products and biosurfactants used in the food industry, and biosurfactants for green synthesis of nanoparticles. The text presents applications of biosurfactants in environmental industries and examines interactions between metals and various classes of biosurfactants and related metal remediation technologies. The final chapter reviews the state of the art of biosurfactants and their applications, and proposes approaches to overcome any challenges.

Artificial Intelligence-based Smart Power Systems Springer

These Proceedings, consisting of Parts A and B, contain the edited versions of most of the papers presented at the annual Review of Progress in Quantitative Nondestructive Evaluation held at the University of Washington, Seattle on July 30 to August 4, 1995. The Review was organized by the Center for NDE at Iowa State University, in cooperation with the Ames Laboratory of the USDOE, the American Society of Nondestructive Testing, the Department of Energy, the National Institute of Standards and Technology, the Federal Aviation Administration, the National Science Foundation IndustryiUniversity Cooperative Research Centers, and the Working Group in Quantitative NDE. This year's Review of Progress in QNDE was attended by approximately 450 participants from the US and many foreign countries who presented over 375 papers. The meeting was divided into 36 sessions with as many as four sessions running concurrently. The Review covered all phases of NDE research and development from fundamental investigations to engineering applications or inspection systems, and it included many important methods of inspection science from acoustics to x-rays. In the last several years, the Review has stabilized at about its current size. Most participants seem to agree it is large enough to permit a full-scale overview of the latest developments but still small enough to retain the collegial atmosphere which has marked the Review since its inception. The Proceedings are structured in a format to reflect the organization of the Review itself, producing a more logical organization for both the meeting and the present volume.

Biosurfactants John Wiley & Sons

This textbook fosters information exchange and discussion on all aspects of introductory matters of modern mechanical engineering from a number of perspectives including: mechanical engineering as a profession, materials and manufacturing processes, machining and machine tools, tribology and surface engineering, solid mechanics, applied and computational mechanics, mechanical design, mechatronics and robotics, fluid mechanics and heat transfer, renewable energies, biomechanics, nanoengineering and nanomechanics. At the end of each chapter, a list of 10 questions (and answers) is provided.

*Introduction to Mechanical Engineering* ASTM International

Biomedical Engineering II: Recent Developments covers some progress made in biochemical engineering, which have some useful application in dentistry, medical instrumentation, and orthopedics. The book provides a detailed testing and analysis of the use of hydroxylapatite as an effective substance for mandibular augmentation of the atrophic ridge. An in-depth report about the technique called the tendon reroute surgery is also given. The book includes a discussion on cardiology hemodynamics, which is about the determination of blood flow by monitoring the speed of blood cell. Another topic covered is the effects of stresses on the vertebral body. A separate section of the book is focused on the modeling and creation of simulation to test the movement of transmicrovascular fluid and protein exchanges. Some topics in the field of bioelectricity, biomechanics, and biocontrol systems are thoroughly discussed. The text will be a useful tool for dentists, orthopedics, doctors, and people in the field of medical physiology.