Materials Science and Engineering

2026/Fall Edition

Materials Research Forum LLC
www.mrforum.com

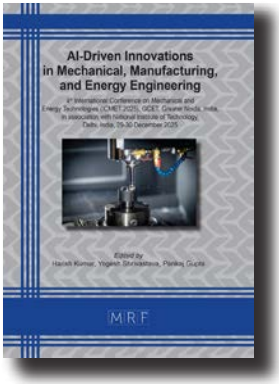
Welcome to Materials Research Forum LLC' complete 2026 Fall Publications Catalog. It describes all 267 books, electronic products, and proceedings we currently publish.

Materials Research Forum LLC, is located in Millersville, PA.

The policy of Materials Research Forum LLC is to focus on materials related research and serve the indivitual publishing needs of researchers in this field. At the same time our vision is to deliver the most up-to-date knowledge of current research and information tools useful to this community.

The publishing house is managed by Thomas Wohlbier who has served the publishing community, especially the materials research community, for over 33 years. During his 12 years as Director of Publication at a Swiss publishing house he initiated and oversaw the publication of over 2000 titles including monograph books, special topical volumes and conference proceedings volumes.

Materials Research Forum LLC
105 Springdale Lane
Millersville, PA 17551
U.S.A.



AI-Driven Innovations in Mechanical, Manufacturing, and Energy Engineering

Eds. Harish Kumar, Yogesh Shrivastava, Pankaj Gupta

The conference refers to research in the areas of mechanical engineering, materials science, renewable energy, manufacturing technologies, computational methods, robotics, automation, and sustainable engineering systems. The contributions focus on emerging technologies, experimental investigations, analytical methods, and industrial applications to address current engineering challenges.

Reinforcement Learning-Based Decision Making, AI-Assisted Structural Health Monitoring, Hybrid Composites, Fiber Reinforced Polymer Matrices, Machine Intelligence, Vibration Analysis Of Turbomachinery, Real-Time Monitoring, Flat-Plate Aluminum Wing, PID-Controlled Quartz Heating, Fault Detection in Rotating Machinery, Energy-Efficient Manufacturing Systems

https://mrforum.com/product/icmet2025

9781644904305, 2026, 262 pages, full color SC book, USD 140.00, also available as eBook PDF (9781644904312)

Biomimetic

Materials and Applications

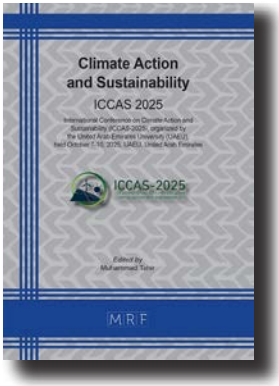
Eds. Inamuddin, Tariq Altalhi, Arwa Alrooqi, Mohammad Luqman

Biomimicry is the study of materials that mimic the phenomena and characteristics of plants, animals, and insects. The book explores biomimetic materials for diverse biomedical applications, including drug delivery, cancer therapy, skin and tissue regeneration, bone repair, and biotherapy. It also highlights their applications in energy storage, environmental remediation and monitoring, water purification, food preservation, and thermal energy storage.

Bioactive Compounds, Biomimetic Structures, Biosensing, Cancer Therapy, Drug Delivery, Flexible Photovoltaics, Nanoparticles, Skin Regeneration, Solar Absorptance, Sterilization, Thermal Energy Storage, Tissue Engineering, Wound Healing

https://mrforum.com/product/biomimetic-materials-applications

9781644904343, 2026, 224 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904350)



Climate Action and Sustainability

ICCAS 2025

Ed. Muhammad Tahir

The conference focused on advancing innovative solutions that support the transition toward a low-carbon and sustainable future. The papers presented cover sustainable energy systems, carbon management technologies, advanced manufacturing, sustainable materials, artificial intelligence, climate resilience, green infrastructure, and policy development.

Climate Action, Clean Energy, Sustainable Innovation, Environmental Stewardship. Batteries and Fuel Cells, Additive Manufacturing, Advanced Composites, Sustainable Catalysts, Electrocatalysts, Photocatalysts. Aerospace, Robotics, Artificial Intelligence for Sustainability, Energy–Water–Food Nexus, Climate Resilience, Green Building Innovations

https://mrforum.com/product/iccas2025

9781644904169, 2026, 1042 pages, full color SC book, USD 180.00, also available as eBook PDF (9781644904176)

CEAS - AIDAA Conference 2025

Eds. Erasmo Carrera and Matteo Filippi

The conference focuses on recent advances in aerospace science and engineering. Topics covered include (1) Artificial Intelligence, Machine Learning & Data Driven Methods, (2) Aerodynamics & Fluid Mechanics, (3) Aeroacoustics & Noise Control, (4) Aeroelasticity & Structural Dynamics, (5) Aircraft Design, MDO & Performance, (6) Propulsion, Energy & Combustion, (7) UAV, UAM & Rotorcraft Systems, (8) Guidance, Navigation & Control, (9) Space Systems, GNC & Orbital Operations, (10) Structures, Materials & Manufacturing, (11) Human Factors, Cockpit & Operations, (12) Systems Engineering, Digital Twins & Simulation.

Artificial Intelligence, Machine Learning & Data Driven Methods, Aerodynamics & Fluid Mechanics, Aeroacoustics & Noise Control, Aeroelasticity & Structural Dynamics, Aircraft Design, MDO & Performance, Propulsion, Energy & Combustion, UAV, UAM & Rotorcraft Systems, Guidance, Navigation & Control, Space Systems, GNC & Orbital Operations, Structures, Materials & Manufacturing, Human Factors, Cockpit & Operations, Systems Engineering, Digital Twins & Simulation

https://mrforum.com/product/ceas-aidaa-conference-2025

9781644904244, 2026, 1624 pages, full color SC book, USD 200.00, also available as eBook PDF (9781644904251)

Corrosion Prevention Engineering for Modern Industries

Principles, Protection Strategies, and Materials Technologies

Eds. Rajender Boddula, G. Kausalya Sasikumar, Ramyakrishna Pothu

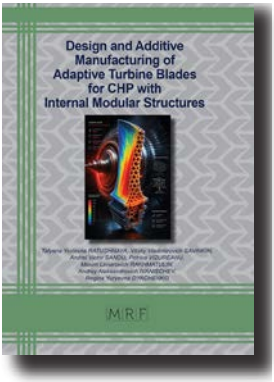
This is the first of two reference books on corrosion prevention engineering in modern industrial systems. The aim is to understand the mechanisms of corrosion and how they can be used to create practical, reliable and cost-effective solutions for the control of corrosion.

Electrochemical Degradation, Corrosion Kinetics, Passivation Characteristics, Operational Safety, Protective Coatings, Paints and Primers, Metallic Coatings, Cathodic Protection Systems, Corrosion Inhibitors, Smart Corrosion Monitoring, Self-healing Materials, Nanostructured Protective Surfaces, Corrosion Prediction Models, Machine Learning,. Regulatory Frameworks, Industrial Standards, Corrosion Management

https://mrforum.com/product/corrosion-prevention-engineering-for-modern-industries-Part-I

9781644904381, 2026, 306 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904398)

Design and Additive Manufacturing of Adaptive Turbine Blades for CHP with Internal Modular Structures



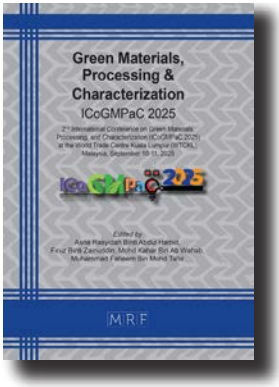
Tatyana Yurievna RATUSHNAYA, Vitaliy Vladimirovich SAVINKIN, Andrei Victor SANDU, Petrica VIZUREANU, Maxim Lenarovich RAKHMATULIN, Andrey Aleksandrovich IVANISCHEV, Regina Yuryevna DYACHENKO

This book is devoted to the issues of increasing the service life and reliability of the working blades of a thermal power plant steam turbine by developing and substantiating the optimal configuration of stress-active structural modules inside the blade feather, ensuring the redistribution of thermal force fields and a reduction in the level of maximum equivalent stresses while maintaining the weight and size characteristics.

Adaptive Blade, Additive Manufacturing, Fatigue Stresses, High-Energy Radiation, Hirtisation Technology, Honeycomb Cells, Laser Technology, Microcracks, Quality Parameters, Statistical Indices, Turbine Blades, Vibration Constraints

https://mrforum.com/product/design-and-additive-manufacturing-of-adaptive-turbine-blades

9781644904404, 2026, 130 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644904411)



Green Materials, Processing & Characterization

ICoGMPaC 2025

Eds. Asna Rasyidah Binti Abdul Hamid, Firuz Binti Zainuddin, Mohd Kahar Bin Ab Wahab, Muhammad Faheem Bin Mohd Tahir

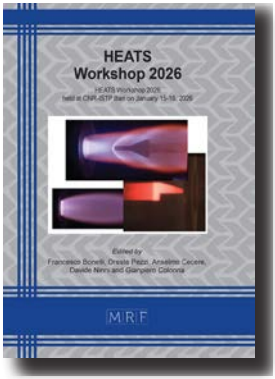
The conference proceedings present recent advances in the field of environmentally friendly green materials. The topics covered include advanced manufacturing and processing technologies, material characterization approaches, sustainable engineering practices, and emerging applications in materials science and engineering.

PVC/PCL Blends, Sintered Perlis Dolomite/Silica, Lysozyme, Rubber Wood, Coffee Waste-Derived Activated Carbon, Graphene-Reinforced Concrete, Cellulose Blend Films, UHMWPE Composites, Natural Fiber Polymer Composites, Degradation of Plastic Waste, Hybrid Natural Fiber Composites, PLA Composites, Thermoplastic Starch Films, Epoxy Composites, Sustained Wound Hydration, Sand Cement Brick Containing Fly Ash, Graphitic Carbon from Coconut Shell Waste, Paddy Straw, Solar Water Heater, Ethylenediamine, Concrete Cracking, Recycled Copper for Rapid Tooling, Kenaf–Epoxy Composites, Water Retaining Structures, Epoxidized Natural Rubber, Biomass Pelletizer, Fused Deposition, Injection Moulding, Machine Learning, Solder/Intermetallic Compound

https://mrforum.com/product/icogmpac2025

9781644904220, 2026, 346 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904237)

HEATS Workshop 2026



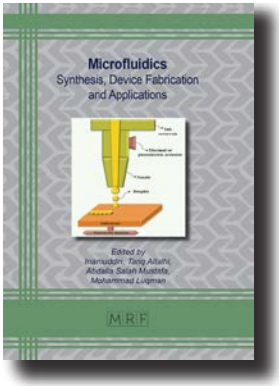
Eds. Francesco Bonelli, Oreste Pezzi, Anselmo Cecere, Davide Ninni and Gianpiero Colonna

The HEATS project was devoted to the development of advanced computational tools for the simulation of atmospheric super-orbital and lunar re-entry flows in the ionization regime. The project addressed key challenges in hypersonic aerothermodynamics, including high-temperature gas effects, chemical non-equilibrium, dissociation and ionization processes, plasma formation, radio-wave absorption, and the interaction between high-enthalpy flows and Thermal Protection System materials.

Atmospheric Flows, Aerothermodynamics, Plasma Formation, High-Enthalpy Flows, Thermal Protection

https://mrforum.com/product/heats2026

9781644904282, 2026, 50 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644904299)



Microfluidics

Synthesis, Device Fabrication and Applications

Eds. Inamuddin, Tariq Altalhi, Abdalla Salah Mustafa, Mohammad Luqman

The book provides a comprehensive overview of recent progress and emerging trends in microfluidic technology, including material synthesis strategies, device fabrication methods, and multidisciplinary applications.

Device Fabrication, Microfluidic Manufacturing, Analytical Applications, Food Analysis, Beam Electron Lithography, Water Quality Monitoring, Nanomaterials, Electrochemical Sensors, Bioanalysis, Separation of Biomolecules, Organic Synthesis, Immunosensors

https://mrforum.com/product/microfluidics

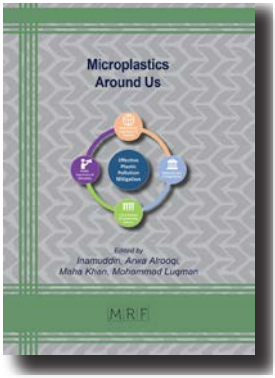
9781644904206, 2026, 422 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904213)

Microplastics Around Us

Eds. Inamuddin, Arwa Alrooqi, Maha Khan, Mohammad Luqman

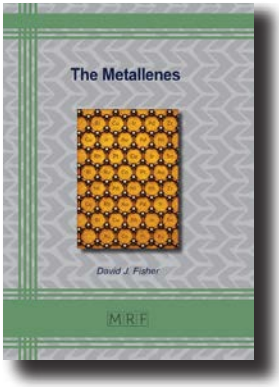
The book is concerned with microplastics and how they affect our health, food and the whole planet. Microplastics are found in foods, beverages and drinking water. Key topics are the dangers associated with the presence of microplastics; including issues related to fertility, liver and kidney health, skin rashes, and potential cancer risks.

Bioactive Compounds, Biomimicry, Biomimetic Hydrogels, Biosensing Cancer Therapy, Drug Delivery, Flexible Photovoltaics, Marine Microplastic Debris, Microplastic Disposal, Microbial Degradation, Skin Regeneration, Smart Biomaterials, Thermal Energy Storage, Tissue Engineering, Wound Healing



https://mrforum.com/product/microplastics-around-us

9781644904367, 2026, 372 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904374)



The Metallenes

David J. Fisher

Metallenes are 2-dimensional metallic allotropes. They are composed of unsaturated coordinated metal atoms having a thickness of only a few atomic layers, a high specific surface area, a high density of unsaturated surface-coordinated atoms and form anisotropic nanosheets formed of isotropic metal bonds. Due to their unique physicochemical properties metallenes find widespread applications in various fields of current interest.

Organic Synthesis, Sensors, Biomedicine, Energy Catalysis, Fuel Oxidation, Solid-State Hydrogen Storage

https://mrforum.com/product/metallenes

9781644904183, 2026, 124 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644904190)

Smart and Sustainable Architecture and Urban Resilience

SSAUR 2026

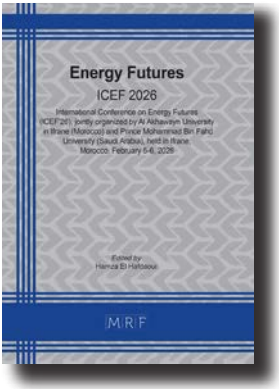
Eds. Jamal Nayfeh, Chuloh Jung, Nadine Fayad

This International Conference represents an evolving intellectual platform situated at the intersection of architectural innovation, urban systems, and emerging technological frameworks. It focusses on the mechanisms through which smart systems and resilient urban strategies can be conceptualized, implemented, and critically evaluated. The inquiries range from computational design methodologies and smart infrastructure systems to sustainability-driven urban strategies and human-centered spatial frameworks.

Sustainable Design, Mold Prevention, Housing Performance Evaluation, Air Quality Risk Modeling. Balancing Daylighting and Thermal Control, Sustainable Construction, Green vs. Conventional Buildings, Integrated Photovoltaics, Machine Learning Models, CO2 Prediction, Urban Planning, Hot-Arid Cities, Walking in Gulf Cities, Everchanging Environments, Urban River Recovery, Spiritual Architecture, Deep Learning Approaches, Heat-Resilient Public Space, Global Energy Regulations, Green University Transformation, Hot Arid Climates, Thermal Stress, Energy Harvesting, Climate Resilience

https://mrforum.com/product/ssaur2026

9781644904329, 2026, 624 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644904336)



Energy Futures

ICEF 2026

Ed. Hamza El Hafdaoui

The proceedings collected in this volume refer to current research in energy-related fields: Renewable Energy and Storage, Electric Grid and Digital Infrastructure, Materials for Energy Applications, Alternative Fuels and Applications, Energy Efficiency and Management, Energy Finance and Economics, Energy Sustainability.

Renewable Energy, Energy Storage, Materials for Energy Applications, Energy Efficiency and Management, Energy Finance and Economics

https://mrforum.com/product/icef2026

9781644904084, 2026, 1338 pages, full color SC book, USD 180.00, also available as eBook PDF (9781644904091)

Flame Retardant Materials

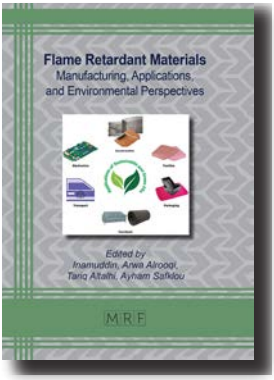
Manufacturing, Applications, and Environmental Perspectives

Eds. Inamuddin, Arwa Alrooqi, Tariq Altalhi, Ayham Safklou

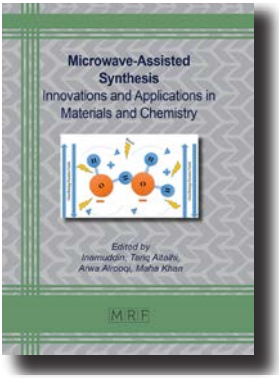
The book focuses on flame-retardant materials and their industrial significance. It covers a broad spectrum of retardants, including biomass-derived, synthetic, mineral-based, and nanotechnology-enabled systems.

MXenes (MOFs), Electrospun Networks, Fire Safety, Textiles, Paints, Polymers, Electronics, Sensors, Batteries, Green Flame Retardants, Nanoscale Barrier Effects, Electrospun Polymeric Matrices, Flame-Retardant Strategies, Lithium-Ion and Solid-State Batteries, Ignition Behavior, Heat Release, Smoke Generation, Charring

https://mrforum.com/product/flame-retardant-materials



9781644904060, 2026, 398 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904077)



Microwave-Assisted Synthesis

Innovations and Applications in Materials and Chemistry

Eds. Inamuddin, Tariq Altalhi, Arwa Alrooqi, Maha Khan

The book focuses on developments in the microwave-assisted preparation of organic and inorganic compounds, advanced composite materials, polymers, and nanostructures.

Microwave-Assisted Synthesis, Bioactive Heterocycles, Medicinal Chemistry, Synthesis of Polypyrrole, Environmental Pollutant Adsorption, Zeolite Synthesis, Synthesis of Ionic Liquids, Radiopharmaceuticals, Targeted Drug Delivery, Pyrolysis of Biomass, Photocatalysts for Hydrogen Production

https://mrforum.com/product/microwave-assisted-synthesis

9781644904022, 2026, 476 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904039)

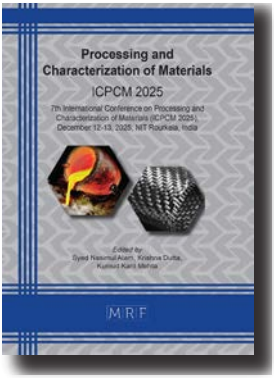
Processing and Characterization of Materials

ICPCM 2025

Eds. Syed Nasimul Alam, Krishna Dutta, Kumud Kant Mehta

The book presents research in mineral beneficiation, non-ferrous metallurgy, advanced steels, composites, additive manufacturing, high-entropy alloys, smart materials, corrosion and surface engineering, materials for energy storage, and the use of AI/ML in materials engineering.

Iron Ore Particle Sintering, Refractories, Bio-Material Composites, Forest Waste, Nickel Nanowire, Micro-alloyed Dual-Phase Steel Sheet, Natural Fiber-Reinforced Composites, Artificial Neural Network, Titanium Bending



https://mrforum.com/product/icpcm2025

9781644904121, 2026, 102 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904138)

Advanced Materials and Sustainable Energy Technologies

AMSET2025

Eds. Adarsh Kumar Pandey, Saidur Rahman, Kalidasan Balasubramanian, Norulsamani binti Abdullah

The book focuses on the synergistic potential of integrating advanced sustainable energy systems with various techniques to optimize energy efficiency, predict energy consumption patterns, facilitate better decision-making, and accelerate the global transition towards a more sustainable future.

Renewable Energy Generation, Energy Storage, Smart Grids, Carbon Capture, Green Buildings, Electric Vehicles, Machine Learning, Design Methodologies, Numerical Simulations, Phase Change Materials

https://mrforum.com/product/amset2026

9781644904145, 2026, 456 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644904152)

Advances in Cement and Concrete Research

ICACCR 2025

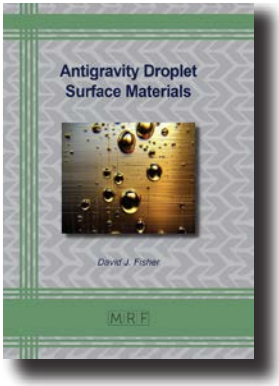
Eds. Bolanle D. Ikotun, Walied A. Elsaigh, Akeem Ayinde Raheem

The book focuses on the production, processing, analysis and testing of cement and concrete materials. The topics covered include cementitious materials, 4IR technology in concrete, nanotechnology in cement composites, concrete for resilient and durable buildings, water quality in concrete production and concrete materials for sustainable development.

Sustainable Cement Standards, Portland Cement Mortar, Concrete Manufacturing, Natural Coarse Aggregates in Concrete, Crushed Burnt Clay Bricks, Corn Cob Ash, Wood Ash

https://mrforum.com/product/icaccr2025

9781644904046, 2026, 244 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644904053)



Antigravity Droplet Surface Materials

David J. Fisher

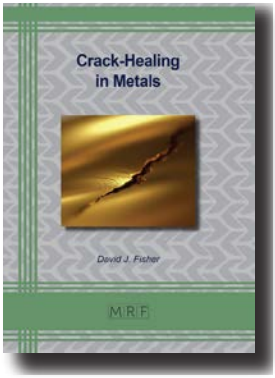
The book reviews recent progress in the area of droplet manipulation on surfaces as required in fields such as thermal management, water collection, microfluidics and biomedical devices. The book references 142 original resources with their direct web links for in-depth reading.

Superwicking Surfaces, Microfluidics, Micro/Nano-Technology, Droplet and Bubble Manipulation, Inkjet-Printing, Micro/Nanofluidics, Superhydrophobicity, Anti-icing, Propulsion of Droplets, Bio-inspired Designs, Substrate-Heterogeneity, Vibratory Phenomena, Aluminium, Copper, Iron, Silver, Titanium, Carbon, Glass, Graphene, Silicon, Polymers

https://www.mrforum.com/product/antigravity-droplet-surface-materials

9781644903889, 2026, 112 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903896)

Crack-Healing in Metals



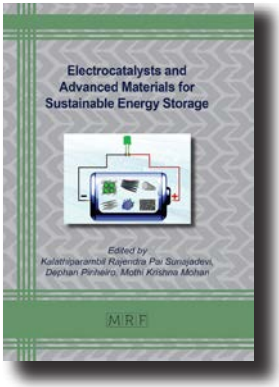
David J. Fisher

The healing of cracks in metallic components fundamentally involves the exchange of material and energy within an open system. The processes involved include welding and laser repair, various heat-treating techniques, hot plastic deformation, plasma spraying, electro-healing, electroplating, gas carbonitriding, friction stir welding, electric current-pulsing, thermo-mechanical coupling, filling of cracks via oxide formation, flash hot isostatic pressing, and various ultrasonic methods. The book describes the various techniques, their advantages and disadvantages.

Aluminum, Gallium, Gold, Iron, Magnesium, Molybdenum, Nickel, Palladium, Silver, Tin, Titanium, Tungsten, Alloys

https://www.mrforum.com/product/crack-healing-in-metals

9781644903766, 2025, 108 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903773)



Electrocatalysts and Advanced Materials for Sustainable Energy Storage

Eds. Kalathiparambil Rajendra Pai Sunajadevi, Dephan Pinheiro, Mothi Krishna Mohan

As the world moves steadily toward renewable energy, the need for efficient, reliable, and environmentally friendly energy storage has never been greater. This book, Electrocatalysts and Advanced Materials for Sustainable Energy Storage, brings together some of the most exciting developments in this fast-evolving field. It offers readers a broad yet detailed exploration of how different materials—ranging from metal-organic frameworks (MOFs) and MXenes to carbon nanotubes, graphene, biomass-derived catalysts, and transition metal oxides—are being designed, synthesised, and optimised to power the energy systems of the future.

Energy Storage, Electrocatalysts, Advanced Materials, Sustainable Energy Storage,Metal-Organic Frameworks (MOFs), MXenes, Carbon Nanotubes, Graphene, Biomass-Derived Catalysts, Transition Metal Oxides, Supercapacitors, Renewable Biomass

https://www.mrforum.com/product/electrocatalysts-and-advanced-materials-for-sustainable-energy-storage

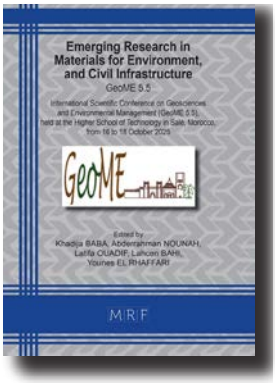
9781644903780, 2025, 182 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903797)

Emerging Research in Materials for Environment, and Civil Infrastructure

GeoME 5.5

Eds. Khadija BABA, Abderrahman NOUNAH, Latifa OUADIF, Lahcen BAHI, Younes EL RHAFFARI

The topics covered include innovative construction materials, seismic resilience, sustainable building technologies and digital approaches to heritage conservation.



3D Printed Concrete, Artificial Intelligence, Bio-Based Reinforcement, Cement Replacement, Ceramic Membrane, Clay, Concrete, Cultural Heritage, Digital Technologies, Eco-Friendly Materials, Fly Ash, Gypsum, Hydrothermal Behavior, Machine Learning, Mortar, Phase Change Materials, Random Coring, Seismic Performance, Stainless Steel, Sustainable Materials, Thermal Performance, Ultrasonic Pulse Velocity, Water Filtration

https://www.mrforum.com/product/geome2025

9781644903926, 2026, 166 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903933)

Frontiers of Chemical and Materials Engineering

ICoFCheM 2025

Eds. Teh Pei Leng, Lim Bee Ying, Ho Li Ngee, Hoo Peng Yong, Mohd Fitri bin Mohamad Wahid, Sri Raj Rajeswari Munusamy, Nur Maizatul Shima Adzali, Mohd Fitri Mohamad Wahid, Nur Hidayah Ahmad Zaidi

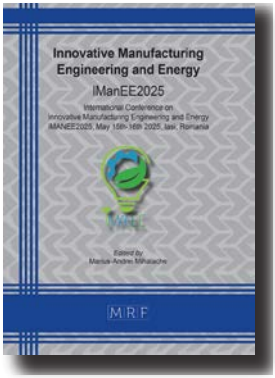
The conference focused on various topics in the fields of chemical and materials engineering: Ferrous Metallurgy, Aluminium Alloys, Powder Metallurgy, Hydrogen Production, Biodegradable Magnesium, Magnesium Nanocomposites, Reinforced Carbon Nanomaterials.

Pyrolyzed Palm Kernel Shell (PKS), Banana Fiber, Tool Steel for Blade Application, Polyurethane Degradation, Deep Eutectic Solvents, Dye Removal

https://www.mrforum.com/product/icofchem2025

9781644903964, 2026, 124 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903971)

Innovative Manufacturing Engineering and Energy



IMANEE2025

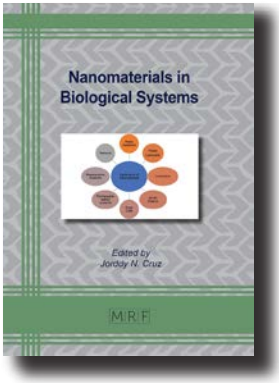
Ed. Marius-Andrei Mihalache

The conference focuses on topics such as Additive Manufacturing, Advanced Manufacturing Processes, Industry 4.0 / 5.0, Smart Manufacturing, Mechanical Engineering, Mechatronics and Robotics. It emphasizes the convergence between digitalization, automation, human-centric design, and sustainable engineering practices. Furthermore, the conference encourages interdisciplinary dialogue and promotes ideas between materials science, process engineering, digital tools, control systems, artificial intelligence, and robotics.

Machining AL-LI alloy, Medical Device Industry, 3D Printing, MIG and TIG Welding Technologies, Micro DLP Printing, Friction Stir Welding, Thermoplastic Polymers, Management of New Product Development, CNC Machining, Advanced Imaging Techniques, CAD Parametric Modeling

https://www.mrforum.com/product/imanee2025

9781644903988, 2026, 98 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903995)



Nanomaterials in Biological Systems

Interactions Between Nanoparticles and Macromolecules

Ed. Jorddy N. Cruz

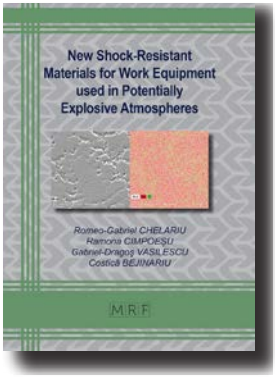
The book presents a collection of works that collectively illuminate the multifaceted nature of nanoparticle research and its profound implications for life sciences.

Nanomaterials in Biological Systems, Woman Body, Drug Delivery, Wound Healing, Cancer Cells, Anti-Inflammatory Studies, Ethical Considerations

https://mrforum.com/product/nanomaterials-in-biological-systems

9781644903841, 2026, 190 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903858)

New Shock-Resistant Materials for Work Equipment used in Potentially Explosive Atmospheres



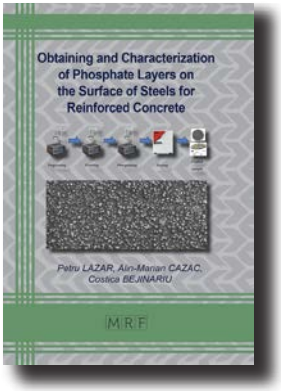
Romeo-Gabriel CHELARIU, Ramona CIMPOEȘU, Gabriel-Dragoş VASILESCU, Costică BEJINARIU

The book covers current research on topics, such as non-sparking alloys, chemical composition determination, analysis of CuAlBe alloys, and analysis of CuTi alloys as an alternative to existing non-sparking alloys.

New Shock-Resistant Materials, Hazardous Explosive Environments, Friction Spark Accidents, Chemical Composition Determination, Analysis of Experimental CuTi Alloys

https://www.mrforum.com/product/new-shock-resistant-materials-for-work-equipment

9781644903865, 2026, 108 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903872)



Obtaining and Characterization of Phosphate Layers on the Surface of Steels for Reinforced Concrete

Petru LAZAR, Alin-Marian CAZAC, Costica BEJINARIU

The book reviews recent research in the area of phosphate layers on surfaces of steel. Focus is placed on the morphology and structure of such layers and on their characterisation and corrosion behavior.

Phosphate Layers, Phosphating Morphology and Structure, Properties Characterisation, Corrosion Behaviour, Steels For Reinforced Concrete

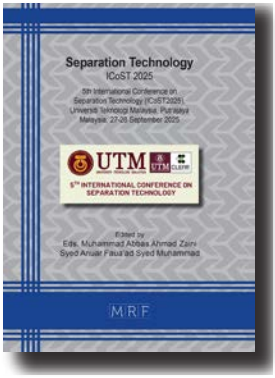
https://www.mrforum.com/product/obtaining-and-characterization-of-phosphate-layers

9781644903803, 2025, 108 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903810)

Separation Technology

ICoST 2025

Eds. Muhammad Abbas Ahmad Zaini, Syed Anuar Faua'ad Syed Muhammad

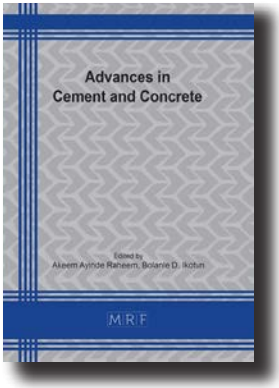


The theme of this conference was 'Exploring Frontiers in Separation and Purification.' The papers refer to recent breakthroughs, novel methodologies and transformative ideas that collectively push the boundaries of separation and purification technology.

Metal Extraction from E-Waste, Conversion of Defatted Microalgae, Conversion of Biomass into Bio-Oil, Activation of Palm Kernel Shell Carbon, Removal of Cationic Dyes, Adsorptive Removal of Tetracycline in Aqueous Solution, Biogas Production, Functional Chitosan Thin Films, Oleoresin from Syzygium Aromaticum, Antioxidant and Anti-Inflammatory Potentials, Dye Removal, Biogas Purification, Biodegradable Alginate/Zirconia Aerogels, Palm Oil Sterilizer Condensate, Synthesis of Silver Nanoparticles, Palm Oil Solid Condensate

https://www.mrforum.com/product/icost2025

9781644903940, 2026, 218 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903957)



Advances in Cement and Concrete

Eds. Akeem Ayinde Raheem, Bolanle D. Ikotun

The book reports recent research in the production, processing, analysis and testing of cement and concrete materials. Topics include the development of green building materials, synthesis and applications of nanoparticles, self-healing and self-sensing cement composites and High-Performance Concrete (HPC).

Wood Ash, Nanosilica, Rice Husk Ash, Bio-Fibrous Concrete, Hollow Sandcrete Blocks, Metakaolin-Blended Cement Mortar, Pozzolanic Materials, Waste Paper Sludge Ash, Crushed Glass Waste, Self-Compacting Concrete, Reinforced Concrete Buildings, Bamboo Leaves Ash, Laterized Concrete, Blast Furnace Slag

https://www.mrforum.com/product/advances-in-cement-and-concrete

9781644903520, 2025, 176 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903537)

Advances in Healthcare and Nanoparticle Toxicology

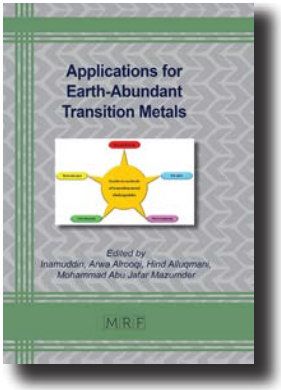
Ed. Jorddy Neves Cruz

The capacity of nanoparticles to interact with biological systems at the molecular and cellular levels has led to revolutionary advancements in medicine and the environmental sciences. This book focuses especially on the multifaceted roles of nanoparticles in the areas of health and disease.

Photoresponsive Nanoparticles, Cancer Treatments, Bacteria, Viruses, Wound Restoration, Inflammation Control, Nucleic Acids, Lipids, Cell Membranes, Endothelial Cells, Genotoxicity, Carcinogenicity

https://mrforum.com/product/healthcare-and-nanoparticle-toxicology/

9781644903322, 2024, 284 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903339)



Applications for Earth-Abundant Transition Metals

Eds. Inamuddin, Arwa Alrooqi, Hind Alluqmani, Mohammad Abu Jafar Mazumder

Earth-abundant transition metals - such as iron, copper, manganese, cobalt, and nickel - offer viable alternatives to expensive noble metals commonly used in the fields of catalysis, environmental science, materials chemistry, pharmaceuticals, and sustainable energy. The book presents a comprehensive compilation of recent studies that leverage the potential of these metals across various industries.

Catalysts, Solid Propellants, Therapeutics, Solar Cells, Supercapacitors, Chemical Sensors, Water Treatment, Hydrogen Production, Hydrogen Evolution

https://www.mrforum.com/product/applications-for-earth-abundant-transition-metals

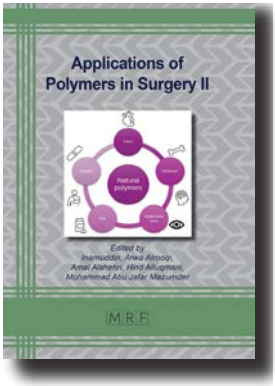
9781644903704, 2025, 410 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903711)

Applications of Polymers in Surgery II

Eds. Inamuddin, Arwa Alrooqi, Amal Alshehri, Hind Alluqmani, Mohammad Abu Jafar Mazumder

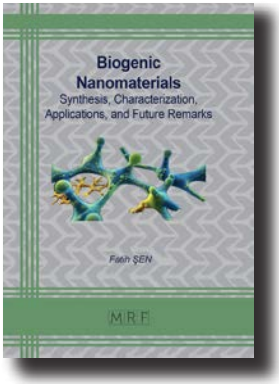
Polymers permeate nearly every aspect of life, including biomedical applications and energy storage devices. The present book explores the diverse applications of polymers in advanced medical surgery; ranging from tissue engineering, wound dressings, and implanted medical devices to blood vessel reconstruction, drug delivery and dentistry.

Printed Polymers, Sealants, Adhesives, Surgery Implants, Cardiovascular Surgery, Neurosurgery, Orthopedic Surgery, Tissue Engineering, 3D Printed Scaffolds, Dosage Forms, Drug Delivery, Wound Care, Implant Devices, Retinal Prosthesis, Vascular Applications, Human Health, Dentistry, Blood Vessels



https://www.mrforum.com/product/polymers-in-surgery2

9781644903346, 2025, 472 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903353)



Biogenic Nanomaterials

Synthesis, Characterization, Applications, and Future Remarks

Fatih ŞEN

The book presents a comprehensive review of synthesis methods, characterization techniques, and cutting-edge applications for biogenic nanomaterials.

Biomimetic Nanomaterials, Diagnostic Methods, Drug Delivery, Dentistry, Surgery, Pregnancy, Tumor Targeting Peptides, Chemotherapeutic Materials, Wastewater, Hydrogen Storage, Fuel Cell, Orthopaedics, Dermatology , Biochips, Cytotoxic Effects, Genotoxic Effects, Energy conversion

https://www.mrforum.com/product/biogenic-nanomaterials

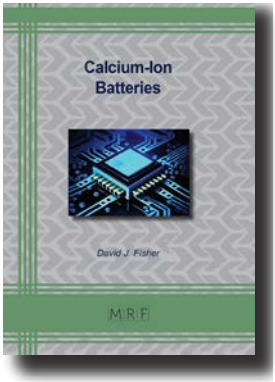
9781644903742, 2025, 446 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903759)

Calcium-Ion Batteries

David J. Fisher

Due to the limited availability of lithium in the world, there is much research on the possibility of using calcium instead of lithium. Calcium is 2500 times more plentiful than lithium. The book reviews resent research on identifying suitable electrode and electrolyte materials based on calcium ions. It references 167 original resources with their direct web links for in-depth reading.

Multivalent Batteries, High Energy-Density, Rechargeable Electrodes, Ion Diffusion, Intercalation Electrode Materials, Reversible Calcium-Exchange, Power Output, Safety, Toxicity, Cost-Effectiveness



https://www.mrforum.com/product/calcium-ion-batteries

9781644903483, 2025, 112 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903490)

Composite Materials

SEAJCCM2024

Eds. Norhayani Othman, Lin Feng Ng, Pui San Khoo, R.A. Ilyas, Mohd Yazid Yahya

This conference focussed on advanced manufacturing, applications and recent developments in the field of composite science and technology. The topics covered include natural fibres, mineral filler/recycling polymer composites, advanced metal matrix composites, fabric/film/rubber/polymer, and advanced polymer composites.

Geopolymer Membrane, Non-Fired Clay Brick, Food Waste Composting, Solar Photovoltaic Farms, Nanocellulose-Based Adsorbents, Microcrystalline Cellulose, Steel-Polypropylene Composite, Geopolymer Membrane, Non-Fired Clay Brick, CO2 Emissions, Wastewater, Microcrystalline Cellulose, Polyethylene/Thermoplastic Starch Blends, Reinforced Concrete, Emulsion Liquid Membrane Systems, Grain Evolution in CuAl and CuAlSi Alloys.

https://www.mrforum.com/product/seajccm2024

9781644903629, 2025, 132 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903636)

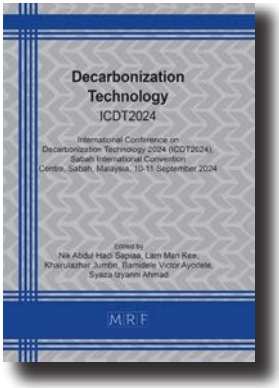
Decarbonization Technology

ICDT2024

Eds. Nik Abdul Hadi Sapiaa, et al.

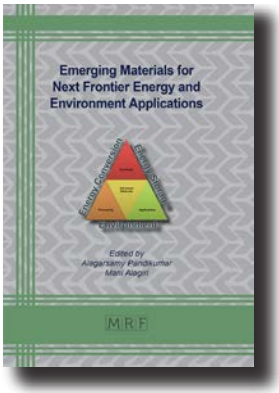
The Proceedings of the International Conference on Decarbonization Technology (ICDT2024) cover a wide range of topics, including Hydrogen, Solar and Thermal Energy, Biomass and Biofuel, Carbon Capture and Utilization, Green Processes and Materials, and Carbon Offsets and Accounting.

Hydrogen Production, Bioethanol, Lithium Recovery, Gas Separation, Refrigeration Oils, Microwave Heating, Rubber Waste Tyre, CO2 Adsorption, Nanofluids, Hybrid Supercapacitor, CO2 Hydrogenation, Oil Palm Wastes, Methanol Production, Biogas Upgradation, Bacterial Nanocellulose Foam, Polymer Aerogel, Marine Farm, Palm Kernel Oil, Lithium-ion Batteries, Beverages for Astronauts, Simulation Software, Blue Energy, Carbon Capture and Storage, Nuclear Fusion, Quantum Chemistry, Porous Media, Carbon Quantum Dots



https://www.mrforum.com/product/icdt2024

9781644903568, 2025, 668 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903575)



Emerging Materials for Next Frontier Energy and Environment Applications

Eds. Alagarsamy Pandikumar, Mani Alagiri

This book focuses on (1) photocatalysis in environment remediation, i.e. the removal of pollution or contaminants from water, (2) electrode materials for electrocatalytic hydrogen production and supercapacitors, and (3) hydrogen generation and storage. The electrocatalytic hydrogen evolution reaction turns out to be a very effective method for converting sustainable energy into a clean energy carrier.

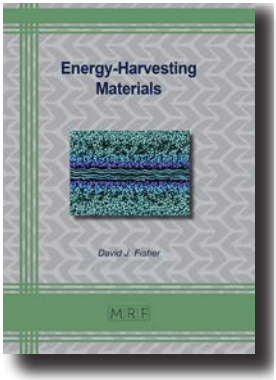
Supercapacitors for Energy Storage, Photocatalysis, Electrode Materials, Biomass Derived Carbon, MOF Electrode Material for Supercapacitors, Transition Metal Oxides, Transition Metal Chalcogenides

https://mrforum.com/product/emerging-materials-energy-and-environmen-applications/

9781644903285, 2024, 174 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903292)

Energy-Harvesting Materials

David J. Fisher

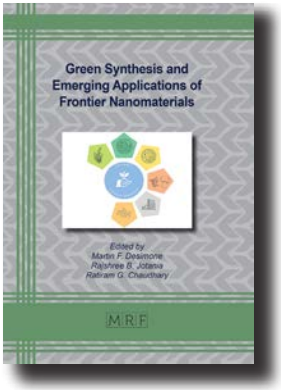


Energy harvesting refers to the derivation of energy from a great number of sources, such as solar energy, wind energy or the kinetic energy that is present in a car in motion and can be recuperated when we step on the brakes. The book presents examples of energy-harvesting which involve only imperceptible effects on the user, or which involve large-scale phenomena where individuals are not involved. The former choice has come to center largely on the use of nanomaterials, piezoelectricity and tribo-electricity to harvest the energy involved in a wide range of everyday activities that encounter vibrations, impacts, etc. The book references 200 original resources with their direct web links for in-depth reading.

Triboelectric Harvesters, Piezoelectric Harvesters, Waste-heat Harvesting, Vibrational Energy-Harvesting, Microelectromechanical Sensor, Eutectogels for Flexible Electronics, Thermal-Energy Storage, Hydrogen-Storage, Photocatalytic Water-Splitting, Natural Rubber Composites, Dielectric Elastomers, Salinity-Harvesting, Ultra-Strong Nanocomposite Membrane

https://www.mrforum.com/product/energy-harvesting-materials

9781644903667, 2025, 120 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903674)



Green Synthesis and Emerging Applications of Frontier Nanomaterials

Eds. Martin F. Desimone, Rajshree B. Jotania, Ratiram G. Chaudhary

The book presents a comprehensive overview of the latest advancements in the eco-friendly synthesis, characterization and potential application of various advanced nanomaterials.

Green synthesis and Bio-inspired Fabrication; Biomedical, Environmental and Agricultural Applications; Silica, Silver, Iron, Zinc, Copper, Nickel, Ceria, Carbon Nanotubes, Zirconium, Rhodium, Quantum Dots, Titanium, Bismuth, Gold

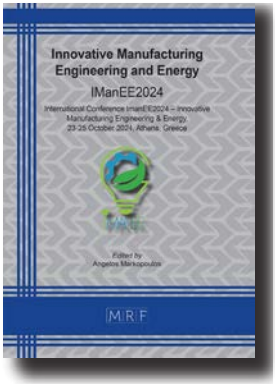
https://mrforum.com/product/green-synthesis-and-emerging-applications-of-frontier-nanomaterials/

9781644903261, 2024, 408 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903278)

Innovative Manufacturing Engineering and Energy

IManEE2024

Ed. Angelos Markopoulos



The key contributions of this conference focused on “3D Printing Multifunctional Materials and Advanced Composites”, “From 3D Printing to Biomedical Applications, ”Ultraprecision Machining of Freeform Surfaced Components and Devices”, “Nanoparticle-Enhanced Fluids” and “Manufacturing Computationally Designed Wearables via 3D Printing”.

Carbon Fibre Reinforced Thermoplastic, 3D Printing, Laser Melting in a Powder Layer, TiO2-ABS Composite Filaments, Cutting Tools, Spinning Tool, Cold Plastic Deformation, Ideas Diagram Method, Surface Roughness, Automatic Real-Time Detection, Electrochemical Discharge Drilling, Digital Twins, Metallised Plastic Products, Milling Process, Tube Extrusion, Shear Banding, Laser Machining, Mutually Intersecting Surfaces, ZnMg-Y Biodegradable Alloy, Deep Cryogenic Treatment, Recycled Carbon Fibre, Incremental Deformation, Wear Resistance of Surface Layers, Artificial Intelligence, Digital Modeling, Pressure Pipe, Smart Manufacturing, Noise Reduction, 3D Visualization

https://mrforum.com/product/IManEE2024/

9781644903360, 2024, 452 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903377)

Italian Manufacturing Association Conference

XVII AITeM

Eds. Livan Fratini and Luca Settineri

The book covers transformation processes of products, from production to assembly, from testing to recycling: (1) mechanical and technological characterisation of the transformed materials; (2) methodologies and tools for designing transformation systems, processes, and components; (3) programming, management and control of production, assembly, testing, and recycling systems; (4) quality management and environmental safeguard management for sustainable development.

Quality Engineering, Production Metrology Additive Manufacturing, Reverse Engineering, Materials Processing, Manufacturing Processes Design, Assembly, Disassembly and Circular Economy, Process and System Simulation, Digital Manufacturing

https://www.mrforum.com/product/XVIIAITeM

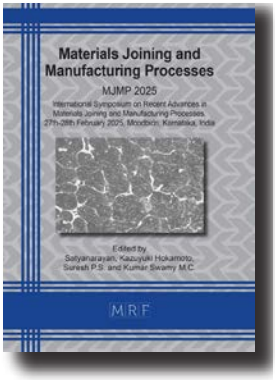
9781644903728, 2025, 688 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903735)

Materials Joining and Manufacturing Processes

MJMP 2025

Eds. Satyanarayan, Kazuyuki Hokamoto, Suresh P.S. and Kumar Swamy M.C.

The book presents latest results in the areas of materials joining, additive manufacturing, interface materials, fastening technology, coating technology, welding, brazing and soldering, composite manufacturing, and simulation techniques.



Cobalt-Chromium Alloy, Aluminum-Tin Bearing Material, Internal Cooling System, 3D Printed Specimens, Explosive Welding, Equipment-Dependent Forging, Dye/Fluorescent Penetrant Testing, Glass Fiber Epoxy Laminates, Machine Learning, Glass Fibre Epoxy Resin Composites, Additive Manufacturing, Explosive Welding, Ultrasonic Vibration, Aluminum Alloy Reinforced with Graphene Nano-platelets, Microwave Butt Welded MONEL 400, Taguchi Method, Joining of Aluminum Tube to PVC Pipes, Lead-free Solders, Thermal Spray Coatings, Thermal Interface Material, Composites Reinforced with Sawdust

https://www.mrforum.com/product/mjmp2025

9781644903605, 2025, 174 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903612)

Mechanical Engineering for Sustainable Development

ISME-2024

Eds. Amit Pal, Vijay Gautam, Qasim Murtaza, Pravin Kumar, Rohit Sahu

The book covers four research areas: (1) Thermal and Energy Engineering, (2) Industrial Engineering and Management, (3) Computational Design and Simulations and (4) Materials and Manufacturing. Topics covered include robotics, micro-electro-mechanical systems, cryogenics, composites, and cellular and molecular biomechanics.

Green Hydrogen Economy, Renewable Energy Systems, Additive Manufacturing, Lithium-Ion Batteries, Air Pollution Control, Photothermal Material, Electric Vehicle, Cloud Computing, Wastegate Turbocharger, Machine Intelligence, Shear Deformation, Friction Stir Welding, Biogas Production, Green Combustion

https://www.mrforum.com/product/isme2024

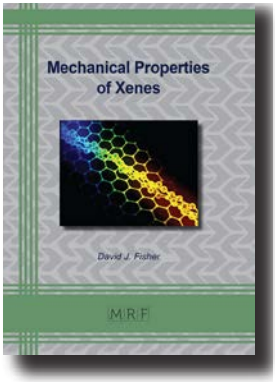
9781644903421, 2025, 590 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903438)

Mechanical Properties of Xenes

David J. Fisher

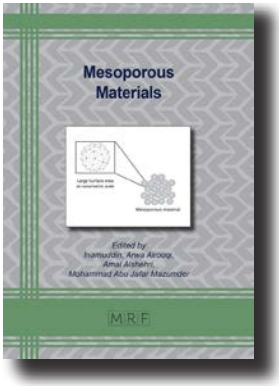
Xenes are two-dimensional monoelemental materials beyond graphene. Many of them are of interest because of their electronic properties. Their mechanical properties are surveyed in the present book, with the contents being limited to the pure element, apart from occasionally considering the involvement of hydrogen which turns the 'ene into an ane'. The book references 156 original resources with their direct web links for in-depth reading.

Xenes, Graphene, Silicene, Germanene, Stanene, Tinene, Antimonene, Indiene, Arsenene, Phosphorene, Bismuthene, Borophene, Plumbene



https://www.mrforum.com/product/mechanical-properties-of-xenes

9781644903643, 2025, 142 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903650)



Mesoporous Materials

Eds. Inamuddin, Arwa Alrooqi, Amal Alshehri, Mohammad Abu Jafar Mazumder

The book covers applications of mesoporous materials in such areas as sorption, removal, degradation of dyes, volatile organic compounds, pollutants for effective environmental remediation, healthcare and medicine, tissue engineering, diagnostic applications, size exclusion chromatography, separation techniques, high-performance catalysis, and enzyme immobilization.

Sorption of Heavy Metal Ions, Removal of Dyes, Removal of Pollutants, Liquid Chromatographic Separation, Bentonite Clay, Environmental Remediation, Solid-Phase Extraction, Electrochemical Sensing, Size Exclusion Chromatography, Separation of Biomolecules, Food Analysis, Tissue Engineering, Cosmetics, Diagnostics

https://www.mrforum.com/product/mesoporous-materials

9781644903445, 2025, 508 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903452)

Sheet Metal 2025

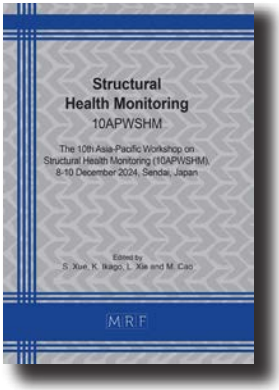
Eds. G. Meschut, M. Bobbert, J. Duflou, L. Fratini, H. Hagenah, P. Martins, M. Merklein, F. Micari

The book on sheet metals features 45 articles covering the following topics: Forming, Incremental forming, Joining, Simulation, Characterization, Polymers and composites, Machine learning, Sustainability, and Welding and additive manufacturing.

Forming, Incremental Forming, Joining, Simulation, Characterization, Polymers, Composites, Machine Learning, Sustainability, Welding, Additive Manufacturing

https://www.mrforum.com/product/shemet2025

9781644903544, 2025, 384 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903551)



Structural Health Monitoring

10APWSHM

Eds. S. Xue, K. Ikago, L. Xie, M. Cao

Structural Health Monitoring (SHM) technology has become increasingly important in civil, maritime, and aerospace applications. The present book focusses particularly on early warning systems, loss prevention, and structural safety assurance.

Damage Diagnosis, Vibration Monitoring, Wireless Monitoring, Hybrid Modelling, Structural Health Monitoring, Cracks in CFRP Laminates, Deep Learning-Based Prognostics, Low-Velocity Impacts, Excavation Methods, Large-Scale Geomembrane Covers, Helicopter-Gearbox Sensing, Harmonic Vibration Analysis, Seismic Control, Repeated Earthquakes, Composite Fuselage, Vibration of Long-Span Bridges, Machine Learning

https://www.mrforum.com/product/10APWSHM

9781644903506, 2025, 360 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903513)

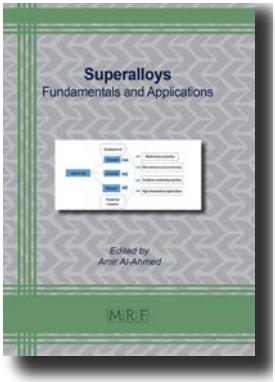
Superalloys

Fundamentals and Applications

Ed. Amir Al-Ahmed

The demand for sustainable technologies, renewable energy, and cost-effective industrial processes has drawn attention to the use of earth-abundant transition metals, such as iron, copper, manganese, cobalt, and nickel. This book aims to serve researchers working in the fields of catalysis, environmental science, materials chemistry, pharmaceuticals, and sustainable energy.

Composite Solid Propellants, Metal Oxide-based Catalysts, Pharmaceutical Industries, Therapeutics, Dye-Sensitized Solar Cells, Supercapacitors, Chemical Sensors, Water Treatment, Hydrogen Production, Petrochemistry



https://www.mrforum.com/product/superalloys-fundamentals-and-applications

9781644903681, 2025, 374 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903698)

Terotechnology XIII

Eds. Norbert Radek, Agnieszka Szczotok

The book presents recent advances in the technology of installation, commissioning, maintenance, replacement, and removal of plant machinery and equipment, feedback on operation and design, and related subjects and practices.

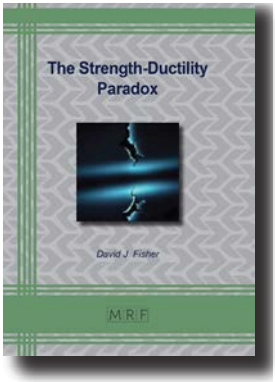
Fibre Prestressing, Hierarchical Robotic System, Environmental Pollution, Casting Processes, EU and US Legal Frameworks, Machine Learning Models, Forecasting for Supply Chain Applications, Bio-inspired Algorithms, Resistance to the Effects of Explosions, Armor Technologies, Control of Aerial Drones, Concentrated Energy Beams

https://mrforum.com/product/terotechnology-XIII/

9781644903308, 2024, 310 pages, full color SC book, USD 140.00, also available as eBook PDF (9781644903315)

The Strength-Ductility Paradox

David J. Fisher

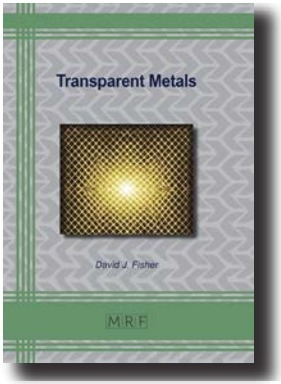


The strength-ductility paradox originally referred to the fact that the plasticity of titanium is improved when subjected to high-pressure torsion. This is also known as the SPD-paradox, where SPD is the initialism of severe plastic deformation. Today, we know that short-term annealing of the deformed material increases the strength and ductility simultaneously. The same phenomenon is also observed in other pure metals, in alloys and in metal-matrix composites. The book reviews the strength-ductility paradox in a wide range of materials, and the range of mechanisms involved. The book references 119 original resources with their direct web links for in-depth reading.

Severe Plastic Deformation, Pure Metals, Non-Ferrous Alloys, Ferrous Alloys, High Entropy Alloys, Composites

https://mrforum.com/product/strength-fuctility-paradox

9781644903223, 2024, 118 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903230)



Transparent Metals

David J. Fisher

There is much current interest in transparent metallic materials. These are optical materials based upon photonic band-gap structures which are created by combining films of metals and dielectrics. Transparent materials are used to produce devices having electrically variable optical properties. Such photonic devices exhibit increased speeds of operation, reduced size and increased immunity to temperature changes. The book references 202 original resources with their direct web links for in-depth reading.

Solar Cells, Optoelectronic Devices, Photonic Band-Gap Structure, Light-Emitting Diodes, Metal-Polymer Hybrid Nanostructure, Ultra-Thin Gold Electrode, Transparent Metal Electrode Materials, Transparent Heaters, Silver Nanowire Electrodes

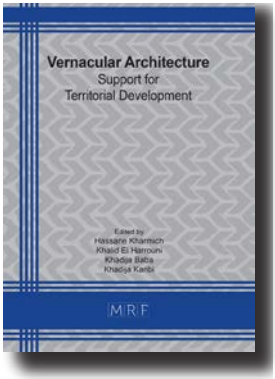
https://www.mrforum.com/product/transparent-metals

9781644903469, 2025, 116 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903476)

Vernacular Architecture

Support for Territorial Development

Eds. Hassane Kharmich, Khalid El Harrouni, Khadija Baba, Khadija Karibi



Vernacular architecture refers to regional buildings. It utilizes resources from the region in which the buildings are situated. This type of architecture reveals a collective heritage, embodying the diversity and richness of natural, human, and socio-cultural contexts. Vernacular architecture thus is the result of ancestral knowledge in the use of local materials and pure craft techniques. The book focuses on four topics: (1): Richness and diversity of forms of expression; (2) Restoration issues and revitalization challenges, (3) Natural risks and resilience, and (4) Vernacular architecture as a source of inspiration and a lever for development.

Coastal Vernacular Architecture, Climatic and Cultural Challenges, Intellectual Representations, Traditional Earthen Architecture, Environment and Restoration, Thermal Storage Materials, Arid Environments, Heritage Preservation, Biopolymer Composite Materials, Hydrography, Tented Living, Seismic Hazards, Seismic Resilience, Bio-Sourced Materials, Geophysical Characterization, Sustainable Territorial Design, Solar Collector, Thermal Storage, Rammed Earth Buildings, Resilient Architecture, Energy-Efficient Buildings, Hydraulic Networks

https://mrforum.com/product/vernacular-architecture/

9781644903384, 2025, 378 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903391)

Aerospace Science and Engineering

IV Aerospace PhD-Days

Eds. Andrea Alaimo, Antonio Esposito and Marco Petrolo

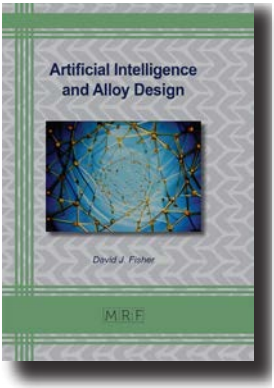
The Aerospace PhD Days are organized by the Italian Association of Aeronautics and Astronautics, AIDAA, and are open to PhD students working on Aerospace Science and Engineering topics. The 2024 proceedings edition has 42 presentations, with authors from more than ten institutions, including delegates from China, Germany, Lithuania, and Switzerland. Many aerospace disciplines and topics were covered, such as fluid dynamics, structures, stratospheric balloons, maintenance and operations, UAV, dynamics and control, space systems, sustainability of aeronautics and space, aeroelasticity, multiphysics, space debris, aeroacoustics, navigation and traffic management, additive manufacturing, and human-machine interaction.

Luid Dynamics, Structures, Stratospheric Balloons, Maintenance and Operations, UAV, Dynamics and Control, Space Systems, Sustainability of Aeronautics and Space, Aeroelasticity, Multiphysics, Space Debris, Aeroacoustics, Navigation and Traffic Management, Additive Manufacturing, Human-Machine Interaction

https://www.mrforum.com/product/iv-aerospace-phd-days

9781644903186, 2024, 206 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903193)

Artificial Intelligence and Alloy Design



David J. Fisher

The development of novel materials can be greatly accelerated by Artificial Intelligence based on high-throughput automatic computation and data-mining of material databases. Artificial intelligence can be used to predict the properties of alloys, based simply upon their composition. The book references 343 original resources with their direct web links for in-depth reading.

Machine Learning, Artificial Neural Network, Back-Tracking Algorithm, Bat Algorithm, Bayesian Regularization, Chimp Optimization Algorithm, Regression Tree, Firefly Algorithm, Genetic Algorithm, Gradient Boosting Decision Tree, Grey Wolf Algorithm, Half-Heusler Alloys, Hume-Rothery Rules, Jaya Algorithm, Johnson-Cook Model, Random Forests, Sparrow Model, Whale Optimization Algorithm, XGboost Algorithm

https://www.mrforum.com/product/artificial-intelligence-and-alloy-design

9781644903148, 2024, 126 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903155)

Metal Forming 2024

Eds. Danuta Szeliga, Krzysztof Muszka

The book covers a great range of topics, including (1) Incremental forming and metal forming of 3D printed materials; (2) numerical modeling of processes and systems; (3) material characterization techniques for predicting microstructure evolution and mechanical properties during or after thermomechanical processing; (4) constitutive and numerical modeling, as well as process and system optimization. The materials covered include metal powders, lightweight systems, advanced high-strength steels, multiphase materials, and high-entropy alloys.

Materials Forming, Numerical Modeling, Material Characterization, Thermomechanical Processing, Process Optimization, Metal Powders, Lightweight Systems, High-Strength Steels, Multiphase Materials, High-Entropy Alloys

https://mrforum.com/product/metal-forming-2024

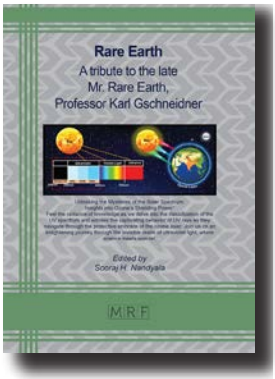
9781644903247, 2024, 796 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644903254)

Rare Earth

A tribute to the late Mr. Rare Earth, Professor Karl Gschneidner

Ed. Sooraj H. Nandyala

This monograph represents a tribute to the late Prof. Karl Gschneidner, well known as "Mr. Rare Earth", distinguished Professor of Materials Science and Engineering at the Iowa State University, a Senior Metallurgist at the Ames Laboratory, and the Chief Scientist of the Critical Materials Institute. Topics covered include Rare Earth Glass Spectroscopy, Treating Skin Diseases, Prospective Rare Earth Applications, Optical Information Storage, Diagnostic Imaging, Nanoparticles in Glasses, and ZnO Nanomaterials.



Fiber Lasers, Luminescent Pathway, Forensic Applications, Rejuvenating Skin, Health Imaging, FCC Catalyst, Energy Transfer, Rare Earth Phosphors

https://www.mrforum.com/product/rare-earth

9781644903049, 2024, 376 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903056)

Renewable Energy: Generation and Application

ICREGA'24

Ed. Ala A. Hussein

The book covers the current status of renewable energy technology, such as solar, wind, hydro and geothermal power engineering and biomass conversion. It focusses on technical challenges and potential future developments in electricity generation. electrical vehicles, heating and cooling, industrial processes and rural electrification.

Solar Energy, Wind Energy, Wind Farms. Hydropower, Hydroelectric Dams, Geothermal Energy, Biomass Energy, Agricultural Residues, Organic Waste, Electricity Transportation, Global Energy Systems

https://www.mrforum.com/product/ICREGA24

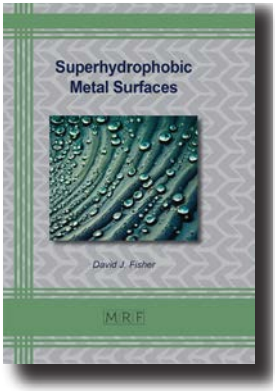
9781644903209, 2024, 394 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644903216)

Superhydrophobic Metal Surfaces

David J. Fisher

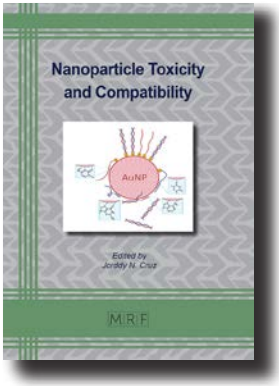
The fact that water droplets are far from wetting the surface upon which they stand leads to many associated tendencies, such as impeding fogging, icing and corrosion. The book covers the ways in which superhydrophobicity has been imparted to metals. Metals themselves tend more naturally to be hydrophilic; and so imparting superhydrophobicity relies upon adding some sort of coating. The book references 156 original resources with their direct web links for in-depth reading.

Superhydrophobicity, Aluminum, Cobalt, Copper, Iron, Magnesium, Titanium, Tungsten



https://www.mrforum.com/product/superhydrophobic-metal-surfaces

9781644903162, 2024, 108 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903179)



Nanoparticle Toxicity and Compatibility

Ed. Jorddy N. Cruz

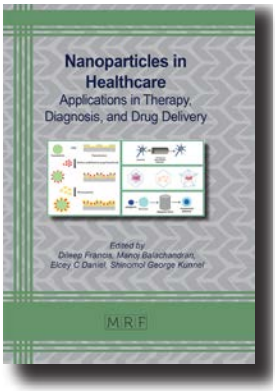
The book focuses on the interplay between nanoparticles and biological systems. Topics covered include the synthesis, characterization, and application of nanomaterials in tissue engineering; the interaction of nanoparticles with macromolecules; biomedical and food science applications; the cardiovascular toxicity of nanoparticles; colon targeted nano drug delivery systems; the biocompatibility and immunogenicity of nanoparticles; plasmon-enhanced biosensing applications; strategies for enhancing the biocompatibility of nanoparticles; the environmental impact of nanoparticles; as well as the intricate dynamics between nanoparticles and living organisms.

Tissue Engineering, Cardiovascular Toxicity, Drug Delivery Systems, Plasmon-Enhanced Biosensing, Biocompatibility of Nanoparticles, Ecotoxicology of Nanoparticles, Bioinspired Nanosynthesis, Hepatotoxicity, Nano Drug Delivery, Nanofabrication, Nanorobots, Plasmonics, Probiotics, Protein

https://www.mrforum.com/product/nanoparticle-toxicity-and-compatibility

9781644902981, 2024, 256 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902998)

Nanoparticles in Healthcare



Applications in Therapy, Diagnosis, and Drug Delivery

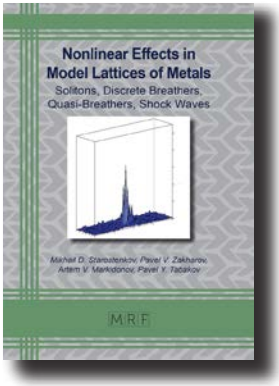
Eds. Dileep Francis, Manoj Balachandran, Elcey C Daniel, Shinomol George Kunnel

The book covers the use of nanoparticles in therapeutics, diagnostics, and drug delivery. Topics covered include nanomaterial fabrication, surface modification and applications; toxicity of plant-based nanomaterials; the use of herbal extracts; bioimaging; metal doped nanoparticles for drug delivery; nanoparticles designed for specific neurodegenerative conditions; theranostic nanoparticles in treating lung diseases; and glioma nanotherapy.

Nanoparticles, Toxicity, Plant-based Nanomaterials, Bioimaging, Diagnostic Nanotechnologies, Metal Doped Nanoparticles, Wound Healing, Neurodegenerative Diseases, Theranostic Nanoparticles, Lung Diseases, Glioma Therapy, Drug Delivery Systems

https://www.mrforum.com/product/nanoparticles-in-healthcare

9781644902967, 2024, 320 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902974)



Nonlinear Effects in Model Lattices of Metals

Solitons, Discrete Breathers, Quasi-Breathers, Shock Waves

Mikhail D. Starostenkov, Pavel V. Zakharov, Artem V. Markidonov, Pavel Y. Tabakov

The book presents an overview of nonlinear effects arising in discrete lattices of metals. Topics covered include discrete breathers, quasi-breathers, soliton waves, and shock waves.

Soliton, Discrete Breathers, Quasi-Breathers, Shock Waves, Supersonic Waves, Molecular Dynamics, Self-Organization, Nonlinearity, Dislocation Extraction Algorithm, Frenkel Pairs, Stacking Fault Tetrahedra

https://www.mrforum.com/product/nonlinear-effects-in-model-lattices-of-metals

9781644902882, 2024, 130 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644902899)

Novel Approaches in Materials and Technologies for Building Construction

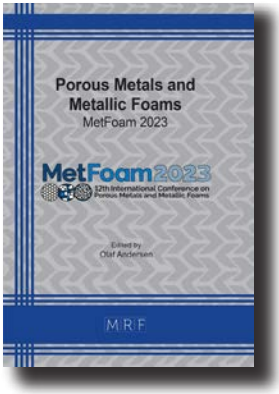
Mohammad Arif Kamal, Rupesh Manohar Surwade, Abhishek Mahendra Bangre

The book discusses the latest developments in the area of building constructions. Most of the building components such as columns, roofs and concrete blocks are available in prefabricated forms that increase the speed of construction processes. The goal is to engineer buildings that are sustainable, efficient, resilient, economically viable; and ensure the safety, health and comfort of occupants. New materials and technologies aim at energy efficiency, water conservation, improved indoor air quality, durability and low life cycle and maintenance costs.

Building Materials, Columns, Roofs, Concrete Blocks, Prefabricated Forms, Greenhouse Gas Emission, Energy Efficiency, Water Conservation, Air Quality, Life Cycle Cost, Maintenance Costs, Calcium Silicate Bricks, Autoclaved Aerated Concrete Blocks, Hydraform Interlocking Block Walling System, Reinforced Hollow Concrete Block Masonry, 3D Printing Technology, Structural Insulated Panels, Glass Fibre Reinforced Gypsum Panels, Monolithic Concrete Construction Technology, Formwork System for Building Construction, Insulated Roof, Wall Tiles, Metal Roofing System, Warehouses

https://www.mrforum.com/product/materials-and-echnologies-for-building-construction

9781644902929, 2024, 152 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644902936)



Porous Metals and Metallic Foams

MetFoam 2023

Ed. Olaf Andersen

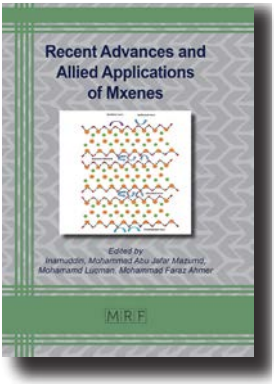
The book focuses on the production methods, properties and applications of functional and lightweight porous/cellular metallic materials. Topics covered include surface emissivity, stainless steel composite metal foam, solid-state welding, thermal conductivity of steel-steel composite metal foam, computational modeling, custom design, geometrical groperties of open-celled metal foams, aluminum foams with in situ composite particles, and metal structures in cooling systems.

Cellular Metals, Composite Metal Foam, Computational Modeling, Thermal Conductivity, Thermal Diffusivity, Energy Absorption, Metal Foam, Metal Matrix Composite, Open Cellular Structures, Power Electronics, Solid-State Welding, Surface Emissivity, Thermal Insulation, Torch Fire

https://www.mrforum.com/product/metfoam2023

9781644903087, 2024, 66 pages, full color SC book, USD 55.00, also available as eBook PDF (9781644903094)

Recent Advances and Allied Applications of Mxenes



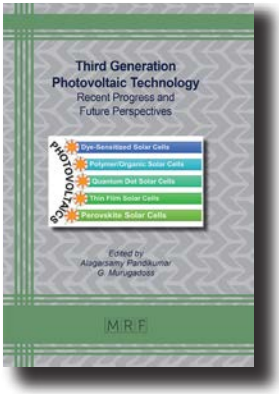
Eds. Inamuddin, Mohammad Abu Jafar Mazumd, Mohamamd Luqman, Mohammad Faraz Ahmer

Since 2011, the MAX phase derivatives MXenes are constantly expanding in terms of crystallographic and composition variability. Several advancements have been made in the previous few years that have accelerated the production of novel MXenes with better chemical diversification and crystal structures. This book is intended to present the latest applicational advancements of MXenes in diversified sectors.

MAX Phase, MXene, MXene-Based Composite, MXene Symmetric Supercapacitor, MXene Asymmetric Supercapacitor, MXene Micro Supercapacitor, MXene Transparent Supercapacitor, 2D Materials, EMI shielding, Nanophotonics, MXenes in Photodetectors, MXenes in Electrocatalysis

https://www.mrforum.com/product/applications-of-mxenes

9781644902868, 2024, 124 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644902875)



Third Generation Photovoltaic Technology

Recent Progress and Future Perspectives

Eds. Alagarsamy Pandikumar, G. Murugadoss

Third-generation solar cells (SCs) are built on inorganic nanoparticles, hybrids, or semiconducting organic macromolecules. This book focuses on dye-sensitized solar cells, polymer/organic solar cells, copper/zinc/tin sulfide thin film cells, quantum dot solar cells and perovskite-based solar cells. Specific topics covered include device architecture, interface engineering, characterization, and fabrication techniques such as spin coating, blade coating, slot-die coating, dip coating, meniscus coating, spray coating, ink-jet printing, screen printing and electro deposition.

Fullerene-Containing Polymers, Light-Sensitive Dye, Organic Solar Cells, Perovskite Film, Quantum Dots, Thin Film Solar Cells

https://www.mrforum.com/product/third-generation-photovoltaic-technology

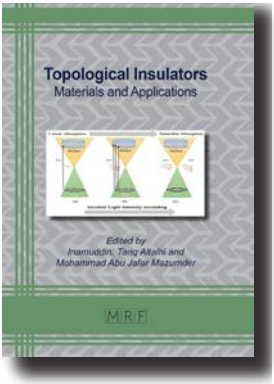
9781644903025, 2024, 174 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644903032)

Topological Insulators

Materials and Applications

Eds. Inamuddin, Tariq Altalhi, Mohammad Abu Jafar Mazumder

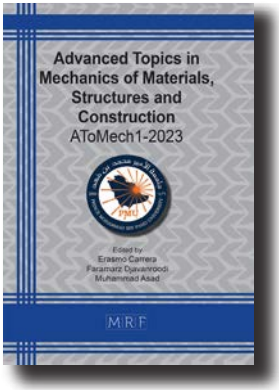
A topological insulator is an area that has yet to be fully explored and developed. The charge-induced bandgap fluctuation in the best-known bismuth-chalcogenide-based topological insulators is approximately 10MeV in magnitude. The major focus has shifted to the investigation of the presence of high-symmetry electronic bands as well as the utilization of easily produced materials. As the subject of topological insulators is still in the nascent stage, there is growing research and knowledge in the emerging field. This book is intended to provide the readers with an understanding of the needs and application of these materials.



Topological Insulators, Insulators, One-Dimensional Topological Insulators, Graphene, Magnetic Topological Insulator, Antiferromagnetic Phase, Ferromagnetic Phase, Topological Superconductor, Nonlinear Optical Behavior, Saturable Absorber, Quantum, Band Gap, Photonic Topological Insulators

https://www.mrforum.com/product/topological-insulator

9781644902844, 2024, 196 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902851)



Advanced Topics in Mechanics of Materials, Structures and Construction

AToMech1

Eds. Erasmo Carrera, Faramarz Djavanroodi, Muhammad Asad

The book presents 81 papers referring to the properties and applications of technologically important materials. Topics covered include material characterization, environmental impact, probabilistic assessment, failure analysis, vibration analysis, AI-based predictions, conceptual models, thermo-mechanical properties, numerical models, design and simulation, industrial performance and failure analysis.

https://www.mrforum.com/product/AToMech1-2023

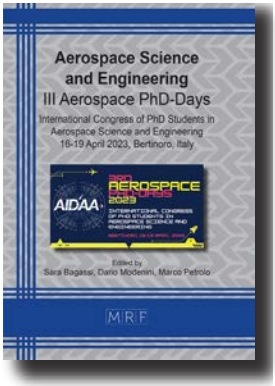
9781644902585, 2023, 834 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644902592)

Aerospace Science and Engineering

III Aerospace PhD-Days

Eds. Sara Bagassi, Dario Modenini, Marco Petrolo

The papers of this conference focus on the following topics: dynamics and control, navigation, aeroacoustics, fluid dynamics, human-machine interaction, structures, maintenance and operations, sustainability of aeronautics and space, space economy, propulsion, additive manufacturing, sensors, aerospace systems, aeroelasticity, artificial intelligence, and UAV (unmanned aerial vehicle).



Autonomous Navigation, Visual Navigation, Space Mission, Radar Detection. Aeroacoustics, Plasma Formation, Digital Technologies, Heat Transfer, Vibration Analysis, Future Passenger Aircraft, Acoustic Metamaterial Design, Highly Energetic Materials, Bistatic Radar, Helicopter Tracking, Supersonic Parachute, Dynamical Modeling, Composite Beams, Additive Manufacturing, BCC Cell Characterization, Interplanetary Trajectory Design, Thermoelastic Properties of Composites, Offner Spectrometer, Nanosatellite

https://www.mrforum.com/product/iii-aerospace-phd-days

9781644902660, 2023, 408 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902677)

Application of Artificial Intelligence in New Materials Discovery

Eds. Inamuddin, Maha Khan, Jafar Mazumder

The book is concerned with the use of Artificial Intelligence in the discovery, production and application of new engineering materials. Topics covered include nano-robots. data mining, solar energy systems, materials genomics, polymer manufacturing, and energy conversion issues.

Artificial Intelligence, Mathematical Models, Machine Learning, Artificial Neural Networks, Bayesian Analysis, Vector Machines, Heuristics, Crystal Structure, Component Prediction, Process Optimization, Density Functional Theory, Monitoring, Classification, Nano-Robots, Data Mining, Solar Photovoltaics, Renewable Energy Systems, Alternative Energy Sources, Material Genomics, Polymer Manufacturing, Energy Conversion

https://www.mrforum.com/product/application-artificial-intelligence-in-new materials-discovery

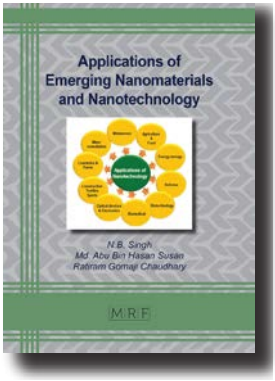
9781644902523, 2023, 146 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644902530)

Applications of Emerging Nanomaterials and Nanotechnology

Eds. N.B. Singh, Md. Abu Bin Hasan Susan and Ratiram Gomaji Chaudhary

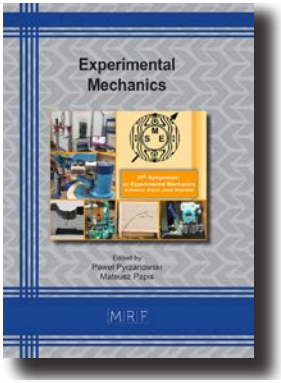
The book reviews recent developments in the field of nanomaterials science and technology. Topics covered include methods of fabrication of nanomaterials and nanocomposites, and their applications in areas such as Optoelectronics, Cosmetics, Energy Conversion Cells, Soil and Water Treatment, Agricultural Engineering, Food Sciences, Leather Production, and Photocatalysis.

Nanomaterials, Nanocomposites, Ionic Liquids, Forest Resources



https://www.mrforum.com/product/applications-of-emerging-nanomaterials-and-nanotechnology

9781644902547, 2023, 344 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902554)



Experimental Mechanics

Eds. Paweł Pyrzanowski, Mateusz Papis

The book presents the proceedings of the 29th Symposium on Experimental Mechanics. The focus of this conference was on recent experimental achievements in the mechanics of solids, machine design, mechanical engineering and biomechanics.

Long Flexible Bars, PEEK and PPSU Filaments, Sandwich Panels, Virtual Instrument Techniques, PIV Methods, Axles in Rail Vehicles, Electromechanical Coupling, Human Masticatory System, Fatigue Cracks, Relation Between Stress Amplitude and Vibration Amplitude, Data Acquisition System, Energy Harvesting, Additive Technology

https://www.mrforum.com/product/experimental-mechanics-29

9781644902561, 2023, 108 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644902578)

Italian Manufacturing Association Conference

XVI AITeM

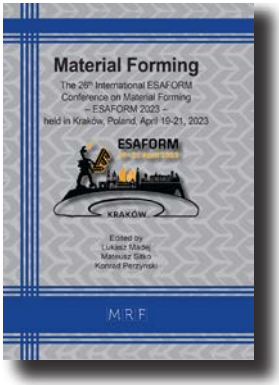
Eds. Luigi Maria Galantucci, Luca Settineri

The book presents new advances in the field of manufacturing technologies. It focuses on the design and engineering of manufacturing processes; additive manufacturing and reverse engineering; assembly, disassembly and circular processes; system simulation, optimization and digital manufacturing; and materials processing technology.

Human Robot, Short Term Production Planning, Thermoplastic Composite Components, Compostable Materials, Diffusion Bonding, Superplastic Forming, Hardening Technologies, Physical Simulation Tests, Numerical Model, Dissimilar Material Welding, Additive Manufacturing, Laser Powder Bed Fusion, Fused Deposition Modeling, Laser Sintering, Fused Filament Fabrication, Manufacturing System Laser Welding, Wind Blades, Bandsaw Machine, PVC Tubes, Submerged Arc Welding, Multi-Layered Coatings, Cryogenics, Metal Piercing, Picosecond Laser Processing, Carbon Nanotube; Fiber Reinforced Composites, Tools With Complex Geometry. Carbon/Epoxy Composite, Rheological Additives, PP/flax Fibers, Human Well-being, Extruded Rods & Pipes, Laser Welding, E-mobility, WAAM Process, Glass Fiber

https://www.mrforum.com/product/XVIAITeM

9781644902707, 2023, 514 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902714)



Material Forming

ESAFORM 2023

Eds. Lukasz Madej, Mateusz Sitko and Konrad Perzynski

These proceedings present papers on Additive Manufacturing, Composites Forming Processes, Extrusion and Drawing, Forging and Rolling, Formability of Metallic Materials, Friction and Wear in Metal Forming, Incremental and Sheet Metal Forming, Innovative Joining by Forming Technologies, Lionel Fourment MS on Optimization and Inverse Analysis in Forming, Machining and Cutting, Material Behavior Modelling, New and Advanced Numerical Strategies for Material Forming, Non-Conventional Processes, Polymer Processing and Thermomechanical Properties, Sustainability on Material Forming, and Property-Controlled Forming.

https://www.mrforum.com/product/ESAFORM2023

9781644902462 PT1, 9781644902486 PT2, 9781644902493 PT3, 2023, 2200 pages, full color SC book, USD 375.00, also available as eBook PDF (9781644902479)

Material Forming - ESAFORM 2023 - Part 1

This first part of the proceedings of ESAFORM 2023 presents 74 peer reviewed papers on Additive Manufacturing, Composites Forming Processes, Extrusion and Drawing, and Forging and Rolling.

9781644902462, 714 pages, USD 125.00

Material Forming - ESAFORM 2023 - Part 2

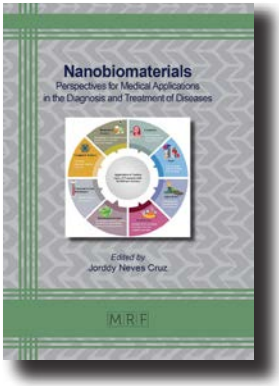
This second part of the proceedings of ESAFORM 2023 presents 73 peer reviewed papers on Formability of Metallic Materials, Friction and Wear in Metal Forming, Incremental and Sheet Metal Forming, Innovative Joining by Forming Technologies, Lionel Fourment MS on Optimization and Inverse Analysis in Forming, and Machining and Cutting.

9781644902486, 698 pages, USD 125.00

Material Forming - ESAFORM 2023 - Part 3

This third part of the proceedings of ESAFORM 2023 presents 79 peer reviewed papers on Material Behavior Modelling, New and Advanced Numerical Strategies for Material Forming, Non-Conventional Processes, Polymer Processing and Thermomechanical Properties, Sustainability on Material Forming, and Property-Controlled Forming.

9781644902493, 784 pages, USD 125.00



Nanobiomaterials

Perspectives for Medical Applications in the Diagnosis and Treatment of Diseases

Ed. Jorddy Neves Cruz

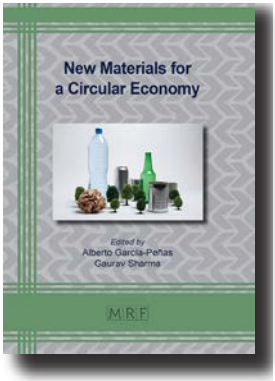
The book provides a comprehensive overview of the synthesis, characterization and potential applications of nanobiomaterials. Emphasis is placed on antimicrobial action, bone regeneration, wound treatment, cancer diagnosis, environmental cleanup and the ethical considerations of nanomedicine.

Nanomaterials, Green Chemistry, Synthesis of Nanoparticles, Characterization of Silver Nanoparticles, Antimicrobial Action, Bone Regeneration, Wound Treatment, Molecular Targets, Cancer Diagnosis, Environmental Clean-up, Ethics of Nanomedicine

https://www.mrforum.com/product/nanobiomaterials

9781644902363, 2023, 332 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902370)

New Materials for a Circular Economy



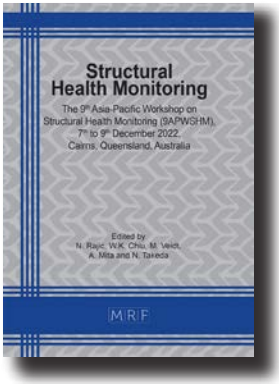
Eds. Alberto García-Peñas and Gaurav Sharma

A circular and environment-friendly economy could displace the linear economy as it is in use around the world. This would involve enlarged life cycles for products, and an increase in the efficiency of electric and electronic devices. The generation of new materials will be essential, as well as materials recycling or conversion after use. This book discusses new ways of production, management, recycling and conversion of new and regular materials.

Microplastics, Lignocellulose-Based Materials, Food Packaging, Biorefinery, Solar Energy, Reused Materials, Recycling of Plastics, Biopolymers, Composites, Polymeric Systems, CO2 Capture, Anticorrosive Polymeric Coatings, Metallic Structures, Scrap for New Steel, Nanomaterials, Waste from Electronic Components, Future of Cars, Raw Materials, Biomaterials, Bioeconomy, Circular Bioeconomy, Polymeric Electrolytes, Fuel Cells

https://www.mrforum.com/product/new-materials-for-a-circular-economy

9781644902622, 2023, 494 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902639)



Structural Health Monitoring

9APWSHM

Eds. N. Rajic, W.K. Chiu, M. Veidt, A. Mita and N. Takeda

The book presents the proceedings of the 9th Asia-Pacific Workshop on Structural Health Monitoring. With the increasing worldwide emphasis on asset sustainability, there is a trend toward Condition-Based Maintenance (CBM) and Reliability-Centred Maintenance (RCM). Both approaches require diagnostic systems which detect damage and monitor structural health and/or prognostic systems that predict the future health of a structure.

Vibration Monitoring, Railway Bridge, Strain-based Damage, Turbine Blades, Crack and Temperature Sensing, Bone Degradation, Prefabricated Concrete Frame, Impact Damage in Composites, Ferroelectric Single Crystals, Evaluation of Human Injury, Automatic Damage Assessment, Metal-Composite Plates, Osseointegration, High-rise Buildings, Acoustic Emission Source. Earthquake, Wind Turbine Rotor Blades. Smart Cables, Thermal Damages, Cement Materials, Multi-parameter Monitoring, Petri Net Model, Maintenance Strategies, Load Bearing Antenna, Thin Metal Joints, Aerospace Structure

https://www.mrforum.com/product/9APWSHM

9781644902448, 2023, 396 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644902455)

Quality Production Improvement and System Safety

QPI 16 - CZOTO 10

Eds. Robert Ulewicz, Norbert Radek, Jacek Pietraszek

Key topics include optimizing production processes, implementing visual control and management systems. Emphasis is placed on the sustainable development of production systems, the application of additive manufacturing, the implementation of cleaner production methods, and the utilization of waste materials for sustainable production practices.

Welding, Onyx Material, Joints Fabrication, High-Temperature Oxidation, Fatigue Resistance, Fiber Winding Force, Mountaineering Systems, Hydrogen Embrittlement, Corrosion, Biodegradable Materials, Thermal Stability, Concrete, Laser Metal Deposition. Paint Coatings, Efficiency Analysis, Product Incompatibility, Vane Pump, Automotive Castings, Numerical Analysis, Food Industry, Paper Industry, Commercialization of Research Results, Complaint Analysis, Quality and Safety Management, Occupational Health, Public Safety, Pandemic, Qualitative Raster Maps, Computer Image Analysis, Automated Quality Verification, Acoustic Signals, Engineering Data Processing

https://www.mrforum.com/product/qpi16

9781644902684, 2023, 496 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902691)

Superplasticity in Advanced Materials

ICSAM 2023

Ed. José María Cabrera Marrero

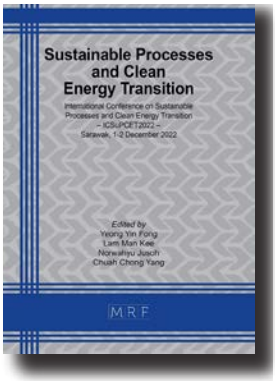
The book presents practical and theoretical works on superplasticity in metals and ceramics, on deformation mechanisms, on processes to obtain large ultrafine-grained structures, on advanced characterization techniques, and on hot deformation of advanced materials. Key papers focus on (1) processing of metallic alloys for achieving exceptional superplastic properties, (2) high-pressure sliding (HPS) processes, (3) in-situ neutron and synchrotron methods, and (4) ultra-severe plastic deformation.

Superplasticity, Superfunctionality, High-pressure Sliding, High-pressure Torsion, Precise Forming, Numerical Simulation, Aeronautical Parts, Near-unconstrained Superplastic Parts, Low-temperature Superplasticity, Friction Stir Processing, Microstructure Evolution, Corrosion Properties, Duplex Stainless Steel, Grain Boundary Sliding, Laminated Materials, Asymmetric Hot Rolling, Uniaxial Hot Pressing, Diffusion Bonding

https://www.mrforum.com/product/ICSAM2023

9781644902608, 2023, 390 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902615)

Sustainable Processes and Clean Energy Transition



ICSuPCET2022

Eds. Yeong Yin Fong, Lam Man Kee, Norwahyu Jusoh, Chuah Chong Yang

The book presents the proceedings of the International Conference on "Sustainable Processes and Clean Energy Transition" (2022).Topics covered include Biomass and Biofuel, Green Processes and Materials, and Safety and Energy Systems.

Palm Oil, Acid Gases, Syngas, Graphitic Carbon Nitride, Bioactive Compounds, Carbon Fiber Reinforced Plastics, Saline Water, Synthesis of Mxene, Bioethanol Production, Urea Fertilizer, Synthetic Wastewater, Porous Media, Palm Kernel, Biodiesel Purification, Lignocellulose, Human Reliability Assessment, Flax/Elium Biocomposites, Geopolymer, Energy Generation, Recycling of Lithium-ion Batteries, Arsenic Removal from Water, Gas Turbine Combustion, Machine Learning Models, Chicken Eggshell, Agriculture Biomass, Carbon/Graphene Electrodes, Blood Mimicking Fluid, Computational Study, Catalytic Microwave Heating, Freezing Point Depression, Petroleum Refinery, Safety Assessment, Flammability Parameter, Urea Granule Fertilizer, Paint & Coating, Methane, Catalyst for Syngas Production, Bacterial Biomass. Graphene Nanoplatelets, Nafion, Resource Assessment, Ultra-fine Friction Grinding, Renewable Energy Policy

https://www.mrforum.com/product/ICSuPCET2022

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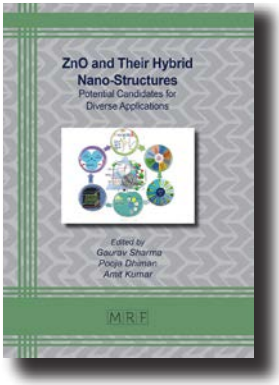


ZnO and Their Hybrid Nano-Structures

Potential Candidates for Diverse Applications

Eds. Gaurav Sharma, Pooja Dhiman, Amit Kumar

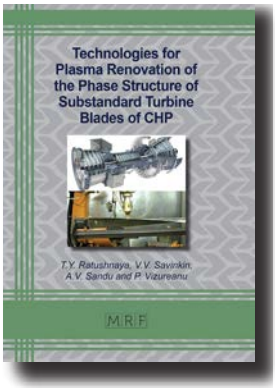
ZnO and its hybrid nanostructures have unique optical, physical and chemical properties. The book covers recent trends in processing techniques and applications. Topics include solar cells, photo-voltaic devices, fuel cells, uv filters, lasers, light-emitting diodes, photo-detectors, spin-tronic devices, magnetic semiconductors, nano-generators, piezotronics, photo-catalytic applications against harmful organic pollutants like dyes, heavy metals, antibiotics, and sensors such as bio sensors, chemical sensors, gas sensors.

ZnO, Nano ZnO, Point Defects, Magnetic Semiconductors, Hybrid Nanostructures, Cell Applications, Nanoadsorbant for Heavy Metal Removals, Diagnostics, ZnO Nano-Carriers, ZnO Thin Films Fabrication

https://www.mrforum.com/product/zno-hybrid-nanostructures

9781644902387, 2023, 330 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902394)

Technologies for Plasma Renovation of the Phase Structure of Substandard Turbine Blades of CHP



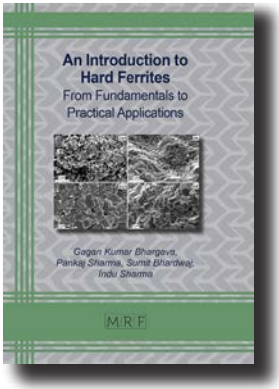
T.Y. Ratushnaya, V.V. Savinkin, A.V. Sandu and P. Vizureanu

The book contains a comprehensive and interdisciplinary study in the field of plasma recovery of substandard CHP (Combined Heat and Power) turbine blades. The advantages and disadvantages of recovery methods are presented, as well as the traditional methods that are used in production, and the latest technical advances.

Turbine Blades, Energy Efficiency, Productivity, Types of Failures, Mathematical Description of Dynamic Processes, Quality Indicators for Blades of Complex Geometry, Steam and Gas Turbines, Recovery of the Phase Structure, Gas-Air Path of the Plasmatron

https://www.mrforum.com/product/technologies-for-plasma-renovation

9781644902646, 2023, 98 pages, full color SC book, USD 80.00, also available as eBook PDF (9781644902653)



An Introduction to Hard Ferrites

From Fundamentals to Practical Applications

Eds. Gagan Kumar Bhargava, Pankaj Sharma, Sumit Bhardwaj, Indu Sharma

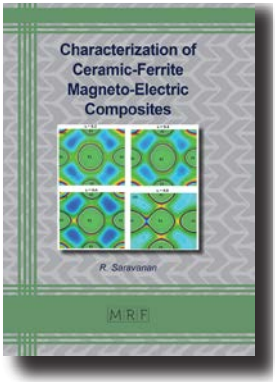
Due to their excellent magnetic characteristics, hard ferrites have many high-tech applications in such areas as permanent magnets, storage devices, HF Antenna and Spin Transmission. The present book reviews the present knowledge of these materials; their processing, characterization and potential applications. The book is also useful as an introductory text for students at the postgraduate research level.

Hard Ferrites, Synthesis, BaFe12O19, SrFe12O19, Magnetization, Miniaturization, EMI Shielding, Ferrofluids, Nanomaterials, Nano-Floating Gate, Permanent Magnets, Recording Media, High-Frequency Antenna, Radar Applications, Memory Devices. Spin Transmission, Spinel Model, Synthesis Methods

https://www.mrforum.com/product/introduction-to-hard-ferrites

9781644902301, 2023, 218 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902318)

Characterization of Ceramic-Ferrite Magneto-Electric Composites



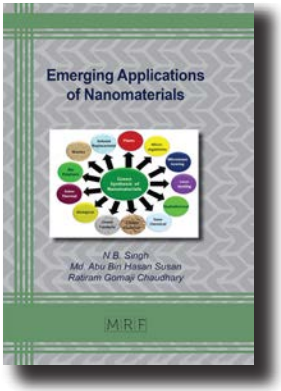
R. Saravanan

Magneto-electric ceramic composites are important materials for designing new microwave sensors (e.g. field probes) and devices such as filters, attenuators, capacitive resonators, gyrators and devices for medical applications. The book presents new research results for the following composite systems: (1-x) BaTiO3 + x NiFe2O4 II (1-x); BaTiO3 + x ZnFe2O4; (1-x) BaTiO3 + x CoFe2O4 and (1-x) BaTiO3 + x MgFe2O4.

Magneto-Electric Composites, Powder X-ray diffraction (PXRD), Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDS), UV-Visible Spectrophotometry (UV-Vis), Electrical (Dielectric and P-E) Characterization, Magnetic Characterization (M-H), Structural Parameters, Morphological Studies, Elementary Analysis, Optical Studies, Electrical Studies, Magnetic Studies, Charge Density Analysis

https://www.mrforum.com/product/ceramic-ferrite-magneto-electric-composites

9781644902189, 2023, 138 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902196)



Emerging Applications of Nanomaterials

Eds. N.B. Singh, Md. Abu Bin Hasan Susan and Ratiram Gomaji Chaudhary

This book reviews new advances in the field of nanomaterials; their synthesis, characterization, and applications. Specific topics include nanomaterials as catalysts, photodegradation of organic pollutants, multifunctional textiles, self-healing hydrogels, nanosensors for the detection of pathogens, machine learning based prosthesis, and various applications in the sports industry, the automobile sector, the area of defence and security, pharmaceuticals, energy storage and food packaging.

Nanomaterials, Catalysts, Photodegradation, Organic Pollutants, Multifunctional Textiles, Self-Healing Hydrogels, Nanosensors, Detection of Pathogens, Prosthesis, Pharmaceuticals, Energy Storage, Food Packaging

https://www.mrforum.com/product/emerging-applications-of-nanomaterials

9781644902288, 2023, 380 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902295)

Emerging Nanomaterials and Their Impact on Society in the 21st Century

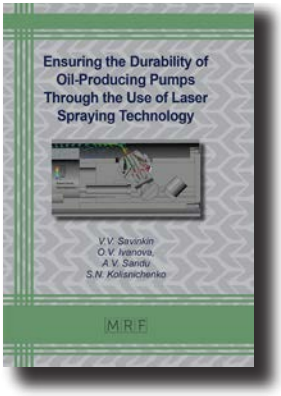
Eds. N.B. Singh, Md. Abu Bin Hasan Susan and Ratiram Gomaji Chaudhary

The book covers the synthesis, classification, characterization, applications and historical background of nanomaterials in various sectors, such as nanosensors, healthcare, solar cells, energy storage, hydrogels, nanocatalysts, sport industry, automobile sector, construction industry, lubricant industry, defense and security, textiles, food sciences, agriculture and biomedical applications.

Carbon Nanomaterials , Functionalized Carbon Nanomaterials, Smart Nanomaterials, Hybrid Nanomaterials, Biomedical Applications, Drug Delivery, Soy Protein Isolate, Healthcare, Perovskite Solar Cells, Nanoemulsions, Lubricant Industry, Binding Materials, Construction Industry, Toxicological Effects, Aquatic Biota, Safety Concerns

https://www.mrforum.com/product/emerging-nanomaterials-and-their-impact

9781644902165, 2023, 372 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902172)



Ensuring the Durability of Oil-Producing Pumps Through the Use of Laser Spraying Technology

V.V. Savinkin, O.V. Ivanova, A.V. Sandu, S.N. Kolisnichenko

The book focuses on the causes of failures of oil producing pumps as a result of the aggressive action of the oil-producing environment. To ensure a good durability of the pumps, the application of laser spraying technology is investigated.

Oil Pumping Complexes, Oil Fluids, Gas Dynamic Analysis, Downhole Pumps, Calculation of Cutting Modes, Causes of Failures, Wear Mechanisms, Gas-Dynamic Calculation, Simulation Flow Software, Laser Spraying, Internal Surfaces, Electric Centrifugal Pumping, Rod Depth Pump, Non-Standard Pumps, Causes of Malfunctions, Restoring Pump Operability, Salt Deposition Inhibitors, Laser Source, Boring Head, Small-Diameter Structures

https://www.mrforum.com/product/ensuring-the-durability-of-oil-producing-pumps

9781644902356, 2023, 126 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902356)

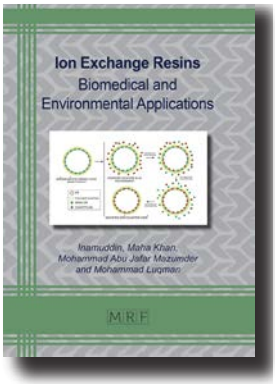
Ion Exchange Resins

Biomedical and Environmental Applications

Eds. Inamuddin, Maha Khan,
Mohammad Abu Jafar Mazumder, Mohammad Luqman

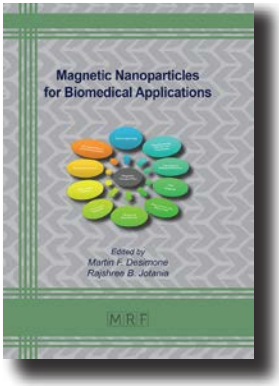
The book focuses on the applications of ion exchange resins in processes such as the separation and purification of proteins and vitamins, the selective separation of toxic metals and the separation and purification of bioactive molecules. Specific topics include drug delivery, clinical applications, water softening and sustained drug delivery.

Ion Exchange Resins, Protein Separation and Purification, Partition and Purgation of Vitamins, Toxic Heavy Metal Ions, Bioactive Molecules, Sustained Drug Release, Ion-Exchange Chromatography, Clinical Applications, Electrodialysis, Ultrasound, Water Softening



https://www.mrforum.com/product/ion-exchange-resins

9781644902202, 2023, 174 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902219)



Magnetic Nanoparticles for Biomedical Applications

Eds. Martin F. Desimone and Rajshree B. Jotania

Magnetic nanoparticles (MNPs) have many applications in the biomedical field because of their non-toxicity, high chemical stability, and biocompatibility. They are used in DNA or protein separation, hyperthermia, tissue engineering, magnetic resonance imaging, cancer therapy, drug delivery, bone and dental repair, biosensors, etc. The book focuses on magnetic nanoparticles and coated nanoparticles (ferrites nanoparticles, bimetallic-magnetic nanoparticles, magnetic fluid); their synthesis, characterization, and in vivo or in vitro biomedical applications.

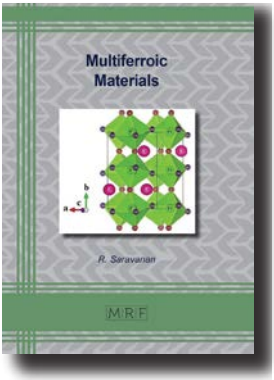
Iron Oxide Magnetic Nanomaterials, Magnetic Spinel Ferrite Nanoparticles, Magnetic Oxide Nanoparticles, Ferromagnetic Nickel Nanostructures, Cobalt Ferrite with Niobium Pentoxide, Hyperthermia, Oncologic Magnetic Thermotherapy, Cancer Therapy, Cancer Diagnosis, Drug Delivery. Immune System Related Diseases

https://www.mrforum.com/product/magnetic-nanoparticles-for-biomedical-applications

9781644902332, 2023, 320 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902332)

Multiferroic Materials

R. Saravanan



The magnetoelectric properties of multiferroic materials have a high potential for applications in the fields of data storage, spin valves, spintronics, memories, sensors and microelectronic devices. The book presents both a detailed literature review of the field, and the experimental results obtained from various characterization and analytical techniques performed on four series of lanthanum orthoferrite type multiferroics. These materials have been used in solid oxide fuel cells (SOFC), magneto-hydrodynamic power generation (MHD), capacitors and energy storage devices in microelectronics, non-volatile magnetic memory devices and ferroelectric random access memories (Fe-RAM).

Multiferroics, Lanthanum Orthoferrites, Ferromagnetism, Ferroelectricity, Electrical Conductivity, Thermal Stability, Dielectric Constant, Solid Oxide Fuel Cell (SOFC), Magneto-Hydrodynamic Power Generation (MHD), Capacitors, Energy Storage Devices, Magnetic Memory Devices, Ferroelectric Random Access Memories (Fe-RAM), Charge Density Measurements

https://www.mrforum.com/product/multiferroic-materials

9781644902264, 2023, 194 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902271)

Sheet Metal 2023

Eds. Marion Merklein, Hinnerk Hagenah, Joost R. Duflou, Livan Fratini, Paulo Martins, Gerson Meschut, Fabrizio Micari

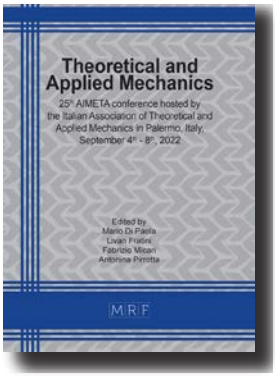
The book presents recent advances in the following areas: High speed cutting and forming of sheet metals, Incremental forming, Joining by forming, Material characterization, Modelling, Presses and press tools, Processes, Quality and reliability, Sustainability.

Sheet Metals, High Speed Cutting, Forming, Joining, Characterization, Modelling, Presses, Press Tools, Quality, Reliability, Sustainability. Polygon Forming Processes, Fused Filament Fabrication, Pin Caulking, Thermoplastic Composite/Steel Hybrid Joining, Self-piercing Riveting, Plastic Orthotropy on Clinching, Stress-related Fatigue, High-cycle Fatigue, Clinching Process Simulations, Magnetorheological Lubricant, Elastomer Tooling Components, Ultrasonic Vibration Microforming, Laser Heat Treatment, Fiber Reinforced Thermoset Plastics, Customized Classification System, Stainless Steel Deep Drawing, Thermoplastic Organosheets, Friction Drilling of Titanium, Medical Applications, Laser Cut Edges, Industrial Defect Detection, Bayes Filters, Benign Volatile Lubricants, Sheet Hydroforming, Zinc-coated Boron-manganese Steel, Thermoplastic Fibre Metal Laminates

https://www.mrforum.com/product/sheet-metal-2023

9781644902400, 2023, 484 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644902417)

Theoretical and Applied Mechanics



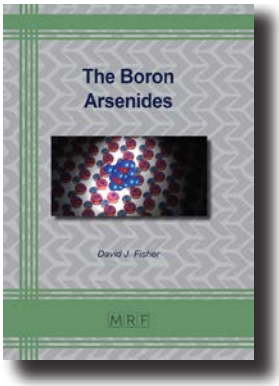
Eds. Mario Di Paola, Livan Fratini, Fabrizio Micari, Antonina Pirrotta

The book presents the proceedings of the XXV National Congress of the Italian Association of Theoretical and Applied Mechanics (Palermo, September 2022).

Fluid Mechanics, Solid Mechanics, Structural Mechanics, Mechanics of Machine, Computational Mechanics, Biomechanics, Masonry Modelling and Analysis, Dynamical Systems in Civil and Mechanical Structures, Control and Experimental Dynamics, Mechanical Modelling of Metamaterials and Periodic Structures, Novel Stochastic Dynamics, Signal Processing Techniques for Civil Engineering Applications, Vibration-based Monitoring and Dynamic Identification of Historic Constructions, Modeling and Analysis of Nanocomposites and Small-Scale Structures, Gradient Flows in Mechanics and Continuum Physics, Multibody Systems Vibration Analysis, Mechanics of Renewable Energy Systems, Mathematical Modeling and Experimental Techniques for Quantification and Prediction of Fluid Dynamic Noise, and Advanced Process Mechanics

https://www.mrforum.com/product/aimeta2022

9781644902424, 2023, 744 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644902431)



The Boron Arsenides

David J.Fisher

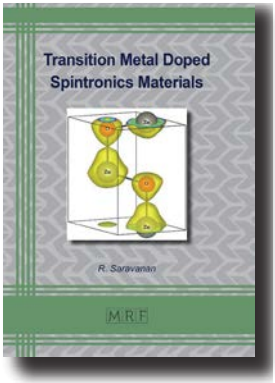
Boron Arsenide offers very interesting electronic properties, as well as a high thermal conductivity; nearly 10 times higher than that of silicon. It has been hailed as 'the best semiconductor material ever found'. The present book presents a detailed review of this material and its potential applications. The materials covered include Icosahedral Boron Arsenide, Hexagonal Boron Arsenide, Amorphous Boron Arsenide and Cubic Boron Arsenide. The book references 166 original resources with their direct web links for in-depth reading.

Boron Arsenides, Electron Mobility, Hole Mobility, Band-gap, Monolayers, Defects, Mechanical Properties, Photo-electrodes, Thermal Conductivity, Heat-spreading

https://www.mrforum.com/product/the-boron-arsenides

9781644902226, 2023, 118 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902233)

Transition Metal Doped Spintronics Materials



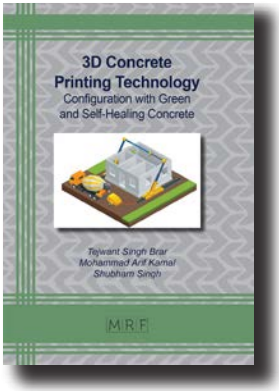
R. Saravanan

The book presents new research on the synthesis and characterization of various oxide based dilute magnetic spintronics materials (ODMS). The characterization techniques included powder X-ray diffraction, scanning electron microscopy, vibrating sample magnetometry and UV visible spectrometry. The morphological, magnetic and optical properties are reported. Electron density distribution studies are presented in the form of three, two and one dimensional electron density maps.

Spintronics Materials, Zn1-xTixO, Zn1-xFexO, Zn1-xVxO, Zn1-xNix/2Vx/2O, Synthesis, X-ray Diffraction. Rietveld Analysis, Surface Morphological Properties, Optical Properties, Magnetic Properties, Charge Density Analysis, Electron Density Distribution

https://www.mrforum.com/product/transition-metal-doped-spintronics-materials

9781644902240, 2023, 116 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902257)



3D Concrete Printing Technology

Configuration with Green and Self-Healing Concrete

Tejwant Singh Brar, Mohammad Arif Kamal, Shubham Singh

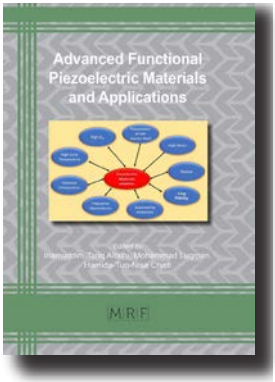
The book presents a detailed comparison between traditional construction techniques and 3D printing construction. The comparison focuses on four primary parameters: mechanism, composition, time and cost. The operational details of each technology (cast-in situ, pre-stress, post-tension) are reviewed and comparison criteria for all techniques are formulated. In conclusion, 3D printing seems to be well on its way to transform the whole construction industry.

3D Concrete Printing, Cast-in-Situ Technology, Pre-Cast Technology, Pre-Stressed Technology, Post-Tension Technology, 3D-Printable Materials, Extrudability, Buildability, Workability, Open Time, Contact Strength between Layers, Aggregates, Water-Cement Ratio, Rheological and Mechanical Properties of 3D Printable Materials, Reinforcement Strategies, Printability Window, Cost Analysis, Green Concrete, Self-Healing Concrete

https://www.mrforum.com/product/3d-concrete-printing-technology

9781644902141, 2022, 94 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644902158)

Advanced Functional Piezoelectric Materials and Applications



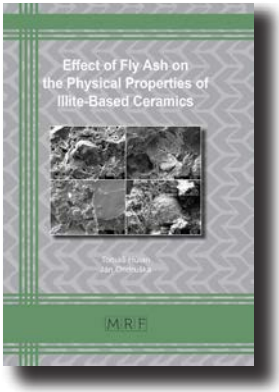
Eds. Inamuddin, Tariq Altalhi, Mohammad Luqman, Hamida-Tun-Nisa Chisti

The book reviews our current knowledge of piezoelectric materials, including their history, developments, properties, process design, and technical applications in such areas as sensors, actuators, power sources, motors, environmental and biomedical domains. Piezoelectric materials will play a crucial role in the development of sustainable energy systems.

Piezoelectric Materials, Piezo-crystals, Nanogenerators, Phototronics, Piezoelectric Composites, Biomedical Applications, Energy Harvesting, Piezoelectric Thin Films, Piezoelectric Perovskites, Sensor Applications, Piezoelectric Ceramics, Piezoelectric Semiconductors, Piezoelectric Polymers

https://www.mrforum.com/product/functional-piezoelectric-materials

9781644902080, 2022, 286 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902097)



Effect of Fly Ash on the Physical Properties of Illite-Based Ceramics

Tomáš Húlan and Ján Ondruška

The book investigates the potential use of fly ash as a secondary raw material. Emphasis is placed on the effects of the admixture of power plant fly ash from lignite combustion on the properties of ceramic bodies in the building industry.

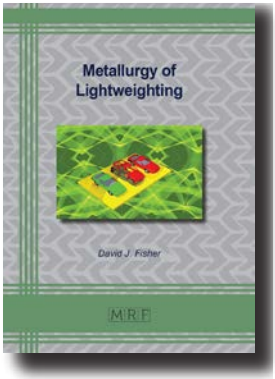
Illite-Based Ceramics, Power Plant Fly Ash, Drying Process, Particle Size, Particle Morphology, Heavy Metals, Mineral Compositions, Microstructure, Differential Thermal Analysis, XRD Analysis, Bulk Density, Water Absorption, Porosity, Pore Distribution, Thermal Diffusivity, Internal Friction, Hardness, Mechanical Strength, Flexural Strength

https://www.mrforum.com/product/effect-of-fly-ash

9781644902066, 2022, 148 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902073)

Metallurgy of Lightweighting

David J. Fisher



The existential threat of global warming has triggered the need to reduce the energy consumption of vehicles. This can be achieved by reducing the weight of vehicles; a process known as light-weighting. The book reviews recent progress in this multifaceted discipline and discusses possible future developments. It references 214 original resources with their direct web links for in-depth reading.

Aluminum, Iron, Ductile Iron Castings, Magnesium Alloys, Nano-Composites, Steel, Titanium, Joining Dissimilar Materials, Batteries, Electric Vehicles, Body Torsioning, Castability, Drawability, Elasto-Viscoplastic Model, Electroplasticity, Embrittlement, Eutrophication, Extrudability, Front Crash Structure, Hall-Heroult Electrolysis, Hall-Petch Effect, Hot Extrusion, Hydroforming, Liftgate-Assembly, Lomer–Cottrell Lock, Machinability, Metamodel, Microballoon, Monocoque, Nano-Scale Spinodal, Nugget Debonding, Peening, Portevin–LeChatelier, Powerplant, Powertrain, Recrystallization Texture, Recyclability, Rheocasting, Rivetability, Self-Piercing Riveting, Solutionizing, Stiffness, Strain Hardening, Superplastic Forming, Taylor Polycrystal, Thixomolding, Weldability, Zener Effect, Zener Pinning

https://www.mrforum.com/product/metallurgy-of-lightweighting

9781644902127, 2022, 122 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902134)

Superconductors

Materials and Applications

Eds. Inamuddin, Tariq Altalhi, Vikas Gupta, Mohammad Luqman

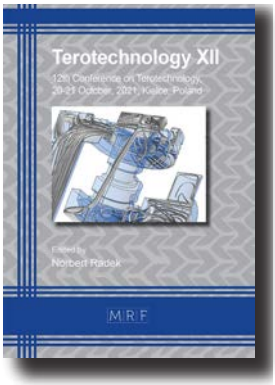
The book presents the current status of superconductor science and technology. It focuses on the design, properties and applications of superconductor materials. The superconductor categories covered include type-I, type-II, bulk, hard, soft, oxide, fermions, organic, iron, Lanthanide-based superconductors, high temperature superconductors and superconducting metamaterials.

Superconductors, Large-Scale Applications, Bulk Superconductors, Soft Superconductors, Oxide Superconductors, Lanthanide-based Superconductors, High Temperature Superconductors, Superconducting Metamaterials, Medical Applications, Magnetic Imaging Resonance Applications

https://www.mrforum.com/product/superconductors-materials-and-applications

9781644902103, 2022, 266 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902110)

Terotechnology XII



Ed. Norbert Radek

Terotechnology is concerned with the installation, commissioning, maintenance, replacement, and removal of plant machinery and equipment. It also includes operation and design aspects, and related subjects and practices.

Flow Control Valve, Boiling Heat Transfer, Laser Treated Heaters, Laser Micro Machining, Surface Laser Micropatterning, Adhesive Joints, WC-Co Coatings, Diamond-Like Carbon Coatings, TiO2 Coatings, Weathering of Paint Systems. Rolling Stock, Cellular Automata, High Strength Concrete, Concrete Composites, Thermal Sensations, Intelligent Buildings, Sulphuric Acid, Corrosion Resistance of Coatings on Steel, Evaluating the Technological Modernity of Machines, Computer Simulation Techniques, Production Management, TNT Storage, Powder Metallurgy, Graphene Oxide, Rail Head Operational Crack, Aluminum Castings, Non-Destructive Testing, Automotive Industry Case Studies, Quality Assessment, Bearing Shell Casting, Rail Vehicles, Fuels in Rail Transport, Fire Hazard, Mobility Assessment for Tracked Vehicles, Laser Welding, Helical Metal Expansion Joints, Steel Joints, Flash Butt Welded Rail Joints, Gas Face Seals, Design Parameters of Ball Bearing, Neural Network Structure, Prescriptive Maintenance Strategy, Unmanned Aerial Vehicles, Urban Traffic Noise, Textile Cleaning Processes

https://www.mrforum.com/product/terotechnology12

9781644902042, 2022, 328 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902059)

Advanced Applications of Micro and Nano Clay

Biopolymer-based Composites

Eds. Amir Al-Ahmed and Inamuddin

Due to their characteristic properties, biodegradable nature and non-toxicity, clay-biopolymer based composites have many applications in such advanced fields as drug release, antimicrobial activities, wound healing, tissue engineering, wastewater treatment, food packaging and flame retardant materials. The book reviews fabrication, properties and applications of a great variety of these materials.

Clay-Polymer Composites, Nano Clay, Polysaccharide, Fibrous Clays, Halloysite-Chitosan, Montmorillonite-Chitosan, Kaolinite-Chitosan, Vermiculite Starch, Halloysite-Starch, Montmorillonite-Starch, Kaolinite-Starch, Cellulose. HNT-Cellulose, Kaolinite-Cellulose, Drug Release, Wound Healing, Tissue Engineering, Wastewater Treatment, Food Packaging, Flame Retardant Materials

https://www.mrforum.com/product/micro-and-nano-clay

9781644901908, 2022, 332 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901915)

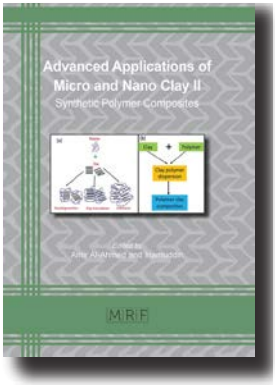
Advanced Applications of Micro and Nano Clay II

Synthetic Polymer Composites

Eds. Amir Al-Ahmed and Inamuddin

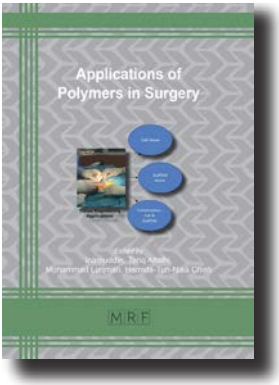
The book focuses on clay-based micro and nanocomposites with different synthetic polymers and presents their synthesis, characterization and testing. The fields of application of these materials include food packaging, rheological control agents, wastewater treatment, biomedical applications and drug delivery.

Synthetic Polymer Composites, Nanoclay-based Polymer Nanocomposites, Hectorite, Nontronite-Starch, Reinforcement of Thermoplastics, Polyethylene, Polypropylene, Sonochemical Synthesis, Drug Delivery, Electromagnetic Interference Shielding, Flame Retardancy, Water Treatment



https://www.mrforum.com/product/micro-and-nano-clay-II

9781644902028, 2022, 290 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644902035)



Applications of Polymers in Surgery

Eds. Inamuddin, Tariq Altalhi, Mohammad Luqman, Hamida-Tun-Nisa Chisti

There is much interest in polymers as biomaterials for medical applications. The aim is to develop polymers with tailor made mechanical properties that exhibit good durability and biodegradation properties and can be easily sterilized without alteration in properties. These materials can be implanted in the body to provide a special prosthetic function. They can also be used in surgical, diagnostics and therapeutic applications.

Biopolymer Materials, Surgery Devices, Diagnostics, Therapeutic Applications, Tissue Engineering, Neurosurgery, Ophthalmology, Guided Tissue Regeneration, Membranes for Dental Applications, Denture Lining Materials, Guided Bone Regeneration

https://www.mrforum.com/product/polymers-in-surgery

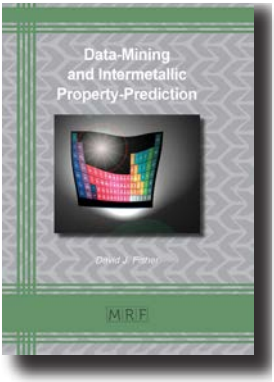
9781644901885, 2022, 224 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901892)

Data-Mining and Intermetallic Property-Prediction

David J. Fisher

Using a computer-aided data mining approach and available experimental data bases, the author discusses the prediction of the structures and properties of intermetallic alloy compounds. The book references 252 original resources with their direct web links for in-depth reading.

Data-Mining, Intermetallic Compounds, Structure-Mapping, Clustering Methods, Free Energy, Energy Landscapes of Compounds, Stable Groupings of Atoms, Intermetallic Phases, Crystal Unit Cell Size, Platonic Solids, Symmetries, Stoichiometries, Stability Fields



https://www.mrforum.com/product/data-mining-and-intermetallic-property-prediction

9781644902004, 2022, 112 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644902011)

Functional Materials and Applied Physics

FMAP-2021

Eds. Yogesh Sonvane, Dimple Shah, K.N. Pathak and Lalit Saini

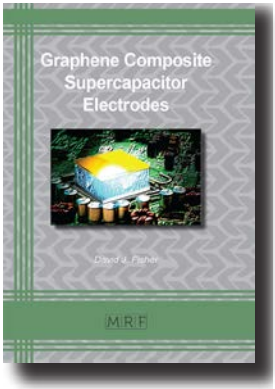
The book presents advances in the field of functional materials. Topics covered include Nano-MgB2 Superconductors, Au and Ag Nanoribbons, Silver Nanostructure Formation, 2D Monolayer As2S3, Electronic and Optical Properties of Boron Selenide BSe(2H) monolayers, Mixed Halide Perovskite Solar Cells, Ionization Potentials of Nucleic Acid Intercalators, and Surface Cladding on AISI 1045 Steel.

CIGS Solar Cell, Drag Resistivity, Electron Beam Cladding, Electron Transport, Electronic Structure , Gold Nanoparticles, GTA Cladding, Hole Transport Layer, Hole-Hole Interactions, Intercalator , Interparticle Coupling, Laser Cladding. Mesons, Monolayer, Nanoribbons, Nanostructures, Nanoscale Devices, NEGF, Nucleic Acid, Perovskite Solar Cell, Plasma Chemistry, Thin Film Solar Cell Simulation, Schrodinger Equation, Thermal Spraying, TIG Cladding, UV-Vis and TEM Analysis, Wear Resistance

https://www.mrforum.com/product/FMAP-2021

9781644901861, 2022, 120 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644901878)

Graphene Composite Supercapacitor Electrodes



David J. Fisher

Graphene supercapacitors, also called ultracapacitors or electrical double-layer capacitors, have increasingly begun to rival conventional batteries. They allow to manipulate the nanoscale structure of carbon-based supercapacitors and offer the additional advantage of sequestering increasing amounts of carbon from the environment, thus helping to limit global warming. The book focuses on the choice of electrode materials, their properties and methods of fabrication. It references 494 original resources with their direct web links for in-depth reading.

Graphene Supercapacitors, Micro-Supercapacitors, Oxides, Sulfides, Selenides, Hydroxides, Phosphates, Nitrides, Fabrication, Printing, Environmental Effects

https://www.mrforum.com/product/graphene-composite-supercapacitor-electrodes

9781644901922, 2022, 158 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901939)

Multifunctional Concrete Technology

Feng Naiqian, Lu Jin Ping, Peng Gai-Fei

The book reviews production and applications of high- and ultra-high strength multifunctional concrete. The use of various coarse and fine aggregates are covered, as well as ultrafine powders, new superplasticizers, anti-rust agents for steel bars and electrochemical protection technology.

Multifunctional Concrete, Powder Technology, Water Reducing Technology, Ultra-High Pumping Technology, Coarse and Fine Aggregates, Lightweight Aggregates, Electronic Protection, Superplasticizers, Shrinkage and Cracking, Shrinkage Reducing Agents. Anti-Rust Agents, Steel Bars. Microbead Ultrafine Powder, Natural Zeolite Ultrafine Powder, Slag Ultrafine Powder, Silica Fume, Fly Ash, Performance Testing

https://www.mrforum.com/product/multifunctional-concrete-technology

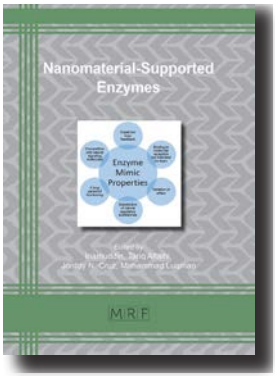
9781644901984, 2022, 394 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901991)

Nanomaterial-Supported Enzymes

Eds. Inamuddin, Tariq Altalhi, Jorddy N. Cruz, Mohammad Luqman

The book presents recent advances in the field of nanoenzymes and the immobilization of enzymes in nanomaterials. Applications include disease diagnosis, environmental clean-up, biosensor manufacturing, drug delivery and vaccine production.

Nanoenzymes, Metal and Metal Oxide Nanoparticles, Carbon Nanotubes, Graphene, Activated Carbon, Enzyme Immobilization, Catalytic Activity, Leaching of the Enzyme, Enzyme Mimicking, Biosensors, Biosensing Mechanisms, Therapeutic Applications, Vaccine Production and Immunization. Drug Delivery, Delivery of Vaccine Antigens, Antigen Resistance, Immunogenicity, Disease Diagnosis



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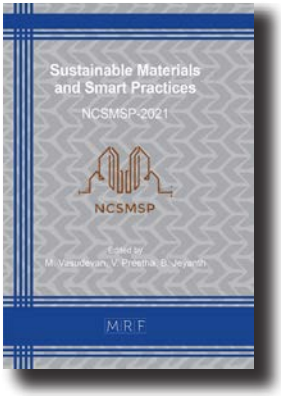
9781644901960, 2022, 268 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901977)



Sustainable Materials and Smart Practices

NCSMSP-2021

Eds. M. Vasudevan, V. Preetha, B. Jeyanth

This book presents recent research on sustainable building materials and their various applications. Topics include such items as fiber reinforced concrete, the use of mineral admixtures. self-sensing cement composites, the use of nanomaterials for structural health monitoring and the production of geopolymer mortar.

Light Transmitting Concrete, Self-Compacting Concrete, Light-Weight Concrete, Polymer Concrete, Porous Concrete, Eco-Friendly Building Material, Cement Composite, Geopolymer Composites, Sustainable Bricks, Cement, Sisal Fiber, Glass Fiber, Nanomaterials, Metakaoline, Fly Ash, Silica Fume, Rice Husk Ash, Oyster Shells, Bitumen, Sugarcane Bagasse Ash, Herbocrete, Waste Foundry Sand, Swell Pressure of Clay, Quarry Dust, Sensors, Topology Optimization, Soil Stabilization

https://www.mrforum.com/product/NCSMSP-2021

9781644901946, 2022, 478 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644901953)

Sustainable Natural Fiber Composites

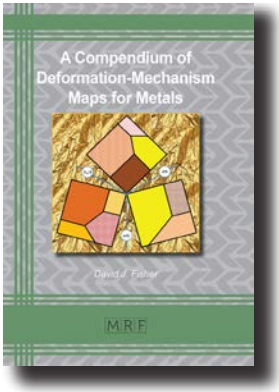
Eds. Anish Khan, A. Manikandan, M. Ramesh, Imran Khan, Abdullah Mohammed Ahmed Asiri

The book covers such diverse topics as cellulose fibers in cement paste and concrete, biodegradable materials for dental applications, coconut and pineapple fiber composites, biodegradable plastic composites, durability against fatigue and moisture, physical and mechanical characterization of fiber composites, improving the hydrophobic nature of fiber composites, and hybrid natural fiber composites.

Fiber Reinforced Composites, Biodegradable Composites, Polymethyl Methacrylate, Cellulose Fibers, Coconut Fibers, Biocomposites, Resol-Vegetable Fibers, Pineapple Natural Fiber Composite, Dental Applications, Cement Paste, Concrete, Thermoplasticity, Fatigue, Moisture, Thermal Conductivity

https://www.mrforum.com/product/sustainable-natural-fiber-composites

9781644901847, 2022, 312 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901854)



Compendium of Deformation-Mechanism Maps for Metals

David J. Fisher

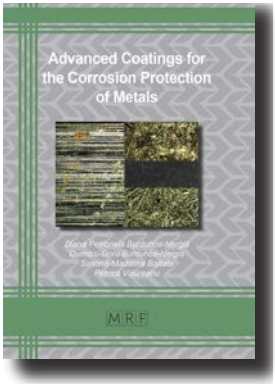
Deformation-mechanism maps represent an invaluable guide to predicting the optimum processing conditions for a material. They are also useful in matching a material to a given engineering application. The present book summarizes recent research results in the field. The book references 106 original resources and includes their direct web link for in-depth reading.

Deformation-Mechanism Maps, Metals, Engineering Applications, Dislocation Glide, Diffusional Flow, Dislocation Creep, Plastic Flow, Strain Rate, Atomic Bonding, Aluminium, Cadmium, Cobalt, Copper, Iron, Lead, Magnesium, Nickel, Potassium, Silver, Tin, Thallium, Titanium, Tungsten, Zinc, Zirconium

https://www.mrforum.com/product/deformation-mechanism-maps-for-metals

9781644901687, 2022, 130 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901694)

Advanced Coatings for the Corrosion Protection of Metals



Diana Petronela Burduhos-Nergis, Dumitru-Doru Burduhos-Nergis, Simona-Madalina Baltatu, Petrica Vizureanu

The corrosion protection of metallic materials is of great importance in many fields, especially also when it comes to environmental issues. The book focuses on organic and inorganic coatings, metallic coatings and new methods for the deposition of protective thin layers. Coating techniques and methods for testing and assessing corrosion behavior are presented.

Anticorrosion Coating, Metal Corrosion, Electrochemical Corrosion , Biochemical Corrosion, Atmospheric Corrosion, Underground Corrosion, Aqueous Corrosion, Corrosion Involving Mechanical Stress, Microbiological Corrosion, Metal Passivation, Metallic Layers, Spray Metal Coatings, Diffusion Coatings, Cladding Coatings, Inorganic Layers, Organic Layers, Phosphating, Oxidation, Chromating, Enamelling, Painting, Varnishing, Bituminous Coatings, Protective Thin Layers, PVD Method, Layers by Thermal Evaporation, Cathodic Spray Deposition, CVD Method, Wear Resistant Thin Layers, Decorative Thin Film Deposition

https://www.mrforum.com/product/advanced-coatings-for-metals-corrosion-protection

9781644901663, 2022, 152 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901670)

Advanced Functional Membranes

Materials and Applications

Eds. Inamuddin, Tariq Altalhi, Mohd Imran Ahamed, Mohammad Luqman

Functional membranes are used in food processing, sensor technology, medical and biomedical devices, desalination, waste water treatment, CO2 capture, energy production and energy storage, optoelectronics etc. The book reviews recent advances in the field and discusses challenges and perspectives.

Membrane Fabrication, Polymer Membranes, Self-Assembled Membranes, Molecular Probes, Membrane Fouling, Membrane Cleaning, Microfiltration, Ultrafiltration, Food Processing, Sensors, Medical Devices, Biomedical Applications, Desalination, Wastewater Treatment, Ion Exchange Processes, Polymeric Ceramic Membranes, Nano Holes, Fuel Cells, Lithium-Ion Batteries, Optoelectronics

https://www.mrforum.com/product/advanced-functional-membranes

9781644901809, 2022, 338 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901816)

Advanced Metallic Biomaterials

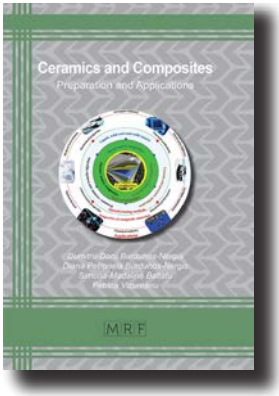
Madalina-Simona Baltatu, Dumitru-Doru Burduhos-Nergis, Diana Petronela Burduhos-Nergis, Petrica Vizureanu

The book presents the characterization and classification of metallic biomaterials; with focus on titanium-based alloys, cobalt-based alloys, stainless steels and biodegradable alloys. Emphasis is placed on the synthesis, assessment of properties and medical applications such as multifunctional implants. The book references 423 original resources and includes their direct web link for in-depth reading.

Biomaterials, Classification, Titanium Alloys, Cobalt Alloys, Stainless Steels, Biodegradable Alloys, Medical Applications, Optimization of Metallic Biomaterials, Multifunctional Implants, Tissue Reactions, Toxicity of Metals, Inflammatory Reactions, Immunological Reactions, Sensibility, Allergy, Carcinogenic Effects, Ceramic Coatings, Ionic Implantation in Plasma, Biocompatibility

https://www.mrforum.com/product/advanced-metallic-biomaterials

9781644901762, 2022, 162 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901779)



Ceramics and Composites

Preparation and Applications

Dumitru-Doru Burduhos-Nergis, Diana Petronela Burduhos-Nergis, Simona-Madalina Baltatu, Petrica Vizureanu

The book presents a state-of-the-art survey of ceramics and composites. It focuses on the flexible and efficient manufacture of objects with specific shapes, complexity and tailor-made characteristics and properties.

Metal Matrix Composites, Polymer Matrix Composites, Ceramic Composite Materials, Composite Manufacturing Methods, Compressive Pouring, Vacuum Bagging, Filament Winding, Centrifugal Casting, Pultrusion, Automatic Fiber Positioning, Automatic Laying, Tape, Aeronautical Applications, Missile Aerospace Systems, Marine Applications, Prevention of Earthquake Damage, Machine Construction, Rubber Laminates, Flexible Gaskets

https://www.mrforum.com/product/ceramics-and-composites

9781644901700, 2022, 152 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901717)

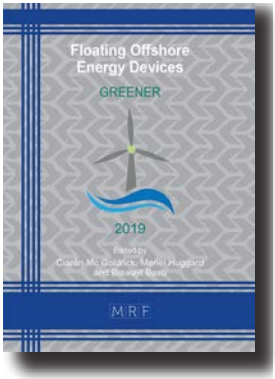
Floating Offshore Energy Devices

GREENER

Eds. Ciarán Mc Goldrick, Meriel Huggard and Biswajit Basu

This new conference series aims at presenting state-of-the-art research in the development of offshore energy machines and devices. Topics covered include: Present and future offshore wind and wave devices; innovations in modelling, design, control, operation and testing of offshore energy machines, and the impact of these devices on the marine environment.

Oscillating Water Column, Monitoring of Wind Turbines, Coriolis Effect, Internal Ocean Waves, Rapid Distortion Theory, Modelling of Ocean Wave Energy Converters, Pendulum-Type Vibration, Wind Turbine Fault Prediction, Short-Term Wind Power Forecasting, Floating Tidal Energy Conversion, Antarctic Circumpolar Current, Shallow Water Large Scale Modelling



https://www.mrforum.com/product/greener

9781644901724, 2022, 94 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644901731)

Modern Trends in Manufacturing Technologies and Equipment

ICMTMTE 2021

Eds. Sergey Bratan and Stanislav Roshchupkin

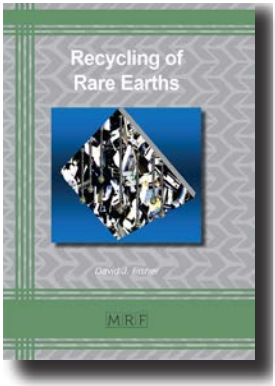
The book presents the proceedings of the International Conference on Modern Trends in Manufacturing Technologies and Equipment, held in September 2021 in Sevastopol, Russia. The aim of the conference was to provide scientists and industrial researchers with the latest developments in manufacturing technologies, materials research, manufacturing equipment and tools, and to build up partnerships for future collaboration.

Welded Joints, Dry Building Mixtures, Tribological Properties of Sapphire, Direct Metal Deposition Modes, Production of Artificial Concrete, Wooden Structures, Rolls for Helical Rolling, Laser Treatments, Electromechanical Surfacing, Luminous Phosphate Coatings, Ventilated Brake Discs, Cutting Zone, Models for Wind Tunnels, Gas-Thermal Spraying, Water-Abrasive Cutting, Grinding Forces, CVD Coatings, Carbonate Concrete, Photocatalytic Activity of Tungsten Oxide, Maraging Steel, Corrosion of TiNi Alloy, 3D Printing, Production of Ultramarine, Injection Molding, Elastomeric Composites, Reinforcing Bars Inside Concrete Structures, Coatings for Cutting Tools, Hard Alloy Tools

https://www.mrforum.com/product/icmtmte

9781644901748, 2022, 490 pages, full color SC book, USD 195.00, also available as eBook PDF (9781644901755)

Recycling of Rare Earths



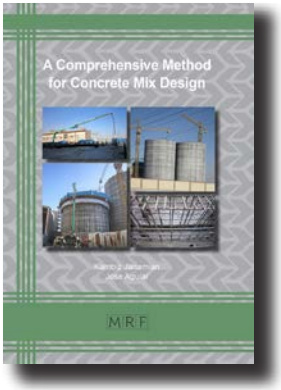
David J. Fisher

The recycling of rare earth elements is one of the great challenges for establishing a green economy. Rare earths play an essential role in a great many high-tech products and processes: electronic display screens, computer monitors, cell phones, rechargeable batteries, etc. Recycling these materials not only results in valuable materials for new products; it also helps in reducing mountains of discarded products. The recycling methods discussed include bioleaching, biosorption, siderophores, algae and seaweed. carbon-based nanomaterials, silica, pyrometallurgy, electrochemistry, hydrometallurgy, solvent extraction and the use of various absorbents. The book references 253 original resources with their direct web links for in-depth reading.

Rare Earths, Bioleaching, Biosorption, Siderophores, Algae, Seaweed. Carbon-based Nanomaterials, Silica, Pyrometallurgy, Electrochemistry, Hydrometallurgy, Solvent Extraction, Absorbents, Ash, Slag, Red Mud, Contaminated Soil

https://www.mrforum.com/product/recycling-of-rare-earths

9781644901786, 2022, 130 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901793)



A Comprehensive Method for Concrete Mix Design

Kambiz Janamian and Jose Aguiar

A novel method of concrete mix design is presented. Tests with various constituent materials are reported in great detail. Both laboratory tests and applications in industry show the method to be very successful for all kinds of normal constituent materials, including silica fume, ground granulated blast furnace slag, fly ash, natural pozzolans, blended cement, fine and coarse aggregates, water, air entraining admixtures, plasticizers and super-plasticizers.

Concrete Mix Design, Concrete Specification, Concrete Constituent Materials, Concrete Transport, Compressive Strength of Concrete, Concrete Slump, Hardened Concrete, Permeability of Concrete, Concrete Quality, Fresh Concrete, Workability of Concrete, Entrapped Air in Concrete

https://www.mrforum.com/product/concrete-mix-design

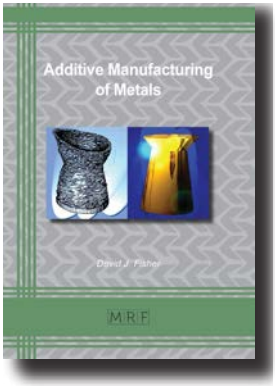
9781644900581, 2020, 180 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644900598)

Additive Manufacturing of Metals

David J. Fisher

Additive manufacturing of metals is an increasingly important process for producing or repairing structural components in the aerospace, medical and dental industries. The book reviews the various techniques that are currently in use and describes the many possible applications. The review is based on 350 original resources and includes their direct web link for in-depth reading.

Additive Manufacturing, 3-Dimensional Printing,, Layered Manufacturing, Titanium Alloys, Nickel Alloys, Iron Alloys, Stainless Steels, Aluminium, Cobalt, Copper, Magnesium, Niobium, Tantal, Tin, Tungsten, Zinc, Porous Metals, Biomedical Materials, Orthopaedic Devices, Dental Implants, Aerospace Components, Laser Melting, Electron-Beam Melting



https://www.mrforum.com/product/additive-manufacture-of-metals

9781644900628, 2020, 154 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900635)

Advanced Applications of Bio-degradable Green Composites

Eds. Amir Al-Ahmed and Inamuddin

The book reports progress on the development of new biodegradable polymers, composites and nanocomposites for use in such areas as drug delivery, packaging, food and agricultural technology. The world has become increasingly worried about non-degradable polymers used in our daily activities. Hence, biodegradable polymers and composites are of growing demand to replace petroleum based polymers and products.

Biopolymers, Biodegradable Polymers, Biodegradable Composites, Biodegradable Nanocomposites, Green Composites, Biodegradable Packaging, Bioplastics, Biodegradation Test Methods, Polyhydroxybutyrate, Lipids, Liposomes, Lipid Composites, Natural Fiber, Drug Delivery, Dunnage, Electronics Packaging, Horticulture, Plantable Pots

https://www.mrforum.com/product/bio-degradable-green-composites

9781644900642, 2020, 202 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900659)

Advanced Applications of Polysaccharides and their Composites

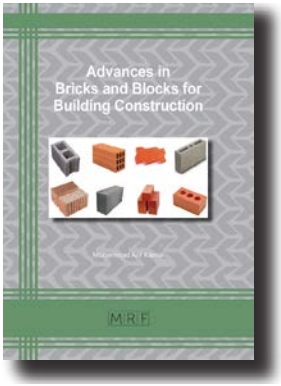
Eds. Amir Al-Ahmed and Inamuddin

Polysaccharides and their composites are highly promising materials for food, pharmaceutical and biomedical applications; including drug delivery, tissue engineering and packaging. Fiber- and nano-reinforced composites are good alternatives to non-biodegradable petroleum-based polymers. The great advantage of these materials is that they are both environment friendly and nontoxic.

Polysaccharides, Polysaccharide Composites, Drug Delivery, Tissue Engineering, Pharmaceutical Packaging, Food Packaging , Environment Friendly Materials, Nontoxic Materials, Wound-Healing Sponge, Skin Lesions, Chitosan Composites, Nanocellulose, Starch-Based Composites

https://www.mrforum.com/product/polysaccharides-and-its-composites

9781644900765, 2020, 248 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900772)



Advances in Bricks and Blocks for Building Construction

Mohammad Arif Kamal

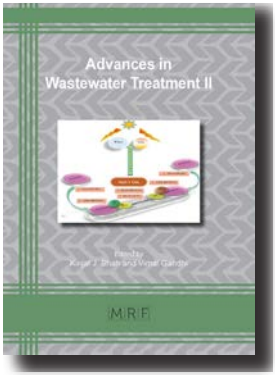
The book reviews the current state of bricks and blocks; their manufacture, properties and applications in the building construction sector.

Bricks and Blocks, Fly Ash Bricks, Calcium Silicate Bricks, Autoclaved Aerated Concrete (AAC) Blocks, Compressed Earth Blocks, Stabilized Mud Blocks, Concrete Blocks, Reinforced Hollow Concrete Block Masonry, Concrete Pavement Blocks, Beams with Longitudinal Reinforcements, Surface Textures, Smooth Surfaces, Fluted or Rough Finishes, Automated Production

https://www.mrforum.com/product/bricks-and-blocks

9781644901502, 2021, 122 pages, full color SC book, USD 75.00, also available as eBook PDF (9781644901519)

Advances in Wastewater Treatment II



Eds. Kinjal J. Shah and Vimal Gandhi

The book reviews advanced methods of wastewater treatments. Included are oxidation processes for the degradation of organic molecules; applications of nanomaterials and nanocomposites in membrane-based processes; design of adsorption columns; photocatalytic degradation processes; and the removal of dyes, pesticides and pharmaceutical compounds.

Degradation of Organic Molecules, Nano Filtration, Ultrafiltration, Microfiltration, Nanomaterial-based Membranes, Adsorption Columns, Nano Carbon Cage, Photocatalytic Degradation, Dyes, Pesticides, Pharmaceutical Compounds, Advanced Oxidation Processes, Complex Organic Molecules, Perfluorooctanoic Acid, Hydrolytic Acidification, Levofloxacin Degradation, Catalytic Degradation, Energy Storage

https://www.mrforum.com/product/wastewater-treatment-ii

9781644901380, 2021, 206 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901397)

Advances in Wastewater Treatment I

Eds. Vimal Gandhi and Kinjal Shah

The book presents new materials and methods for waste water treatments; including advanced oxidation processes, membrane technologies, detection and removal of heavy metals and organic compounds, and the use of nanomaterials, low cost adsorbents and bio flocculants.

https://www.mrforum.com/product/wastwater-treatment-i

9781644901144, 2021, 258 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901151)

Advancing Silicon Carbide Electronics Technology I

Metal Contacts to Silicon Carbide: Physics, Technology, Applications

Eds. Konstantinos Zekentes and Konstantin Vasilevskiy

The rapidly advancing Silicon Carbide technology has a great potential in high temperature and high frequency electronics. High thermal stability and outstanding chemical inertness make SiC an excellent material for high-power, low-loss semiconductor devices. The present volume presents the state of the art of SiC device fabrication and characterization.

Silicon Carbide Technology, Semiconductor Devices, SiC Device Fabrication, SiC Device Characterization, SiC Surface Cleaning, SiC Surface Etching, Electrical Characterization of SiC, Ohmic Contacts to SiC, Contact Resistivity Analysis, Ohmic Contact Fabrication, Metallization Schemes, Thermal Stability of Ohmic Contacts to SiC, Schottky Contacts to SiC, Schottky Barrier Formation, Schottky Diodes, Junction Barrier Schottky Diodes, Si/ SiC Heterojunction Diodes, Schottky Barrier Inhomogeneity in SiC, SiC Power Electronics, Temperature/Light Sensors, SiC Switching Devices, High Temperature Electronics, High Frequency Electronics, Thermal Stability of SiC

https://www.mrforum.com/product/advancing-silicon-carbide-electronics-technology-I

9781945291845, 2018, 250 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291852)

Advancing Silicon Carbide Electronics Technology II

Core Technologies of Silicon Carbide Device Processing

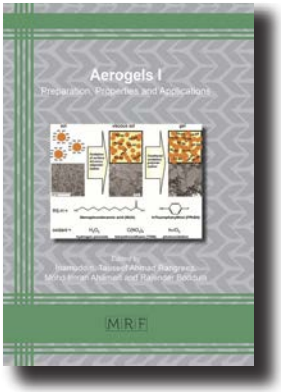
Eds. Konstantinos Zekentes and Konstantin Vasilevskiy

The book presents an in-depth review and analysis of Silicon Carbide device processing. The main topics are: (1) Silicon Carbide Discovery, Properties and Technology, (2) Processing and Application of Dielectrics in Silicon Carbide Devices, (3) Doping by Ion Implantation, (4) Plasma Etching and (5) Fabrication of Silicon Carbide Nanostructures and Related Devices. The book is also suited as supplementary textbook for graduate courses.

Silicon Carbide, SiC, Technology, Processing, Semiconductor Devices, Material Properties, Polytypism, Thermal Oxidation, Post Oxidation Annealing, Surface Passivation, Dielectric Deposition, Field Effect Mobility, Ion Implantation, Post Implantation Annealing, Channeling, Surface Roughness, Dry Etching, Plasma Etching, Ion Etching, Sputtering, Chemical Etching, Plasma Chemistry, Micromasking, Microtrenching, Nanocrystal, Nanowire, Nanotube, Nanopillar, Nanoelectromechanical Systems (NEMS)

https://www.mrforum.com/product/advancing-silicon-carbide-electronics-technology-II

9781644900666, 2020, 292 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900673)



Aerogels I

Preparation, Properties and Applications

Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed and Rajender Boddula

This book focuses on aerogels and their applications in such areas as energy storage, thermal storage, catalysis, water splitting and environmental remediation. The materials covered include nanocellulose-, porous-, silica-, hybrid silica-, carbon-, graphene- and magnetic aerogels. Ways of modulating the pore structure of aerogels are presented, as well as surface modifications and the application of coatings. Future perspectives focus on functional foods, thickeners, stabilizers, and scaffolding in tissue repair.

Aerogels, Nanocellulose Aerogels, Non-Silicate Aerogels, Organic Aerogels, Composite Hybrid Aerogels, Carbon-based and Graphene-based Aerogels, Biogels, Hybrid Silica-based Aerogels, Energy Storage, Thermal Storage, Catalysis, Water Splitting, Environmental Remediation, Absorbents, Gas Filters, Packaging Materials, Electrical Devices, Thermal Insulations, Fire Retardants, Pharmaceutical and Biomedical Applications, Functional Foods, Thickeners, Stabilizers, Scaffolding in Tissue Repair

https://www.mrforum.com/product/aerogels-I

9781644900987, 2020, 282 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900994)

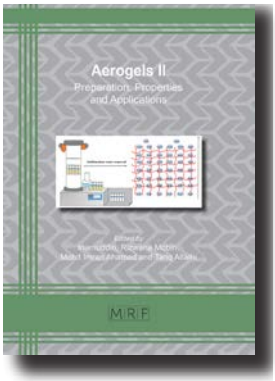
Aerogels II

Preparation, Properties and Applications

Eds. Inamuddin, Rizwana Mobin, Mohd Imran Ahamed and Tariq Altalhi

The book focuses on aerogels for biomedical applications, thermal insulation, energy storage, fuel cells, batteries and environmental remediation.

Aerogels, Biomedical Applications, Implantable Devices, Tissue Engineering, Bone Regeneration, Biosensing, Pharmacological Applications, Catalysts, Water Purification, Pesticides, Thermal Insulation, Energy Storage, Fuel Cells, Batteries, Environmental Remediation, Polymer Aerogels, Bioaerogels, Carbon-based Aerogels



https://www.mrforum.com/aerogels_II

9781644901281, 2021, 192 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901298)

Alternative Concrete – Geopolymer Concrete

Emerging Research and Opportunities

Adrian LĂZĂRESCU, Henriette SZILÁGYI, Cornelia BAERĂ, Andreea HEGYI

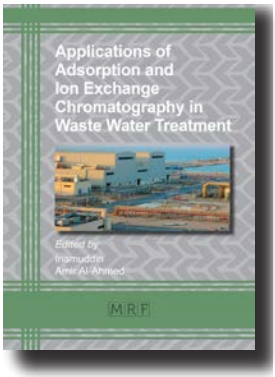
Portland cement based concrete is the most versatile, durable and reliable building material. Unfortunately, the production of Portland cement is environmentally unfriendly. An interesting alternative is provided by alkali-activated geopolymer materials (AAGM). This book focuses on fly ash-based alkali-activated geopolymer concrete, its production and characteristic properties. The re-use of waste materials and industrial by-products, such as fly ash, is not only economically of interest but also helps to reduce carbon dioxide emissions.

Geopolymers, Geopolymer Concrete, Alkali-activated Geopolymer Materials (AAGM), Portland Cement, Fly Ash-based Geopolymer Concrete, Reduction of Carbon Dioxide Emissions, Concrete Applications, Self-Compacting Concrete, High-strength Concrete, High-performance Concrete

https://www.mrforum.com/product/geopolymer-concrete

9781644901526, 2021, 138 pages, full color SC book, USD 75.00, also available as eBook PDF (9781644901533)

Applications of Adsorption and Ion Exchange Chromatography in Waste Water Treatment



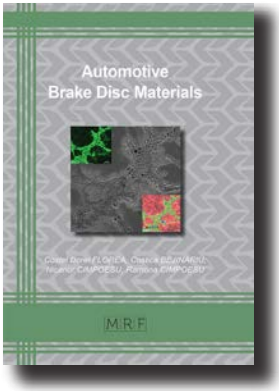
Eds. Inamuddin and Amir Al-Ahmed

The ion-exchange process is a natural phenomenon and mankind has been using this technique since the early days of civilisation. With the progress of technologies and concepts, we got a better understanding of this technique and increased its application horizon. Like in other research areas, nanotechnology has also penetrated heavily into this field, and has helped develop smart materials with better properties for application in adsorption and ion-exchange chromatography. A large amount of research was carried out in this field in the last few decades, showing the importance of these materials and technologies.

Water treatment is receiving great attention worldwide, due to the increasing demand of drinking water and hence the need to recycle polluted water sources. Keeping this importance in mind, this book "Applications of Adsorption and Ion Exchange Chromatography in Waste Water Treatment" has been edited with contributions from well know experts in the field, who have been working on different ion-exchange materials and technologies for many years.

https://www.mrforum.com/product/Adsorption-Ion-Exchange-Chromatography-Waste-Water-Treatment

9781945291326, 2017, 310 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291333)



Automotive Brake Disc Materials

Costel Dorel FLOREA, Costica BEJINARIU,
Nicanor CIMPOESU, Ramona CIMPOESU

The book reviews the current status of vehicle brake disc materials and technology. Topics covered include friction materials for braking systems, material characterization, mechanical properties, corrosion processes and methods for disc break investigations.
The book references 158 original resources with their direct web links for in-depth reading.

Braking Systems, Friction Materials, Car Braking Systems, Mathematical Models, Corrosion, Fractality, Cast Iron, Ceramic Thin Layers, Wear, Profilometry, Electro-Corrosion, Linear Potentiometry, Rainwater

https://www.mrforum.com/product/automotive-brake-disc-materials

9781644901441, 2021, 142 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644901458)

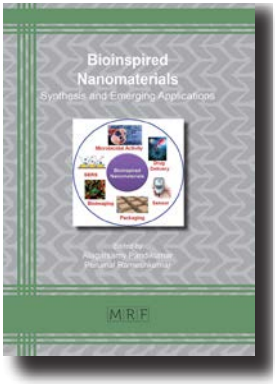
Bioinspired Nanomaterials

Synthesis and Emerging Applications

Eds. Alagarsamy Pandikumar, Perumal Rameshkumar

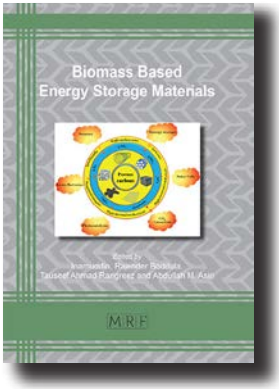
Biological synthesis employing microorganisms, fungi or plants is an alternative method to produce nanoparticles in low-cost and eco-friendly ways. The book covers the synthesis of metal nanoparticles, metal oxide nanostructures and nanocomposite materials, as well as the stability and characterization of bioinspired nanomaterials. Applications include optical and electrochemical sensors, packaging, SERS and drug delivery processes.

Bioinspired Nanomaterials, Metal Nanoparticles, Metal Oxide Nanostructures, Nanocomposite Materials, Microbicidal Activity, Drug Delivery, Packaging Applications, SERS Applications, Fluorescent Biosensing, Quantum Dots. Bio-Imaging, Electrochemical Sensors



https://www.mrforum.com/product/bioinspired-nanomaterials

9781644901564, 2021, 270 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901571)



Biomass Based Energy Storage Materials

Eds. Inamuddin, Rajender Boddula, Tauseef Ahmad Rangreez and Abdullah M. Asiri

The book presents an in-depth review of biomass-derived materials for energy storage technologies. Biomass is the most renewable and abundant carbon resource and has great potential for sustainable energy production. Topics covered include: Bone Char as a Support Material to Build a Microbial Biocapacitor; Biomass Derived Composites; Lignin- and Bamboo Derived Materials, Cellulose-Derived Electrodes; Water Splitting, Fuel cells, and Supercapacitor Technologies. 465 References.

Bamboo Stick, Biochar, Bioelectrodes, Biofilm, Biomass, Bone Char, Carbon Nanofiber, Cellulose-Derived Electrodes, Fuel Cells, Green Energy, Microbial Biocapacitor, Biomass Derived Composites, High-Frequency Supercapacitors, Lignin Materials, Bamboo Materials, Lithium-Ion Batteries, Lithium-Sulfur Batteries, Natural Precursors, Porous Carbon, Supercapacitor Technology, Water Splitting

https://www.mrforum.com/product/biomass-based-energy-storage

9781644900864, 2020, 150 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644900871)

Biosensors

Materials and Applications

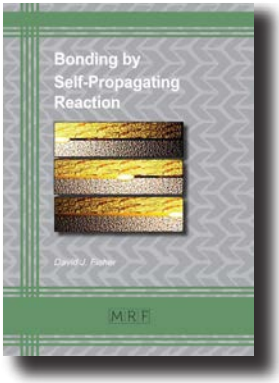
Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed, Abdullah M. Asiri

This book presents recent developments in the field of biosensors and their applications in healthcare. Topics include aptasensors for the detection of environmental contaminants, disease-causing pathogens, molecularly imprinted polymers for the detection of genetic materials, infectious diseases, in vivo monitoring of key molecules, functional nanoparticles targeted to specific tumor cells for detection as well as imaging.

Biosensors, Environmental Contaminants, Disease-causing Pathogens, Genetic Material, Tumor Cells, Cancer, Infectious Diseases, Monitoring Molecules in vivo, Aptasensors, Molecularly Imprinted Polymers, Biomarkers, Nanobiosensors, Theranostics, Bio-recognition, DNA Biosensors, Hydroxide Based Biosensors, Nanoparticles Combating Infections. Healthcare

https://www.mrforum.com/product/biosensors

9781644900123, 2019, 324 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900130)



Bonding by Self-Propagating Reaction

David. J. Fisher

Bonding by Self-Propagating Reaction represents a highly promising approach for the joining of dissimilar materials in such fields as microelectronics, infrared sensors, micro-electro-mechanical systems (MEMS), aerospace and nuclear industries, and surface engineering for chemical, mechanical and microsystems applications. The technique leads to high bonding strengths and low rates of damage on substrates. Another advantage is that it does not require high processing temperatures. The book is based on 251 original resources and includes their direct web link for in-depth reading.

Microsystems, Sensors, Actuators, High-Temperature Synthesis, Multilayer Films, Bilayer Thickness, Magnetron Sputtering, Thermite-Type Bonding, Silicon Wafers, Intermetallics, Metalloids, Metallic Glasses, Ceramics, Metallized Ceramics, Nanofoils, Nanocomposite Foils, Nanocrystalline Films, Nano-Laminates, Nano-Multilayers, Aluminum alloys, Nano-Aluminates, Polymers, Porous Materials, Stainless Steels, Titanium Alloys, Titanium Nanolayers

https://www.mrforum.com/product/bonding-by-self-propagating-reaction

9781644900086, 2019, 146 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900093)

By-Products of Palm Trees and Their Applications

Eds. Hamed El-Mously, Mohamad Midani, Mohamed Wagih

Palm by-products represent an economical resource for the sustainable development of rural areas in many countries of the world. The book focuses on the utilization of palm by-products in the following areas: Wood Alternatives and Panels, Sustainable Energy and Fertilizers, Bio-Composites, Biomedicine and Biotechnology, Fiber, Paper, and Textile, Food Applications, Design and Architecture.

Palm by-products, Palm Trees, Wood Alternatives, Sustainable Energy, Fertilizers, Bio-Composites, Biomedicine, Biotechnology, Fiber Technology, Paper, Textiles, Oil Palm Trunks, Palm Wood, Bamboo Wood, Buildings in High-risk Seismic Regions, Fiberboard Manufacturing, Palm-Oil Biodiesel, Charcoal Production, Compost Production, Date Palm Trees Mulch, Husk Fibre Reinforcing Material, Embryogenic Callus, Textile Palm Fibers, Coconut Residue, Protein from Date Waste, Printed Palm Leaflets

https://www.mrforum.com/product/palm-trees-by-products

9781644900161, 2019, 355 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900178)

Carbon Monoxide Sensing Technologies

Gurleen Kaur Gulati, Loveleen Kaur Gulati, and Satish Kumar

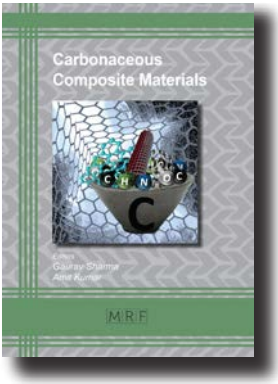
The book covers the sensing and monitoring of poisonous carbon monoxide pollution in the environment. The sensors covered include semiconducting metal oxides, carbon nanotubes, conducting polymeric thin films, sensors based on colorimetric detection, non-dispersive infrared sensors, electrochemical sensors and photoacoustic detectors.

Poisonous Gas Sensing, Carbon Monoxide Pollution, Semiconducting Metal Oxides, Carbon Nanotubes, Polymeric Thin Films, Colorimetric Gas Detection, Non-dispersive Infrared Sensors, Electrochemical Sensors, Photoacoustic Detectors, Bio-sensing of CO, Carbon Monoxide Pollution Sources, Mechanism of CO Toxicity

https://www.mrforum.com/product/co-sensing

9781644901205, 2021, 76 pages, full color SC book, USD 55.00, also available as eBook PDF (9781644901212)

Carbonaceous Composite Materials



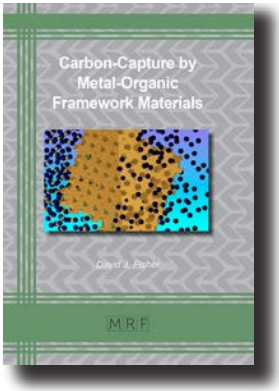
Eds. Gaurav Sharma, Amit Kumar

All you need to know on current progress in the development, design and utilization of carbonaceous materials in such diverse areas as electronics, medical implants, drug delivery, clean energy, biofuel and pollution control. Emphasis is placed on "engineered carbons" which include fullerenes, graphene, carbon foam, nanotubes, graphene oxide, carbon aerogels, carbon matrix composites, reinforced polymers and many others.

Carbonaceous Materials, Carbons, Graphite, Biochar, Fullerenes, Graphene, Carbon Foam, Carbon Nanotubes, Graphene Oxide, Graphitic Carbon Nitride, Carbon Aerogels, Carbon Matrix Composites, Organic-inorganic Hybrid Materials, Building Materials, Carbon-based Composites, Carbon Matrix Polymer Composites, Conducting Polymers, Clean Energy, Energy Storage, Electrode Materials, Batteries, Supercapacitors, Fuel Cells, Catalysts, Bio-fuel Production, Organic Pollutants, Catalysts, Greenhouse Gas Sequestration, Climate Control, Bio-medical Applications, Biomass Applications, Smart Hybrids, Photocatalysts, Hydrogen Production, Contaminants Degradation, Pollution Control

https://www.mrforum.com/product/carbonaceous-composite-materials

9781945291968, 2018, 342 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291975)



Carbon-Capture by Metal-Organic Framework Materials

David J. Fisher

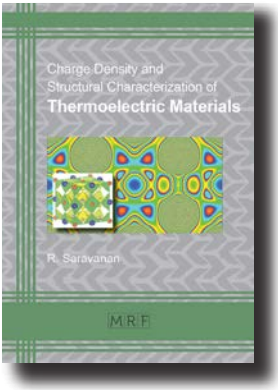
Metal-Organic Framework Materials (MOFs) are well suited for absorbing carbon dioxide. MOFs can form highly-porous structures with great adsorption capacities. They also offer good catalytic properties and much research refers to the relationship between catalytic performance and framework structure. In addition to simple CO2 absorption, there are other interesting applications, such as the direct electrochemical reduction into useful chemicals and fuels, the conversion of CO2 into methanol, the electrochemical reduction of CO2, or electrocatalytic hydrogen evolution (thus boosting the 'hydrogen economy'). The book references 295 original resources and includes their direct web link for in-depth reading.

Global Warming, Carbon Dioxide Capture, Metal-Organic Frameworks MOFs, Adsorbents for CO2, Porous Solids, Catalytic Performance, Synthesis of MOFs, Conversion of CO2 into Methanol, Electrocatalytic Hydrogen Evolution, Hydrogen Economy, Gas Adsorption, Gas Separation, Organic Ligands, Metal Ion Clusters

https://www.mrforum.com/product/carbon-capture-by-metal-organic-framework-materials

9781644900840, 2020, 140 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900857)

Charge Density and Structural Characterization of Thermoelectric Materials



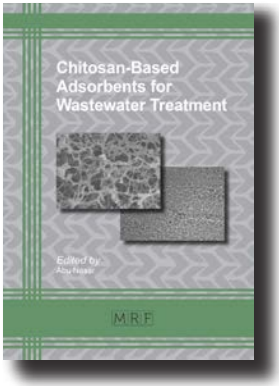
R. Saravanan

Thermoelectric materials permit the direct conversion of temperature differences into electric energy, and vice versa. They are therefore of highest technological interest in applications such as solid state coolers, waste heat recovery, sensors and detectors, and power generators including remote power generation.
In addition to providing an introduction to the field, the main objective of this book is to present the results of the growth and structural characterization of thermoelectric materials that are of high current interest; including Mg2Si, PbTe, Bi1-xSbx, Bi2Te3, Sb2Te3, Sn1-xGexTe and InSb.

Materials Science, Thermoelectric Materials, Thermoelectric Mechanism, Charge Density, Structural Characterization, Magnesium silicide, Lead telluride, Bismuth doped with antimony, Bismuth telluride, Antimony telluride, Tin telluride doped with germanium, Indium Antimonide, Pair Distribution Function, Maximum Entropy Method, Rietveld Method

https://www.mrforum.com/product/1/

9781945291005, 2016, 182 pages, full color SC book, USD 100.00, also available as eBook PDF (9781945291012)



Chitosan-Based Adsorbents for Wastewater Treatment

Ed. Abu Nasar

Chitosan is a natural amino polymer. It is eco-friendly, biocompatible, biodegradable, cost-effective, easily available and has high potential to be utilized as an adsorbent. Because of their excellent chelating power, chitosan-based adsorbents have a very high ability to tightly bind the pollutants present in contaminated water and wastewater. Different heavy metals and toxic dyes can be effectively removed.

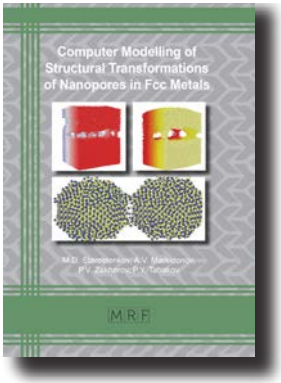
Wastewater Treatment, Adsorbent, Chitosan, Adsorption Capacity of Chitosan, Heavy Metal Removal from Wastewater, Dye Removal from Wastewater, Chitosan-Based Nanocomposites, Removal of Arsenicals from Wastewater, Surfactants for Chitosan, Surfactants for Biomaterials

https://www.mrforum.com/product/chitosan-based-adsorbents

9781945291746, 2018, 286 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291753)

Computer Modelling of Structural Transformations of Nanopores in Fcc Metals

M.D. Starostenkov, A.V. Markidonov, P.V. Zakharov, P.Y. Tabakov

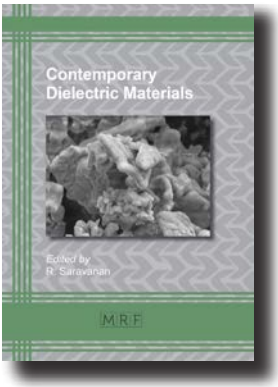


The book focuses on the effects of shock waves on vacancies and their clusters in fcc crystals. It is shown that high-speed cooperative atomic displacements represent a powerful tool for the purposeful modification of defect structures in crystalline bodies. The results are important for radiation material science, nano-engineering, the study of shock wave effects and the ultrasonic treatment of materials.

Computer Modelling of Nanopores, Molecular Dynamics, Fcc Metals, Defect Structures in Crystals, Radiation Material Science, Nano-Engineering of Materials, Ultrasonic Treatment of Materials, Radiation Induced Defects, Vacancy Clusters, Shock Wave Effects, Radiation-Resistant Materials, Thermomechanical Processing, Energy Transfer Mechanism, Nanopore Nucleation, Nanopore Based Filters, Nanopore Based Detectors, Cooling Elements in Nano-Electronics

https://www.mrforum.com/product/structural-transformations-nanopores-fcc-metals

9781644900505, 2019, 130 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900512)



Contemporary Dielectric Materials

Ed. R. Saravanan

This book deals with experimental results of the physical characterization of several important, dielectric materials of great current interest.
The experimental tools used for the analysis of these materials include X-ray diffraction, dielectric measurements, magnetic measurements using a vibrating sample magnetometer, optical measurements using a UV-Visible spectrometer etc.

Materials Science, Dielectric Materials, Nanocrystalline NiO, GaO Powders, Multiferroic Material, ZnO Nanoparticles, ZnO Ceramics

https://www.mrforum.com/product/contemporary-dielectric-materials/

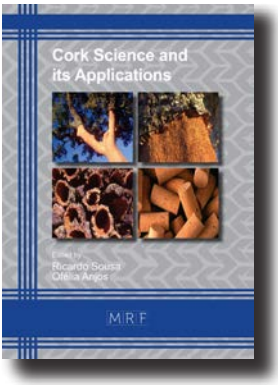
9781945291128, 2017, 156 pages, full color SC book, USD 100.00, also available as eBook PDF (9781945291135)

Cork Science and its Applications

Eds. Ricardo Sousa and Ofélia Anjos

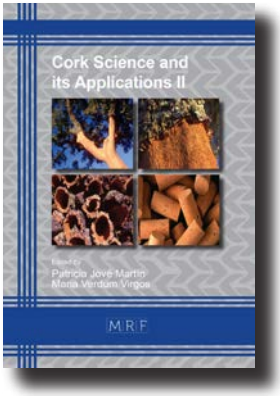
Cork and cork agglomerates are natural cellular materials that are receiving much interest in a number of technological applications, e.g. as Feedstock for the Additive 3D Printing Technology; Solar, Wind and Bioenergy applications; Sorbent for Pesticides and Heavy Metals; and Water Treatment. Experimental, analytical and computational research is reported, as well as new applications in fields ranging from design and architecture to mechanical, chemical, civil and electronics engineering.

3D Printing Feedstock, Renewable Energy, Bioenergy, Biosorbent, Wastewater Treatment, Cork Stopper, Compression Moulding, Thermal Conductivity



https://www.mrforum.com/product/cork-science-applications

9781945291401, 2017, 94 pages, full color SC book, USD 85.00, also available as eBook PDF (9781945291418)



Cork Science and its Applications II

Eds. Patricia Jové Martín and Maria Verdum Virgos

Natural cork materials have many interesting applications. The present book places emphasis on such topics as cork quality, crashworthiness of agglomerated cork, architectural applications, cork stoppers, production of hollow cork pieces, 3D print technology filaments based on cork waste, effects of extremely low and high temperatures, and the adaptation of cork oak forests to climate change.

Cork Oak, Agglomerated Cork, Architectural Applications of Cork, Natural Cork Stoppers, Hollow Pieces of Cork, Rotational Moulding of Cork, 3D Print Technology based on Cork Waste, 3D Print Technology based on Natural Biological Sources, Crashworthiness of Agglomerated Cork, Low and High Temperature Effects on Cork

https://www.mrforum.com/product/cork-science-applications2

9781644900406, 2019, 56 pages, full color SC book, USD 55.00, also available as eBook PDF (9781644900413)

Current Trends on Lanthanide Glasses and Materials

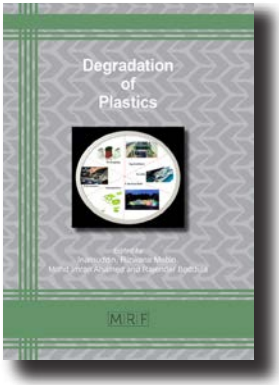
Ed. Sooraj Hussain Nandyala

This monograph covers the latest developments in lanthanide doped glasses and phosphor materials. The book aims to explain the basic functioning mechanisms of phosphor materials, and the luminescence behaviour of glasses doped with certain lanthanide ions. It also describes how to plot colors in a CIE chromaticity diagram.
The book will be of use for senior researchers, materials scientists, chemists, physicists, engineers, as well as research students to gain knowledge on current developments of these materials.

Materials Science, Lanthanide Glasses, Lanthanide Doped Glasses, Phosphor Materials, Luminescence Behaviour of Glasses, CIE Chromaticity Diagram, Solid State Lighting

https://www.mrforum.com/product/current-trends-on-lanthanide-glasses-and-materials/

9781945291142, 2017, 200 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291159)



Degradation of Plastics

Eds. Inamuddin, Rizwana Mobin, Mohd Imran Ahamed and Rajender Boddula

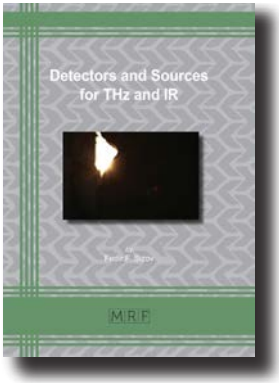
The degradation of plastics is most important for the removal and recycling of plastic wastes. The book presents a comprehensive overview of the field. Topics covered include plastic degradation methods, mechanistic actions, biodegradation, involvement of enzymes, photocatalytic degradation and the use of cyanobacteria. Also covered are the market of degradable plastics and the environmental implications.

Degradable Plastics, Bioplastics, Biodegradable Plastics, Enzymes, Cyanobacteria, Photocatalytic Degradation, Wastewater Treatment, Degradable Plastic Market, Polyethylene, Polypropylene, Polystyrene, Polyvinyl Chloride, Polyurethane, and Polyethylene Terephthalate

https://www.mrforum.com/degradation-of-plastics

9781644901328, 2021, 330 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901335)

Detectors and Sources for THz and IR



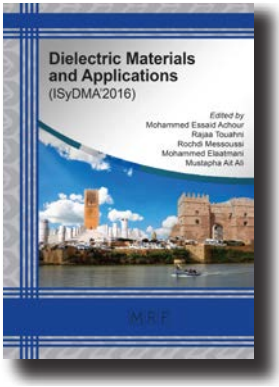
Fedir F. Sizov

IR and THz technologies are widely used in security screening and surveillance, astronomy, spectroscopy, biomedicine, food and package inspection, detection of concealed weapons, vision through camouflage, etc. There are increasing demands for the fast transmission of large amounts of data. THz radiation penetrates dielectric materials like plastics, ceramics or cardboard allowing contact-free testing. Medical imaging technologies can provide guidance for surgeons in delimiting the margins of tumors, help clinicians to visualize diseased areas, etc.

THz and IR Detectors, THz and IR Sources, Superconducting Photon Detectors, Superconducting THz Detectors, Graphene-based Detectors, THz Sensors with Metamaterials, Photoconductive Antenna Detectors, Imaging, Communication, Spectroscopy, Sensing, Security Screening, Surveillance, Astronomy, Biomedicine, Food Inspection, Package Inspection, Concealed Weapons Detection, Transmission of Large Amounts of Data, Non-destructive Testing, Contact-free Testing, Medical Imaging Technologies

https://www.mrforum.com/product/detectors-and-sources-for-thz-and-ir

9781644900748, 2020, 330 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900758)



Dielectric Materials and Applications

ISyDMA'2016

Eds. Mohammed Essaid Achour, Rajaa Touahni, Rochdi Messoussi, Mohammed Elaatmani, Mustapha Ait Ali

The First International Symposium on Dielectric Materials and Applications (ISyDMA'2016) was held in Kenitra (4 May, 2016) and in Rabat (May 5-6, 2016), Morocco. ISyDMA'2016 provided an international forum for reporting the most recent developments in Advanced Dielectric Materials and applications.
The goal of this collection of peer reviewed papers is to provide researchers and scientists from all over the world with recent developments in dielectric materials and their innovative applications. The book will be useful for materials scientists, physicists, chemists, biologists, and electrical engineers engaged in fundamental and applied research or technical investigations of such materials.

Dielectric Materials, Nanomaterials, Nanotubes, Nanocomposites, Polymer Composites, Thin Films, Metallic Glasses, Ceramic Glasses, Biomaterials, Solar Cells

https://www.mrforum.com/product/dielectric-materials-and-applications/

9781945291180, 2016, 330 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291197)

Digital Methods in Developing Textile Products for People with Locomotor Disabilities

Bianca Aluculesei, Sybille Krzywinski, Antonela Curteza, Manuela Avadanei

In the United States, there are 3-4 million wheelchair users, with the number steadily increasing. This book focuses upon the design of garments for wheelchair-users by considering the shape of the body while in the sitting position, the needs of the user (functionality, fashionability, ease-of-use, affordability, safety), as well as the characteristics and properties of the materials used. The book references 186 original resources and includes their direct web link for in-depth reading.

Disabilities, Clothing for Disabled Persons, Wheelchair Users, Paraplegia, Functional Clothes, Kinematic Model, Scanning Procedure, 2D-3D/ 3D-2D Virtual Prototype, Body Posture Simulation, Virtual Pattern Making, Garment Fit Simulation

https://www.mrforum.com/product/digital-methods-for-developing-textile-products

9781644901540, 2021, 144 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644901557)

Dilute Magnetic Semiconducting (DMS) Materials

R. Saravanan

Diluted Magnetic Semiconductors (DMS) play a vital role in modern electronics industry. It is important to understand the fundamental properties of these materials in order to apply them to their full potential.
This book presents an analysis of the charge density distribution and other properties of some silicon and germanium based diluted magnetic semiconductors.

Diluted Magnetic Semiconductors (DMS), Magnetic Semiconductors, Vanadium Doped Germanium, Manganese Doped Germanium, Cobalt Doped Germanium, Manganese Doped Silicon, Nickel Doped Silicon

https://www.mrforum.com/product/dilute-magnetic-semiconducting-materials

9781945291760, 2018, 204 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291777)

Electrochemical Capacitors

Theory, Materials and Applications

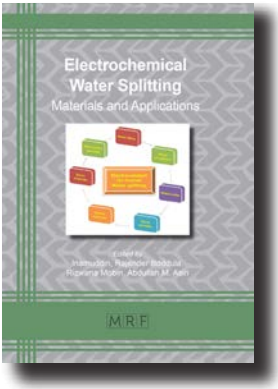
Eds. Inamuddin, Mohammad Faraz Ahmer, Abdullah M. Asiri

Electrochemical capacitors are most important for the development of future energy storage systems and sustainable power sources. New superior hybrid supercapacitors are based on binary and ternary thin film nanocomposites involving carbon, metal oxides and polymeric materials. The synthesis of materials and fabrication of electrodes for supercapacitor applications is discussed in detail. The book also presents the fundamental theory and a thorough literature review of supercapacitors.

Energy Storage, Electrochemical Capacitors, Nanocomposites, Hybrid Supercapacitors, Carbon/Metal Oxide Composites, Metal Oxides/Hydroxides Composites, Polymer Type Capacitors, Nanoscience, Hydrothermal Synthesis, Graphene-based Composites, Ultrasonic Assisted Synthesis

https://www.mrforum.com/product/electrochemical-capacitors

9781945291562, 2018, 298 pages, full color SC book, USD 130.00, also available as eBook PDF (9781945291579)



Electrochemical Water Splitting

Materials and Applications

Eds. Inamuddin, Rajender Boddula, Rizwana Mobin, Abdullah M. Asiri

Aiming at the generation of hydrogen from water, electrochemical water splitting represents a promising clean technology for generating a renewable energy resource. The book reviews the fundamental aspects and describes recent research advances. Properties and characterization methods for various types of electrocatalysts are discussed, including noble metals, earth-abundant metals, metal-organic frameworks, carbon nanomaterials and polymers.

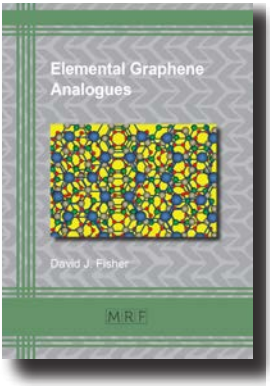
Electrochemical Water Splitting, Renewable Energy Resource, Electrocatalysts, Oxygen Evolution Reaction (OER), Noble Metal Catalysts, Earth-Abundant Metal Catalysts, MOF Catalysts, Carbon-based Nanocatalysts, Polymer Catalysts, Transition Metal-based Electrocatalysts, Fe-based Electrocatalysts, Co-based Electrocatalysts, Ni-based Electrocatalysts, Metal Free Catalysts, Transition-Metal Chalcogenides, Prussian Blue Analogues

https://www.mrforum.com/product/electrochemical-water-splitting

9781644900444, 2019, 250 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900451)

Elemental Graphene Analogues

D.J. Fisher

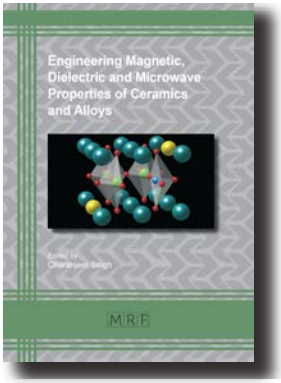


A recent innovation has been the discovery and preparation of graphene; single-monolayer carbon having a remarkable strength. This success has naturally led researchers to ask whether other materials might also be prepared in an analogous monolayer form and offer similarly amazing properties.
The present monograph summarizes all of the work carried out on such monolayer materials up to the beginning of 2017, with attention being restricted to those, like graphene, being composed of a single element. Most of the work done so far on these 'elemental graphene analogues' has been theoretical, but the existing experimental data suggest that they may well become as useful as graphene.

2-Dimensional Materials, Antimonene, Arsenene, Bismuthene, Borophene, Chair Structure, Germanene, Indiene, Monolayers, Nano-Materials, Phosphorene, Silicene, Spintronics, Stanene, Tinene, Valleytronics, Zig-Zag Structure

https://www.mrforum.com/product/elemental-graphene-analogues

9781945291302, 2017, 384 pages, full color SC book, USD 150.00, also available as eBook PDF (9781945291319)



Engineering Magnetic, Dielectric and Microwave Properties of Ceramics and Alloys

Ed. Charanjeet Singh

New research on the magnetic, dielectric and microwave properties of promising materials for domestic, industrial, military and medical applications are presented, with focus on biomaterials, ferrites, Ni-Fe alloys, capacitors, multiferroics, microwave absorbers and perovskite materials. Special emphasis is placed on bioceramics for orthopedic applications; classification of biomaterials; bioactive glass systems; preparation, properties and applications of PbFe12O19 hexaferrites; Ni-Fe alloys for shielding electronic devices from external magnetostatic fields; the role of multiferroics in spintronics field; design of microwave absorbers and absorption characteristics of ceramics.

Biomaterials for Bone Repair, Lead Hexaferrite, Ni-Fe Films, Capacitor Materials, Multiferroics, Spintronics, Dielectric Properties of Ferrites, Rare-Earth Doped Manganite Perovskites, Microwave Absorption in Ceramics, Bioactive Glass Systems, PbFe12O19 Hexaferrites, Shielding Electronic Devices from Magnetostatic Fields, Microwave Absorbers, Classification of Biomaterials, Hydroxyapatite, Lead Ferrites

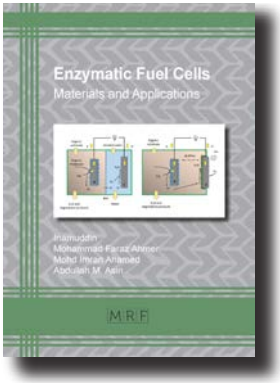
https://www.mrforum.com/product/engineering-magnetic-dielectric-microwave-properties

9781644900383, 2019, 198 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900390)

Enzymatic Fuel Cells

Materials and Applications

Eds. Inamuddin, Mohammad Faraz Ahmer, Mohd Imran Ahamed, Abdullah M. Asiri

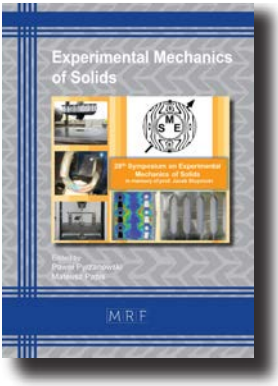


Enzymatic biofuel cells, in contrast to conventional energy systems, use enzymes as catalysts for the conversion of chemical energy into electrical energy. The book presents various aspects of biofuel cells including fuel cell electrochemistry, use of enzyme and enzyme immobilization techniques, use of materials such as mesoporous materials, graphene composites, conducting polymer composites and applications of biofuel cells.

Fuel Cells, Biofuel cells, Enzyme Catalysts, Energy Conversion, Fuel catalysis, Sucrose Fuel, Fructose Fuel, Glucose Fuel, Implantable Gadgets, Biosensors, Pacemakers, Catheters, Defibrillators, Insulin pumps, Artificial Muscles, Mesoporous Materials, Graphene Composites, Conducting polymers, Fuel Cell Electrochemistry, Fuel Cell Applications

https://www.mrforum.com/product/enzymatic-fuel-cells

9781644900062, 2019, 196 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900079)



Experimental Mechanics of Solids

Eds. Paweł Pyrzanowski, Mateusz Papis

The book presents some of the latest experimental achievements in the mechanics of solids, machine design, mechanical engineering, biomechanics, composites, adhesive joints, laminates, coating techniques, bridge joints, data analysis, fatigue cracks, cyclic properties of metals, vibrational control systems etc.

Mechanics of Solids, Machine Design, Mechanical Engineering, Biomechanics, Composite Sandwich Panels, High-Temperature Creep Testing, Failure in Adhesive Joints, Stainless Steel Pipes, Wrought Aluminum Alloys, Laminate Beams, DCB Test Configuration, Composite Laminates, Fastening Systems, Photoelastic Coating Techniques, Car Suspension Failure Analysis, Perforated Thin-Walled Bars, Fatigue Crack Growth, Neck Effect in Cylindrical Shells, Floating Bridge Joints, Torsional Friction, Load Identification, Measurements and Data Analysis, Fatigue Cracks in Metals, Articulated Rigid Body Vehicles, Cyclic Properties of Metals, Fatigue Damage Analysis, Offshore Structures, Hot-Spot Stress, Notch Strain, Vibration Control

https://www.mrforum.com/product/experimental-mechanics-of-solids

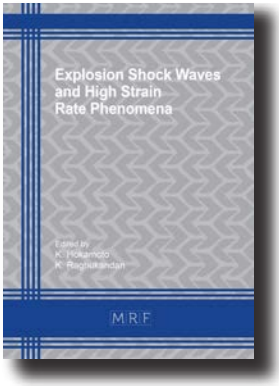
9781644900208, 2019, 178 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900215)

Explosion Shock Waves and High Strain Rate Phenomena

Eds. K. Hokamoto and K. Raghukandan

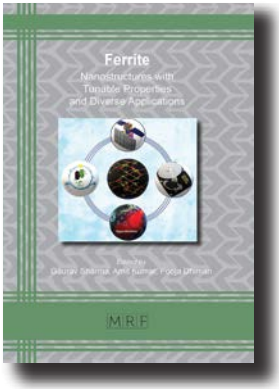
The book presents the papers presented at the 6th international conference on Explosion, Shock Wave and High Strain-Rate Phenomena (ESHP).

Explosion Shock Waves, High Strain-Rate Phenomena, Manufacturing using Impact Loading, Flammable Gas Detaonation, Auxetic Cellular Structures, Underwater Shock Waves, Magnetic Pressure Welding, Shock Synthesis of Oxides, Impact Joining of Dissimilar Metals, Dislocation Wall Structures, Strength of Rock at High Strain Rates, Fiber Reinforced Mortar, Impact Analysis of Carbon Fiber Reinforced Polymer, Explosive Welding , Underwater Explosive Welding, Ultrafine Explosives, Explosive Cladding of Metals, Explosive Clads with Interlayers



https://www.mrforum.com/product/explosion-shock-waves-and-high-strain-rate-phenomena

9781644900321, 2019, 182 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900338)



Ferrite

Nanostructures with Tunable Properties and Diverse Applications

Eds. Gaurav Sharma, Amit Kumar, Pooja Dhiman

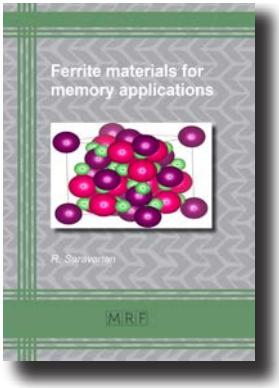
Ferrites are highly interesting high-tech materials. The book covers their classification, structure, synthesis, properties and applications. Emphasis is placed on biomedical applications, degradation of organic pollutants, high frequency applications, photocatalytic applications for wastewater remediation, solar cell applications, removal of organic dyes and drugs from aquatic systems, and the synthesis of hexagonal ferrites.

Ferrite, Spinel Ferrite Nanoparticles, Biomedical Applications, Ferrite Based Heterojunction, Photocatalytic Degradation of Organic Pollutants, Nickel-Zinc Ferrites, Spinel Ferrite Based Nanomaterials, Water Remediation, Magnetic Nano Particles, Wastewater Treatment, Piezo-Phototronic Effect, Ferrite Based Solar Cells, Aurivillius Based Ceramics, Hexagonal Ferrites

https://www.mrforum.com/product/ferrite

9781644901588, 2021, 378 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901595)

Ferrite Materials for Memory Applications



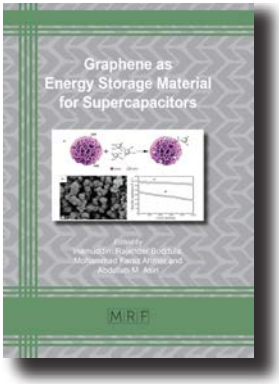
R. Saravanan

The aim of this book is to describe the synthesis and characterization of various nano ferrite materials used for memory applications. It is now well established that materials synthesized in nanometer scale have novel properties compared to their bulk counterparts. The distinct feature of the book is the construction of charge density diagrams of ferrites by using the maximum entropy method (MEM). It is analyzed how the charge density distribution in the ferrite unit cell affects charge related properties.

Magnetic Materials, Nano Ferrite Materials Characterization Techniques, Dielectric Studies, Maximum Entropy Method (MEM), Magnetic Properties, Optical Properties, Dielectric Properties

https://www.mrforum.com/product/ferrite-materials-for-memory-applications

9781945291388, 2017, 172 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291395)



Graphene as Energy Storage Material for Supercapacitors

Eds. Inamuddin, Rajender Boddula, Mohammad Faraz Ahmer and Abdullah M. Asiri

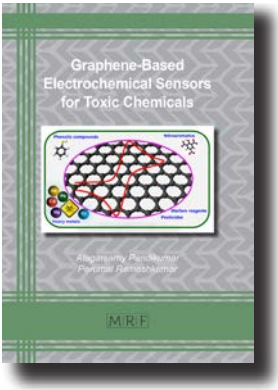
The book presents a comprehensive review of graphene-based supercapacitor technology. It focusses on synthesis, characterization, fundamental properties and promising applications of graphene materials and various types of graphene-based composites. The wide range of applications include electric power systems of portable electronics, hybrid-electric vehicles, mobile phones etc.

Graphene, Energy Storage Materials, Supercapacitors, Micro-Supercapacitors, Self-Healable Supercapacitors, Graphene-Based ZnO Nanocomposites, Defect Engineered Graphene Materials, Electric Power Systems

https://www.mrforum.com/product/graphene-energy-storage-material-supercapacitors

9781644900543, 2020, 284 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900550)

Graphene-Based Electrochemical Sensors for Toxic Chemicals



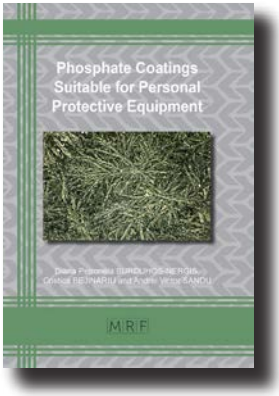
Eds. Alagarsamy Pandikumar, Perumal Rameshkumar

Graphene-based nanocomposites are very useful in detecting toxic chemicals such as heavy metals, inorganic anions, phenolic compounds, pesticides, and chemical warfare agents. The book presents recent progress on relevant topics: Toxicity of chemicals, importance of electrochemical sensors, different types of graphene-based nanomaterials, Neurotoxins and electroanalytical detection of toxic chemicals.

Graphene-based Nanocomposites, Electrochemical Sensors, Toxic Chemicals, Sensors for Toxic Molecules, Graphene-Metal Oxides, Graphene-Metal Chalcogenides, Graphene-Polymer Nanocomposites, Graphene-Carbon Nanotubes, Graphene-Carbon Nitrides, Graphene-MOF Composites, Heavy Metals, Phenolic Compounds, Pesticides, Chemical Warfare Agents

https://www.mrforum.com/product/graphene-based-electrochemical-sensors

9781644900949, 2020, 314 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900956)



Green Materials Obtained by Geopolymerization for a Sustainable Future

Petrica VIZUREANU and Dumitru-Doru BURDUHOS-NERGIS

Geopolymerization techniques allow the conversion of industrial waste materials into environmentally friendly materials. The vast list of applications includes thermal insulation, fire-resistant materials, construction materials, refractory linings, cements and concretes, encapsulation of radioactive and toxic waste etc. The book presents the technological processes involved, as well as the characterization and applications of the resulting ecomaterials.

Geopolymerization, Industrial Waste Materials, Green Materials, Thermal Insulation, Fire-resistant Materials, Construction Materials, Refractory Linings, Cements and Concretes, Encapsulation of Radioactive Waste, Encapsulation of Toxic Waste, Thermal Power Plant Ash, Aluminosilicates Recycling, Porous Geopolymers, Environmentally Friendly Concrete

https://www.mrforum.com/product/green-materials-obtained-by-geopolymerization

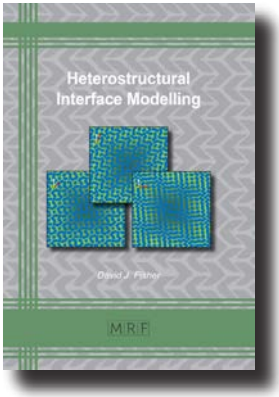
9781644901120, 2021, 212 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901137)

Heterostructural Interface Modelling

David J. Fisher

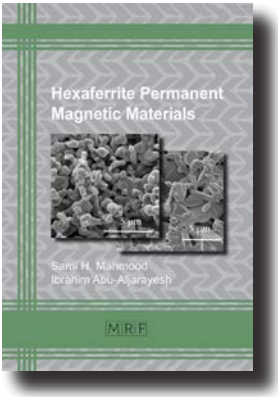
The interface structure of joined materials is a key factor in the development of high-tech components. The book reviews recent experimental and theoretical research in the area of modelling new types of joints and predicting the expected properties. The book references 302 original resources and includes their direct web link for in-depth reading.

Interface Modelling, Lattice Theory, Semiconductor Electronics, Lithium-ion Conductor, Graphite Filaments, Graphite Sheets, Interface Stresses, Epitaxial Deposition, Composite Design, Coincidence-Site Lattice Theory, Ionic Conductivity, Interfacial Lattice Strain, Epitaxial Thin Films, Compatible-Material-Combination Software, Lattice-Matching to Silicon, Lattice-Matching to Smiconductors, Lattice-Matching to Sapphire, Lattice-Matching to Ceramics, Lattice-Matching to Metals, Lattice-Matching to Organic Materials



https://www.mrforum.com/product/heterostructural-interface-modelling

9781644900468, 2019, 162 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900475)



Hexaferrite Permanent Magnetic Materials

Sami H. Mahmood, Ibrahim Abu-Aljarayesh

This concise book presents the basic concepts of magnetism and magnetic properties pertinent to permanent magnetic materials. Emphasis is placed on hexaferrite materials for permanent magnet applications, with M-type ferrites as the focal point.

Hexaferrite Permanent Magnetic Materials, Permanent Magnets, Ferrite Magnets, Sm-Co Magnets, Nd-Fe-B Magnets, Coercivity, Magnetic Dipole Moments, Magnetic Materials, Free Energies of a Ferromagnet, Domains, Hysteresis, M-Type Hexaferrite, Structural Properties, Magnetic Properties, Synthesis, Motor, Transducer, Microwave Absorption, Passive Microwave Devices, Hysteresis, Remanence, Coercivity, Thermal Stability, Recording processes

https://www.mrforum.com/product/hexaferrite-permanent-magnetic-materials/

9781945291067, 2016, 197 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291074)

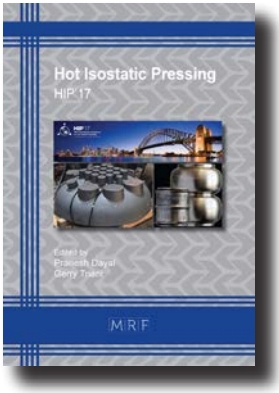
Hot Isostatic Pressing

HIP'17

Eds. Pranesh Dayal and Gerry Triani

Hot Isostatic Pressing (HIP) has important applications in advanced materials manufacturing, automotive, aerospace, oil and gas industries, power generation, and medical and nuclear fields.

Hot Isostatic Pressing, Radioactive Nuclear Waste, Cast Aluminum Alloys, Ceramic Materials, Superalloys, Manufacturing of Turbine Blisks, Additive Manufacturing, Diffusion Welding, Turbopump Components, Valve Spindles, Ni-base Superalloys, Titanium Aluminide, Stainless Steels, Metal Matrix Composites, Phase Transformations, Cooling Equipment, Duplex Steel, Diamond/SiC Composites, Reactor Vessel Fabrication, Electron Beam Welding, Superconducting Magnet Structures



https://www.mrforum.com/product/hot-isostatic-pressing

9781644900024, 2019, 252 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900031)

Industrial Applications of Green Solvents

Volume I

Eds. Inamuddin, Mohd Imran Ahamed and Abdullah M. Asiri

Green chemistry aims at reducing pollution and avoiding hazardous waste in the environment, as well as in a number of industrial applications, including chemical, pharmaceutical, paint and leather industries. The book focuses on new applications of green solvents (water, ionic liquids, supercritical carbon dioxide, terpenes) in such areas as chemical synthesis (including lipase-catalyzed reactions, organic synthesis, esterification reactions), gas separation membranes, environment-friendly products, low energy requirement processes and alternatives to hazardous substances.

Green Chemistry, Pollution Control, Hazardous Waste, Environmental Pollution, Green Solvents, Ionic Liquids, Supercritical Carbon Dioxide, Terpenes, Chemical Synthesis, Lipase-catalyzed Reactions, Organic Synthesis, Esterification, Gas Separation Membranes, Environment-friendly Products, Low Energy Requirement Processes, Alternatives to Hazardous Substances, Spiroheterocycles in Water, Sustainable Organic Synthesis, Chemical Industry, Pharmaceutical Industry, Paint Industry, Leather Industry

https://www.mrforum.com/product/green-solvents-I

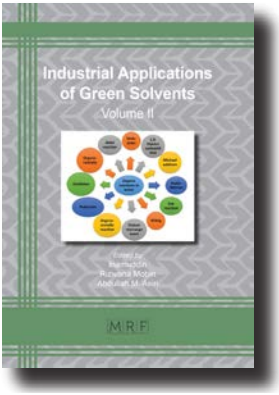
9781644900222, 2019, 354 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900239)

Industrial Applications of Green Solvents

Volume II

Eds. Inamuddin, Rizwana Mobin and Abdullah M. Asiri

The book explores industrial applications of green solvents in industrially important areas such as oil extraction, sensors and biosensors, CO2 capture, lignocellulosic biomass utilization, bio-based chemicals and their application in catalysis, electrochemical devices, purification of pharmaceuticals, organic synthesis and transformations, bio-lubricant additives, aluminum and aluminum-alloy production. The solvents covered include water, ionic liquids, supercritical carbon dioxide and glycerol.



Green Chemistry, Green Solvents, Ionic Liquids, Supercritical Carbon Dioxide, Glycerol, Biosensors, CO2 Capture, Lignocellulosic Biomass Utilization, Bio-based Chemicals, Electrochemical Devices, Chromatographic Purification of Pharmaceuticals, Bio-lubricant Additives, Green Electrolytes for Aluminum Production, Green Electrolytes for Aluminum-Alloy Production, Green Solvents for Oil Extraction

https://www.mrforum.com/product/industrial-applications-of-green-solvents-volume-ii

9781644900307, 2019, 300 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900314)

Inkjet Based 3D Additive Manufacturing of Metals

Mojtaba Salehi, Manoj Gupta, Saeed Maleksaeedi,
Nai Mui Ling Sharon

Additive Manufacturing (AM) is a highly promising rapid manufacturing process. Based on incremental layer-upon-layer deposits, three dimensional components of high geometrical complexity can be produced; applications ranging from aerospace and automotive to biomedical industries. Laser, electron beam and wire-based techniques are reviewed.
The various metal printing techniques are compared with each other and case studies are referred to.

Additive Manufacturing, Inkjet Printing of Metals, 3D Printed Components, Laser Melting, Laser Sintering, Laser Powder Deposition, Material Selection Guidelines for Inkjet Printing of Metals, Biological Properties of AM Metals, Surface Properties of AM Metals, Porosity of AM Metals, Shrinkage of AM Metals, Mechanical of Properties of AM Metals, Density of Properties of AM Metals

https://www.mrforum.com/product/inkjet-based-3d-additive-manufacturing-of-metals

9781945291449, 2018, 158 pages, full color SC book, USD 95.00, also available as eBook PDF (9781945291456)

Innovation in Smart Materials and Structural Health Monitoring for Composite Applications

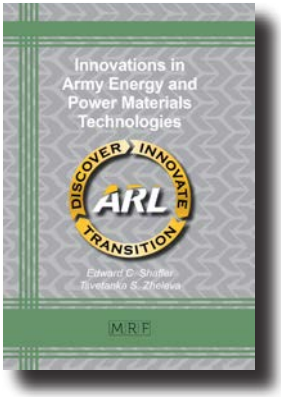
F. Mustapha, A. Hamdan, Nisreen N. Ali Al-Adnani,
K.D. Mohd Aris

Structural health monitoring (SHM) is an automated approach to determine any changes in the integrity of mechanical systems. The SHM system gives information in real time and online.
The book explains and discusses the advantages of Root Mean Square Deviation (RMSD) techniques. Special focus is placed on applications of structural health monitoring of bio-composite turbine blades for vertical axis wind turbines.

Smart Materials, Composites, Structural Health Monitoring, Non-destructive Test, Composite Aircraft Structures, Root Mean Square Deviation (RMSD) , Wind Turbine System, Biocomposite Turbine Blade, Vertical Axis Wind Turbine, Micro Energy Harvester

https://www.mrforum.com/product/Structural-Health-Monitoring-Composite-Applications

9781945291289, 2017, 184 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291296)



Innovations in Army Energy and Power Materials Technologies

Eds. Edward C. Shaffer, Tsvetanka S. Zheleva

This compendium reports fundamental science and engineering advances of the US Army Research Labratory (ARL) within the area of Energy and Power technologies. Although, in general, ARL's Materials Research encompasses a broad range of materials technologies (e.g.: Photonics, Electronics, Biological and Bio-inspired Materials, Structural Materials, High Strain and Ballistic Materials, and Manufacturing Science), this publication specifically addresses selected energy and power material related work at ARL. While this work includes electrochemical energy storage (batteries and capacitors) and electrochemical energy conversion (fuel cells, photoelectrochemistry, and photochemistry), special emphasis is given on electrochemical energy storage:

Electrochemical Energy Storage, Batteries, Capacitors, Electrochemical Energy Conversion, Fuel Cells, Photoelectrochemistry, Photochemistry, High Voltage Electrolytes, Li-ion Batteries, Li-ion Chemistry, Lithium–Sulphur Batteries, Nuclear Metastables, Pyroelectric Energy Conversion, Charged Quantum Dots, High-Efficiency Photovoltaics, IR Sensing,

https://www.mrforum.com/product/army-energy-power-materials-technologies

9781945291784, 2018, 726 pages, full color SC book, USD 150.00, also available as eBook PDF (9781945291791)

Innovative Materials and Techniques for Osteochondral Repair

Horea Rareș Ciprian Benea

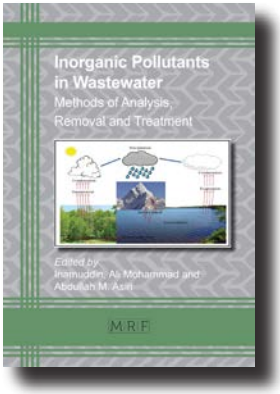
The book presents research in treating focal joint cartilage defects. Lipoaspirate fluid (LAF) cells have important applications in such areas as orthopedics, general surgery, plastic and repair or vascular surgery. Also discussed are cartilage tissue regeneration therapies using collagen scaffolds and multipotent mesenchymal cells; this offers the possibility of making real "biological arthroplasties". The regeneration of cartilage tissue by injecting stem cell concentrates gives hope to patients suffering from cartilage degradation.

Biomaterials, Osteochondral Repair, Lipoaspirate Fluid (LAF) Cells, Arthrosis, Focal Joint Cartilage Defects, Physiopathology of Cartilage Lesions, Diagnosis of Cartilage Lesions, Treatment of Cartilage Lesions, Plastic Surgery, Vascular Surgery, Repair Surgery, Orthopedics, Biological Arthroplasties

https://www.mrforum.com/product/osteochondral-repair

9781644900529, 2019, 184 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900536)

For more details and a free preview please visit our website:
https://mrforum.com



Inorganic Pollutants in Wastewater

Methods of Analysis, Removal and Treatment

Eds. Inamuddin, Ali Mohammad and Abdullah M. Asiri

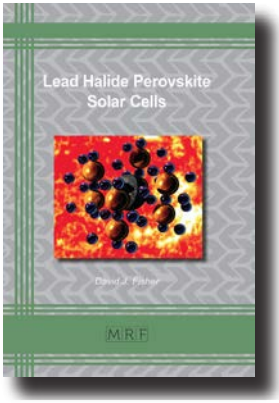
This book, 'Inorganic Pollutants in Wastewater: Methods of Analysis, Removal and Treatment' extensively investigates the most recent improvements in the area of inorganic pollutants analysis, removal and treatment of wastewater by utilizing different materials such as natural polymers, husks, graphene and carbon nanotube composites, fruit cortex etc. It covers photocatalysis, adsorption, desalination and electrochemical technologies used for the analysis and treatment of inorganic pollutants.

Waste Water Treatment, Inorganic Pollutants, Natural Polymers, Husks, Graphene and Carbon Nanotube Composites, Fruit Cortex, Photocatalysis, Adsorption, Desalination, Electrochemical Technologies

https://www.mrforum.com/product/inorganic-pollutants-in-wastewater

9781945291340, 2017, 458 pages, full color SC book, USD 135.00, also available as eBook PDF (9781945291357)

Lead Halide Perovskite Solar Cells



David J. Fisher

Lead halide perovskite materials have a huge potential in solar cell technology. They offer the combined advantages of low-cost preparation and high power-conversion efficiency. The present review focusses on the following topics: Power Conversion Efficiency; Electron Transport, Hole Transport and Interface Layers; Material Preparation; Cesium-Doped Lead-Halide Perovskites; Formamidinium-Doped Lead-Halide Perovskites; Methylammonium Lead-Halide Perovskites; Hysteresis, Stability and Toxicity Problems. The book references 334 original resources and includes their direct web link for in-depth reading.

Solar Cells, Lead Halide Perovskite Materials, Cesium-Doped Lead-Halide Perovskites, Formamidinium-Doped Lead-Halide Perovskites, Methylammonium Lead-Halide Perovskites, Electron-Transport Layer, Hole-Transport Layer, Interface Layers, Hysteresis Problem, Stability Problem, Toxicity Problem

https://www.mrforum.com/product/lead-halide-perovskite-solar-cells

9781644900802, 2020, 130 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900819)

Lead-free Piezo-Ceramic Solid Solutions

R. Saravanan

Discover in this book the results of a systematic investigation of the dielectric, ferroelectric and piezoelectric properties of promising lead-free solid solution ceramics. Lead-based perovskite ceramics are most important for piezoelectric and ferroelectric devices, but the toxicity of lead has raised serious environmental issues. This is why much research presently is concerned with the development of efficient lead-free systems.

Piezoelectric Materials, Lead Toxicity, Lead-free Piezo-Ceramics, Perovskite Ceramics, Sensor Devices, Actuator Devices, Piezoelectric Devices, Ferroelectric Devices, Barium Titanate, Sodium Potassium Niobate, Sodium Bismuth Titanate, Electron Density Distribution, X-ray Diffraction, Scanning Electron Microscopy, Energy Dispersive X-ray Spectroscopy, UV-visible Spectroscopy, Dielectric Measurements, Ferroelectric Measurements, Piezoelectric Measurements

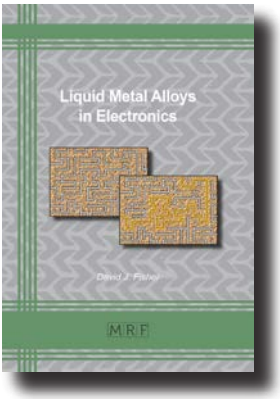
https://www.mrforum.com/product/lead-free-piezo-ceramic-solid-solutions

9781945291944, 2018, 176 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291951)

Liquid Metal Alloys in Electronics

David J. Fisher

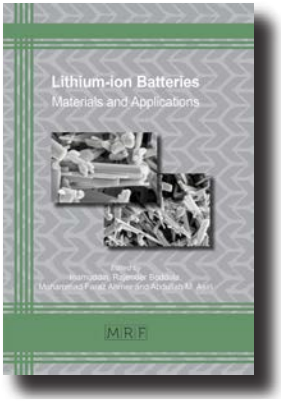
Liquid metal alloys are of rapidly increasing interest in electronics because they combine the high electrical conductivity of metals with the ease of manipulation and reconfiguration of liquids. The book focuses on such issues as self-assembled monolayers, energy-harvesting, reconfigurable and flexible antennae, sensors, conformable electronics, the creation of non-wetting super-hydrophobic or super-lyophobic surfaces, vacuum-assisted infiltration techniques, development of microfluidics, deformable electrodes and wearable electronics. The book references 270 original resources and includes their direct web link for in-depth reading.



Liquid Metals, Gallium-Indium Alloys, Galinstan, EGaIn, Self-Assembled Monolayers, Energy-Harvesting, Reconfigurable Antennae, Sensors, Conformable Electrodes, Stretchable Wires and Interconnects, Self-Healing Circuits, Gallium-Lyophilic Surfaces, Wettability of Liquid Metal, Substrate Topology, Selective Wetting Deposition Technique, Gallium-Indium Droplets on Thin Metal Films, Substrate Texture upon Wetting, Dielectrophoresis, Microfluidics, Deformable Electrodes, Wearable Electronics, Flexible Antennae, Surface Oxidation of Alloys

https://www.mrforum.com/product/liquid-metal-alloys

9781644900680, 2020, 138 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900697)



Lithium-ion Batteries

Materials and Applications

Eds. Inamuddin, Rajender Boddula, Mohammad Faraz Ahmer and Abdullah M. Asiri

There is a great need to develop lithium-ion batteries with high power density. Much research is, therefore, devoted to designing high-performance electrode materials and electrolytes. The book reviews the fundamental concepts and recent advances in the areas of anodes, cathodes, electrolytes, separators, binders, fabrication of device assemblies and electrochemical performance.

Lithium-ion Batteries (LIBs), Fabrication of TiO2 for LIBs, Nanomaterials, Conducting Polymers, 2D Transition Metal Dichalcogenides, Metal Sulphides, Magnetic Nanomaterials, Silicon Materials, Anodes, Cathodes, Electrolytes, Separators, Binders, Fabrication of Device Assemblies, and Electrochemical Performance of LIBs

https://www.mrforum.com/product/lithium-ion-batteries

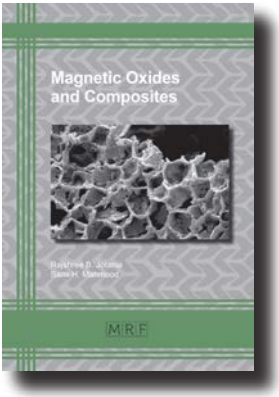
9781644900901, 2020, 208 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644900918)

Magnetic Oxides and Composites

Eds. Rajshree B. Jotania and Sami H. Mahmood

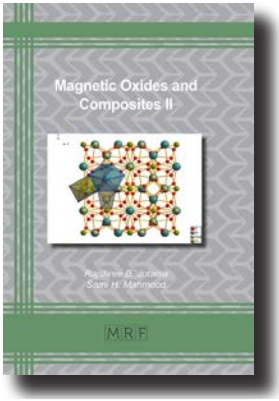
Magnetic oxides, their composites and nanoparticles are uniquely suited for a wide variety of applications in new technologies, including device miniaturization, power efficiency improvement and health sector innovations. The interest in these materials is due to such properties as high resistivity, low dielectric and magnetic losses, good corrosion resistance and favorable mechanical characteristics. The book focuses on the relevant basic concepts, as well as on synthesis routes and important applications of spinel ferrites, hexaferrites and magnetic oxide nanomaterials.

Magnetic Oxides, Spinel Ferrites, Hexaferrites, Magnetoelectric Ceramic Composites, Soft Ferrites, Nano-Size Spinel Ferrites, Magnetic Nanoparticles, Device Miniaturization



https://www.mrforum.com/product/magnetic_oxides_and_composites

9781945291685, 2018, 274 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291692)



Magnetic Oxides and Composites II

Eds. Rajshree B. Jotania, Sami H. Mahmood

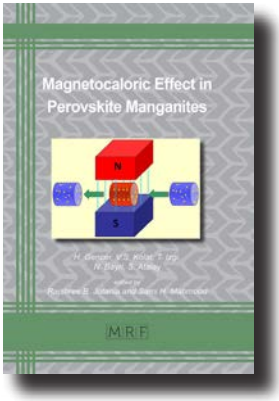
Magnetic oxides have highly interesting applications in the fields of permanent magnets, microwave devices, magnetic refrigeration, sensors, catalysis, and the health sector. This book focuses on the synthesis, characterization, and applications of various perovskites, garnets, manganites, carbon-based metal oxide nanocomposites, nanoferrites, and graphene-metal oxide nanocomposites.

Magnetic Oxides, Permanent Magnets, Microwave Devices, Magnetic Refrigeration, Sensors, Catalysis, Perovskites, Nanoferrites, Manganites, Rare Earth Iron Garnet, Graphene-Metal Oxide Nanocomposites, Carbon Nanomaterials, Mesoporous Materials, Nanocatalysts, Multifunctional Ferrites, Magnetocaloric Effect, Biosynthesis, Photo Catalysis, Antibacterial Activity, High Density Recording Media

https://www.mrforum.com/product/magnetic-oxides-composites-II

9781644900963, 2020, 270 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900970)

Magnetocaloric Effect in Perovskite Manganites



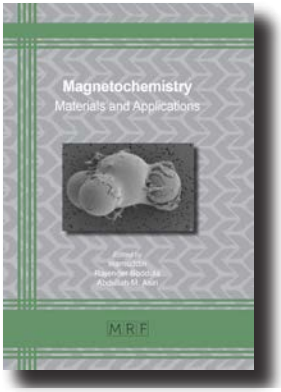
H. Gencer, V.S. Kolat, T. Izgi, N. Bayri, S. Atalay

For environmental concerns, it is highly desirable to replace gas-based refrigeration by magnetic refrigeration. Magnetic refrigeration has significant advantages such as small volume, chemical stability, low cost, non-toxicity and not causing sound pollution. Among the pertinent magnetocaloric materials, perovskite manganites are of special interest because they exhibit extremely large magnetic entropy and adiabatic temperature variations, a small thermal or magnetic hysteresis, high chemical stability. Further, the Curie temperature and saturation magnetization can be tailored by changing doping element and doping concentrations. The book references 289 original resources and includes their direct web link for in-depth reading.

Magnetic Refrigeration, Magnetocaloric Effect, Perovskite Manganites, Perovskite Structure, Magnetic Entropy, Magnetic Hysteresis, Thermal Hysteresis, Chemical Stability, Curie Temperature, Saturation Magnetization, Lanthanides

https://www.mrforum.com/product/magnetocaloric-effect-in-perovskite-manganites

9781644900925, 2020, 108 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644900932)



Magnetochemistry

Materials and Applications

Eds. Inamuddin, Rajender Boddula, Abdullah M. Asiri

The book covers the entire spectrum of magnetic nanomaterials and their highly interesting properties. It also discusses engineering strategies and current applications of magnetic nanomaterials in analytical chemistry, spintronics, biomedical science, electrochemistry, energy storage and conversion, membranes and fuel cells.

Magnetic Nanomaterials, Analytical Chemistry, Biomedical Science, Spintronics, Electrochemistry, Energy Storage, Energy Conversion, Membranes, Fuel Cells, Bio-Sensors, Electrocatalysis, Separation Processes, Hydrogen Storage, Supercapacitors, SERS Effect

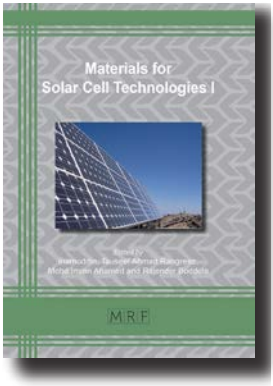
https://www.mrforum.com/product/magnetochemistry

9781644900604, 2020, 352 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900611)

Materials for Solar Cell Technologies I

Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed and Rajender Boddula

The book reviews recent research and new trends in the area of solar cell materials. Topics include fabrication methods, solar cell design, energy efficiency and commercialization of next-generation materials. Special focus is placed on graphene and carbon nanomaterials, graphene in dye-sensitized solar cells, perovskite solar cells and organic photovoltaic cells, as well as on transparent conducting electrode (TCE) materials, hollow nanostructured photoelectrodes, monocrystalline silicon solar cells (MSSC) and BHJ organic solar cells. Also discussed is the use of graphene, sulfides, and metal nanoparticle-based absorber materials.



Solar Cell, Graphene Nanomaterials, Carbon Nanomaterials, Graphene in Dye-sensitized Solar Cells, Perovskite Solar Cells, Organic Photovoltaic Cells, Transparent Conducting Electrode (TCE) Materials, Hollow Nanostructured Photoelectrodes, Monocrystalline Silicon Solar Cells (MSSC), BHJ Organic Solar Cells, Electrochemical Sensing, Low Band-Gap Materials, Absorber Materials for Solar Cells

https://www.mrforum.com/product/materials-for-solar-cell-technologies

9781644901083, 2021, 268 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901090)

Materials for Solar Cell Technologies II

Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed and Hamida-Tun-Nisa Chisti

The book presents current R&D and new trends in the field of solar cell technologies. Topics covered include fabrication methods, various types of cell design, versatile applications of solar cells, PEDOT:PSS thermoelectric materials, transparent conducting electrodes, simulation models for solar photovoltaic materials, and hybrid materials for solar cells.

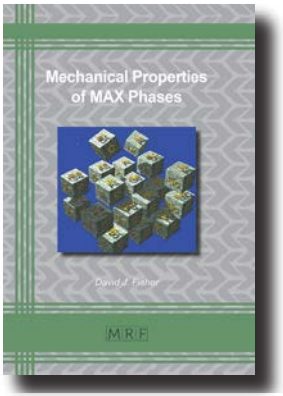
Optoelectronic Devices, PEDOT:PSS Materials, Nanomaterials, Transparent Electrodes, Hybrid Solar Cell Materials, Simulation Models, Solar Cell Design, Solar Cell Applications

https://www.mrforum.com/product/materials-for-solar-cell-technologies-ii

9781644901403, 2021, 182 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901410)

Mechanical Properties of MAX Phases

D.J. Fisher

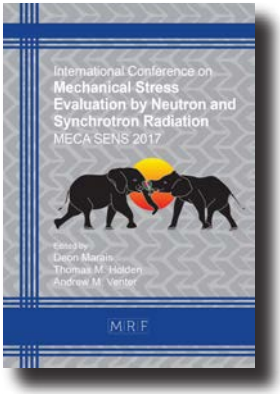


MAX Phase Materials are uniquely structured carbide and nitride materials which combine the rigidity, oxidation-resistance and high-temperature strength of ceramic materials with such metallic properties as good machinability, thermal-shock resistance, damage-tolerance and good transport properties. Potential applications include microelectronic layers, coatings for electrical contacts, thermal shock-resistant refractories, high-temperature heating elements, neutron-irradiation resistant nuclear applications, thermal barriers, protective aerospace coatings, and bio-compatible materials. The book reviews theoretical and experimental research up to early 2021 and references 185 original resources with their direct web links for in-depth reading.

MAX Phase Materials, Rigidity, High-Temperature Strength, Machinability, Microelectronic Layers, Electrical Contact Coatings, Thermal-Shock Resistance, Heating Elements, Neutron-Irradiation Resistant Materials, Thermal Barriers, Bio-compatible Materials

https://www.mrforum.com/product/max-phases

9781644901267, 2021, 134 pages, full color SC book, USD 100.00, also available as eBook PDF (9781644901274)



Mechanical Stress Evaluation by Neutron and Synchrotron Radiation

Eds. Deon Marais, Thomas M Holden, Andrew M Venter

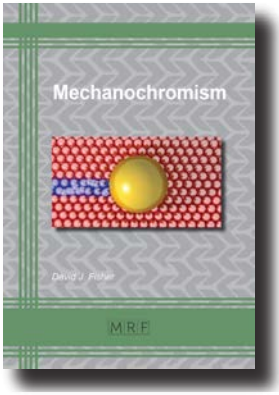
This book presents the proceedings of the 9th International Conference on Mechanical Stress Evaluation by Neutron and Synchrotron Radiation which was hosted by the South African Nuclear Energy Corporation (Necsa) SOC Limited in cooperation with the International Atomic Energy Agency (IAEA). The conference topics included deformation & modeling, processing & welding, techniques & instruments, mechanical methods vs. diffraction, microstructure & characterization, surface modification & coatings, 3D/4D characterization and fatigue, creep & plasticity.

Deformation & Modeling, Processing & Welding, Techniques & Instruments, Mechanical Methods Vs. Diffraction, Microstructure & Characterization, Surface Modification & Coatings, Fatigue, Creep, Plasticity

https://www.mrforum.com/product/mechanical-stress-evaluation

9781945291661, 2018, 186 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291678)

Mechanochromism



David J. Fisher

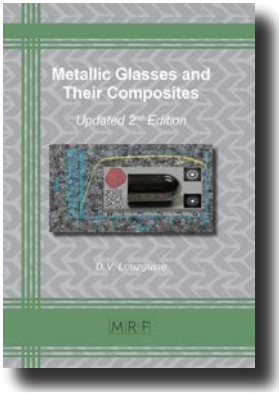
Mechanochromism (or piezochromism) refers to the emission of radiation as a result of the stressing, deforming or breaking of solids. The great current interest in these processes is due to the immense potential for monitoring and recording stresses, wear and fracture. There is, for instance, the possibility of turning such materials into optical pressuresensors and structural damage sensors. Mechanochromic polymers, for example, could visually signal sub-micron damage and failure long before macroscopic cracks became detectable. The range of such high-tech applications is almost unlimited. The book references 325 original resources and includes their direct web link for in-depth reading.

Mechanochromism, Piezochromism, Piezoelectricity, Triboluminescence, Electroluminescence, Thermoluminescence, Photoluminescence, Stress Recording, Wear Monitoring, Fracture Detection, Pressure Monitoring, Incipient Damage Detection, Shock Wave Effects, Mechanoluminescent Polymers, Nanosensors, Spiropyran, Gold Complexes, Copper Complexes

https://www.mrforum.com/product/mechanochromism

9781644900260, 2019, 152 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900277)

Metallic Glasses and Their Composites



2nd updated edition

D.V. Louzguine

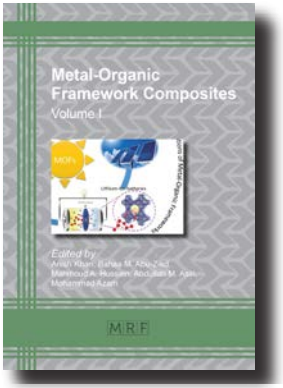
Metallic glasses and their crystal/glass composites find ever more applications in such fields as mini transformers, microelectromechanical devices, pressure sensors, precision surgical instruments, biological implants and sportive goods (springs, diaphragms, membranes, knife blades, electromagnetic wave shields, optical mirrors, power inductors, Coriolis flow meters, etc.). The book reviews recent research and suggests future developments, e.g. in the area of dual-phase composite/hybrid materials.

Metallic Glasses, Crystal/Glass Composites, Dual-phase Composite/Hybrid Materials, Supercooled Liquid, Devitrification, Magnetic Materials, Microelectromechanical Devices, Pressure Sensors, Orthopedic Screws, Precision Instruments, Biological Implants, Electromagnetic Wave Shields, Optical Mirrors, Power Inductors, Coriolis Flow Meters

https://www.mrforum.com/product/metallic-glasses

9781644901007, 2021, 358 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901014)

Metal-Organic Framework Composites



Volume I

Eds. Anish Khan, Baha M Abu-Zaid et al.

Composites based on Metal-organic frameworks (MOFs) have exceptional physical and chemical properties and offer a great number of advanced applications in such fields as energy storage, energy conversion by catalysis, sensors for environmental applications, environment safety and industrial wastewater treatments. They also have interesting medical applications, such as encapsulation of enzymes. The present book covers design, synthesis and preparation of various MOFs, as well as the resulting product characteristics: homogenous morphology, small size dispersion, high thermal stability and desired surface area.

Metal-Organic Frameworks (MOFs), Composites Based on MOFs, Energy Storage, Catalysts, Environmental Sensors, Environment Safety, Industrial Wastewater Treatment, Enzyme Encapsulation, Composite Characterization, Electrochemical Sensors, Metallizing Polymer Fibers, Electroless Coatings, Radio Frequency (RF) Ion Sputtering

https://www.mrforum.com/product/metal-organic-framework-composites_I

9781644900284, 2019, 286 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900291)

Metal-Organic Framework Composites

Volume II

Eds. Anish Khan, Francis Verpoort et al.

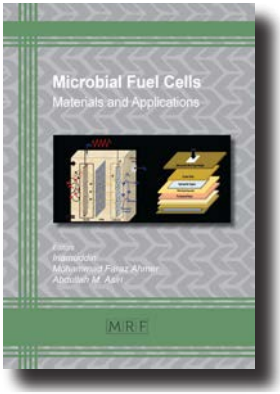
Because of their nanoporous structures and ultra-high surface areas Metal-Organic Framework Composites (MOFs) are very interesting materials. The book focuses on the following applications: gas capture and storage, especially molecular hydrogen storage; performance enhancement of Li-ion batteries; gas separation, nano-filtration, ionic sieving, water treatment, and catalysis; sustainable renewable energy resources, electrochemical capacitors, including supercapacitors, asymmetric supercapacitors and hybrid supercapacitors; biomedical disciplines including drug delivery, theranostics; biological detection and imaging; nanoparticle photosensitizers for photodynamic therapy (PDT) and photothermal therapy (PTT).

MOF Materials, Hydrogen Storage, Renewable Energy Applications, Lithium Batteries, MOF-Quantum Dots, Clean Energy, Nanoporous MOFs, Supercapacitors, Therapeutic Applications, Biosensing, Bioimaging, Phototherapy of Cancer

https://www.mrforum.com/product/metal-organic-framework-composites_II

9781644900420, 2019, 426 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900437)

Microbial Fuel Cells



Materials and Applications

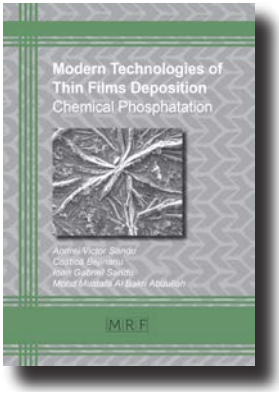
Eds. Inamuddin, Mohammad Faraz Ahmer et al.

Microbial fuel cells are very promising as renewable energy sources. They are based on the direct conversion of organic or inorganic materials to electricity by utilizing microorganisms as catalysts. These cells are well suited for applications that require only low power, e.g. ultracapacitors, toys, electronic gadgets, meteorological buoys, remote sensors, digital wristwatches, smartphones and hardware in space and robots. In addition to electricity generation, microbial fuel cells can be used for wastewater treatment, desalination and biofuel production. The book addresses characterization techniques and operating conditions of microbial fuel cells, as well as the usefulness of various types of anode and cathode materials.

Microbial Fuel Cells, Renewable Energy Sources, Biocatalysts, Wastewater Treatment, Desalination, Biofuel Production, Micropower Generation, Microalgae, Carbon Nanotube Anodes, Carbon Nanotube Cathodes, Biofuel Production from Food Waste, Microbial Desalination Cells, Microbial Ethanol Production, Microbial Propanol Production

https://www.mrforum.com/product/microbial-fuel-cells

9781644900109, 2019, 364 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900116)



Modern Technologies of Thin Films Deposition

Chemical Phosphatation

Andrei Victor Sandu, Costică Bejinariu, Ioan Gabriel Sandu, Mohd Mustafa Al Bakri Abdullah

Thin phosphate coatings are very attractive technologically; in terms of reliability, manufacturing cost and environmental impact. For one thing, the book presents research aimed at obtaining thin phosphate layers that offer good corrosion protection of finished parts. The other aim was to develop techniques that result in coatings with good lubricating properties, as they are required in plastic deformation processing.

Thin Films Deposition, Phosphate Coatings, Surface-Active Agents, Zinc Phosphates, Degreasing, Lubricating Films, Corrosion Protective Films, Anticorrosive Phosphate Films, Phosphating Techniques, Plastic Deformation Processing, Phosphating of Iron-Based Metallic Parts, Thin Film Characterization, Optical Microscopy, Electronic Microscopy, EDX Analysis, XRD Analysis, Optical Profilometry, Corrosion Tests, FTIR Spectroscopy, Tribological Tests, SEM-EDX Analysis

https://www.mrforum.com/product/modern-technologies-thin-films-deposition

9781945291906, 2018, 158 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291913)

MXenes: Fundamentals and Applications

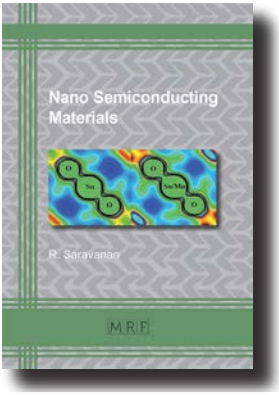
Eds. Inamuddin, Rajender Boddula and Abdullah M. Asiri

This is the very first book on the highly promising topic of MXenes; focusing on their fundamental characteristics and properties, fabrication techniques and applications. MXenes are two-dimensional materials consisting of few atoms thick layers of transition metal carbides or nitrides. These are characterized by high electrical conductivity, good hydrophilicity, chemical stability, and ultrathin 2D sheet-like morphology. Applications in the energy, environmental, biomedical and electronic industries include catalysis, membrane separation, supercapacitors, hybrid-ion capacitors, batteries, flexible electronics, hydrogen storage, nanoelectronics, and sensors.

MXenes, Nanomaterials, Two-dimensional Materials, Transition Metal Carbides, Transition Metal Nitrides, Electrical Conductivity, Hydrophilicity, Chemical Stability, Catalysis, Membrane Separation, Supercapacitors, Hybrid-ion Capacitors, Batteries, Flexible electronics, Hydrogen Storage, Nanoelectronics, Sensors, Energy R&D, Environmental Applications, Electronic Devices, Biomedical Applications

https://www.mrforum.com/product/mxene

9781644900246, 2019, 222 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900253)



Nano Semiconducting Materials

R. Saravanan

The main focus of the present book is the characterization of a number of nano-semiconducting materials, using such techniques as powder X-ray diffraction, UV-visible spectrophotometry, Raman spectrometry, scanning electron microscopy, transmission electron microscopy and vibrating sample magnetometry. The materials studied include ZnS, TiO2, NiO, Ga doped ZnO, Mn doped SnO2, Mn doped CeO2 and Mn doped ZrO2.

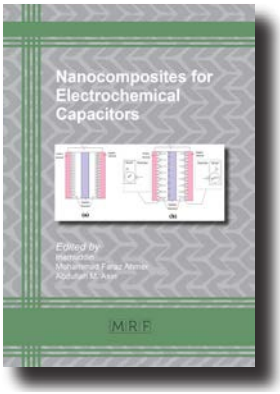
Nano Semiconducting Materials, characterization, powder X-ray diffraction, UV-visible spectrophotometry, Raman spectrometry, scanning electron microscopy, transmission electron microscopy, vibrating sample magnetometry, ZnS, TiO2, NiO, Ga doped ZnO, Mn doped SnO2, Mn doped CeO2, Mn doped ZrO2

https://www.mrforum.com/product/3/

9781945291043, 2016, 184 pages, full color SC book, USD 100.00, also available as eBook PDF (9781945291050)

Nanocomposites for Electrochemical Capacitors

Eds. Inamuddin, Mohammad Faraz Ahmer, Abdullah M. Asiri

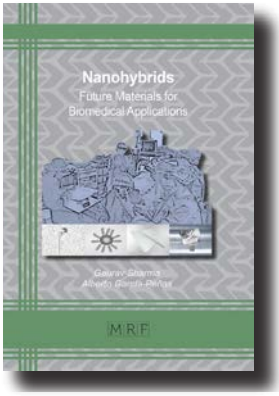


Electrochemical capacitors or supercapacitors offer a number of advantages over batteries; they are more safe and reliable, charge quicker, have an indefinite lifespan, exhibit a high power density and a wide range of working temperature. Supercapacitors demonstrate an extraordinary potential in both consumer electronics and large-sized energy storage applications, e.g. in communications, transportation, aviation, and power industries.
The book explores recent developments in the area of composite applications for supercapacitor electrodes based von conducting polymers, graphene, biomass, or carbonaceous quantum dots. Synthesis strategies of composite materials and electrode preparation methods are discussed in detail.

Electrochemical Capacitors, Supercapacitors, Energy Storage, Supercapacitor Electrodes, Conducting Polymer Composites, Graphene-based Composites, Biomass-based Capacitors, Carbonaceous Quantum Dot Composites, Sol-Gel Synthesis, Sonochemical Synthesis, Polyaniline-Zirconia Nanofibers

https://www.mrforum.com/product/nanocomposites-for-electrochemical-capacitors

9781945291524, 2018, 210 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291531)



Nanohybrids

Future Materials for Biomedical Applications

Eds. Gaurav Sharma and Alberto García-Peñas

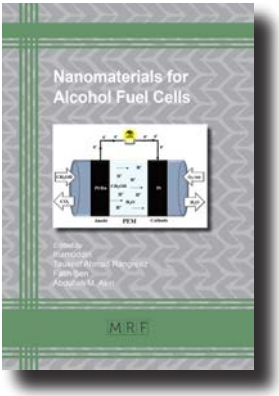
The book covers preparation, designing and utilization of nanohybrid materials for biomedical applications. These materials can improve the effectiveness of drugs, promote high cell growth in new scaffolds, and lead to biodegradable surgical sutures. The use of hybrid magneto-plasmonic nanoparticles may lead to non-invasive therapies. The most promising materials are based on silica nanostructures, polymers, bioresorbable metals, liposomes, biopolymeric electrospun nanofibers, graphene, and gelatin. Much research focuses on the development of biomaterials for cell regeneration and wound healing applications.

Biomedical Materials, Cell Growth, Cell Regeneration, Wound Healing, Surgical Sutures, Non-invasive Therapies , Drug Transport, Tissue Engineering, Cardiovascular Implants, Fracture Repair Implants, Biodegradable Materials, Hybrid Magneto-plasmonic Nanoparticles, Silica Nanostructures, Polymers, Bioresorbable Metals, Liposomes, Biopolymeric Electrospun Nanofibers, Graphene, Gelatin-based Hydrogels

https://www.mrforum.com/product/nanohybrids

9781644901069, 2021, 278 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901076)

Nanomaterials for Alcohol Fuel Cells



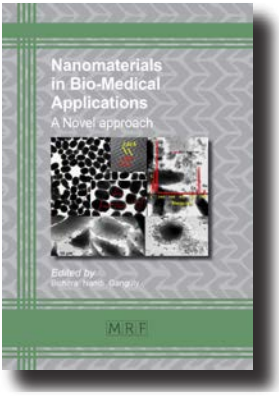
Eds. Inamuddin, Tauseef Ahmad Rangreez, Fatih Şen, Abdullah M. Asiri

Alcohol fuel cells are very attractive as power sources for mobile and portable applications. As they convert the chemical energy of fuels into electricity, much recent research is directed at developing suitable and efficient catalysts for the process. The present book focuses on pertinent types of nanomaterial-based catalysts, membranes and supports.

Alcohol Fuel Cells, Direct Methanol Fuel Cells, Alcohol Oxidation, Nano-Catalysts, Carbon-Based Nanomaterials, Polymer Electrolyte Membranes, Nanomaterials for Oxygen Reduction, Polymer-based Nanocomposites, Electrocatalysts, Ethanol Electro-Oxidation, Proton Electrolyte Membranes, Methanol Oxidation, Polymer-based Nanocomposites, Trimetallic Nanoparticles

https://www.mrforum.com/product/nanomaterials-for-alcohol-fuel-cells

9781644900185, 2019, 398 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900192)



Nanomaterials in Bio-Medical Applications

A Novel approach

Ed. Bichitra Nandi Ganguly

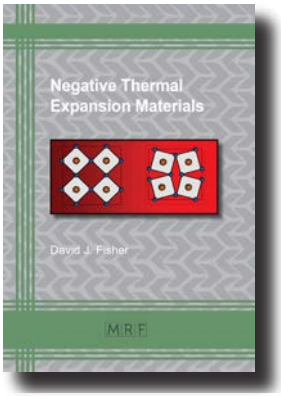
The book presents new results in the areas of nanomaterials, nanoparticles, ultra-small nanoparticles, plasmonic nanoparticles and coated nanoparticles for bio-medical applications. Emphasis is placed on (1) synthetic routes (quantum dots, thermal decomposition methods), (2) characterization methods (photo-physical techniques, X-ray diffraction, electron microscopy, light scattering, positron annihilation spectroscopy) and (3) bio-medical applications (nanomaterials and nanoparticles in physiology, medicine and bio-medicine).

Nanomaterials, Nanoparticles, Ultra-Small Nanoparticles, Plasmonic Nanoparticles, Coated Nanoparticles, Bio-Medical Applications, Quantum Dots, Thermal Decomposition Methods, Photo-Physical Characterization, X-Ray Diffraction, Electron Microscopy, Light Scattering Characterization, Positron Annihilation Spectroscopy, Capping Ligands, Surface Ligands, Passivating Agents

https://www.mrforum.com/product/nanomaterials-bio-medical-applications

9781945291722, 2018, 208 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291739)

Negative Thermal Expansion Materials



D.J. Fisher

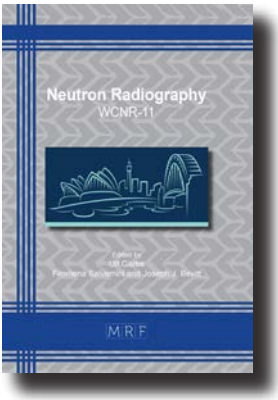
All you want to know about negative thermal expansion materials in an easy to read condensed format. In everyday life, minute thermally-induced elongations are essentially invisible to the naked eye; but even minute expansions can fatally degrade device processing and performance in – for example – the semiconductor industry. Materials which, astonishingly, contract upon heating offer the great advantage of being able to tune the overall thermal expansion of composite materials or to act as thermal-expansion compensators.

The present work is the most up-to-date summary of the current range of negative thermal expansion materials and of the associated mechanisms.

Negative Thermal Expansion Materials, Thermomiotic Behavior, Thermal Stress-Fracture, Thermal Expansion of Composites, Thin-Film Design, Metamaterials

https://www.mrforum.com/product/negative-thermal-expansion-materials

9781945291487, 2018, 178 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291494)



Neutron Radiography

WCNR-11

Eds. Ulf Garbe, Filomena Salvemini and Joseph J. Bevitt

Neutron radiography represents a powerful non-destructive testing technique that is still very much in development. The book reveals the amazing diversity of scientific and industrial applications of this technique, the advancements of the state-of-art neutron facilities, the latest method developments, and the expected future of neutron imaging.

Neutron Imaging, Neutron Radiography Facilities, Neutron Microscope, Neutron Computed Tomography, Digital Neutron Imaging, Fast-Neutron Imaging, Industrial Digital Camera, Scintillators for Neutron Diffraction Measurements, Modulated Beam Imaging, Neutron Grating Interferometry, Neutron Transmission Spectrum, Neutron Activation Analysis, Fission Neutron Tomography, Examination of Nuclear Fuels, Hydrogenous Samples, Archeological Objects, Japanese Swords, Silver Coins from Ancient Greece

https://www.mrforum.com/product/neutron-radiography

9781644900567, 2020, 316 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900574)

New Polymeric Composite Materials

Environmental, Biomedical, Actuator and Fuel Cell Applications

Eds. Inamuddin, Ali Mohammad and Abdullah M. Asiri

Polymeric and composite materials are in high demand and their continuing development is making our life style more comfortable. The present book reviews the latest research results in the field and explores the technological advantages of these materials in environmental, biomedical, actuator and fuel cell applications.
Also discussed are applications of polymeric and composite materials in such areas as shape memory polymers, green composites for artificial organs, geomembranes for the safe disposal of waste, removal of heavy metals and dyes, adhesives, sensors and actuators, fuel cells, membrane and environmental sustainability, etc.

Composite Materials, Polymeric Composite Materials, Shape Memory Polymers, Green Composites, Artificial Organs, Geomembranes, Waste Disposal, Removal of Heavy Metals and Dyes, Adhesives, Sensors and Actuators, Fuel Cells, Membrane

https://www.mrforum.com/product/new-polymeric-composite-materials/

9781945291081, 2016, 402 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291098)

Non-Conventional Materials and Technologies

NOCMAT for the XXI Century

Eds. Khosrow Ghavami, Pedro Jesús Herrera Franco

The book presents new research in the area of biobased "green composites". Biobased materials involve renewable agricultural and forestry feedstocks, including wood, agricultural waste, grasses and natural plant fibers. These lignocellulosic materials are composed mainly of carbohydrates such as sugar and lignin, cellulose, vegetable oils and proteins. Much research is concerned with renewable materials such as bamboo, vegetable fibers, soil composites and recycled materials such as rice husk ash and sugar cane ash. The general aim here is to use renewable and non-polluting materials in ways that offer a high degree of sustainability and preserve the remaining natural resources for future generations.

Biobased Materials, Renewable Materials, Non-polluting Materials, Sustainability, Wood, Agricultural Waste, Grasses, Natural Plant Fibers, Lignocellulosic Materials, Carbohydrates, Sugars, Lignin, Cellulose, Vegetable Oils, Proteins, Bamboo, Vegetable Fibers, Soil Composites, Recycled Materials, Rice Husk Ash, Sugar Cane Ash, Fiber-reinforced Concrete, Post-disaster Reconstruction, Guadua Fibers, Prefabricated Bamboo Guadua Panels, Multi-Level Bamboo Structures, Alkaline Activated Cements, Polymer Residues Reinforced with Glass Fiber, Composites Reinforced with Vegetal Fibers, Sisal Fibers

https://www.mrforum.com/product/nocmat

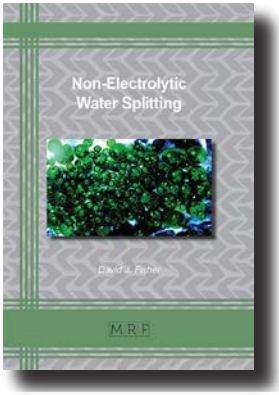
9781945291821, 2018, 820 pages, full color SC book, USD 170.00, also available as eBook PDF (9781945291838)

Non-Electrolytic Water Splitting

David J. Fisher

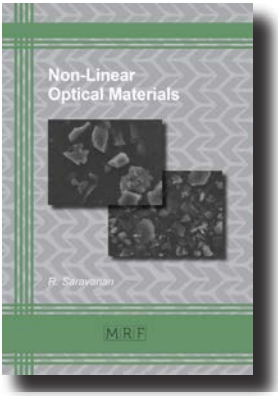
The book focuses on the direct production of hydrogen, using solar energy. Photocatalytic water-splitting by exposing semiconductors to sunlight is one of the most promising routes. The range of materials and other non-electrolytic methods are also reviewed The book references 205 original resources and includes their direct web link for in-depth reading.

Water-Splitting, Hydrogen Production, Solar Energy Conversion, Photocatalytic Water-Splitting, Thermochanical Water-Splitting, Machano-Catalysis, Photocatalysis, Electrocatalysis, Light-induced Ionization of Semiconductors, Z-Schemes of Photosynthesis



https://www.mrforum.com/product/non-electrolytic-water-splitting

9781644900888, 2020, 120 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644900895)



Non-Linear Optical Materials

R. Saravanan

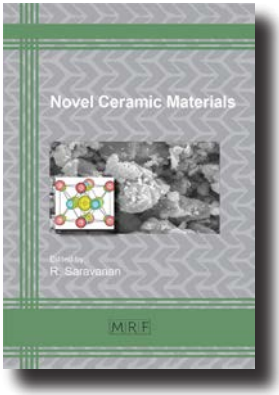
Non-linear optical materials have widespread and promising applications, but the efforts to understand the local structure, electron density distribution and bonding is still lacking. The present work explores the structural details, the electron density distribution and the local bond length distribution of some non-linear optical materials. It also gives estimation of the optical band gap, the particle size, crystallite size, and the elemental composition from UV-Visible analysis, SEM, XRD and EDS of some non-linear optical materials respectively.https://www.mrforum.com/product/non-linear-optical-materials.

Non-linear optical materials, Powder X-ray diffraction, UV-Visible spectroscopy, Scanning electron microscopy, Energy dispersive X-ray spectroscopy, Electron density distribution, Sample preparation, Pair distribution function, Atomic correlation function

https://www.mrforum.com/product/non-linear-optical-materials

9781945291609, 2018, 195 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291616)

Novel Ceramic Materials



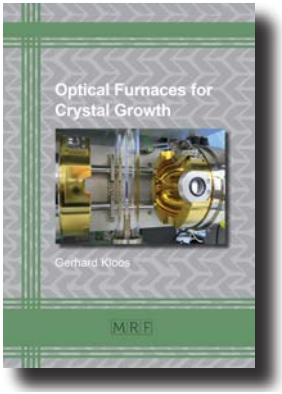
Ed. R. Saravanan

The book presents a number of novel ceramic materials that have great potential for advanced technological applications, such as microwave devices, communication instruments and memory devices. The materials covered include piezoelectric ceramics, zirconia ceramics, doped NiO ceramic nanostructures, BST ceramics (Barium-Strontium-Titanates), manganite ceramics, Ce-doped LaMnO3 and Sb-doped NKN (Sodium-Potassium-Niobates), as well as materials with ferrite structures, and with multi-ferroic structures

materials science, structural characteristics, piezoelectric ceramics, zirconia ceramics, doped NiO ceramic nanostructures, novel ceramics, BST ceramics (Barium-Strontium-Titanates), manganite ceramics, Ce-doped LaMnO3 and Sb-doped NKN (Sodium-Potassium-Niobates), ferrite structures materials, multi-ferroic structures materials, XRD (X-ray diffraction), SEM (Scanning electron microscopy), EDX (Energy Dispersive X-ray analysis), UVVisible Spectroscopy, and VSM (Vibrating sample magnetometer), Rietveld Analysis, surface morphology, optical properties, magnetic properties, electron density distribution

https://www.mrforum.com/product/2/

9781945291029, 2016, 225 pages, full color SC book, USD 100.00, also available as eBook PDF (9781945291036)



Optical Furnaces for Crystal Growth

Gerhard Kloos

Well-defined single crystals of high quality are of importance in some branches of industry as well as in fundamental investigations of materials research. This monograph is devoted to the growth of crystals using optical furnaces. Optical furnaces can be understood and designed making recurrence to concepts that stem from analytical geometry. Therefore, these ideas are presented taking both "faces" of analytical geometry into account.

Optical Furnaces, Crystal Growth, Maintenance of Optical Furnaces, Operation Optical Furnaces, Crystal-Growth Apparatus, Laser-Heated Pedestal Growth Method

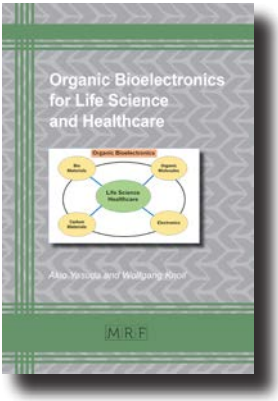
https://www.mrforum.com/product/optical-furnaces-for-crystal-growth/

9781945291203, 2017, 109 pages, full color SC book, USD 85.00, also available as eBook PDF (9781945291210)

Organic Bioelectronics for Life Science and Healthcare

Eds. Akio Yasuda and Wolfgang Knoll

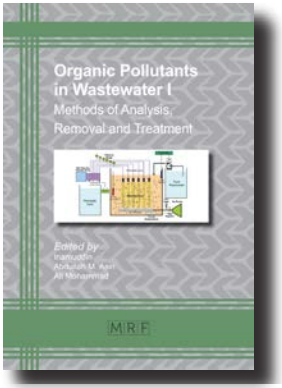
Novel bio-electronic devices have a great potential for gathering biological information such as vital signs, cell behavior, protein and DNA molecule concentrations. The book presents concrete examples and shows that there are lots of sensing targets still remaining to be handled. Organic materials offer high sensitivity, flexibility and biocompatibility, and can be prepared by novel fabrication methods such as printing and coating at low cost. Part 1: OFET-based sensors. Part 2: Graphene-based materials and sensor device applications. Part 3: Applications of bio-sensing technologies, inkjet printing, tests for stroke monitoring, etc.



Organic Bioelectronics, Bioelectronic Devices, Biosensing Technologies, Organic Field Effect Transistor (OFET), OFET-based Sensor, Functional Bio-Interlayer OFET, Electrolyte-gated OFET, Organic Charge-Modulated FET, Graphene-based Materials, Carbon Nanotube, Carbon-based Biosensors, Inkjet Printing, Stroke Monitoring

https://www.mrforum.com/product/organic-bioelectronics

9781644900369, 2019, 290 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900376)



Organic Pollutants in Wastewater I

Methods of Analysis, Removal and Treatment

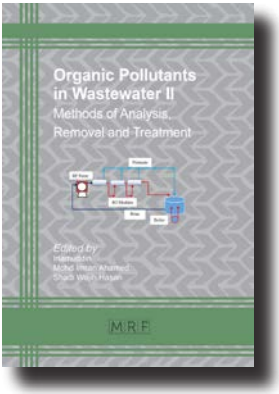
Eds. Inamuddin, Abdullah M. Asiri, Ali Mohammad

Wastewater represents an alternative to freshwater if it can be treated successfully for re-use applications. Promising techniques involve photocatalysis, adsorption, nanocomposites, and membranes. The book focusses on the following topics:
Effluent detoxification and degradation kinetics of organic dyes using Fenton and photo-Fenton processes. Degradation of methylene blue using nanocomposites as a potential photocatalyst. Agricultural and agro-industries based wastes as low-cost biosorbents. Use of carbon quantum dots (CQDs) for photocatalytic degradation of organic pollutants. Detection, determination and removal of phenolic compounds from wastewater. Decomposition of organic dyes via photocatalysis. Oxide-semiconductor nanomaterials for photocatalytic wastewater purification. Photocatalytic efficiency of various ZnO composites for degradation of organic pollutants. TiO2 based nanocomposites. Membrane filtration processes for the removal of organics from industrial wastewater.

https://www.mrforum.com/product/organic-pollutants-wastewater-1

9781945291623, 2018, 362 pages, full color SC book, USD 135.00, also available as eBook PDF (9781945291630)

Organic Pollutants in Wastewater II



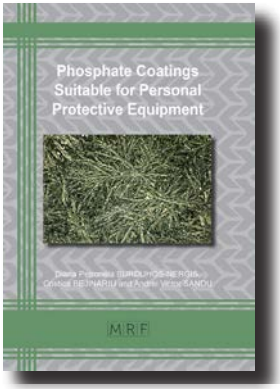
Methods of Analysis, Removal and Treatment

Eds. Inamuddin, Mohd Imran Ahamed, Shadi Wajih Hasan

The book focuses on the following topics:
Biological Wastewater Treatment Technologies. Pesticides and their Treatment in Wastewater. Adsorption Removal of Organic Pollutants using Graphene-based Nanocomposites. Reverse Osmosis for the Removal of Organic Compounds from Wastewater. Treatment of Refractory Organic Pollutants using Ionic Liquids. Biohydrogen and Bioethanol Production from Agro-Industrial Wastewater. Methods for the Treatment of Dairy Wastewater. Membrane Bioreactors for the Removal Pesticides and Hormones in Municipal Wastewater. Carbon Nanotubes and their Composites for Treating Industrial and Municipal Wastewater. Low-cost Adsorbents for the Removal of Malachite Green from Water and Wastewater.

https://www.mrforum.com/product/organic-pollutants-wastewater-2

9781945291708, 2018, 302 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291715)



Phosphate Coatings Suitable for Personal Protective Equipment

Diana Petronela BURDUHOS-NERGIS, Costica BEJINARIU, Andrei Victor SANDU

Phosphate coatings can improve the corrosion resistance of carbon steel equipment such as carabiners. The specific porosity of the phosphate layer allows the deposition of an elastomer-based paint for absorbing mechanical shocks. The book is relevant for fundamental and applied research in the field of protective phosphate layers and their industrial applications. It also describes how to design and develop phosphating solutions that differ in the type and concentration of metal ions dissolved in phosphoric acid.

Safety Rings, Carabiners, Phosphate Coatings, Aluminum Alloys, Carbon Steels, Stainless Steels, Structural Characterization, Mechanical Characterization, Corrosion Resistance, Friction Coefficient, Temperature Shock, Mechanical Impact, Design of Carabiners, Coating Technology

https://www.mrforum.com/product/phosphate-coatings

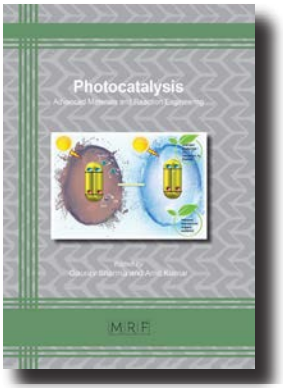
9781644901106, 2021, 188 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901113)

Photocatalysis

Advanced Materials and Reaction Engineering

Eds. Gaurav Sharma and Amit Kumar

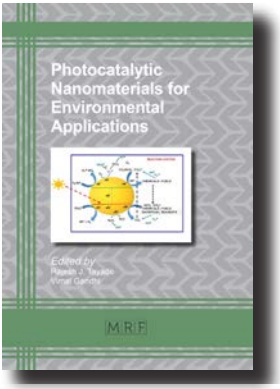
Photocatalysis is important in fighting environmental pollution, such as pharmaceutical effluents, dyes, pesticides and endocrine disruptors. It is also used for the production of clean energy, e.g. by way of hydrogen production from watersplitting, or CO2 conversion into fuels. Further, photocatalytic N2 fixation is promising for achieving sustainable ammonia synthesis. The book discusses new materials and reaction engineering techniques, such as heterojunction formations, composites, ion exchangers, photocatalytic membranes, etc.



Photocatalysis, Pollutant Degradation and Mineralization, Pharmaceutical Effluents, Dyes, Pesticides, Endocrine Disruptors, Water Detoxification, Photocatalytic Hydrogen Production, CO2 Conversion into Fuels, N2 Fixation, Degradation of Organic Molecules, Heavy Metal Removal from Water, Photocatalytic Membranes, Carbon Nitride for Photocatalytic Applications, Carbon Nanotubes, Nanohybrids, Composite Ion Exchangers, Perovskites-based Nano Heterojunctions

https://www.mrforum.com/photocatalysis

9781644901342, 2021, 338 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901359)



Photocatalytic Nanomaterials for Environmental Applications

Eds. Rajesh J. Tayade, Vimal Gandhi

Photocatalytic nanomaterials have a great potential in such applications as reduction of carbon dioxide and degradation of various pollutants. They are equally important in the production and storage of energy, e.g. in the conversion of solar energy to electricity, and the production of hydrogen in photoelectrochemical cells.
Research on synthesis, characterization and specific applications is reported for titanium oxide and a number of other promising catalysts, such as silver phosphate, cerium oxide, zinc oxide and zinc sulfide.
Photocatalytic Nanomaterials, Nanocomposites, Solar Energy Conversion, Carbon Dioxide Reduction, Hydrogen Generation, Degradation of Pollutants, Titanium Oxide, Silver Phosphate, Cerium Oxide, Zinc Oxide, Zinc Sulfide

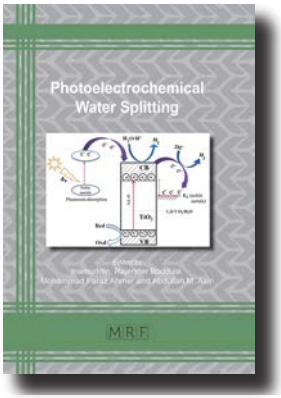
https://www.mrforum.com/product/photocatalytic-nanomaterials-for-environmental-applications

9781945291586, 2018, 486 pages, full color SC book, USD 140.00, also available as eBook PDF (9781945291593)

Photoelectrochemical Water Splitting

Materials and Applications

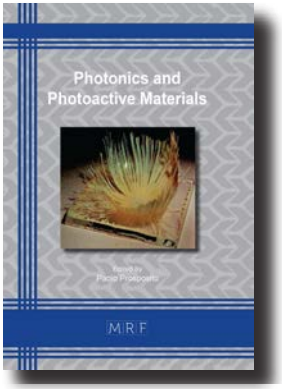
Eds. Inamuddin, Rajender Boddula, Mohammad Faraz Ahmer and Abdullah M. Asiri



Photoelectrochemical (PEC) water splitting is a highly promising process for converting solar energy into hydrogen energy. The book presents new cutting-edge research findings in this field. Subjects covered include fabrication and characteristics of various electrode materials, cell design and strategies for enhancing the properties of PEC electrode materials.
Renewable Energy Sources, Solar Energy Conversion, Hydrogen Production, Photoelectrochemical Water Splitting, Electrode Materials for Water Splitting, Transition Metal Chalcogenide Electrodes, Narrow Bandgap Semiconductor Electrodes, Ti-based Electrode Materials, BiVO4 Photoanodes, Noble Electrode Materials, Cell Design for Water Splitting

https://www.mrforum.com/product/photoelectrochemical-water-splitting

9781644900727, 2020, 220 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900734)



Photonics and Photoactive Materials

Ed. Paolo Prosposito

The book focuses on innovative photonic and photoactive materials and such topics as photonic structures, silicon photonics, nanomaterials, plasmonics, graphene quantum dots, optically active defects, fluorescent materials and optical sensors. The generation of light, absorption, emission, transmission, optical sensing and probing, signal processing and data transmission are some of the properties related to this growing field.

Photonic Structures, Silicon Photonics, Plasmonics, Silver Nanoparticles, Graphene Quantum Dots, Optically Active Defects, Fluorescent Materials, Optical Sensors, Fullerene, Proton Beam Detectors, Lithium Fluoride Films, Signal Processing, Data Transmission

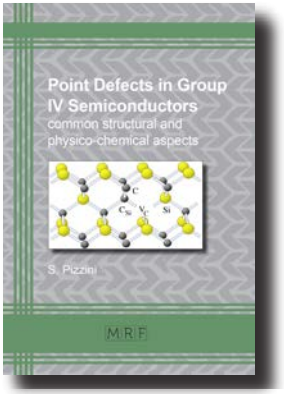
https://www.mrforum.com/product/photonics-and-photoactive-materials

9781644900703, 2020, 72 pages, full color SC book, USD 55.00, also available as eBook PDF (9781644900710)

Point Defects in Group IV Semiconductors

common structural and physico-chemical aspects

S. Pizzini

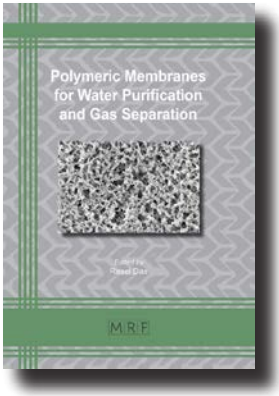


A self-consistent model of point defects requires a reliable connection with the experimentally deduced structural, spectroscopic and thermodynamic properties of the defect centres, to allow their unambiguous identification.
This book focuses on the properties of defects in group IV semiconductors and seeks to clarify whether full knowledge of their chemical nature can account for several problems encountered in practice.
It is shown how difficult the fulfilment of self-consistency conditions can be, even today, after more than four decades of dedicated research work, especially in the case of compound semiconductors, such as SiC, but also in the apparently simple cases of silicon and germanium. The reason for this is that the available microscopic models do not yet account for defect interactions in real solids.

Point Defects in Silicon, Point Defects in Germanium, Point Defects in Diamond, Point Defects in Silicon Carbides, Point Defect-Impurity Complexes, Defect Modeling, Self-Diffusion, Impurity Diffusion

https://www.mrforum.com/product/point-defects-group-iv-semiconductors

9781945291227, 2017, 134 pages, full color SC book, USD 95.00, also available as eBook PDF (9781945291234)



Polymeric Membranes for Water Purification and Gas Separation

Ed. Rasel Das

Various organic and synthetic polymers are important materials for the removal of organic and inorganic pollutants from wastewater and the separation of gases. The book discusses various types of membranes for microfiltration, ultrafiltration, nanofiltration, reverse osmosis, forward osmosis etc. A number of nanomaterials are available for the modification of polymeric membranes.

Polymeric Membrane, Water Purification, Water Softening, Water Desalination, Gas Separation, Osmosis Membranes, Microfiltration, Ultrafiltration, Nanofiltration, Carbon Nanotube, Nanosheets, MOFs, Porous Organic Cages, Titanium Dioxide, Zinc Oxide, Mesoporous Silica Nanoparticles, O2/N2 Separation, CO2/CH4 Separation, H2/N2 Separation

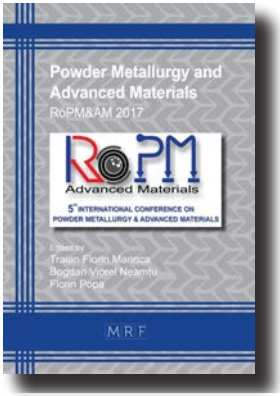
https://www.mrforum.com/product/polymeric-membranes

9781644901625, 2021, 342 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901632)

Powder Metallurgy and Advanced Materials

RoPM&AM 2017

Eds. Traian Florin Marinca, Bogdan Viorel Neamțu, Florin Popa

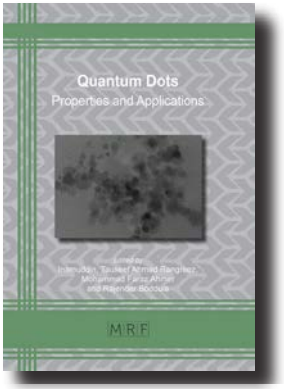


The book presents recent advances in the following fields: Theoretical aspects, characterization and applications of powder and PM products. New developments in powder production and processing. Functional Materials. Nanomaterials and Nanotechnologies. Health, Safety and Environmental Aspects of Particulates. All papers have been peer-reviewed.

Powder Metallurgy, Powder Characterization, Functional Materials, Nanomaterials, Health Aspects of Particulates, Environmental Aspects of Particulates, Microwires in Cellulose Matrix, Multi-layer Steel, Reactive Mechanical Milling, Green Synthesis of Nanoparticles, Linear Homopolymers, Plasma Jet Depositions on Steel, Mössbauer Spectroscopy of Nanocomposites, Manganese Silicides, Quartz Sand, Weldability Model, Thin Films for Optical MEMS, Magnetron Sputtered Thin Films, Graphene Oxide / PVC Composites, Amorphous Alloy Preparation, Zirconium-doped Indium Oxide, W/Cu Nanocomposite Powders, W/Cu Functionally Graded Materials, Reactive Magnetron Sputtering, Heusler Alloys

https://www.mrforum.com/product/powder-metallurgy

9781945291982, 2018, 344 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291999)



Quantum Dots

Properties and Applications

Eds. Inamuddin, Tauseef Ahmad Rangreez et al.

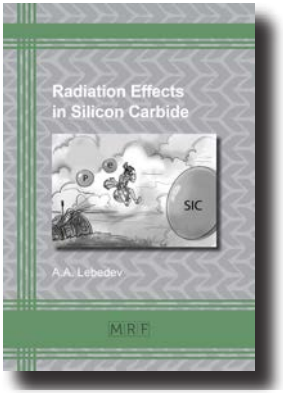
The book provides a thorough survey of current research in quantum dots synthesis, properties, and applications. The unique properties of these new nanomaterials offer multifunctional applications in such fields as photovoltaics, light-emitting diodes, field-effect transistors, lasers, photodetectors, solar cells, biomedical diagnostics and quantum computing.

Quantum Dots (QD), Photovoltaics, Light-emitting Diodes, Field-effect Transistors, Lasers, Photodetectors, Solar Cells, Biomedical Diagnostics, Quantum Computing, QD Synthesis, Carbon QDs, Graphene QDs, QD Sensors, Supercapacitors, Magnetic Quantum Dots, Cellular/Molecular Separation, Chromatographic Separation Column, Photostability, Luminescence of Carbon QDs, QD Materials for Water Treatment, Semiconductor Quantum Dots, QD Drug Delivery, Antibacterial Quantum Dots

https://www.mrforum.com/product/quantum-dots

9781644901243, 2021, 360 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901250)

Radiation Effects in Silicon Carbide



A.A. Lebedev

The book reviews the most interesting research concerning the radiation defects formed in 6H-, 4H-, and 3C-SiC under irradiation with electrons, neutrons, and some kinds of ions. The electrical parameters that make SiC a promising material for applications in modern electronics are discussed in detail.
Specific features of the crystal structure of SiC are considered. It is shown that, when wide-bandgap semiconductors are studied, it is necessary to take into account the temperature dependence of the carrier removal rate, which is a standard parameter for determining the radiation hardness of semiconductors.
Data are also presented regarding the degradation of particular SiC electronic devices under the influence of radiation and a conclusion is made regarding the radiation resistance of SiC. Lastly, the radiation hardness of devices based on silicon and silicon carbide are compared.

Silicon Carbide, Defects, Carrier Recombination, Annealing, Detectors, Electron Irradiation, Neutron Irradiation, Ion Irradiation

https://www.mrforum.com/product/radiation-effects-in-silicon-carbide/

9781945291104, 2017, 172 pages, full color SC book, USD 100.00, also available as eBook PDF (9781945291111)

Recent Advancements in Geotechnical Engineering

NCRAG'21

Eds. B. Soundara, M. Vasudevan, V. Jeevanantham, V. Preetha

Geotechnical engineering has become an important discipline of civil engineering due to its rapid advancements and environmental challenges. Special emphasis is placed on innovative materials in the fields of geotechnical engineering, pavement engineering, health monitoring of structures and sustainability.

Green Building Materials, Cement Based Materials, Concrete Applications, Photocatalytic Effect on Paver Blocks, Stabilization of Black Cotton Soil, Concrete Filled Steel Tube Columns, Cenosphere, Fly Ash Brick, Stone Columns, Reinforced Concrete Beams, Interlocking Masonry Units, Lightweight Filler Materials, Soil Stabilization Using Fibres, Friction Stir Welding of Aluminum and Magnesium

https://www.mrforum.com/product/NCRAG21

9781644901601, 2021, 240 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901618)

Recent Advances in Energy Storage Materials and Devices

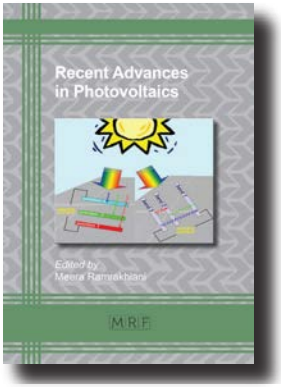
Eds. Li Lu and Ning Hu

In Li-ion batteries, the transportation of ions between positive and negative electrodes relies on organic electrolytes with a low flammable point. Applications of this type of electrolyte lead to various safety problems. In addition, the commercially available organic electrolytes presently can be used only up to about 4.5V. It is therefore important to develop better electrode materials and explore new nonflammable electrolytes and new battery formats. The present book focuses on these problems.

Lithium Ion Batteries, Cathode Materials, Anode Materials, Nanostructured Materials, Electrolytes, Ion Conductive Ceramics, All-Solid-State Li Batteries, Redox Flow Lithium Batteries, Advanced Supercapacitors, Carbon Nanotubes

https://www.mrforum.com/product/Energy-Storage-Materials-Devices

9781945291265, 2017, 240 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291272)



Recent Advances in Photovoltaics

Ed. Meera Ramrakhiani

The ever growing demand for clean energy potentially can be met by solar-to-electrical energy conversion. This book on "Recent Advances in Photovoltaics" presents a detailed overview of recent research and developments in the field of photovoltaics and solar cells. It starts with the basic theory and gradual progress in the field of photovoltaics and various generations of solar cells. The search for new materials and/or new structures such as multi-junctions, nanostructures, photoelectrochemical cells, organic solar cells etc. for improved performance is discussed. The experimental investigations on certain materials and modelling for better results are also described in the book.

Photovoltaics, Solar Cells, Multi-Junctions Solar Cells, Nanostructured Solar Cells, Photoelectrochemical Solar Cells, Organic Solar Cells, Polymer Solar Cells

https://www.mrforum.com/product/recent-advances-in-photovoltaics

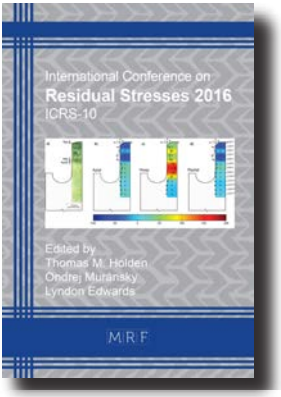
9781945291364, 2017, 358 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291371)

Residual Stresses 2016

ICRS-10

Eds. Thomas M. Holden, Ondrej Muránsky, Lyndon Edwards

This book presents the proceedings of the International Conference on Residual Stresses 10 and is devoted to the prediction/modelling, evaluation, control, and application of residual stresses in engineering materials. New developments, on stress-measurement techniques, on modelling and prediction of residual stresses and on progress made in the fundamental understanding of the relation between the state of residual stress and the material properties, are highlighted. The proceedings offer an overview of the current understanding of the role of residual stresses in materials used in wide ranging application areas.



Residual Stresses, Advanced Materials, Measurement Methods, Modelling Methods, Management and Control, Residual Stress Engineering, Manufacturing Processes, Components and Structures, Life Assessment

https://www.mrforum.com/product/residual-stresses-2016

9781945291166, 2017, 630 pages, full color SC book, USD 150.00, also available as eBook PDF (9781945291173)

Residual Stresses 2018

ECRS-10

Ed. Marc Seefeldt

The European Conference on Residual Stresses (ECRS) series is the leading European forum for scientific exchange on internal and residual stresses in materials. It addresses both academic and industrial experts and covers a broad gamut of stress-related topics from instrumentation via experimental and modelling methodology up to stress problems in specific processes such as welding or shot-peening, and their impact on materials properties.

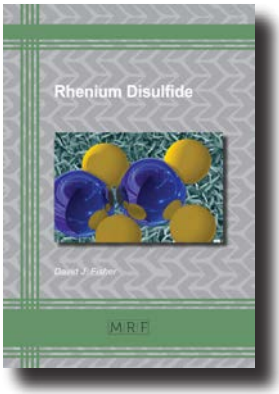
Residual Stresses Determination, Internal Stresses in Materials, Diffraction Methods, Mechanical Relaxation Methods, Acoustic and Electromagnetic Methods, Composite Materials, Nanomaterials, Thin Films, Coatings, Oxides, Cold Working, Machining, Heat Treatment, Phase Transformations, Welding, Fatigue Stresses, Fracture: Stresses, Neutron Strain Scanning, Duplex Steel Bending, Plastic Deformation, X-Ray Micro-Diffraction, Submerged Arc Welding, Metal Cutting, Laser Cladding, Shot-Peened Tool Steel, Hole Drilling Stresses, Cast Iron, Thermal Surface Treatment, Mechanical Surface Treatment, Bones under Tensile Load, Synchrotron Diffraction Characterization, Oxide Scales on Stainless Steel, PVD Coating Stresses, Laser Local Quenching, Bending Fatigue, Bearing Fatigue Life, Weld Imperfections, Multi-Layer Welds, Nickel Based Superalloys, Laser Heat Treatment, Laser Beam Melting

https://www.mrforum.com/product/residual-stresses-2018-ecrs10

9781945291883, 2018, 310 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291890)

Rhenium Disulfide

D.J. Fisher

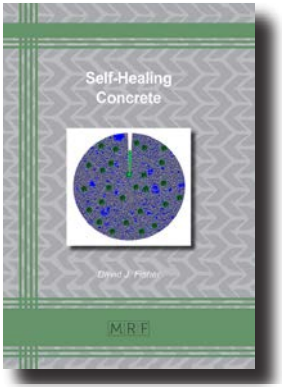


All you want to know about Rhenium disulfide in an easy to read condensed format. Rhenium disulfide especially in low-dimensional form, is a subject of lively research into its electronic and optical properties. The field of 2D materials such as graphene and its analogues has been growing very rapidly. This class of materials also includes rhenium disulfide and rhenium diselenide, which belong to the transition-metal dichalcogenide family. Due to their reduced crystal symmetry, they exhibit distinct electrical and optical characteristics along certain in-plane crystal directions.

Electronic Devices, Energy Storage, Energy Harvesting, Catalysis, Transistors, Resistors, Lasers, Rhenium Disulfide, Rhenium Diselenide, Two-dimensional Materials, Layered Materials, Black Phosphorus, Transition-metal Dichalcogenides, Metal-free Magnetism, ReS2, ReSe2, TiS3, ZrS3, MoS2, MoSe2, WS2, WSe2

https://www.mrforum.com/product/rhenium-disulfide

9781945291920, 2018, 150 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291937)



Self-Healing Concrete

David J. Fisher

Self-healing techniques are most successful in preventing concrete from cracking or breaking. The book reviews the most promising methods, including the use of polymers, epoxy resins, fungi or cementitious composites; biomineralization, continuing hydration or carbonation or wet/dry cycling. Various micro-organisms are able to produce favorable effects, such as denitrification, calcium carbonate formation, sulfate reduction or the production of methane. The book references 289 original resources and includes their direct web link for in-depth reading.

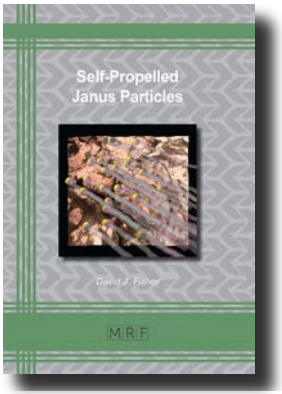
Self-Healing Concrete, Concrete Inspection, Concrete Maintenance, Concrete Repair, Polymers, Bacteria, Fungi, Cementitious Composites, Biomineralization, Carbonation, Wet/dry Cycling, Denitrification, Calcium Carbonate Formation, Sulfate Reduction, Methane Production, Micro-organisms, Phototrophic Micro-organisms, Aerobic Organotrophic Bacteria, Anaerobic Micro-organisms

https://www.mrforum.com/self-healing-concrete

9781644901366, 2021, 152 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901373)

Self-Propelled Janus Particles

D.J. Fisher

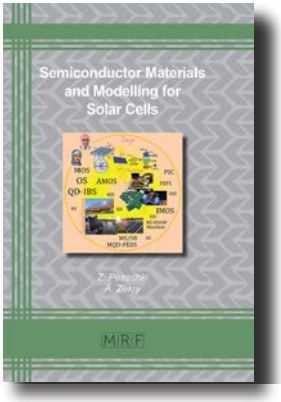


Design and operation of Janus particles have a great potential for applications in fields such as environmental remediation, electronic engineering, bio-imaging, bio-sensing, drug delivery and other biomedical tasks. Current research aims to imitate the molecular motors of biological systems by creating micro- and nano-scale particles which can exploit chemical energy so as to produce directional motion. The assembling of self-propelled particles and their movement can be controlled by using external fields, especially magnetic fields. The book references 332 original resources and includes their direct web link for in-depth reading.

Janus Particles, Bio-imaging, Bio-sensing, Drug Delivery, Environmental Remediation, Electronic Engineering, Asymmetrical Colloidal Particles, Catalysis-propelled Particles , Nanoscale Engines, Chemical Asymmetry, Self-propulsion, Diffusiophoresis, Electrophoresis, Thermophoresis, Bubble Generation, External Propulsion, Radiation Effects, Electric Field, Magnetic Field, Gravitaxis, Barrier Effects

https://www.mrforum.com/product/self-propelled-janus-particles

9781644901182, 2021, 126 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901199)



Semiconductor Materials and Modelling for Solar Cells

Z. Pezeshki and A. Zekry

The book presents a comprehensive survey about advanced solar cell technologies. Focus is placed on semiconductor materials, solar cell efficiency, improvements in surface recombination velocity, charge density, high ultraviolet (UV) sensitivity, modeling of solar cells etc. The book references 281 original resources with their direct web links for in-depth reading.

Solar Cells, Thin Film Solar Cells, Solar Cell Efficiency, Semiconductor Materials, Surface Recombination Velocity, Charge Density, High UV Sensitivity, Heavily-doped Silicon Wafers, Amorphous Semiconductors, Nanocrystalline Semiconductors, Field Effect, Ferroelectric Semiconductors, Solar Cell Modelling

https://www.mrforum.com/product/semiconductors-for-solar-cells

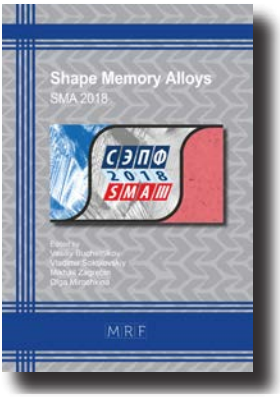
9781644901427, 2021, 94 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644901434)

Shape Memory Alloys

SMA 2018

Eds. Vasiliy Buchelnikov, Vladimir Sokolovskiy, Mikhail Zagrebin, Olga Miroshkina

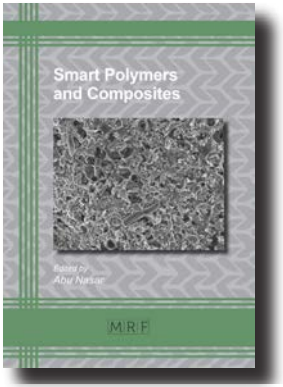
The book presents selected, peer reviewed papers from the 3rd International Conference on "Shape Memory Alloys" (SMA 2018). Covered are: Physical, mechanical and functional properties of shape memory alloys. Structure and martensitic phase transformations. Theory and mathematical modelling. Materials design and calculations of functional properties. Design, synthesis and functional properties of novel materials. Manufacturing technology and applications of shape memory alloys.



Shape Memory Alloys, Martensitic Transformations, Biocompatible Porous Materials, Ni-Mn Intermetallic Alloys, Superelastic Alloys, Ti-Ni Shape Memory Alloys, Novel Superelastic Ti-Zr-Based Alloys, Solid State Cooling, Pulsed Electron Beam Treatment, Surface Modification, Carbon Polytypes, Fluorographene, Diamond-Like Phase Transformations, Solid Oxide Fuel Cell, Multiferroics, Fe-Ga Phase Diagram, Fe-Ge Phase Diagram , Fe-Al Phase Diagram

https://www.mrforum.com/product/shape-memory-alloys

9781644900000, 2018, 196 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900017)



Smart Polymers and Composites

Ed. Abu Nasar

Polymeric compounds are generally blended with inorganic/organic materials to prepare composites to tailor the desired properties for specific requirements. The present book reviews new research in the fields of composite green polymers for environmental applications, polyaniline based composites for wastewater treatment, smart polymeric coating materials, polymer decorated bimetallic nanosorbents for dye removal, fuel cell materials, polymeric membranes, green bio-nanocomposites and polymer based catalysts.

Composite Green Polymers, Polyaniline Based Composites, Smart Polymeric Materials, Nanosorbents, Polymeric Membranes, Bio-Nanocomposites, Polymer Based Catalyst, Wastewater Treatment, Dye Removal, Fuel Cell Materials, Dehydrogenation

https://www.mrforum.com/product/smart-polymers-and-composites

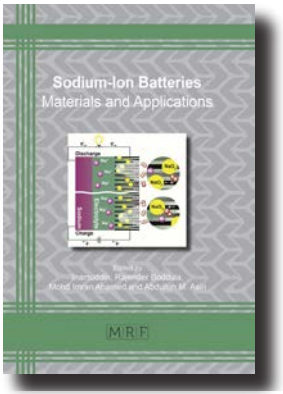
9781945291463, 2018, 208 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291470)

Sodium-Ion Batteries

Materials and Applications

Eds. Inamuddin, Rajender Boddula, Mohd Imran Ahamed and Abdullah M. Asiri

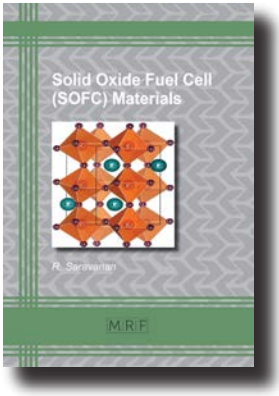
Sodium-ion batteries are likely to be the next-generation power sources. They offer higher safety than lithium-ion batteries and, most important, sodium is available in unlimited abundance. The book covers the fundamental principles and applications of sodium-ion batteries and reports experimental work on the use of electrolytes and different electrode materials, such as silicon, carbon, conducting polymers, and Mn- and Sn-based materials. Also discussed are state-of-the-art, future prospects and challenges in sodium-ion battery technology.



Sodium-Ion Batteries, Lithium-Ion Batteries, Carbon Nanofibers, Conducting Polymers, Electrode Materials, Electrolytes, Graphene, Carbon Anodes, Magnetic Nanomaterials, Mn-based Materials, Sn-based Materials, Na-O2 Batteries, NASICON Electrodes, Organic Electrodes, Polyacetylene, Polyaniline, Polyphenylene, Redox Mediators, Reversible Capacity, Singlet Oxygen, Superoxide Stability

https://www.mrforum.com/product/sodium-ion-batteries

9781644900826, 2020, 278 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900833)



Solid Oxide Fuel Cell (SOFC) Materials

R. Saravanan

Developing materials for SOFC applications is one of the key topics in energy research. The book focuses on manganite structured materials, such as doped lanthanum chromites and lanthanum manganites, which have interesting properties: thermal and chemical stability, mixed ionic and electrical conductivity, electrocatalytic activity, magnetocaloric property and colossal magnetoresistance (CMR).

Solid Oxide Fuel Cells, SOFC, Manganite Structured Materials, Lanthanum Chromites, Lanthanum Manganites, Electrocatalytic Activity, Magnetocaloric Property, Colossal Magnetoresistance, High Temperature NOx Sensors, Hard Disk Read Heads, Magnetic Sensors, Magnetoresistive Random Access Memories, Charge Density Distribution

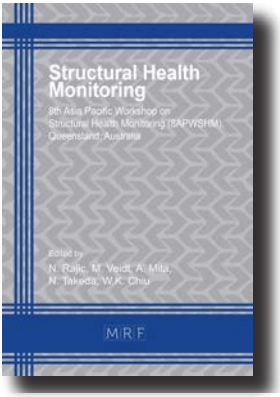
https://www.mrforum.com/product/solid-oxide-fuel-cell-materials

9781945291500, 2018, 182 pages, full color SC book, USD 110.00, also available as eBook PDF (9781945291517)

Structural Health Monitoring

8APWSHM

Eds. N. Rajic, M. Veidt, A. Mita, N. Takeda, W.K. Chiu

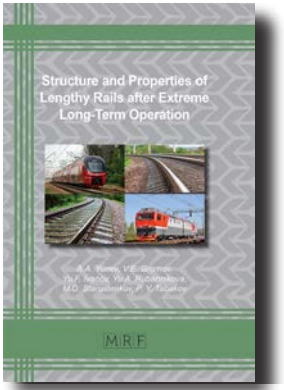


The book presents recent advances regarding the inspection and monitoring of engineering structures; including bridges, buildings, aircraft and space structures, nuclear reactors and defense platforms. Among the techniques covered are UAV photogrammetry, strain monitoring, infrared detection, acoustic emission testing, residual stress measurements, fiber optical sensing, thermographic inspection, vibration analysis, piezoelectric sensing and ultrasonic testing.

Bridges, Buildings, Aircraft Structures, Space Structures, Nuclear Reactors, Defense Platforms, UAV Photogrammetry, Strain Monitoring, Infrared Detection, Acoustic Emission Testing, Residual Stress Measurements, Fiber Optical Sensing, Thermographic Inspection, Vibration Analysis, Piezoelectric Sensing, Ultrasonic Testing, Impact Damage, Anaerobic Reactor Performance, Geomembranes, Ossointegrated Implants, Fatigue Crack Growth, Accelerometer, Nonlinear Cable Bracing, Timber Utility Poles, Steel Pipes, Loosened Bolts on Pipes, IMU-based Motion Capture, CFRP Composites, Maglev Guideway Girder, Cable-Pylon Anchorage, Deep Learning Techniques

https://www.mrforum.com/shm-8apwshm

9781644901304, 2021, 364 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644901311)



Structure and Properties of Lengthy Rails after Extreme Long-Term Operation

A.A. Yuriev, V.E. Gromov, Yu.F. Ivanov, Yu.A. Rubannikova, M.D. Starostenkov, P.Y. Tabakov

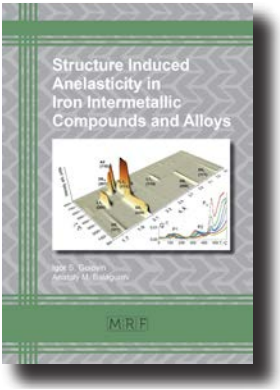
The long-term operation of rails has been studied with focus on (1) the formation and behavior of structural-phase states and nanoscale structures, (2) the modelling of the processes occurring in the surface layers of rails under severe plastic deformation and (3) the methods and techniques for assessing the structural and phase states of rails, internal stresses, and their evolution during the life cycle. The book references 264 original resources and includes their direct web link for in-depth reading.

Long Rails, Long-term Operation, Transmission Electron Microscopy, Steel, Differentiated Hardening, Structural Phase States, Nanoscale Structures, Wear, Deformation Effects, Recrystallization, Segregation, Homogenization, Relaxation, Phase Transitions, Phase Decomposition, Amorphization, Sintering, Filling of Micro- and Nanopores, Nanocapillaries, Severe Plastic Deformation, Megaplastic Deformation

https://www.mrforum.com/product/lengthy-rails

9781644901465, 2021, 194 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644901472)

Structure Induced Anelasticity in Iron Intermetallic Compounds and Alloys



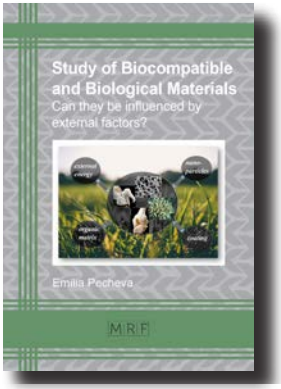
Igor S. Golovin, Anatoly M. Balagurov

Different anelastic phenomena are discussed in this book with respect to iron-based binary and ternary alloys and intermetallic compounds of Fe3Me type, where Me are α-stabilizing elements Al, Ga, or Ge. An introduction into anelastic behavior of metallic materials is given, and methods of mechanical spectroscopy and neutron diffraction are introduced for the better understanding of structure-related relaxation and hysteretic phenomena.
To characterize structure and phase transitions - both first and second order - in the studied alloys XRD, TEM, SEM, MFM, VSM, PAS, DSC techniques were used. Considerable emphasis is placed on in situ neutron diffraction tests that were performed with the same heating and cooling rates as the internal friction measurements.

We discuss (1)Anelasticity, Damping Capacity, Magnetostricition, Structure Transitions, Phase Transitions, Fe-Based Alloys, Intermetallic Compounds, Mechanical Spectroscopy, In Situ Neutron Diffraction

https://www.mrforum.com/product/Structure-induced-anelasticity

9781945291647, 2018, 256 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291654)



Study of Biocompatible and Biological Materials

Can they be influenced by external factors?

Emilia Pecheva

The book focuses on the topic of bio-mineralization and discusses the properties of biological, biocompatible and biomimetic materials. The aim is to improve the performance of these materials. This can be accomplished by tailoring their surface properties by means of external factors and various surface modification techniques. In this way, the growth of biomaterials on surfaces can be influenced beneficially.

Biomaterials, Biomineralization, Biomimetics, Biocompatible Layers, Dental Plaque, Hydroxyapatite, Nanoparticles, Bacterial Films, Oral Health, Plaque Cleaning

https://www.mrforum.com/product/study-biocompatible-biological-materials

9781945291241, 2017, 220 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291258)

Sulfur Dioxide Sensors

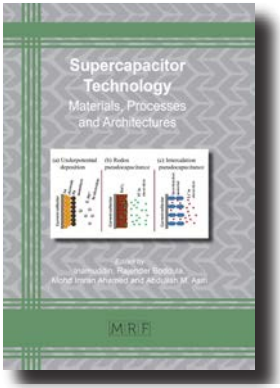
Loveleen Kaur Gulati, Gurleen Kaur Gulati and Satish Kumar

Recent progress on the sensing and monitoring of sulfur dioxide in the environment is presented. The sensing materials covered include potentiometric gas sensors, amperometric sensors, optical sensors involving colorimetric and fluorescence changes, sensors based on ionic liquids, semiconducting metal-oxide sensors, photoacoustic detectors and biosensors.

Sulfur Dioxide Toxicity, Environmental Effects of SO2, Health Effects of SO2, Potentiometric Gas Sensing, Amperometric Gas Sensing, Optical Gas Sensing, Colorimetric Gas Sensing, Fluorescence-based Gas Sensing, Ionic Liquids for SO2 Sensing, Semiconducting Metal-Oxides for SO2 Detection, Photoacoustic Gas Detectors, Biosensors for SO2 Monitoring

https://www.mrforum.com/product/so2-sensing

9781644901229, 2021, 76 pages, full color SC book, USD 55.00, also available as eBook PDF (9781644901236)



Supercapacitor Technology

Materials, Processes and Architectures

Eds. Inamuddin, Rajender Boddula, Mohd Imran Ahamed and Abdullah M. Asiri

Supercapacitors are most interesting in the area of rechargeable battery based energy storage because they offer an unbeatable power density, quick charge/discharge rates and prolonged lifetimes in comparison to batteries. The book covers inorganic, organic and gel-polymer electrolytes, electrodes and separators used in different types of supercapacitors; with emphasis on material synthesis, characterization, fundamental electrochemical properties and most promising applications.

Supercapacitors, Rechargeable Batteries, Organic Electrolytes, Inorganic Electrolytes, Gel Polymer based Supercapacitors, Redox Electrolytes, Starch-Based Electrolytes, Flexible Supercapacitors, Pseudocapacitors, Carbon Nanoarchitectures for Supercapacitors, Photo-Supercapacitors, Bimetal Oxides/Sulfides for Electrochemical Supercapacitors

https://www.mrforum.com/product/supercapacitor-technology

9781644900482, 2019, 274 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900499)

Sustainable Corrosion Inhibitors

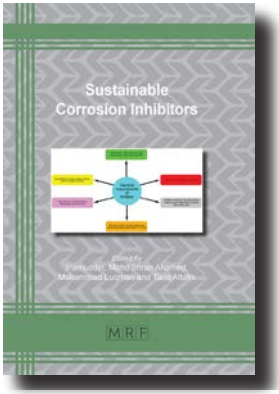
Eds. Inamuddin, Mohd Imran Ahamed, Mohammad Luqman and Tariq Altalhi

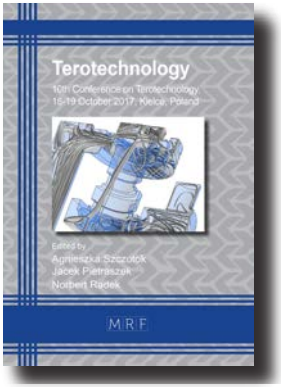
The book presents the current status of corrosion inhibitor technology. A special focus is placed on various types of green corrosion inhibitors and their applications.

Green Corrosion Inhibitors, Sustainable Corrosion Inhibitors, Green Organic Inhibitors, Inhibitors from Biomass and Natural Sources, Polysaccharide, Applications for Concrete, Coatings, Copper and Copper Alloys, Corrosion Control in Conventional and Monolithic Metals

https://www.mrforum.com/product/sustainable-corrosion-inhibitors

9781644901489, 2021, 228 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644901496)





Terotechnology

10th Conference on Terotechnology

Eds. Agnieszka Szczotok, Jacek Pietraszek, Norbert Radek

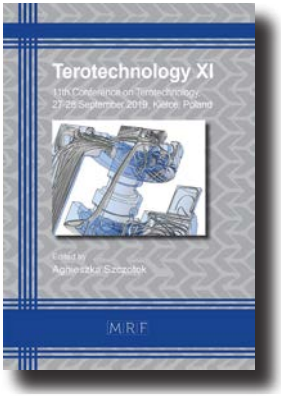
The volume presents advances in materials research and technology in the area of terotechnology, i.e. the technology of installation, maintenance, replacement and removal of plant machinery and equipment, reliability analysis, technical diagnostics, tribology and technical safety.

Cavitation Erosion, Simulation of Particle Erosion, Mechanically-assisted Laser Forming, Laser Machining of Tool Steels, Titanium Carbonitride Coatings, Causes of Cracks in Thermit Welds, Diamond-Like Coatings on Titanium, Reinforcement of Concrete, Fatigue Strength of Construction Elements, Modeling of Mining Support Structures, Surface Treatments of Sintered Stainless Steel, Thermal Welding, Joints of Nickel-Based Superalloys, Robotic Laser Cleaning of Materials, Tribological Properties of Laser-processed ESD Coatings, Laser-modified WC-Cu Electro-Spark Coatings, anti-Graffiti Coating Systems

https://www.mrforum.com/product/terotechnology

9781945291807, 2018, 264 pages, full color SC book, USD 150.00, also available as eBook PDF (9781945291814)

Terotechnology XI



Ed. Agnieszka Szczotok

The book focuses on the technology of installation, maintenance, replacement and removal of manufacturing machinery and transportation equipment. Areas covered include industrial management, reliability, technical diagnostics, materials science, design of experiments, tribology and technical safety.

Terotechnology, Manufacturing Machinery, Transportation Equipment, Spool Control Valves, CFD Simulation, Turbine Nozzle Outlet, Foundry Simulation Codes, Risk Assessment, Flow Control Valves, Hydraulic Drive and Control Systems, Bearing Housing, Defects in Metal Matrix Composites, Controlling Cast Iron Foundry, Camouflage Colors, Erosion Blasting, Fuzzy Logic in Databases, Urban Traffic Noise, Machining of Metal Matrix Composites, Laser Cutting Methods, UV Laser Micro Machining, Simulation of Flow Control, Bearing Housing, Plasma Cutting, Electrical Discharge Machining, Decarburization of Rails, Bogie Frame Strength, Multi Sensor Detection System, DLC Coatings, Horizontal Meshed Heaters, Underground Composite Pressure Pipes, Diagnostic Process of Castings, Toxic Gases Emission, Floor Materials in Rolling Stock, Railway Rubber Products, Electric Cables and Wires, Anti-Graffiti Coatings, Defects in Rails, Screw Coupling 1MN, Laser Welding of Girth Joint, Combustion Chamber of a Piston

https://www.mrforum.com/product/terotechnology_XI

9781644901021, 2020, 290 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901038)

The Inverse Hall-Petch Problem

David J. Fisher

The book reviews the Hall-Petch law, one of the most useful equations of materials science, and the reverse or inverse Hall-Petch relation, which is particular important for controlling the strength of nanocrystalline materials. Theoretical models, experimental data and practical aspects are discussed, making reference to a total of 396 original resources with their direct web link for in-depth reading.

Hall-Petch Law, Reverse or Inverse Hall-Petch Relation, Nanocrystalline Materials, Grain Size and Strength of Materials, Dislocation-based Models, Diffusion-Based Models for the Hall-Petch Relation, Grain-Boundary-Shearing Models, Two-Phase Models for the Hall-Petch Effect, Grain Boundary Structure, Dislocations and Grain Boundaries, Non-Equilibrium Grain-Boundary Structure

https://www.mrforum.com/product/inverse-hall-petch-problem

9781644900345, 2019, 152 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900352)

Theory and Applications of Green Corrosion Inhibitors

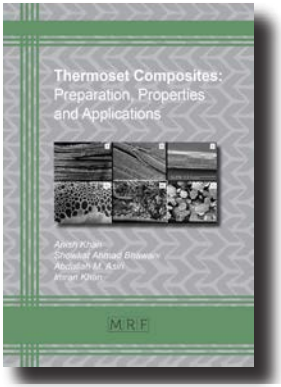
Eds. Inamuddin, Mohd Imran Ahamed, Rajender Boddula and Mohammad Luqman

The book presents theoretical insights, characterization tools and mechanisms of green corrosion inhibitors and their industrial applications in areas such as reinforced concrete, coating, aircraft, oil and gas, acid pickling, water industry and the protection of metals and alloys used in electronic devices.

Biocorrosion Prevention, Green Corrosion Inhibitors, Corrosion Prevention of Metals & Alloys, Corrosion Inhibitors for Concrete, Corrosion Prevention for Electronic Devices, Biological Wastes, Biodegradable Plants, Smart Coatings, Quantum Chemistry, Molecular Dynamics, Simulation, Quantitative Structure Activity Relationship (QSAR), Pyrazine Corrosion Inhibitors

https://www.mrforum.com/product/green-corrosion-inhibitors

9781644901045, 2021, 288 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901052)



Thermoset Composites

Preparation, Properties and Applications

Eds. Anish Khan, Showkat Ahmad Bhawani et al.

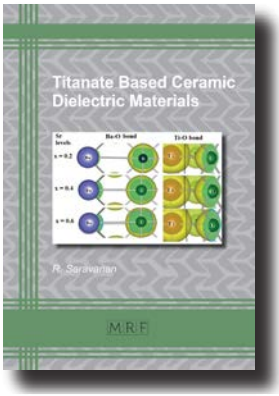
Characterization, design, specific properties and applications of thermoset composites are reported. These composites are presently in high demand because they can be shaped into many-sided segments and structures, and can have a great variety of densities and special physical and mechanical properties.

Thermoset composites, Polymeric Composites, Fiber Reinforced Composites, Lignocellulosic Composites, Hybrid Bast Fibers, Epoxy Composites, Nano-Carbon/Polymer Composites, Conductive Composites, Polyurethane Composites, Wood Flour Filled Composites, Energy Absorption, Automotive Crashworthiness, Electromagnetic Shielding, Electromagnetic Field Emission Applications

https://www.mrforum.com/product/thermoset-composites

9781945291869, 2018, 350 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291876)

Titanate Based Ceramic Dielectric Materials



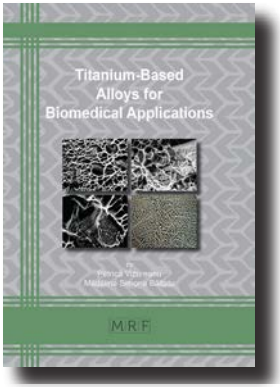
R. Saravanan

Barium titanate is one of the most important electronic materials; due to its high permittivity, low dielectric loss and high tunability. The book presents research results concerning the electron density distribution in a number of doped barium titanate ceramic materials using experimental X-ray diffraction data, UV-visible spectrophotometry (UV-vis), scanning electron microscopy (SEM) and energy dispersive X-ray spectroscopy (EDS). The analysis of interatomic bonding and electron density distribution is important for predicting the properties of potentially important materials and has previously been lacking for the materials studied.

Barium Titanate, Barium Titanate Doping, Dielectric Ceramics, Permittivity, Tunability, Transducers, Piezoelectric Actuators, Memory Storage Devices, Multilayer Ceramic Capacitors, Optoelectronic Devices, X-Ray Diffraction Data, UV-Visible Spectrophotometry, Energy Dispersive X-Ray Spectroscopy, Interatomic Bonding, Electron Density Distribution, Ceramic Property Predictions.

https://www.mrforum.com/product/titanate-based-ceramic-dielectric-materials

9781945291548, 2018, 168 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291555)



Titanium-Based Alloys for Biomedical Applications

Petrică Vizureanu and Mădălina Simona Bălțatu

The book presents the state-of-the-art of biomaterials used in the human body and reports new research on various Ti-based alloys with non-toxic elements (Mo, Zr, Ta, Si, Nb, etc.) aimed at improved mechanical properties, corrosion resistance and biocompatibility. Specific laboratory tests are reported for structural characterization, mechanical properties and corrosion resistance testing, and cytotoxicity assessment.

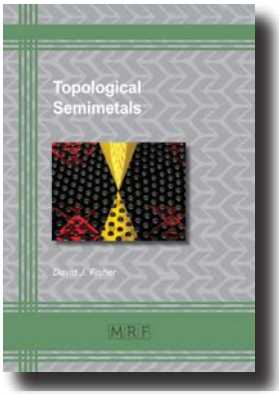
Titanium Alloys, Biomedical Materials, Cytotoxicity Assessment, Biocompatibility, Production and Properties of Ti-Mo-Zr-Ta Alloys, Surface Modification, Powder Metallurgy, Characterization of Ti-Mo-Zr-Ta-Alloys, Mechanical Properties, Differential Scanning Calorimetry, Electrochemical Behavior, Optical Microstructure, X-ray Diffraction, Thermal Characterization, Corrosion Resistance, Medical Applications

https://www.mrforum.com/product/titanium-based-alloys-for-biomedical-applications

9781644900789, 2020, 160 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900796)

Topological Semimetals

David. J. Fisher



Topological semimetals are quantum materials that are not only extremely interesting from a theoretical point of view but also have a great potential for technological applications in which superconducting, semiconducting and other semimetal behaviors are involved. Specific applications include quantum computing, fabricating superconducting microstructures, environmental 'harvesting' of energies which would otherwise go to waste immediately as heat, and fabricating topological quantum devices on industrial-scales. The book references 307 original resources and includes their direct web link for in-depth reading.

Quantum Materials, Macroscopic Quantum Phenomena, Topological Semimetals, Dirac Semimetals, Weyl Semimetals, Nodal-Line Semimetals, Antimony and Antimonides, Antimonene, Arsenides, Bismuthides, Boron, Borides, Borophene, Carbon and Carbides, Chalcogenides, Nitrides, Phosphorus, Phosphides, Silicides, Topological Metals, Topological States of Matter

https://www.mrforum.com/product/topological-semimetals

9781644900147, 2019, 164 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900154)

Toxic Gas Sensors and Biosensors

Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed and Rajender Boddula

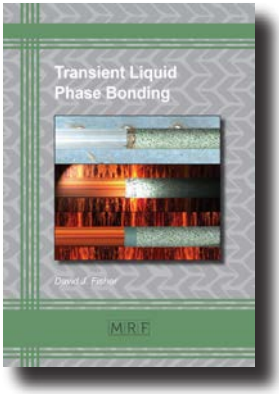
The book focuses on novel sensor materials and their environmental and healthcare applications, such as NO2 detection, toxic gas and biosensing, hydrazine determination, glucose sensing and the detection of toxins and pollutants on surfaces. Materials covered include catalytic nanomaterials, metal oxides, perovskites, zeolites, spinels, graphene-based gas sensors, CNT/Ni nanocomposites, glucose biosensors, single and multi-layered stacked MXenes, black phosphorus, transition metal dichalcogenides and P3OT thin films.

Toxic Gas Sensors, Biosensors, Nitrogen Dioxide Detection, Hydrazine Determination, Glucose Sensing, Catalytic Nanomaterials, Metal Oxides, Perovskites, Zeolites, Spinels, Graphene-based Gas Sensors, CNT/Ni Nanocomposites, Mxenes, Black Phosphorus, Transition Metal Dichalcogenides, P3OT Thin Films

https://www.mrforum.com/product/toxic-gas-sensors

9781644901168, 2021, 252 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901175)

Transient Liquid Phase Bonding



David. J. Fisher

The book presents a complete overview on the topic of Transient Liquid Phase Bonding (TLPB) which has many high-tech applications, ranging from the production and repair of turbine engines in the aerospace industry, to nuclear power plants and the connection of circuit lines in the microelectronics industry. The TLPB process and its specific applications are presented in great detail: Self-Bonding of Pure Materials; Bonding Different Pure Materials; Self-Bonding of Composites; Self-Bonding of Simple Alloys; Self-Bonding of Complex Alloys; Bonding Same-Base Alloys; Bonding Different-Base Alloys; Bonding Ceramics to Ceramics; Bonding Ceramics to Metals. The book references 483 original resources and includes their direct web link for in-depth reading.

Liquid Phase Bonding, Athermal Solidification, Isothermal Solidification, Melting-point Depressant, Intermetallics, Superalloys, Self-Bonding of Pure Materials, Self-Bonding of Composites, Self-Bonding of Alloys, Bonding Different-Base Alloys, Bonding Ceramics to Ceramics, Bonding Ceramics to Metals

https://www.mrforum.com/product/transient-liquid-phase-bonding

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