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This book discusses inventory models for determining optimal ordering policies using various optimization techniques, genetic algorithms, and data mining concepts. It also provides sensitivity analyses for the models' robustness. It presents a collection of mathematical models that deal with real industry scenarios. All mathematical model solutions are provided with the help of various optimization techniques to determine optimal ordering policy. The book offers a range of perspectives on the implementation of

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optimization techniques, inflation, trade credit financing, fuzzy systems, human error, learning in production, inspection, green supply chains, closed supply chains, reworks, game theory approaches, genetic algorithms, and data mining, as well as research on big data applications for inventory management and control. Starting from deterministic inventory models, the book moves towards advanced inventory models. The content is divided into eight major sections: inventory control and management - inventory models with trade credit financing for imperfect quality items; environmental impact on ordering policies;

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impact of learning on the supply chain models; EOQ models considering warehousing; optimal ordering policies with data mining and PSO techniques; supply chain models in fuzzy environments; optimal production models for multi-items and multi-retailers; and a marketing model to understand buying behaviour. Given its scope, the book offers a valuable resource for practitioners, instructors, students and researchers alike. It also offers essential insights to help retailers/managers improve business functions and make more accurate and realistic decisions.

Few Indian politicians can match the mass

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appeal and charisma of Lalu Prasad Yadav. As the leader of a political party, as the Chief Minister of Bihar and as Union Minister, he blazed a trail, bringing a dash of rustic wit and flair into the nation's political narrative of drab 'political correctness'. Although essentially a regional leader, his influence has extended beyond his home state, often impacting important political developments at the Centre. Gopalganj to Raisina Road is the journey of India's most colourful political leader. From his humble origins in Phulwaria village to his remarkable rise as Railway Minister, the narrative relives the twists and turns and the

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highs and lows of his life. In doing so, it reveals little-known facets of many inflection points in the nation's history: the Emergency, how he got V.P. Singh to implement the explosive Mandal Commission recommendations, the arrest of veteran BJP leader L.K. Advani during the latter's Rath Yatra, Sonia Gandhi's decision to not lead the UPA government, his acceptance of Manmohan Singh's candidature for prime ministership in 2004, and his dramatic relationship with friend-turned-foe Nitish Kumar. A political potboiler as never seen before, Lalu Prasad Yadav's autobiography is the most important book if one has to

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understand the evolution of the politics of the dalits and the marginalized.

Textbook on daylighting and sustainable building design principles

This book is a collection of research articles and critical review articles, describing the overall approach to energy management. The book emphasizes the technical issues that drive energy efficiency in context of power systems. This book contains case studies with and without solutions on modelling, simulation and optimization techniques. It covers some innovative topics such as medium voltage (MV) back-to-back (BTB) system, cost optimization of

a ring frame unit in textile industry, rectenna for radio frequency (RF) energy harvesting, ecology and energy dimension in infrastructural designs, 2.4 kW three-phase inverter for aircraft application, study of automatic generation control (AGC) in a two area hydrothermal power system, energy-efficient and reliable depth-based routing protocol for underwater wireless sensor network, and power line communication using LabVIEW. This book is primarily targeted at researchers and senior graduate students, but is also highly useful for the industry professional and scientists. Current and Future Developments in

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Nanomaterials and Carbon Nanotubes presents thematic volumes that highlight research in the field of nanomaterials. The book series covers the theory and application of nanomaterials including carbon nanotubes, composites, metallic nanomaterials and much more. It is essential reading to researchers interested in keeping up to date with nanomaterial applications in a wide variety of fields such as medicine, engineering and biotechnology. High-speed flight is a major technological challenge for both commercial and business aviation. As a first step in revitalizing efforts by the National Aeronautics and Space

Administration (NASA) to achieve the technology objective of high-speed air travel, NASA requested the National Research Council (NRC) to conduct a study that would identify approaches for achieving breakthroughs in research and technology for commercial supersonic aircraft. Commercial Supersonic Technology documents the results of that effort. This report describes technical areas where ongoing work should be continued and new focused research initiated to enable operational deployment of an environmentally acceptable, economically viable commercial aircraft capable of sustained supersonic flight,

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including flight over land, at speeds up to approximately Mach 2 in the next 25 years or less.

Natural polymers have been utilized extensively in food, pharmaceuticals, cosmetics, textiles, oil drilling and paint industries. Their non-toxic and inexpensive attributes readily enhance their commercial acceptability and make them potent agents in lieu of synthetic polymers. This book explores the opportunistic utility of natural polymers in developing effective drug delivery systems and provides a comprehensive and up-to-date analysis of their source, chemical structure and mechanism of action.

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Covering novel polymers for drug delivery - in particular extracts from plants, microorganisms and proteins, as well as water soluble and water insoluble biodegradable polymers - it presents an encyclopaedic overview of natural polymers'. Natural Polymers for Drug Delivery is an invaluable resource for researchers, students and industrial scientists in the fields of biochemistry, chemistry, pharmacology and food science.

Nano-scale materials have unique electronic, optical, and chemical properties which make them attractive for a new generation of devices. Part one of Modeling, Characterization,

and Production of Nanomaterials: Electronics, Photonics and Energy Applications covers modeling techniques incorporating quantum mechanical effects to simulate nanomaterials and devices, such as multiscale modeling and density functional theory. Part two describes the characterization of nanomaterials using diffraction techniques and Raman spectroscopy. Part three looks at the structure and properties of nanomaterials, including their optical properties and atomic behaviour. Part four explores nanofabrication and nanodevices, including the growth of graphene, GaN-based nanorod heterostructures and colloidal

quantum dots for applications in nanophotonics and metallic nanoparticles for catalysis applications. Comprehensive coverage of the close connection between modeling and experimental methods for studying a wide range of nanomaterials and nanostructures Focus on practical applications and industry needs, supported by a solid outlining of theoretical background Draws on the expertise of leading researchers in the field of nanomaterials from around the world

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Development of Solar Power Generation and Energy Harvesting

Proceedings of a Royal Society Discussion Meeting, Held on 29 and 30 January 1992

Nanomaterials

Jero's Journey

Recent Trends in Materials and Devices

Zinc Oxide Bulk, Thin Films and Nanostructures: Processing, Properties, and Applications

Advances in Modern Sensors

Laser Ablation and Its Applications

Advances in Functional and Protective Textiles

This book comprises the select proceedings of the ETAEERE 2016 conference. The book aims to shed light on different

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systems or machines along with their complex operation, behaviors, and linear-nonlinear relationship in different environments. It covers problems of multivariable control systems and provides the necessary background for performing research in the field of control and automation. Aimed at helping readers understand the classical and modern design of different intelligent automated systems, the book presents coverage on the control of linear and nonlinear systems, intelligent systems, stochastic control, knowledge-based systems applications, fault diagnosis and tolerant control, real-time control applications, etc. The contents of this volume will prove useful to researchers and professionals alike.

Jero is a curious wild beast, whose dreams and questions

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are bigger than her tiny frame. But she has a plan - get selected to the council, lead the migration, and then take everyone on an adventure. A surprising twist of fate might just make her wish come true. And it was nothing that she had expected. Jero's journey is a relentless adventure through the breath-taking landscapes of Serengeti, filled with encounters with ostriches, elephants, hippos, pythons, and many others along the way. On a journey where danger lurks at every turn of the journey in the form of prowling predators, deadly disease, and raging rivers, Jero will be faced with hard challenges and harder decisions. Will she be ready for it? Will she be able to lead her friends and her co-travellers? Will she be able to prove herself worthy? This adventure is a story of friendship, courage, and growing up.

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Above all this is a story about finding your own path in a herd where every year, a million wildebeest migrate together for thousands of miles in the same journey. This book disseminates the current knowledge of semiconductor physics and its applications across the scientific community. It is based on a biennial workshop that provides the participating research groups with a stimulating platform for interaction and collaboration with colleagues from the same scientific community. The book discusses the latest developments in the field of III-nitrides; materials & devices, compound semiconductors, VLSI technology, optoelectronics, sensors, photovoltaics, crystal growth, epitaxy and characterization, graphene and other 2D materials and organic semiconductors.

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This book focuses on several areas of intense topical interest related to applied spectroscopy and the science of nanomaterials. The eleven chapters in the book cover the following areas of interest relating to applied spectroscopy and nanoscience: · Raman spectroscopic characterization, modeling and simulation studies of carbon nanotubes, · Characterization of plasma discharges using laser optogalvanic spectroscopy, · Fluorescence anisotropy in understanding protein conformational disorder and aggregation, · Nuclear magnetic resonance spectroscopy in nanomedicine, · Calculation of Van der Waals interactions at the nanoscale, · Theory and simulation associated with adsorption of gases in nanomaterials, · Atom-precise metal nanoclusters, · Plasmonic properties of metallic

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nanostructures, two-dimensional materials, and their composites, · Applications of graphene in optoelectronic devices and transistors, · Role of graphene in organic photovoltaic device technology, · Applications of nanomaterials in nanomedicine.

Laser ablation describes the interaction of intense optical fields with matter, in which atoms are selectively driven off by thermal or nonthermal mechanisms. The field of laser ablation physics is advancing so rapidly that its principal results are seen only in specialized journals and conferences. This is the first book that combines the most recent results in this rapidly advancing field with authoritative treatment of laser ablation and its applications, including the physics of high-power laser-

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matter interaction. Many practical applications exist, ranging from inertial confinement fusion to propulsion of aerostats for pollution monitoring to laser ignition of hypersonic engines to laser cleaning nanoscale contaminants in high-volume computer hard drive manufacture to direct observation of the electronic or dissociative states in atoms and molecules, to studying the properties of materials during 200kbar shocks developed in 200fs. Selecting topics which are representative of such a broad field is difficult. Laser Ablation and its Applications emphasizes the wide range of these topics rather than - as is so often the case in advanced science - focusing on one specialty or discipline. The book is divided into four sections: theory and modeling, ultrafast interactions,

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material processing and laser-matter interaction in novel regimes. The latter range from MALDI to ICF, SNOM's and femtosecond nanosurgery to laser space propulsion. The book arose from the SPIE series of High Power Laser Ablation Symposia which began in 1998. It is intended for a graduate course in laser interactions with plasmas and materials, but it should be accessible to anyone with a graduate degree in physics or engineering. It is also intended as a major reference work to familiarize scientists just entering the field with laser ablation and its applications.

Who said love makes life lively, When love is the one that makes lives miserable too? Is it too difficult for two people to fall in love, irrespective of social boundaries? Or is it just

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too difficult for their families to approve of their relationship? Amaya and Raghav, inseparably in love with each other, fight their way through hard times to get their marriage approved. Lose your emotions to their heart-touching story and connect it to yours. As you read on, discover the weak points in your love life, so that you can make the most of it.

This book critically discusses different aspects of algal production systems and several of the drawbacks related to microalgal biomass production, namely, low biomass yield, and energy-consuming harvesting, dewatering, drying and extraction processes. These provide a background to the state-of-the-art technologies for algal cultivation, CO₂ sequestration, and large-scale application of these systems.

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In order to tap the commercial potential of algae, a biorefinery concept has been proposed that could help to extract maximum benefits from algal biomass. This refinery concept promotes the harvesting of multiple products from the feedstock so as to make the process economically attractive. For the last few decades, algal biomass has been explored for use in various products such as fuel, agricultural crops, pigments and pharmaceuticals, as well as in bioremediation. To meet the huge demand, there has been a focus on large-scale production of algal biomass in closed or open photobioreactors. Different nutritional conditions for algal growth have been explored, such as photoautotrophic, heterotrophic, mixotrophic and oleaginous. This book is aimed at a wide audience, including

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undergraduates, postgraduates, academics, energy researchers, scientists in industry, energy specialists, policy makers and others who wish to understand algal biorefineries and also keep abreast of the latest developments.

Advances in Functional and Protective Textiles explores the latest research in the use of textile materials for protective clothing. The book's international roster of researchers in industry and academia describe innovative applications in defense, medical, sports, fire protection, radiation protection, and more. This book is an invaluable resource for readers seeking to produce textiles with self-cleaning, antimicrobial, super-hydrophobic, UV-protective, insect repellent, flame retardant or anti-felting properties.

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Particular attention is given to textile fibers, including cotton, wool, viscose, and other synthetic fibers whose properties solve many problems. Sustainable approaches to the processing of textiles for protective properties are also addressed, as are hazards. Introduces the advanced testing and modeling methods that are necessary for the production of protective textiles Describes the properties of the latest advanced chemicals and materials used to make protective textiles and clothing Covers every step in the development of protective clothing, from the engineering of novel materials, to advanced fabrication methodologies and applications

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The papers presented in this volume report the striking progress X-ray diffraction has facilitated in the study of structural

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molecular biology. Coupled with the revival of the Laue method, the advent of high-intensity synchrotron radiation sources has made possible the rapid collection of X-ray crystallography data, thereby allowing protein and virus crystallography to progress from studies of equilibrium structures to time-resolved studies of structures at reaction stages. The book also details the many recent technological developments in physics, chemistry and biochemistry that have been critical for the full exploitation of the synchrotron Laue method in the study of dynamic events in crystals. Necessary future

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developments are discussed.

The purpose of the conference was to promote international collaborations in the broad areas of advanced materials and nanotechnology, with a particular emphasis on new and emerging technologies. New research was presented by scientists from around the world, providing an up to date snapshot of progress in these fields.

This book presents select papers presented at the annual meeting of the Asian Polymer Association. The chapters in this volume document and report on a wide range of significant recent results for various

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applications, as well as scientific developments in the areas of polymer science and engineering. The chapters include original research from all areas of polymer science and technology with a focus on the manufacture, processing, analysis and application of long chain polymer molecules. This book will be of interest to researchers in academia and industry alike.

Many tribologists are today not only explicitly concerned with interface action but also with interface composition. This proceedings volume presents a timely review on topics ranging from interface dynamics to

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interface elimination, covering all factors such as contact stress fields, interface rheology, and boundary slip, that control the passage from formation to elimination. The volume contains 45 papers divided into 13 sessions, that were presented at the symposium.

In this fourth edition of our textbook, our editorial board has included additional information and resources in order to enhance the learning experience of our readers. These additions include detailed editing of articles, new figures, tables, and pictures, end of chapter summaries for each chapter,

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test questions with correct answers, an updated glossary with new key words and a chapter discussing viral diseases. Important topics discussed in this new chapter include antiviral properties of plants, the use of probiotics to strengthen the immune system, vitamins and minerals, and other immunity boosting compounds. Several plants and herbs are recognized as having antiviral properties. This chapter takes a closer look at 15 different medicinal plants as well as Vitamin C & D and Selenium to boost the immune system. Some of these plants include *Salvia officinalis* (shown above), *Chelidonium*

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majus L., Thuja occidentalis, Pelargonium sidoides, Hypericum perforatum L., Psoralea corylifolia, and Broussonetia papyrifera. Salvia officinalis as well as other plants studied proved effective when administered prior to infection as well as during the infection. Data from preclinical and clinical studies is provided in several tables for comparative analysis.

This book presents the proceedings of the International Conference on Recent Trends in Materials and Devices, which was conceived as a major contribution to large-scale efforts to foster Indian research and development in

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the field in close collaboration with the community of non-resident Indian researchers from all over the world. The research articles collected in this volume - selected from among the submissions for their intrinsic quality and originality, as well as for their potential value for further collaborations - document and report on a wide range of recent and significant results for various applications and scientific developments in the areas of Materials and Devices. The technical sessions covered include photovoltaics and energy storage, semiconductor materials and devices, sensors,

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smart and polymeric materials, optoelectronics, nanotechnology and nanomaterials, MEMS and NEMS, as well as emerging technologies.

Nanocomposites have better adsorption capacity, selectivity, and stability than nanoparticles. Therefore, they find diversified applications in many areas. Recently, various methods for heavy metal detection from water have been extensively studied. The adsorption of various pollutants such as heavy metal ions and dyes from the contaminated water with the help of nanocomposites has attracted significant

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attention. This book presents a comprehensive discussion on wastewater research. It covers a vast background of the recent literature. It describes the applications of nanocomposites in various areas, including environmental science. Particularly, it is highly useful to researchers involved in the environmental and water research on nanocomposites and their applications. The book covers a broad research area of chemistry, physics, materials science, polymer science and engineering, and nanotechnology to present an interdisciplinary approach and also throws

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light on the recent advances in the field. The purpose of this workshop is to spread the vast amount of information available on semiconductor physics to every possible field throughout the scientific community. As a result, the latest findings, research and discoveries can be quickly disseminated. This workshop provides all participating research groups with an excellent platform for interaction and collaboration with other members of their respective scientific community. This workshop's technical sessions include various current and significant topics for applications and scientific

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developments, including • Optoelectronics • VLSI & ULSI Technology • Photovoltaics • MEMS & Sensors • Device Modeling and Simulation • High Frequency/ Power Devices • Nanotechnology and Emerging Areas • Organic Electronics • Displays and Lighting Many eminent scientists from various national and international organizations are actively participating with their latest research works and also equally supporting this mega event by joining the various organizing committees.

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Intended as a reference for basic and practical knowledge about the synthesis, characterization, and

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applications of nanotechnology for students, engineers, and researchers, this book focuses on the production of different types of nanomaterials and their applications, particularly synthesis of different types of nanomaterials, characterization of different types of nanomaterials, applications of different types of nanomaterials, including the nanocomposites.

This book focuses on the fundamental principles and recent progress in the field of electrical and thermal properties of polymer nanocomposites. The physical and chemical natures determining the electrical and thermal properties of polymer nanocomposites are discussed in detail. The authors describe the range of traditional and

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emerging polymer nanocomposites from nanoparticle and polymer composites to novel nanostructure based polymer nanocomposites. They include novel properties and potential applications, such as high-k, low-k, high thermal conductivity, antistatic, high voltage insulation, electric stress control, and thermal energy conversion among others.

This book gathers the proceedings of the plenary sessions, invited lectures, and papers presented at the International Conference on Recent Trends in Materials Science and Applications (ICRTMSA-2016). It also features revealing presentations on various aspects of Materials Science, such as nanomaterials, photonic

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crystal fibers, quantum dots, thin film techniques, crystal growth, spectroscopic procedures, fabrication and characterisation of new materials / compounds with enhanced features, and potential applications in nonlinear optical and electro-optic devices, solar cell device, chemical sensing, biomedical imaging, diagnosis and treatment of cancer, energy storage device etc. This book will be of great interest to beginning and seasoned researchers alike.

What is deep learning for those who study physics? Is it completely different from physics? Or is it similar? In recent years, machine learning, including deep learning, has begun to be used in various physics studies. Why is

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that? Is knowing physics useful in machine learning? Conversely, is knowing machine learning useful in physics? This book is devoted to answers of these questions. Starting with basic ideas of physics, neural networks are derived naturally. And you can learn the concepts of deep learning through the words of physics. In fact, the foundation of machine learning can be attributed to physical concepts. Hamiltonians that determine physical systems characterize various machine learning structures. Statistical physics given by Hamiltonians defines machine learning by neural networks. Furthermore, solving inverse problems in physics through machine learning and generalization

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essentially provides progress and even revolutions in physics. For these reasons, in recent years interdisciplinary research in machine learning and physics has been expanding dramatically. This book is written for anyone who wants to learn, understand, and apply the relationship between deep learning/machine learning and physics. All that is needed to read this book are the basic concepts in physics: energy and Hamiltonians. The concepts of statistical mechanics and the bracket notation of quantum mechanics, which are explained in columns, are used to explain deep learning frameworks. We encourage you to explore this new active field of machine learning and physics, with this

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book as a map of the continent to be explored.

With an in-depth exploration of the following topics, this book covers the broad uses of zinc oxide within the fields of materials science and engineering: - Recent advances in bulk, thin film and nanowire growth of ZnO (including MBE, MOCVD and PLD), - The characterization of the resulting material (including the related ternary systems ZnMgO and ZnCdO), - Improvements in device processing modules (including ion implantation for doping and isolation, Ohmic and Schottky contacts, wet and dry etching), - The role of impurities and defects on materials properties - Applications of ZnO in UV light emitters/detectors, gas, biological and chemical-sensing,

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transparent electronics, spintronics and thin film
This volume presents a complete and thorough examination of advances in the instrumentation, evaluation, and implementation of UV technology for reliable and efficient data acquisition and analysis. It provides real-world applications in expanding fields such as chemical physics, plasma science, photolithography, laser spectroscopy, astronomy and atmospheric science. The global demand for energy is currently growing beyond the limits of installable generation capacity. To efficiently meet the future energy demands, energy security and reliability needs to be improved and alternative energy sources required to be more

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aggressively investigated. An effective energy solution should be able to address long-term issues by utilising alternative and renewable energy sources. Of the many available renewable sources of energy, solar energy are clearly a promising option as it is abundantly available at most places and is also the cleanest energy resource on our planet. Solar power, especially as it reaches more competitive levels with other energy sources in terms of cost, may serve to sustain the lives of millions of underprivileged people in developing countries. The recent trends are to decrease the cost of the energy generation either by introducing the low cost processing techniques or by enhancing the efficiency of the solar

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cells. After the 1st and 2nd generation of the bulk silicon based - and thin-film Si/CdTe/CIGS based solar cells, the 3rd generation technologies are underway. The new technologies include photo-electrochemical cells, polymer solar, quantum dot, tandem / multi-junction, up-conversion and down-conversion, surface plasmonic and nano-crystal solar cells and other novel innovations and inventions. To deliberate on the current trends in solar power generation, its harnessing, storage, solar energy conversion, processing technologies, modeling and simulation plus engineering of the small solar energy generation plants and related issues, the Centre for Science & Technology of the Non-Aligned and Other

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Developing Countries (NAM S&T Centre) jointly with the Amity University, UP, India - Dubai Campus organised an International Workshop on 'Trends in Solar Power Generation and Energy Harvesting' in Dubai during 27-29 March 2017 which brought together the senior experts and professionals from 23 countries to a common platform. The present book edited by editors Engr. Muhammed Musa Gaji and Dr. Abhishek Verma is a follow up of the above workshop and comprises 20 scientific papers by the authors from 17 countries covering several issues related to the status and trends of solar power generation, designing of solar cells, risk assessment of solar power plants and many other topics.

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The book will be an asset to the researchers, policy makers in government departments and ministries and non government organisations engaged in renewable energy related issues in the developing countries.

This book focuses on the materials used for fuel cells, solar panels, and storage devices, such as rechargeable batteries. Fuel cell devices, such as direct methanol fuel cells, direct ethanol fuel cells, direct urea fuel cells, as well as biological fuel cells and the electrolytes, membranes, and catalysts used there are detailed.

Separate chapters are devoted to polymer electrode materials and membranes. With regard to solar cells, the types of solar cells are detailed, such as inorganic-

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organic hybrid solar cells, solar powered biological fuel cells, heterojunction cells, multi-junction cells, and others. Also, the fabrication methods are described. Further, the electrolytes, membranes, and catalysts used there are detailed. The section that is dealing with rechargeable batteries explains the types of rechargeable devices, such as aluminum-based batteries, zinc batteries, magnesium batteries, and lithium batteries. Materials that are used for cathodes, anodes and electrolytes are detailed. The text focuses on the basic issues and also the literature of the past decade. Beyond education, this book may serve the needs of polymer specialists as well as other specialists,

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e.g., materials scientists, electrochemical engineers, etc., who have only a passing knowledge of these issues, but need to know more.

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Sensors are integral to modern living and are found in a huge number of applications in science, engineering and technology thus it is critical for scientists and technologists to understand the physical principles behind sensor types as well as their characteristics, applications, and how they can be suitably employed in sensor technologies. Whilst there exists a vast literature on the physics and characteristics of traditional sensors,

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this book provides a broad overview of the range of sensor technologies and attendant topics needed to optimise and utilise these devices in the modern world. Not only reviewing sensors by classification, the book encompasses the physics, design characteristics, simulation and interface electronics, and it includes case studies, future challenges and several other aspects of wider sensor technology to provide an overview of modern sensors and their applications. The broad scope will appeal to industrial and academic researchers and application engineers, especially those developing and implementing real-time hardware implementations employing smart sensors for emerging applications. Key Features Features a broad review of sensor types, including MEMS, wearable and smart sensors Presents

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application of modern sensors and emerging research directions
Incorporates case studies Reviews wider associated technologies
such as simulation, materials and interface electronics

Interdisciplinary appeal making the text suitable for industrial
and academic researchers as well as application engineers

Will the European Union have its ¿ single family - a ¿ European
family - as it will have a single currency? This is the question at the
origin of this book. Studies of family behavior and the
organization of private life among European citizens, as well as of
family member social status (children in relation to
adults/parents, women in relation to men), and of social
functions of the family, for example social reproduction, reveal so
much convergence among European families that the reality of a

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¿ European family seems inevitable, and more so if one looks at foreign studies done - in Australia, the United States or Japan - of the family in Europe. However, studies of the different judicial and public policy laws in the different European Union member countries lead one to refine this first impression. The family does not have the same legal meaning in all places, and the ways in which it is defined by law and public policy continue to differ strongly, due in particular to historical factors, cultural traditions, and conceptions of the role of the State. In order for the family to be part of the construction of a European citizenship, the pluralistic nature of its political definitions will have to be recognized. Putting the family into the context of evolving European integration has never been done before. It was made

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possible in this study thanks to the joint efforts of two editors with long experience in social science studies of the family and as expert advisors to the European Commission, and by the work of the best international specialists in the field. This is a book intended for specialists working in the social sciences, for social and government policy-makers in the fields of family and social policy, and for all those interested in European integration. Nanotechnology is a budding field and has a pivotal role in sensing. Nanomaterials exist in various forms such as nanoparticles, nanoclusters, nanobelts, and nanospheres. These nanomaterials act as sensing interfaces and immobilization surfaces for various biomolecules such as enzymes, DNA, and antigens. Therefore, the preparation and characterization of these

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nanoparticles play an important role in sensing devices. This handbook has evolved from the authors' teaching and research experience in the field of nanoparticle biosensing. It encompasses protocols for the synthesis of various forms of metal oxide nanoparticles; study of the various characterizing techniques that help deduce the shape, size, and morphology of these nanoparticles; and applications of these nanoparticles in the field of biosensors. It presents voltammetry techniques such as cyclic, linear wave, wave pulse, and differential pulse voltammetry, throws light on the interactions of nanomaterials and biomolecules, and discusses microfluidic devices, which due to their unique capability of miniaturization fascinate many researchers. It is a practical and user-friendly textbook that

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introduces the various basic principles and practical information that will help undergraduate and advanced-level students and researchers understand the science behind nanoscale sensing. Applied Optics is designed to cater to the need of application part of optics for undergraduate students in Physics and Engineering in Indian Universities. The book covers the applications of optics for lasers, optical fibres, holography, special theory of relativity, particle nature of radiations and photoconductivity and photovoltaics. The text explains the concepts through extensive use of line drawings and gives full derivations of essential relations. The topics are dealt with in a well-organized sequence with proper explanations along with simple mathematical formulations. **KEY FEATURES** • Provides several Solved

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Numerical Problems to help students comprehend the concepts with ease • Includes Multiple Choice Questions and Theoretical Questions to help students check their understanding of the subject matter • Contains unsolved Numerical Problems with answers to build problem-solving skills • Provides Formulae at a Glance and Conceptual Questions with their answers for quick revision

Intended for advanced undergraduates and beginning graduate students, this text is based on the highly successful course given by Walter Greiner at the University of Frankfurt, Germany. The two volumes on classical mechanics provide not only a complete survey of the topic but also an enormous number of worked examples and problems to show students clearly how to apply the

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abstract principles to realistic problems.

[Proceedings of IWPSD 2017](#)

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