

E Mrs 2017 Fall Meeting European Mrs

The tremendous impact of electronic devices on our lives is the result of continuous improvements of the billions of nanoelectronic components inside integrated circuits (ICs). However, ultra-scaled semiconductor devices require nanometer control of the many parameters essential for their fabrication. Through the years, this created a strong alliance between microscopy techniques and IC manufacturing. This book reviews the latest progress in IC devices, with emphasis on the impact of electrical atomic force microscopy (AFM) techniques for their development. The operation principles of many techniques are introduced, and the associated metrology challenges described. Blending the expertise of industrial specialists and academic researchers, the chapters are dedicated to various AFM methods and their impact on the development of emerging nanoelectronic devices. The goal is to introduce the major electrical AFM methods, following the journey that has seen our lives changed by the advent of ubiquitous nanoelectronics devices, and has extended our capability to sense matter on a scale previously inaccessible.

This book will provide readers with deep insight into the intriguing science of thermoelectric thin films. It serves as a fundamental information source on the

techniques and methodologies involved in thermoelectric thin film growth, characterization and device processing. This book involves widespread contributions on several categories of thermoelectric thin films: oxides, chalcogenides, iodates, nitrides and polymers. This will serve as an invaluable resource for experts to consolidate their knowledge and will provide insight and inspiration to beginners wishing to learn about thermoelectric thin films. Provides a single-source reference on a wide spectrum of topics related to thermoelectric thin films, from organic chemistry to devices, from physical chemistry to applied physics, from synthesis to device implementation; Covers several categories of thermoelectric thin films based on different material approaches such as oxides, chalcogenides, iodates, nitrides and polymers; Discusses synthesis, characterization, and device processing of thermoelectric thin films, as well as the nanoengineering approach to tailor the properties of the used materials at the nanoscale level.

Covers the period from 1790 to 1905 in The Times of London.

This book provides a comprehensive overview of nano-optics, including basic theory, experiment and applications, particularly in nanofabrication and optical characterization. The contributions clearly demonstrate how advances in nano-optics and photonics have stimulated progress in nanoscience and -fabrication, and vice versa. Their expert authors address topics

such as three-dimensional optical lithography and microscopy beyond the Abbe diffraction limit, optical diagnostics and sensing, optical data- and telecommunications, energy-efficient lighting, and efficient solar energy conversion. Nano-optics emerges as a key enabling technology of the 21st century. This work will appeal to a wide readership, from physics through chemistry, to biology and engineering. The contributions that appear in this volume were presented at a NATO Advanced Study Institute held in Erice, 4-19 July, 2015.

List of members in each volume.

Computing systems are undergoing a transformation from logic-centric towards memory-centric architectures, where overall performance and energy efficiency at the system level are determined by the density, performance, functionality and efficiency of the memory, rather than the logic sub-system. This is driven by the requirements of data-intensive applications in artificial intelligence, autonomous systems, and edge computing. We are at an exciting time in the semiconductor industry where several innovative device and technology concepts are being developed to respond to these demands, and capture shares of the fast growing market for AI-related hardware. This special issue is devoted to highlighting, discussing and presenting the latest advancements in this area, drawing on the best work on emerging memory devices including magnetic, resistive, phase change, and other types of memory. The special issue is interested in work that presents concepts, ideas, and recent progress ranging from materials, to memory devices, physics of switching mechanisms, circuits, and system applications, as well as progress in modeling and design tools. Contributions that bridge across several of these layers are especially encouraged.

The two-volume set LNCS 10587 + 10588 constitutes the refereed proceedings of the

16th International Semantic Web Conference, ISWC 2017, held in Vienna, Austria, in October 2017. ISWC 2017 is the premier international forum, for the Semantic Web / Linked Data Community. The total of 55 full and 21 short papers presented in this volume were carefully reviewed and selected from 300 submissions. They are organized according to the tracks that were held: Research Track; Resource Track; and In-Use Track.

This volume constitutes the proceedings of two collocated international conferences: EUSFLAT-2017 – the 10th edition of the flagship Conference of the European Society for Fuzzy Logic and Technology held in Warsaw, Poland, on September 11–15, 2017, and IWIFSGN'2017 – The Sixteenth International Workshop on Intuitionistic Fuzzy Sets and Generalized Nets, held in Warsaw on September 13–15, 2017. The conferences were organized by the Systems Research Institute, Polish Academy of Sciences, Department IV of Engineering Sciences, Polish Academy of Sciences, and the Polish Operational and Systems Research Society in collaboration with the European Society for Fuzzy Logic and Technology (EUSFLAT), the Bulgarian Academy of Sciences and various European universities. The aim of the EUSFLAT-2017 was to bring together theoreticians and practitioners working on fuzzy logic, fuzzy systems, soft computing and related areas and to provide a platform for exchanging ideas and discussing the latest trends and ideas, while the aim of IWIFSGN'2017 was to discuss new developments in extensions of the concept of a fuzzy set, such as an intuitionistic

as hardening process for semiconductor devices, biomedical imaging by radiation luminescent quantum dots, hydrogen gas detection by Raman lidar sensor for explosion risk assessment, water and wastewater purification by radiation treatment for environment, doping by the neutron transmutation doping for the semiconductor industry, and polymerization by irradiation, which is useful for industries requiring resistant and protective coating. I wish the chapters of this book can provide some helpful information on ionizing radiation applications.

This book explores the use of biomass as an energy source and its application in energy conversion technologies. Focusing on the challenges of, and technologies related to, biomass conversion, the book is divided into three parts. The first part underlines the fundamental concepts that form the basis of biomass production, its feasibility valuation, and its potential utilization. This part does not consider only how biomass is generated, but also methods of assessment. The second part focuses on the clarification of central concepts of the biorefinery processes. After a preliminary introduction with industrial examples, common issues of biochemical reaction engineering applications are analysed in detail. The theory explained in this part demonstrates that the chemical kinetics are the core focus in modelling biological processes such as growth, decay, product formation and feedstock consumption. This part continues with the theory of biofuels production, including biogas, bioethanol, biodiesel and Fischer-Tropsch synthesis of hydrocarbons. The third part of this book

gives detailed explanations of preliminary notions related to the theory of thermodynamics. This theory will assist the reader when taking into account the concepts treated in the previous two parts of the book. Several detailed derivations are given to give the reader a full understanding of the arguments at hand. This part also gives literature data on the main properties of some biomass feedstock. Fundamentals of Biofuels Engineering and Technology will be of interest not only to academics and researchers working in this field but also to graduate students and energy professionals seeking to expand their knowledge of this increasingly important area.

This book, as a collection of 17 research articles, provides a selection of the most recent advances in the synthesis, characterization, and applications of environmentally friendly and biodegradable biopolymer composites and nanocomposites. Recently, the demand has been growing for a clean and pollution-free environment and an evident target regarding the minimization of fossil fuel usage. Therefore, much attention has been focused on research to replace petroleum-based commodity plastics by biodegradable materials arising from biological and renewable resources.

Biopolymers—polymers produced from natural sources either chemically from a biological material or biosynthesized by living organisms—are suitable alternatives for addressing these issues due to their outstanding properties, including good barrier performance, biodegradation ability, and low weight. However, they generally possess poor mechanical properties, a short fatigue life, low chemical resistance, poor long-term

durability, and limited processing capability. In order to overcome these deficiencies, biopolymers can be reinforced with fillers or nanofillers (with at least one of their dimensions in the nanometer range). Bionanocomposites are advantageous for a wide range of applications, such as in medicine, pharmaceuticals, cosmetics, food packaging, agriculture, forestry, electronics, transport, construction, and many more.

Beauty masks, diapers, wound dressings, wipes, protective clothes and biomedical products: all these high-value and/or large-volume products must be highly compatible with human skin and they should have specific functional properties, such as anti-microbial, anti-inflammatory and anti-oxidant properties. They are currently partially or totally produced using fossil-based sources, with evident issues linked to their end of life, as their waste generates an increasing environmental concern. On the contrary, biopolymers and active biomolecules from biobased sources could be used to produce new materials that are highly compatible with the skin and also biodegradable. The final products can be obtained by exploiting safe and smart nanotechnologies such as the extrusion of bionanocomposites and electrospinning/electrospray, as well as innovative surface modification and control methodologies. For all these reasons, recently, many researchers, such as those involved in the European POLYBIOSKIN project activities, have been working in the field of biomaterials with anti-microbial, anti-inflammatory and anti-oxidant properties, as well as biobased materials which are renewable and biodegradable. The present book gathered research and review papers dedicated to materials and technologies for high-performance products where the attention paid to health and environmental impact is efficiently integrated, considering both the

skin-compatibility of the selected materials and their source/end of life.

Selected Papers of the of the European Materials Research Society (E-MRS) Spring Meeting 2017, May 22-26, 2017, Strasbourg, France Fundamentals of Biofuels Engineering and Technology Springer

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