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July - December 2024
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Contents

A Hands-On Introduction to SOLIDWORKS 2024

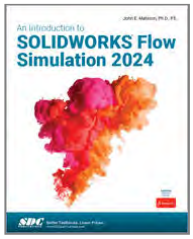
Text and Video Instruction

Kirstie Plantenberg

Specifically written for those who are new to SOLIDWORKS, A Hands-On Introduction to SOLIDWORKS 2024 allows you to relax and learn as you follow an expert in SOLIDWORKS through the basics of the software to its more in-depth capabilities. This book works perfectly for a freshman design class or as a companion text to an engineering graphics textbook. Each tutorial in the book teaches you how to use engineering graphics concepts while modeling real-world parts and assemblies. Learn how to model parts, configurations, create part prints, and assembly drawings.

SDC Publications
May 2024:550
Pb: 978-1-630-57633-2: **£69.99**
* For **full contents** and more information, visit: **www.routledge.com/9781630576332**

An Introduction to SOLIDWORKS Flow Simulation 2024



John E. Matsson

An Introduction to SOLIDWORKS Flow Simulation 2024 takes you through the steps of creating the SOLIDWORKS part for the simulation followed by the setup and calculation of the SOLIDWORKS Flow Simulation project. The results from calculations are visualized and compared with theoretical solutions and empirical data. Each chapter starts with the objectives and a description of the specific problems that are studied. End of chapter exercises are included for reinforcement and practice of what has been learned.

SDC Publications
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Analysis of Machine Elements Using SOLIDWORKS Simulation 2024

Shahin S. Nudehi , John R. Steffen

Analysis of Machine Elements Using SOLIDWORKS Simulation 2024 is written primarily for first-time SOLIDWORKS Simulation 2024 users who wish to understand finite element analysis capabilities applicable to stress analysis of mechanical elements. The focus of examples is on problems commonly found in introductory, undergraduate, Design of Machine Elements or similarly named courses. In order to be compatible with most machine design textbooks, this text begins with problems that can be solved with a basic understanding of mechanics of materials.

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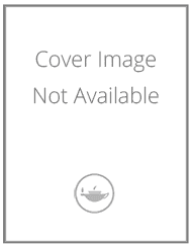
Autodesk AutoCAD 2025 Fundamentals



Elise Moss

Autodesk AutoCAD 2025 Fundamentals is designed to be used during instructor led training in an eight week course. It is an introductory level textbook intended for new AutoCAD 2025 users. This book covers all the fundamental skills necessary for effectively using AutoCAD and will provide a strong foundation for advancement. This textbook applies the use of AutoCAD as it pertains to mechanical drafting. This text not only provides the necessary information to operate AutoCAD 2025 but also provides the skills to use AutoCAD as a tool to work proficiently as a drafter or designer.

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Autodesk Inventor 2025

A Tutorial Introduction

L. Scott Hansen

This unique text and video set presents a thorough introduction to Autodesk Inventor for anyone with little or no prior experience with CAD software. It can be used in virtually any setting from four year engineering schools to on-the-job use or self-study. Unlike other books of its kind, it begins at a very basic level and ends at a very advanced level. It's perfect for anyone interested in learning Autodesk Inventor quickly and effectively using a "learning by doing" approach.

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Designing with SOLIDWORKS 2024

Michael J. Rider

Designing with SOLIDWORKS 2024 is a thoughtfully crafted guide that presents you with a basic introduction to engineering design while simultaneously providing you with a strong foundation using SOLIDWORKS. This textbook goes beyond merely teaching the functionalities of SOLIDWORKS 2024; it underscores the pivotal role of SOLIDWORKS in modern engineering and design, making it an essential skill for aspiring engineers and designers.

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Learning SOLIDWORKS 2024

Modeling, Assembly and Analysis

Randy H. Shih

This book will teach you everything you need to know to start using SOLIDWORKS 2024 with easy to understand, step-by-step tutorials. This book features a simple robot design used as a project throughout the book. You will learn to model parts, create assemblies, run simulations and even create animations of your robot design.

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Mastering Modern CAD Drawings with SOLIDWORKS 2024

Applying ASME Standards to Engineering Drawings

Lani Tran

We thrive as learners when we actively practice the skills we want to master, and this is especially true for learning computer-aided design. Mastering Modern CAD Drawings with SOLIDWORKS 2024 provides new and more experienced users with the perfect blend of preparation and plenty of practice to build their skills. Because of its popularity, there is a high demand for those with SOLIDWORKS skills. In Mastering Modern CAD Drawings with SOLIDWORKS 2024 you create the types of SOLIDWORKS projects that students, designers, engineers, and other manufacturing professionals routinely encounter.

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May 2024:400
Pb: 978-1-630-57689-9: **£65.99**
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Mastering Surface Modeling with SOLIDWORKS 2024

Lani Tran

Mastering Surface Modeling with SOLIDWORKS 2024 focuses on surfacing tools, an important aspect of SOLIDWORKS' design capabilities that fills in the gaps that might be left by using solid modeling alone. If you are a SOLIDWORKS user currently relying on solid modeling for designs, or are just not familiar with surface modeling techniques, this book will add these skills to your repertoire to help you create the highest-quality models.

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Parametric Modeling with Autodesk Fusion

Spring 2024 Edition

Randy H. Shih

Parametric Modeling with Autodesk Fusion contains a series of fourteen tutorial style lessons designed to introduce Autodesk Fusion, solid modeling and parametric modeling techniques and concepts. This book introduces Autodesk Fusion on a step-by-step basis, starting with constructing basic shapes, all the way through to the creation of assembly drawings and 3D printing your own designs. This book takes a hands on, exercise intensive approach to all the important parametric modeling techniques and concepts. Each lesson introduces a new set of commands and concepts, building on previous lessons.

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Parametric Modeling with SOLIDWORKS 2024

Paul J. Schilling , Randy H. Shih

Parametric Modeling with SOLIDWORKS 2024 contains a series of seventeen tutorial style lessons designed to introduce SOLIDWORKS 2024, solid modeling and parametric modeling techniques and concepts. This book introduces SOLIDWORKS 2024 on a step-by-step basis, starting with constructing basic shapes, all the way through to the creation of assembly drawings and motion analysis.

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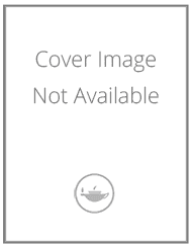
Principles and Practice An Integrated Approach to Engineering Graphics and AutoCAD 2025



Randy H. Shih

Principles and Practices An Integrated Approach to Engineering Graphics and AutoCAD 2025 combines an introduction to AutoCAD 2025 with a comprehensive coverage of engineering graphics principles. By adopting this textbook, you will no longer need to adopt separate CAD and engineering graphics books for your course. Not only will this unified approach give your course a smoother flow, your students will also save money on their textbooks. What's more, the tutorial exercises in this text cover the performance tasks found on the AutoCAD 2025 Certified User Examination.

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Residential Design Using AutoCAD 2025

Daniel John Stine

Residential Design Using AutoCAD 2025 is an introductory level tutorial which uses residential design exercises as the means to teach you AutoCAD 2025. Each book comes with access to extensive video instruction in which the author explains the most common tools and techniques used when designing residential buildings using AutoCAD 2025. After completing this book you will have a well-rounded knowledge of Computer Aided Drafting that can be used in the industry and the satisfaction of having completed a set of residential drawings.

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Tutorial Guide to AutoCAD 2025

2D Drawing, 3D Modeling

Shawna Lockhart

Tutorial Guide to AutoCAD 2025 provides a step-by-step introduction to AutoCAD with commands presented in the context of each tutorial. In fifteen clear and comprehensive chapters, author Shawna Lockhart guides you through all the important commands and techniques in AutoCAD 2025, from 2D drawing to solid modeling and finally finishing with rendering. Tutorial Guide to AutoCAD 2025 begins with three Getting Started chapters that include information to get readers of all levels prepared for the tutorials.

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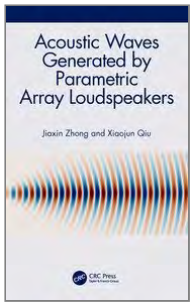
Acoustic Waves Generated by Parametric Array Loudspeakers



Jiaxin Zhong University of Technology Sydney, Australia**, Xiaojun Qiu** Nanjing University, China

Parametric array loudspeakers (PALs) are capable of generating highly directional audio beams from nonlinear interactions of intense airborne ultrasound waves. This unique capability holds great potential in audio engineering. This book systematically introduces the physical principles of acoustics waves generated by PALs, along with the commonly used and the state-of-the-art numerical models, such as the Westervelt model, the convolution directivity model, the Gaussian beam expansion method, and the spherical wave expansion method. The book is tailored to meet the needs of researchers in this field, as well as audio practitioners and acoustics engineers.

CRC Press
August 2024:392
Hb: 978-1-032-40852-1: **£115**
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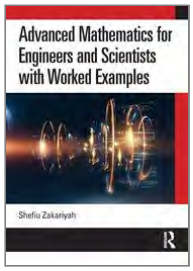
Advanced Mathematics for Engineers and Scientists with Worked Examples



Shefiu Zakariyah University of Derby, UK

This covers core to advanced topics in mathematics, providing a comprehensive, step-by-step presentation of concepts to engineers, scientists and general readers. It moves from simple to challenging areas, with carefully tailored worked examples also of different degrees of challenge. Mathematical concepts are linked with engineering applications. It is written primarily for students at levels 3 and 4 (typically in the early stages of a degree in engineering or a related discipline) or for those undertaking foundation, access, Higher National Certificate (HND), International Foundation Year (IFY), and International Year One (IYO) courses with math modules.

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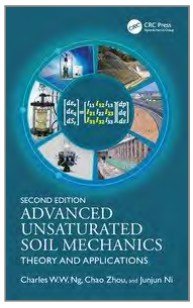
Advanced Unsaturated Soil Mechanics

Theory and Applications



Charles W.W. Ng Hong Kong University of Science and Technology, Hong Kong**, Chao Zhou** Hong Kong Polytechnic University, Hong Kong**, Junjun Ni** Hong Kong University of Science and Technology, Hong Kong

This book is designed to meet the increasing challenges of climate change and engineering activities by covering the mechanics and engineering of unsaturated soil in a logical manner. This second edition covers fundamental topics not covered in other similar books, including the state-dependency of soil–water retention behaviour and water permeability functions, small strain stiffness considering the influence of wetting–drying cycles and recent suction history, suction effects on dilatancy and peak shear strength, cyclic thermal effects on soil behaviour, state-dependent elastoplastic constitutive modelling of monotonic and cyclic behaviour, and several engineering applications.

CRC Press
September 2024:520
Hb: 978-1-032-29832-0: **£160**
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AI-Based Optimized Design of Structural Frames

With Application to Practical Building Designs

Won-Kee Hong Kyung Hee University, Republic of Korea

This book introduces an auto-design-based optimization for building frames using an artificial neural networks (ANN)-based Lagrange method and genetic algorithms (GAs). Chapters provide readers with an understanding of how both ANN-based and GA-based structural optimization can be implemented in optimizing designated design targets for building structural frames, guiding them towards more rational design that is consistent with American Institute of Steel Construction (AISC) and American Concrete Institute (ACI) standards. The book suits structural engineers, architects, and graduate students in the field, and is heavily illustrated with color figures and tables.

CRC Press
October 2024:504
Hb: 978-1-032-53681-1: **£155**
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Air Pollution: Science, Engineering and Management Fundamentals

Science, Engineering and Management Fundamentals

Mukesh Khare Professor, Civil Engineering Department, IIT Delhi Hauz Khas, New Delhi - 110016**, Prateek Sharma** Professor, Department of Energy and Environment, Teri School of Advanced Studies Vasant Kunj, New Delhi - 110070**, Sri Harsha Kota** Assistant Professor, Civil Engineering Department, IIT Delhi Haus Khas, New Delhi - 110016**, Sumanth Chinthala** National Institute Of Technology Warangal Warangal, Telangana - 506004

This comprehensive and up-to-date textbook discusses fundamental aspects of air pollution with the help of solved and case examples within the chapter and review questions at the end of each chapter to help readers. The textbook discusses in-depth the entire domain of air pollution starting from the fundamentals, sources, types, effects, associated risk, ecology, meteorology, climatology, sampling, monitoring and instrumentation, air pollution laboratory quality control, data analysis and interpretation, modelling, control technologies, indoor air pollution, to the latest principles of air quality management, and legislation, regulations, and standards.

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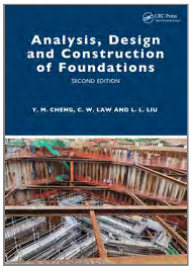
2ND EDITION

Analysis, Design and Construction of Foundations



Yung Ming Cheng Hong Kong Polytechnic University, Hong Kong**, Chi Wai Law** Hong Kong**, Leilei Liu** Central South University, China

This book covers the key concepts in the analysis and design of foundation systems, balancing theory with engineering practice. This second edition is extensively revised and developed to include a new chapter on numerical methods in geotechnical engineering, as well as a large number of new construction drawings, project photos, and construction method statements from existing projects. It is ideal for senior undergraduates and graduate students, academics, and consulting geotechnical engineers.

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2ND EDITION

Australian Guidebook for Structural Engineers

Lonnie Pack Coffey Services Australia**, Brian Kinnear**

This guidebook is a practical and essential tool covering all the necessary steps for structural design engineers to create detailed and accurate calculations in accordance with Australian and international standards. This new edition includes the latest design requirements from Australian Standards, including Steel Structures (AS 4100–2020), Concrete Structures (AS 3600–2018) (including steel fibre reinforced concrete slabs), and basic requirements from Timber Structures (AS 1720.1–2010). Requirements from many more standards are provided in the context of typical design projects. Examples are given for popular engineering programs (Space Gass, Strand7, and Rhinoceros 3D).

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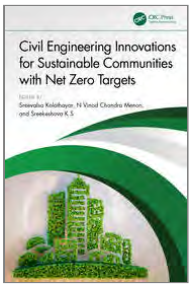
Civil Engineering Innovations for Sustainable Communities with Net Zero Targets



Edited by **Sreevalsa Kolathayar** Department of Civil Engineering, Indian Institute of Science, Bangalore, India**, N Vinod Chandra Menon** Adjunct Professor, Amrita Vishwa Vidyapeetham Amritapuri, Clappana. P.O., Kollam, Kerela, 690525**, Sreekeshava K S** Jyothi Institute of Technology Tathaguni Off Kanakapura Road Bengaluru, Karnataka, 560082 India

This volume on civil engineering innovations for sustainable communities with net zero targets aligns with the United Nations sustainable development goals in the context of civil engineering innovations. Major topics covered include hydrological alterations under climate change, smart water management, sustainable slope stability solutions, sustainable water management and climate smart agriculture, conservation of wetlands, influence of phase change materials on thermal properties, BIM for sustainable and affordable construction, and so forth. This book is aimed at graduate students and researchers in civil engineering, sustainable development, risk management, GIS, and water.

CRC Press
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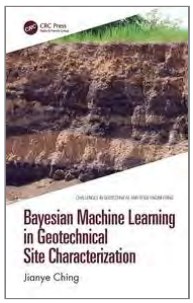
Bayesian Machine Learning in Geotechnical Site Characterization



Jianye Ching National Taiwan University, Taipei

Series: Challenges in Geotechnical and Rock Engineering

Bayesian data analysis and modelling linked with machine learning offers a new tool for handling geotechnical data. This book presents recent advancements in probabilistic geotechnical site characterization. It starts with the introduction of Bayesian notion of probability "degree of belief", then reviews probability theories and useful probability models for cross correlation and spatial correlation. Methods for Bayesian parameter estimation and prediction are also presented, and the use of these methods demonstrated with geotechnical site characterization examples. It suits consulting engineers and graduate students in the area.

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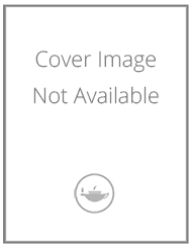
Design of Fibre-Polymer Composite Structures

Commentary to European Technical Specification CEN/TS 19101: 2022



Edited by **João R. Correia** Instituto Superior Técnico, Lisbon, Portugal**, Thomas Keller , Jan Knippers , J. Toby Mottram , Carlo Paulotto , José Sena-Cruz** University of Minho, Portugal**, Luigi Ascione**

The European Technical Specification CEN/TS 19101:2022, 'Design of Fibre-Polymer Composite Structures', constitutes a milestone for the use of fibre-polymer composites in civil engineering works. This Open Access book comprises around 400 background reports covering the most relevant paragraphs of the Technical Specification, providing supplementary information to the Technical Specification, justifying the options that were followed, and introducing references that were considered. It is ideal for professional engineers working in structural design, as well as a source of consensus information for graduate students and researchers in the area.

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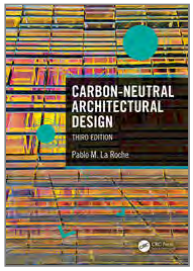
3RD EDITION

Carbon-Neutral Architectural Design



Pablo M. La Roche Cal Poly Pomona, USA

The energy used to build and operate buildings is a significant sources of greenhouse gas emissions. While it is possible to reduce emissions through low-carbon design, many architects are not trained to do this. Filling an urgent need for a design reference in this emerging field, this book describes how to reduce building-related greenhouse gas emissions through appropriate design techniques. It presents strategies to achieve CO2 reductions, with an emphasis on control of energy flows through the building envelope and passive heating and cooling strategies.

CRC Press
May 2024:472
Hb: 978-0-367-85739-4: **£125**
eBook: 978-1-003-01482-9
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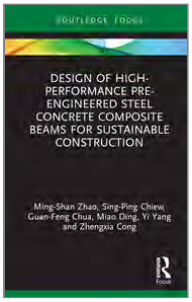
Design of High-performance Pre-engineered Steel Concrete Composite Beams for Sustainable Construction



Ming-Shan Zhao Singapore Institute of Technology**, Sing-Ping Chiew** Nanyang Technological University, Singapore**, Guan-Feng Chua** Singapore Institute of Technology**, Miao Ding** Singapore Institute of Technology**, Yi Yang** JTC Corporation**, Zhengxia Cong**

This accessible and practical shortform book details the properties and advantages of high-performance pre-engineered steel-concrete composite beams (HPCBs) for improving the sustainability of construction techniques and explains the analysis methods for testing HPCB systems. Structural engineering professionals whose work relates to long-span and heavy-loading industrial or commercial buildings will benefit from the detailed guidance and focus on practical applications provided throughout this book. Postgraduate students of advanced steel and composite structures will also benefit from these descriptions.

CRC Press
August 2024:128
Hb: 978-1-032-62691-8: **£48.99**
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Designing with Alternative Building Materials and Review of Building Materials

Kalyan Kumar Ganguly

This book explains possible alternative building materials along with the test results including review of common building materials, earth engineering and construction, suitable soil, soil mechanics and production, masonry construction, rammed earth construction, use of ferro-cement units for projects, and fibre reinforced concrete for projects and applications. Other items such as project management, computer aided work, education, training for engineers, construction work, quality control, safety aspect, communication, applications, and case studies etc. have been covered with construction photographs. This book is aimed at professionals in civil and construction engineering.

CRC Press
November 2024:568
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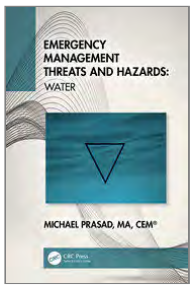
Emergency Management Threats and Hazards

Water



Michael Prasad

Emergency Management Threats and Hazards: Water is a resource guidebook, which bridges the work of the emergency management practitioners and academic researchers, specifically for water-related incidents. Practitioners typically follow a disaster phase cycle of preparedness/protection/prevention, response, recovery, and mitigation– all of which have distinct actions and missions to reduce or eliminate adverse impacts from both threats and hazards. Academics will find the connections to allied fields such as meteorology, hydrology, homeland security, healthcare, and more.

CRC Press
September 2024:380
Hb: 978-1-032-75515-1: **£75**
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Energy Efficiency in Shipping for Environmental Sustainability

Ashok Menon

This examines the environmental impact of emissions from ships, setting out the mandatory regulations of MARPOL 73/78 and the Shipboard Energy Efficiency Management Plan, as well as new International Maritime Organization regulations such as MEPC 80. Chapters provide an in-depth understanding of how ship staff can increase energy efficiency by reducing fuel consumption and using innovative technologies. Comprehensive coverage of energy audit methodology is offered to ensure compliance with energy efficiency requirements. Written accessibly to suit a wide range of readers in the shipping industry, the book will be especially valuable for ship officers as well as trainees and cadets.

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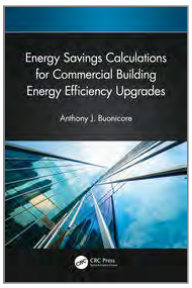
Energy Savings Calculations for Commercial Building Energy Efficiency Upgrades



Anthony J. Buonicore Sustainable Real Estate Solutions, Inc. Easton, Conneticut

Energy Savings Calculations for Commercial Building Energy Efficiency Upgrades assists energy professionals, contractors, building owners and managers in developing energy savings estimates that can facilitate a quick assessment of the potential energy savings that might be realized when replacing code-compliant building components with the highest efficiency equipment. It also provides algorithms to estimate greenhouse gas emission reductions that may be achieved by building energy efficiency upgrades and the impact these upgrades can have on building electrification-decarbonization projects.

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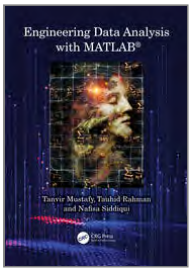

Tanvir Mustafy Military Inst. of Science and Tech, BD**,**
Tauhid Rahman Military Inst. of Science and Tech, BD**,**
Nafisa Siddiqui Military Inst. of Science and Tech, BD

This book provides a concise overview of a variety of techniques for analyzing statistical, scientific, and financial data, using MATLAB® to integrate several approaches to data analysis and statistics. Chapters offer a broad review of computational data analysis, illustrated with many examples and applications. Each chapter combines theoretical concepts with practical MATLAB® applications and includes practice exercises, ensuring a comprehensive understanding of the material. With coverage of both basic and more complex ideas in applied statistics, the book has broad appeal for undergraduate students up to practicing engineers.

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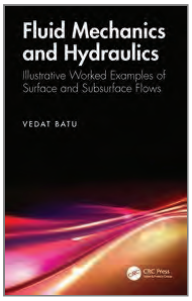
Fluid Mechanics and Hydraulics

Illustrative Worked Examples of Surface and Subsurface Flows



Vedat Batu

Fluid Mechanics and Hydraulics: Illustrative Worked Examples of Surface and Subsurface Flows presents the basic principles of fluid mechanics through the use of numerous worked examples. It serves as an effective learning source for college students and as a teaching tool for instructors (with an included solutions manual) as well as for practicing professionals in the areas of fluid mechanics and hydraulics.

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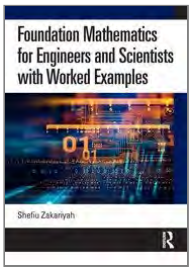
Foundation Mathematics for Engineers and Scientists with Worked Examples



Shefiu Zakariyah University of Derby, UK

This provides a comprehensive, step-by-step presentation of fundamental mathematical concepts for engineers, scientists, and general readers. It moves from simple to challenging areas, with tailored worked examples. Mathematical concepts are linked with appropriate engineering applications and are aligned with topics taught in major UK and overseas curriculums. It is written primarily for students at levels 3 and 4 (typically in the early stages of a degree in engineering or a related discipline) or for those undertaking foundation, access, Higher National Certificate (HND), International Foundation Year (IFY), and International Year One (IYO) courses with math modules.

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Fundamentals of Offshore Engineering

Srinivasan Chandrasekaran Indian Institute of Technology Madras, India**, Surasak Phoemsapthawee , Shanker Krishna , Hari Srinivasan**

Fundamentals of Offshore Engineering addresses the basics of design for offshore oil and gas production systems, and examines the health, safety, environmental (HSE) aspects in the oil and gas industry with an emphasis towards safety measures in design and operations. It also covers fundamental issues of crude oil and natural gas exploration and extraction and also includes coverage of seismic surveys and green energy systems. Details of offshore platforms, describing the types, historical development, basics of analysis and design, environmental loads, and potential hazards are also provided.

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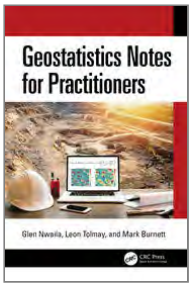

Glen Nwaila University of the Witwatersrand**, Leon Tolmay , Mark Burnett**

This book provides a practical perspective of all the processes involved in estimating mineral resources and reserves, including mine-to-mill reconciliation. It provides an integrated step-by-step explanation of processes for performing each step, including insight from academic and industry practitioners. Each chapter details a specific aspect of the estimation processes in a practical manner. It contains examples and case studies to illustrate the practical application of geostatistics in mineral resource estimation, mineral reserve conversion, and reconciliation. This book is aimed at professionals and graduate students in Resource and Mining Geology, and Mining Engineering.

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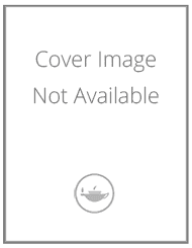
2ND EDITION

Geotechnical Earthquake Engineering



Steven L. Kramer University of Washington, USA**, Jonathan P. Stewart** University of California Los Angeles, USA

This fully-updated new edition provides an introduction to geotechnical earthquake engineering to first-time readers (typically first-year graduate students) with a level of detail that will be useful to more advanced students, as well as researchers and practitioners. It covers the topic of geotechnical earthquake engineering beginning with an introduction to seismology and earthquake ground motions. It also includes hazard analysis and performance-based earthquake engineering design and dynamic soil properties. These topics are followed by site response and its analysis and soil-structure interaction.

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Grouted Soil and Rock Anchors

Devon Mothersille Consulting Engineer, UK**, Donald A. Bruce** Consulting Engineer, USA**, Stuart Littlejohn** Retired from University of Bradford, UK

This book delves deep into the crucial aspects of grouted soil and rock anchors, providing a contemporary perspective on the best practices in anchor technology that are directly applicable to the work of consulting engineers, contractors, and students in the field. It comprehensively covers aspects of anchor design, construction, testing, durability, and maintenance, as well as the fundamental characteristics of ground and groundwater aggressivity. It adheres to Eurocode 7 and the main current standards and codes of practice and includes extensive case histories of successful projects, demonstrating the importance of proper planning, installation, and maintenance.

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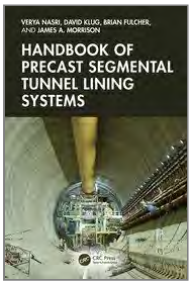
Handbook of Precast Segmental Tunnel Lining Systems



Edited by **Verya Nasri** AECOM, New York, USA**, David Klug** David R. Klug and Associates, USA**, Brian Fulcher** McMillen Jacobs Associates, USA**, James A. Morrison** COWI North America, USA

This definitive international technical and practical manual from world-leading practitioners covers new and current design methods and quantitative analyses for precast linings. It details proper and reliable design, manufacturing and construction in line with ACI and ASTM codes and the main global standards; and incorporates new science and technology, such as new admixtures and manufacturing processes and precisions, such as tight dimensional controls and high repeatability cycles. With detailed guidance, it is the one-stop reference for tunnel engineers and an invaluable resource for advanced students in civil, mechanical and mining engineering.

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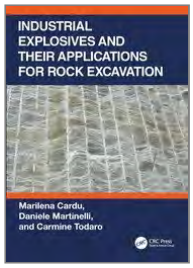
Industrial Explosives and their Applications for Rock Excavation



Marilena Cardu Politecnico di Torino, Italy**, Daniele Martinelli** Politecnico di Torino, Italy**, Carmine Todaro** Politecnico di Torino, Italy

Industrial Explosives and their Applications for Rock Excavation focuses on applications of industrial explosives in civil and mining engineering works. Explosives and their actions are explained in terms of basics, principles, and related chemistry. Explosives and initiation devices are described, including their characteristics, geometry, and timing aspects of the blast design.

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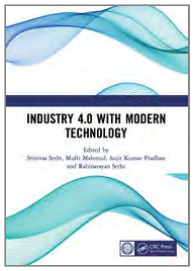
Industry 4.0 with Modern Technology

Proceedings of the International Conference on Emerging trends in Engineering and Technology, Industry 4.0 (ETETI-2023)



Edited by **Srinivas Sethi , Mufti Mahmud , Sujit Kumar Pradhan , Rabinarayan Sethi**

This volume contains the papers presented at International Conference on Emerging Trends in Engineering and Technology-Industry 4.0 (ETETI-2023) being organized by the prestigious Indira Gandhi Institute of Technology, Sarang (An Autonomous institute of Govt of Odisha), India, during 6th and 7th May 2023.

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Latest Trends in Engineering and Technology

Proceedings of the 2nd International Conference on Latest Trends in Engineering and Technology (ICLTET 2023), July 13-14, 2023, Mohali, India

Edited by **Sajjan Singh , Sarabpreet Kaur**

We are very pleased to introduce the proceedings of the International Conference on Latest Trends in Engineering and Technology [ICLTET 2023]. Papers were well presented in the conference in the fields of Artificial Intelligence, Machine learning, IOT, Communication Networks, Mechanical Engineering, Civil Engineering, Nano Material Research, Business Management and many more to arouse a high level of interest.

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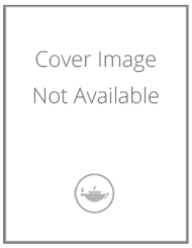

Shefiu Zakariyah University of Derby, UK

This provides a comprehensive, step-by-step presentation of mathematical concepts for engineers, scientists, and general readers. It moves from simple to challenging areas, with tailored worked examples. Mathematical concepts are linked with appropriate engineering applications and are aligned with topics taught in major UK and overseas curriculums. It is written primarily for students at levels 3 and 4 (typically in the early stages of a degree in engineering or a related discipline) or for those undertaking foundation, access, Higher National Certificate (HND), International Foundation Year (IFY), and International Year One (IYO) courses with math modules.

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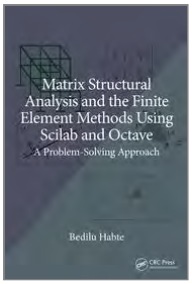
Matrix Structural Analysis and the Finite Element Methods Using Scilab and Octave

A Problem-Solving Approach



Bedilu Habte Addis Ababa Institute of Technology, Ethiopia

This book covers code development for structural analysis throughout all the chapters and includes topics from Finite Element Methods such as modeling and analysis of continuum structures. It explains the concepts and showing derivation of necessary equations, relationships, and steps in solving structural analysis problems. It contains worked examples, problem sets and ample Scilab and Octave codes to teach structural analysis techniques using these softwares. Focused on problem solving through programming, the text guides senior undergraduate and graduate students in structural and civil engineering.

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Modeling and Simulation of Intelligent Transportation Systems

Wael A. Altabey Alexandria University, Egypt**, Mohammad Noori , Ahmed Silik , Marco Domaneschi , Weixing Hong**

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Advances in information technology are now such that intelligent transportation systems (ITS) offer real potential to meet this challenge: by monitoring current conditions, predicting what might happen in the future and providing the means to manage transport proactively and on an area-wide basis. Modeling and Simulation of Intelligent Transportation Systems provides engineers, professionals, and researchers an intuitive appreciation for ITS theory, related sensor technologies, and other practical applications, including traffic management, safety, design optimization, and sustainability.

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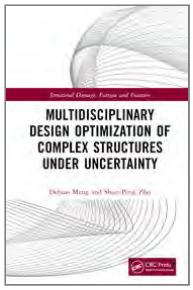
Multidisciplinary Design Optimization of Complex Structures Under Uncertainty



Debiao Meng , Shun-Peng Zhu University of Electronic Science and Technology of China, China

Series: Structural Damage, Fatigue and Fracture

From basic theory to advanced applications, this book helps readers achieve more efficient and reliable design optimization in complex systems through rich case studies and practical technical guidance. It presents the fundamental theories and methods of Uncertainty-Based Multidisciplinary Design and Optimization, including techniques such as uncertainty modeling, sensitivity analysis, approximate modeling, and uncertainty-based optimization. It also introduces various uncertainty analysis methods and explores future development trends and challenges. It caters to a diverse audience, including engineers, researchers, students, and decision makers and managers handling complex systems.

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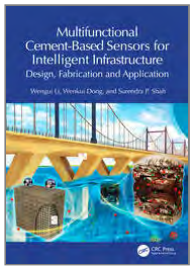
Multifunctional Cement-Based Sensors for Intelligent Infrastructure

Design, Fabrication and Application



Wengui Li , Wenkui Dong , Surendra P. Shah

This book covers the development and use of cement-based sensors for monitoring structural health, durability, and environmental conditions in concrete infrastructure. It sets out the principles of the sensing mechanisms, fabrication techniques, and performance evaluation along with several case studies. It also provides a glimpse into a future where concrete structures will not only stand as pillars of strength but also become an indispensable part of smart cities as the core of automation. The book suits researchers, engineers, and practitioners involved in design, construction, and maintenance of concrete buildings and infrastructure.

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Numerical Solutions for Nanocomposite Structures

Maryam Shokravi , Amin Shagholani Loor

Numerical Solutions for Nanocomposite Structures provides an in-depth exploration of structural analysis using numerical methods grounded in rigorous mathematical modeling. Theoretical foundations are established by comprehensively elucidating theories governing beams, plates, and shells, leading to the derivation of governing equations based on the stress-strain relationship. The process of obtaining governing equations through the energy method, application of boundary conditions, and the utilization of numerical methods to calculate deflection, frequency, and buckling loads is meticulously explained, providing readers with valuable insights into structural analysis methodologies.

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Pacific Northwest Coastal Environments

Earthquakes and Sea Level Rise

Ronald C. Chaney Cal Poly Humboldt, USA

Pacific Northwest Coastal Environments: Earthquakes and Sea Level Rise investigates the potential impacts of changes in global sea level by examining historical sea and land levels, projected future levels, and by determining how those changes may affect future tides and storm surges to inform their potential to cause harmful impacts. This region has a unique interaction of land, sea, and tectonics, and climate change can initiate issues ranging from an inundation of coastal areas due to both sea level rise and potential tsunami, to the retreat of coastal shorelines due to erosion caused by both tidal action and wave runup.

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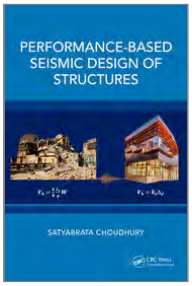
Performance-Based Seismic Design of Structures



Satyabrata Choudhury

Seismic design of structures is fast turning to Performance-Based design (PBD) from old codal force-based design (FBD) method. The aim of the book is to expose readers to the evolution of PBD to date, its various forms, and applications. Various design philosophies and procedures have been described including modelling aspects and hazard considerations backed by examples. Direct displacement-based design (DDBD) and Unified PBD (UPBD) of RC frame buildings, RC dual systems, steel frame buildings, bridge piers have also been explained. This book is aimed at graduate students and professionals in civil and earthquake engineering, and structural design.

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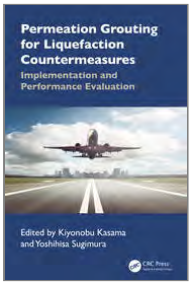
Permeation Grouting for Liquefaction Countermeasures

Implementation and Performance Evaluation



Edited by **Kiyonobu Kasama** Ito Campus, Kyushu University, Fukuoka**., Yoshihisa Sugimura** Kobe University, Japan.

Through contributions from experts in academia and industry, this book describes the discovery of construction defects at three airports in Japan and the subsequent project to repair and strengthen the ground using chemical grouting using environmentally friendly colloidal silica, the first time this technique was used in Japan. This book is a useful resource for geotechnical and other infrastructure engineers who must strengthen the ground without disrupting normal operations.

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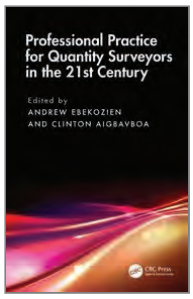
Professional Practice for Quantity Surveyors in the 21st Century



Andrew Ebekozien University of Johannesburg, South Africa**, Clinton Aigbavboa**

This book covers developing trends and changes occurring in the Quantity Surveying profession. It begins by explaining the construction industry structure followed by the quantity surveying practice modalities, professional ethics, roles of regulatory bodies, continuous professional development, and code of professional conduct of quantity surveying practice. Further topics covered include international construction, contract administration, and financial management, liquidated, and ascertained damages as applicable to the construction industry. This book is aimed at professionals and students in construction, quantity surveying/value management and civil engineering.

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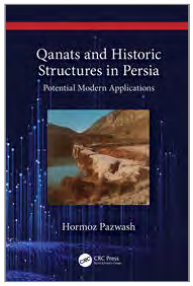
Qanats and Historic Structures in Persia

Potential Modern Applications



Hormoz Pazwash

Qanats and Historic Structures in Persia presents the early history of water science and includes the advanced knowledge held by Persians regarding the hydrologic cycle in general and groundwater flow in particular. It explains how the Persians understood the sources of rivers, streams, springs and groundwater, at least seven centuries before it was known to western scholars, and how their use underground water tunnels allowed them to transform deserts into centers of civilization and food production for thousands of years.

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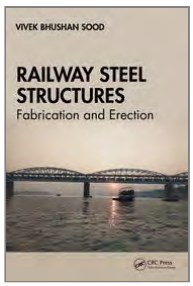
Railway Steel Structures

Fabrication and Erection



Vivek Bhushan Sood

This book covers the basics of fabrication of railways steel structures, types of structures involved, and design. The launching/erection methods and processes are covered including case studies covering the consequences of errors or shortcuts adopted during fabrication. The latest trends in steel construction, adoption of steel for fast-paced construction, pre-engineered structures and use of steel for station redevelopment projects are also covered. It aims to help reader deliver the economical and good quality structures speedily without time and cost over-runs. This book is aimed at professionals in railway, civil, and mechanical engineering, connected with steel structures.

CRC Press
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Reinforced Concrete Design

Limit State Method and Beyond

Santanu Bhanja NITTTR, Kolkata, India

Reinforced Concrete Design (RC) is performed mostly by Limit State method throughout the globe. This book covers fundamental concepts and principles of RC design developing the topics from the basic theories and assumptions. Building upon the possible revisions to the mother concrete code IS 456 2000, it explains the RC design provisions of IRC 112 2020 in line with international standards. Apart from strength design, serviceability design is also covered.

CRC Press
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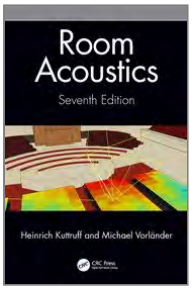
7TH EDITION

Room Acoustics



Heinrich Kuttruff Institute of Technical Acoustics, Aachen University, Germany**, Michael Vorländer** RWTH Aachen University, Germany

This classic reference and specialised textbook presents in detail the theory and practice of sound behaviour in enclosed spaces. This seventh edition is developed to cover new measurement and simulation techniques, including sections on spatial and directional analysis and on recent psychophysical experimental approaches to determining auditory perception in concert halls. Special emphasis is placed on the properties and calculation of reverberation. The book suits graduate students, acoustical engineers, and architects.

CRC Press
July 2024:344
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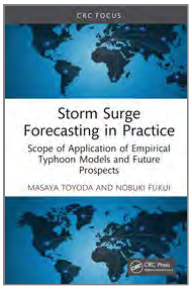
Storm Surge Forecasting and Future Projection in Practice

Scope of Application of Empirical Typhoon Models



Masaya Toyoda , Nobuki Fukui

This accessible shortform book describes storm surge forecasting to enable port managers and practitioners to forecast these and mitigate their effects. This is particularly useful as global warming increases the severity of typhoons, particularly windstorms and storm surge disasters, globally. This book is a vital resource that enables port managers to make effective and informed decisions when conducting storm surge forecasting in practice. It also contains useful insights for civil engineering students, especially those studying coastal engineering.

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Structural Dynamics in Uncertain Environments

Micro, Nano, and Functionally Graded Beam Analysis

Subrat Kumar Jena National Institute of Technology Rourkela, India**, S. Chakraverty**

In this book, uncertainty modeling of nanobeams, microbeam, and FG beams is presented using non-probabilistic approaches which include interval and fuzzy concepts. Vibration and stability analysis of the beams are conducted using different analytical, semi-analytical, and numerical methods for finding exact and/or approximate solutions of governing equations arising in uncertain environments. In this context, this book addresses structural uncertainties and investigates the dynamic behavior of micro, nano, and FG beams.

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Structural Health Monitoring Using Emerging Signal Processing Approaches with Artificial Intelligence Algorithms

Chunwei Zhang Shenyang University of Technology, China**, Asma A. Mousavi**

This book presents a comprehensive review of the applications in time, frequency, and time-frequency domains of signal processing techniques for damage perception, localization, and quantification in various structural systems. Experimental investigations are illustrated. Performance and sensitivity of different approaches are assessed, including multiple signal classification and empirical wavelet transform techniques in damage detection and quantification. Artificial Neural Networks for automated damage identification are introduced. It suits students, engineers, and researchers investigating structural health monitoring, signal processing, and damage identification of structures.

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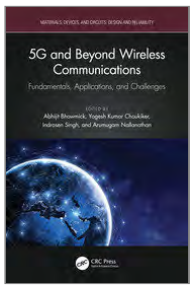
5G and Beyond Wireless Communications

Fundamentals, Applications, and Challenges



Edited by **Abhijit Bhowmick , Yogesh Kumar Choukiker , Indrasen Singh** Vellore Institute of Technology, India**, Arumugam Nallanathan**

Series: Materials, Devices, and Circuits

This book provides a thorough introduction of 5G and B5G wireless networks, as well as cutting-edge technologies that aid in network design and development. This book also covers machine learning techniques for advanced communications. This book will be helpful for researchers and master students who want to focus their research work in the area of next generation advanced wireless communications

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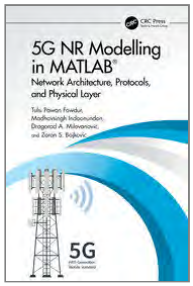
5G NR Modelling in MATLAB

Network Architecture, Protocols, and Physical Layer



Tulsi Pawan Fowdur University of Mauritius, Mauritius**., Madhavsingh Indoonundon , Dragorad A. Milovanovic , Zoran S. Bojkovic** University of Belgrade, Serbia.

5G is the fifth generation of wireless technology and NR stands for a new radio interface and radio access technology for cellular networks i.e. a physical connection method for radio-based communication. It is a powerful platform that supports a wide range of services that includes enhanced mobile broadband, massive machine-type communication and ultra-reliability, and low latency covering several vertical industries such as e-health, transportation, energy, media and factories automation.

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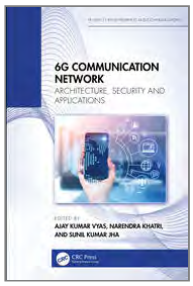
6G Communication Network

Architecture, Security and Applications



Edited by **Ajay Kumar Vyas** Adani University, India**, Narendra Khatri , Sunil Kumar Jha**

Series: Prospects in Networking and Communications

The book focuses on 6G technology beyond 5G. The objectives of next generation 6G wireless communications is to improve the benchmarks while simultaneously delivering additional services. Many widely expected future services, such as life-critical services and wireless brain-computer interactions, will be important to their success. This book presents the evolution of 6G technology, architecture, and implementation. This book provides a comprehensive overview of theoretical and experimental modelling of 6G communication, providing detailed implementation issues and performance evaluation of emerging technologies along with research results, and networking methods.

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Adaptive Detection for Multichannel Signals in Non-Ideal Environments

Zeyu Wang , Weijian Liu , Hongmeng Chen

This book systematically presents adaptive multichannel signal detection in three types of non-ideal environments, including sample-starved scenario, signal mismatch scenario, and noise plus subspace interference environment. The authors provide definitions of key concepts, detailed derivations of adaptive multichannel signal detectors, and specific examples of every non-ideal environment. The book will be of interest to researchers, advanced undergraduate, and graduate students in sonar, radar signal processing, and communications engineering.

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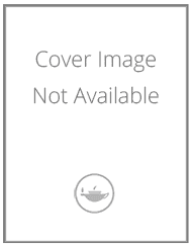

Takayoshi Kobayashi

This book covers the principle, structure, enhancement of sensitivity and resolution power of photothermal and Raman microscopies. It includes real-world applications to biological and medical targets. The book will be useful to researchers and non-specialists in biomedical fields using optics and electronics relevant to (optical) microscopes. It will also be helpful resource to graduate students in the fields of biology and medical research who are using photothermal microscopes in their own research.

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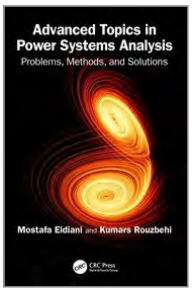
Problems, Methods, and Solutions



Mostafa Eidiani , Kumars Rouzbehi

Electric Power Systems Analysis" is one of the most challenging courses of the Electric Power Engineering major which is taught for junior students. Its complexity arises from numerous prerequisites, a wide array of topics, and a crucial dependence on computational tools, presenting students with significant challenges."

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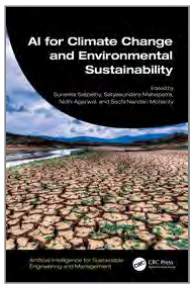
AI for Climate Change and Environmental Sustainability



Edited by **Suneeta Satpathy** CE Bhubaneswar**, Satyasundara Mahapatra , Nidhi Agarwal , Sachi Nandan Mohanty** College of Engg., Pune

Series: Artificial Intelligence for Sustainable Engineering and Management

This book discusses the adverse effects of climatic changes on our planet. It examines AI-based tools and technologies and how they can assist in identifying energy emission reductions, CO2 removal, and support the development of greener transportation networks, monitoring deforestation, and forecast extreme weather events. The book can be used as a primary text book for graduate and postgraduate students in technology and science, as well as a reference for researchers, academics, and IT professionals working on climate change and sustainability initiatives.

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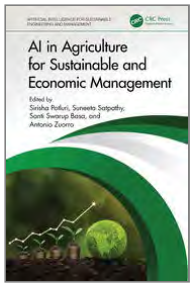
AI in Agriculture for Sustainable and Economic Management



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AI in Material Science

Revolutionizing Construction in the Age of Industry 4.0

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The book explores the transformative impact of AI on material science and construction practices in the Industry 4.0 landscape. It enquires into AI history and applications, examining material optimization, smart materials, and AI in construction. Covering automation, robotics, and AI-assisted design, the book also provides insights into ethical considerations and future trends. A reference for scholars and professionals, it bridges academic and practical applications in the dynamic intersection of AI and materials science.

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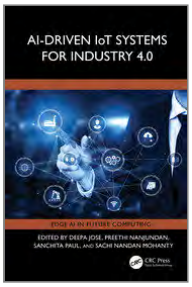
AI-Driven IoT Systems for Industry 4.0



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The purpose of this book is to discuss the trends and key drivers of Internet of Things and AI for automation in Industry 4.0. IoT and AI are transforming the industry thus accelerating efficiency and forging a more reliable automated enterprise. This book is intended for undergraduates, postgraduates, academicians, researchers, and industry professionals in industrial and computer engineering.

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Revolutionizing the Healthcare Industry

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The book presents a comprehensive overview of biosensors, AI-integrated biosensor technologies and their potential to enhance healthcare outcomes. The book covers a wide range of biosensor-related subjects, such as their principles, several types of biosensors, and applications in disease diagnosis and drug delivery. This book is intended for specialists, analysts, engineers, scholars, researchers, academics, professionals, and students working in biosensors and AI-integrated biosensor technologies to resolve the challenging issues associated with the leveraging of combating the fields of healthcare and medicine.

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Series: Advances in Manufacturing, Design and Computational Intelligence Techniques

The text highlights the role of artificial intelligence in driving innovation, productivity, and efficiency. It further covers applications of artificial intelligence for digital marketing in Industry 5.0 and discusses data security and privacy issues in artificial intelligence, risk assessments, and identification strategies. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer engineering, industrial engineering, manufacturing engineering, and production engineering.

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Series: Intelligent Data-Driven Systems and Artificial Intelligence

This book comprehensively discusses the role of cloud computing in artificial intelligence-based data-driven systems, and hybrid cloud computing for large data-driven applications. It further explores new approaches, paradigms, and frameworks to meet societal challenges by providing solutions for critical insights into data. The text provides internet of things-based frameworks and advanced computing techniques to deal with online/virtual systems. This book is primarily written for senior undergraduate, graduate students, and academic researchers in diverse fields including electrical engineering, electronics and communications engineering, computer science, and engineering.

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This book aims to examine the utilization of AI technologies in tackling difficult industrial issues and offer readers a thorough comprehension of how these technologies are being employed to address intricate industrial challenges and stimulate innovation. The book explores the fundamental principles of artificial intelligence (AI) and its practical use in industrial environments. The book would help in better understanding of core concepts, present state of art and real time implementation of AI in numerous Industrial Applications. It is planned to provide the detailed implementation of AI in the industrial sector as well as related case study for in depth understanding.

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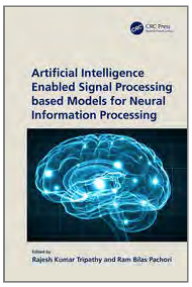
Artificial Intelligence Enabled Signal Processing based Models for Neural Information Processing



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The book provides details regarding the application of various signal processing and artificial intelligence-based methods for electroencephalography data analysis. It will help readers in understanding the use of electroencephalography signals for different neural information processing and cognitive neuroscience applications.

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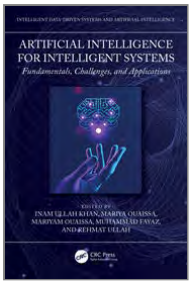
Artificial Intelligence for Intelligent Systems

Fundamentals, Challenges, and Applications



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The aim of this book is to highlight the most promising lines of research, using new enabling technologies and methods based on AI/ML techniques to solve issues and challenges related to intelligent and computing systems. It is primarily written for Senior undergraduate, graduate students, and academic researchers in the fields of electrical engineering, electronics and communication engineering, and computer engineering.

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The text provides a comprehensive study of the application of advanced artificial intelligence in next-generation wireless communications with a focus on theory, standardization, and core development. It further highlights artificial intelligence-enabled intelligent architecture for 6G networks to realize smart resource management, automatic network adjustment, and intelligent service layers. The book covers artificial-assisted non-orthogonal multiple access schemes for 6G communication.

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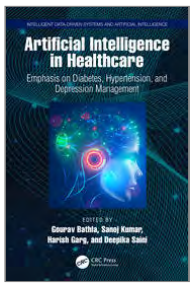
Emphasis on Diabetes, Hypertension, and Depression Management



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This book presents state-of-the-art research works for a better understanding of the advantages and limitations of AI techniques in the field of healthcare. It will further discuss artificial intelligence applications in depression, hypertension and diabetes management. The text also presents an artificial intelligence chatbot for depression, diabetes, and hypertension self-help. The text is primarily written for senior undergraduate, graduate students, and academic researchers in diverse fields including electrical engineering, electronics and communications engineering, computer science and engineering, and biomedical engineering.

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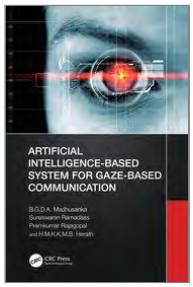
Artificial Intelligence-Based System for Gaze-Based Communication



B.G.D.A. Madhusanka , Sureswaran Ramadass Malaysia University of Science and Technology**, Premkumar Rajagopal** Malaysia University of Science and Technology**, H.M.K.K.M.B. Herath** Sri Lanka Technological Campus

This book focuses on the artificial neural network-based system for gaze-based communication. It covers the feasible and practical collaboration of HCI in which a user can intuitively express tasks using gaze-based communication. It will target the vast applications of gaze-based communication using computer vision, image processing, and artificial intelligence. This book is ideally designed for students, researchers, academicians and professionals interested in exploring and implementing gaze-based communication strategies and those working in the field of Computer Vision and Image Processing.

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Audio and Video Systems

M. L. Anand

This book details the important concepts in the study of audio and video systems. It covers the basics of audio and video engineering, communication and radar systems, optical fibers, and consumer electronics. It also includes assessment questions for better understanding and practice. The subject matter of this book also discusses: Sound Synthesis Need of F.M. (Frequency Modulation) for Video Recording Turnstile Array Delta Gun Colour Picture Tube Snell's Law Print edition not for sale in South Asia (India, Sri Lanka, Nepal, Bangladesh, Pakistan or Bhutan)

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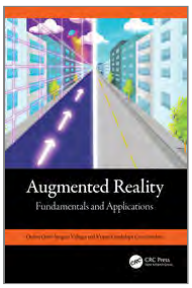
Fundamentals and Applications



Osslan Osiris Vergara Villegas , Vianey Guadalupe Cruz Sánchez

This book focuses on augmented reality technology, which uses the real environment to superimpose virtual elements. The authors explore step-by-step development of an application that could be replicated for personal, institutional, or industrial benefit. This book is intended for students, researchers, and developers looking to develop a foundation in AR technologies.

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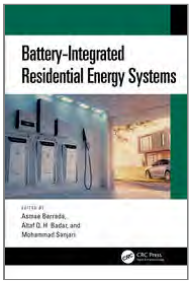
Battery-Integrated Residential Energy Systems



Edited by **Asmae Berrada , Altaf Q. H. Badar** NIT Warangal, India**, Mohammad Sanjari** Griffith University, School of Engineering and Built Environment

This book introduces Battery Energy Storage Systems (BESS) of residential systems and offers insight into modelling, managing, and controlling. Apart from survey of different BESS applications, it explains electrochemical simulation models of BESS. It includes performance parameters, economic analysis, sizing, energy management, control, charging, discharging patterns, coordination of the storage system with other devices in the home including policy-related matters. This book is aimed at senior undergraduate, graduate students and researchers in Electrical Engineering, Battery systems, Energy engineering, and Sustainable and Renewable Technologies.

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Big Data and Edge Intelligence for Enhanced Cyber Defense

Principles and Research

Edited by **Chhabi Rani Panigrahi , Victor Hugo C. de Albuquerque , Akash Kumar Bhoi , Hareesha K.S.**

Series: Edge AI in Future Computing

An unfortunate outcome of the growth of the internet and mobile technologies has been the challenge of countering cybercrime. This book introduces and explains the latest trends and techniques of Edge Artificial Intelligence (EdgeAI) intended to help cyber security experts design robust Cyber Defense Systems (CDS), including host based and network based intrusion detection system and digital forensic intelligence. This book discusses the direct confluence of EdgeAI with big data, as well as demonstrating detailed reviews of recent cyber threats and their countermeasure.

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Bio-Inspired Data-driven Distributed Energy in Robotics and Enabling Technologies

Edited by **Abhishek Kumar , Hemant Kumar Saini , Ashutosh Kumar Dubey , Vicente García Díaz** University of Oviedo, Spain

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This book begins by introducing bio-inspired data-driven computation techniques, discussing bio-inspired swarm models, and highlighting the development of interactive bio-inspired energy harvesting systems to drive transportation infrastructure. It further covers important topics such as efficient control systems for distributed and hybrid renewable energy sources, and smart energy management systems for developing intelligent systems. The text is primarily written for graduate students, and academic researchers in diverse fields including electrical engineering, electronics and communications engineering, computer science and engineering, and environmental engineering.

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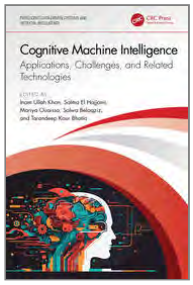
Cognitive Machine Intelligence

Applications, Challenges, and Related Technologies



Edited by **Inam Ullah Khan** Department of Electronic Engineering, SEAS, Isra University, Islamabad Campus**, Salma El Hajjami** Computer science department, Faculty of science, Ibn Zohr University**, Mariya Ouaissa , Salwa Belaqziz** Ibn Zohr University, Morocco**, Tarandeep Kaur Bhatia** University of Petroleum and Energy Studies, India

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"Cognitive Machine Intelligence: Applications, Challenges, and Related Technologies" offers a compelling exploration of the transformative landscape shaped by the convergence of machine intelligence, artificial intelligence, and cognitive computing. In this book, the authors navigate through the intricate realms of technology, unveiling the profound impact of cognitive machine intelligence on diverse fields such as communication, healthcare, cybersecurity, and smart city development. The chapters present study on robots and drones to the integration of machine learning with wireless communication networks, IoT, quantum computing, and beyond.

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Collaborative Filtering

Recommender Systems

Angshul Majumdar Indraprastha Institute of Information Technology, Delhi, India

This book dives into the inner workings of recommender systems, those ubiquitous technologies that shape our online experiences. From Netflix show suggestions to personalized product recommendations on Amazon or the endless stream of curated YouTube videos, these systems power the choices we see every day.

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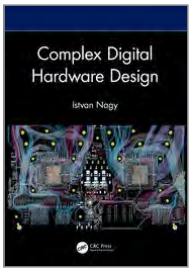
Complex Digital Hardware Design



Istvan Nagy L3Harris

This book is about how to design the most complex types of digital circuit boards used inside servers, routers and other equipment. It explains common structures and subsystems that can be expanded into new designs in different markets. Targeted at all levels of hardware engineers, it includes shorter, lower-level introductions to every topic, as well as advanced topics of digital circuit design, layout design, analysis and hardware architecture.

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Computational Intelligence Applications in Cyber Security

Edited by **Suhel Ahmad Khan** IGNTU, India**, Mohammad Faisal** Integral University, Lucknow, India**., Nawaf Alharbe , Rajeev Kumar** Babu Banarasi Das Uni, India**, Raees Ahmad Khan** BBA Uni., Lucknow

The text comprehensively discusses soft computing and decision-making techniques like the fuzzy analytic hierarchy process, fuzzy analytic network process, and fuzzy TOPSIS. It further covers a wide range of wireless communication with emerging computational intelligent trends. The text explores the role of wireless technologies in applications touching on various spheres of human life with the help of hesitant fuzzy sets-based computational modeling. The text is primarily written for senior undergraduate, graduate students, and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer engineering, and information technology.

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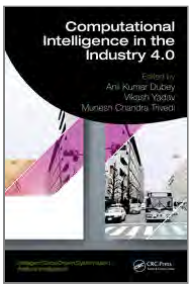

Edited by **Anil Kumar Dubey** ABES Engineering College, Ghaziabad**, Vikash Yadav** ABES Engineering College, Ghaziabad**, Munesh Chandra Trivedi** NIT Agartala

Series: Intelligent Data-Driven Systems and Artificial Intelligence

This book discusses the importance of using industrial intelligence in collaboration with computational intelligence in forming a smart system for diverse applications. It further illustrates the challenges and deployment issues in industrial resolution. The text highlights innovation and applications of computational agents and the industrial intelligence era to automate the requirements as per industry 4.0.

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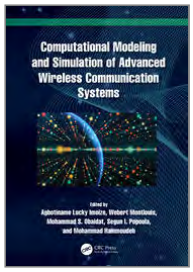
Computational Modeling and Simulation of Advanced Wireless Communication Systems



Edited by **Agbotiname Lucky Imoize** Department of Electrical and Electronics Engineering, Faculty of Engineering, University of Lagos**, Webert Montlouis , Mohammad S. Obaidat , Segun Popoola , Mohammad Hammoudeh** Manchester Metropolitan University

The book covers the exploitation of computational models for effectively developing and managing large-scale wireless communication systems. The book examines methods of system information modeling for wireless networks. The goal is to create and establish computational models for seamless human interaction and efficient decision-making in beyond 5G wireless systems. The book is intended for industry and academic researchers, scientists, and engineers in the fields of ICTs it is structured to present a practical guide to wireless communication engineers, IT practitioners, and students.

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Control of Nonlinear Systems

Stability and Performance

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The theory of nonlinear control systems has grown and flourished since the 1980s. Numerous texts of varying degrees of difficulty have been published on this topic. However, even the texts ostensibly aimed at beginners in the field are often riddled with complex theorems, and many treatises omit topics that are essential for a thorough familiarization with the various aspects and approaches of nonlinear control.

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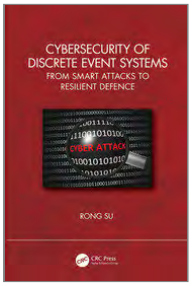
Cybersecurity of Discrete Event Systems

From Smart Attacks to Resilient Defence



Rong Su Nanyang Technological University

Su's book describes analysis and control against smart cyberattacks in discrete event systems (DES). This book is the first in the DES community to provide a thorough introduction of smart cyberattacks on supervisory control systems modelled by regular languages or finite-state automata. This book provides a solid theoretical foundation for future exploration by researchers and graduate students who are interested in cybersecurity research, not necessarily limited to those in the DES community. To illustrate the practical relevance of this research, realistic examples are used throughout the book. Readers are recommended to have a background in formal language theory

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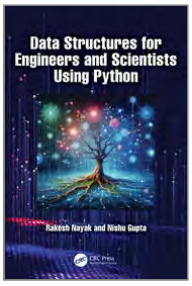
Data Structures for Engineers and Scientists Using Python



Rakesh Nayak Department of CSE, Vaagdevi Engineering College, India**, Nishu Gupta** Chandigarh University, India

The text covers the fundamentals of Python programming and the implementation of data structures using Python programming with the help of worked-out examples. It provides a learning tool for engineers as well as for researchers and scientists of advanced level. The text further discusses important concepts such as polynomial manipulation, sparse matrices, implementation of stack using queue model, and topological sorting. It is primarily written for senior undergraduate, graduate students, and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer engineering, and information technology.

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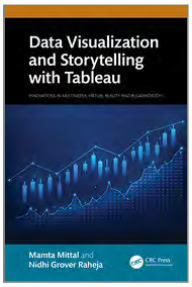

Mamta Mittal G. B. Pant Engineering College, New Delhi, India**, Nidhi Grover Raheja**

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This book gives a holistic overview of creating appropriate charts by describing a sequence of visualizations. The book presents step by step implementation in Tableau to convey information through innovative stories with interactive dashboards for visual data analysis of a dataset. This book is meant for data analysts, computer scientists/ engineers and industry professionals who are interested in creating different types of visualization graphs for given data problem and drawing interesting insights from the plotted trends in order to make better business decisions in future.

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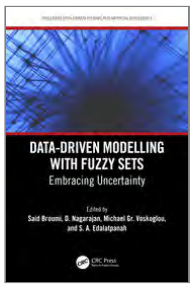
Data-Driven Modelling with Fuzzy Sets

Embracing Uncertainty



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This book presents recent theoretical advances and applications of fuzzy sets and their extensions to Science, Humanities and Education. It is primarily written for Senior undergraduate and graduate students and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer science and engineering.

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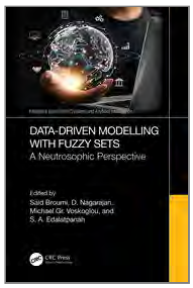
Data-Driven Modelling with Fuzzy Sets

A Neutrosophic Perspective



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Fuzzy sets have long been employed to handle imprecise and uncertain information in the real world, but their limitations in dealing with incomplete and inconsistent data led to the emergence of neutrosophic sets. In this thought-provoking book, titled ' Data-Driven Modelling with Fuzzy Sets: A Neutrosophic Perspective' the authors delve into the theories and advancements in the field of neutrosophic sets. The book explores the extensive applications of neutrosophic sets, ranging from neutrosophic graphs to single-valued trapezoidal neutrosophic sets, and their practical implications in knowledge management.

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Series: Intelligent Data-Driven Systems and Artificial Intelligence

This book comprehensively discusses basic data-driven intelligent systems, the methods for processing the data, and cloud computing with artificial intelligence. It presents fundamental and advanced techniques used for handling large user data and for the data stored in the cloud. It further covers data-driven decision-making for smart logistics and manufacturing systems, network security, and privacy issues in cloud computing. It will be useful for senior undergraduate, graduate students, and academic researchers in diverse fields including electrical engineering, electronics and communications engineering, computer engineering, manufacturing engineering, and production engineering.

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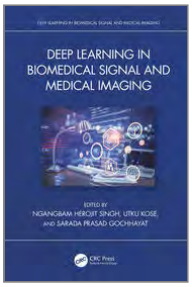

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This book offers detailed information on biomedical imaging using Deep Convolutional Neural Networks (Deep CNN). It focuses on different types of biomedical images to enable readers to understand the effectiveness and the potential. It includes topics such as disease diagnosis, and image processing perspectives. The book is written for graduate students, researchers, and professionals in biomedical engineering, electrical engineering, signal process engineering, biomedical imaging, and computer science.

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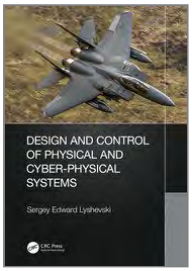
Design and Control of Physical and Cyber-Physical Systems



Sergey Lyshevski Rochester Institute of Technology, New York, USA

Focusing on basic theory, emerged technologies and underlying engineering solutions, we investigate frontiers of engineering and science in design and control of physical and cyber-physical systems (CPS). Advanced-technology multi-physics systems are designed by seamlessly integrating components and modules, guaranteeing overall specifications and functionality by means of data processing, management and control. Analog and digital controllers and data management are implemented by analog and mixed-signal ASICs, as well as by microcontrollers and field-programmable gate arrays. Cybersecurity and information security have become critical.

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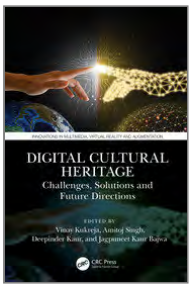
Digital Cultural Heritage

Challenges, Solutions and Future Directions



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This book explores how digital technologies are transforming cultural heritage preservation, documentation, and archiving. It delves into the technical aspects of digitalization techniques, digital preservation strategies, and the use of advanced technologies like virtual reality and augmented reality in the context of cultural heritage. The book will resonate with engineers specializing in imaging technology, data management, and information systems and those exploring the intersection of digital technology and museums, such as interactive exhibits, digital displays, and virtual museum experiences.

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Digital Image Security

Techniques and Applications

Edited by **Amit Kumar Singh** National Institute of Technology Patna, India**, Stefano Berretti** University of Florence, Italy**, Ashima Anand** Thapar Institute of Engineering and Technology, India**, Amrit Kumar Agrawal** Galgotias College of Engineering & Technology, India

This book will highlight cutting-edge research with a particular emphasis on interdisciplinary approaches, novel techniques, and solutions to provide digital image security for applications in diverse areas. It further discusses important topics such as biometric imaging, big data security and privacy in healthcare, security and privacy in the internet of things, and security in cloud-based image processing.

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Digital Transformation with AI and Smart Servicing Technologies for Sustainable Rural Development

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This book introduces and demonstrates the state-of-the art research and development in tackling sustainable urban and rural integration, supported by digitalization and digital transformation in rural areas with Industry 4.0/5.0 technologies. This book will be a valuable reference for multidisciplinary researchers, policy makers, urban and rural development engineers, and university students to support their research and work in AI and smart technology applications

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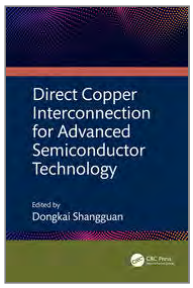
Direct Copper Interconnection for Advanced Semiconductor Technology



Edited by **Dongkai Shangguan**

In the "More than Moore" era, performance requirements for leading edge semiconductor devices are demanding extremely fine pitch interconnection in semiconductor packaging. Direct copper interconnection has emerged as the technology of choice in the semiconductor industry for fine pitch interconnection, with significant benefits for interconnect density and device performance. Low temperature direct copper bonding, in particular, will become widely adopted for a broad range of high performance semiconductor devices in the years to come.

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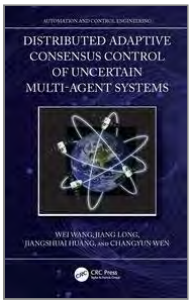
Distributed Adaptive Consensus Control of Uncertain Multi-Agent Systems



Wei Wang , Jiang Long , Jiangshuai Huang , Changyun Wen

Series: Automation and Control Engineering

Multi-agent systems are special networked systems full of research interest and practical sense, which are abundant in real life, ranging from mobile robot networks, intelligent transportation management, to multiple spacecraft, surveillance and monitoring. Consensus control is one of the most typical and hot research issues for multi-agent systems. Distributed Adaptive Consensus Control of Uncertain Multi-agent Systems provides innovative technologies to design and analyze distributed adaptive consensus for multi-agent systems with model uncertainties.

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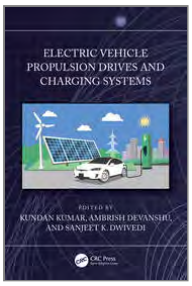
Electric Vehicle Propulsion Drives and Charging Systems



Edited by **Kundan Kumar** NIT Manipur, India**, Ambrish Devanshu** NIT Silchar, India**, Sanjeet K. Dwivedi**

This book covers the introduction, theory, development, and applications of hybrid and electric vehicles and their charging infrastructures. It also discusses the real applications of power converters and electric drives to give the readers a flavour of how to design propulsion drives and fast charging systems for electric vehicles. It further covers important topics such as static and dynamic wireless charging systems, battery management, and battery swapping system for electric vehicles.

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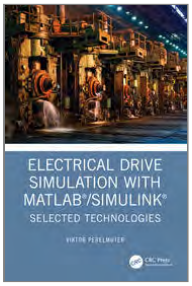
Electrical Drive Simulation with MATLAB/Simulink

Selected Technologies



Viktor Perelmuter National Technical University, Kharkov, Germany

The book discusses the modeling of electric drives, taking into account their relationship with the technological process they serve, which significantly affects the composition, layout and characteristics of the electric drive. There are no published books of this kind, and this book fills a gap in the literature. The book deals with electric drives of rolling mills, paper machines, a number of hoisting and transport devices; these installations are very common and very complex, so that modeling methods in their development and study are mandatory.

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Elementary Semiconductor Device Physics

Understanding Energy Band Formation Using Circuit Theory

Kazuya Masu Tokyo Institute of Technology, Japan.**, Shuhei Amakawa** Hiroshima University, Japan.

This book by two leading experts on semiconductor fabrication processes adopts an untraditional approach to introducing semiconductor devices to beginners. The authors use circuit theory to provide a digestible explanation of energy band theory and understanding of energy band diagrams. Because no prior exposure to quantum mechanics is required and the book does not attempt to teach it, this book is ideal for students in various disciplines who may or may not be specializing in semiconductor devices. The numerous practical examples of reading TCAD-based energy-band diagrams are also invaluable to practicing semiconductor device engineers.

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Embedded Devices and Internet of Things

Technologies, and Applications

Edited by **Adesh Kumar** UPES, INDIA**, Surajit Mondal** University of Petroleum and Energy Studies, Dehradun, India**, Gaurav Verma** Jaypee Institute of Technology, India**, Prashant Mani** Government Engineering College, Bihar. India

The text discusses machine-to-machine communication in real-time, low-power system design and estimation using field programmable gate arrays, PID, hardware, accelerators, and software integration for service applications. It further covers the recent advances in embedded computing and IoT for healthcare systems. The text explains the use of low-power devices such as microcontrollers in executing deep neural networks, and other machine learning techniques. It is primarily written for senior undergraduate, graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, and computer engineering.

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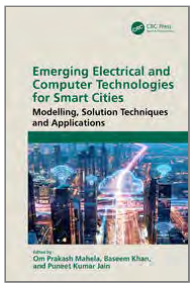
Emerging Electrical and Computer Technologies for Smart Cities

Modelling, Solution Techniques and Applications



Edited by **Om Prakash Mahela** Vidyut Prasaran Nigam, Rajasthan, India**, Baseem Khan** Hawassa University, Ethiopia**, Puneet Kumar Jain** NIT Rourkela, India

This text discusses smart grid technologies including home energy management systems, demand management systems, source-side management systems and communication technologies for power supply management, and supervisory control and data acquisition. It further covers applications of rooftop solar PV panels, rooftop solar heating systems, solar streetlights, solar traffic signal systems, and electrical demand management for smart cities. It will serve as an ideal reference text for graduate students and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer engineering, civil engineering, and environmental engineering.

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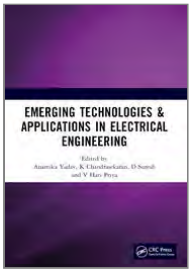
Emerging Technologies & Applications in Electrical Engineering

Proceedings of the International Conference on Emerging Technologies & Applications in Electrical Engineering (ETAEE-2023), December 21-22, 2023, Raipur, India



Edited by **Anamika Yadav , K Chandrasekaran , V Hari Priya , D Suresh**

The First International Conference on Emerging Technologies and Applications in Electrical Engineering (ETAEE 2023) was hosted and organized by the Department of Electrical Engineering, National Institute of Technology, Raipur, held on 21st to 22nd December 2023, with CRC Press, Taylor and Francis as publication partner.

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Emerging Trends for Securing Cyber Physical Systems and the Internet of Things

Edited by **Bharat Bhushan** Sharda University, India**, Sudhir Kumar Sharma** Institute of Information Technology and Management, India**, Parma Nand** Sharda University, India**, Achyut Shankar** Amity University, India**, Ahmed J. Obaid** University of Kufa, Iraq

Series: Future Generation Information Systems

This book discusses concepts including wireless sensor networks (WSNs), cyber-physical systems (CPS), and the internet of things (IoT) in a comprehensive manner and presents a pathway and architecture for proactive security schemes in cyber-physical systems to counter vulnerabilities including phishing attacks, malware injection, internal stealing of data, and hacking.

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Explainable Artificial Intelligence (XAI) in Healthcare

Edited by **Utku Kose , Nilgun Sengoz** Burdur Mehmet Akif Ersoy University, MAKU-BAKA Technopark, Burdur, Turkey**, Xi Chen , Jose Antonio Marmolejo Saucedo** Universidad Nacional Autonoma de Mexico, Mexico

Series: Biomedical and Robotics Healthcare

This book highlights the use of explainable artificial intelligence (XAI) for healthcare problems, in order to improve trustworthiness, performance and sustainability levels in the context of applications. This book will offer great benefits to students at the undergraduate and graduate levels and researchers. The book will also be useful for industry professionals and clinicians who perform critical decision making tasks.

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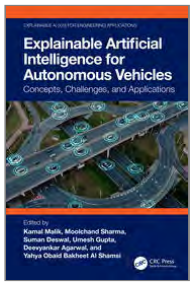
Explainable Artificial Intelligence for Autonomous Vehicles

Concepts, Challenges, and Applications



Edited by **Kamal Malik** CT University, India**, Moolchand Sharma** MAIT, India**, Suman Deswal , Umesh Gupta , Deevyankar Agarwal , Yahya Obaid Bakheet Al Shamsi**

Series: Explainable AI (XAI) for Engineering Applications

The book "Explainable AI for Autonomous Vehicles: Concepts, Challenges, and Applications" is a comprehensive guide to developing and applying explainable artificial intelligence (XAI) in the context of autonomous vehicles. It also provides an overview of the challenges and limitations of traditional black-box AI models and how XAI can help address these challenges by providing transparency and interpretability in the decision-making process of autonomous vehicles. The book then covers the state-of-the-art techniques and methods for XAI in autonomous vehicles, including model-agnostic approaches, post-hoc explanations, and local and global interpretability techniques.

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Explainable Artificial Intelligence for Biomedical and Healthcare Applications

Edited by **Aditya Khamparia** Lovely Professional University, India.**, Deepak Gupta**

Series: Explainable AI (XAI) for Engineering Applications

This reference text helps understand how the concepts of explainable artificial intelligence (XAI) are used in the medical and healthcare sectors. The text discusses medical robotic systems using XAI and physical devices having autonomous behaviours for medical operations. It explores the usage of XAI for analysing different types of unique data sets for medical image analysis, medical image registration, medical data synthesis, and information discovery. It covers important topics including XAI for biometric security, genomics, and medical disease diagnosis.

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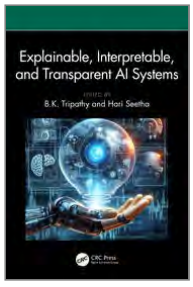
Explainable, Interpretable, and Transparent AI Systems



Edited by **B.K. Tripathy** Vellore Institute of Technology, Vellore, India.**, Hari Seetha** VIT, India

Transparent Artificial Intelligence Systems facilitate understanding the decision-making process and provide opportunities in various aspects of providing explainability of AI models. This book provides up-to-date information on latest advancements in the field of Explainable AI, which is the critical requirement of AI/ML/DL models. It provides examples, case studies, latest techniques, and applications from the domains of health care, finance, network security etc. It also covers open-source interpretable tool kits such that practioners can use them in their domains. This book is aimed at Graduate students and professionals in computer engineering and networking communications.

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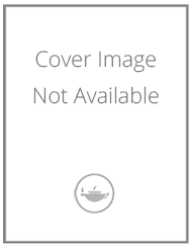
Fault Diagnosis for Electric Power Systems and Electric Vehicles



G. Rigatos , M. Abbaszadeh , M. HAMIDA , P. Siano

In the monograph on Fault diagnosis for electric power systems and electric vehicles, the following issues are analyzed:

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Green Metaverse for Greener Economies

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Series: Artificial Intelligence for Sustainable Engineering and Management

This book reviews Metaverse, the possibilities and difficulties of sustainable development, and policy suggestions, especially within the context of the 2030 Agenda. Green Metaverse for Greener Economies examines how the metaverse holds the potential to significantly reduce carbon emissions, whether through the replacement of physical goods with digital ones, the substitution of in-person interactions with virtual ones, or the creation of digital twins that will aid in the optimization of the physical world, from the planet to specific individuals thereby leading to Sustainable world.

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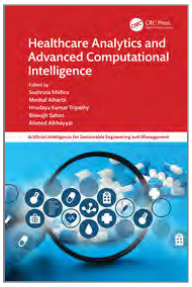
Healthcare Analytics and Advanced Computational Intelligence



Edited by **Sushruta Mishra** Kalinga Institute of Industrial Technology, Deemed to be University, Odisha, India**, Meshal Alharbi , Hrudaya Kumar Tripathy** Kalinga Institute of Industrial Technology, Odisha, India**, Biswajit Sahoo , Ahmed Alkhayyat**

Series: Artificial Intelligence for Sustainable Engineering and Management

This book aims to apply state-of-the-art advanced computational intelligence frameworks in healthcare. It presents recent and real-life applications of computationally intelligent healthcare. It also discusses problems and solutions to remote healthcare and emergency healthcare services. Healthcare Analytics and Advanced Computational Intelligence, highlight modern ambient intelligence enabled healthcare models along with advanced topics like quantum computing in healthcare and cryptomedical systems.The book is written for researchers and academicians in diverse areas. Engineers from technical disciplines like computer engineering are likely to purchase the book.

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Industry 5.0 for Smart Healthcare Technologies

Utilizing Artificial Intelligence, Internet of Medical Things and Blockchain

Edited by **Sherin Zafar** Jamia Hamdard, India**, S. N. Kumar , A. Ahilan** PSN College of Engineering and Technology**, Gulsun Kurubacak Cakir** Anadolu University

Series: Edge AI in Future Computing

In this book, the Role of Artificial Intelligence, Internet of Things and Blockchain in smart healthcare is explained through the detailed study of Artificial Neural Network, Fuzzy Set Theory, Intuitionistic Fuzzy Set, Machine learning and Big Data technology. This book is intended for researchers and professionals working in interdisciplinary fields of computer engineering/science and healthcare fields. It will provide them with the tools to enhance diagnostics, optimize treatment plans, and empower patients to actively participate in their healthcare journey.

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Industry 6.0

Technology, Practices, Challenges, and Applications

Edited by **C Kishor Kumar Reddy** Stanley Col of Engg and Tech for Women, India**, Srinath Doss** Botho University, Botswana**, Lavanya Pamulaparty , Kari Lippert , Ruchi Doshi**

Series: Future Generation Information Systems

The proposed book entitled Industry 6.0: Technology, Practices, Challenges and Applications determine the ways to create a paradigm shift from conventional to intelligent companies by integrating Industry 6.0 technology with data, identifies limitations, pitfalls, and open research questions in industry 6.0. The book discusses the most recent advances, architectures, frameworks, applications, novel practices, methods and techniques vital for integrating intelligent systems to resolve Intelligent Internet of Things issues, with a special focus on sustainable growth, humanization and environmentally friendly intelligent system applications.

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Integrated Circuit Design

IC Design Flow and Project-Based Learning

Xiaokun Yang

This textbook provides HDL-based examples, experiments, and projects able that cover real industry needs such as design/coding rules and methodologies. It will help readers build a connection between the HDL code and hardware circuits. This book can be used as a textbook for integrated circuit design and simulation courses. The audience includes senior undergraduate and graduate students, researchers, and entry-level design and verification engineers in the integrated circuit design industry.

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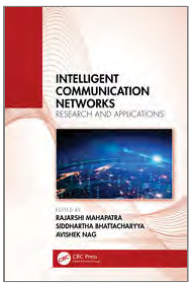
Intelligent Communication Networks

Research and Applications



Edited by **Rajarshi Mahapatra , Siddhartha Bhattacharyya** Christ University, Bangalore, India**, Avishek Nag**

The text provides a comprehensive overview of the theory, applications, and research of machine learning for communication networks, including wireless, optical, and computer networks. It further explores the different facets of computational intelligence in evolving intelligent communication networks which would become more efficient, robust, and failsafe. It will serve as an ideal reference text for senior undergraduate, graduate students, and academic researchers in the fields including electrical engineering, electronics and communication engineering, and computer engineering.

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Intelligent Control for Electric Power Systems and Electric Vehicles

G. Rigatos , M. Abbaszadeh , M HAMIDA , P. Siano

The contents of the present monograph on Intelligent Control for Electric Power Systems and Electric Vehicles, are outlined as follows

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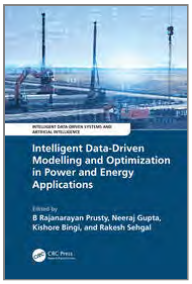
Intelligent Data-Driven Modelling and Optimization in Power and Energy Applications



Edited by **B Rajanarayan Prusty , Neeraj Gupta** NIT Srinagar, India.**, Kishore Bingi , Rakesh Sehgal** NIT Srinagar, India

Series: Intelligent Data-Driven Systems and Artificial Intelligence

This book provides a comprehensive understanding of how intelligent data-driven techniques can be used for modelling, controlling, and optimizing various power and energy applications. It aims to develop multiple data-driven models for forecasting renewable energy sources and to interpret the benefits of these techniques in line with first principles modelling approaches. By doing so, the book aims to stimulate deep insights into computational intelligence approaches in data-driven models and promote their potential applications in the power and energy sectors.

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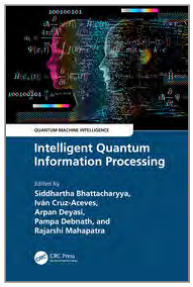
Intelligent Quantum Information Processing



Edited by **Siddhartha Bhattacharyya** Christ University, Bangalore, India**, Ivan Cruz-Aceves** Centre for Research in Mathematics, Mexico**, Arpan Deyasi , Pampa Debnath , Rajarshi Mahapatra**

Series: Quantum Machine Intelligence

The text discusses the foundations of intelligent quantum information processing applied to several real-life engineering problems including intelligent quantum systems, intelligent quantum communication, intelligent process optimization, and intelligent quantum distributed networks. It will serve as an ideal reference text for graduate students, and academic researchers in fields including electrical engineering, electronics and communication engineering, computer engineering, and information technology.

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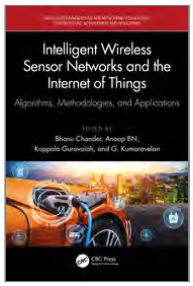
Intelligent Wireless Sensor Networks and the Internet of Things

Algorithms, Methodologies, and Applications



Edited by **Bhanu Chander , Anoop Benet Nirmala , Koppala Guravaiah , G. Kumaravelan**

Series: Wireless Communications and Networking Technologies

The edited book Intelligent Wireless Sensor Networks and Internet of Things: Algorithms, Methodologies and Applications is intended to discuss the progression of recent as well as future generation technologies for WSNs and IoTs applications through Artificial Intelligence (AI), Machine Learning (ML), and Deep Learning (DL). This book is for graduate students and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer engineering, and information technology.

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Internet of Things enabled Machine Learning for Biomedical Application

Edited by **Neha Goel , Ravindra Kumar Yadav**

The text begins by highlighting the benefits of the internet of things enabled machine learning in the healthcare sector, examines the diagnosis of diseases using machine learning algorithms, and examines security and privacy issues in the healthcare systems using the internet of things. The text elaborates on image processing implementation for medical images to detect and classify diseases based on magnetic resonance imaging and ultrasound images. It is primarily written for graduate students, and academic researchers in the fields of electrical engineering, electronics and communications engineering, computer science and engineering, and biomedical engineering.

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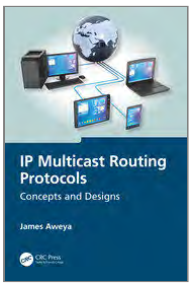
IP Multicast Routing Protocols

Concepts and Designs



James Aweya

This book discusses the fundamental concepts that are essential to understanding IP multicast communication. The material covers the well-known IP multicast routing protocols along with the rationale behind each protocol. The discussion is presented in a simple style to make it comprehensible and appealing to undergraduate and graduate level students, research and practicing engineers, scientists, IT personnel, and network engineers. It is geared towards readers who want to understand the concepts and theory of IP multicast routing protocols, yet want these to be tired to clearly illustrated and close-to-real-world example systems and networks.

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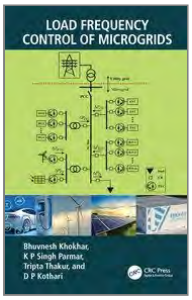
Load Frequency Control of Microgrids



Bhuvnesh Khokhar , K P Singh Parmar , Tripta Thakur , D P Kothari Wainganga College of Engineering & Management, Nagpur, India

The book focuses on describing the emerging microgrid concept, and its various constituents, especially the EV technology, and investigates the load frequency control performance of different microgrid configurations by implementing the modern control theory. An exhaustive study is presented on the various renewable energy sources and an up-to-date status of their installed capacity and power generation. The text presents case studies for load frequency control of a microgrid in its various operating modes. It is primarily written for senior undergraduates, and graduate students in the fields of electrical engineering, electronics, communication engineering, and renewable energy.

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Machine Learning for Mobile Communications

Edited by **Sinh Cong Lam , Chiranji Lal Chowdhary** VIT, India**, Tushar Hrishikesh Jaware , Subrata Chowdhury**

Series: Industry 5.0

The book "Machine Learning for Mobile Communication" will take readers on a journey from the basic to advanced knowledge about mobile communications and machine learning. For basic levels, this book volume discusses a wide range of mobile communications topics from the system level such as system design, optimization to the user level such as power control, resource allocation. It also reviews state-of-art Machine Learning which is one of the biggest emerging trends for both academic and industrials. For the advanced level, this book provides knowledge about how to utilize Machine Learning to design and solve the problems of future mobile communications.

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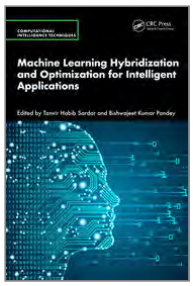
Machine Learning Hybridization and Optimization for Intelligent Applications



Edited by **Tanvir Habib Sardar** Dept. of CSE, GITAM School of Technology, GITAM University, Bengaluru Campus, Bengaluru, Karnataka, India**, Bishwajeet Kumar Pandey** Jain University, India

Series: Computational Intelligence Techniques

This book discusses state-of-the-art reviews of the existing machine-learning techniques and algorithms including hybridizations and optimizations. It covers applications of machine learning via artificial intelligence (AI) prediction tools, the discovery of drugs, neuroscience, diagnosis in multiple imaging modalities, pattern recognition approaches to functional magnetic resonance imaging, image and speech recognition, automatic language translation, medical diagnostic, stock market prediction, traffic prediction, and product automation. This book is aimed at graduate students and researchers in machine learning, artificial intelligence, and electrical engineering.

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Machine Vision and Industrial Robotics in Manufacturing

Approaches, Technologies, and Applications

Edited by **Alex Khang , Vugar Abdullayev , Anuradha Misra** Amity University, Lucknow, India**, Eugenia Litvinova**

This book covers the basics of machine vision and robotics in the manufacturing industry. Major applicability of intelligent machines and robotics in the manufacturing sector are explored in three major areas of product traceability, remote product-monitoring, supply chain, logistics, and product record management. This book targets a mixed audience of students, engineers, scholars, researchers, academics and professionals who are learning, researching, and working in the field of machine vision, AI, IIoT, MV, CV, and robotic technologies from different industries and economics.

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Maneuverable Formation Control in Constrained Space

Dongyu Li , Xiaomei Liu , Qinglei Hu , Shuzhi Ge

Series: Automation and Control Engineering

Inspired by the community behaviors of animals and humans, cooperative control has been intensively studied by numerous researchers in recent years, which aims to build a network system collectively driven by a global objective function in a distributed or centralized communication network and shows great application potential in a wide domain.

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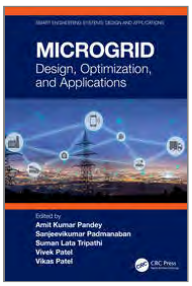
Microgrid

Design, Optimization, and Applications



Edited by **Amit Kumar Pandey , Sanjeevikumar Padmanaban** University of South-Eastern Norway**, Suman Lata Tripathi** LPU,Punjab, India**, Vivek Patel , Vikas Patel**

Series: Smart Engineering Systems

The book discusses principles of optimization techniques for microgrid applications specifically for microgrid system stability, smart charging, and storage units. It also highlights the importance of adaptive learning techniques for controlling autonomous microgrids. It further presents optimization-based computing techniques like fuzzy logic, and neural networks to enhance the computational speed.

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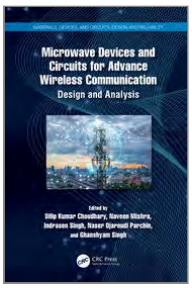
Microwave Devices and Circuits for Advance Wireless Communication

Design and Analysis



Edited by **Dilip Kumar Choudhary , Naveen Mishra , Indrasen Singh** Vellore Institute of Technology, India**, Naser Ojaroudi Parchin , Ghanshyam Singh**

Series: Materials, Devices, and Circuits

This book offers a comprehensive overview of design and analysis of microwave devices and circuits for 5G and beyond wireless communication systems. The focused modern microwave antennas, filters, metamaterial, MIMO systems. It also includes design approach based on Artificial Intelligence and practical use of microwave devices and circuits in commercial, medical and military applications. This book will be helpful for young researchers and master students, and engineers working in the area of design and reliability of circuits for microwave and communication systems.

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Millimeter Wave Communications in 5G and Towards 6G

Vasanthan Raghavan , Junyi Li , Ozge H. Koymen , Ashwin Sampath , Tao Luo

The focus of this book is on explaining different facets of millimeter wave systems, which form a central part of 5G systems today and will serve as a foundational building block of 5G-Advanced/6G as these systems evolve. This book is geared towards both introductory as well as advanced researchers in both industry and academia working in the areas of 5G, 5G-Advanced and 6G communications. It would also be useful for senior undergraduate and graduate students in universities focusing on wireless communications topics.

CRC Press
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Hb: 978-1-032-70374-9: **£110**
* For **full contents** and more information, visit: **www.routledge.com/9781032703749**

Mobile Robots for Digital Farming

Edited by **Redmond R Shamshiri , Ibrahim A. Hameed**

This book examines the latest achievements in agricultural mobile robots, specifically those that are used for autonomous weed control, field scouting, mowing, and harvesting. The book examines object identification, task planning algorithms, digitalization and optimization of sensors, and the challenges in the context of digital farming. This book will useful to professors and academics in Engineering (Mechanical, Robotics, Control, Electrical, Computer, Agricultural), graduate and undergraduate students, farmers and commercial growers, startups, private companies, consultancy agencies, equipment suppliers, and agricultural policymakers.

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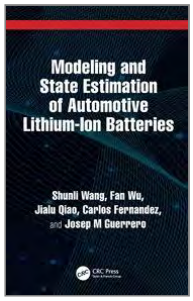
Modeling and State Estimation of Automotive Lithium-Ion Batteries



Shunli Wang , Fan Wu , Jialu Qiao , Carlos Fernandez , Josep M Guerrero

This book aims to evaluate and improve the state of charge (SOC) and state of health (SOH) of automotive lithium-ion batteries. The authors first introduce the basic working principle and dynamic test characteristics of lithium-ion batteries. They present the dynamic transfer model, compare it with the traditional second-order Reserve Capacity (RC) model, and demonstrate the advantages of the proposed new model. The book will benefit researchers and engineers in the new energy industry, and provide students of science and engineering with some innovative aspects of battery modeling.

CRC Press
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Hb: 978-1-032-77791-7: **£74.99**
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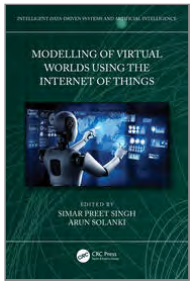
Modelling of Virtual Worlds Using the Internet of Things



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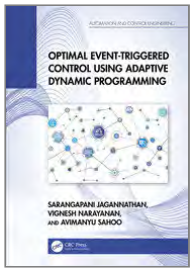

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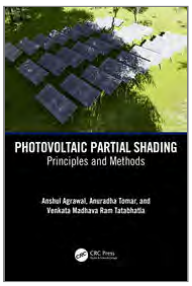

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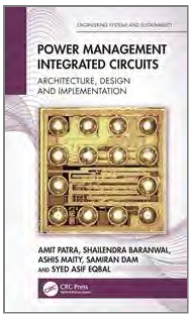

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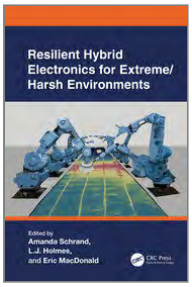

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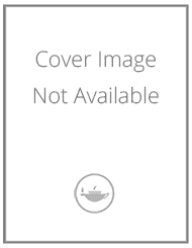
Robotic Safety Systems

An Applied Approach



Justin Starr , Christopher Quick

This book reboots the conversation about all technologies relating to robot safety. It covers key features of industry standards, relevant government regulations, hardware devices, physical safeguards, and vendor-specific software implementations, including FANUC's Dual-Check Safety, ABB's SafeMove and more. This book is intended for post-secondary classes at universities with specializations in robotics or robotic engineering. It will also be useful for robot systems integrators - design engineers, consultants, integration experts, robot programmers.

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The text discusses fundamental, advanced concepts, and applications of robotics, and autonomous systems. It further discusses important topics such as robotics techniques in the manufacturing sector, applications of smart autonomous systems in the healthcare sector, resource optimization in mobile robotics, and smart autonomous transport systems. It is primarily written for senior undergraduate, graduate students, and academic researchers in the fields including electrical engineering, electronics and communications engineering, computer science and engineering, and automotive engineering.

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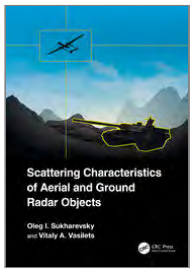
Scattering Characteristics of Aerial and Ground Radar Objects



Oleg I. Sukharevsky , Vitaly A. Vasilets

This book presents computations for various types of aerial and ground objects. It contains a brief explanation of the theoretical calculation methods used for obtaining scattering characteristics of these objects. It provides working examples for the analysis of electromagnetic wave scattering processes by different objects. This book will be a valuable reference for scientists, engineers, and researchers of electromagnetic wave scattering, computational electrodynamics, and radar detection and recognition algorithms.

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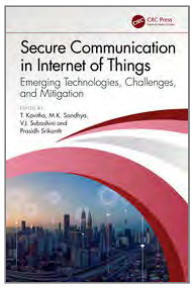
Secure Communication in Internet of Things

Emerging Technologies, Challenges, and Mitigation



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This book will be of value to the readers in understanding the key theories, standards, various protocols, and techniques for the security of Internet of Things hardware, software, and data, and explains how to design a secure Internet of Things system. It presents the regulations, global standards, and standardization activities with an emphasis on ethics, legal, and social considerations about Internet of Things security. It will be a valuable resource for senior undergraduate, graduate students, and academic researchers in the fields such as electrical engineering, electronics, and communications engineering, computer engineering, and information technology.

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The text highlights a comprehensive survey that focuses on all security aspects and challenges facing the Internet of Things systems, including outsourcing techniques for partial computations on edge or cloud while presenting case studies to map security challenges. It further covers three security aspects including Internet of Things device identification and authentication, network traffic intrusion detection, and executable malware files detection.

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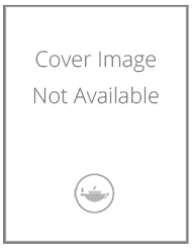
Security, Privacy, and Trust in WBANs and E-Healthcare



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Security, Privacy, and Trust in WBANs and E-Healthcare highlights the taxonomy of threats and attacks in WBANs and Internet of Medical Things (IoMT) and presents all technical aspects related to the security and privacy of WBANs. In addition to outlining viable solutions that take into account constrained resources at WBAN end-devices, hybrid network architecture, application characteristics, and communication protocols, the book covers the core concepts of WBAN security, privacy, and trust. It describes both theoretical and practical aspects for those working in security in the WBAN and IoMT, emphasizing the most significant potential WBAN security issues and challenges.

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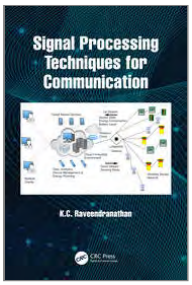
Signal Processing Techniques for Communication



K.C. Raveendranathan Government College of Engineering Kannur, Kannur, India

The text discusses signal processing tools and techniques used for the design, testing, and deployment of communication systems. It further explores software simulation and modeling tools like MATLAB, GNU Octave, Mathematica, and Python for modeling, simulation, and detailed analysis leading to comprehensive insights into communication systems. The book explains topics such as source coding, pulse demodulation systems, and the principle of sampling and aliasing. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer science, and engineering.

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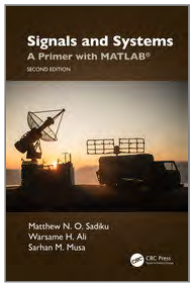

Matthew N. O. Sadiku , Warsame Hassan Ali , Matthew N. O. Sadiku Prairie View A&M University, Texas, USA**, Warsame Hassan Ali , Sarhan M. Musa** Prairie View A&M University, Houston, Texas, USA

The idea of signals and systems arises in different disciplines such as science, engineering, economics, politics, and medicine. Typical examples of systems include radio and television, telephone networks, radar system, computer networks, wireless communication, military surveillance system, and satellite communication system.

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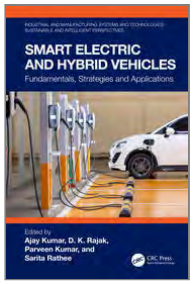

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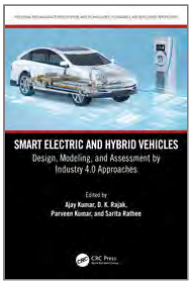

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This book examines terahertz technology and its applications in atmospheric remote sensing. This title will serve as a valuable reference for academics, students and engineers in the fields of terahertz technology, space science and remote sensing. Professionals in atmospheric remote sensing and inspection imaging will also benefit from this book.

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Security Models and Applications

Edited by **Uma Maheswari V** Chaitanya Bharathi Institute of Technology**, Rajanikanth Aluvalu** Chaitanya Bharathi Institute of Technology

Series: Artificial Intelligence for Sustainable Engineering and Management

This book covers the fundamental concepts of private AI and its applications. It also covers fusion of Private AI with cutting-edge technologies like cloud computing, federated learning and computer vision. The target audience includes undergraduate and postgraduate students in Computer Science, Information technology, Electronics and Communication Engineering and related disciplines. This book is also a one stop reference point for professionals, security researchers, scholars, various government agencies and security practitioners, and experts working in the cybersecurity Industry specifically in the R & D division.

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Sustainable Energy and Fuels

Materials, Processing Methods, and Development

Edited by **Piush Verma** NITTTR Chandigarh, India**, Ahmed Boubakeur** Ecole Nationale Polytechnique, Algeria**, Leila Mokhnache , Balwinder Raj**

The main objective of the book is to provide the state of the art of conduction mechanism, structure construction, operation, performance evaluation and applications of various renewable energies and fuels. The current trend of innovations is likely to explore potential to connect novel materials, design methods and new techniques. The innovations required to be intended towards keeping an existing resource and develop new methods by employing technologies smartly. This book has a complete insight on the recent advancement in nano materials, renewable energies design and applications.

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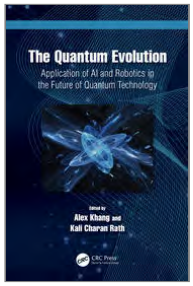
The Quantum Evolution

Application of AI and Robotics in the Future of Quantum Technology



Edited by **Alex Khang , Kali Charan Rath**

The book offers a comprehensive exploration of the fusion between quantum technology, AI, and robotics, providing readers with a deep understanding of the interplay between these fields and the transformative potential they hold. This book targets a mixed audience of specialists, analysts, engineers, scholars, researchers, academics, professionals, and students from different communities to share and contribute new ideas, methodologies, technologies, models, frameworks, theories and practices in quantum technology.

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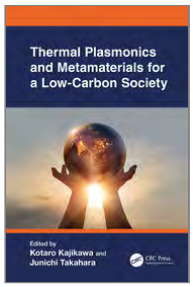
Thermal Plasmonics and Metamaterials for a Low-Carbon Society



Edited by **Kotaro Kajikawa , Junichi Takahara**

In this edited volume for researchers and students, experts in thermal plasmonics and metamaterials technologies introduce cutting-edge energy and resource conservation techniques and environmentally friendly solutions in areas including energy generation and harvesting and radiative cooling. This publication is invaluable for researchers and graduate students working in the fields of nanophotonics, energy, and environmentally friendly solutions, whether they are working on advancing the underlying technologies or expanding the range of usable applications to solve common global problems related to energy use, cooling, and resource consumption.

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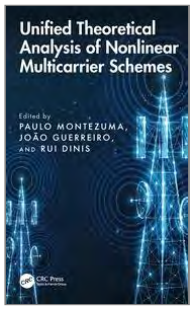
Unified Theoretical Analysis of Nonlinear Multicarrier Schemes



Paulo Montezuma , João Guerreiro Faculty of Science and Technology, Universidade Nova de Lisboa, Portugal**, Rui Dinis**

This book provides the analytical tools to characterize nonlinear distorted multicarrier signals and optimal/sub-optimal receivers employed in high data rate communication systems. The book will be a valuable resource for design engineers, industrial engineers, applications engineers and researchers working on multi-carrier systems, power amplifiers modelling and design.

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Architecture, Protocols, and Applications

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Series: Wireless Communications and Networking Technologies

The book presents theoretical and experimental approaches, quantitative and qualitative analysis, and simulations in wireless ad-hoc and sensor networks. It further explains the power, and routing optimization in underwater sensor networks, advanced cross-layer framework, challenges, security issues in underwater sensor networks, and the use of machine learning and deep learning techniques for security implementations in wireless ad-hoc and sensor networks.

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Subal Kar

The text contains all the essential elements of communication principles, devices, circuits, antennas, and systems covering the electromagnetic spectrum from KHz to MHz of radio frequency (RF) that was developed in the formative stage of wireless technology.

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Subal Kar

This book covers the active devices, circuits and systems including antennas used in the electromagnetic spectrum for wireless technology in the GHz to THz frequency range. It also includes the whole domain of digital communication techniques and its use in modern electronic communication including those in 5G and the forthcoming 6G mobile communication. The presentation of the book is in a concise yet complete way and stresses the physical and technical aspects with application view-points but using minimum possible mathematics.

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Advanced Green Technology for Environmental Sustainability and Circular Economy

Edited by **Maulin P. Shah** Enviro Technology Limited, India**, Alok Prasad Das**

Series: Greener Technologies For Sustainable Industry And Environment

This book elucidates the growing application of greener technology with a circular economic approach and examines the connection among environment, economy, and ecology for an emerging and supportable human society. It focuses on numerous features of environmental sustainability, and more responsibly, labels the technologies and methods essential to overcome growing environmental challenges including biotechnological methods, cutting-edge research, applications, and procedures. This book is aimed at professionals and graduate students in environmental engineering, project management, bioremediation, sustainable development, and waste management.

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Advancing Sustainable Science and Technology for a Resilient Future

Edited by **Sai Kiran Oruganti , Dimitrios A Karras , Srinesh Singh Thakur**

The Industrial Internet of Things (IIoT) has become an effective tool with significant implications for industrialisation and Market Research (MR), especially in the field of green production. Green IIoT (GRIIoT) can be used to implement Green Production (GP) goals for the environment.

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Advances in Geospatial Technologies for Natural Resource Management

Edited by **Ravi Shankar Dwivedi** Jawaharlal Nehru Technological University, Hyderabad, India

Timely and reliable information on natural resources, regarding their potential and limitations, is a prerequisite for sustainable development. Using orbital sensors data in conjunction with airborne and proximal sensors to generate information on soils and agricultural resources, forests, mineral resources, fossil fuel, wetlands, water resources, and marine resources, this book focuses on the advancements in technologies applicable to managing these resources. It addresses global issues like climate change and land degradation neutrality and introduces Spatial Data Infrastructure (SDI) as a mechanism for sharing geospatial data.

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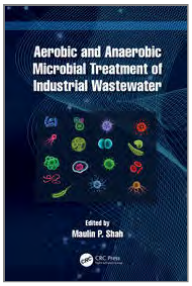
Aerobic and Anaerobic Microbial Treatment of Industrial Wastewater



Edited by **Maulin P. Shah** Enviro Technology Limited, India

Biological treatment techniques of industrial wastewater, including aerobic and anaerobic digestion, are known to be environmentally friendly, clean, and generally superior to other physicochemical techniques. Aerobic and Anaerobic Microbial Treatment of Industrial Wastewater presents the latest information on multiple bioremediation treatment techniques summarizes the sources, occurrence, and removal of industrial pollutants and suggests the most appropriate treatment options for different scenarios.

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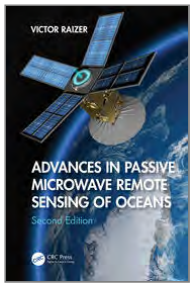
2ND EDITION

Advances in Passive Microwave Remote Sensing of Oceans



Victor Raizer IEEE Fellow

This new edition introduces the fundamentals of passive microwave remote sensing of oceans including the physical principles of microwave radiometry, novel observational data, their interpretation, and applications. It not only demonstrates and examines the recent state-of-the-art of microwave data but also provides guidance for explaining complex ocean studies and advanced applications. All chapters are thoroughly updated with detailed analysis of space-based microwave missions and a new chapter on space-based microwave radiometer experiments has been added. The power of microwave remote sensing is discussed as a tool for the diagnostics of ocean phenomena in research and education.

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Agricultural Biomass for the Synthesis of Value-Added Materials

Edited by **Sankha Chakrabortty** KIIT Bhubaneswar, India**, Jayato Nayak** Mahindra University, India**, Shirsendu Banerjee** Kalinga Institute of Industrial Technology, India**, Maulin P. Shah** Enviro Technology Limited, India

This book is a comprehensive guide to bioconversion approaches based on microorganisms and enzymes for the valorization of underused wastes of diverse categories to produce new products. Optimized conditions for microbial and enzymatic valorization are discussed, along with related biotechnological considerations, environmental considerations, bioprocess development, obstacles, and future outlooks.

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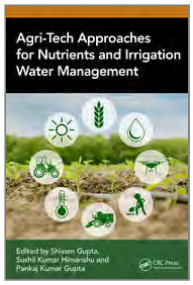
Agri-Tech Approaches for Nutrients and Irrigation Water Management



Edited by **Shivam Gupta** MCAET, Akbarpur, India**, Sushil Kumar Himanshu** AIT, Thailand**, Pankaj Kumar Gupta** CRDT, IIT Delhi, India

This book includes concept, state-of-the-art methodologies, and techniques used in soil nutrients and irrigation water management. It covers soil moisture flow, nutrient dynamics, crop water estimation techniques, approaches to improve crop water productivity and soil health, crop simulation modeling, and remote sensing/GIS applications in irrigation water management. Agri-technologies, climate-resilient agriculture, and advances in big data/machine learning techniques are explained and precision farming techniques are included. This book is aimed at researchers and graduate students in agriculture, water resources, environmental, and irrigation engineering.

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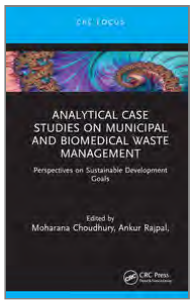
Analytical Case Studies on Municipal and Biomedical Waste Management

Perspectives on Sustainable Development Goals



Edited by **Moharana Choudhury** Voice of Environment (VoE), India**, Ankur Rajpal** Indian Institute of Technology Roorkee,India**, Srijan Goswami** Indian School of Complementary Therapy & Allied Sciences, Ichapur**, Arghya Chakravorty** Vellore Institute of Technology, India**, Vimala Raghavan** Vellore Institute of Technology, India

Effective waste management practices are essential to mitigate the unfavourable impacts and achieve sustainable development goals. This book covers perspectives addressing the sustainable development goals through analytical and case studies on municipal and biomedical waste management. It consists of ten selectively curated highly technical chapters covering various aspects of achieving sustainable development goals through applying effective waste management strategies and practices through practical case studies and examples. This book is aimed at researchers and graduate students in environmental engineering and management.

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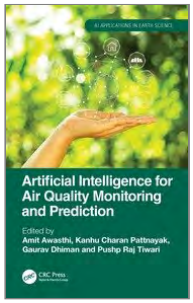
Artificial Intelligence for Air Quality Monitoring and Prediction



Edited by **Amit Awasthi** Dept. of Applied Sciences, University of Petroleum and Energy Studies, India**, Kanhu Charan Pattnayak , Gaurav Dhiman** Jagat Guru Nanak Dev Punjab State Open University, India**, Pushp Raj Tiwari**

Series: AI Applications in Earth Science

This book is a comprehensive overview of advancements in artificial intelligence (AI) and how it can be applied in the field of air quality management. It explains the linkage between conventional approaches used in air quality monitoring with AI techniques such as data collection and preprocessing, deep learning, machine vision, natural language processing, and ensemble methods. The integration of climate models and AI enables readers to understand the relationship between air quality and climate change. Different case studies demonstrate the application of various air monitoring and prediction methodologies and their effectiveness in addressing real-world air quality challenges.

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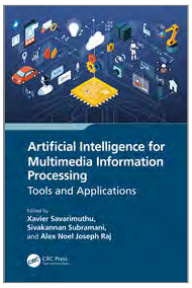
Artificial Intelligence for Multimedia Information Processing

Tools and Applications



Edited by **Xavier Savarimuthu** St. Joseph's University, India**, Sivakannan Subramani** St. Joseph's University, India**, Alex Noel Joseph Raj** Shantou University, China

Advances in artificial intelligence (AI), widespread mobile devices, Internet technologies, multimedia data sources, and information processing, have led to the emergence of multimedia processing. Multimedia processing is the application of signal processing tools to multimedia data: text, audio, images, and video, to allow the interpretation of these data particularly in urban and smart city environments. This book discusses the new standards of multimedia and information processing from several technological perspectives including analytics empowered by AI, streaming on the intelligent edge, multimedia edge caching and AI, services for edge AI, and more.

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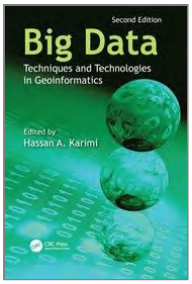
2ND EDITION

Big Data

Techniques and Technologies in Geoinformatics



Edited by **Hassan A. Karimi** University of Pittsburgh, Pennsylvania, USA

Since the publication of the first edition there have been new advancements in computing power, computing platforms, mathematical models, statistical models, geospatial algorithms, and the availability of data in various domains, which have aided in the automation of complex real-world tasks and decision-making that inherently rely on geospatial data. Machine learning, particularly deep learning, virtual reality, and game engine have benefited from these advancements and increasingly gained the interest of researchers and practitioners. This revised new edition provides up-to-date knowledge on the latest developments related to these three fields for solving geoinformatics problems.

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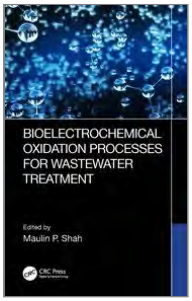
Bioelectrochemical Oxidation Processes for Wastewater Treatment



Edited by **Maulin P. Shah** Enviro Technology Limited, India

Conventional methods of wastewater treatment are somewhat successful in decontamination, but current techniques require more time and energy than newer, novel techniques. Bioelectrochemical oxidation systems (BEOS), for example, have greatly aided in wastewater treatment sustainability and efficiency, and offer promising solutions for different types of energy recovery options. The book examines the latest hybrid technologies utilizing algae, bacteria, and various other chemical agents, and discusses the major challenges in large scale operations, as well as forward-looking techniques to make treatment processes even more sustainable in the future.

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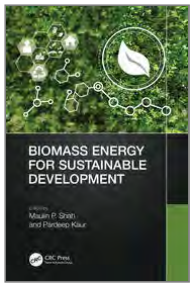
Biomass Energy for Sustainable Development



Edited by **Maulin P Shah** Enviro Technology Limited, India**, Pardeep Kaur** University Institute of Biotechnology, Chandigarh University, India

The current recalcitrant nature of biomass processing has led researchers to find the most suitable technique for its depolymerization, as well as various strategies to pretreat the biomass which include physical, thermochemical, and biochemical methods and a combination of these. Biomass Energy for Sustainable Development examines how optimal biomass utilization can reduce forest management costs, help mitigate climate change, reduce risks to life and property, and help provide a secure, competitive energy source into the future.

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Chemistry, Thermodynamics, and Reaction Kinetics for Environmental Engineers

Jeff Kuo

Series: Fundamentals of Environmental Engineering

This book aims to be the preeminent university chemistry textbook for environmental engineers. It provides undergraduate and graduate environmental engineering students with basic concepts and practical knowledge about chemistry that they would need throughout their professional careers. It focuses on the fundamental concepts of chemistry and its practical applications (e.g., understanding fate and transport of chemicals/pollutants in the environmental as well as the chemical/physicochemical processes applied in environmental engineering and related industries).

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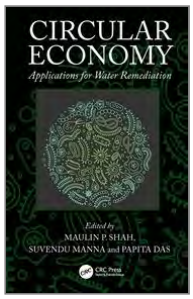
Circular Economy

Applications for Water Remediation



Edited by **Maulin P. Shah** Enviro Technology Limited, India**, Suvendu Manna** University of Petroleum and Energy Studies, India**, Papita Das** Jadavpur University, India

Clean water and other essential materials reclamation are one of the major research areas for understanding the effects of implementing a circular economic model. The reuse and recycling of wastewater can greatly reduce the overall demand for fresh water for various industrial applications. Such concepts could potentially alter the overall water demands of our planet completely if implemented successfully. Circular Economy: Applications for Water Remediation will examine the current understanding on the circular economy in water remediation processes, its drawbacks, and relatively unexplored areas that require further research.

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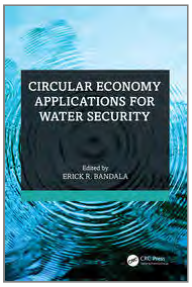
Circular Economy Applications for Water Security



Edited by **Erick R. Bandala**

In arid and semi-arid regions, where water demand exceeds water availability, water security is becoming a significant concern not only related with water availability but also with rigorous and costly requirements to remove conventional and emerging contaminants from effluents discharging into drinking water sources or as water reuse becomes an alternate water supply for communities in these regions. Circular Economy Applications for Water Security examines knowledge gaps, avenues of future research, and challenges related with the potential of enhanced underutilized/waste materials as transition to circular economy applications for ensuring the proper quality of water.

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3RD EDITION

Classification Methods for Remotely Sensed Data

Taskin Kavzoglu Gebze Technical University, Dept. of Geomatics Engineering, Turkey**, Brandt Tso , Paul M. Mather**

The third edition of the bestselling Classification Methods for Remotely Sensed Data covers current state-of-the-art machine learning algorithms and developments in the analysis of remotely sensed data.It is thoroughly updated to meet the needs of readers today and provides six new chapters on deep learning, feature extraction and selection, multisource image fusion, hyperparameter optimization, accuracy assessment with model explainability and object-based image analysis, which is relatively a new paradigm in image processing and classification. It presents new AI-based analysis tools and metrics together with ongoing debates on accuracy assessment strategies and XAI methods.

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Climate Change in India

Impacts and Assessments

Edited by **Neloy Khare** Ministry of Earth Sciences, Government of India, New Delhi, INDIA

Series: Maritime Climate Change

The climate over the Indian subcontinent is influenced by complex interactions between the atmosphere, ocean, and land, along with human interventions that are influencing heat extremes, changing monsoon patterns, sea-level rise, and posing serious threats to lives and livelihoods among populations in India. This book, based on recent studies and research, explains how and why the climate is changing across India and how these changes are expected to evolve in the future. It takes a holistic view of the climate from India's perspective and discusses important themes. Readers will have an in-depth understanding of impacts and possible adaptations.

CRC Press
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Derelict Mines

Environmental Risk Assessment and Management

Edited by **Ravi Naidu** Global Institute for Environmental Research, CRC CARE, University of Newcastle, Callaghan, Australia

Mine areas left behind by companies that no longer exist are defined as derelict mines- those that were operated and closed at a time when most countries did not have adequate regulations requiring rehabilitation of the impacted mine areas. This new book provides unique information on the extent and severity of derelict mines' impact on environmental degradation and human and environmental health. It examines the nature of derelict mines, short and long-term risks to sensitive receptors, tools for monitoring and prioritizing risks, and technological advances for rehabilitation. This book considers a risk-based approach to managing derelict mines, which is reliable and cost-effective.

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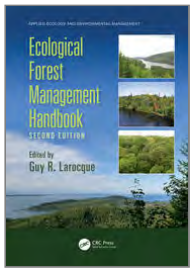
2ND EDITION

Ecological Forest Management Handbook



Edited by **Guy R. Larocque**

Series: Applied Ecology and Environmental Management

This second edition continues to provide forestry professionals and students with basic principles of ecological forest management and their applications at regional and site-specific levels. Thoroughly updated and revised, the handbook addresses numerous topics and explains that ecological forest management is a complex process that requires broad ecological knowledge. It discusses how to develop adaptive management scenarios to harvest resources in a sustainable way and provide ecosystem services and social functions. It includes new studies on ecological indicators, the carbon cycle, and ecosystem simulation models for various forest types: boreal, temperate, and tropical forests.

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Emergent Pollutants in Freshwater Plankton Communities

Ecological Effects and Sustainable Mitigation Strategies

Edited by **Osikemekha A. Anani** Edo State University Uzairue, Nigeria**, Maulin P. Shah** Enviro Technology Limited, India

Emergent Pollutants in Freshwater Plankton Communities introduces the environmental and health monitoring techniques for emergent pollutants and their influences on the community structure of lentic freshwater plankton. It highlights the challenges posed by the improper treatment or disposal of industrial pharmaceutical wastes, which could cause numerous related environmental and health risks. It also suggests possible sustainable mitigation techniques for the treatment of emerging pollutants. Further, it addresses the issues of regulatory and monitoring frameworks, and reviews laws governing the management and disposal of wastes.

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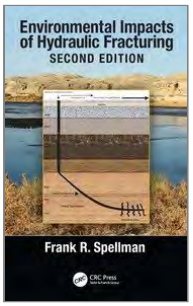
2ND EDITION

Environmental Impacts of Hydraulic Fracturing



Frank R. Spellman Spellman Environmental Consultants, Norfolk, Virginia, USA

Environmental Impacts of Hydraulic Fracturing is a balanced and comprehensive guide to all aspects of hydraulic fracturing and covers all facets of the issue, including ongoing controversies about possible water pollution, drinking water contamination, and the potential for harmful chemical exposure. The author discusses both the pros and cons of hydraulic fracturing, explaining the process in great detail. Arguably the first book of its kind, this is the go-to text on the use and impacts of hydraulic fracturing.

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Environmental Nexus Approach

Management of Water, Waste, and Soil

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Series: Environmental Nexus in Waste Management

Environmental Nexus Approach: Management of Water, Waste, and Soil provides the linkages between environmental resources, such as water, waste, and soil to deal with sustainable management of resources. It shows the nexus approach as a policy-relevant means of environmental management by focusing on integrated management of water, waste, and soil resources. It synthesizes interdisciplinary theory, concepts, definitions, models and findings involved in complex global sustainability problem-solving, making it an essential guide and reference. It includes real-world examples and applications making the book accessible to a broader interdisciplinary readership.

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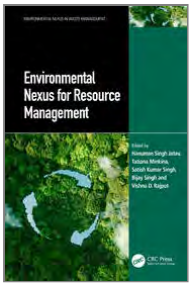
Environmental Nexus for Resource Management



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Series: Environmental Nexus in Waste Management

This book gives detailed information about how soil, water and wastes can be managed to overcome the various global issues via possible nexus thinking. The emphasis is on the environmental resource perspective of the global climate change related issues. It provides stepwise information on climate change and adaption strategies; urbanization and its impact and management strategies; environmental nexus approaches to cope up global challenges and recourses conservation; and ecological approach to restore the damaged ecosystem. This book is aimed at researchers and graduate students in environmental sciences and engineering, and sustainable development.

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Fundamentals of Evapotranspiration

Alessia Corami , Saeid Eslamian Isfahan University of Technology, Iran**, Faezeh A. Eslamian** McGill University, Canada

Fundamentals of Evapotranspiration aims to determine simple methods to evaluate evapotranspiration and to examine the evolution of these methods over time. It compares and contrasts best practices and discusses the opportunities for harmonization among various methods. Further, the book discusses optimal calibration of these methods in a local context, depending on particular climates and scenarios.

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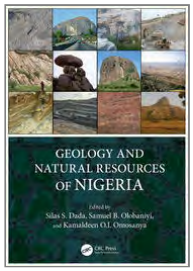

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Geology and Natural Resources of Nigeria is an up-to-date and comprehensive overview of the geological framework of the continental crust of Nigeria, its evolution, and the natural resources it holds. It covers a wide set of topics and provides a detailed description of the rock units of the Nigerian continental crust, their geological settings and structural characteristics, and the potential of their mineral, energy, and water resources. It discusses the impact of geo-resources on the Nigerian economy, includes recommendations on how to fully exploit geo-resources, and explains how to prevent geological processes that could lead to natural hazards.

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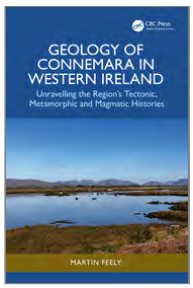
Geology of Connemara in Western Ireland

Unravelling the Region's Tectonic, Metamorphic, and Magmatic Histories



Martin Feely University of Galway, Ireland

The Connemara region in Western Ireland is world-renowned for its outstanding geology that blends with spectacular landscapes. This book and its many colorful illustrations, maps, diagrams, field, and landscape images, detail the origin and formation of Connemara's metamorphic and igneous rocks in deep time from 700 to 380 million years ago. It combines many field geology observations, and current research results, and describes the many geological processes involved in the formation of the bedrock foundations of Connemara. It serves as an amazing book for students and geological societies that visit the region annually.

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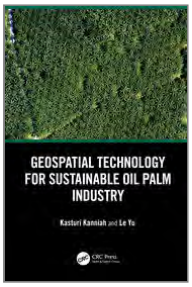
Geospatial Technology for Sustainable Oil Palm Industry



Kasturi Kanniah , Le Yu Tsinghua University, Beijing, China

Oil palm cultivation is a significant contributor to the global agricultural industry, providing valuable resources for various products. While it has faced challenges, including concerns about deforestation and environmental degradation, it is crucial to understand the geographical distribution of oil palms to ensure responsible, sustainable management. Geospatial Technology for Sustainable Oil Palm Industry introduces the application of geospatial technology to the oil palm industry, showing how these tools address key issues while promoting responsible practices.

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The Making and Marketing of Sustainable Brands

Al Iannuzzi Johnson & Johnson Inc., New Brunswick, New Jersey, USA

Sustainability and its competitive advantage are the goals of every company and any brand that wants to stay successful in the marketplace. Customers also gravitate to brands that manage sustainability issues well. Greener Products: The Making and Marketing of Sustainable Brands written by a renowned sustainability expert, continues to address the latest developments in the extremely fast-moving field of sustainability. Thoroughly updated, this third edition introduces new case studies, includes a new chapter on natural capital cost accounting, and explores the best practices of leading global companies and helps readers learn what it is that makes them successful.

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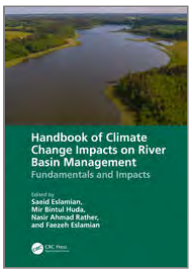
Handbook of Climate Change Impacts on River Basin Management

Fundamentals and Impacts



Edited by **Saeid Eslamian** Isfahan University of Technology, Iran**, Mir Bintul Huda , Nasir Ahmad Rather , Faezeh A. Eslamian** McGill University, Canada

Climate change not only involves rising temperatures but can also alter the hydro-meteorological parameters of a region and the corresponding changes emerging in the various biotic or abiotic environmental features. One of the results of climate change has been the impact on the sediment yield and its transport. This volume provides an overview of the fundamental processes and impacts of climate change on river basin management and examines issues related to soil erosion, sedimentation, and contaminants as well as rainfall-runoff modeling and flood mitigation strategies. It also includes coverage of climate change fundamentals and chapters on related global treaties and policies.

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Handbook of Climate Change Impacts on River Basin Management

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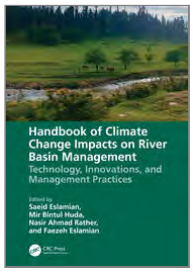

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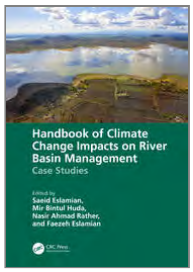
Handbook of Climate Change Impacts on River Basin Management

Case Studies



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Climate change not only involves rising temperatures but it can also alter the hydro-meteorological parameters of a region and the corresponding changes emerging in the various biotic or abiotic environmental features. One of the results of climate change has been the impact on the sediment yield and its transport. This volume presents a diverse collection of case studies from researchers across the globe examining the impacts of climate change on river basin management in various geographical, hydrological, and socioeconomic contexts. The case studies yield important insights that can inform strategies to build resilience and adapt river basins to a changing climate.

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Climate change is an alarming issue that has affected the globe at multiple levels. It involves not only rising temperatures but also changes to the original hydro-meteorological parameters of a region and the corresponding changes emerging in the various biotic or abiotic environmental features. This handbook examines hydrology, watershed, soil erosion, global climate change scenarios, changing dynamics of streamflow and erosion, impact of changing sediment dynamics, major problems associated with change in the original sediment balance in nature, the latest computing technologies incorporated in the studies, risk control and management measures.

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Handbook of Energy and Environment in the 21st Century

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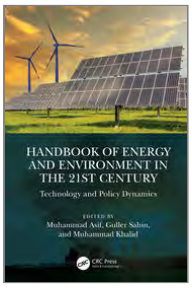

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The Handbook of Energy and Environment in the 21st Century discusses the key dimensions of the present energy scenario as well as the emerging trends. Global responses to environmental challenges are examined, taking into account technical, economic, social, and policy perspectives. Responding to the latest developments, the book also discusses the impacts of natural disasters and pandemics on the energy in the context of energy and environmental implications. The book will benefit a wide range of stakeholders from the fields of energy, environment, socioeconomics, geopolitics, and sustainable development.

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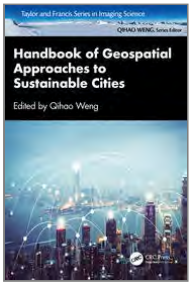

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This comprehensive handbook presents the current state of knowledge on geospatial technologies, techniques, and methods that are imperative for providing solutions to sustainable cities. It addresses the role of geospatial big data and AI techniques and how they are applied when analyzing the sustainability of urban development, land use, urban planning, and resource management, as well as monitoring the impact urbanization has on the environment and the ecosystem. With contributions from renowned experts around the world, this holistic handbook is a toolbox for geospatial, urban, and sustainability professionals, and the artificial intelligence community.

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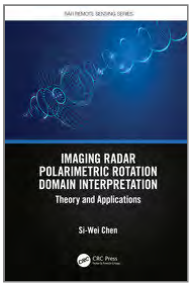

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Polarimetric rotation domain interpretation is an innovation in radar image processing and understanding. Orientation rotation is a basic operator well-known in the classic polarimetry theory and significant advancement has been made in recent years. This book presents new and advanced concepts, theories, and methodologies in radar polarimetry and bridges the gaps between the target scattering diversity, polarimetric radar data, and their practical applications. It provides a comprehensive summarization and investigation of polarimetric roll-invariant features for researchers, students, and engineers.

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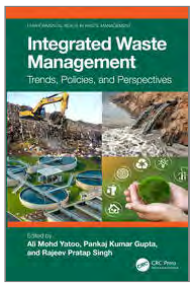

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This book addresses multiple focus areas identified and provides solutions with respect to the circular economy, water pollution, potable water availability, reducing population impact on the environment, and better health by integrated waste management. It explains techniques to handle waste generation, characterization, minimization, collection, separation, treatment, and disposal, and includes chapters that address waste management policy, education, and economic and environmental assessments. This book is aimed at graduate students and researchers in environmental engineering and waste management.

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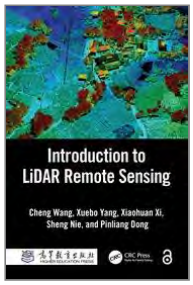

Cheng Wang Aerospace Information Research Inst., CAS**, Xuebo Yang** Aerospace Information Research Inst., CAS**, Xiaohuan Xi , Sheng Nie** Aerospace Information Research Inst., CAS**, Pinliang Dong** University of North Texas, Denton, USA

Light Detection and Ranging or LiDAR is an advanced active remote sensing technology developed in the last 30 years to measure variable distances to the Earth. This book explains the fundamental concepts of LiDAR technology and its extended spaceborne, airborne, terrestrial, mobile, and UAV platforms. It addresses the challenges of massive LiDAR data intelligent processing, LiDAR software engineering, and in-depth applications. The theory and algorithms are integrated with multiple applications in a systematic way and with step-by-step instructions. This book is a comprehensive resource for undergraduate and graduate students, and practitioners in the field of LiDAR remote sensing.

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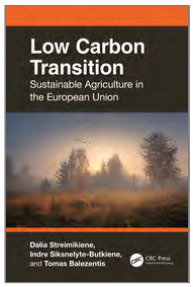
Low Carbon Transition

Sustainable Agriculture in the European Union



Dalia Streimikiene , Indre Siksnelyte-Butkiene , Tomas Balezentis

Low carbon transition is a shift from an economy that depends heavily on fossil fuels to a sustainable, low carbon energy economy. This book analyses the role of renewables in driving the low carbon transition in agriculture, explores the circular bio-based economy, examines policies and strategies designed to facilitate low carbon transition in agriculture, and greenhouse gas emission trends in the European Union agriculture sector. It provides new knowledge about the impact of low carbon energy transition in the agriculture sector, emphasizes the key role of renewable energy in a range of agricultural activities, and offers alternative sustainable solutions to current practices.

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Material and Energy Recovery from Solid Waste for a Circular Economy

Edited by **Atun Roy Choudhury** Eco India Projects Private Limited, India**, Sankar Ganesh Palani** BITS Pilani, India

Material and Energy Recovery from Solid Waste for a Circular Economy describes solid waste to material and energy recovery to bridge the gap between theoretical possibilities and on-field criticalities. It deals with various resource recovery possibilities from numerous waste streams such as municipal solid, hazardous waste, human faecal sludge, construction and demolition waste, and electronic waste. The practical issues of resource recovery and possible remedies derived through onsite practice and experience are incorporated. It includes real-life feasibility analysis and implementation of waste-to-energy systems supported by case studies.

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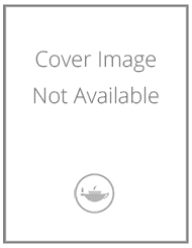
Math Problems in Water and Wastewater



Subhash Verma Sault College of Applied Arts and Technology, Canada

This book covers all the fundamental concepts required to solve typical problems in water and wastewater engineering. Water professionals working in the industry require a license to work in water plants and Math Problems in Water and Wastewater aids readers in preparing for the mathematics portion of these exams. It lays a sound foundation that not only helps with the certification examination but also helps water operators in performing their daily activities. The basic concepts, volumes of various unit devices followed by specific problems in water and water treatment are presented through solved example problems.

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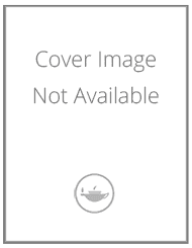
Methylmercury Accumulation in Rice

Process and Regulation



Edited by **Xinbin Feng** Chinese Academy of Sciences**, Jianxu Wang** Chinese Academy of Sciences**, Jörg Rinklebe** Uni. of Wuppertal

Series: Emergent Environmental Pollution

This book presents state-of-the-art knowledge related to concerns on methylmercury (Hg) in the soil-rice system. It covers increasing concerns of human exposure to methylmercury through the consumption of Hg-contaminated rice and shows the global contamination of soil, and how Hg can be mobilized, immobilized, methylated, and de-methylated in soils. The authors present the biogeochemical process through which rice plants accumulate Hg. This book comprehensively displays the biogeochemical behavior of Hg in paddy soils and rice plants, as well as the current remediation technologies to mitigate Hg risks from paddy soil ecosystems.

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The book provides up-to-date insights into the potential of microbial and enzyme-based processes for wastewater treatment, addressing challenges and limitations while offering alternative methods for effluent treatment and water reclamation. It serves as a valuable resource for understanding the interplay between microbial, biological, and chemical components in the remediation of toxic aqueous pollutants, aiding both researchers and industrialists in advancing environmental stewardship efforts.

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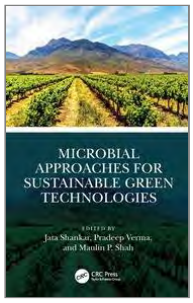
Microbial Approaches for Sustainable Green Technologies



Edited by **Jata Shankar , Pradeep Verma** Central University of Rajasthan, India**, Maulin P. Shah** Enviro Technology Limited, India

Microbial systems have strong potential to develop green and sustainable technologies, including sources of renewable energy, alternative fuels, and biosynthetic materials for sustainable applications. Advances in these technologies are evolving to meet growing demand and industries are adapting to green technologies such as solar panels and more. With the aid of sophisticated technology and integration strategies, these industries are moving toward being more environmentally friendly and sustainable. This book serves as a guide to the newest technologies that will enable the implementation of microbial technologies in fostering an eco-friendly industrial and environmental landscapes.

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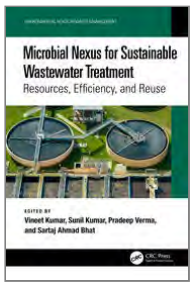
Microbial Nexus for Sustainable Wastewater Treatment

Resources, Efficiency, and Reuse



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Series: Environmental Nexus in Waste Management

This book provides a thorough understanding of wastewater treatment and management focussing on scientific, technical, and principles of microbial treatment to aid in understanding how microbial nexus work on wastewater detoxification for its safe disposal into the environment. It gives insights of technological interventions in a more comprehensive manner, which allows the assessment of role of microbial behaviour under different environmental conditions during treatment of wastewater. This book is aimed at graduate students and researchers in environmental and chemical engineering, microbiology, and biotechnology.

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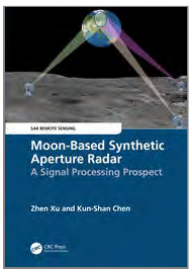
Moon-Based Synthetic Aperture Radar

A Signal Processing Prospect



Zhen Xu , Kun-Shan Chen Chinese Academy of Sciences, Beijing, China

Series: SAR Remote Sensing

Lunar explorations have received increasing attention in recent years with tremendous application values, including using the Moon as a remote sensing platform for Earth observation. As an active sensor, the Synthetic Aperture Radar (SAR) can detect changes in the atmosphere, terrain, and ocean. Moon-based SAR, complementary to the spaceborne SAR systems, expands our capabilities of understanding the Earth. This book explains the Moon-Earth observation geometry, generic parameters, image focusing, and outlook using the Moon-based SAR. Written as a SAR imaging of Earth on the lunar-based platform, it is an essential reference to those interested in planetary and Earth sciences.

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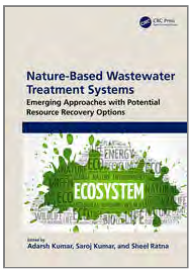
Nature-Based Wastewater Treatment Systems

Emerging Approaches with Potential Resource Recovery Options



Edited by **Adarsh Kumar , Saroj Kumar , Sheel Ratna**

Giving an account of successfully applied and recently developed green remediation technologies for water pollution control, this book describes the scope and applications of nature-based wastewater treatment technologies for environmental sustainability. Major focus is on associated eco-environmental concerns, recent technological developments, field studies, lessons learned, sustainability concerns, and future challenges. It also deals with the development of valuable bioresources together with wastewater treatment for the circular economy. The book is aimed at graduate students and researchers in environmental engineering and sciences, environmental microbiology, and biotechnology.

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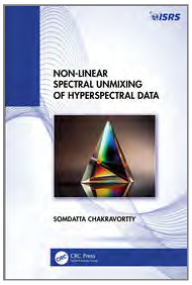
Non-Linear Spectral Unmixing of Hyperspectral Data



Somdatta Chakravortty Nh-12 (old nh-34), Simhat, Maulana Abul Kalam Azad University of Technology, West Bengal, India - 741249

This book is based on satellite image processing focussing on the potential of hyperspectral image processing research taking a case study-based approach. It covers the background, objectives, and practical issues related to HIP and substantiates the needs/potentials of said technology for discrimination of pure and mixed endmembers in pixels including unsupervised target detection algorithms for extraction of unknown spectra of pure pixels. It includes application of machine and deep learning models on hyperspectral data and its role in Spatial Big Data Analytics. This book is aimed at researchers and graduate students in digital image processing, big data, and spatial informatics.

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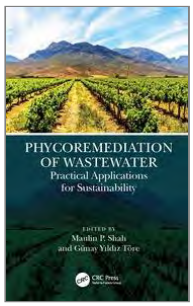
Phycoremediation of Wastewater

Practical Applications for Sustainability



Edited by **Maulin P. Shah** Enviro Technology Limited, India**, Günay Yıldız Töre** TEKIRDAG NAMIK KEMAL UNIVERSITY ÇORLU, Turkey

Phycoremediation is an alternative method of water and wastewater remediation, which includes the use of algae for treatment, and is an environmentally friendly and sustainable technology. More conventional methods of wastewater treatment have been successful in the removal of conventional contaminants from the water; however, these techniques typically require more time and energy than phycoremediation. Focuses on the latest developments in water remediation, and major challenges faced by municipalities implementing large scale operations. It also addresses the latest advancements in the field and techniques to make water remediation processes more environmentally sustainable.

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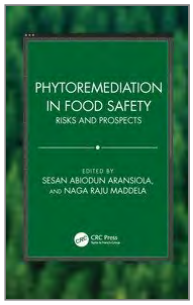
Phytoremediation in Food Safety

Risks and Prospects



Edited by **Sesan Abiodun Aransiola** National Biotechnology Development Agency, Nigeria**, Naga Raju Maddela** UTM, Ecuador

Phytoremediation is the process that uses plants to remove pollutants from soils. These pollutants are stored in the edible parts of plants and if they are consumed above a certain level, they become a health risk for humans and animals. This book is a critical review of phytoremediation, its direct or indirect effects on food products, and the risks posed by this cost-effective technology in food safety. It shows how different plants are suited for phytoremediation, explains the role of toxicants in the environment, and analyses their effects and risks in the food chain at a global level. It also reviews the extraction methods of toxicants from plants after phytoremediation.

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Quantitative Remote Sensing

Fundamentals and Environmental Applications

Jay Gao University of Auckland, New Zealand

This book provides comprehensive, in-depth explanations of all topics related to quantitative remote sensing and its applications in terrestrial, biospheric, hydrospheric, and atmospheric studies. It describes how to retrieve quantitative data on a range of environmental parameters from various remote sensing data at the highest accuracy possible and discusses how different aspects of the target of remote sensing can be quantified using diverse analytical methods and levels of inaccuracy. Written in an easy-to-follow language, logically organized, and with step-by-step examples, readers deepen their understanding of the theory and cutting-edge research on quantitative remote sensing.

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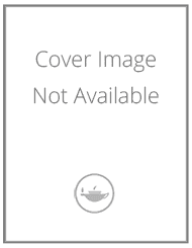
Rainwater Harvesting for the 21st Century



Edited by **Ilan Adler** University College London, United Kingdom**, Kemi Adeyeye** University of Bath, United Kingdom**, Aisha Bello-Dambatta** Bangor University, United Kingdom**, Berill Takacs**

Rainwater Harvesting (RWH) is gaining much interest as both an alternative source of water and for its potential to be an important climate change adaptation measure, although large-scale adoption remains challenging in many parts of the world. Rainwater Harvesting for the 21st Century serves as a rigorous yet practical guide for a broad audience interested in the many opportunities that RWH systems can provide, including water security, food security, flood management, and climate change adaptation.

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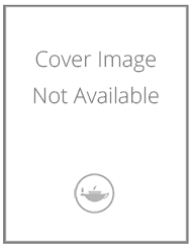
Recalcitrant Pollutants Removal from Wastewater



Edited by **Izharul Haq , Maulin P. Shah** Enviro Technology Limited, India

Recalcitrant Pollutants Removal from Wastewaters examines the role of indigenous microbes in the degradation and detoxification of wastewater utilizing the latest biological treatment technologies. It emphasizes environmental sustainability as a core theme in facilitating the adoption of circular economy objectives by industry and policy makers alike. Numerous environmentally sound strategies for industrial wastewater treatment are presented throughout, as well practical applications for treated wastewater, including irrigation, aquaculture, and agricultural uses.

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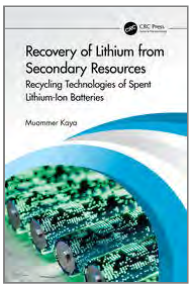
Recovery of Lithium from Secondary Resources

Recycling Technologies of Spent Lithium-Ion Batteries



Muammer Kaya Eskisehir Osmangazi University, Turkey

This book examines the pretreatment and mechanical treatment methods of S-LIBs for scarce critical metals (Li, Co, Ni, and Mn) recycling. A comprehensive guide to pyrometallurgical processing, hydro-metallurgical processing, direct reuse processing, and environmental aspects for recycling S-LIBs for high-value-added products is presented for sustainability. The book discusses engineering issues in the entire S-LIB recycling process chain. A framework for environmental and economic evaluation is presented. An essential reference resource for professors, researchers, operators, and policymakers in academia, industry, and government around the globe will be provided by this book.

CRC Press
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2ND EDITION

Remediation Manual for Contaminated Sites

David L. Russell Global Environmental Operations, Inc., USA

Based on the author's more than 40 years of experience working on environmental projects, Remediation Manual for Contaminated Sites provides a practical guide to environmental remediation and cleanups. It presents a broad overview of the environmental remediation process, distilled into what one needs to know to evaluate a specific challenge or solve a remediation problem. The text offers guidance on tasks that range from managing consultants and contractors to gathering data, selecting a suitable remediation technology, and calculating remediation costs. This new edition is updated throughout, includes five new chapters, and provides a more global coverage.

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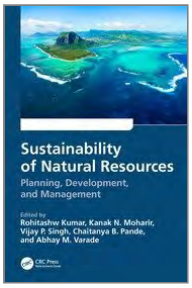
Sustainability of Natural Resources

Planning, Development, and Management



Edited by **Rohitashw Kumar** SKUAST-Kashmir, India**, Kanak N. Moharir , Vijay P. Singh** Texas A&M University, USA**, Chaitanya B. Pande , Abhay M. Varade**

Over-exploitation of groundwater and changes in climate over the past few decades has imposed immense pressure on groundwater resources. Considering the looming threat of water scarcity in the near future, it has become crucial to quantify and manage available water resources. Sustainability of Natural Resources: Planning, Development, and Management addresses water resources exploration, planning, recent geographic information system-based studies, and groundwater modeling and applications. It highlights the optimal strategies for sustainable water resources management and development.

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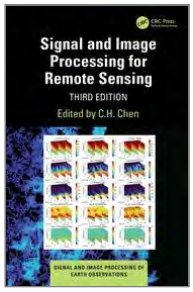
3RD EDITION

Signal and Image Processing for Remote Sensing



Edited by **C.H. Chen** University of Massachusetts, Dartmouth, USA

Series: Signal and Image Processing of Earth Observations

Advances in signal and image processing for remote sensing have been tremendous in recent years. These advancements are the focus of this third edition of Signal and Image Processing for Remote Sensing. It emphasizes the use of machine learning approaches for the extraction of remote sensing information. Other topics include change detection in remote sensing and compressed sensing. With 19 new chapters written by world leaders in the field, this book provides an authoritative examination and offers a unique point of view on signal and image processing.

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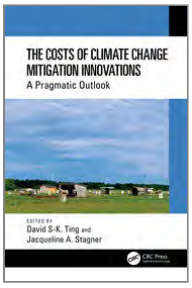
The Costs of Climate Change Mitigation Innovations

A Pragmatic Outlook



Edited by **David S-K. Ting** University of Windsor, Canada**, Jacqueline A. Stagner** University of Windsor, Canada

The notion that humanity may be too late to alter climate change could potentially lead to fear and therefore the advocacy of implementing radical strategies and/or hastening the execution of certain measures to the extreme. The Costs of Climate Change Mitigation Innovations: A Pragmatic Outlook provides a forum for discussion on the long-term consequences of various climate strategies. It promotes our striving toward minimizing the potential negative impact of new interventions by performing objective, holistic analyses. The bottom line is that we do not want todays' solutions to become tomorrow's problems.

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Solid Waste Treatment Technologies

Challenges and Perspectives

Edited by **Pratibha Gautam** UPL University of Sustainable Technology, India**, Vineet Kumar** CSIR-National Environmental Engineering Research Institute, India**, Sunil Kumar**

Series: Environmental Nexus in Waste Management

Sustainable waste management is a major step towards the attainment of Sustainable Development Goals. This book covers all technical, managerial, and legislative aspects of waste management at a global scale, providing a detailed description about different types of wastes, their characteristics, legal perspectives, and sustainable practices for their management. It explains developments in waste treatment technologies (classified based on waste type) and understanding the fundamentals of circular economy in waste management, supported by various case studies. This book is aimed at researchers, graduate students and professionals in environmental engineering and waste management.

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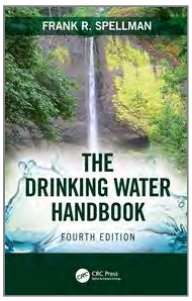
4TH EDITION

The Drinking Water Handbook



Frank R. Spellman Spellman Environmental Consultants, Norfolk, Virginia, USA

This new edition of The Drinking Water Handbook is thoroughly revised and updated and includes a comprehensive discussion of "forever chemicals" as well as the herbicide Atrazine in drinking water. It presents the latest coverage of contaminants in water, such as personal care products and pharmaceuticals (PCPP), and endocrine disruptors, and examines the security requirements for waterworks and ancillary procedures. It examines the process of producing drinking water— from sources of water, to the purification process, through distribution systems to the tap, and then to the actual use and reuse of water.

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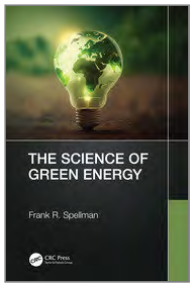
The Science of Green Energy



Frank R. Spellman Spellman Environmental Consultants, Norfolk, Virginia, USA

Concern for the environment and the impacts of pollution have brought about the need to shift from the use and reliance on hydrocarbons to energy-power sources that are pollution neutral or near pollution neutral or renewable. Moreover, the impact of two hundred years of industrialization and surging population growth threatens to exceed the future supply of hydrocarbon power sources. Therefore, the implementation of green energy sources is surging. The Science of Green Energy presents technologies and techniques, as well as real world usage of and operation of today's green energy-based applications.

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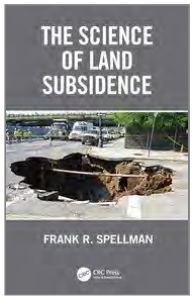
The Science of Land Subsidence



Frank R. Spellman Spellman Environmental Consultants, Norfolk, Virginia, USA

The Science of Land Subsidence explains the current science underpinning natural and human-caused land subsidence events and provides students and interested readers with sufficient background on the basics of geology, natural science, chemical, and environmental engineering. Moreover, it presents a wide-ranging discussion presented in the author's comprehensible conversational style describing the impact of land subsidence events on health, sustenance, and society in general, and provides various case studies covering catastrophic land subsidence events.

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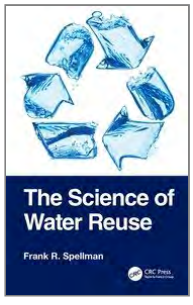
The Science of Water Reuse



Frank R. Spellman Spellman Environmental Consultants, Norfolk, Virginia, USA

The Science of Water Reuse explains how technology can sufficiently purify reclaimed water to potable water quality-even surpassing the cleanliness of the water available from conventional taps. It addresses the significant gap in existing literature on water reuse, focusing particularly on the varied applications of reused or reclaimed water within municipal and agricultural contexts, with a specific emphasis on issues and technologies related to both direct and indirect potable water reuse. It serves as a valuable resource for policy makers, municipal planners, environmental engineering professionals, as well as undergraduate and graduate students.

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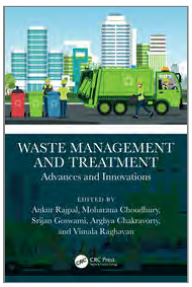
Waste Management and Treatment

Advances and Innovations



Edited by **Ankur Rajpal** Indian Institute of Technology Roorkee,India**, Moharana Choudhury** Voice of Environment (VoE), India**, Srijan Goswami** Delhi Paramedical and Management Institute, India**, Arghya Chakravorty** Vellore Institute of Technology, India**, Vimala Raghavan** Vellore Institute of Technology, India

This book covers environmental and economic waste treatment with resource recovery strategies covering mining, urban, agricultural, industrial, and sewage wastes. It further includes waste management, life-cycle assessment, recycling, and recovery of useful materials from blast furnace slags, iron ore, coal, and bauxite mining. Wastewater recycling, reuse, and treatment methods and economic gain through nanotechnology is covered alongwith biochemical study cycles in mining waste and tailing, landfill stabilization, energy, and nutrient recovery from household, urban, and hazardous waste. This book aims at researchers and graduate students in environmental engineering, and management.

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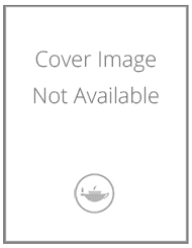
Waste-to-Wealth

Resource Recovery and Value-added Products for Sustainable Development



Edited by **Vinay Yadav** IIT-Kharagpur, India**, Shishir Shrotriya** Embassy of India, Moscow, Russia

For researchers and policymakers in environmental engineering, waste management, and clean energy, this book covers state-of-the-art resource recovery technologies from the different components of solid waste such as plastics, e-waste, fly ash, sewage sludge, slag, and their real applications. Further, it explains various management strategies for agricultural waste, including the generation of bioenergy from agri-crop residue. It also highlights the recent technologies used in the management of industrial waste, their implementation at a large scale, and the treatment of industrial effluent with the rationale synthetic approach, hybrid advanced oxidation process, and bio methanation.

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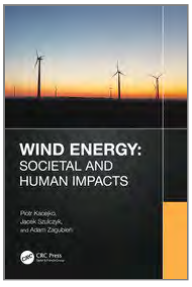
Wind Energy: Societal and Human Impacts



Piotr Kacejko Lublin University of Technology, Poland**, Jacek Szulczyk , Adam Zagubień** Koszalin University of Technology, Poland

Wind Energy: Societal and Human Impacts presents the theoretical basis for the various impacts of wind turbines on humans. These impacts include noise, visual effects, electromagnetic fields, vibrations and oscillations from wind turbines, as well as mechanical impacts and physical risk related to turbine collapse or turbine component failure. It addresses the issue of siting and minimum distances between turbines and residential buildings and proposes modifications to legislation, as well as guidelines and recommendations related to environmental impact reports for wind farms, assessment of such reports, monitoring of such impacts, and more.

CRC Press
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Pb: 978-1-032-59880-2: **£33.99**
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A Career Worth Engineering

Don't Just Graduate—Navigate the Transition from Student to Professional

John S. Rogers , Sean Maciag

Series: Continuous Improvement Series

Transitioning from student to professional can be challenging, but it doesn't have to be a daunting mystery. In A Career Worth Engineering: Don't Just Graduate-Navigate the Transition from Student to Profession, the authors draw from their experiences and share valuable lessons learned in the foundational years of their careers. This book is a guide for new engineering students, recent graduates searching for their first job, or professionals feeling stagnant in their careers.

CRC Press
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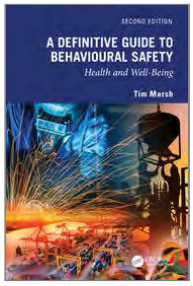
2ND EDITION

A Definitive Guide to Behavioural Safety

Health and Well-Being, Second Edition



Tim Marsh

In this second edition, internationally acclaimed behavioural safety expert Tim Marsh leads the reader through the three main strands: the awareness approach, the 'walk-and-talk' approach and the Six Sigma safety or the Deming-inspired 'full' approach that covers the systemic approach to safety observation, measurement, intervention and analysis, but also incorporates emotional intelligence training aimed at enhancing supervisor–worker trust and communication more generally. Updated to reflect systemic changes due to the COVID-19 pandemic and featuring a brand-new chapter on well-being that discusses the massive changes in thinking about the interaction of culture and personal safety.

CRC Press
October 2024:144
Pb: 978-1-032-57989-4: **£46.99**
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3RD EDITION

Actively Caring for Safety

The Psychological Science of Injury Prevention

E. Scott Geller Virginia Tech, Blacksburg, Virginia, USA

This book outlines proactive applications of applied behavioural science and humanism (i.e., humanistic behaviourism) for improving health and safety. This text provides evidence-based principles for customizing effective processes for improving the human dynamics of safety and health in various locations—from home to the workplace, and throughout a community. World-renowned health/safety researcher, teacher, and consultant E. Scott Geller combines theory and principles in practical step-by-step procedures with behavioral science methods capable of enhancing safety awareness, reducing at-risk behavior, and facilitating ongoing participation in safety-related activities.

CRC Press
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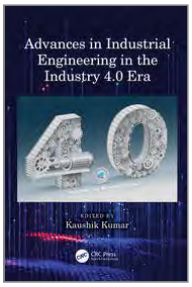
Advances in Industrial Engineering in the Industry 4.0 Era



Edited by **Kaushik Kumar** Birla Institute of Technology, Mesra

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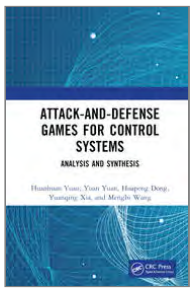

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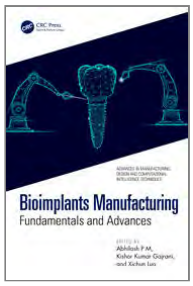

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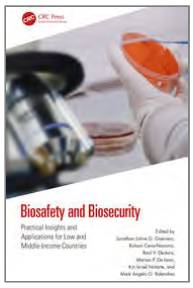

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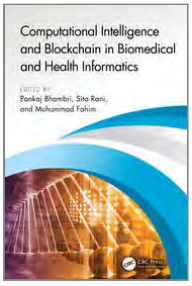

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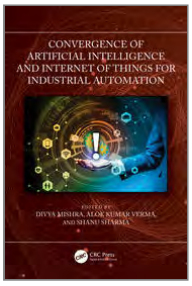

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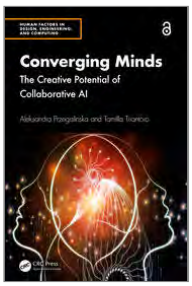

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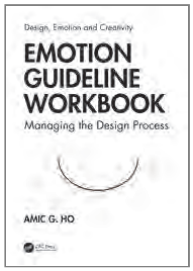

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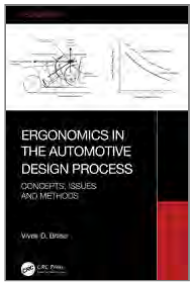

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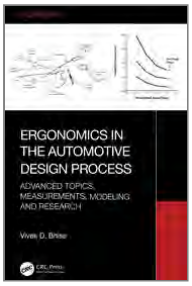

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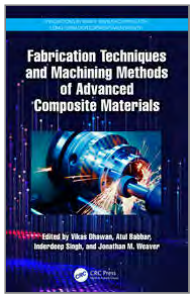

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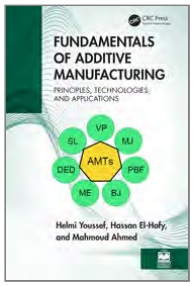
Fundamentals of Additive Manufacturing

Principles, Technologies, and Applications



Helmi Youssef Alexandria University, Egypt**, Hassan El-Hofy** Egypt-Japan University of Science and Technology**, Mahmoud Ahmed**

Additive manufacturing (AM) is the process of constructing 3D objects from a computer model by depositing successive layers of material. This book provides a comprehensive overview of AM techniques, including their concepts, features, and historical background. This textbook is for undergraduate students in mechanical, industrial, manufacturing, and materials engineering programs at the second to fourth levels. As well as students in related fields such as automotive, biomedical, and aerospace engineering. The content is also designed for production and manufacturing engineers, and technologists working in AM and related industries.

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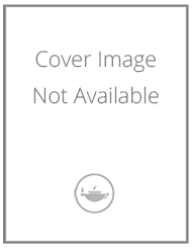

Edited by **Constantine Stephanidis** University of Crete, Greece**, Gavriel Salvendy** University of Central Florida, USA and Purdue University, USA

Human-computer interaction (HCI) is a multidisciplinary research field focusing on the study of people interacting with information technology and plays a critical role in the development of computing systems that work well for the people using them, ensuring the seamless integration of interactive systems into our technologically driven lifestyles. The book series contains six volumes providing extensive coverage of the field, wherein each one addresses different theoretical and practical aspects of the HCI discipline. These volumes are an essential read for individuals interested in human-computer interaction research and applications.

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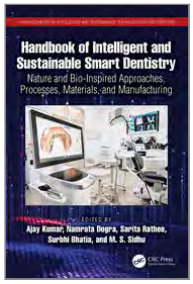

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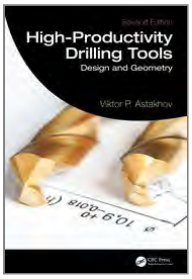

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This completely updated volume covers the design, manufacturing, and inspection of High Productivity Drilling Tools (HPDT) and addresses common issues with drilling system components. It discards old notions and beliefs as it introduces scientifically and technically sound concepts and rules with detailed explanations and practical examples. This practical book should be on the shelves of all industrial engineers, those working in production and manufacturing, process designers, tool material designers, cutting tool designers, and quality specialists. Researchers, senior undergraduate students, and graduate students will also find this book full of very helpful reference information.

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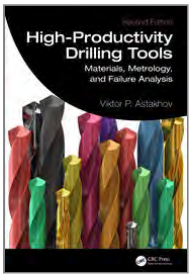

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This updated volume covers tool materials, tolerances, an inspection of drilling tools, requirements of tool drawings, and methodologies and procedures of failure analysis. It introduces a new line of HP drilling tools called VPA designs and signifies its importance in drilling operations. This practical book is for all industrial engineers, those working in production and manufacturing, process designers, tool material designers, cutting tool designers, and quality specialists. Researchers, senior undergraduate students, and graduate students will find this book full of very helpful reference information and a source of new ideas and notions in drilling tool development.

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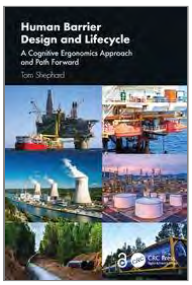
A Cognitive Ergonomics Approach and Path Forward



Tom Shephard

A common source of failure in a human dependent barrier or safety critical task is a latent (designed-in) mismatch error. The mismatch is an unrealistic cognitive demand that exceeds the human capability to reliably respond to that demand. Demand situations often include increased time pressures and difficult environmental conditions. The book presents new solutions to prevent and mitigate these and other cognitive-type errors in barriers and safety critical tasks.

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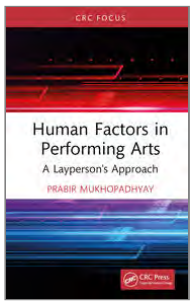
Human Factors in Performing Arts

A Layperson's Approach



PRABIR MUKHOPADHYAY Indian Institute of Info Tech Design and Manufacturing, Jabalpur, India

This captivating book explores the intersection where performing art meets human interaction and delves into the application of human factors' principles in this field. From music to magic shows, performances are analyzed from a human factors perspective. This book offers a comprehensive overview of how human factors influence the nuances of performing arts. Ideal for professionals in human factors, occupational health and safety, and those working in the performing arts industry, Human Factors in Performing Arts: A Layperson's Approach serves as a guide for theatre managers, event organizers, and anyone involved in orchestrating small or large-scale performances.

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Human Perspectives of Industry 4.0 Organizations

Reviewing Sustainable Performance

Edited by **Sonia Umair , Umair Waqas , Beata Mrugalska** Poznan University of Technology, Poznan, Poland**, Ibrahim Rashid Al Shamsi**

This book focuses on sophisticated aspects of how to make products tailor-made to suit specific requirements. It seeks to understand the status of sustainable performance that is impacted by different aspects related to human factors and concludes with detailing the future needs of businesses and potential trends. The book allows the reader to develop a deeper view of sustainability and organizational problems and to bridge the gap between theory and practice. Each chapter contains a self-contained study of a business and the decisions made to improve performance and is supported with tables, charts and illustrations, and a wide list of bibliographic references.

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Human-Computer Interaction in Intelligent Environments

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This book will provide the reader with a comprehensive picture of intelligent environments. It covers the subject coming from a holistic human-computer interaction approach, addressing the challenges and knowledge gained in designing interactions with the Internet of Things, conversing with intelligent agents or robots, and also the overall philosophy and process. Important concepts such as human-robot interaction, smart cities, and human-agent teaming are discussed in a comprehensive manner. It will serve as an ideal text for students, professionals, and researchers in the fields of ergonomics, human factors, human-computer interaction, and computer engineering.

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This book showcases the use of human-computer interaction in practice in various application domains. The reader of the book will be able to see how the human-computer interaction theory is applied in a wide range of real-world scenarios and gain an understanding of how the basic methods and theories can be used to address the specific issues of each case. It will also help the readers to explore how the human-computer interaction discipline is advancing and which are the emerging research topics in the field. It will serve as an ideal text for students, professionals, and researchers in the fields of ergonomics, human factors, human-computer interaction, and computer engineering.

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A Four-Step Approach

Tim D'Ath

The world of safety for professionals can often be unclear. In an industry that divides the safety world into one of two camps, either traditional or contemporary safety, the lack of knowledge propagates through books, publications, podcasts, social media, and conferences, leaving safety professionals feeling more muddled than informed. This book is an easy-to-read that will appeal to professionals at all career levels where safety is critical to their role, including those in construction, utilities, manufacturing, mining, civil, aviation and maritime sectors.

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Society has become more educated on the impacts on human health and environment and there has been a noticeable decrease in the acceptance of this risk by workers and the public. However, to ensure a higher level of worker protection, a revised approach to industrial hygiene is needed focusing on risk-reduction. The second edition of Industrial Hygiene focuses on implementation of an industrial hygiene program, using a risk-based approach, in an operational environment. This is an ideal read for any student, researcher, or practitioner in the fields of occupational health and safety, industrial hygiene, risk management and hazard control.

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The industrial landscape and global society are changing rapidly, driven by the growing adoption of the Industrial Internet of Things (IIoT) and Artificial Intelligence (AI) technologies. As IIoT and AI become more pervasive, they also offer new security risks that must be addressed to ensure the reliability and safety of critical systems. By offering step-by-step guidance for the implantation process along with best practices this book becomes a valuable resource for practitioners and engineers in the areas of Industrial Engineering, IT, Computer Engineering, and anyone looking to secure their IIoT network against cyber threats.

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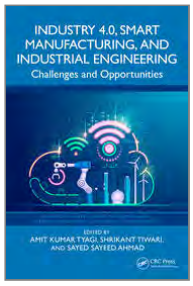

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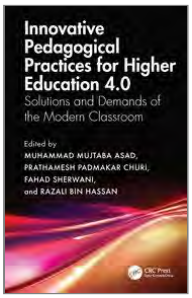

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Innovative and creative teaching methods tailored to meet the demands of the current era of Industrial Revolution 4.0 are increasingly prevalent in Higher Education Institutions. This book explores and showcases various aspects of Innovative Pedagogies for Higher Education 4.0 to provide a comprehensive understanding of this evolving field. This book meets the need for solutions that tackle the challenges of Education 4.0 and demonstrates how to overcome these challenges in higher education institutions. It is a valuable resource for educators, specialists, academic institutions, and policymakers seeking practical solutions in the ever-evolving landscape of education.

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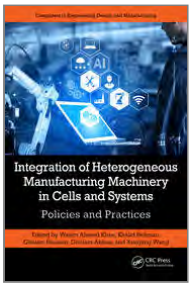

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Intelligent Manufacturing and Industry 4.0

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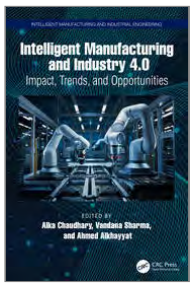

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The reader of this book will gain an in-depth understanding of the various common and contemporary ways humans interact with computer technologies, including a description of the interaction styles and the comprehensive presentation of interactive devices. It further presents the characteristics of devices, advantages, and the disadvantages of interaction modes. It will also cover multi-user, multimodal systems, public systems with large displays, brain-computer interfaces, and the latest in mixed reality environments. Serves as an ideal text for students, professionals, and researchers in the fields of ergonomics, human factors, human-computer interaction, and computer engineering.

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By enabling the conversion of traditional manufacturing systems into contemporary digitalized ones, IoT adoption in manufacturing creates huge economic prospects through reshaping industries. Modern businesses can more readily implement new data-driven strategies and deal with the pressure of international competition thanks to Industrial IoT. But as the use of IoT grows, the amount of created data rises, turning industrial data into Industrial Big Data. This reference brings all related technologies into a single source so researchers, undergraduate and postgraduate students, academicians, and those in the industry can easily understand the topic and further their knowledge.

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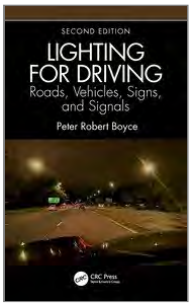
Roads, Vehicles, Signs, and Signals



Peter Robert Boyce Canterbury, Kent, UK

Vehicle,road, sign and signal lighting are provided to enable drivers to reach their destinations quickly and safely. Lighting for Driving: Roads, Vehicle, Signs and, Signals,Second Edition shows the crucial role lighting plays in road safety and examines how it could be used more effectively. With the light emitting diode (LED) becoming the lighting source of choice for transport planners and vehicle designers, this book discusses road lighting,vehicle lighting, signs and signals in one handy volume. This book will be an ideal for ergonomists and engineers within transport and road engineering, transport planners, civil engineers, vehicle designers and electrical engineers.

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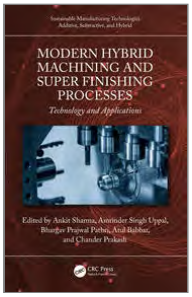
Modern Hybrid Machining and Super Finishing Processes

Technology and Applications



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This book captures the recent breakthroughs in subtractive manufacturing and difficult-to-machine material-based modern machining techniques. It illustrates various combinations of hybrid machining and super finishing and outlines the critical area profile accuracy, high precision machining, high tolerance, surface quality, chipping, and cracking, for converting into new applications. This book is a first-hand reference for commercial organizations mimicking modern hybrid machining processes by targeting difficult-to-machine materials-based applications and a resource for scholars manufacturing professionals, engineers, and academic researchers.

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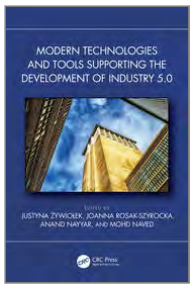
Modern Technologies and Tools Supporting the Development of Industry 5.0



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In an era where technological advancements are not just tools but partners in our workspaces, "Modern Technologies and Tools Supporting the Development of Industry 5.0" emerges as a seminal guide to understanding and navigating the complexities of the fifth industrial revolution. This book, a collective work of expert authors, delves into the heart of Industry 5.0, exploring how it synergizes human creativity with robotic precision to redefine industrial landscapes. From collaborative robotics to sustainable development, each chapter unfolds layers of knowledge essential for professionals, academics, and students alike.

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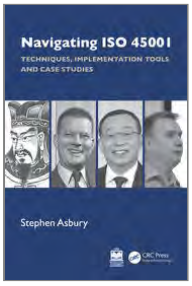

Stephen Asbury

Navigating ISO 45001 charts the evolution of control and management systems up to the launch of the world's first occupational health and safety management system (OH&S-MS) standard ISO 45001:2018 and then forecasts its future for the next ten years. This book delivers approaches and techniques that include the Navigating 45001: Three-Step Model, 16 OH&S-MS implementation toolkits, and 24 case studies. Acting as the go-to companion to Health and Safety, Environment, and Quality Audits, this book presents OH&S-MS from the organization's side. The book is essential reading for senior managers and safety managers in any safety-critical role or profession.

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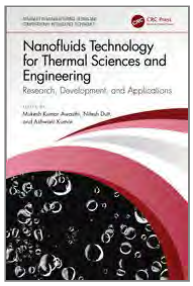
Nanofluids Technology for Thermal Sciences and Engineering

Research, Development, and Applications



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The text highlights how nanofluids can be used in thermal solutions across multiple industries, including electronics, energy, and manufacturing. It emphasizes the enhanced heat transfer properties of nanofluids and their potential to significantly improve the efficiency of heat exchange processes. The book discusses topics such as nanoparticle synthesis, nanofluid testing, performance enhancement using nanofluids, thermal behavior of hybrid nanofluids, Brinkman Equation in Nanofluids and Safety considerations in Nano Fluid-Based Systems.

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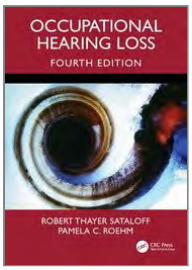
4TH EDITION

Occupational Hearing Loss, Fourth Edition



Robert Thayer Sataloff Thomas Jefferson University, Philadelphia, Pennsylvania, USA**, Pamela C. Roehm**

Now in its fourth edition, Occupational Hearing Loss delivers a complete overview of the hazards of occupational noise exposure, causes of hearing loss, testing of hearing, criteria to distinguish occupational hearing loss, and more. The book emphasizes medical and societal factors in its coverage of topics such as audiometry and who should do it, evoked response testing, and conductive and sensorineural hearing loss, as well as mixed, central, and functional hearing loss. This title is an ideal read for any student or professional occupational physician, audiologist, health and safety engineer, industrial hygienist, and otolaryngologist.

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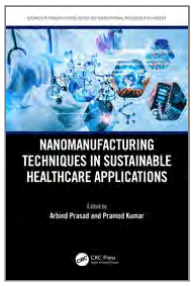
Nanomanufacturing Techniques in Sustainable Healthcare Applications



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The text begins by discussing the processing and characterization of nano-manufactured resorbable bio nanocomposites and presents the latest advances in carbon-based polymer nanocomposite materials for sensing applications. It further presents different characterization techniques such as scanning electron, transmission electron, atomic force microscopy, and powder-X ray diffraction for the identification of bio nanocomposites. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of manufacturing engineering, biomedical engineering, materials science and engineering, mechanical engineering, and production engineering.

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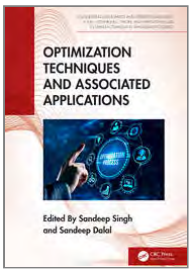

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José Manuel Torres Farinha

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Post-Processing of Parts and Components Fabricated by Fused Deposition Modeling

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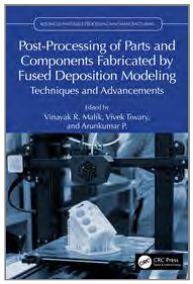

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This book describes several post-processing techniques that can be used to enhance the mechanical strength, isotropy, surface quality, and dimensional accuracy of 3D printed components using Fused Deposition Modelling (FDM) technique. It also discusses the usage of adhesives, interlocks, fasteners, ultrasonic, frictional, and microwave energy to join FDM-3D printed parts. Furthermore, the book also covers the scope of future research and challenges in the post-processing of FDM parts, as well as some of the most popular approaches in the field, such as Big Area Additive Manufacturing (BAAM), Machine Learning, and IoT.

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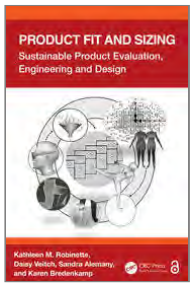
Product Fit and Sizing

Sustainable Product Evaluation, Engineering, and Design



Kathleen M. Robinette , Daisy Veitch , Sandra Alemany , Karen Bredenkamp

This book addresses the complexity of assessing fit and using fittings in the product design process from a scientific and systems engineering perspective. Including: how to represent the anthropometry of the target market, good practices for reliable fit testing, and comprehensive statistical analyses for fit and sizing analysis. This book is intended for industry professionals and undergraduate and graduate education to prepare students for design and engineering jobs. For organizations that purchase uniforms or protective equipment and apparel, it provides instructions for purchasing professionals to evaluate the suitability of wearable products.

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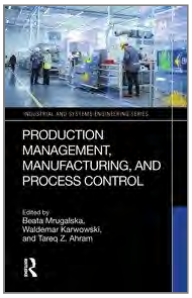
Production Management, Manufacturing, and Process Control



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Drawing on contributions from various manufacturing fields, this book offers a comprehensive perspective by combining theoretical concepts with practical applications. It emphasizes future developments, the integration of technologies, and the crucial role of humans in manufacturing companies. This is an ideal read and a valuable resource for students, graduates, teachers, researchers, and professionals in industrial management, business management, safety fields, manufacturing, risk management, and quality management.

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2ND EDITION

Productive Safety Management

How to Mitigate Residual and Entropic Risks, Second Edition

Tania Van der Stap

This book discusses the realm of operational risk management, exploring the intricacies of managing safety, production, and quality simultaneously. The reliance on current understandings of residual risk is daunting, particularly as systems of production are prone to degradation over time. This degradation leads to an increase in 'entropic risk', resulting in losses in daily production that, if left unchecked, could culminate in catastrophic consequences. This comprehensive title is designed for operational managers and supervisors, and risk-related professionals in engineering, OSH, environment, and quality management.

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Risk Management Framework for Fourth Industrial Revolution Technologies

Omoseni Oyindamola Adepoju Department of Management and Accounting, Lead City University, Ibadan, Nigeria**, Nnamdi Ikechi Nwulu** University of Johannesburg, Johannesburg, South Africa**, Love Opeyemi David** University of Johannesburg, Johannesburg, South Africa

This book focuses on major challenges posed by the Fourth Industrial Revolution (4IR), particularly the associated risks. By recognizing and addressing these risks, it bridges the gap between technological advancements and effective risk management. It further facilitates a swift adoption of technology and equips readers with the knowledge to be cautious during its implementation. Divided into three parts, it covers an overview of 4IR, explores the risks and risk management techniques, and comprehensive risk management framework specifically tailored for the 4IR.

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Safety at Height

A Holistic View of Fall Management

Natarajan Krishnamurthy

In this book, Proferssor Krishnamurthy shares his long research and consultancy experience to offer an overview of falls, methods to mitigate them and management techniques to ensure better safety. This book argues that deaths and major injuries from fall accidents could have been prevented by stakeholders knowing more and following guidelines. It looks at the mechanics of falls, accidents in the workplace and safeguards that can be put in place. Featuring exercises at the end of chapters to underpin learning, it concludes with unusual fall situations. Through its pages, you will develop a good understanding of how to prevent falls across a variety of different real-life scenarios.

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A Supply Chain 4.0 Perspective

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The ongoing impact of Industry 4.0 and disruptive technologies has transformed conventional supply chains into globally connected collaborative networks. As supply chains become flexible, agile, and digital structures, the planning and operation phases of the key business processes become more complex. This book presents state-of-the-art chapters on smart and sustainable supply chain management in the aviation industry. This book covers a wide range of topics, including key business operations in aviation, productivity improvement strategies in the aviation industry, and promising applications of disruptive technologies for aviation companies.

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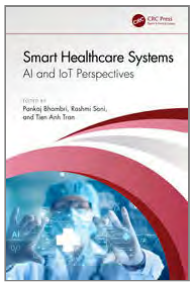
Smart Healthcare Systems

AI and IoT Perspectives



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Recently, Artificial Intelligence (AI) and the Internet of Things (IoT) have revolutionized numerous industries, including healthcare.This book explores the profound impact these new technologies have on healthcare, and presents a comprehensive overview of their applications, challenges, and prospects. Researchers, Academicians, Industry, R&D Organizations, medical professionals, PG students, and policymakers in the fileds of artificial intelligence, the internet of things, healthcare informatics, biomedical engineering, medical informatics, and related subjects can use this book to assist them in making appropriate decisions regarding these emerging disciplines.

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The text discusses a novel correlation coefficient of linguistic intuitionistic fuzzy sets and its application to medical diagnosis problems. It further explains neutrosophic cubic set-based aggregation operators for library ranking systems, and techniques for order performance by similarity to ideal solution. The text also introduces the new aggregation operators, similarity measures and distance measures for the fuzzy sets and their extensions. It is primarily written for senior undergraduate, graduate students, and academic researchers in fields including industrial engineering, manufacturing engineering, production engineering, mechanical engineering and engineering mathematics.

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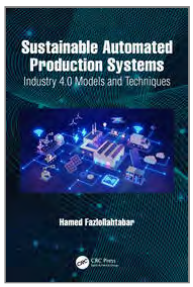
Sustainable Automated Production Systems

Industry 4.0 Models and Techniques



Hamed Fazlollahtabar

Due to disruptions occurring within production processes as a result of different circumstances, it is necessary to provide a new and safe production system that can pass any crisis such as a pandemic. New sustainable automated production systems need to be proposed and adopted by industrial managers and this book fulfills that need. The book includes chapters presenting sustainable production models and automated production using Industry 4.0 technologies and is targeted to help both practitioners and academicians.

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The convergence of AI and Financial Technology (Fintech) has ushered in a new era of innovation in the finance ecosystem, particularly within the context of the digital gig economy. This emerging trend has created a unique set of challenges and opportunities, which AI and Fintech are poised to address. This book explores how these cutting-edge technologies are reshaping the financial landscape and the digital gig economy's impact on the traditional workforce. Written for students, scholars, lecturers, researchers, scientists, experts, specialists, and engineers, this book represents an area of significant interest and importance in the realm of finance and technology.

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Technology Innovation Pillars for Industry 4.0

Challenges, Improvements, and Case Studies

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Technology Innovation Pillars for Industry 4.0: Challenges, Improvements, and Case Studies discusses the latest innovations in the application of technologies to Industry 4.0 and the nine pillars and how they relate, support, and bridge the gap between the digital and physical worlds we live in. This reference book provides a great resource for undergraduate and graduate students, industrial and manufacturing engineers, and engineers of related disciplines along with business professionals explaining what the nine pillars are and how they relate to Industry 4.0 and smart factories.

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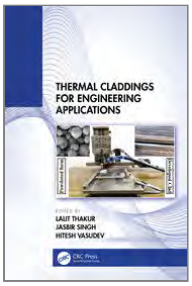
Thermal Claddings for Engineering Applications



Edited by **Lalit Thakur** NIT Kurukshetra, India**, Jasbir Singh** Gurukula Kangri, Deemed to be University, India**, Hitesh Vasudev** LPU, India

The text presents advances in the field of thermal claddings for protection against erosion, corrosion, and wear in hydraulic turbines, automobiles, agricultural equipment, power plant, chemical industries and jet engines. It further discusses different cladding techniques such as electron beam, oxy-fuel, arc welding processes and microwave hybrid heating. It explains the mechanism for failure of materials and cladding and emphasizes the protection mechanism. The text is primarily written for senior undergraduate, graduate students and academic researchers in the fields of mechanical engineering, manufacturing engineering, industrial engineering and production engineering.

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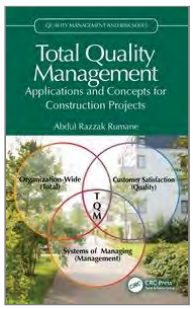
Total Quality Management

Applications and Concepts for Construction Projects



Abdul Razzak Rumane Sijjeel General Commerce & Contracting Co., Kuwait

Series: Quality Management and Risk Series

This book has been developed to provide significant information about the usage and application of the Total Quality Management (TQM) concept in a construction project environment. The content spans from the inception through to the closing of the project focusing on the TQM approach in each phase of the project. Construction and quality professionals, industrial engineers, project managers, students, academics, and trainers will find that this book satisfies their needs and meets their requirements for a book that specifically uses TQM in construction projects.

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User Experience Methods and Tools in Human-Computer Interaction

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This book presents all the necessary methods and tools to design and create useful, usable, and enjoyable products and services that meet the user's needs and preferences. It covers important concepts including designing, conducting, analyzing, and reporting user testing experiments, eye-tracking and physiological measurements for UX evaluation, digital human modeling, and UX design tools. It will serve as an ideal text for students, professionals, and researchers in the fields of ergonomics, human factors, human-computer interaction, and computer engineering.

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Wireless Communication Technologies

Roles, Responsibilities, and Impact of IoT, 6G, and Blockchain Practices

Edited by **Vandana Sharma , Balamurugan Balusamy** Shiv Nadar Uni.**, Gianluigi Ferrari** University of Parma, Italy**, Prerna Ajmani**

Series: Advances in Intelligent Decision-Making, Systems Engineering, and Project Management

This book introduces recent wireless technologies and their impact on trends, applications, and opportunities. It explores the latest 6G, IoT, and Blockchain techniques with AI and evolutionary applications, showing how digital integration can serve society. The book is a reference for those working with 6G, IoT, AI, and its related application areas. Students at UG and PG levels in manufacturing, electronics, telecommunications, computer science, other engineering fields, and information technology will be interested in this book. This publication is ideal for technology development, academicians, data scientists, industry professionals, and researchers.

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Women Entrepreneurs

Building Sustainable Business Models in Digital Spaces, Case Studies, and Experiences

Edited by **Tilottama Singh** Indian Institute of Management, Uttaranchal University**, Richa Goel** SCMS, Symbiosis International University, India**, Manleenjot Kaur , Michela Floris**

This book describes the path of women entrepreneurs who manage sustainable enterprises and delves into the issues they encounter and the steps they take to overcome these obstacles. It also addresses the scaffolding provided by liminal digital spaces to the sustainable business models run by women entrepreneurs. As well as how organizations can profit from utilizing digital spaces to improve their operations. Whether you are an entrepreneur, a policymaker, a researcher, or simply someone interested in the subject, this book offers an opportunity to understand and promote the growth and empowerment of women entrepreneurs in the digital age.

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2D Semiconductors for Environmental Remediation

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This book gives a comprehensive description of various aspects of 2D semiconductors including their synthesis, surface science, characterizations, and their allied application in environmental remediation including air and water purification, oil-water separation, hydrogen production, and CO2 removal. These are explained in detail with the plausible applications of these semiconductors. The electronic and optoelectronic enhancement properties of these semiconductors with bandgap engineering, doping, and chemical functionalization for various applications are exemplified. This book is aimed at researchers and graduate students in materials science and environmental engineering.

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Fundamentals, Advances, and Challenges

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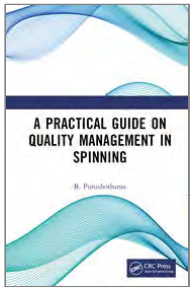
A Practical Guide on Quality Management in Spinning



B. Purushothama

This book is a hands-on guide that discusses quality management in spinning. It details the techniques, insights and best practices that weave excellence into every fiber. The subject matter of this book discusses the concepts of product objectives and the impact of product features at customer's end with examples. Print edition not for sale in South Asia (India, Sri Lanka, Nepal, Bangladesh, Pakistan and Bhutan)

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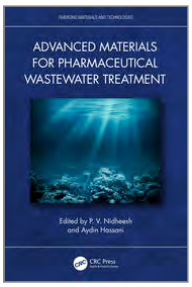
Advanced Materials for Pharmaceutical Wastewater Treatment



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Pharmaceuticals cannot be effectively removed by conventional wastewater treatment plants owing to the complex composition, high concentration of organic contaminants, high salinity, and biological toxicity of pharmaceutical wastewater. This book provides an overview of the production and environmental impacts of pharmaceutical compounds and their advanced treatment methods, with a focus on advanced materials used for removing pharmaceutical contaminants from wastewater. The book is essential reading for researchers and practitioners in materials science and engineering, environmental science and engineering, analytical chemistry, and water treatment.

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This book explores modelling and simulation of chemical and biochemical processes at industrial scale using a variety of approaches. Particular attention is devoted to simulations in different scales to achieve a wide-spectrum and more efficient analysis of problems ranging from the design of novel materials to the optimization of industrial processes as a function of the operating conditions. It covers optimization with experimental data and offers readers a thorough understanding and analysis of different parameters of a whole process stream. This text will be of interest to researchers in chemical, biochemical, environmental, and materials engineering and industrial chemistry.

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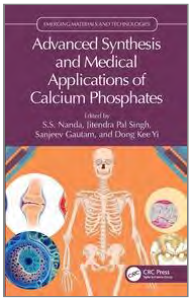
Advanced Synthesis and Medical Applications of Calcium Phosphates



Edited by **S.S. Nanda** Myongji University, Republic of Korea**, Jitendra Pal Singh** Manav Rachna University, India**, Sanjeev Gautam** Panjab University, India**, Dong Kee Yi** Myongji University, Republic of Korea

Series: Emerging Materials and Technologies

Calcium phosphate materials are used in many medical and dental applications. Advanced Synthesis and Medical Applications of Calcium Phosphates covers the structure, chemistry, synthesis, and properties of both natural and synthetic calcium-based biomaterials and details a variety of medical applications. Detailing fundamentals through applications, this book helps biomaterials researchers to better understand the clinical targets and requirements for use of these materials for optimal synthesis and development.

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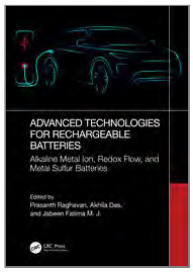
Advanced Technologies for Rechargeable Batteries

Alkaline Metal Ion, Redox Flow, and Metal Sulfur Batteries



Edited by **Prasanth Raghavan** Department of Polymer Science and Rubber Tech, India.**, Akhila Das** Department of Polymer Science and Rubber Tech, India.**, Jabeen Fatima M. J.** Department of Polymer Science and Rubber Tech, India.

This volume focusses on Alkaline Metal Ion, Redox Flow and Metal Sulfur Batteries and details about the various kinds of advanced rechargeable batteries. Divided into four sections, it explains magnesium ion batteries, sodium ion batteries, metal sulfur batteries, and redox flow batteries with an introduction to rechargeable batteries and major upcoming batteries (magnesium/sodium ion batteries). Various kinds of redox flow batteries from introduction extending to the recent progress in redox flow batteries have been exclusively discussed. It is aimed at graduate students, researchers and professionals in materials science, chemical and electrical engineering, and electrochemistry.

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Advanced Technologies for Rechargeable Batteries

Metal-Ion, Hybrid, and Metal-Air Batteries

Edited by **Prasanth Raghavan** Department of Polymer Science and Rubber Tech, India.**, Akhila Das** Department of Polymer Science and Rubber Tech, India.**, Jabeen Fatima M. J.** Department of Polymer Science and Rubber Tech, India.

The volume covers recent advanced battery systems such as Metal-Ion, Hybrid and Metal-Air Batteries under three sections. It includes introduction to fluoride, potassium, zinc, chloride, aluminium, and iron ion batteries. It summarizes the recent progress and chemistry behind the popular metal air batteries including a systematic overview of the components, design, and integration of these new battery technologies. It is aimed at graduate students, researchers and professionals in materials science, chemical and electrical engineering, and electrochemistry.

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Advanced Technologies for Rechargeable Batteries

Two Volume Set

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The main aim of this volume series is to deliver the significance of latest rechargeable batteries over the currently using lithium–ion batteries. It focusses on the next-generation rechargeable batteries such as magnesium ion batteries, metal air batteries, sodium ion batteries, chloride ion batteries, fluoride ion batteries, redox flow batteries, hybrid batteries, iron-ion batteries etc. It highlights emerging energy electrochemical systems and the recent progress in energy storage devices. This book is aimed at graduate students, researchers and professionals in materials science, chemical and electrical engineering, and electrochemistry.

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Advanced Two-Dimensional Material-Based Heterostructures in Sustainable Energy Storage Devices

Edited by **Sreekanth Ponnada , Susmita Naskar** Johns Hopkins University, MA, USA

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 comprehensive reference is written to guide researchers and engineers working to advance the technology of energy-efficient energy storage devices.

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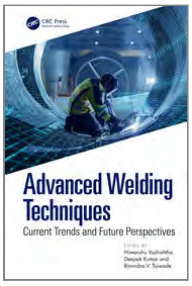
Advanced Welding Techniques

Current Trends and Future Perspectives



Edited by **Himanshu Vashishtha , Deepak Kumar , Ravindra V. Taiwade**

Advanced Welding Techniques highlights breakthroughs in advances in welding methods and provides readers with the ability to accurately identify the appropriate welding processes and optimal improvement methods for intended applications. It offers comprehensive guidance on welding design to ensure readers are equipped to provide solutions to any technical malfunctions they may encounter. This book offers students, academics, researchers, scientists, engineers, and industry experts a comprehensive overview the most recent breakthroughs in advanced welding methods and their applications to joining various metals and their alloys.

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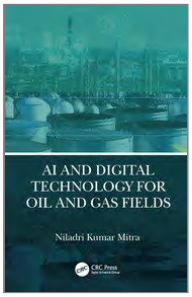
AI and Digital Technology for Oil and Gas Fields



Niladri Kumar Mitra Petroleum Professional, Delhi, India

The book essentially covers the growing role of AI in oil and gas industry, including digital technology in exploration phase to customer sales service along with a cloud-based digital storage of reservoir simulation data for modeling. It initiates with the description of AI system and its role towards oil and gas business including agent base system, impact of industrial IoT on business models, ethics of robotics in AI implementation. It discusses reliability of operation leading to reduction of operating costs by localizing control functions, remote monitoring, and supervision. This book aims at Professionals in Petroleum and Chemical Engineering, Technology & Engineering Management.

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An Introduction to Fundamentals of Diffusion in Solid State Materials

Reza Ghomashchi

Diffusion, the movement of atoms in a material, is an integral part of many metallurgical and materials treatment processes. Understanding diffusion mechanisms helps to control and improve materials properties. This book offers a comprehensive overview of diffusion in synthesis and analysis of materials from the fundamentals through applications. Written with less emphasis on complex mathematical equations, this text is accessible to researchers and students in materials, mechanical, and related engineering disciplines studying the phenomenon of diffusion in materials and its application in the engineering of materials.

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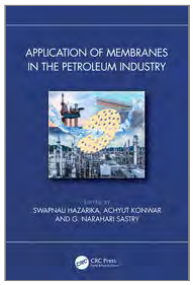
Application of Membranes in the Petroleum Industry



Edited by **Swapnali Hazarika , Achyut Konwar , G. Narahari Sastry**

This book focusses on the advantageous features of membrane technology in petroleum industries with emphasis on membrane materials, olefin paraffin, oil water, aliphatic and aromatics, heavy metals, waste management, Sulphur emission, enhanced oil recovery and so forth. It also discusses design and development of membrane from novel materials, challenges of new materials for membrane applications, membrane-based processes, and application of novel membrane-based processes for petroleum industries. This book is aimed at researchers and graduate students in chemical and petroleum engineering, membrane technology.

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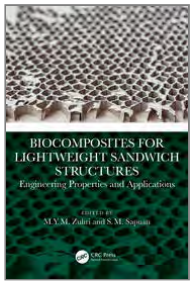
Biocomposites for Lightweight Sandwich Structures

Engineering Properties and Applications



Edited by **M.Y.M. Zuhri , S. M. Sapuan** Universiti Putra, Malaysia

This book highlights how the relationship between biocomposites and sandwich structures can provide a unique combination of superior properties that can be optimized for environmentally friendly lightweight applications. It introduces current performance of biocomposites, sandwich structure applications, machining and manufacturing methods, energy-absorbing capabilities, and strengthening techniques of structures, as well as potential, challenges, and future perspectives on performance improvement. This comprehensive reference is aimed at materials, mechanical, and aerospace engineers and those working in related fields interested in development of materials for lightweight designs.

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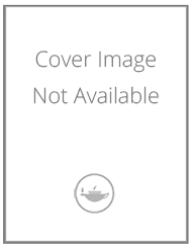
Biodegradable Polymers, Blends and Biocomposites

Trends and Applications



Edited by **A. Arun** Alagappa University, India**, Kunyu Zhang** Petrochemical Research Institute, China**, Sudhakar Muniyasamy** CSIR Chemical Cluster, South Africa**, Rathinam Raja** University of Algarve, Portugal

Series: Emerging Materials and Technologies

Biobased biodegradable polymers are emerging as an alternative to fossil fuel-based plastics. This book discusses trends in the development of microbial/other renewable source-based bioplastics products, their blends, and biocomposites applications in various industrial fields. It covers biodegradable polymeric materials preparation, extraction, formulation, modification of properties, products development and applications, and end-of-life options. Furthermore, the book help readers understand the bioplastic's resource, isolation procedure, utilization in commercial level and finally markets and economy. The book is aimed at researchers and graduate students in polymers and composites.

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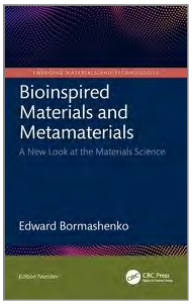
Bioinspired Materials and Metamaterials

A New Look at the Materials Science



Edward Bormashenko

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This book examines advances in bioinspired materials and metamaterials and investigates how their tailor-engineered properties enable the design of devices and ultimately the ability to solve complex societal problems that are, in principle, impossible with traditional materials. The aim is to survey the scientific foundations of the design and properties of bioinspired materials and metamaterials and the way they enter engineering applications. The text is intended for materials engineering students who have completed courses in general physics, chemistry, and calculus, as well as researchers in materials science and engineering.

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Biomass Wastes for Sustainable Industrial Applications

A Waste-to-Wealth Approach

Edited by **Chandrabhan Verma** King Fahd University of Petroleum & Minerals, Saudi Arabia**, Shikha Dubey** Hemvati Nandan Bahuguna Garhwal University

In this edited volume, Verma and Dubey collate important discussions from international researchers to address major innovations in the sustainable industrial applications of biomass wastes including processing fundamentals, extraction, purification, properties, and industrial applications. This is a vital resource for a broad readership including students, academics, research professionals, research enterprises, R&D and defence research laboratories, especially those researching and working in fields such as chemical engineering, material science and engineering, nanotechnology, energy, and environmental engineering.

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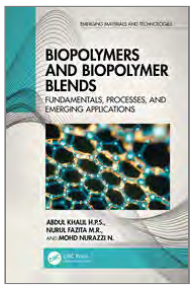
Biopolymers and Biopolymer Blends

Fundamentals, Processes, and Emerging Applications



Abdul Khalil H.P.S. , Nurul Fazita M. R. , Mohd Nurazzi N.

Series: Emerging Materials and Technologies

This book 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. 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 engineering, biotechnology, and related disciplines.

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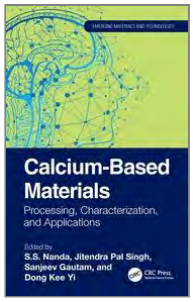
Calcium-Based Materials

Processing, Characterization, and Applications



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Series: Emerging Materials and Technologies

Calcium-based natural minerals are important for wide range of applications. Though these materials are available in the nature, researchers are working towards developing these materials in the laboratory. Calcium-Based Materials: Processing, Characterization, and Applications introduces the possibility of designing these materials for particular applications. This comprehensive text is aimed at researchers in materials science and engineering and bioengineering.

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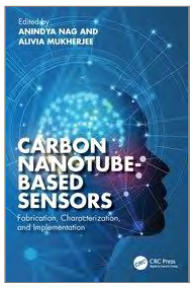
Carbon Nanotube-Based Sensors

Fabrication, Characterization, and Implementation



Edited by **Anindya Nag** Technische Universität Dresden, Germany**, Alivia Mukherjee**

Carbon Nanotube-Based Sensors highlights the latest research and developments on carbon nanotubes (CNTs) and their applications in sensors and sensing systems. It offers an overview of CNTs, including their synthesis, functionalization, characterization, and toxicology. It then delves into the fabrication and various applications of CNT-based sensors. This book is aimed at researchers in the fields of materials and electrical engineering who are interested in the development of sensor technology for industrial, biomedical, and related applications.

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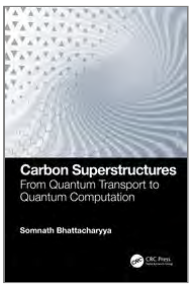
Carbon Superstructures

From Quantum Transport to Quantum Computation



Somnath Bhattacharyya University of the Witwatersrand, South Africa

This book covers how the understanding, as well as controllability of the quantum electronic properties of carbon structures, can be improved through a combined study of structural geometry, vibrational properties, and dynamics of resonating valence bonds. It elaborates varied properties like growth mechanism, exotic properties viz. unusual geometry of microstructures mixed with electron distribution and spin properties in carbon, transport mechanism, and new applications including Hybrid quantum technology-based on the superconducting diamond and diamond NV centres. This book is aimed at Researchers and Professionals in Materials Science, Electronics, Physics, and Chemistry.

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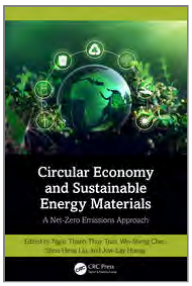
Circular Economy and Sustainable Energy Materials

A Net-Zero Emissions Approach



Edited by **Ngoc Thanh Thuy Tran , Wei-Sheng Chen , Shou-Heng Liu , Jow-Lay Huang**

With a unique emphasis on net-zero emission approaches, this book delves into circular economy principles and sustainable energy materials, offering a comprehensive perspective on climate change challenges. Offering a roadmap towards carbon neutrality and net-zero emission future, this book serves as a valuable resource for advanced students, researchers, engineers, and policymakers worldwide seeking solutions to climate change and sustainable development.

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Classical and Molecular Thermodynamics of Fluid Systems

Principles and Applications

Juan H. Vera Professor Emeritus, McGill University, Montreal, Canada**, Grazyna Wilczek-Vera** McGill University, Montreal, Canada, Retired**, Claudio Olivera-Fuentes , Costas Panayiotou**

This text explores the connections between different thermodynamic subjects related to fluid systems, from first principles to applied topics. It clarifies concepts through simple nomenclature and algebra. It presents the structural elements of classical thermodynamics of fluid systems, covers the treatment of mixtures, and shows via examples and references the usefulness and limitations of classical thermodynamics for the treatment of practical problems related to fluid systems. The new edition recent advances and contains additional pedagogical tools. This text is written for advanced students in Chemical Engineering and Chemistry, as well as practicing engineers and researchers.

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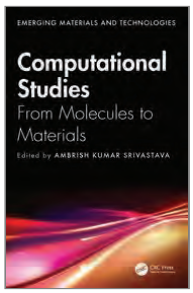

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The book covers a diverse range of topics based on computational studies including modeling and simulations based on quantum chemical studies and molecular dynamics (MD) simulations. It contains quantum chemical studies on several molecules including biologically relevant molecules and liquid crystals and various aspects of super atomic clusters including super alkalis and super halogens. It gives an overview of MD simulations and their applications on biomolecular systems such as HIV-1 protease and integrase. This book is aimed at researchers and graduate students in materials science and computational and theoretical chemistry.

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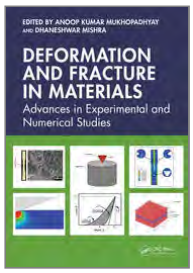
Deformation and Fracture in Materials

Advances in Experimental and Numerical Studies



Edited by **Anoop Kumar Mukhopadhyay** CSIR-Central Glass & Ceramic Research Institute, Kolkata, India**, Dhaneshwar Mishra** Manipal University, Jaipur, India

This book provides basics of deformation and fracture in materials and the current state-of-the-art on experimental and numerical/theoretical methods including data driven approach in deformation and fracture study of materials. The blend of experimental test methods, and numerical techniques to study the deformation and fracture in materials is discussed. In addition, the application of data driven approaches in predicting material performance in different types of loading and loading environment is illustrated as well. This book is aimed at researchers and graduate students in fracture mechanics, finite element methods, and materials science.

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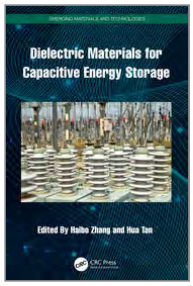
Dielectric Materials for Capacitive Energy Storage



Edited by **Haibo Zhang , Hua Tan**

Series: Emerging Materials and Technologies

Dielectric Materials for Capacitive Energy Storage focuses on the research and application of dielectric materials for energy storage capacitors. It provides a detailed summary of dielectric properties and polarization mechanism of dielectric materials and analyzes several international cases based on the latest research progress. With its summary and large-scale analysis of the fields related to dielectric energy storage, this book will benefit scholars, researchers, and advanced students in materials, electrical, chemical, and other areas of engineering working on capacitors and energy storage.

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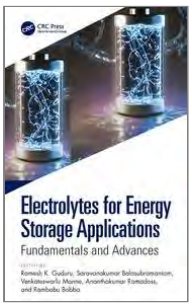
Electrolytes for Energy Storage Applications

Fundamentals and Advances



Edited by **Ramesh K. Guduru , Saravanakumar Balasubramaniam , Venkateswarlu Manne , Ananthakumar Ramadoss , Rambabu Bobba**

The book offers detailed progress and challenges in energy storage technologies with respect to various electrolyte chemistries including energy storage devices like batteries and supercapacitors. It introduces energy storage systems and explains selection of electrolytes for energy storage systems, aqueous and non-aqueous based electrolytes, metal-air batteries, and multivalent chemistries. It covers various battery chemistry and related electrolytes, additives for Li, Na ion, metal-sulfur, metal-air battery systems.

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Electromagnetic Wave Absorption and Shielding Materials

Wei Lu , Hongtao Guan

The book reveals the latest research findings and innovations in electromagnetic wave absorption and shielding by exploring the design and application of absorbent materials, the optimization of shielding structures and the improvement of testing and evaluation methods. It covers the basic principles of absorbing materials, the properties and applications of various electromagnetic wave absorbing materials, and different methods of electromagnetic wave shielding. The book will be of interest to researchers and graduate students of electromagnetic compatibility, materials science and engineering.

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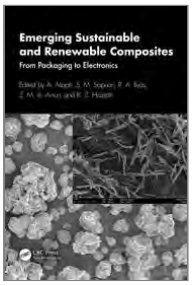
From Packaging to Electronics



Edited by **A. Atiqah , S. M. Sapuan , R. A. Ilyas , Z. M. A. Ainun , K. Z. Hazrati**

This edited volume presents a comprehensive discussion of emerging sustainable and renewable composites from tropical fibres and provides an in-depth analysis of their prospective applications as replacements for conventional petroleum-based packaging and the challenges regarding this. This book is an invaluable and accessible guide for researchers and postgraduate students of composites engineering and nanotechnology who wish to learn more about composites from tropical fibres and their applications.

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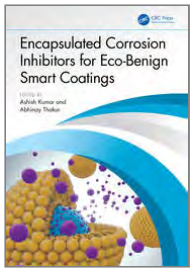
Encapsulated Corrosion Inhibitors for Eco-Benign Smart Coatings



Edited by **Ashish Kumar** Nce, Department Of Science And Technology, Government Of Bihar, India**, Abhinay Thakur** Department of Chemistry, Lovely Professional University, GT Road, Phagwara, Punjab, India, 144411

This book covers all the recent advancements and technologies developed for encapsulated corrosion inhibitors-based coatings as corrosion inhibitors by using eco-benign and sustainable encapsulated smart coatings based on self-healing functionality. It includes overview, properties, applicability, methodologies to detect corrosion and recent developments made in the field to study the inhibition potential of encapsulated corrosion inhibitors for eco-benign smart coatings in several corrosive systems.

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Fabrication and Applications of Biomass-Derived Porous Carbon

Edited by **Kai Yan , Yetao Tang , Rongliang Qiu**

This book systematically introduces the fundamentals, preparation technology, state-of-the-art applications, and future development of biomass-derived porous carbon materials. The authors provide a theoretical foundation that demonstrates the microstructure and physicochemical attributes of carbon materials. Both traditional and new fabrication methods are explicitly described, and many potential applications of biomass (especially biomass-derived porous carbon materials) are identified. It will be a valuable resource for researchers, scientists, and engineers working in the field of biomass-derived porous carbon materials, carbon resource development, and environmental protection.

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Forming and Machining of Polymers, Ceramics, and Composites targets the two important manufacturing processes where plastic deformation is involved to give the required shape and size to the raw material. The main goal of the book is to represent the recent developments in the field of forming and machining of different nonmetals especially polymers, composites, and ceramics. Special focus is on the advancement of these processes to manufacture components from these non-metals. This book is aimed at graduate students and researchers in materials processing and machine design.

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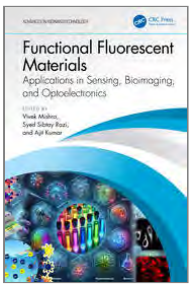
Functional Fluorescent Materials

Applications in Sensing, Bioimaging, and Optoelectronics



Edited by **Vivek Mishra** Amity Institute of Click Chemistry Research and Studies, Amity University, Noida**, Syed Sibtay Razi , Ajit Kumar**

Series: Advances in Bionanotechnology

This book explains functional molecular probes (organic/inorganic materials, polymers, nanomaterials), with a focus on those that represent spectroscopic properties with detection of different analytes and specific role in molecular recognition and their applications. It broadly covers molecular recognition to applications of fluorescence reporters, starting from optoelectronic properties of materials, detection of heavy metals, through biological macromolecules, and further to a living cell, tissue imaging, and theranostics. This book is aimed at graduate students and researchers in materials and chemical engineering and engineering physics.

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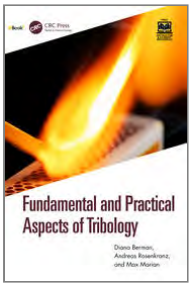
Fundamental and Practical Aspects of Tribology



Diana Berman , Andreas Rosenkranz , Max Marian

Fundamental and Practical Aspects of Tribology introduces the rudiments of engineering surfaces and teaches basic phenomena of interacting surfaces in relative motion, major modes of friction and wear, and theories of contact evolution and lubrication. The book also considers the relationship between nanotribology and macrotribology, rolling contacts, tribological problems in magnetic recording and electrical contacts, and monitoring and diagnosis of friction and wear. This textbook is written for students taking courses in tribology and lubrication, as well as surface engineering. It will also appeal to scientists and engineers who are new to tribology.

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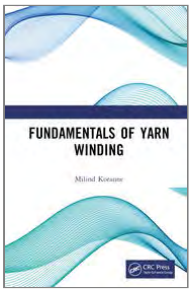
Fundamentals of Yarn Winding



Milind Koranne

This book focuses on the fundamental aspects of yarn winding from a broader perspective. Supplemented with self-explanatory labelled diagrams and photographs, the subject matter of this book includes – Principles of winding systems Winding package parameters Yarn tension during winding Package driving and yarn traversing Winding package faults and remedies Print edition not for sale in South Asia (India, Sri Lanka, Nepal, Bangladesh, Pakistan and Bhutan)

CRC Press
August 2024:202
Hb: 978-1-032-76065-0: **£150**
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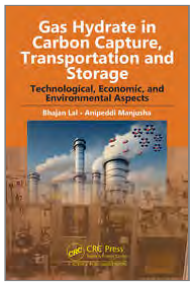
Gas Hydrate in Carbon Capture, Transportation and Storage

Technological, Economic, and Environmental Aspects



Bhajan Lal University Technology PETRONAS, Malaysia**, Anipeddi Manjusha**

This book offers a deep insight into gas hydrate-based carbon capture, transportation, and storage technology as solution to decarbonization. The key aspects of carbon capture & storage technologies are discussed together with their advantages and status of development and commercialization. The authors delve into intricacies of gas hydrate reactor design, provide a review on the Techno-Economic Aspects (TEA), expound critical safety considerations and elucidate upon the regulatory mandates shaping the landscape of decarbonization initiatives.

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October 2024:252
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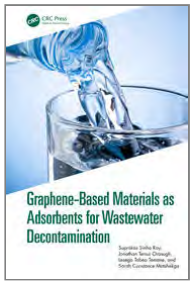
Graphene-Based Materials as Adsorbents for Wastewater Decontamination



Suprakas Sinha Ray DSI-CSIR National Centre for Nanostructured Materials, South Africa**, Jonathan Tersur Orasugh** University of Johannesburg, South Africa**, Lesego Tabea Temane** DSI-CSIR National Centre for Nanostructured Materials, South Africa**, Sarah Constance Motshekga** University of South Africa, South Africa

This book aims at providing a fundamental grasp of graphene-based materials (GAMs) concerning their adsorption process. The effect of diverse process parameters, including pH, temperature, agitation, competing ions, etc., on the adsorption performance of GAMs as well as their recent and relevant applications in biomedical fields, are discussed. The current challenges and future outlook have been addressed as an independent chapter and also covers the recyclability of these adsorbent materials. This book has been aimed at graduate students and researchers in wastewater treatment, environmental, materials, and chemical engineering.

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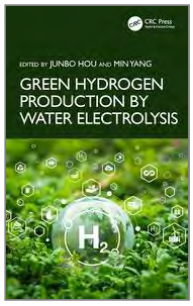
Green Hydrogen Production by Water Electrolysis



Edited by **Junbo Hou , Min Yang**

From an Economy, Energy, and Environment (3E) point of view, hydrogen energy is an ideal technology for enabling the energy transition from fossil fuels, restructuring energy systems, securing national energy sources, accelerating carbon neutralization, and driving development of technologies and industry. Green hydrogen production by water electrolysis is key for hydrogen energy and this book offers urgently needed guidance on the most important scientific fundamentals and practical applied technologies in this field. This comprehensive reference is aimed at engineers and scientists working on renewable and alternative energy to meet global energy demands and climate action goals.

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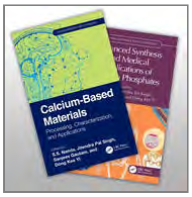
Handbook of Calcium-Based Materials, Two-Volume Set



Edited by **S.S. Nanda** Myongji University, Republic of Korea**, Jitendra Pal Singh** Manav Rachna University, India**, Sanjeev Gautam** Panjab University, India**, Dong Kee Yi** Myongji University, Republic of Korea

Series: Emerging Materials and Technologies

This comprehensive handbook describes fundamentals and recent advances in the synthesis and application of calcium-based materials in a two-volume format. The first volume, Calcium-Based Biomaterials, introduces the possibility of designing these materials for particular applications. The second volume, Advanced Synthesis and Medical Applications of Calcium Phosphates, covers the structure, chemistry, synthesis, and properties of both natural and synthetic calcium-based biomaterials. Handbook of Calcium-Based Materials, Two-Volume Set is aimed at researchers in materials science and engineering and bioengineering.

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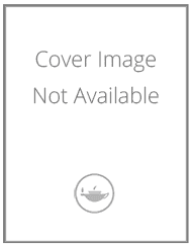
Handbook of Hydrogen Production and Applications, Six-Volume Set



Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

Handbook of Hydrogen Production and Applications, Six-Volume Set presents readers with an exhaustive treatment of the major technological advances in the production and application of hydrogen. The six volumes that the comprise the Handbook discuss the theoretical basics and practical methods of various aspects of hydrogen from production, purification, and applications to transportation and storage and applications. This comprehensive Handbook will appeal to researchers and academics in chemical, environmental, energy, and related areas of engineering interested in development and implementation of hydrogen production technologies.

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Handbook of Perovskite Solar Cells, Three-Volume Set

Towards Stability, Large Area, and Commercialization

Edited by **Jiangzhao Chen , Sam Zhang** Southwest University, Chongqing, China

Series: Advances in Materials Science and Engineering

Comprised of 3 volumes, the Handbook of Perovskite Solar Cells serves as the comprehensive reference on key aspects of PSCs, detailing working principles, critical materials and technologies, device performance, and industrialization. It takes readers step-by-step from materials properties, crystal structures, device configurations, working mechanisms, and research advances to commercial applications. This comprehensive set is aimed at researchers, advanced students, and industry professionals in materials, energy, and related areas of engineering who are interested in development and commercialization of photovoltaic technologies.

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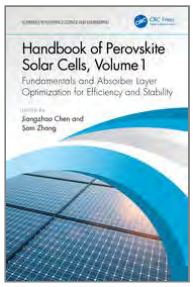
Handbook of Perovskite Solar Cells, Volume 1

Fundamentals and Absorber Layer Optimization for Efficiency and Stability



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Perovskite absorber layers play a decisive role in the realization of high-power conversion efficiency in perovskite solar cells (PSCs). This book discusses device structures, working principles, and optimization strategies of perovskite absorber layers for PSCs to help foster commercialization. It describes strategies to optimize the quality of perovskite films, including composition, dimensional, solvent, strain, additive, and interface engineering. This book is aimed at researchers, advanced students, and industry professionals in materials, energy, and related areas of engineering who are interested in development and commercialization of photovoltaic technologies.

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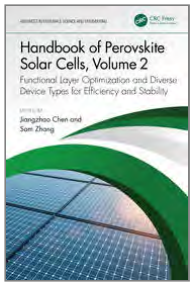
Handbook of Perovskite Solar Cells, Volume 2

Functional Layer Optimization and Diverse Device Types for Efficiency and Stability



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Single- and multijunction perovskite solar cells PSCs have obtained promising certified power conversion efficiency PCEs, which suggests that PSCs are a very promising next-generation photovoltaic technology. In addition to the perovskite absorber layer, other functional layers have made huge contributions to enhancing device performance. This book focuses on the development, advancement, and application of these functional layers in various PSCs. It is aimed at researchers, advanced students, and industry professionals in materials, energy, and related areas of engineering who are interested in development and commercialization of photovoltaic technologies.

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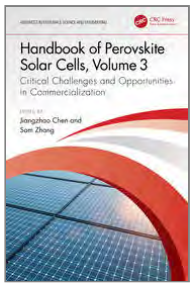
Handbook of Perovskite Solar Cells, Volume 3

Critical Challenges and Opportunities in Commercialization



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Perovskite solar cells (PSCs) have emerged as one of the most promising new solar cells, with strong commercial potential. This book highlights the opportunities, advancements, and critical challenges involved in the commercial application of PSCs. It discusses large area fabrication, long-term stability, lead management, encapsulation techniques, as well as a commercial roadmap and current and future trends. This book is aimed at researchers, advanced students, and industry professionals in materials, energy, and related areas of engineering who are interested in development and commercialization of photovoltaic technologies.

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Handbook of Semiconductors

Fundamentals to Emerging Applications

Edited by **Ram K. Gupta** Pittsburg State University

This book provides readers with state-of-the-art knowledge of established and emerging semiconducting materials, their processing, and the fabrication of chips and microprocessors. In addition to covering the fundamentals of these materials, it details the basics and workings of many semiconducting devices and their role in modern electronics and explores emerging semiconductors and their importance in future devices. This book provides direction to scientists, engineers, researchers in materials engineering and related disciplines to help them better understand the physics, characteristics, and applications of modern semiconductors.

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High-Power Laser Material Processing for Engineers

Joerg Volpp

This book focuses on the mechanisms of how laser light is produced, guided, and focused for materials processing, explained in easily understandable language for practical use. It emphasizes a basic understanding of the principles necessary to run lasers in a safe and efficient way and provides information for quick access to laser materials processing for laser users. This practical handbook serves as a guide for students studying production technologies to learn about laser processes and for engineers that want to start safely and quickly working with laser processes.

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Hydrogen Applications and Technologies

Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

Hydrogen has wide applications across many industries, including petroleum refineries, hydrotreating processes, and metallurgy applications. In addition, a number of valuable chemicals, such as ammonia, alcohols, and acids, are manufactured directly or indirectly with hydrogen. This book covers the utilization of hydrogen in petrochemical products, vehicles and power generation systems, and in refinery hydrotreating, metallurgy, welding, annealing, and heat-treating of metals. Part of the multi-volume Handbook of Hydrogen Production and Applications, this standalone book guides researchers and academics in chemical, environmental, energy, and related areas of engineering.

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Hydrogen Production by Water Splitting, Storage and Transportation

From Laboratories to Industries

Imran Ali Jamia Millia Islamia, Jamia Nagar, Moulana Mohd Johar Ali Marg, New Delhi - 110025, India**, Gunel T. Imanova** Institute of Radiation Problems, Minister of Science and Education Republic of Azerbaijan, AZ 1143**, Al Arsh Basheer** The University of California, Davis, California, 95616

This book provides the complete state-of-art of hydrogen production by water splitting including materials used, methods, and instrumentation. It discusses hydrogen production methods with a focus on water splitting (laboratory/industrial scales) followed by its storage, and perspectives. It describes all the methods of hydrogen production i.e. water electrolysis, steam electrolysis, steam reforming, membrane electrolysis, and water splitting. The effects of various radiations (UV, Visible, gamma, X-ray, IR) on hydrogen production are also included. This book is aimed at graduate students and researchers in materials and chemical engineering, chemistry, and materials science.

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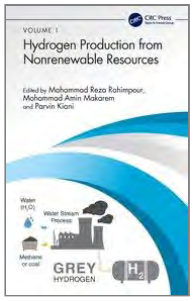
Hydrogen Production from Nonrenewable Resources



Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

The conventional generation of a substantial quantity of hydrogen from resources based on fossil fuels continues to play an essential role in the hydrogen economy. Hydrogen Production from Nonrenewable Resources offers a comprehensive overview and features 3 sections covering properties and characteristics of hydrogen, technologies for converting nonrenewable sources to hydrogen, and challenges in synthesis and production. This book guides researchers and academics in chemical, environmental, energy, and related areas of engineering interested in development and implementation of hydrogen production technologies.

CRC Press
November 2024:402
Hb: 978-1-032-46558-6: **£140**
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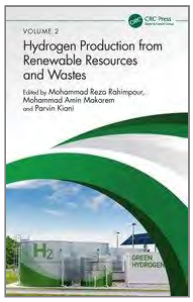
Hydrogen Production from Renewable Resources and Wastes



Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

This book provides readers with a comprehensive overview of the processes and technologies utilized for producing hydrogen from renewable sources. It discusses common methods like gasification, pyrolysis, and liquefaction, along with novel methods like water thermochemical splitting, biophotolysis, biological water gas shift reaction, and fermentation processing. The application of various renewable sources, including wind, solar, and geothermal energy, is covered in detail. Part of the multi-volume Handbook of Hydrogen Production and Applications, this book guides researchers and academics in chemical, environmental, energy, and related areas of engineering.

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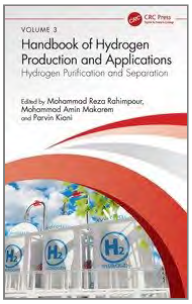
Hydrogen Purification and Separation



Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

This book reviews various hydrogen separation methods as well as membranes used in hydrogen separation. It discusses absorption and adsorption methods as well as novel technologies like cryogenic methods and plasma-assisted technology and discusses related economic assessments and environmental challenges. Part of the multi-volume Handbook of Hydrogen Production and Applications, this standalone book guides researchers and academics in chemical, environmental, energy, and related areas of engineering.

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Hydrogen Technologies

Production, Transportation, Storage, and Utilization

Olayinka I. Ogunsola , Olubunmi M. Ogunsola

Offering wide-range coverage, this book provides fundamentals as well as the applied science and technology involved in the whole hydrogen value chain, including production, storage, transportation, and utilization. It details challenges and opportunities for hydrogen to address energy demand and climate change issues. This book is aimed at engineers and scientists working in the disciplines of Energy, Chemical, Environmental, Petroleum, Petrochemical, and Mechanical Engineering.

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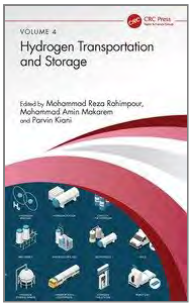
Hydrogen Transportation and Storage



Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

The success of hydrogen energy markets depends on developing efficient hydrogen storage and transportation methods. This book comprehensively reviews hydrogen storage and transportation technologies along with related safety hazards and challenges. Part of the multi-volume Handbook of Hydrogen Production and Applications, this standalone book guides researchers and academics in chemical, environmental, energy, and related areas of engineering interested in development and implementation of hydrogen production technologies.

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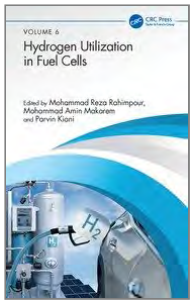
Hydrogen Utilization in Fuel Cells



Edited by **Mohammad Reza Rahimpour , Mohammad Amin Makarem , Parvin Kiani**

Hydrogen Utilization in Fuel Cells introduces the fundamentals, characteristics, and applications of fuel cells, materials used, the role of hydrogen in different fuel cell types, and applications of fuel cells in transportation and small portable and stationary power systems. Part of the multi-volume Handbook of Hydrogen Production and Applications, this standalone book guides researchers and academics in chemical, environmental, energy, and related areas of engineering interested in development and implementation of hydrogen production technologies.

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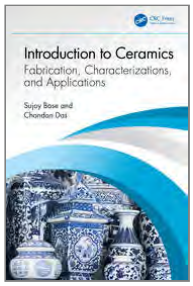
Introduction to Ceramics

Fabrication, Characterizations, and Applications



Sujoy Bose , Chandan Das

The field of ceramics has applications in diverse fields including electronic engineering, electrical engineering, biochemical engineering, automobile engineering and defense sector. This textbook discusses ceramic raw materials, properties of ceramics, fabrication techniques of ceramics and testing of ceramics. It comprehensively discusses mechanical properties, thermal properties, optical properties, electrical properties and magnetic properties of ceramics.

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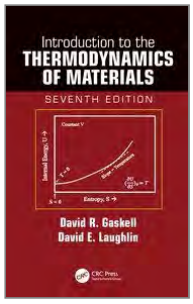

David R. Gaskell , David E. Laughlin Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

Maintaining the substance that has made Introduction to the Thermodynamic of Materials a perennial best seller for decades, this Seventh Edition is updated to reflect the broadening field of materials science and engineering. Chapters are updated and revised throughout to be more useful and logical for students. Written as the definitive introduction to thermodynamic behavior of materials systems, this text presents the underlying thermodynamic principles of materials and their applications and continues to be the best undergraduate textbook in thermodynamics for materials science students. An updated solutions manual is also available for qualifying adopting professors.

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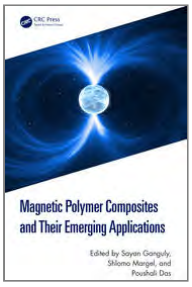
Magnetic Polymer Composites and Their Emerging Applications



Edited by **Sayan Ganguly , Shlomo Margel , Poushali Das**

Magnetic composite particles offer much potential for use in a variety of applications, including manufacturing, environmental protection, microfluidics, microelectronics, and biomedicine. Magnetic Polymer Composites and Their Emerging Applications explores leading research in the fabrication, characterization, properties, and all reported applications of magnetic polymer composites. This unique book serves as a road map for materials engineers, as well as researchers, academics, technologists, and students working in sensor technology.

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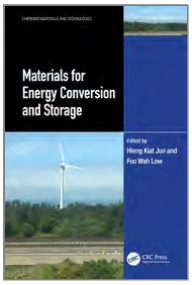
Materials for Energy Conversion and Storage



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Development of new energy-related materials is essential in addressing future energy demands. Materials for Energy Conversion and Storage focuses on the materials science related to energy conversion and energy storage technologies. It covers the principles of prospective energy technologies and their relationship to the performance of energy devices. Aimed at readers in materials, electrical, and energy engineering, this book provides readers with a deep understanding of the role of materials in developing sustainable energy devices.

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Jonathan B. Puthoff , Vilupanur A. Ravi

Designed with the needs of non-Materials Science and Engineering students in mind, this textbook covers the major categories of materials and their defining properties, but with an emphasis on applications related to materials properties measurement, materials selection, and design as opposed to an accent on fundamental physical and chemical topics. This textbook is aimed at undergraduate engineering students taking materials science courses. It can also be used by professional engineers interested in a ready reference.

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Materials from Natural Sources

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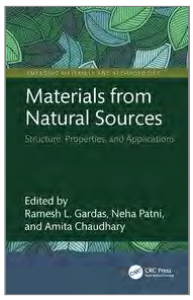

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This book comprises of interdisciplinary topics including consolidating research activities in all experimental and theoretical aspects of natural advanced materials in the fields of science, engineering and medicine including structure, synthesis, processing, physico-chemical properties, and applications.

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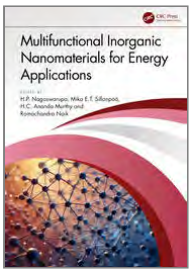
Multifunctional Inorganic Nanomaterials for Energy Applications



Edited by **H.P. Nagaswarupa** Department of Studies in Chemistry, Davangere University, Karnataka, India**, Mika E.T. Sillanpää , H.C. Ananda Murthy** Adama Science and Technology University, Ethiopia**, Ramachandra Naik** Department of Physics, New Horizon College of Engineering, Bangalore, India

This book provides deep insight into the role of multifunctional nanomaterials in the field of energy and power generation applications. It mainly focuses on the synthesis, fabrication, design, development and optimization of novel functional inorganic nanomaterials for energy storage and saving devices. It also covers studies of inorganic electrode materials for supercapacitors, membranes for batteries and fuel cells, materials for display systems and energy generation. This book is aimed at graduate students and researchers in materials science, electrical engineering, and nanomaterials.

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Tin Sin Lee , Soo Tueen Bee

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Microplastics Pollution and Worldwide Policies on Plastic Use discusses microplastic pollution and global policies developed to tackle the problem. It details the mechanisms of microplastics occurrence, sources, and impacts. It then offers a comprehensive overview of the various policies created by specific countries in Asia, Europe, the Americas, and Africa to address plastics use and minimize its effects. This book is aimed offers academics, industrial professionals, policy makers, and general readers interested in the mitigation of microplastic pollution.

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MXenes

From Research to Emerging Applications

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Series: Emerging Materials and Technologies

This book introduces MXenes and provides a summary of current discoveries in their synthesis, properties, characterization techniques, and emerging applications in several fields. It explores the MXenes' distinctive electrical, mechanical, and biological features, as well as their applications. It discusses the various emerging applications of MXenes in a variety of fields, including regenerative medicine and tissue engineering, separation membranes, photocatalytic hydrogen production, environmental applications, and so forth.

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Multifunctional Coordination Materials for Green Energy Technologies

Edited by **Ghulam Yasin , Anuj Kumar , Sajjad Ali , Tuan Anh Nguyen , Saira Ajmal**

Series: Emerging Materials and Technologies

As an emerging material platform, multifunctional coordination materials offer many advantages such as remarkable porosity, structural flexibility, crystallinity, and modifiable functionalities that render them highly suited to generate and store green energy. This book covers the design and fabrication approaches of multifunctional coordination materials for green energy-related technologies. Multifunctional Coordination Materials for Green Energy Technologies is an ideal reference for advanced students and researchers working in materials engineering, including new catalyst development, battery design, and related areas.

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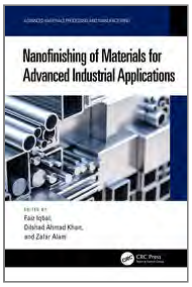
Nanofinishing of Materials for Advanced Industrial Applications



Edited by **Faiz Iqbal , Dilshad Ahmad Khan** NIT,Hamirpur,HP, India**., Zafar Alam** IIT,Dhanbad,India

Series: Advanced Materials Processing and Manufacturing

This book details out nanofinishing techniques employed for finishing of the industrial applications in a comprehensive manner. It provides introduction about nanofinishing requirements, and basic nanofinishing techniques and their variants; details the latest developments, research and innovation, and advancements. It includes topics ranging from working principles, material removal mechanisms, force analysis, and mathematics involved to industry-specific applications, salient features, comparative study, and automation and optimization in nanofinishing technologies. This book is aimed at graduate students and researchers in manufacturing and process engineering, die and mold industry.

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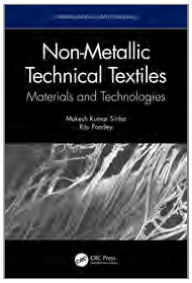
Non-Metallic Technical Textiles

Materials and Technologies



Mukesh Kumar Sinha Defence Materials, Stores , Research, Development Establishment, India**, Ritu Pandey** Chandra Shekhar Azad Univ of Agri & Tech, India

Series: Emerging Materials and Technologies

This book describes various aspects of technical textiles and materials, emerging technologies, plant by-product, ultrafine fibers, functional fibers and fabrics, covering the entire spectrum of technical textiles. It covers the fundamental aspects of emerging technology, materials, and processes. It also discusses various futuristic potential nanofibrous material spun via needleless technology and its inherent properties utilized for creating the functional applications in the field of technical textiles. The book is aimed at researchers, professionals, and graduate students in textile and industrial engineering, materials science and engineering including apparel engineering.

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Pearlite in Steels

Harshad K. D. H. Bhadeshia University of Cambridge, Cambridge, England

Pearlitic steel is the strongest commercially available mass-produced alloy, and pearlite is routinely used for tyre reinforcement in every single road vehicle in the world. Pearlite in Steels is the first book dedicated to pearlitic steels and uniquely covers the topic in depth to provide readers with comprehensive coverage of fundamentals and advances in this vital and wide-reaching engineered material. Aimed at materials engineers and metallurgists, this book by a leading global authority on the subject offers readers the deepest and broadest overview of pearlite in steels to date.

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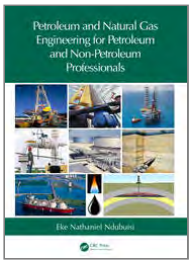

Eke Nathaniel Ndubuisi FMG RESOURCES LTD, NIGERIA

This book gives a comprehensive overview of the basics, principles, practice, application of eclectic technology in Oil and Gas industry. It covers fundamental operations, work scope definitions, execution methods, mathematical calculations, field applications, core subjects, diversities, introduction to petroleum economics/project management concepts, strategies which is the primary link between decision making and profitable operations. Topics discussed in the chapters are carefully structured with interactive pictorial illustrations where necessary to benefit all interested readers. This book is aimed at professionals and researchers in petroleum and natural gas engineering.

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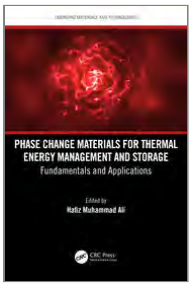
Phase Change Materials for Thermal Energy Management and Storage

Fundamentals and Applications



Edited by **Hafiz Muhammad Ali** King Fahd University of Petroleum and Minerals, Saudi Arabia

Series: Emerging Materials and Technologies

This book provides the latest advances in thermal energy applications of phase change materials (PCMs). It introduces definitions and offers a brief history, and then delves into preparation techniques, thermophysical properties and heat transfer characteristics with mathematical models, performance-affecting factors, and the applications and challenges of PCMs. This reference offers a comprehensive overview of the fundamentals, technologies, and current and near future applications of PCMs for thermal energy management and storage for researchers and advanced students in materials, mechanical, and related fields of engineering.

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Plasmonic Nanosensors for Biological and Chemical Threats

Edited by **Adil Denizli** Hacettepe University, Turkey

This book explores novel and updated research on different types of plasmonic nanosensors for analysis of biological and chemical threat agents. It covers a brief theory of plasmonic nanosensors, summarizes the state-of-art in the molecular recognition of biological and chemical threat agents, and describes the application of various types of nanosensors in the detection of these threat agents. Showcasing the latest achievements in plasmonic nanosensors, this book will appeal to researchers in materials, chemical, and environmental engineering as well as chemistry interested in exploring the application of sensors to support environmental monitoring and global health.

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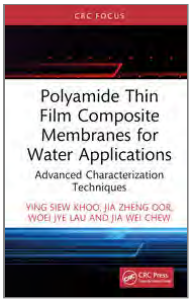
Polyamide Thin Film Composite Membranes for Water Applications

Advanced Characterization Techniques



Ying Siew Khoo , Jia Zheng Oor , Woei Jye Lau , Jia Wei Chew

The global market for polymeric membranes used in water and wastewater treatment is experiencing robust growth, with polyamide (PA) thin film composite (TFC) membranes dominating reverse osmosis (RO) and nanofiltration (NF) processes. This monograph presents the latest trends in characterization techniques for PA TFC membranes and provides the most current and relevant information on these techniques tailored specifically for TFC NF and RO membranes. It is an indispensable reference and practical guide for advanced students, researchers, and scientists involved in NF and RO membrane fabrication and characterization in the fields of chemical, materials, and environmental engineering.

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Sarkyt E. Kudaibergenov

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Polyampholytes are unique polymers containing acid/base and/or anionic/cationic groups in the main or side chains. Water-soluble and water-swelling polyampholytes exhibit properties that show potential as structural biomaterials, drug delivery and chemo-mechanical systems, biosensors, energy storage devices, supercapacitors, and actuators. This monograph reviews innovative studies in this field over the past two decades with the aim to analyze and systematize the literature in the context of emerging technologies. The book will appeal to a readership that conducts materials research for biomedical, water treatment, and environmental remediation applications.

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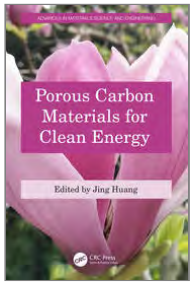
Porous Carbon Materials for Clean Energy



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New carbon materials with well-defined nanostructures and functionalization patterns have been developed to meet challenges of a growing global demand for energy-saving materials and sustainable materials to reduce negative environmental consequences. This book describes progress towards the conversion and efficient utilization of porous carbon and its derived precursor as electrode materials for clean energy. This book will be of interest to materials and chemical engineers, scientists, researchers, and others active in advancing development of renewable and clean energy technologies.

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Process Integration for Resource Conservation presents state-of-the-art, cost-effective techniques, including pinch analysis and mathematical optimization, for numerous conservation problems. The Second Edition of this best seller adds new chapters on heat integration and retrofitting of water networks and features multiple optimisation examples via downloadable MS Excel spreadsheets. Ideal for students preparing for real-world work as well as industrial practitioners in chemical processing, the text provides a systematic guide to the latest process integration techniques for performing material recovery in process plants.

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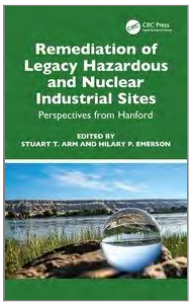
Remediation of Legacy Hazardous and Nuclear Industrial Sites

Perspectives from Hanford



Edited by **Stuart T. Arm , Hilary P. Emerson**

The book provides an overview of the key elements involved in remediating complex waste sites using the Hanford nuclear site, one of the most complex waste sites in the world, as a case study. The book is aimed at a non-technical audience and describes the stages of remediation based on general RCRA/CERCLA processes, from establishing a strategy that includes all stakeholders to site assessment, waste treatment and disposal, and long-term monitoring. Aimed at a broad audience, this book offers approachable guidance to technical and non-technical readers through a series of real-world examples that cover each important step in the complex waste cleanup process.

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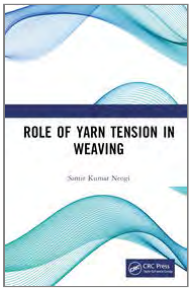
Role of Yarn Tension in Weaving



Samir Kumar Neogi

No cloth can be woven without desired and adequate tensions of its constituent warp and weft yarns. This book explains the crucial role of yarn tension in weaving and discusses its various aspects and effects on cloth characteristics. The subject matter of this book includes – Yarn tension at the weaving preparatory process Warp tension measurement General form of weft tension variation Effects of loom settings and other factors on warp tension Effects of yarn tensions on loom performance Print edition not for sale in South Asia (India, Sri Lanka, Nepal, Bangladesh, Pakistan and Bhutan)

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Soft Nanoferrites for Biomedical and Environmental Applications

Edited by **Atul Thakur** Amity University Haryana-Gurugram, India**, Preeti Thakur** Amity University Haryana-Gurugram, India

Spinel nanoferrites have emerged as an advanced class of nanostructured material in the domains of nanoscience and technology over the course of the last decade. This book covers the fundamentals of spinel ferrites, in the health sector, such as hyperthermia, cancer diagnosis/treatment, and antimicrobial activity, and on environmental issues like water purification, wastewater treatment, and air pollution remediation. This book is aimed at graduate students and researchers in materials science, nanotechnology, environmental sciences, and bioengineering.

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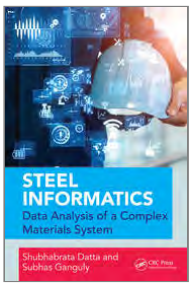
Steel Informatics

Analysing Data of a Complex Materials System



Shubhabrata Datta Department of Mechanical Engineeing, SRM University, Kattankulathur, Chennai, India**, Subhas Ganguly** Department of Metallurgy and Materials Engineering, National Institute of Technology, Raipur, Chhatisgarh, India

The book aims to review the application of data-driven computing techniques related to design of steel including phase transformation, composition-process-property correlation, and different processing techniques, particularly deformation and joining. It initiates with fundamentals of informatics followed by description of applications of statistical analyses in defining different attributes of steel. The proceeding chapters covers recent applications of statistical, machine learning, expert systems and optimizations algorithms in the domains of iron and steel making, casting, deformation, phase transformation and heat treatment, microstructure analysis, and design of steel.

CRC Press
October 2024:264
Hb: 978-0-367-56923-5: **£120**
* For **full contents** and more information, visit: **www.routledge.com/9780367569235**

Steel Odyssey

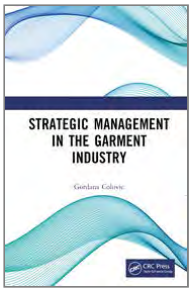
Tracing the Journey of Humanity Through the Lens of Steel

Ohjoon KWON , JOO Choi , Hae-Geon LEE

In this wide-ranging interdisciplinary work, the authors draw on history, anthropology, and materials engineering to present a comprehensive and ambitious examination of the multifaceted roles of iron and steel throughout history and the current and future challenges faced by the steel industry. Despite the technical nature of this book, all terminology is fully explained to facilitate better comprehension for those who may not possess an engineering education or a direct interest in metallurgy. This book is therefore invaluable not only as a technical book but also as a guide to the development history of human civilization and its future challenges.

CRC Press
July 2024:304
Hb: 978-1-032-72736-3: **£82.99**
eBook: 978-1-003-41925-9
* For **full contents** and more information, visit: **www.routledge.com/9781032727363**

Strategic Management in the Garment Industry



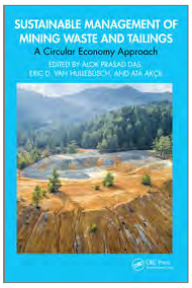
Gordana Colovic

From supply chain finesse to market triumph, this book covers the advancements in business strategy and presents a multidisciplinary approach to strategic management in the garment industry. The subject matter of this book discusses – Strategic management Strategic marketing in garment industry Strategic methods Organizational behaviour Print edition not for sale in South Asia (India, Sri Lanka, Nepal, Bangladesh, Pakistan and Bhutan)

CRC Press
August 2024:210
Hb: 978-1-032-76071-1: **£150**
eBook: 978-1-003-47695-5
* For **full contents** and more information, visit: **www.routledge.com/9781032760711**

Sustainable Management of Mining Waste and Tailings

A Circular Economy Approach



Edited by **Alok Prasad Das , Eric D. van Hullebusch** Institut de physique du globe de Paris, Paris, France**, Ata Akçil**

Critical metals recovery from mining tailings and secondary resources holds significant opportunity as their applications are widespread in high-tech industries. This book discusses technology advances for management of industrial and mining waste through circular economy approaches and successful critical metal recovery from secondary resources. It highlights how reprocessing of mine waste and tailings result in development of critical raw materials that significantly reduce the mining burden and ensure lucrative use of waste materials. It is of interest to researchers and advanced students working in the mining, chemical and environmental engineering, and renewable energy sectors.

CRC Press
June 2024:358
Hb: 978-1-032-58081-4: **£150**
eBook: 978-1-003-44245-5
* For **full contents** and more information, visit: **www.routledge.com/9781032580814**

Sustainable Management of Urban Plastic Waste Through Circular Economic Approaches

Edited by **Alok Prasad Das , Akbar John**

Sustainable Management of Urban Plastic Waste Through Circular Economic Approaches covers the technologies and methods essential to overcome single-use plastic processing waste. It describes the biotechnological methods, cutting-edge research, procedures, and applications required to safeguard global sustainable development along with plastic waste management. This book will be of interest to researchers, scientists, and engineers working on sustainable management of plastic waste, especially in the chemical and environmental engineering and biotechnology sectors.

CRC Press
October 2024:352
Hb: 978-1-032-73686-0: **£140**
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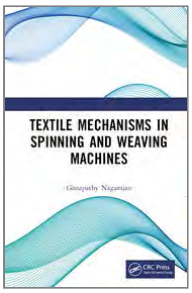
Textile Mechanisms in Spinning and Weaving Machines



Ganapathy Nagarajan

This book discusses the mechanics in textile machinery in spinning, weaving and knitting processes. It is a useful resource for developing an analytical thinking about the machineries by providing information about the various mechanisms involved. The subject matter of this book includes – Gear trains Equations of movement Resolution of forces Principle of moments Stress, strain and elasticity Print edition not for sale in South Asia (India, Sri Lanka, Nepal, Bangladesh, Pakistan and Bhutan)

CRC Press
August 2024:384
Hb: 978-1-032-76075-9: **£150**
eBook: 978-1-003-47699-3
* For **full contents** and more information, visit: **www.routledge.com/9781032760759**

The Digital Transformation of Product Formulation

Concepts, Challenges, and Applications for Accelerated Innovation

Edited by **Alix Schmidt , Kristin Wallace**

Advances in areas from data acquisition to analytics are synergizing to transform workflows and increase the pace of research and innovation. This book offers practical guidance on how to implement data-driven, accelerated product development through concepts, challenges, and applications. It describes activities related to creating new or improved functional material products by discovering new ingredients or new combinations of ingredients that result in targeted quality properties. It provides students and professionals from engineering and science disciplines with practical-know how in product development in the context of chemical products, across the entire modeling lifecycle.

CRC Press
August 2024:372
Hb: 978-1-032-47406-9: **£105**
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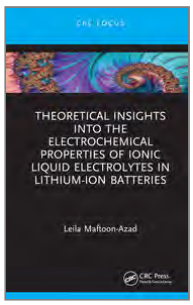
Theoretical Insights into the Electrochemical Properties of Ionic Liquid Electrolytes in Lithium-Ion Batteries



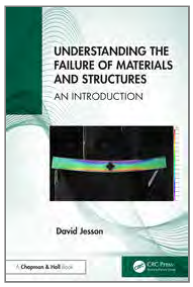
Leila Maftoon-Azad

This book provides a concise overview of the use of ionic liquids as electrolytes in lithium-ion batteries (LIBs) from a theoretical and computational perspective. It focuses on computational studies to understand the behavior of lithium ions in different ionic liquids and to optimize the performance of ionic liquid-based electrolytes. This monograph will be of interest to engineers working on LIB optimization.

CRC Press
August 2024:96
Hb: 978-1-032-86603-1: **£49.99**
* For **full contents** and more information, visit: **www.routledge.com/9781032866031**

Understanding the Failure of Materials and Structures

An Introduction



David Jesson University of Surrey, Guildford

The book introduces practical aspects of mechanical characterisation of materials and structures. It gives those with little or no prior experience insight into the process of developing everyday products, issues behind high-profile failures, and tools to begin planning a research programme. It discusses fundamentals of the physical world, highlighting the range of materials used and varied applications. It covers the role of materials structure in controlling materials properties and describes mechanical properties. The book features information on various modes of testing and strain measurement and covers how materials fail and the future of physical testing.

CRC Press
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Hb: 978-0-367-36840-1: **£59.99**
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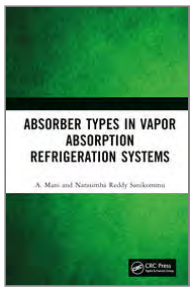
Absorber Types in Vapor Absorption Refrigeration Systems



A. Mani , Narasimha Reddy Sanikommu

Absorber Types in Vapor Absorption Refrigeration Systems addresses the increasing energy demand and costs associated with the global refrigeration industry, primarily driven by the need for cooling. It proposes the substitution of vapor compression refrigeration systems (VCRS) with vapor absorption refrigeration systems (VARS), which operates on low-grade, renewable energy sources like solar, geothermal, and waste heat. The book will interest HVAC academic researchers, graduate students, and professionals involved in the advancement of sustainable refrigeration technologies and selection of absorbers.

CRC Press
September 2024:112
Hb: 978-1-032-77878-5: **£150**
* For **full contents** and more information, visit: **www.routledge.com/9781032778785**

Additive Manufacturing for Advance Applications

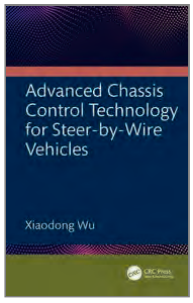
Technologies, Challenges and Case Studies

Pawan Sharma , Vishvesh Badheka

The book discusses the latest trends such as 4D printing, wire arc additive manufacturing (WAAM), direct energy deposition, and topological optimization in additive manufacturing (AM), and its compliance with the ASTM/ISO standards. It further explains materials for additive manufacturing and the development of novel future materials.

CRC Press
June 2024:260
Hb: 978-1-032-48094-7: **£115**
eBook: 978-1-003-48432-5
* For **full contents** and more information, visit: **www.routledge.com/9781032480947**

Advanced Chassis Control Technology for Steer-by-Wire Vehicles



Xiaodong Wu

Steer-by-Wire systems replace conventional mechanical technology with electronic sensors, controllers and actuators, enhancing functionality when steering. The book looks first at the theory behind this technology and compares it to conventional mechanical steering. It discusses control through forward and backward dynamics, and a shared steering control concept to improve vehicle handling and performance, relevant to intelligent vehicles. It also explains how to create chassis domain fusion control, four independent wheels steering system and teleoperated control. Using case studies and ISOs, the book is a practical guide to safely designing steer-by-wire systems.

CRC Press
June 2024:190
Hb: 978-1-032-74077-5: **£74.99**
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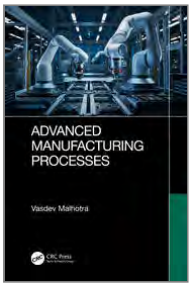
Advanced Manufacturing Processes



Vasdev Malhotra

The field of manufacturing over the years has seen introduction of new and innovative technologies for enhancing output, increasing quality and reducing material inventory. This textbook discusses fundamental concepts, principles, technologies and applications of advanced manufacturing processes. It comprehensively discusses key manufacturing technologies including reconfigurable manufacturing processes, computer integrated manufacturing processes, agile manufacturing process, cellular manufacturing process, rapid prototyping and flexible manufacturing processes.

CRC Press
April 2024:134
Hb: 978-0-367-75056-5: **£61.99**
eBook: 978-1-003-47637-5
* For **full contents** and more information, visit: **www.routledge.com/9780367750565**

Advancements in Science and Technology for Healthcare, Agriculture, and Environmental Sustainability

A Review of the Latest Research and Innovations

Edited by **Dimitrios A Karras , Srinesh Thakur , Sai Kiran Oruganti**

This book is the collection of selected articles that appeared at the First International Analytics Conference 2023 held in Hyderabad in virtual mode on February 2nd the 3rd 2023. This informative volume offers a window into recent breakthroughs shaping healthcare, agriculture, and environmental sustainability.

CRC Press
June 2024:691
Pb: 978-1-032-70832-4: **£45.99**
eBook: 978-1-032-70834-8
* For **full contents** and more information, visit: **www.routledge.com/9781032708324**

Africa's Propensity for a Net Zero Energy Transition

Samuel Chukwujindu Nwokolo University of Calabar, Nigeria**, Anthony Umunnakwe Obiwulu** University of Lagos, Nigeria**, Paul C. Okonkwo** Dhofar University, Oman

This book explores the issue of a sustainable energy transition in Africa including the current energy landscape and exploration of various scenarios for achieving net-zero emissions. It highlights the challenges faced by African countries in transitioning to clean energy and provides practical solutions for these challenges. It provides perceptive analysis and case studies demonstrating how African nations can take advantage of their natural resources including insights from Bhutan and Denmark to achieve sustainable development while mitigating the effects of climate change. This book is aimed at graduate students and researchers in sustainability and energy systems.

CRC Press
November 2024:480
Hb: 978-1-032-77343-8: **£135**
* For **full contents** and more information, visit: **www.routledge.com/9781032773438**

Air Transportation Industry

History and Developments

Edited by **Edward Majewski , Konrad Stasiczak , Sonia Huderek-Glapska , Łukasz Olipra , Wojciech Augustyniak**

Air Transportation Industry considers the influence of political, legal, economic, social, and technological factors on the developments in the industry. It provides a brief historical background of the air transport industry, the determinants of the changes in the airline business, and adaptation processes that resulted in the evolution of business models and structural changes in the industry. The book will interest air transportation and airport operations researchers. It can also serve as a reference for management and operations transportation students in logistics, air transportation, and economics courses.

CRC Press
October 2024:368
Hb: 978-1-032-56903-1: **£99.99**
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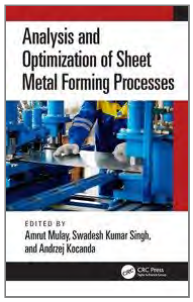
Analysis and Optimization of Sheet Metal Forming Processes



Edited by **Amrut Mulay** SVNIT,Gujarat, India**, Swadesh Kumar Singh** Victoria University, Institute for Sustainable Industry, Melbourne, Victoria, Australia-14428**, Andrzej Kocanda**

Beginning with an introduction to sheet metal forming, the book provides a guide to the various techniques used within the industry. It discusses sheet metal properties relevant to forming processes, such as ductility and strength, and analyses material selection. Forming processes including shearing, bending and stamping are also discussed, along with tools. Simulation and modelling are key to optimising the sheet metal forming process, including finite element analysis and CAE. Other topics included are quality control, design and future trends. The book will be of interest to students working in the field of sheet metal and metal forming, materials science and metallurgy.

CRC Press
June 2024:370
Hb: 978-1-032-57941-2: **£99.99**
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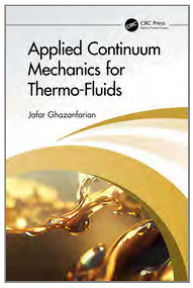
Applied Continuum Mechanics for Thermo-Fluids



Jafar Ghazanfarian University of Zanjan, Iran

Applied Continuum Mechanics for Thermo-Fluids presents the tensor notation rules and integral theorems before defining the preliminary concepts and applications of continuum mechanics. It bridges the gap between physical concepts and mathematical expressions with a rigorous mathematical treatment. The book is intended for upper-level undergraduate mechanical engineering students taking Continuum Mechanics, Advanced Fluid Mechanics, and Convective Heat Transfer courses. Instructors will be able to utilize a Solutions Manual and Figure Slides for their course.

CRC Press
June 2024:245
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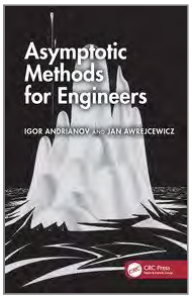
Asymptotic Methods for Engineers



Igor V. Andrianov RWTH Aachen, Germany**, Jan Awrejcewicz** Lodz University, Poland

This book offers many years of experience in the application of asymptotic methods to solve engineering problems, presented without excessive mathematical scholasticism. The book will be useful for students and researchers from applied mathematics and physics and interesting for doctoral and graduate students, university and industry professors from various branches of engineering (mechanical, civil, electro-mechanical, etc.).

CRC Press
May 2024:264
Hb: 978-1-032-72542-0: **£115**
eBook: 978-1-003-46746-5
* For **full contents** and more information, visit: **www.routledge.com/9781032725420**

Biodegradable Waste Processing for Sustainable Developments

Edited by **Arbind Prasad** KEC College, Bihar, India**, Atanu Kumar Paul**

Series: Renewable and Sustainable Energy Developments

The text comprehensively highlights the key issues surrounding the implementation of waste-to-energy systems, such as site selection, regulatory aspects, financial, and economic implications. It further discusses environmental aspects of food waste to energy conversion, microbial fuel cells (MFCs) for waste recycling and energy production, and valorization of algal blooms and their residues into renewable energy. It is primarily written for senior undergraduate, graduate students, and academic researchers in the fields of mechanical engineering, environmental engineering, energy studies, production engineering, industrial engineering, and manufacturing engineering.

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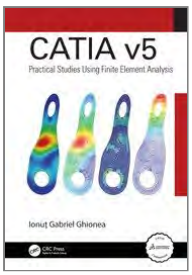
CATIA v5

Practical Studies Using Finite Element Analysis



Ionuț Gabriel Ghionea

This tutorial textbook presents, through many CAD examples, the main characteristics and working possibilities of the modern CAD software solution CATIA v5 and step by step practical studies for FEM practice. This book is essential reading for students from faculties with a mechanical or industrial engineering profile, as well as production and design engineers from various industries (automotive, military, heavy machinery, medical technology, etc.).

CRC Press
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Challenges and Opportunities in Industrial and Mechanical Engineering: A Progressive Research Outlook

Proceedings of the International Conference on Progressive Research in Industrial & Mechanical Engineering (PRIME 2021), August 05-07, 2021, Patna, India

Edited by **S M Pandey , Ambrish Maurya , Chetan Kumar Hirwani , Om Ji Shukla**

Present time Industry 4.0 is the need of all industries because it connects industries to AI, high productivity, safety, and flexibility, ensures the 100% utilization of resources across diverse manufacturing systems, and could accelerate normal manufacturing systems to advanced manufacturing systems by using robotics, additive manufacturing, and many more. In this book, the collection of selected papers is constituted from the International Conference on Progressive Research in Industrial & Mechanical Engineering (PRIME 2021), which was at the National Institute of Technology (NIT), Patna, India from August 5 to 7, 2021.

CRC Press
June 2024:1036
Pb: 978-1-032-71321-2: **£45.99**
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Condensation Particle Counting Technology and Its Applications

Edited by **Longfei Chen , Xiaoyan Ma , Guangze Li , Liuyong Chang**

Condensation Particle Counting Technology and its Applications introduces the principles, key components, calibration methods and applications of condensation particle counting systems. This book delves into the adverse effects of fine particles on human health, along with the existing detection technologies for these particles. It discusses theories and methods of optical measurement for fine particles and the applicable conditions for each light scattering theory. The book is intended for industry professionals and environmental researchers specializing in particle and aerosol measurement, detection methods, and technology.

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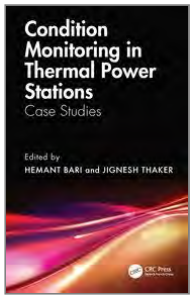
Condition Monitoring in Thermal Power Stations

Case Studies



Hemant Bari Adani Dahanu thermal Plant, India**, Jignesh Thaker** Adani University, India

Condition monitoring (colloquially, CM) is the process of monitoring a parameter of condition in machinery to identify a significant. This book covers 25 case studies of all major areas of thermal power station which have suffered a lot about the machinery condition problems. It covers the information about how can machine vibrations brought down to the acceptable limits using right approach of condition monitoring techniques. It includes the detection methodology for condition monitoring deviations of all areas of plant and suggested remedies. This book aimed at professionals and researchers in plant engineering and maintenance, thermal power plants, and condition monitoring.

CRC Press
October 2024:320
Hb: 978-1-032-53199-1: **£140**
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Conventional and Powder Mixed Electro-Discharge Machining

Biomedical Applications

Edited by **Ahmad Majdi Abdul-Rani , Masdi Muhammad , T V V L N Rao** Madanapalle Institute of Technology & Science, India**, Saeed Rubaiee , Anas Ahmed , Mohd Danish**

Series: Advances in Design, Materials and Manufacturing for Sustainability

This book presents the evolution of electro-discharge machining (EDM) process from conventional EDM to powder mixed EDM with emphases on the biomedical applications. It discusses the theory behind each process and their applications in the field of biomedical applications, and presents a brief background to various EDM processes, current research challenges, and detailed case studies of powder mixed EDM of various materials. It also includes the state-of-the-art review of the EDM process. This book is aimed at graduate students, researchers in manufacturing, production, materials, and biomedical engineering.

CRC Press
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Hb: 978-1-032-45276-0: **£120**
* For **full contents** and more information, visit: **www.routledge.com/9781032452760**

Deep Neural Networks-Enabled Intelligent Fault Diagnosis of Mechanical Systems

Ruqiang Yan , Zhibin Zhao

With in-depth research on advanced topics such as auto encoders, deep belief networks, convolutional neural networks, data augmentation, multi-sensor fusion, unsupervised deep transfer learning, neural architecture search, self-supervised learning, and reinforcement learning, the book aims to highlight the potential of Deep Learning (DL)-enabled methods in Intelligent Fault Diagnosis (IFD), along with their benefits and contributions. It will appeal to academic researchers, practitioners, and students in the fields of intelligent fault diagnosis, prognostics and health management, and deep learning.

CRC Press
June 2024:216
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eBook: 978-1-003-47446-3
* For **full contents** and more information, visit: **www.routledge.com/9781032752372**

Environmentally Benign Machining

Edited by **Şenol Bayraktar** Recep Tayyip Erdogan University Fener Street, Rize, Turkey -- 53100**, Sunil Pathak** HiLASE Centre, Institute of Physics of Czech Academy of Sciences Za Radnicí 828, Dolni Brezany Prague, Czech Republic Postcode - 25241

Series: Advanced Materials Processing and Manufacturing

This book provides essential information on environmentally benign/sustainable machining processes including innovations and developments in conventional machining, considering economy, safety, and productivity. Developments in machine tools, recent research on green lubricants and lubrication techniques, process hybridization, and role of optimization techniques are discussed. Green machining of difficult-to-machine materials and composites is also explained with attempts towards making electric discharge and electrochemical machining technologies. This book is aimed at Researchers and professionals in manufacturing and mechanical engineering, and sustainable processes.

CRC Press
October 2024:232
Hb: 978-1-032-40303-8: **£120**
* For **full contents** and more information, visit: **www.routledge.com/9781032403038**

Equipment and Components in the Oil and Gas Industry

A Two Volume Set

Karan Sotoodeh University of Stavanger, Norway

This two volume set will provide an overview of the equipment and components used in the oil and gas industry. The set includes the following volumes: Vol 1 looks at the equipment used in the oil and gas industry, from drilling equipment, wellhead equipment such as casings, tubing, and wellhead Christmas trees, to equipment for the transportation of fluids and gases, such as pumps and compressors. Vol 2 covers both larger and smaller components used throughout the oil and gas industry, detailing the theory behind pressure gauges, temperature gauges, flow gauges, and level gauges. These books will be of interest to mechanical and chemical engineers working in the oil and gas industry

CRC Press
May 2024:572
Hb: 978-1-032-74198-7: **£175**
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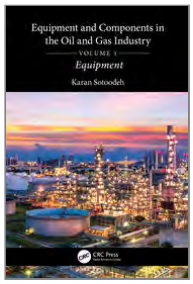
Equipment and Components in the Oil and Gas Industry Volume 1

Equipment



Karan Sotoodeh University of Stavanger, Norway

The equipment used in the oil and gas industry ranges from drilling equipment, wellhead equipment such as casings, tubing, and wellhead Christmas trees to equipment for the transportation of fluids and gases, such as pumps and compressors. The book presents a simplified method to choose the correct equipment for each task and covering the selection of heat exchangers and storage tanks. Finally, it covers turbines, motors and other prime movers, alongside a flare system for disposing of unwanted or waste gases in oil and gas refineries, and petrochemical plants. The book will be of interest to mechanical and chemical engineers working in the oil and gas industry.

CRC Press
May 2024:293
Hb: 978-1-032-73907-6: **£86.99**
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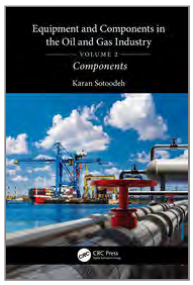
* For **full contents** and more information, visit: **www.routledge.com/9781032739076**

Equipment and Components in the Oil and Gas Industry Volume 2

Components



Karan Sotoodeh University of Stavanger, Norway

Covering both larger and smaller components used throughout the oil and gas industry, the book details the theory behind pressure gauges, temperature gauges and level gauges. It discusses piping components such as pipes, flanges, gaskets, and introduces piping special components. Valves are particularly crucial to the oil and gas industry including on/off valves, control valves, safety valves and special valves. The book also details actuators, sprinklers, fire and gas detectors, hoses, and hose reels, along with electrical components. Finally, the book ends with a discussion of heating, ventilation, and air conditioning (HVAC) components.

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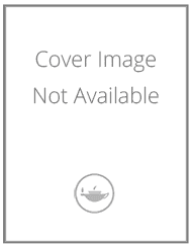
Fracture and Fatigue Characterization of Cortical Bone Tissue



Marcelo F. S. F. de Moura Universidade do Porto, Portugal**, Nuno Dourado**

Beginning with a thorough description of fracture mechanics and fatigue, the book describes non-linear fracture mechanics and quasi-static analyses. It presents a cohesive zone modelling method which is appropriate for both mode I and mode II loading. It presents cutting-edge fracture tests, new methods for data reduction purposes and numerical models suited for cohesive zone modelling. It is key to aid both students and professionals in applying fundamental theories and methods to cortical bone tissue and who are working in mechanical engineering and biomedical engineering, including work on stress fracture, fracture under fatigue loading, fracture mechanisms.

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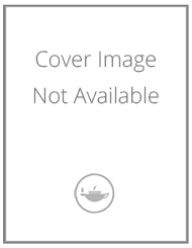
Friction Stir Spot Welding

Metallurgical, Mechanical and Tribological Properties



Edited by **Jeyaprakash Natarajan** China University of Mining and Technology, China**, K. Anton Savio Lewise** Karunya Institute of Technology and Sciences, India

Series: Emerging Materials and Technologies

Friction Stir Spot Welding offers an introduction to friction stir spot welding (FSSW) between both similar and dissimilar metals and materials. It explains the impact of the interlayer in FSSW of different metals with regards to mechanical, metallurgical, wear, thermo-mechanical, and chemical characteristics. Emphasizing the impact of interlayer on friction stir spot welding of different metals, the book discusses the influence of the interlayer in the process as a new technique. The book is intended for mechanical, materials, and manufacturing professionals, researchers, and engineers working in the field of friction stir spot welding.

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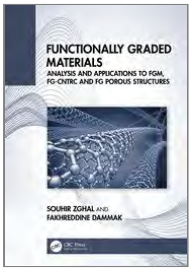
Functionally Graded Materials

Analysis and Applications to FGM, FG-CNTRC and FG Porous Structures



Souhir Zghal , Fakhreddine Dammak

This book aims to disseminates knowledge between users, manufacturers, designers and researchers involved in structures or structural components manufactured using functionally graded materials. This book is a valuable reference source for postgraduate students, engineers, scientists, professors, researchers and applied mathematicians in this field.

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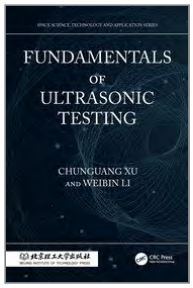

Chunguang Xu , Weibin Li

Series: Space Science, Technology and Application Series

Focusing on the theory and state-of-the-art technologies of ultrasonic testing (UT), this book examines ultrasonic propagation in solids and its detection applications, and explores the intersection of UT technology with various fields of electromagnetics, optics and physics. This title will appeal to engineering students and technicians in the field of ultrasonic nondestructive testing.

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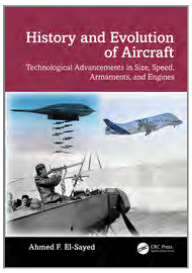
Technological Advancements in Size, Speed, Armaments, and Engines



Ahmed F. El-Sayed Zagazig University, Egypt

History and Evolution of Aircraft reviews the history of aviation from early history to present day, including milestones of civil and military airplanes, helicopters, drones, balloons, and airships. It also provides the background and development of different types of aircraft. World conflicts are reviewed with a thorough description of the manned and unmanned aircraft used. The book will be a useful reference for academic researchers and aviation, aerospace, and mechanical engineering students taking courses in aerodynamics, aircraft structures, aircraft engines, and propulsion. Aviation history enthusiasts will be interested in the scope of the contents as well.

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Vasile Minea

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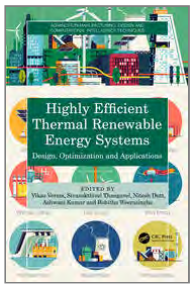

Edited by **Vikas Verma** Tezpur University, India**, Sivasakthivel Thangavel** GCET, India**, Nitesh Dutt** College of Engineering Roorkee, India**, Ashwani Kumar** Technical Educational Department, UP, India**, Rohitha Weerasinghe** University of Bedforshire, UK

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The text comprehensively highlights the latest methodologies, models, techniques, and applications along with a description of modeling, optimization, and experimental works in the energy sector. It further explains key concepts such as finite element analysis tools, hybrid energy systems, mechanical components design, and optimization, solar coupled systems, and vertical heat exchanger.

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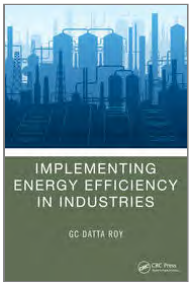

GC Datta Roy Development Environergy Services Limited (DESL), New Delhi

This book focusses on designing, implementing, and verifying performance of energy efficiency and conservation (EE&C) projects in relevant industries from a practitioner's perspective. Various techniques and approaches are presented using case studies collated from the author's notes from about four decades of working in process industries and two decades as international sustainable energy consultant. This book is aimed at professionals in energy engineering, industry, efficiency, and policy.

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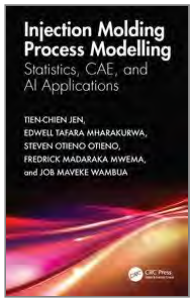
Injection Molding Process Modelling

Statistics, CAE, and AI Applications



Tien-Chien Jen University of Johannesburg, South Africa**, Edwell Tafara Mharakurwa , Steven Otieno Otieno , Fredrick Madaraka Mwema** Dedan Kimathi University of Technology, Kenya**, Job Maveke Wambua**

Injection Molding Process Modelling presents the application of CAE, statistics and AI in defect identification, control, and optimization of injection molding process for quality production. It showcases CAE in determining the optimal placement of injection points, designing cooling channels, and ensuring that the mold will produce parts with the desired specifications. The book illustrates the capability of the CAE tools to simulate molten plastic flow within a mold during the injection molding process. The book will interest industry professionals and engineers working in manufacturing, production, automation, and quality control.

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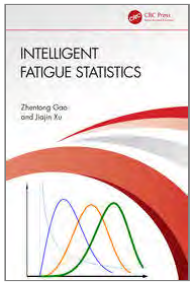
Intelligent Fatigue Statistics



Zhentong Gao , Jiajin Xu

This book introduces the principles and theories of fatigue statistics and presents the Zhentong Gao method along with its practical applications. The title will serve as a valuable reference for researchers, senior undergraduate and graduate students, and engineers in the fields of aerospace, automotive, mechanical, civil engineering, etc.

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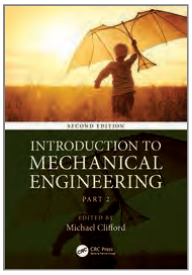

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An Introduction to Mechanical Engineering Part 2, Second Edition is an essential text for all second-year undergraduate students and those studying for foundation degrees and HNDs. Building upon the first-year level topics in Introduction to Mechanical Engineering Part 1, Part 2 provides the next level of coverage for those subject areas.

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This book creates a holistic view about the localized energy transition while addressing current challenges associated with the production of biofuels, introducing new materials to produce solar PV panels, and digital systems for sustainable energy monitoring on a small scale, carbon capture and sequestration. Also, each section of the book addresses specific aspects of the renewable and sustainable energy space while focusing more on energy improvement and storage technologies that are practical focused. This book is aimed at graduate students and researchers in mechanical, chemical, and mechatronics engineering, and renewable energy systems.

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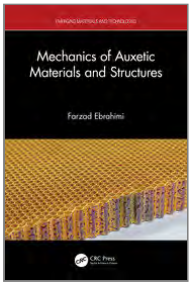
Mechanics of Auxetic Materials and Structures



Farzad Ebrahimi

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Mechanics of Auxetic Materials and Structures offers a wide range of application-based and practical considerations of smart materials and auxetic materials in engineering structures. Covering the effect of different parameters and external factors on the mechanics of auxetic materials and structures, the book considers the benefits leading to better fracture resistance, toughness, shear modulus, and acoustic response. The book serves as a reference for senior undergraduate and graduate students studying civil engineering, mechanical engineering, and materials science and taking courses in smart materials, metamaterials, and mechanics of materials.

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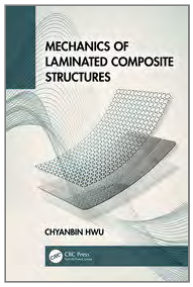
Mechanics of Laminated Composite Structures



Chyanbin Hwu National Cheng Kung University

In this textbook of laminated composite materials, composite structures, and anisotropic elasticity, Chyanbin Hwu draws on more than 3 decades of research and applications experience to provide a leading resource on many unique topics related to laminated composite structures. This textbook is vital for advanced undergraduate and graduate students on courses related to the mechanics of composite materials, composite structures, and anisotropic elasticity such as aerospace, mechanical, civil, and naval engineering; applied mechanics; and engineering science. It is also useful for engineers working in these fields and applied mathematicians and material scientists.

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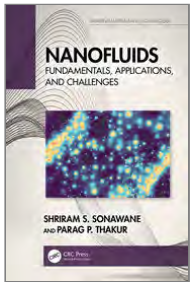

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Nanofluids provides insight to the mathematical, numerical, and experimental methodologies of the industrial application of nanofluids. It covers the fundamentals and applications of nanofluids in heat and mass transfer. The book will be a useful reference for mechanical and chemical engineering researchers and graduate students studying nanotechnology and nanofluids advancements. Thoroughly covering the thermo-physical and optical properties of nanofluids in various operations, the book highlights the necessary parameters for enhancing their performance. It discusses the application of nanofluids in solar panels, car radiators, and boiling operations.

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The text discusses the fundamentals of lubrication science and technology linking the science concepts to engineering practices. It further explores the performance characterization of lubrication systems by utilizing sophisticated experiments and tests and motivates the readers to develop their conclusions and reach solutions based on modern tools and techniques. It is primarily written for senior undergraduate, graduate students, and academic researchers in the fields of mechanical engineering, production engineering, industrial engineering, aerospace engineering, and manufacturing engineering.

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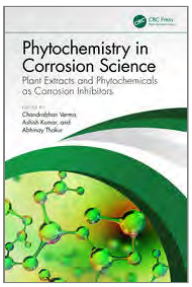
Phytochemistry in Corrosion Science

Plant Extracts and Phytochemicals as Corrosion Inhibitors



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Phytochemistry in Corrosion Science covers the use of plant extracts/phytochemicals in corrosion mitigation with industrial applications. It explores innovative and characterization approaches towards the utilization of plant extracts and their phytochemicals as potential corrosion inhibitors for several metals and their alloys. The book will be a useful reference for undergraduate and graduate students and academic researchers in the fields of phytochemistry, corrosion science and engineering, environmental science, chemical engineering, green chemistry, and mechanical/industrial engineering.

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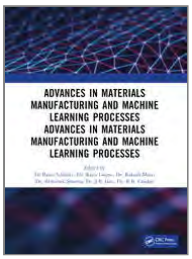
Recent Advances in Material, Manufacturing, and Machine Learning

Proceedings of 2nd International Conference (RAMMML-23)



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The main aim of the 2nd international conference on recent advances in materials manufacturing and machine learning processes-2023 (RAMMML-23) is to bring together all interested academic researchers, scientists, engineers, and technocrats and provide a platform for continuous improvement of manufactur□ng, machine learning, design and materials engineering research. RAMMML 2023 received an overwhelm□ng response with more than 530 full paper submissions. After due and careful scrutiny, about 120 of them have been selected for presentation.

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International Conference on Recent Advances in Science, Engineering & Technology

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The advances in technology, engineering and science are necessary for better and sustainable life. It is not only beneficial for human growth but equally important for all the living and non living matters on the planet.

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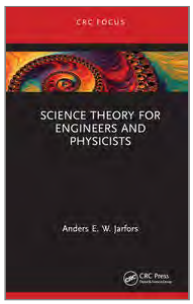
Science Theory for Engineers and Physicists



Anders E. W. Jarfors Jonkoping University, Sweden

This book is a short hands-on guide to the theory of science with the purpose of providing a tool for a systematic approach to inquiry. The book is intended to be used with experimental work as a final project or thesis project for undergraduate or graduate students who have not previously had science theory or data handling and uncertainty.

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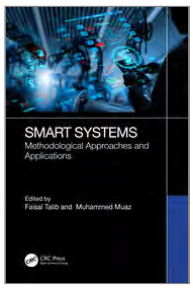
Smart Systems

Methodological Approaches and Applications



Edited by **Faisal Talib** Aligarh Muslim University, India**, Muhammed Mauz** Aligarh Muslim University, India

This book covers the fundamentals, methodological approaches, and diverse applications of smart systems. It also discusses important topics such as the internet of things enabled smart systems, artificial intelligence, ergonomics, digital twin, and quality assured framework in smart systems. It addresses methodological approaches in diverse sectors such as service, agriculture, product design, and development. The text is primarily written for senior undergraduate, graduate students, and academic researchers in the fields of mechanical engineering, manufacturing engineering, industrial engineering, production engineering, and aerospace engineering.

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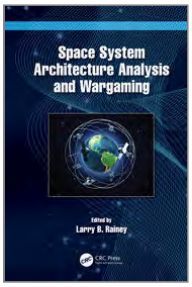
Space System Architecture Analysis and Wargaming



Edited by **Larry B. Rainey**

Space System Architecture Analysis and Wargaming presents a single-source reference for two major topics that are not currently covered in literature related to subdisciplines of astronautics. It provides modeling and simulation tools to architect space systems and analysis, which include detailed discussions of various simulation tools: STK, SEAS, SOAP, AFSIM, EADSIM, and STORM. The book is intended for professionals working in the fields of aerospace engineering, astronautical engineering, space systems engineering, and space wargaming. It will also interest graduate students who are studying spacecraft systems and space architecture.

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Technology for Improved Sustainability and Quality

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Superheated Steam Drying is a guide to selecting the appropriate type of superheated steam drying (SSD) as per operational techniques, including steam oven dryers, rotary drum dryers, tray dryers, flash dryers, and fluidized bed dryers. With studies on hybrid drying technologies with SSD, the book assesses future needs and opportunities for industry adoption and further innovation. The book serves as a useful reference for technicians, graduate students, and researchers in the field of drying technology. It can also be used in courses on Industrial Drying, Processing and Drying of Food, Advanced Drying Technology, and Superheated Steam Drying.

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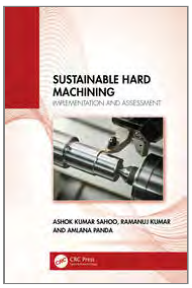
Sustainable Hard Machining

Implementation and Assessment



Ashok Kumar Sahoo Kalinga Institute of Industrial Technology, India**, Ramanuj Kumar** Kalinga Institute of Industrial Technology, India**, Amlana Panda** Kalinga Institute of Industrial Technology, India

Sustainable Hard Machining: Implementation and Assessment analyses the various methodologies of cooling and lubrication employed during hard machining operations along with their potential towards sustainable machining. It includes the needs, challenges, and trends towards sustainable hard machining of difficult-to-cut materials through the application of dry, minimum quantity lubrication (MQL), cryogenic and nanofluids assisted MQL towards environmental, economic, ecological, and societal benefits, leading to environmentally cleaner sustainable machining.

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Sustainable Manufacturing

An Emergence in Industry 4.0

Edited by **Kamalpreet Sandhu** Plaksha University, India**, Sunpreet Singh** National University of Singapore**, Ranvijay Kumar** Chandigarh University, Mohali**, J. Paulo Davim** University of Aveiro, Portugal**, Seeram Ramakrishna**

Series: Manufacturing Design and Technology

This edited collection is a cutting-edge assessment of the barriers preventing the implementation of sustainable manufacturing in industry. Highlighting basic definitions within sustainability and mfg, the book covers topics including interactive design, remanufacturing and optimisation. Using case studies to illustrate success stories in which products have been created using sustainable processes, the book will also include technical notes and experimental results from a wide variety of international contributors. This book is relevant to anyone working in industry, including mechanical engineering, manufacturing and industrial engineering and materials science.

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Sustainable Technologies for Energy Efficient Buildings

Edited by **Chandan Swaroop Meena** IIT Roorkee**, Ashwani Kumar** Technical Educational Department, UP, India**, Varun Pratap Singh** University of Petroleum and Energy Studies**, Aritra Ghosh** University of Exeter, UK

Series: Smart Innovations and Technological Advancements in Mechanical and Materials Engineering

The text discusses sustainable buildings, energy efficient technologies, advanced materials, advances in renewable energy for building sector, green intelligent infrastructure, policies on sustainable infrastructure, and life cycle assessment. It further presents design considerations, challenges, and applications of net zero energy buildings with a global perspective. The book covers renewable energy technologies for energy-efficient buildings. It is primarily written for senior undergraduates, graduate students, and academic researchers in the fields of energy engineering, environmental science and engineering, materials science, mechanical engineering, and civil engineering.

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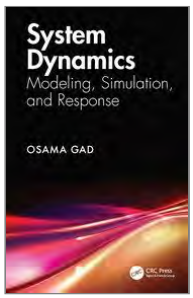
System Dynamics

Modeling, Simulation, and Response



Osama Gad

System Dynamics covers linearity-based modeling techniques before delving into nonlinear systems. It compares the Bond Graph technique against traditional techniques (Newton's law, Kirchhoff's law, the law of the conservation of energy, and the heat transfer law). Presenting transient response analyses of first- and second-order systems subjected to various inputs, the book provides a thorough discussion of computational analyses of transient responses using MATLAB®/Simulink and 20-sim software. The book is intended for upper-level undergraduate mechanical and aerospace engineering students taking System Dynamics courses.

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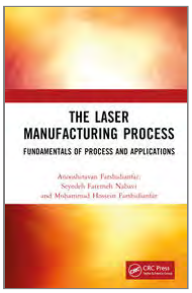
The Laser Manufacturing Process

Fundamentals of Process and Applications



Anooshiravan Farshidianfar , Seyedeh Fatemeh Nabavi , Mohammad Hossein Farshidianfar

The book is a comprehensive guide to industrial laser processes, offering insights into their fundamentals, applications across industries, production specifics, and characteristics, including mechanical, metallurgical, and geometrical aspects, as well as potential defects. The Laser Manufacturing Process functions as a concise reference manual catering to the needs of both students and professionals who require knowledge related to laser manufacturing processes, such as laser cutting.

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Theory and Practice of Decision Making in Regulation, Diagnostics and Reliability of Machines

Paweł Lindstedt Air force institute of technology**, Rafał Grądzki** Bialystok Univerisity of Technology, Poland**, Karol Golak** Bialystok University of Technology, Poland

Without decision-making processes, it is difficult to achieve suitable safety and cost-efficiency. Tackling this head on, the textbook discusses theoretical foundations of decision making, and how this can impact diagnostics and the reliability of machines. Discussing cybernetics, artificial intelligence, engine control, machine diagnostics and reliability, the book uses practical examples such as turbine blades of aircraft engines and vehicles such as cars and buses. This book will be of interest to students and industry workers in the field of mechanical engineering, aerospace and automotive engineering, enabling readers to make informed decisions in their field of work.

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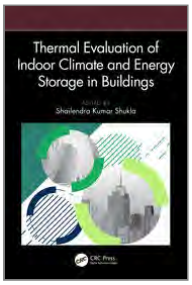
Thermal Evaluation of Indoor Climate and Energy Storage in Buildings



Edited by **Shailendra Kumar Shukla** IIT BHU, India.

There is a need to reduce energy consumption for space cooling and heating the energy efficient solutions/technologies for implementation in the buildings. Thermal energy storage regulates indoor temperature, shifting the peak load to the off-peak hours and reducing the energy need for space cooling and heating. This book presents the most recent advances related to the thermal energy storage system design and integration in buildings. Additionally, modelling, application, synthetization, and characterization of energy efficient building materials is also considered. This book is aimed at researchers and graduate students in mechanical, renewable energy, and HVAC engineering.

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Thermal Properties of Nanofluids

Taher Armaghani , Ramin Ghasemiasl , Omid Mahian

Thermal Properties of Nanofluids presents emerging prospects of understanding and controlling thermophysical properties at the nanoscale. It covers a comprehensive study of recent progress concerning these properties from the solid state to colloids and, above all, a different look at the effect of temperature on nanofluids thermal conducting. The book will interest industry professionals and academic researchers studying the thermophysical behavior of nanomaterials and heat transfer applications of nanofluids. It will serve graduate engineering students studying advanced fluid mechanics, heat transfer, and nanomaterials.

CRC Press
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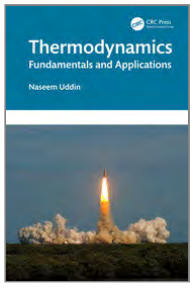
Thermodynamics

Fundamentals and Applications



Naseem Uddin University of Technology Brunei, Brunei

Thermodynamics: Fundamentals and Applications offers a blend of theory and practical applications for a complete understanding of thermodynamics for various engineering applications. Beginning with a basic introduction and principles of thermodynamics, the book advances to more specialized topics like Organic Rankine cycle, gas mixtures, equilibria, and chemical reactions. The book is intended for senior undergraduate mechanical, aerospace, and chemical engineering students taking courses in Thermodynamics.

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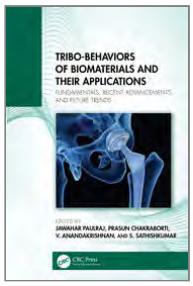
Tribo-Behaviors of Biomaterials and their Applications

Fundamentals, Recent Advancements, and Future Trends



Edited by **Jawahar Paulraj** NIT Agartala, India**, Prasun Chakraborti** NIT Agartala, India**, V. Anandakrishnan** National Institute of Technology, India**, S. Sathishkumar** National Institute of Technology, India

Handling wear within biodevices is a pressing issue, due to the continuous friction and corrosion within the body. It is further complicated by the involvement of body fluids, which can lead to revision surgery to relieve pain. In order to lessen this, engineers can choose a biomaterial better suited to the application. Including detailed discussion of the properties of each biomaterial, the book covers the behaviours of implants, and has chapters on metals, ceramics and polymers. The book will be of interest to those in the field of biomechanical engineering, biomedical engineering, materials science and manufacturing engineering, alongside tribology and nanocomposites.

CRC Press
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Hb: 978-1-032-47056-6: **£100**
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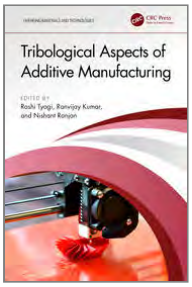
Tribological Aspects of Additive Manufacturing



Edited by **Rashi Tyagi , Ranvijay Kumar** Chandigarh University, Mohali**, Nishant Ranjan** Chandigarh University

Series: Emerging Materials and Technologies

Tribological Aspects of Additive Manufacturing provides a technical discussion on the roles of the 3D printing process for processing polymeric-, metallic-, and ceramics-based additive manufactured products in order to improve the tribological properties. It explores design flexibility, waste minimization, and cost reduction. This book will be a useful reference for undergraduate and graduate students and academic researchers in the fields of materials science, tribology, additive manufacturing, maintenance engineering, and 3D printing.

CRC Press
April 2024:252
Hb: 978-1-032-50975-4: **£155**
eBook: 978-1-003-40052-3
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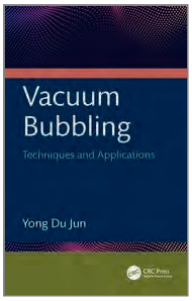
Vacuum Bubbling

Techniques and Applications



Yong Du Jun Kongju National University, Republic of Korea

Vacuum Bubbling introduces the background and applications for generating bubbles under a vacuum condition, accomplished through depressurization without the need to heat water. It presents the advantage of utilizing vapor bubble in deaeration applications since the diffusion for degassing happens between the water body and micro vapor bubbles without the need of membrane or packing. The book is intended for researchers in thermal-fluids, heat and mass transfer, process engineering, and water treatment fields and industry professionals working in power generation, plant and process engineering, transportation, and energy.

CRC Press
May 2024:166
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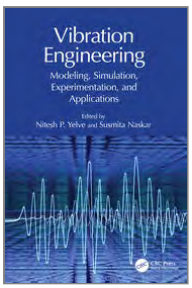
Vibration Engineering

Modeling, Simulation, Experimentation, and Applications



Edited by **Nitesh P. Yelve , Susmita Naskar** Johns Hopkins University, MA, USA

Vibration Engineering presents recent advances in the field, including industrial standards and applications in the finite element method, infrastructure, and active vibration control. It offers a study in seismic vibration control and analysis for building structures and liquid storage tanks. The book will be a useful reference for industry professionals and engineers working with challenges and advances of vibrations in the fields of mechanical, aerospace, structural, and civil engineering. Covering a range of vibration engineering fields, the book highlights machinery diagnostics, modal analysis, energy harvesting, balancing, vibration isolation, and human-vibration interaction.

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