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ROLLINS MCMAHON

Science in Clothing Comfort CRC Press

"This is a comprehensive volume on analytical techniques used in materials science for the characterization of surfaces, interfaces and thin films. This flagship volume is a unique, stand-alone reference for materials science practitioners, process engineers, students and anyone with a need to know about the capabilities available in materials analysis. An encyclopedia of 50 concise articles, this book will also be a practical companion to the forthcoming books in the series."--Knovel.

Mathematics for Machine Learning Cambridge University Press

This book provides a systematic and comprehensive treatment of the variety of methods available for applying data reconciliation techniques. Data filtering, data compression and the impact of measurement selection on data reconciliation are also exhaustively explained. Data errors can cause big problems in any process plant or refinery. Process measurements can be corrupted by power supply fluctuations, network transmission and signal conversion noise, analog input filtering, changes in ambient conditions, instrument malfunctioning, miscalibration, and the wear and corrosion of sensors, among other factors. Here's a book that helps you detect, analyze, solve, and avoid the data acquisition problems that can rob plants of peak performance. This indispensable volume provides crucial insights into data reconciliation and gross error detection techniques that are essential for optimal process control and information systems. This book is an invaluable tool for engineers and managers faced with the selection and implementation of data reconciliation software, or for those developing such software. For industrial personnel and students, Data Reconciliation and Gross Error Detection is the ultimate reference.

Introduction to Materials Science Springer Science & Business Media

The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

Industrial Applications of Carbon Nanotubes John Wiley & Sons

This text introduces the important aspects associated with the failure analysis of engineering components; and provides a treatment of both macroscopic and microscopic observations of fracture surfaces. --

Edutech Enabled Teaching Morgan & Claypool Publishers

This work comprises eight contributions from leading experts on the topic of the mechanical behaviour of materials. The research themes described in this special volume range from surface forces, surface energies and adhesion to the indentation and nano-indentation of solids and fracture waves in glasses to spectroscopic studies of biological cells. The result is an intriguing and informative review of this important subject area.

Introduction To Phase Diagrams In Materials Science And Engineering Cambridge University Press

Industrial Applications of Carbon Nanotubes covers the current applications of carbon nanotubes in various industry sectors, from the military to visual display products, and energy harvesting and storage. It also assesses the opportunities and challenges for increased commercialization and manufacturing of carbon nanotubes in the years ahead. Real-life case studies illustrate how carbon nanotubes are used in each industry sector covered, providing a valuable resource for scientists and engineers who are involved and/or interested in carbon nanotubes in both academia and industry. The book serves as a comprehensive guide to the varied uses of carbon nanotubes for specialists in many related fields, including chemistry, physics, biology, and textiles. Explains how carbon nanotubes can be used to improve the efficiency and performance of industrial products. Includes real-life case studies to illustrate how carbon nanotubes have been successfully employed. Explores how carbon nanotubes could be mass-manufactured in the future, and outlines the challenges that need to be overcome.

Materials Engineering and Technology Springer

The topology optimization method solves the basic engineering problem of distributing a limited amount of material in a design space. The first edition of this book has become the standard text on optimal design which is concerned with the optimization of structural topology, shape and material. This edition, has been substantially revised and updated to reflect progress made in modelling and computational procedures. It also encompasses a comprehensive and unified description of the state-of-the-art of the so-called material distribution method, based on the use of mathematical programming and finite elements. Applications treated include not only structures but also materials and MEMS.

Mechanical Behaviour of Materials WPI Publishing

Volume is indexed by Thomson Reuters CPCI-S (WoS). Collection of selected, peer reviewed papers from the 2013 International Conference on Advances and Trends in Engineering Materials and their Applications (ATEMA 2013), October 11-12, 2013, Singapore. The 75 papers are grouped as follows: Chapter 1: Materials Science and Technology; Chapter 2: Engineering Materials and Application; Chapter 3: Manufacturing Technology and Process; Chapter 4: Related Topics

Material Science and Metallurgy: Van Rye Publishing, LLC

The progress of civilization can be, in part, attributed to their ability to employ metallurgy. This book is an introduction to

multiple facets of physical metallurgy, materials science, and engineering. As all metals are crystalline in structure, it focuses attention on these structures and how the formation of these crystals are responsible for certain aspects of the material's chemical and physical behaviour. Concepts in Physical Metallurgy also discusses the mechanical properties of metals, the theory of alloys, and physical metallurgy of ferrous and non-ferrous alloys.

Mathematical Methods in Engineering McGraw Hill Professional

Introduction to Python Programming is written for students who are beginners in the field of computer programming. This book presents an intuitive approach to the concepts of Python Programming for students. This book differs from traditional texts not only in its philosophy but also in its overall focus, level of activities, development of topics, and attention to programming details. The contents of the book are chosen with utmost care after analyzing the syllabus for Python course prescribed by various top universities in USA, Europe, and Asia. Since the prerequisite know-how varies significantly from student to student, the book's overall overture addresses the challenges of teaching and learning of students which is fine-tuned by the authors' experience with large sections of students. This book uses natural language expressions instead of the traditional shortened words of the programming world. This book has been written with the goal to provide students with a textbook that can be easily understood and to make a connection between what students are learning and how they may apply that knowledge. Features of this book This book does not assume any previous programming experience, although of course, any exposure to other programming languages is useful This book introduces all of the key concepts of Python programming language with helpful illustrations Programming examples are presented in a clear and consistent manner Each line of code is numbered and explained in detail Use of f-strings throughout the book Hundreds of real-world examples are included and they come from fields such as entertainment, sports, music and environmental studies Students can periodically check their progress with in-chapter quizzes that appear in all chapters

Mechanical Behavior of Materials CRC Press

Prepared as a textbook complete with problems after each chapter, specifically intended for classroom use in universities.

The Solid State Gulf Professional Publishing

In this new edition of their classic work on Cellular Solids, the authors have brought the book completely up to date, including new work on processing of metallic and ceramic foams and on the mechanical, electrical and acoustic properties of cellular solids. Data for commercially available foams are presented on material property charts; two new case studies show how the charts are used for selection of foams in engineering design. Over 150 references appearing in the literature since the publication of the first edition are cited. The text summarises current understanding of the structure and mechanical behaviour of cellular materials, and the ways in which they can be exploited in engineering design. Cellular solids include engineering honeycombs and foams (which can now be made from polymers, metals, ceramics and composites) as well as natural materials, such as wood, cork and cancellous bone.

Mining of Massive Datasets Elsevier

This book presents a careful selection of the contributions presented at the Mathematical Methods in Engineering (MME10) International Symposium, held at the Polytechnic Institute of Coimbra- Engineering Institute of Coimbra (IPC/ISEC), Portugal, October 21-24, 2010. The volume discusses recent developments about theoretical and applied mathematics toward the solution of engineering problems, thus covering a wide range of topics, such

as: Automatic Control, Autonomous Systems, Computer Science, Dynamical Systems and Control, Electronics, Finance and Economics, Fluid Mechanics and Heat Transfer, Fractional Mathematics, Fractional Transforms and Their Applications, Fuzzy Sets and Systems, Image and Signal Analysis, Image Processing, Mechanics, Mechatronics, Motor Control and Human Movement Analysis, Nonlinear Dynamics, Partial Differential Equations, Robotics, Acoustics, Vibration and Control, and Wavelets.

Air Pollution CRC Press

Fundamentals of Materials Engineering - A Basic Guide is a helpful textbook for readers learning the basics of materials science. This book covers important topics and fundamental concepts of materials engineering including crystal structure, imperfections, mechanical properties of materials, polymers, powder metallurgy, corrosion and composites. The authors have explained the concepts in an effective way and by using simple language for the benefit of a broad range of readers. This book is also beneficial to the students in engineering courses at B.Sc, M.Sc, and M.Tech. levels.

New Age Education Models World Scientific

Now in its second edition, this book focuses on practical algorithms for mining data from even the largest datasets.

Fundamentals of Light Microscopy and Electronic Imaging Notion Press

Rethinking, Redesigning, and Restructuring of higher education is the need of the hour. This book intends to enlighten its readers about the 21st-century education models for 21st-century learners. Such models would include skill-oriented and technology-based teaching and learning. This book suggests various routes for student entrepreneurs to access resources throughout their college life to ultimately achieve their goals. It also talks about the effectiveness of e-learning tools in education, emerging teaching techniques, and methodologies by understanding the education models of different countries and benchmarking the best practices. The book also highlights the importance and advantage of open-source learning, mobile learning, and the role of creativity and its relevance with technology.

Smart Structures Theory Springer Science & Business Media

AN INTRODUCTION TO MECHANICS OF MATERIALS attempts to deal with the subject as an engineering science with a clear elaboration of the central scheme of dealing with this subject, namely, delinking the geometry aspects of the subject from the materials aspects. This is achieved by using explicitly the three-step scheme of macro (forces) to micro (stresses) conversion, transforming at the micro level (from stresses to strains), and then converting back to the macro level (deformations), or vice versa. Another aspect which has been emphasised considerably is the construction of idealized models of the physical structures such that they are amenable to analysis with the mathematical tools available with a beginning engineering student. The level of mathematics used has been kept at the very minimum, without sacrificing the rigour. In the belief that not all readers would have sufficient familiarity with the engineering aspects of many applications discussed, considerable amount of details about these have been included wherever feasible.

Topology Optimization Academic Press

New materials enable advances in engineering design. This book describes a procedure for material selection in mechanical design, allowing the most suitable materials for a given application to be identified from the full range of materials and section shapes available. A novel approach is adopted not found elsewhere. Materials are introduced through their properties; materials selection charts (a new development) capture the important features of all materials, allowing rapid retrieval of

information and application of selection techniques. Merit indices, combined with charts, allow optimisation of the materials selection process. Sources of material property data are reviewed and approaches to their use are given. Material processing and its influence on the design are discussed. The book closes with chapters on aesthetics and industrial design. Case studies are developed as a method of illustrating the procedure and as a way of developing the ideas further.

Encyclopedia of Materials Characterization World Scientific

The primary goal of this book is to address the issues faced by teachers in the adoption of digital tools into their teaching and their students learning. This book also addresses the issues confronting educators in the integration of digital technologies into their teaching and their students' learning. Such issues include a skepticism of the added value of technology to educational learning outcomes, the perception of the requirement to keep up with the fast pace of technological innovation, a lack of knowledge of affordable educational digital tools and a lack of understanding of pedagogical strategies to embrace digital technologies in their teaching. This book presents theoretical perspectives of learning and teaching today's digital students with technology and proposes a pragmatic and sustainable framework for teachers' professional learning to embed digital technologies into their repertoire of teaching strategies in a systematic, coherent and comfortable manner so that technology integration becomes an almost effortless pedagogy in their day-to-day teaching. Some of the objectives

are given below: Shares valuable insights into the influence of technology on teaching and learning in higher education Provides deeper insights on higher education and sustainability interact Studies innovations from various perspectives Investigates how the educators and students apply the unique innovative and emotional dimensions in modern age of learning Provides a timely overview of changes in education reforms and policy research globally Evaluates the problematic relationship between globalization, the state, and education reforms.

Mechanics Of Composite Materials Cambridge University Press

Metallic Glass-Based Nanocomposites: Molecular Dynamics Study of Properties provides readers with an overview of the most commonly used tools for MD simulation of metallic glass composites and provides all the basic steps necessary for simulating any material on Materials Studio. After reading this book, readers will be able to model their own problems on this tool for predicting the properties of metallic glass composites. This book provides an introduction to metallic glasses with definitions and classifications, provides detailed explanations of various types of composites, reinforcements and matrices, and explores the basic mechanisms of reinforcement-MG interaction during mechanical loading. It explains various models for calculating the thermal conductivity of metallic glass composites and provides examples of molecular dynamics simulations. Aimed at students and researchers, this book caters to the needs of those working in the field of molecular dynamics (MD) simulation of metallic glass composites.