

Engineering Materials By Surendra Singh

This collection contains 16 papers presented at a symposium on condition monitoring of materials and structures at the Engineering Mechanics Conference, held in Austin, Texas, May 2000.

The present book Microbial Synthesis of Nanomaterials is written mainly for the public's acquaintance with the synthesis and characterisation of different types of nanomaterials (NMs) and their sustainable applications in various fields. The nano-era began the late 1990s, after which the production of NMs increased rapidly and is expected to reach 1.663 million tons by the end of 2021. Recent findings have shown that NMs play a vital role in various fields like agriculture, food industries, environment, medicine and pharmaceutical, electronics, and so on. Microorganisms play a key role in the formation and transformation of nanoscale minerals in the environment. These natural processes can be harnessed for the green synthesis of nanomaterials for a diverse array of commercial, industrial and environmental applications, presenting a sustainable alternative to more traditional physiochemical synthesis routes. This new book consists of 15 chapters which provide comprehensive knowledge about the synthesis of NMs and offer a critical overview of the current understanding of nanoparticle synthesis using microbes, covering NMs' synthesis, characterisation and applications, and providing discussion on future prospects. The editors believe that this book will be helpful to researchers, the scientific community, academicians, business farmers and policy makers. The editors thankfully acknowledge the financial support of the Russian Foundation for Basic Research, project no. 19-05-50097 and of the Ministry of Science and Higher Education of the Russian Federation within the framework of the state task in the field of scientific activity (no. 0852-2020-0029).

Mosquitoes are significant vectors that transmit various pathogens to humans and other mammals. Mosquitoes seem to be omnipresent and easily breed in climates favourable to them. Life cycle of the Aedes species of mosquitoes is similar to others of its genera. This book focuses on Aedes mosquitoes that are responsible for many dreadful diseases and discusses every stage in the life cycle of the species. The contributing authors of this book have extensive teaching and research experience in the field of detection of viruses of Dengue, Chikungunya, yellow fever and West Nile. One of the contributing authors, Prof. Vinod Joshi, has researched on Dengue viruses for 17 years. The book provides a detailed account of the distribution of Aedes mosquitoes, their role as a vector and their control through various methods. Currently, there has been increased interest among researchers to mitigate the threat caused by Aedes mosquitoes and substantial investigation is being done on the mosquito 's history, in characterizing present circumstances and to collaborate future efforts.

Mergers and Acquisitions

Biomaterials Science: Processing, Properties, and Applications

Civil Engineering Materials

Functional Nanomaterials for Regenerative Tissue Medicines

Select Proceedings of RAME 2020

This text on building materials includes discussion of structural clay products, rocks and stones, wood, materials for making concrete, ferrous and non-ferrous metals, and miscellaneous materials.

The book examines the market reaction to mergers and acquisitions (M&A) announcements over a period from 2003 to 2015. Mergers and acquisitions continue to be amongst the preferred competitive options available to the companies seeking to grow fast in the rapidly changing global business scenario. M&A as a growth strategy has received attention from developed as well as emerging economies. It has been extensively used by managers as an expansion strategy and also serves as an important instrument for increasing corporate efficiency. Recently, M&A has grown at a rapid pace, creating a need for research to analyze what drives this phenomenon and how it affects firms and markets. As such, this book evaluates the impact of M&A on short-term abnormal returns as well long-term financial performance. It also assesses the management view concerning the motives for undertaking M&A. In addition, the book investigates the corporate governance practices of the acquiring firms and their impact on the short- term as well as long- term performance of those firms.

This book highlights the complexity of spinel nanoferrites, their synthesis, physio-chemical properties and prospective applications in the area of advanced electronics, microwave devices, biotechnology as well as biomedical sciences. It presents an overview of spinel nanoferrites: synthesis, properties and applications for a wide audience: from beginners and graduate-level students up to advanced specialists in both academic and industrial sectors. There are 15 chapters organized into four main sections. The first section of the book introduces the readers to spinel ferrites and their applications in advanced electronics industry including microwave devices, whereas the second section mainly focus on the synthesis strategy and their physio-chemical properties. The last sections of the book highlight the importance of this class of nanomaterials in the field of biotechnology and biomedical sector with a special chapter on water purification.

Synthesis, Properties and Applications

Select Papers from AIMTDR 2016

Silicon Anode Systems for Lithium-Ion Batteries

Key Engineering Materials

Condition Monitoring of Materials and Structures

This book presents select proceedings of the international conference on Innovations in Clean Energy Technologies (ICET 2020) and examines a range of durable, energy efficient and next-generation smart green technologies for sustainable future by reflecting on the trends, advances and development taking place all across the globe. The topics covered include smart technologies based product, energy efficient systems, solar and wind energy, carbon sequestration, green transportation, green buildings, energy material, biomass energy, smart cites, hydro power, bio-energy and fuel cell. The book also discusses various performance attributes of these clean energy technologies and their workability and carbon footprint. The

book will be a valuable reference for beginners, researchers and professionals interested in clean energy technologies.

This book covers the recent developments in the production of micro and nano size products, which cater to the needs of the industry. The processes to produce the miniature sized products with unique characteristics are addressed. Moreover, their application in areas such as micro-engines, micro-heat exchangers, micro-pumps, micro-channels, printing heads and medical implants are also highlighted. The book presents such microsystem-based products as important contributors to a sustainable economy. The recent research in this book focuses on the development of new micro and nano manufacturing platforms while integrating the different technologies to manufacture the micro and nano components in a high throughput and cost effective manner. The chapters contain original theoretical and applied research in the areas of micro- and nano-manufacturing that are related to process innovation, accuracy, and precision, throughput enhancement, material utilization, compact equipment development, environmental and life-cycle analysis, and predictive modeling of manufacturing processes with feature sizes less than one hundred micrometers.

This book covers nanomaterials in tissue engineering for regenerative therapies of heart, skin, eye, skeletal muscle, and the nervous system. The book emphasizes fundamental design concepts and emerging forms of nanomaterials in soft- and hard-tissue engineering. FEATURES Fills a gap in the literature related to the application of nanomaterials in hard- and soft-tissue regeneration, repair, and restructure Discusses a variety of applications, including cardiac, kidney, liver, bone, wound healing, artificial organs, and dental Presents advantages and limitations of various nanomaterials alongside future challenges Functional Nanomaterials for Regenerative Tissue Medicines is essential for academics and industry professionals working in tissue engineering, biomedicine, biopharmaceuticals, and nanotechnology. It is primarily intended for materials researchers (to develop the platforms related to tissue regeneration) as well as clinicians (to learn and apply nanomaterials in their practice) and industrial scientists (to develop commercial blood substitute products).

Bulletin of the Institution of Engineers (India).

Recent Developments

Recent Advances in Mechanical Engineering

Mechanics of Composite Structures

Building Materials

This book presents the select proceedings of the second International Conference on Recent Advances in Mechanical Engineering (RAME 2020). The topics covered include aerodynamics and fluid mechanics, automation, automotive engineering, composites, ceramics and polymers processing, computational mechanics, failure and fracture mechanics, friction, tribology and surface engineering, heating and ventilation, air conditioning system, industrial engineering, IC engines, turbomachinery and alternative fuels, machinability and formability of materials, mechanisms and machines, metrology and computer-aided inspection, micro- and nano-mechanics, modelling, simulation and optimization, product design and development, rapid manufacturing technologies and prototyping, solid mechanics and structural mechanics, thermodynamics and heat transfer, traditional and non-traditional machining processes, vibration and acoustics. The book also discusses various energy-efficient renewable and non-renewable resources and technologies, strategies and technologies for sustainable development and energy & environmental interaction. The book is a valuable reference for beginners, researchers, and professionals interested in sustainable construction and allied fields.

An increase in the use of composite materials in areas of engineering has led to a greater demand for engineers versed in the design of structures made from such materials. This book offers students and engineers tools for designing practical composite structures. Among the topics of interest to the designer are stress-strain relationships for a wide range of anisotropic materials; bending, buckling, and vibration of plates; bending, torsion, buckling, and vibration of solid as well as thin walled beams; shells; hygrothermal stresses and strains; finite element formulation; and failure criteria. More than 300 illustrations, 50 fully worked problems, and material properties data sets are included. Some knowledge of composites, differential equations, and matrix algebra is helpful but not necessary, as the book is self-contained. Graduate students, researchers, and practitioners will value it for both theory and application.

Silicon Anode Systems for Lithium-Ion Batteries is an introduction to silicon anodes as an alternative to traditional graphite-based anodes. The book provides a comprehensive overview including abundance, system voltage, and capacity. It provides key insights into the basic challenges faced by the materials system such as new configurations and concepts for overcoming the expansion and contraction related problems. This book has been written for the practitioner, researcher or developer of commercial technologies. Provides a thorough explanation of the advantages, challenge, materials science, and commercial prospects of silicon and related anode materials for lithium-ion batteries Provides insights into practical issues including processing and performance of advanced Si-based materials in battery-relevant materials systems Discusses suppressants in electrolytes to minimize adverse effects of solid electrolyte interphase (SEI) formation and safety limitations associated with this technology

MANUFACTURING PROCESSES

Deadly Infections Transmitted by Aedes Mosquitoes

Select Proceedings of ICET 2020

Building Construction and Materials

Cement Types, Admixtures, and Technical Procedures of Cement Analysis

?ABOUT THE BOOK: feel proud in issuing the Seventh Edition of the book "Building Construction and Materials". The subject " Building Construction and Materials" is a very vast and tedious subject of Civil Engineering. Author has tried to explain all the aspects of this subject in a very simple and lucid language. The Book is entirely in SI Units. The book covers the syllabi prescribed by all the Indian universities, State Technical Boards and A.M.I.E. (India) examinations. The book is also very useful for Engineers involved in construction industry. All the relevant I.S.I. Recommendations and other useful data have been incorporated in the book. Author has tried to explain all the aspects with the help of lot of neat drawings. It is hoped that the book will satisfy all the needs of the students and practising engineers in regard to this subject. In order to increase the usefulness of the book basic engineering materials have been added in this revised 17th edition. Basic engineering material like stone, bricks, lime, cement, timber and iron has been added in this edition.

?RECOMMENDATIONS: A textbook for all Engineering Branches, Competitive Examination, ICS, and AMIE Examinations In S.I Units For Degree, Diploma and A.I.M.E. (India) Students and Practising Civil Engineers. ?ABOUT

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Handbook of Biomedical Engineering covers the most important used systems and materials in biomedical engineering. This book is organized into six parts: Biomedical Instrumentation and Devices, Medical Imaging, Computers in Medicine, Biomaterials and Biomechanics, Clinical Engineering, and Engineering in Physiological Systems Analysis. These parts encompassing 27 chapters cover the basic principles, design data and criteria, and applications and their medical and/or biological relationships. Part I deals with the principles, mode of operation, and uses of various biomedical instruments and devices, including transducers, electrocardiograph, implantable electrical devices, biotelemetry, patient monitoring systems, hearing aids, and implantable insulin delivery systems. Parts II and III describe the basic principle of medical imaging devices and the application of computers in medicine, particularly in the fields of data management, critical care, clinical laboratory, radiology, artificial intelligence, and research. Part IV focuses on the application of biomaterials and biomechanics in orthopedic and accident investigation, while Part V considers the major functions of clinical engineering. Part VI provides the principles and application of mathematical models in physiological systems analysis. This book is valuable as a general reference for courses in a biomedical engineering curriculum.

Contemporary Indian Houses discusses fifty-one architect-designed built-up houses selected from different parts of India. They display the diversity of needs, tastes and building materials in the context of different weather conditions and social trends. Different architectural appearances or external expressions have determined the classification of the houses into

five sections. This grouping keeps the reader's growing interest in the external aspect of a residential structure. The emphasis is on the built-form rather than on the interior and its decor. Each house is accompanied by an explanatory text and supplemented by appropriate drawings and photographs to present a comprehensive picture of India's many-splendoured domestic architecture. Contemporary Indian Houses is a well illustrated document of changing trends in architectural tune. It is not only a reflection of contemporary Indian architecture but also source of reference material for architecture historians. Moreover, it fulfills the needs of architects and other professionals engaged in house construction activity along with those general readers who wish to keep themselves informed of what is happening in the field of creative design.

Scientific and Technical Books and Serials in Print

Innovative Applications of Nanowires for Circuit Design

Handbook of Materials Characterization

Concepts in Quantum Mechanics

Books in Print

This book focuses on the widely used experimental techniques available for the structural, morphological, and spectroscopic characterization of materials. Recent developments in a wide range of experimental techniques and their application to the quantification of materials properties are an essential side of this book. Moreover, it provides concise but thorough coverage of the practical and theoretical aspects of the analytical techniques used to characterize a wide variety of functional nanomaterials. The book provides an overview of widely used characterization techniques for a broad audience: from beginners and graduate students, to advanced specialists in both academia and industry.

Research on biomedical applications of nanomaterials has exhibited the rapidly evolving field of biomedical sciences by showing how effective they are in treatment. These particles hold considerable potential for biomedical applications. Work is ongoing, and the results suggest a possibility for a sustainable future for nanomaterials in both therapeutic and biomedical fields. This book highlights current and emerging applications, taking global research findings into consideration. We believe the focus on the identification and role of nanomaterial applications in therapeutic and biomedical sciences can lead to novel solutions in the fields. The chapters of this book are disseminated in a manner that can be readily adopted as sources for new and further study. The editors integrate advanced texts in their research that help graduate students, researchers and professors. Additionally, we believe that international readers will be able to make use of this book for reference purposes.

This book on Management Accounting has been written to serve as a useful text for undergraduate courses in commerce and management—B.Com. (Hons.), B.Com., B.B.A., B.B.S., B.B.M., B.B.E.—offered by Indian Universities and Institutes. Besides, the students pursuing M.Com., M.B.A., M.I.B., C.A., C.M.A. and C.S. will also find the book equally beneficial for their course curriculum. **SALIENT FEATURES** • Written in a simple, lucid and easy to comprehend style, to facilitate learning even for the first time readers. • Topics have been presented

and organised systematically. • Concepts are supported with numerous graphs, tables and diagrams, wherever required. • Incorporates more than 260 solved examples/illustrations/questions from previous examination papers of various universities and professional institutes. • Considerable number of objective type, multiple choice questions (MCQs), and theoretical and practical questions have been provided in each chapter for the students to learn and practice. The book has already found place in the recommended list of the UGC curriculum under its Choice Based Credit System.

Strength of Materials

An Introduction

A Study of Financial Performance, Motives and Corporate Governance

(for the Architecture and Civil Engineering Students Preparing for Degree, Diploma and Other Competitive Examinations)

Advances in Clean Energy Technologies

This book presents select proceedings of the International Conference on Future Learning Aspects of Mechanical Engineering (FLAME 2020). This book, in particular, focuses on characterizing materials using novel techniques. It covers a variety of advanced materials, viz. composites, coatings, nanomaterials, materials for fuel cells, biomaterials among others. The book also discusses advanced characterization techniques like X-ray photoelectron, UV spectroscopy, scanning electron, atomic power, transmission electron and laser confocal scanning fluorescence microscopy, and gel electrophoresis chromatography. This book gives the readers an insight into advanced material processes and characterizations with special emphasis on nanotechnology.

This book presents selected papers from the International Conference on Advances in Materials Processing and Manufacturing Applications (iCADMA 2020), held on November 5–6, 2020, at Malaviya National Institute of Technology, Jaipur, India. iCADMA 2020 proceedings is divided into four topical tracks – Advanced Materials, Materials Manufacturing and Processing, Engineering Optimization and Sustainable Development, and Tribology for Industrial Application.

This book contains 18 papers from the Next Generation Biomaterials and Surface Properties of Biomaterials symposia held during the 2010 Materials Science and Technology (MS&T'10) meeting, October 17-21, 2010, Houston, Texas. Topics include: Biocompatible Coatings; Drug Delivery and Anti-Microbial Coatings; Ceramic and Metallic Biomaterials; Biomaterials for Tissue Engineering; and Surface Modification.

Micro and Nano Machining of Engineering Materials

MANAGEMENT ACCOUNTING

Microbial Synthesis of Nanomaterials

Indian Books in Print

International Books in Print

Civil Engineering Materials explains why construction materials behave the way they do. It covers the construction materials content for undergraduate courses in civil engineering and related subjects and serves as a valuable reference for professionals working in the construction industry. The book concentrates on demonstrating methods to obtain, analyse and use information rather than focusing on presenting large amounts of data. Beginning with basic properties of materials, it moves on to more complex areas such as the theory of concrete durability and corrosion of steel. Discusses the broad scope of traditional, emerging, and non-structural materials Explains what material properties such as specific heat, thermal conductivity and electrical resistivity are and how they can be used to calculate the performance of construction materials. Contains numerous worked examples with detailed solutions that provide precise references to the relevant equations in the text. Includes a detailed section on how to write reports as well as a full section on how to use and interpret publications, giving students and early career professionals valuable practical guidance.

The revised and updated second edition of this book gives an in-depth presentation of the basic principles and operational procedures of general manufacturing processes. It aims at assisting the students in developing an understanding of the important and often complex interrelationship among various technical and economical factors involved in manufacturing. The book begins with a discussion on material properties while laying emphasis on the influence of materials and processing parameters in understanding manufacturing processes and operations. This is followed by a detailed description of various manufacturing processes commonly used in the industry. With several revisions and the addition of four new chapters, the new edition also includes a detailed discussion on mechanics of metal cutting, features and working of machine tools, design of molds and gating systems for proper filling and cooling of castings. Besides, the new edition provides the basics of solid-state welding processes, weldability, heat in welding, residual stresses and testing of weldments and also of non-conventional machining methods, automation and transfer machining, machining centres, robotics, manufacturing of gears, threads and jigs and fixtures. The book is intended for undergraduate students of mechanical engineering, production engineering and industrial engineering. The diploma students and those preparing for AMIE, Indian Engineering Services and other competitive examinations will also find the book highly useful. New to This Edition : Includes four new chapters Non-conventional Machining Methods; Automation: Transfer Machining, Machining Centres and Robotics; Manufacturing Gears and Threads; and Jigs and Fixtures to meet the course requirements. Offers a good number of worked-out examples to help the

students in mastering the concepts of the various manufacturing processes. Provides objective-type questions drawn from various competitive examinations such as Indian Engineering Services and GATE.

A bulky document on cement science and manufacturing technology is difficult for a college junior to easily understand. Thus, it is better to write a short and precise book that contains only the necessary basic content. This introductory book is designed as a short and concise resource for undergraduate university students studying chemical science (chemistry and chemical engineering), material science, geology, and construction technology. It emphasizes different types of cement, admixtures, and how to analyze the chemical compositions of cement in the laboratory. Technical procedures of cement analysis are very important for determining and comparing chemical compositions. This book describes the detailed procedures for different test parameters.

Spinel Nanoferrites

Simulations for Design and Manufacturing

Introduction to the Thermodynamics of Materials, Fifth Edition

Engineering Materials

This book focuses on numerical simulations of manufacturing processes, discussing the use of numerical simulation techniques for design and analysis of the components and the manufacturing systems. Experimental studies on manufacturing processes are costly, time consuming and limited to the facilities available. Numerical simulations can help study the process at a faster rate and for a wide range of process conditions. They also provide good prediction accuracy and deeper insights into the process. The simulation models do not require any pre-simulation, experimental or analytical results, making them highly suitable and widely used for the reliable prediction of process outcomes. The book is based on selected proceedings of AIMTDR 2016. The chapters discuss topics relating to various simulation techniques, such as computational fluid dynamics, heat flow, thermo-mechanical analysis, molecular dynamics, multibody dynamic analysis, and operational modal analysis. These simulation techniques are used to: 1) design the components, 2) to investigate the effect of critical process parameters on the process outcome, 3) to explore the physics of the process, 4) to analyse the feasibility of the process or design, and 5) to optimize the process. A wide range of advanced manufacturing processes are covered, including friction stir welding, electro-discharge machining, electro-chemical machining, magnetic pulse welding, milling with MQL (minimum quantity lubrication), electromagnetic cladding, abrasive flow machining, incremental sheet forming, ultrasonic assisted turning, TIG welding, and laser sintering. This book will be useful to researchers and professional engineers alike.

Nanowires are an important sector of circuit design whose applications in very-large-scale integration design (VLSI) have huge impacts for bringing revolutionary advancements in nanoscale devices, circuits, and systems due to improved electronic properties of the nanowires. Nanowires are potential devices for VLSI circuits and system applications and are highly preferred in novel nanoscale devices due to their high mobility and high-driving capacity. Although the knowledge and resources for the fabrication of nanowires is currently limited, it is predicted that, with the advancement of technology, conventional fabrication flow can be used for nanoscale devices, specifically nanowires. Innovative Applications of Nanowires for Circuit Design provides relevant theoretical frameworks that include device physics, modeling, circuit design, and the latest developments in experimental fabrication in the field of nanotechnology. The book covers advanced modeling concepts of nanowires along with their role as a key enabler for innovation in GLSI devices, circuits, and systems. While highlighting topics such as design, simulation, types and applications, and performance analysis of nanowires, this book is ideally intended for engineers, practitioners, stakeholders, academicians, researchers, and students interested in electronics engineering, nanoscience, and nanotechnology.

Taking a conceptual approach to the subject, Concepts in Quantum Mechanics provides complete coverage of both basic and advanced topics. Following in the footsteps of Dirac's classic work Principles of Quantum Mechanics, it explains all themes from first principles. The authors present alternative ways of representing the state of a physical system,

Engineered Nanomaterials for Innovative Therapies and Biomedicine

Contemporary Indian Houses

ICE Manual of Construction Materials: Fundamentals and theory; Concrete; Asphalts in road construction; Masonry

Advances in Materials Processing and Manufacturing Applications

Small Bite, Big Threat