

## Fundamentals And Applications

***Students and researchers looking for a comprehensive textbook on magnetism, magnetic materials and related applications will find in this book an excellent explanation of the field. Chapters progress logically from the physics of magnetism, to magnetic phenomena in materials, to size and dimensionality effects, to applications. Beginning with a description of magnetic phenomena and measurements on a macroscopic scale, the book then presents discussions of intrinsic and phenomenological concepts of magnetism such as electronic magnetic moments and classical, quantum, and band theories of magnetic behavior. It then covers ordered magnetic materials (emphasizing their structure-sensitive properties) and magnetic phenomena, including magnetic anisotropy, magnetostriction, and magnetic domain structures and dynamics. What follows is a comprehensive description of imaging methods to resolve magnetic microstructures (domains) along with an introduction to micromagnetic modeling. The book then explores in detail size (small particles) and dimensionality (surface and interfaces) effects -- the underpinnings of nanoscience and nanotechnology that are brought into sharp focus by magnetism. The hallmark of modern science is its interdisciplinarity, and the second half of the book offers interdisciplinary discussions of information technology, magnetoelectronics and the future of biomedicine via recent developments in magnetism. Modern materials with tailored properties require careful synthetic and characterization strategies. The book also includes relevant details of the chemical synthesis of small particles and the physical deposition of ultra thin films. In addition, the book presents details of state-of-the-art characterization methods and summaries of representative families of materials, including tables of properties. CGS equivalents (to SI) are included.***

*Provides coverage on the full range of topics associated with polyimides, including structure, polymer fundamentals, and product areas. The text addresses both basic and applied aspects of the subject. It details the synthesis of polyimides, polyamideimides, and flourinated polyimides, explains the molecular design of photosensitive polyimides, and more.*

*This book provides a comprehensive overview of the field of plasma catalysis, regarded as a promising alternative to thermal processes for energy and environmental applications. It bridges the gap between the plasma and catalysis research communities, covering both the fundamentals of plasma catalysis and its application in environmental and energy research. The first section of the book offers a broad introduction to plasma catalysis, covering plasma-catalyst systems, interactions, and modeling. The core of the book then focuses on different applications, describing a wide range of plasma-catalytic processes in catalyst synthesis, environmental clean-up, greenhouse gas conversion and synthesis of materials for energy applications. Chapters cover topics ranging from removal of NOx and VOCs to conversion of methane, carbon dioxide and the reforming of ethanol and methanol. Written by a group of world-leading researchers active in the field, the book forms a valuable resource for scientists, engineers and students with different research backgrounds including plasma physics, plasma chemistry, catalysis, energy, environmental engineering, electrical engineering and material engineering.*

*The first book offering a global overview of fundamental microfluidics and the wide range of possible applications, for example, in chemistry, biology, and biomedical science. As such, it summarizes recent progress in microfluidics, including its origin and development, the theoretical fundamentals, and fabrication techniques for microfluidic devices. The book also comprehensively covers the fluid mechanics, physics and chemistry as well as applications in such different fields as detection and synthesis of inorganic and organic materials. A useful reference for non-specialists and a basic guideline for research scientists and technicians already active in this field or intending to work in microfluidics.*

*A comprehensive resource to sustainability and its application to the environmental, industrial, agricultural and food security sectors Sustainability fills a gap in the literature in order to provide an important guide to the fundamental knowledge and practical applications of sustainability in a wide variety of areas. The authors - noted experts who represent a number of sustainability fields - bring together in one comprehensive volume the broad range of topics including basic concepts, impact assessment, environmental and the socio-economic aspects of sustainability. In addition, the book covers applications of sustainability in environmental, industrial, agricultural and food security, as well as carbon cycle and infrastructural aspects. Sustainability addresses the challenges the global community is facing due to population growth, depletion of non-renewable resources of energy, environmental degradation, poverty, excessive generation of wastes and more. Throughout the book the authors discuss the economics, ecological, social, technological and systems perspectives of sustainability. This important resource: • Explores the fundamentals as well as the key concepts of sustainability; • Covers basic concepts, impact assessment, environmental and socio-economic aspects, applications of sustainability in environmental, industrial, agricultural and food security, carbon cycle and infrastructural aspects; • Argues the essentiality of sustainability in ensuring the propitious future of earth systems; and • Authored by experts from a range of various fields related to sustainability. Written for researchers and scientists, students and academics, Sustainability: Fundamentals and Applications is a comprehensive book that covers the basic knowledge of the topic combined with practical applications.*

*Plasmonics: Fundamentals and Applications*Springer Science & Business Media

*Electronics explained in one volume, using both theoretical and practical applications. Mike Tooley provides all the information required to get to grips with the fundamentals of electronics, detailing the underpinning knowledge necessary to appreciate the operation of a wide range of electronic circuits, including amplifiers, logic circuits, power supplies and oscillators. The 5th edition includes an additional chapter showing how a wide range of useful electronic applications can be developed in conjunction with the increasingly popular Arduino microcontroller, as well as a new section on batteries for use in electronic equipment and some additional/updated student assignments. The book's content is matched to the latest pre-degree level courses (from Level 2 up to, and including, Foundation Degree and HND), making this an invaluable reference text for all study levels, and its broad coverage is combined with practical case studies based in real-world engineering contexts. In addition, each chapter includes a practical investigation designed to reinforce learning and provide a basis for further practical work. A companion website at http://www.key2electronics.com offers the reader a set of spreadsheet design tools that can be used to simplify circuit calculations, as well as circuit models and templates that will enable virtual simulation of circuits in the book. These are accompanied by online self-test multiple choice questions for each chapter with automatic marking, to enable students to continually monitor their own progress and understanding. A bank of online questions for lecturers to set as assignments is also available.*

*Cengel and Cimbala's Fluid Mechanics Fundamentals and Applications, communicates directly with tomorrow's engineers in a simple yet precise manner, while covering the basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. The text helps students develop an intuitive understanding of fluid mechanics by emphasizing the physics, using figures, numerous photographs and visual aids to reinforce the physics. The highly visual approach enhances the learning of fluid mechanics by students. This text distinguishes itself from others by the way the material is presented - in a progressive order from simple to more difficult, building each chapter upon foundations laid down in previous chapters. In this way, even the traditionally challenging aspects of fluid mechanics can be learned effectively. McGraw-Hill Education's Connect, is also available as an optional, add on item. Connect is the only integrated learning system that empowers students by continuously adapting to deliver precisely what they need, when they need it, how they need it, so that class time is more effective. Connect allows the professor to assign homework, quizzes, and tests easily and automatically grades and records the scores of the student's work. Problems are randomized to prevent sharing of answers an may also have a "multi-step solution" which helps move the students' learning along if they experience difficulty.*

*Fracture Mechanics*

*Solar Energy*

*Loose Leaf for Fluid Mechanics: Fundamentals and Applications*

*Infrared Spectroscopy*

*Isotopes in Nanoparticles*

*Progress in Fluorine Science Series*

*Fundamentals and Applications of Magnetic Materials*

*Microgel Suspensions*

*Diatoms*

*The Revolution in the Lighting Industry*

This book provides fundamentals, highlights recent developments and offers new perspectives relating to the use of electrolyzed water (EW) as an emerging user- and environmental-friendly broad-spectrum sanitizer, with particular focus on the food industry. It addresses the generation, inactivation, pesticide degradation and safety of food by EW, illustrates the mechanism of the germicidal action of EW and its antimicrobial efficacy against a variety of microorganisms in suspensions. In addition, the sanitizing effects of combining EW with various chemical and physical sanitizing technologies have been evaluated, and recent developments and applications of EW in various areas including fruits and vegetables, meat, aquatic products, environment sterilization, livestock and agriculture has been described. The book can be a go-to reference book of EW for: (1) Researchers who need to understand the role of various parameters in its generation, the bactericidal mechanism of EW and its wide applications for further research and development; (2) Equipment producers who need comprehensive understanding of various factors (e.g. type of electrolyte, flow rates of water and electrolyte) which govern the efficacy of EW and developing its generators; (3) Food processors who need good understanding of EW in order to implement it in the operations and supervisors who need to balance the advantages and limitations of EW and ensuring its safe use.

Compiles Information from a Multitude of Sources Synthetic jets have been used in numerous applications, and are part of an emergent field. Accumulating information from hundreds of journal articles and conference papers, Synthetic Jets: Fundamentals and Applications brings together in one book the fundamentals and applications of fluidic actuators. Clearly and thoroughly explaining the mechanisms of underlying synthetic jet behavior—from aerospace to mechanical engineering—this book addresses a variety of aspects, and provides a holistic, systematic approach of the subject. Covers Fundamental Principles, Analysis Techniques, and Applications Designed as a starting point for newcomers, the book is divided into three parts: fundamentals, techniques, and applications, and focuses on a class of incompressible jet flows where the jet is made up of the surrounding fluid. It explores fluid dynamics, hydrodynamic modeling, acoustics, and fabrication. It covers key measurement techniques, computational modeling, and synthetic jet design. In addition to highlighting the concepts and applications of synthetic jets, (in particular their uses in flow control and thermal management in electronic devices), the book explores attempts to improve and accelerate the design and optimization processes (from flow control to electronic cooling and propulsion) involved in a wealth of applied knowledge. Features prominent experts in the field Surveys the state of the art Details a pathway to future advances in the industry Synthetic Jets: Fundamentals and Applications can be used as a guidebook for researchers, graduate students, and upper-level undergraduate students.

Addresses recent advances from both the clinical and technological perspectives to provide a comprehensive presentation of m-Health This book introduces the concept of m-Health, first coined by Robert S. H. Istepanian in 2003. The evolution of m-Health since then—how it was transformed from an academic concept to a global healthcare technology phenomenon—is discussed. Afterwards the authors describe in detail the basics of the three enabling scientific technological elements of m-Health (sensors, computing, and communications), and how each of these key ingredients has evolved and matured over the last decade. The book concludes with detailed discussion of the future of m-Health and presents future directions to potentially shape and transform healthcare services in the coming decades. In addition, this book: Discusses the rapid evolution of m-Health in parallel with the maturing process of its enabling technologies, from bio-wearable sensors to the wireless and mobile communication technologies from IOT to 5G systems and beyond Includes clinical examples and current studies, particularly in acute and chronic disease management, to illustrate some of the relevant medical aspects and clinical applications of m-Health Describes current m-Health ecosystems and business models Covers successful applications and deployment examples of m-Health in various global health settings, particularly in developing countries

Explores the Principles of Plasticity Most undergraduate programs lack an undergraduate plasticity theory course, and many graduate programs in design and manufacturing lack a course on plasticity—leaving a number of engineering students without adequate information on the subject. Emphasizing stresses generated in the material and its effect, Plasticity: Fundamentals and Applications effectively addresses this need. This book fills a void by introducing the basic fundamentals of solid mechanics of deformable bodies. It provides a thorough understanding of plasticity theory, introduces the concepts of plasticity, and discusses relevant applications. Studies the Effects of Forces and Motions on Solids The authors make a point of highlighting the importance of plastic deformation, and also discuss the concepts of elasticity (for a clear understanding of plasticity, the elasticity theory must also be understood). In addition, they present information on updated Lagrangian and Eulerian formulations for the modeling of metal forming and machining. Topics covered include: Stress Strain Constitutive relations Fracture Anisotropy Contact problems Plasticity: Fundamentals and Applications enables students to understand the basic fundamentals of plasticity theory, effectively use commercial finite-element (FE) software, and eventually develop their own code. It also provides suitable reference material for mechanical/civil/aerospace engineers, material processing engineers, applied mechanics researchers, mathematicians, and other industry professionals.

With its combination of practicality, readability, and rigor that is characteristic of any truly authoritative reference and text, Fracture Mechanics: Fundamentals and Applications quickly established itself as the most comprehensive guide to fracture mechanics available. It has been adopted by more than 100 universities and embraced by thousands of professional engineers worldwide. Now in its third edition, the book continues to raise the bar in both scope and coverage. It encompasses theory and applications, linear and nonlinear fracture mechanics, solid mechanics, and materials science with a unified, balanced, and in-depth approach. Reflecting the many advances made in the decade since the previous edition came about, this indispensable Third Edition now includes: A new chapter on environmental cracking Expanded coverage of weight functions New material on toughness test methods New problems at the end of the book New material on the failure assessment diagram (FAD) method Expanded and updated coverage of crack closure and variable-amplitude fatigue Updated solutions manual In addition to these enhancements, Fracture Mechanics: Fundamentals and Applications, Third Edition also includes detailed mathematical derivations in appendices at the end of applicable chapters; recent developments in laboratory testing, application to structures, and computational methods; coverage of micromechanisms of fracture; and more than 400 illustrations. This reference continues to be a necessity on the desk of anyone involved with fracture mechanics.

Provides an introduction to those needing to use infrared spectroscopy for the first time, explaining the fundamental aspects of this technique, how to obtain a spectrum and how to analyse infrared data covering a wide range of applications. Includes instrumental and sampling techniques Covers biological and industrial applications Includes suitable questions and problems in each chapter to assist in the analysis and interpretation of representative infrared spectra Part of the ANTS (Analytical Techniques in the Sciences) Series.

Comprehensive coverage of the principles, mechanism, chemistry and application of guttation in plants.

Nanoparticles may be used in industrial processes, incorporated into consumer products, or applied as biomedical agents. Isotopic (radio)labeling is one of the most powerful methods for nanoparticle tracing in experimental studies. This book presents an introduction to some commonly used nanomaterials, describes various methods with which they may be radiolabeled, and provides illustrative examples of applications of the labeled particles. Finally, it discusses the use of nanomaterials in radiotherapy, the stable isotope labeling technique, and operational health and safety aspects related to the manipulation of nanoparticles in controlled areas. The book will appeal to anyone involved in nanotechnology, molecular imaging, radiochemistry, and nanomedicine.

*Plasticity*

*Fundamentals, Devices, and Applications*

*Synthetic Jets*

*Guttation: Fundamentals and Applications*

*Low-Energy Electrons*

*A Concise Guide to Industrial Polymers*

*Plasmonics: Fundamentals and Applications*

*Computer Fundamentals and Applications*

*Microfluidics*

*The Fundamentals and Applications of Light-Emitting Diodes*

This new edition specifically addresses the most recent and relevant developments in the design and manufacture of OLED displays Provides knowledge of OLED fundamentals and related technologies for applications such as displays and solid state lighting along with processing and manufacturing technologies Serves as a reference for pe research, manufacturing, applications and marketing Includes coverage of white + color filter technology, which has become industry standard technology for large televisions

This book covers sensors and multiple sensor systems, including sensor networks and multi-sensor data fusion. It presents the physics and principles of operation and discusses sensor selection, ratings and performance specifications, necessary hardware and software for integration into an engineering system and signal processing and discusses parameter estimation, decision making and practical applications. Even though the book has all the features of a course textbook, it also contains a wealth of practical information on the subject.

New Fluorinated Carbons: Fundamentals and Applications is the second volume in Alain Tressaud's Progress in Fluorine Science series. This volume provides an overview of cutting-edge research and emerging applications using new fluorinated carbon materials such as fullerenes, carbon nanotubes, polycyclic aromatic molecules, carbon nano Edited by recognized experts Olga Boltalina and Tsuyoshi Nakajima, this book includes valuable chapters on syntheses, structure analyses, and chemical and physical properties of fluorinated carbons written by leaders in each respective field. The work also explores the diverse practical applications of these functional materials—from energy conversion devices to molecular electronics and lubricants. Features contributions by leading experts in the field Includes fundamental and current research on synthesis, chemical, and physical properties of fluorinated carbons Explores practical applications in energy, electronics, and lubricants Examines a range of new fluorinated carbon n The use of reactive polymers enables manufacturers to make chemical changes at a late stage in the production process—these in turn cause changes in performance and properties. Material selection and control of the reaction are essential to acheive optimal performance. The second edition of Reactive Polymers Fundamentals and Appli and scientists to the range of reactive polymers available, explains the reactions that take place, and details applications and performance benefits. Basic principles and industrial processes are described for each class of reactive resin (thermoset), as well as additives, the curing process, and applications and uses. The initial chapters are divided into two types (e.g. epoxides, cyanacrylates, etc.); followed by more general chapters on topics such as reactive extrusion and dental applications. Material new to this edition includes the most recent developments, applications and commercial products for each chemical class of thermosets, as well as sections on fabrication methods, reactive bio polymers, and case studies. Injection molding of reactive polymers, radiation curing, thermosetting elastomers, and reactive extrusion equipment are all covered as well. Most comprehensive source of information about reactive polymers Covers basics as well as most recent developments, including reactive biopolymers, recycling of reactive and fluorosilicones Indispensable guide for engineers and advanced students alike—providing extensive literature and patent review

Providing a vital link between chemistry and physics on the nanoscale, this book offers concise coverage of the entire topic in five major sections, beginning with synthesis of microgel particles and continuing with their physical properties. The phase behavior and dynamics of resulting microgel suspensions feature in the third section, followed by a discussion of their rheological properties. It concludes with detailed accounts of numerous industrial, commercial and medical applications. Edited by David Weitz, Professor at Harvard and one of the world's pre-eminent experts in the field.

Due to its unique properties, graphene oxide has become one of the most studied materials of the last decade and a great variety of applications have been reported in areas such as sensors, catalysis and biomedical applications. This comprehensive volume systematically describes the fundamental aspects and applications of graphene oxide as an introduction to the topic, so each chapter begins with a discussion on fundamental concepts, then proceeds to review and summarize recent advances in the field. Divided into two parts, the first part covers fundamental aspects of graphene oxide and includes chapters on formation and chemical structure, characterization methods, and optical properties of graphene oxide solutions. Part Two covers numerous graphene oxide applications including field effect transistors, transparent conductive films, sensors, energy harvesting and storage, membranes, composite materials, catalysis and biomedical applications. In each case the differences and advantages of graphene oxide and its counterpart are discussed. The book concludes with a chapter on the challenges of industrial-scale graphene oxide production. Graphene Oxide: Fundamentals and Applications is a valuable reference for academic researchers, and industry scientists interested in graphene oxide, graphene and other carbon materials.

Publisher's Note: Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. Master the principles and applications of today's renewable energy sources and systems Written by a team of recognized experts and educators, this au comprehensive coverage of all major renewable energy sources. The book delves into the main renewable energy topics such as solar, wind, geothermal, hydropower, biomass, tidal, and wave, as well as hydrogen and fuel cells. By stressing real-world relevancy and practical applications, Fundamentals and Applications of Renewable Energy h a successful career in renewable energy. The text contains detailed discussions on the thermodynamics, heat transfer, and fluid mechanics aspects of renewable energy systems in addition to technical and economic analyses. Numerous worked-out example problems and over 850 end-of-chapter review questions reinforce main concepts, l analysis. Coverage includes:•Renewable energy basics•Thermal sciences overview•Fundamentals and applications ofSolar energy Wind energyHydropowerGeothermal energy Biomass energy Ocean energyHydrogen and fuel cells•Economics of renewable energy•Energy and the environment

Dendrimers are defined as nanoscale macromolecules having a particular architecture consisting of treelike arms or branches. They are characterized by special properties that make them promising candidates in medicine, biology, materials science, synthetic organic chemistry, biotechnology, environmental engineering, optics, electronics, ca photochemistry, and sensors and even for production of cosmetics and personal care products. The dendrimers research field is growing day by day, and scientists are exploring new synthesis and functionalization methods in order to improve and to determine new properties and thus new applications. The main purpose of this book is to properties and applications of dendrimers in the field of biology, medicine, liquid crystal devices, electronics, quantum devices, and self-healing technology.

[Electrolyzed Water in Food: Fundamentals and Applications](#)

[Dendrimers](#)

[Electronic Circuits](#)

[Reactive Polymers Fundamentals and Applications](#)

[Extending Structures](#)

[Sustainability](#)

[Fundamentals and Applications, Third Edition](#)

[Polyimides](#)

[Biocatalysis](#)

*Cengel and Cimbala's Fluid Mechanics Fundamentals and Applications, communicates directly with tomorrow's engineers in a simple yet precise manner. The text covers the basic principles and equations of fluid mechanics in the context of numerous and diverse real-world engineering examples. The text helps students develop an intuitive understanding of fluid mechanics by emphasizing the physics, using figures, numerous photographs and visual aids to reinforce the physics. The highly visual approach enhances the learning of Fluid mechanics by students. This text distinguishes itself from others by the way the material is presented - in a progressive order from simple to more difficult, building each chapter upon foundations laid down in previous chapters. In this way, even the traditionally challenging aspects of fluid mechanics can be learned effectively. McGraw-Hill's Connect, is also available as an optional, add on item. Connect is the only integrated learning system that empowers students by continuously adapting to deliver precisely what they need, when they need it, how they need it, so that class time is more effective. Connect allows the professor to assign homework, quizzes, and tests easily and automatically grades and records the scores of the student's work. Problems are randomized to prevent sharing of answers an may also have a "multi-step solution" which helps move the students' learning along if they experience difficulty.*

*Extending Structures: Fundamentals and Applications treats the extending structures (ES) problem in the context of groups, Lie/Leibniz algebras, associative algebras and Poisson/Jacobi algebras. This concisely written monograph offers the reader an incursion into the extending structures problem which provides a common ground for studying both the extension problem and the factorization problem. Features Provides a unified approach to the extension problem and the factorization problem Introduces the classifying complements problem as a sort of converse of the factorization problem; and in the case of groups it leads to a theoretical formula for computing the number of types of isomorphisms of all groups of finite order that arise from a minimal set of data Describes a way of classifying a certain class of finite Lie/Leibniz/Poisson/Jacobi/associative algebras etc. using flag structures Introduces new (non)abelian cohomological objects for all of the aforementioned categories As an application to the approach used for dealing with the classification part of the ES problem, the Galois groups associated with extensions of Lie algebras and associative algebras are described*

*This book provides the reader with an understanding of what color is, where color comes from, and how color can be used correctly in many different applications. The authors first treat the physics of light and its interaction with matter at the atomic level, so that the origins of color can be appreciated. The intimate relationship between energy*

*Superalloys are unique high-temperature materials used in gas turbine engines, which display excellent resistance to mechanical and chemical degradation. This book presents the underlying metallurgical principles which have guided their development and practical aspects of component design and fabrication from an engineering standpoint. The topics of alloy design, process development, component engineering, lifetime estimation and materials behaviour are described, with emphasis on critical components such as turbine blading and discs. The first introductory text on this class of materials, it will provide a strong grounding for those studying physical metallurgy at the advanced level, as well as practising engineers. Included at the end of each chapter are exercises designed to test the reader's understanding of the underlying principles presented. Solutions for instructors and additional resources are available at [www.cambridge.org/9780521859042](http://www.cambridge.org/9780521859042).*

*The aim of this new book series (Diatoms: Biology and Applications) is to provide a comprehensive and reliable source of information on diatom biology and applications. The first book of the series, Diatoms Fundamentals & Applications, is wide ranging, starting with the contributions of amateurs and the beauty of diatoms, to details of how their shells are made, how they bend light to their advantage and ours, and major aspects of their biochemistry (photosynthesis and iron metabolism). The book then delves into the ecology of diatoms living in a wide range of habitats, and look at those few that can kill or harm us. The book concludes with a wide range of applications of diatoms, in forensics, manufacturing, medicine, biofuel and agriculture. The contributors are leading international experts on diatoms. This book is for a wide audience researchers, academics, students, and teachers of biology and related disciplines, written to both act as an introduction to diatoms and to present some of the most advanced research on them.*

*A new era in wildland fuel sciences is now evolving in such a way that fire scientists and managers need a comprehensive understanding of fuels ecology and science to fully understand fire effects and behavior on diverse ecosystem and landscape characteristics. This is a reference book on wildland fuel science; a book that describes fuels and their application in land management. There has never been a comprehensive book on wildland fuels; most wildland fuel information was put into wildland fire science and management books as separate chapters and sections. This book is the first to highlight wildland fuels and treat them as a natural resource rather than a fire behavior input. Moreover, there has never been a comprehensive description of fuels and their ecology, measurement, and description under one reference; most wildland fuel information is scattered across diverse and unrelated venues from combustion science to fire ecology to carbon dynamics. The literature and data for wildland fuel science has never been synthesized into one reference; most studies were done for diverse and unique objectives. This book is the first to link the disparate fields of ecology, wildland fire, and carbon to describe fuel science. This just deals with the science and ecology of wildland fuels, not fuels management. However, since expensive fuel treatments are being planned in fire dominated landscapes across the world to minimize fire damage to people, property and ecosystems, it is incredibly important that people understand wildland fuels to develop more effective fuel management activities.*

*Containing contributions from leading academic and industrial researchers, this book provides a much needed update of foam science research. The first section of the book presents an accessible summary of the theory and fundamentals of foams. This includes chapters on morphology, drainage, Ostwald ripening, coalescence, rheology, and pneumatic foams. The second section demonstrates how this theory is used in a wide range of industrial applications, including foam fractionation, froth flotation and foam mitigation. It includes chapters on suprafroths, flotation of oil sands, foams in enhancing petroleum recovery, Gas-liquid Mass Transfer in foam, foams in glass manufacturing, fire-fighting foam technology and consumer product foams. Key features: Foam fractionation is an exciting and emerging technology, starting to gain significant attention Discusses a vital topic for many industries, especially mineral processing, petroleum engineering, bioengineering, consumer products and food sector Links foam science theory to industrial applications, making it accessible to an engineering science audience Summarizes the latest developments in this rapidly progressing area of research Contains contributions from leading international researchers from academia and industry*

*The Fundamentals and Applications of Light-Emitting Diodes: The Revolution in the Lighting Industry examines the evolution of LEDs, including a review of the luminescence process and background on solid state lighting. The book emphasizes phosphor-converted LEDs that are based on inorganic phosphors but explores different types of LEDs based on inorganic, organic, quantum dots, perovskite-structured materials, and biomaterials. A detailed description is included about the diverse applications of LEDs in fields such as lighting, displays, horticulture, biomedicine, and digital communication, as well as challenges that must be solved before using LEDs in commercial applications. Traditional light sources are fast being replaced by light-emitting diodes (LEDs). The fourth generation of lighting is completely dominated by LED luminaires. Apart from lighting, LEDs have extended their hold on other fields, such as digital communications, horticulture, medicine, space research, art and culture, display devices, and entertainment. The technological promises offered by LEDs have elevated them as front-runners in the lighting industry. Presents a concise overview of different types of light-emitting diodes (LEDs) based on inorganic phosphors, organic materials, quantum dots, perovskite-structured materials, and biomaterials Includes a discussion of current and emerging applications in lighting, communications, horticulture, and medical fields Addresses fundamentals, luminescence mechanisms, and key optical materials, including synthesis methods*

[Sensor Systems](#)

[OLED Display Fundamentals and Applications](#)

[Adsorbents](#)

[Wildland Fuel Fundamentals and Applications](#)

[Fluid Mechanics Fundamentals and Applications](#)

[Color Imaging](#)

[New Fluorinated Carbons: Fundamentals and Applications](#)

[Graphene Oxide](#)

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[Fundamentals and Applications of Renewable Energy](#)

Adsorption promises to play an integral role in several futureenergy and environmental technologies, including hydrogen storage,CO removal for fuel cell technology, desulfurization oftransportation fuels, and technologies for meeting higher standardson air and water pollutants. Ralph Yang's Adsorbents provides asingle and comprehensive source of knowledge for all commercial andnew sorbent materials, presenting the fundamental principles fortheir syntheses, their adsorption properties, and their present andpotential applications for separation and purification. Chaptertopics in this authoritative, forward-looking volume include: - Formulas for calculating the basic forces or potentials foradsorption - Calculation of pore-size distribution from a single adsorptionisotherm - Rules for sorbent selection - Fundamental principles for syntheses/preparation, adsorptionproperties, and applications of commercially availablesorbents - Mesoporous molecular sieves and zeolites -.complexation sorbents and their applications - Carbon nanotubes, pillared clays, and polymeric resins Yang covers the explosion in the development of new nanoporousmaterials thoroughly, as the adsorption properties of some of thes materials have remained largely unexplored. The whole of this bookbenefits from the new adsorbent designs made possible by theirincrease in desktop computing and molecular simulation, makingAdsorbents useful to both practicing laboratories and graduateprograms. Ralph Yang's comprehensive study contributessignificantly to the resolution of separation and purificationproblems by adsorption technologies.

With the invention of computers and the advent of the Internet, mobile computing and e-Business applications, Information Technology (IT) has brought rapid progress in domestic and international business, and a tremendous change in the lifestyle of people. This book provides the students not just the knowledge about the fundamentals of a computer system, like its organization, memory management and hardware devices, but also the software that run on it. The book then proceeds to describe operating systems, and the basics of programming concepts like procedure-oriented programming and object-oriented programming. Useful application software like MS Word, MS Excel and MS PowerPoint are described in great detail in separate chapters. A complete section has been devoted to the teaching of data communication, networking and Internet. The book ends with a detailed description of the business applications of computers. KEY FEATURES • Incorporates basics of IT along with developing skills for using various IT tools • Includes diagrams, pictures and screenshots • Provides key terms, review questions, practical exercises, group discussions, project activities and application-based case studies in each chapter • Follows the latest curriculum and guidelines for undergraduate and postgraduate courses of various universities, colleges and institutes

A comprehensive exposition of micro and nanofiber formation processes, from physical foundations to production and applications.

Low-energy electrons are ubiquitous in nature and play an important role in natural phenomena as well as many potential and current industrial processes. Authored by 16 active researchers, this book describes the fundamental characteristics of low-energy electron–molecule interactions and their role in different fields of science and technology, including plasma processing, nanotechnology, and health care, as well as astro- and atmospheric physics and chemistry. The book is packed with illustrative examples, from both fundamental and application sides, features about 130 figures, and lists over 800 references. It may serve as an advanced graduate-level study course material where selected chapters can be used either individually or in combination as a basis to highlight and study specific aspects of low-energy electron–molecule interactions. It is also directed at researchers in the fields of plasma physics, nanotechnology, and radiation damage to biologically relevant material (such as in cancer therapy), especially those with an interest in high-energy-radiation-induced processes, from both an experimental and a theoretical point of view.

The whole range of biocatalysis, from a firm grounding in theoretical concepts to in-depth coverage of practical applications and future perspectives. The book not only covers reactions, products and processes with and from biological catalysts, but also the process of designing and improving such biocatalysts. One unique feature is that the fields of chemistry, biology and bioengineering receive equal attention, thus addressing practitioners and students from all three areas.

Considered a major field of photonics, plasmonics offers the potential to confine and guide light below the diffraction limit and promises a new generation of highly miniaturized photonic devices. This book combines a comprehensive introduction with an extensive overview of the current state of the art. Coverage includes plasmon waveguides, cavities for field-enhancement, nonlinear processes and the emerging field of active plasmonics studying interactions of surface plasmons with active media.

[Electroless Plating](#)

[Plasma Catalysis](#)

[The Superalloys](#)

[Foam Engineering](#)

[Fundamentals and Applications of Micro and Nanofibers](#)

[M-Health](#)