

Recent Trends In Materials And Devices

Biomaterials created from innovative glass and bioceramic research are emerging as a precursor to several developments useful for solving a wide variety of industry and health related issues. Current Trends on Glass and Ceramic Materials is a review on the latest developments in glass and ceramic materials for technological applications along with biomedical applications in vivo. The volume serves as a useful reference to readers interested in learning about this area of materials science and its multidisciplinary array of applications

Recent Trends in Cold-Formed Steel Construction discusses advancements in an area that has become an important construction material for buildings. The book addresses cutting-edge new technologies and design methods using cold-formed steel as a main structural material, and provides technical guidance on how to design and build sustainable and energy-efficient cold-formed steel buildings. Part One of the book introduces the codes, specifications, and design methods for cold-formed steel structures, while Part Two provides computational analysis of cold-formed steel structures. Part Three examines the structural performance of cold-formed steel buildings and reviews the thermal performance, acoustic performance, fire protection, floor vibrations, and blast resistance of these buildings, with a final section reviewing innovation and sustainability in cold-formed steel construction. Addresses building sciences issues and provides performance solutions for cold-formed buildings Provides guidance for using the next generation design method, computational tools, and technologies Edited by an experienced researcher and educator with significant knowledge on new developments in cold-formed steel construction

This book will hopefully shed light on some of the advances taking place within nuclear science research in recent times. It describes the interesting results of some modern nuclear science research carried out by bright scientists and researchers in different parts of the world. The book is divided into five chapters. The first one is an introductory chapter to explain the nature and purpose of the book and the logic and significance of its contents. The second chapter is a concise introduction to the core subject of nuclear science, which is the nuclear reactions. This chapter also touches on the fundamental and basic physics underlining major nuclear reactions. Chapter three addresses some recent advances related to the famous nuclear detector material namely CdTe. The authors suggest that the modern detector based on CdTe materials can be developed as a multi-element detection platform that allows for the direct conversion of information generated by passing X/y-radiations through an examined object into an array of digital electrical signals without using an intermediate visible image on a fluorescent screen. In chapter four, a new study on the effect of unintended and accidental nuclear impact on the environment is discussed. In the last chapter, Thomas W. Grimshaw; from The University of Texas at Austin, USA; has composed an interesting study on the so-called cold nuclear fusion or the more widely known low energy nuclear reaction (LENR). He, among others, argues that nuclear cold fusion, if realized and understood, could be a significant source of cheap and clean energy. This book will hopefully encourage readers, researchers, and scientists to look further into the frontier topics of modern nuclear science and make the needed efforts to develop its cause and uses.

Volume is indexed by Thomson Reuters CPCI-S (WoS). Advanced materials offer exceptional properties and permit engineers to design novel and high-quality products. These peer-reviewed papers cover major topics such as nano, ferroelectric, magnetic, meta, polymer, non-linear optical, composite, thermoelectric, bio, catalytic inorganic, semiconductor and superconducting materials. It is hard to imagine a more wide-ranging treatment of such materials.

Recent Trends in Biofilm Science and Technology helps researchers working on fundamental aspects of biofilm formation and control conduct biofilm studies and interpret results. The book provides a remarkable amount of knowledge on the processes that regulate biofilm formation, the methods used, monitoring characterization and mathematical modeling, the problems/advantages caused by their presence in the food industry, environment and medical fields, and the current and emergent strategies for their control. Research on biofilms has progressed rapidly in the last decade due to the fact that biofilms have required the development of new analytical tools and new collaborations between biologists, engineers and mathematicians. Presents an overview of the process of biofilm formation and its implications Provides a clearer understanding of the role of biofilms in infections Creates a foundation for further research on novel control strategies

Updates readers on the remarkable amount of knowledge on the processes that regulate biofilm formation

The field of electrochemistry is exploring beyond its basic principles to innovation. New Technologies for Electrochemical Applications presents advancements in electrochemical processes, materials, and technology for electrochemical power sources such as batteries, supercapacitors, fuel cells, hydrogen storage and solar cells. It also examines various environmental applications such as photo electrochemistry, photosynthesis, and coating. Organized to give readers an overview of the current field in electrochemical applications, this book features a historical timeline of advancements and chapters devoted to the topics of organic material and conducting polymers for electrochemical purposes. Established experts in the field detail state-of-the-art materials in biosensors, immunosensors, and electrochemical DNA. This edited reference is a valuable resource for graduate and post-graduate students, and researchers in disciplines such as chemistry, physics, electrical engineering and materials science.

The book presents the select proceedings of the International Conference on Recent Advances in Design, Materials and Manufacturing (ICRADMM 2020). The topics covered include structural mechanics, kinematics and dynamics of machines, mechanical structures and stress analysis, noise and vibration analysis, fault detection and condition monitoring, optimization techniques, mechatronics & robotics, product design and development, tribology. The book also discusses various properties and performance attributes of modern-age design in mechanical engineering including their durability, workability, and carbon footprint. The book will be a valuable reference for researchers and professionals interested in sustainable development in mechanical engineering design and allied fields.

[New Trends in Materials Chemistry](#)

[Recent Trends in Materials, Mechanical Engineering, Automation and Information Engineering](#)

[A Review-Based Approach](#)

[Handbook of Research on Developments and Trends in Industrial and Materials Engineering](#)

[Recent Trends in Materials and Mechanical Engineering Materials, Mechatronics and Automation](#)

[Emerging Trends of Advanced Composite Materials in Structural Applications](#)

[Selected, Peer Reviewed Papers from the 2014 3rd International Conference on Recent Trends in Materials and Mechanical Engineering, \(ICRTMME 2015\), January 15-16](#)

[Recent Trends in Nanomaterials](#)

[Selected Articles from iM3F 2020, Malaysia](#)

[Some Recent Trends](#)

[Nanomaterials, Crystal Growth, Thin films, Quantum Dots, & Spectroscopy \(Proceedings ICRTMSA 2016\)](#)

[Recent Trends in Naval Engineering Research](#)

In today's modernized world, new research and empirical findings are being conducted and found within various professional industries. The field of engineering is no different. Industrial and material engineering is continually advancing, making it challenging for practitioners to keep pace with the most recent trends and methods. Engineering professionals need a handbook that provides up-to-date research on the newest methodologies in this imperative industry. The Handbook of Research on Developments and Trends in Industrial and Materials Engineering is a collection of innovative research on the theoretical and practical aspects of integrated systems within engineering. This book provides a forum for professionals to understand the advancing methods of engineering. While highlighting topics including operations management, decision analysis, and communication technology, this book is ideally designed for researchers, managers, engineers, industrialists, manufacturers, academicians, policymakers, scientists, and students seeking current research on recent findings and modern approaches within industrial and materials engineering.

Volume is indexed by Thomson Reuters CPCI-S (WoS). This collection of over 429 peer-reviewed papers on Materials and Mechanical Engineering is divided into the chapters: 1: Materials Engineering and Mechanical Engineering - 2: Manufacturing and Production Processes - 3: Automotive Engineering and Industry Application. It provides an authoritative overview of the subject.

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 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.

This book presents the proceedings of the International Conference on Recent Trends in Materials and Devices (ICRTMD 2019) held in India. It brings together academicians, scientists and industrialists from various fields for the establishment of enduring connections to solve the common global challenges across a number of disciplines. The conference provides a platform to tackle complex problems from a range of perspectives, thereby modeling integrated, solution-focused thinking and partnerships.

Novel Electrochemical Energy Storage Devices Explore the latest developments in electrochemical energy storage device technology In Novel Electrochemical Energy Storage Devices, an accomplished team of authors delivers a thorough examination of the latest developments in the electrode and cell configurations of lithium-ion batteries and electrochemical capacitors.

Several kinds of newly developed devices are introduced, with information about their theoretical bases, materials, fabrication technologies, design considerations, and implementation presented. You'll learn about the current challenges facing the industry, future research trends likely to capture the imaginations of researchers and professionals working in industry and academia, and still-available opportunities in this fast-moving area. You'll discover a wide range of new concepts, materials, and technologies that have been developed over the past few decades to advance the technologies of lithium-ion batteries, electrochemical capacitors, and intelligent devices. Finally, you'll find solutions to basic research challenges and the technologies applicable to energy storage industries. Readers will also benefit from the inclusion of: A thorough introduction to energy conversion and storage, and the history and classification of electrochemical energy storage An exploration of materials and fabrication of electrochemical energy storage devices, including categories, EDLCs, pseudocapacitors, and hybrid capacitors A practical discussion of the theory and characterizations of flexible cells, including their mechanical properties and the limits of conventional architectures A concise treatment of the materials and fabrication technologies involved in the manufacture of flexible cells Perfect for materials scientists, electrochemists, and solid-state chemists, Novel Electrochemical Energy Storage Devices will also earn a place in the libraries of applied physicists, and engineers in power technology and the electrochemical industry seeking a one-stop reference for portable and smart electrochemical energy storage devices.

This book comprises the select proceedings of the International Conference on Emerging Trends in Traditional and Technical Textiles (ICETT 2019), and examines the latest developments and automation in the field of textile technology. The topics covered include geotextiles, filters, medical textiles, functional finishing of textiles, composites, sustainable textile materials, and pollution in the textile industry. The book also discusses various aspects of traditional textiles including traditional methods of designing textiles, traditional textiles

as a new avatar for technical textiles, traditional and technical assets of Indian and Asian culture: phulkari, bagh, kalamkari and chope embroideries. This book can be useful for students, researchers, and professionals working in traditional textile design and technical textile applications.

Collection of selected, peer reviewed papers from the 2013 2nd International Conference on Recent Trends in Materials and Mechanical Engineering (ICRTMME 2013), September 21-23, 2013, Singapore. The 66 papers are grouped as follows: Chapter 1: Applied Mechanics; Chapter 2: Materials Science and Materials Processing Technology; Chapter 2: Materials Science and Materials Processing Technology; Chapter 4: Control and Automation Systems.

[Recent Trends in Materials Science and Applications](#)

[Proceedings of ICRTMD 2019](#)

[Materials, Architectures, and Future Trends](#)

[New Trends in Nuclear Science](#)

[Sources, Detectors, Advanced Materials, and Light-matter Interactions](#)

[Recent Trends in Thermoelectric Materials Research](#)

[Current Trends on Glass and Ceramic Materials](#)

[Recent Trends in Civil Engineering](#)

[Novel Electrochemical Energy Storage Devices](#)

[Recent Trends in Physics of Material Science and Technology](#)

[Proceedings ICRTMD 2015](#)

[Current Trends of Surface Science and Catalysis](#)

Since its inception in 1966, the series of numbered volumes known as Semiconductors and Semimetals has distinguished itself through the careful selection of well-known authors, editors, and contributors. The Willardson and Beer series, as it is widely known, has succeeded in producing numerous landmark volumes and chapters. Not only did many of these volumes make an impact at the time of their publication, but they continue to be well-cited years after their original release. Recently, Professor Eicke R. Weber of the University of California at Berkeley joined as a co-editor of the series. Professor Weber, a well-known expert in the field of semiconductor materials, will further contribute to continuing the series' tradition of publishing timely, highly relevant, and long-impacting volumes. Some of the recent volumes, such as Hydrogen in Semiconductors, Imperfections in III/V Materials, Epitaxial Microstructures, High-Speed Heterostructure Devices, Oxygen in Silicon, and others promise that this tradition will be maintained and even expanded. Thermoelectric materials may be used for solid state refrigeration or power generation applications via the large Peltier effect in these materials. To be an effective thermoelectric material, a material must possess a large Seebeck coefficient, a low resistivity and a low thermal conductivity. Due to increased need for alternative energy sources providing environmentally friendly refrigeration and power generation, thermoelectric materials research experienced a rebirth in the mid 1990's. Semiconductors and Semimetals, Volume 70: Recent Trends in Thermoelectric Materials Research: Part Two provides an overview of much of this research in thermoelectric materials during the decade of the 1990's. New materials and new material concepts such as quantum well and superlattice structures gave hope to the possibilities that might be achieved. An effort was made to focus on these new materials and not on materials such as BiTe alloys, since such recent reviews are available. Experts in the field who were active researchers during this period were the primary authors to this series of review articles. This is the most complete collection of review articles that are primarily focussed on new materials and new concepts that is existence to date.

This book focuses on the latest advances in the field of nanomaterials synthesis and processes, and provides a comprehensive overview of the state of art of research in this rapidly developing field. The book is divided into 11 chapters on various aspects of nanomaterials, moving from the synthesis and characterization of graphene oxide to graphene quantum dots and other interesting nanomaterials. Some chapters based on theoretical simulation of nanomaterials and their properties and applications of nanomaterials have also presented in this book. Given the depth and breadth of coverage, the book offers a valuable guide for researchers and students working in the area of nanomaterials.

The proceedings of the National conference on science of materials (NCSM2015, Maharaja Sayajirao University of Baroda, Vadodara, India, 28-30 December, 2015) consists from science peer reviewed articles covering a wide range of basic and applied aspects of the material's research. The proceedings depict a multidisciplinary nature of presented papers from many areas of modern materials: condensed matter and material physics, chemistry, biological science and modeling.

Progress and Recent Trends in Microbial Fuel Cells provides an in-depth analysis of the fundamentals, working principles, applications and advancements (including commercialization aspects) made in the field of Microbial Fuel Cells research, with critical analyses and opinions from experts around the world. Microbial Fuel cell, as a potential alternative energy harnessing device, has been progressing steadily towards fruitful commercialization. Involvements of electrolyte membranes and catalysts have been two of the most critical factors toward achieving this progress. Added applications of MFCs in areas of bio-hydrogen production and wastewater treatment have made this technology extremely attractive and important. . Reviews and compares MFCs with other alternative energy harnessing devices, particularly in comparison to other fuel cells. Analyses developments of electrolyte membranes, electrodes, catalysts and biocatalysts as critical components of MFCs, responsible for their present and future progress. Includes commercial aspects of MFCs in terms of (i) generation of electricity, (ii) microbial electrolysis cell, (iii) microbial desalination cell, and (iv) wastewater and sludge treatment.

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

The book highlights recent prominent results in the domain of the synthesis of new polyoxometalates with a specific attention to polyoxothioanions, and provides some novelties and perspectives in selected domains such as magnetism, luminescence and nanochemistry, and macroions self-assembly in solutions. The case of OC one-potOCO syntheses often used and reported in POMs synthesis is studied in terms of more complex solution speciation processes related to highly dynamical situation connected to factors such as pH, ionic strength, reaction time, temperature, counterion nature, concentration of starting materials, presence of electron donors and redox potentials. The behavior of macroions (2nm-6nm size range) in solution is shown to be quite different from the simple ionic solution or colloidal systems (Debye-Huckel model). Their self-assembling into a single-layered, spherical, hollow vesicle structure, namely the OC blackberryOCO structure, is clearly described. Examples of spin clusters with tunable interactions are given and single molecule magnets based on POMs are specifically tackled. Besides paramagnetic transition metal centres and lanthanoid ions encapsulated in archetypal lacunary polyoxoanions, magnetically functionalized Kleperates are described, their discovery tracing back nearly 15 years.

This book comprises select proceedings of the International Conference on Futuristic Trends in Materials and Manufacturing (ICFTMM 2018). The book includes latest research on conventional materials, advanced metals and alloys, polymeric materials and composites. In addition to the characterization of different advanced materials, the book also discusses their applications in various fields such as

marine, automotive, aerospace, sporting equipment, and infrastructure. The book offers an insight into the manufacturing of cost-effective and high performance materials products. The contents of this book will be useful for students, academicians, and researchers working in the field of materials science and engineering.

[Advanced Catalytic Materials](#)

[New Technologies for Electrochemical Applications](#)

[Recent Trends in Science of Materials](#)

[Select Proceedings of ICRTICE 2019](#)

[Polyoxometalate Chemistry](#)

[Recent Trends in Design, Materials and Manufacturing](#)

[COMAT 2014 - Recent Trends in Structural Materials](#)

[Recent Trends in Thermoelectric Materials Research, Part Two](#)

[Synthesis and Properties](#)

[Selected, Peer Reviewed Papers from the 2013 2nd International Conference on Recent Trends in Materials and Mechanical Engineering \(ICRTMME 2013\), September 21-23, 2013, Singapore](#)

[Recent Trends in Biofilm Science and Technology](#)

[Recent Trends in Materials](#)

"The crucial interdependence between humans and their environment is explored and illuminated in this revealing overview of the major environmental issues facing society in the twenty-first century. Environmental Technology and Engineering Techniques: Basic Concepts and Health Interventions presents a novel picture of some of the current advances in the research of theoretical and practical frameworks of environmental problems and solutions taken from the latest empirical findings. This new volume focuses on the aspects of new techniques that are particularly valuable for solving environmental problems. The complex environmental issues are presented in simple terms to help readers grasp the basics and solve relevant problems. Timely and comprehensive discussions of applications to real-world environmental concerns are a central focus of this research-oriented volume. This book is a valuable reference for researchers and practitioners in environmental science and engineering"--

Materials chemistry is a growing interdisciplinary field which interfaces with and draws from many disciplines including solid state chemistry and physics, materials science and crystallography. This volume provides a review of the main techniques and topical materials presented by leading workers in the field. The survey of techniques includes in-depth coverage of diffraction, microscopy, NMR and IR spectroscopic methods; and special emphasis is given to the growing role of computational and theoretical techniques. The development of new materials with specific applications is a major feature of contemporary materials chemistry. Later chapters of the book emphasize ionic conductors, superconductors, colossal magneto-resistance materials and catalytic systems (including micro- and meso-porous materials), to which several chapters are devoted. Synthetic aspects of the field are also emphasized. This book covers a collection of topics that reflect the diversity of modern trends in chemistry and chemical engineering. It presents leading-edge research from some of the brightest and most well known scientists from around the world. Contributions range from new methods to novel applications of existing methods to give readers an understanding of the material and/or structural behavior of new and advanced systems. The book offers a broad scope of new research for academics, researchers, and engineering professionals, which has potential for applications in several disciplines of engineering and science. Topics include: Time evolution of the electronegativity and its various scales and the interrelationship between electronegativity and other periodic parameters The starch nanocomposite and nanoparticles and its biomedical applications The lamination of nanofiber at different temperatures Electrospinning of chitosan (CHT) and how it can be improved by the addition of synthetic materials including carbon nanotubes (CNTs) Smart nanofibers based on nylon 6,6/polyethylene glycol blend Nano-biocomposites with chitosan matrix and carbon nanotubes (CNTs) Polypyrrole-coated polyacrylonitrile electrospun nanofibers Semi-empirical AM-1 studies on porphyrin, which include global reactivity parameters, local reactivity parameters, and atomic charge

Collection of selected, peer reviewed papers from the 3rd International Conference COMAT on Recent Trends in Structural Materials, November 19-21, 2014, Pilsen, Czech Republic. The book contains 21 papers and covers a wide range of topics: Mechanical Properties, Forming and Microstructure Development, Investigation of Steel, Wear Resistance, Thermo-Mechanical Treatments, Defects Detecting.

Materials for Potential EMI Shielding Applications: Processing, Properties and Current Trends extensively and comprehensively reviews materials for EMI shielding applications, ranging from the principles to possible applications and various types of shielding materials. The book provides a thorough introduction to electromagnetic interference, its effect on both the environment and other electronic items, various materials that are used for electromagnetic interference shielding applications, and its properties. It explains the mechanism behind EMI shielding, the methods by which EMI SE of a given material is estimated, and the different fabrication methods currently employed for fabricating EMI shielding materials. Final sections focus on the theoretical background of EMI shielding and shielding mechanisms. This theoretical background is extended to the physics of EMI shielding, wherein the physics behind mechanism of shielding is explained. Focuses on the different types of available EMI shielding, their applications, processing, characterization, and the mechanism behind their shielding Discusses how to incorporate EMI shielding with low cost, low density and high strength Provides an understanding and clarifies both elementary and practical problems relating to EMI shielding materials

This book discusses in detail the recent trends in Computational Physics, Nano-physics and Devices Technology. Numerous modern devices with very high accuracy, are explored In conditions such as longevity and extended possibilities to work in wide temperature and pressure ranges, aggressive media, etc. This edited volume presents 32 selected papers of the 2013 International Conference on Science & Engineering in Mathematics, Chemistry and Physics. The book is divided into three scientific Sections: (i) Computational Physics, (ii) Nanophysics and Technology, (iii) Devices and Systems and is addressed to Professors, post-graduate students, scientists and engineers taking part in R&D of nano-materials, ferro-piezoelectrics, computational Physics and devices system, and also different devices based on broad applications in different areas of modern science and technology.

Assessing and improving nuclear material performance is a crucial subject for the sustainability of the nuclear energy and radioactive isotope supplies. This book aims to present research efforts used to identify nuclear materials performances in different areas. The contributions of esteemed international experts have covered important research aspects in fission and fusion technologies and naturally occurring radioactive materials management. The authors introduced current and anticipated trends toward better performances and mitigating challenges for commercial application of innovative technologies, biological remediation of mine effluents, nuclear fuel performance in power and research fission reactors, gamma ray spectrometer calibration, and recent advances in understanding the performance of tungsten composite in fusion reactor environment.

[Basic Concepts and Health Interventions](#)

[Physics and Chemistry](#)

[Recent Trends in Traditional and Technical Textiles](#)

[Recent Trends in Advanced Materials](#)

[Modern Trends in Chemistry and Chemical Engineering](#)

[Emerging Trends of Nanotechnology in Environment and Sustainability](#)

[Photocatalysis and Other Current Trends](#)

[Recent Trends in Cold-Formed Steel Construction](#)

[Trends in Materials Engineering](#)

[Nuclear Material Performance](#)

[Select Proceedings of ICETMM 2018](#)

[Recent Trends in Materials and Devices](#)

This book presents the selected peer-reviewed proceedings of the International Conference on Recent Trends and Innovations in Civil Engineering (ICRTICE 2019). The volume focuses on latest research and advances in the field of civil engineering and materials science such as design and development of new environmental materials, performance testing and verification of smart materials, performance analysis and simulation of steel structures, design and performance optimization of concrete structures, and building materials analysis. The book also covers studies in geotechnical engineering, hydraulic engineering, road and bridge engineering, building services design, engineering management, water resource engineering and renewable energy. The contents of this book will be useful for students, researchers and professionals working in civil engineering.

This book discusses nanotechnology, its benefits and risks affecting the environment we live in today, and is divided into three parts: Part-I dealing with Sustainability, Part-II describing Toxicological Impacts, and Part-III discussing Nanomaterial-based Adsorbents. The crucial challenge of sustainability in various environmental elements is a global problem. This draws upon various issues of nanotechnology which impact sustainability of food, clean environment, green house gases, raw materials extraction, manufacturing and automobile industry. Growth in the production of nanomaterials to suit any of these applications is commendable. However, this does not negate the growth in their toxic effects. The nanotoxicity research in areas like medicine and agriculture industry is reviewed in detail in this book. Part-II discusses the toxic nature of widely used nanomaterials. Nanomaterials are enormously used in environmental remediation due to some of their distinct properties. These properties are described and discussed. Part-III of the book highlights the highly reactive and adsorbent properties of nanomaterials that enable them to be a competent agent in water and pollutant remediation. This book is mainly intended for researchers and students to acquire fairly comprehensive understanding and appreciation of nanotechnology dominance in sustainability challenges, with the aim to give the anticipatory governance of nanomaterials in our society and environment.

This unique book covers the latest surface science studies on model catalysts, including single crystals, non-colloidal nanocatalysts, and nanoparticles in various forms with the control of size, shape and composition. This book addresses the issue of bridging "materials and pressure gaps" and also discusses the important issue of metal-oxide interface and hot electron flows in heterogeneous catalysis. The current development of in-situ surface techniques that is relevant to bridging "pressure gaps" is also highlighted.

This book highlights recent advances and applications in terahertz (THz) technology, addressing advanced topics such as THz biomedical imaging, pattern recognition and tomographic reconstruction for THz biomedical imaging by machine learning and artificial intelligence, THz imaging radars for autonomous vehicle applications, and THz imaging systems for security and surveillance. It also discusses theoretical, experimental, established and validated empirical work on these topics.

Materials Under Extreme Conditions: Recent Trends and Future Prospects analyzes the chemical transformation and decomposition of materials exposed to extreme conditions, such as high temperature, high pressure, hostile chemical environments, high radiation fields, high vacuum, high magnetic and electric fields, wear and abrasion related to chemical bonding, special crystallographic features, and microstructures. The materials covered in this work encompass oxides, non-oxides, alloys and intermetallics, glasses, and carbon-based materials. The book is written for researchers in academia and industry, and technologists in chemical engineering, materials chemistry, chemistry, and condensed matter physics. Describes and analyzes the chemical transformation and decomposition of a wide range of materials exposed to extreme conditions Brings together information currently scattered across the Internet or incoherently dispersed amongst journals and proceedings Presents chapters on phenomena, materials synthesis, and processing, characterization and properties, and applications Written by established researchers in the field

This book presents part of the proceedings of the Manufacturing and Materials track of the iM3F 2020 conference held in Malaysia. This collection of articles deliberates on the key challenges and trends related to manufacturing as well as materials engineering and technology in setting the stage for the world in embracing the fourth industrial revolution. It presents recent findings with regards to manufacturing and materials that are pertinent towards the realizations and ultimately the embodiment of Industry 4.0, with contributions from both industry and academia.

Today's chemical industry processes worldwide largely depend on catalytic reactions and the desirable future evolution of this industry toward more selective products, more environmentally friendly products, more energy-efficient processes, a smaller use of hazardous reagents, and a better use of raw materials also largely involves the development of better catalysts and, specifically, purposely designed catalytic materials. The careful study and development of the new-generation catalysts involve relatively large groups of specialists in universities, research centers, and industries, joining forces from different scientific and technical disciplines. This book has put together recent, state-of-the-art topics on current trends in catalytic materials and consists of 16 chapters.

[Recent Trends and Future Prospects](#)

[Select Proceedings of ICRADMM 2020](#)

[Recent Trends in Manufacturing and Materials Towards Industry 4.0](#)

[Environmental Technology and Engineering Techniques](#)

[Materials for Potential EMI Shielding Applications](#)

[Processing, Properties and Current Trends](#)

[Materials Under Extreme Conditions](#)

[Progress and Recent Trends in Microbial Fuel Cells](#)

[Emerging Trends in Terahertz Solid-State Physics and Devices](#)

[Recent Trends in Materials and Mechanical Engineering II](#)

[Select Proceedings of ICETT 2019](#)