

# **Materials Science and Engineering**

A scanning electron micrograph (SEM) showing a highly textured, fibrous, and porous material surface. The image is in grayscale, highlighting the intricate details of the material's morphology, which appears to be a network of interconnected fibers or a complex crystalline structure.

# **MRF**

**2022/Fall Edition**

**Materials Research Forum LLC**  
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Welcome to Materials Research Forum LLC' complete 2022 Fall Publications Catalog. It describes all 158 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 exclusively on materials related research and serve the individual 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 25 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.

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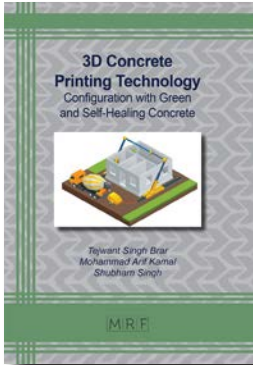
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### 3D Concrete Printing Technology

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, Build-*

*ability, 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.

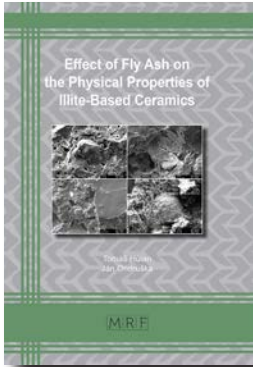
*Piezoelectric Materials, Piezo-crystals, Nanogenerators, Phototronics, Piezoelectric Composites, Biomedical Applications, Energy Harvesting, Piezoelectric Thin Films, Piezoelectric Perovskites, Sensor Applications, Piezoelectric Ceramics, Piezoelectric Semiconductors, Piezoelectric Polymers*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



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

Tomáš Hulan 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

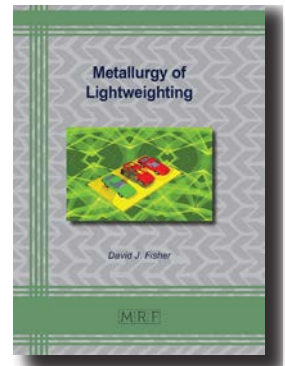
David J. Fisher

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 lightweighting. 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.

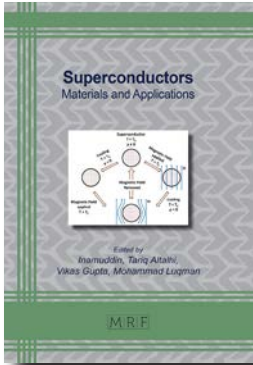
*Aluminum, Iron, Ductile Iron Castings, Magnesium Alloys, Nano-Composites, Steel, Titanium, Joining Dissimilar Materials, Batteries, Electric Vehicles, Body Torsioning, Castability, Drawability, Elasto-Viscoplastic Model, Electroplasticity, Embrittlement, Eutrophication, Extrudability, Front Crash Structure, Hall-Heroult Electrolysis, Hall-Petch Effect, Hot Extrusion, Hydroforming, Lifigate-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)



# Current Book List



## 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

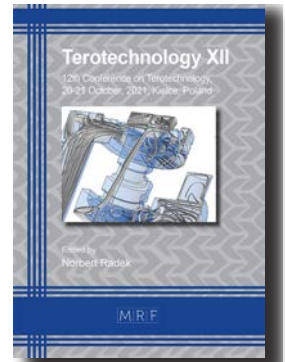
Ed. Norbert Radek

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, TiO<sub>2</sub> 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*

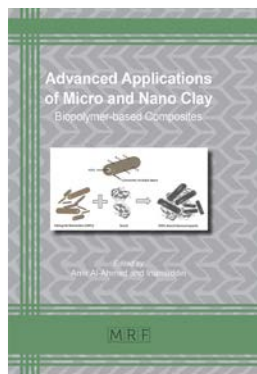
<https://www.mrforum.com/product/terotechnology12>

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



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## Current Book List



### 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

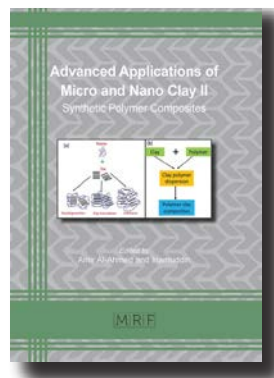
Eds. Amir Al-Ahmed and Inamuddin

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.

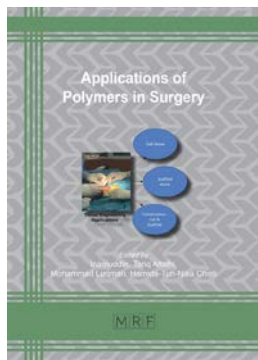
*Synthetic Polymer Composites, Nanoclay-based Polymer Nanocomposites, Hectorite, Nontronite-Starch, Reinforcement of Thermoplastics, Polyethylene, Polypropylene, Sonochemical Synthesis, Drug Delivery, Electromagnetic Interference Shielding, Flame Retardancy, Water Treatment*

<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)



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### 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>

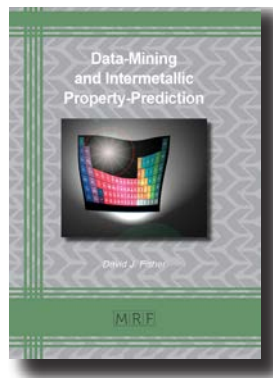
9781644901885, 2022, 224 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901892)

### 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.

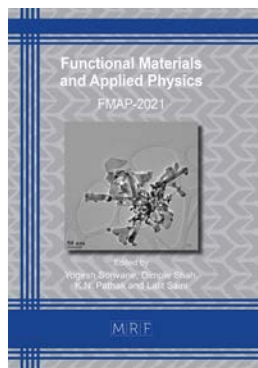
*Data-Mining, Intermetallic Compounds, Structure-Mapping, Clustering Methods, Free Energy, Energy Landscapes of Compounds, Stable Groupings of Atoms, Intermetallic Phases, Crystal Unit Cell Size, Platonic Solids, Symmetries, Stoichiometries, Stability Fields*



<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)

## Current Book List



### 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-MgB<sub>2</sub> Superconductors, Au and Ag Nanoribbons, Silver Nanostructure Formation, 2D Monolayer As<sub>2</sub>S<sub>3</sub>, 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*

*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

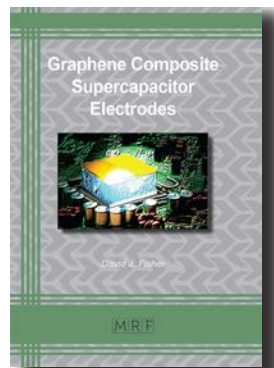
David J. Fisher

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)



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## Current Book List



### 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>

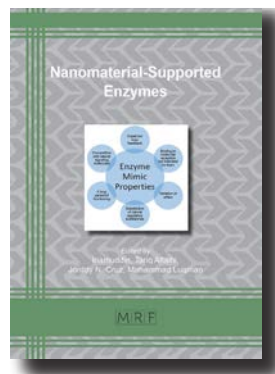
9781644901984, 2022, 394 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901991)

### 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*

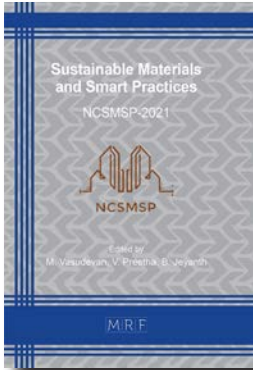


<https://www.mrforum.com/product/nanomaterial-supported-enzymes>

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

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## Current Book List



### 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>

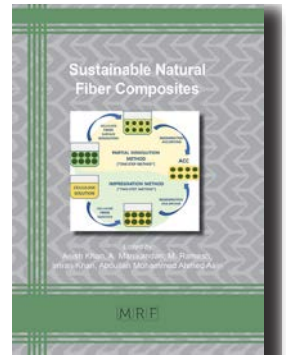
9781644901946, 2022, 478 pages, full color SC book, USD 150.00, also available as eBook PDF (9781644901953)

### 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.

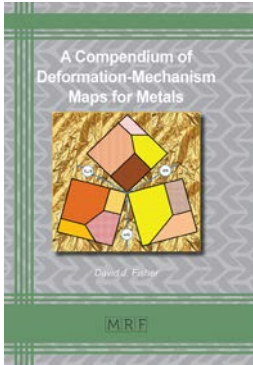
*Fiber Reinforced Composites, Biodegradable Composites, Polymethyl Methacrylate, Cellulose Fibers, Coconut Fibers, Biocomposites, Resol-Vegetable Fibers, Pineapple Natural Fiber Composite, Dental Applications, Cement Paste, Concrete, Thermoplasticity, Fatigue, Moisture, Thermal Conductivity*



<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)

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### **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>

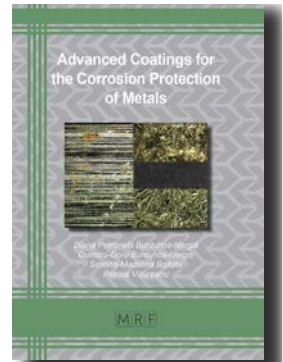
9781644901687, 2022, 130 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901694)

### **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.

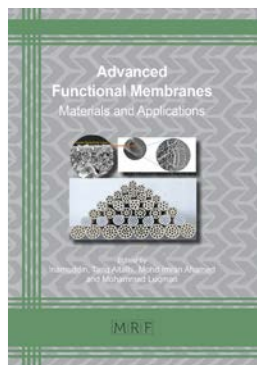
*Anticorrosion Coating, Metal Corrosion, Electrochemical Corrosion, Biochemical Corrosion, Atmospheric Corrosion, Underground Corrosion, Aqueous Corrosion, Corrosion Involving Mechanical Stress, Microbiological Corrosion, Metal Passivation, Metallic Layers, Spray Metal Coatings, Diffusion Coatings, Cladding 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)

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### Advanced Functional Membranes

Materials and Applications

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

Functional membranes are used in food processing, sensor technology, medical and biomedical devices, desalination, waste water treatment, CO<sub>2</sub> 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

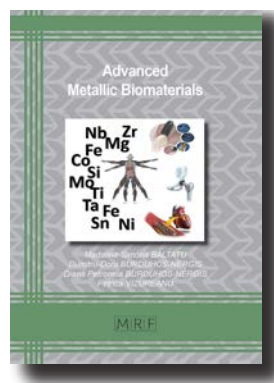
Madalina-Simona Baltatu, Dumitru-Doru Burduhos-Nergis, Diana Petronela Burduhos-Nergis, Petrica Vizureanu

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.

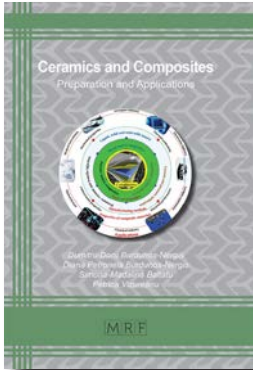
*Biomaterials, Classification, Titanium Alloys, Cobalt Alloys, Stainless Steels, Biodegradable Alloys, Medical Applications, Optimization of Metallic Biomaterials, Multifunctional Implants, Tissue Reactions, Toxicity of Metals, Inflammatory Reactions, Immunological Reactions, Sensibility, Allergy, Carcinogenic 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)



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<http://www.mrforum.com>



### 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

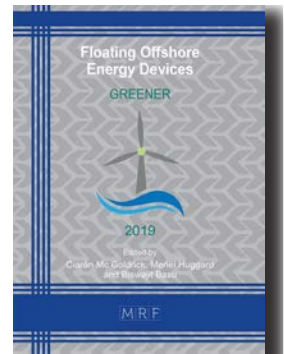
Eds. Ciarán Mc Goldrick, Meriel Huggard and Biswajit Basu

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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

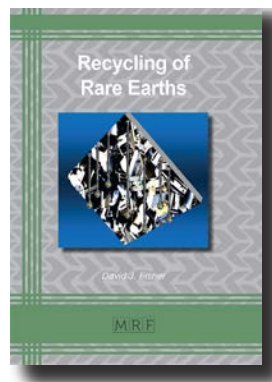
David J. Fisher

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.

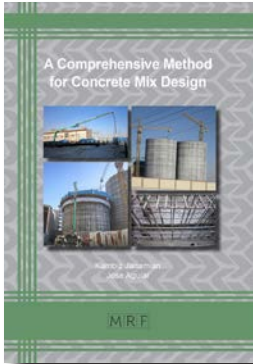
*Rare Earths, Bioleaching, Biosorption, Siderophores, Algae, Seaweed, Carbon-based Nanomaterials, Silica, Pyrometallurgy, Electrochemistry, Hydrometallurgy, Solvent Extraction, Absorbents, Ash, Slag, Red Mud, Contaminated Soil*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### **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>

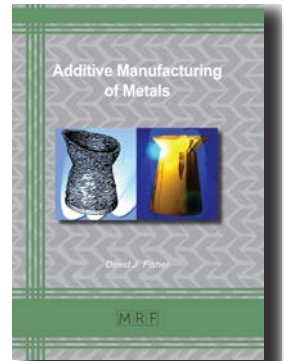
9781644900581, 2020, 180 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644900598)

### **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.

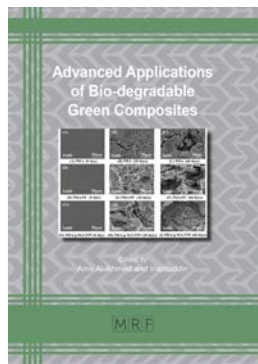
*Additive Manufacturing, 3-Dimensional Printing, Layered Manufacturing, Titanium Alloys, Nickel Alloys, Iron Alloys, Stainless Steels, Aluminium, Cobalt, Copper, Magnesium, Niobium, Tantal, Tin, Tungsten, Zinc, Porous Metals, Biomedical Materials, Orthopaedic Devices, Dental Implants, Aerospace Components,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

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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>

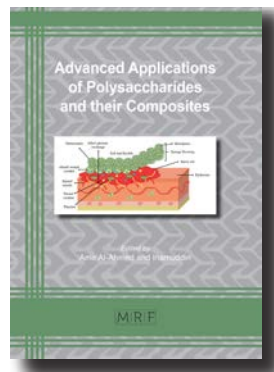
9781644900642, 2020, 202 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900659)

### 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*

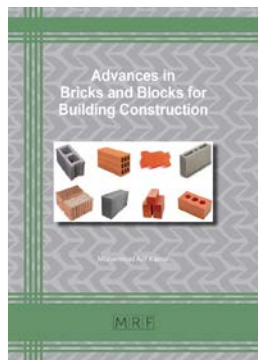


<https://www.mrforum.com/product/polysaccharides-and-its-composites>

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

For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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

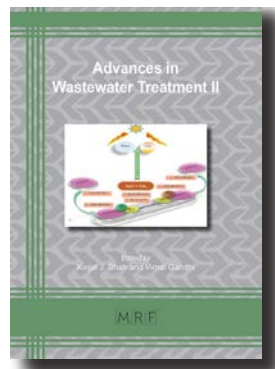
Eds. Kinjal J. Shah and Vimal Gandhi

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

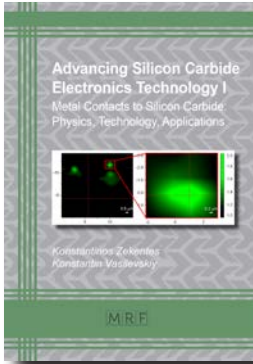
Eds. Vimal Gandhi and Kinjal Shah

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/wastewater-treatment-i>

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

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### **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

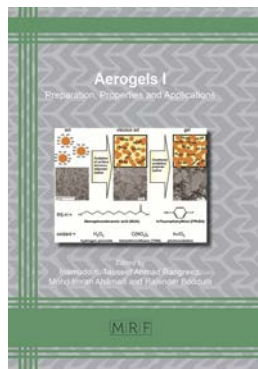
The book presents an in-depth review and analysis of Silicon Carbide device processing. The main topics are: (1) Silicon Carbide Discovery, Properties and Technology, (2) Processing and Application of Dielectrics in Silicon Carbide Devices, (3) Doping by Ion Implantation, (4) Plasma Etching and (5) Fabrication 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



## 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

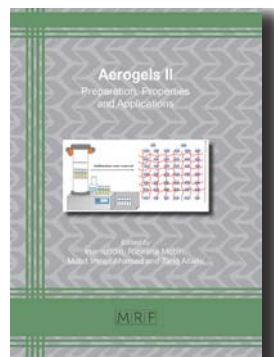
Eds. Inamuddin, Rizwana Mobin, Mohd Imran Ahamed and Tariq Altalhi

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](https://www.mrforum.com/aerogels_II)

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



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<http://www.mrforum.com>

## Current Book List



### 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>

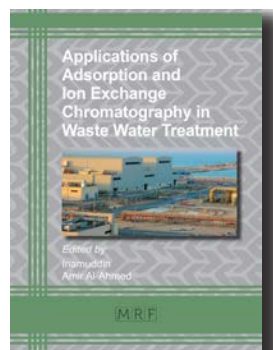
9781644901526, 2021, 138 pages, full color SC book, USD 75.00, also available as eBook PDF (9781644901533)

### 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.*

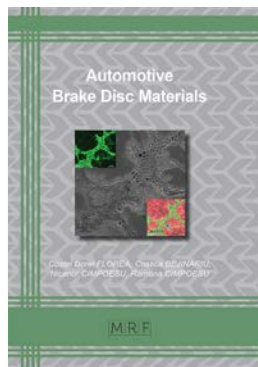


<https://www.mrforum.com/product/Adsorption-Ion-Exchange-Chromatography-Waste-Water-Treatment>

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

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<http://www.mrforum.com>

## Current Book List



### 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)

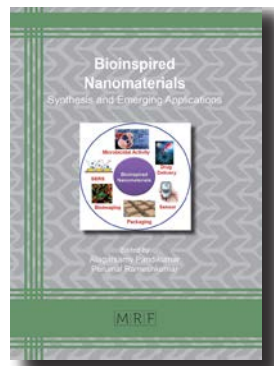
### Bioinspired Nanomaterials

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.

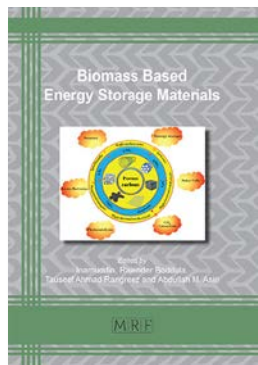
*Bioinspired Nanomaterials, Metal Nanoparticles, Metal Oxide Nanostructures, Nanocomposite Materials, Microbicidal Activity, Drug Delivery, Packaging Applications, SERS Applications, Fluorescent Biosensing, Quantum Dots, Bio-Imaging, Electrochemical Sensors*



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

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

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

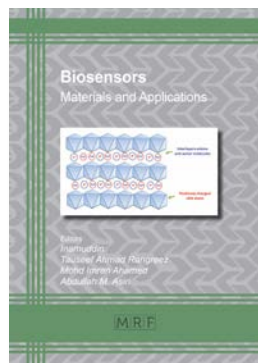
Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed, Abdullah M. Asiri

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*

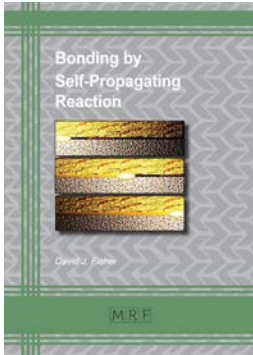
<https://www.mrforum.com/product/biosensors>

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



For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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, Nanofibers, Nanocomposite Foils, Nanocrystalline Films, Nano-Laminates, Nano-Multilayers, Aluminum alloys, Nano-Aluminates, Polymers, Porous Materials, Stainless Steels, Titanium Alloys, Titanium Nano-layers*

<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*

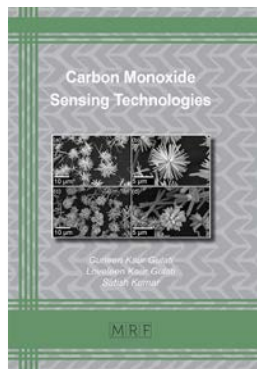


<https://www.mrforum.com/product/palm-trees-by-products>

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

For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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

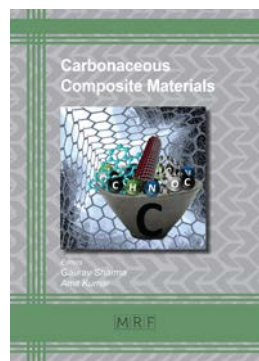
Eds. Gaurav Sharma, Amit Kumar

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.

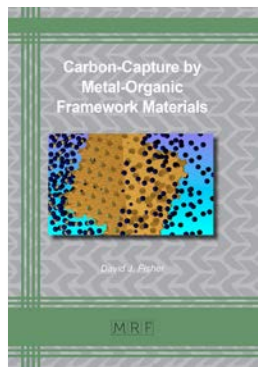
*Carbonaceous Materials, Carbons, Graphite, Biochar, Fullerenes, Graphene, Carbon Foam, Carbon Nanotubes, Graphene Oxide, Graphitic Carbon Nitride, Carbon Aerogels, Carbon Matrix Composites, Organic-inorganic Hybrid Materials, Building Materials, Carbon-based Composites, Carbon Matrix Polymer Composites, 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, Bio-mass 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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 CO<sub>2</sub> absorption, there are other interesting applications, such as the direct electrochemical reduction into useful chemicals and fuels, the conversion of CO<sub>2</sub> into methanol, the electrochemical reduction of CO<sub>2</sub>, 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 CO<sub>2</sub>, Porous Solids, Catalytic Performance, Synthesis of MOFs, Conversion of CO<sub>2</sub> 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

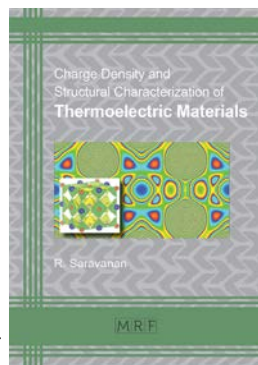
Thermoelectric materials permit the direct conversion of temperature differences into electric energy, and vice versa. They are therefore of highest technological interest in applications such as solid state coolers, waste heat recovery, sensors and detectors, and power generators including remote power 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 Mg<sub>2</sub>Si, PbTe, Bi<sub>1-x</sub>Sb<sub>x</sub>, Bi<sub>2</sub>Te<sub>3</sub>, Sb<sub>2</sub>Te<sub>3</sub>, Sn<sub>1-x</sub>GexTe and InSb.

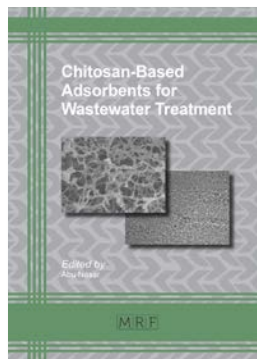
*Materials Science, Thermoelectric Materials, Thermoelectric Mechanism, Charge Density, Structural Characterization, Magnesium silicide, Lead telluride, Bismuth doped with antimony, Bismuth telluride, Antimony telluride, Tin telluride doped with germanium, Indium Antimonide, Pair Distribution Function,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



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

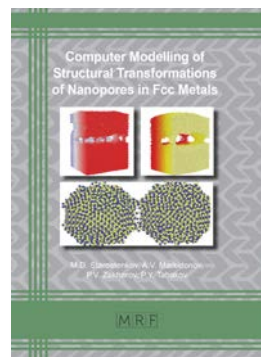
M.D. Starostenkov, A.V. Markidonov, P.V. Zakharov, P.Y. Tabakov

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.

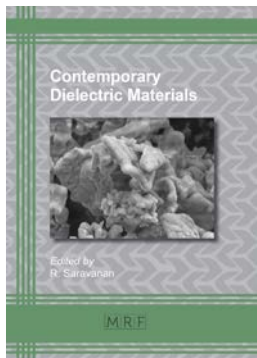
*Computer Modelling of Nanopores, Molecular Dynamics, Fcc Metals, Defect Structures in Crystals, Radiation Material Science, Nano-Engineering of Materials, Ultrasonic Treatment of Materials, Radiation Induced Defects, Vacancy Clusters, Shock Wave Effects, Radiation-Resistant Materials, Thermomechanical 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

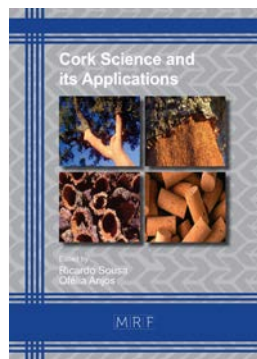
Eds. Ricardo Sousa and Ofélia Anjos

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*

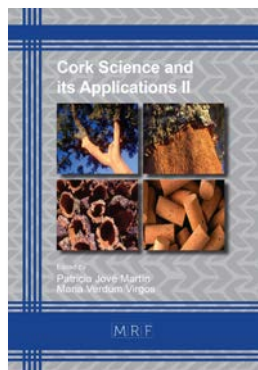
<https://www.mrforum.com/product/cork-science-applications>

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



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<http://www.mrforum.com>

## Current Book List



### Cork Science and its Applications II

Eds. Patricia Jové Martín and Maria Verduin 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 Nandiyala

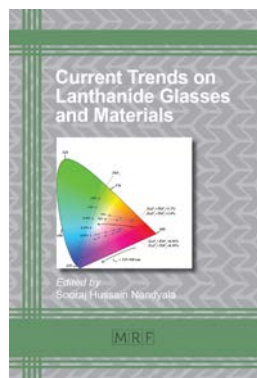
This monograph covers the latest developments in lanthanide doped glasses and phosphor materials. The book aims to explain the basic functioning mechanisms of phosphor materials, and the luminescence behaviour of glasses doped with certain lanthanide ions. It also describes how to plot colors in a CIE 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.

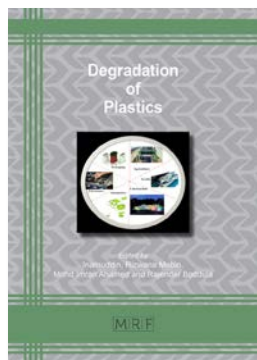
*Materials Science, Lanthanide Glasses, Lanthanide Doped Glasses, Phosphor Materials, Luminescence Behaviour of Glasses, CIE Chromaticity Diagram, Solid State Lighting*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

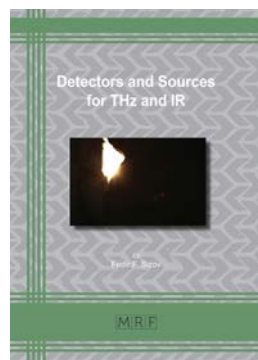
Fedir F. Sizov

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.

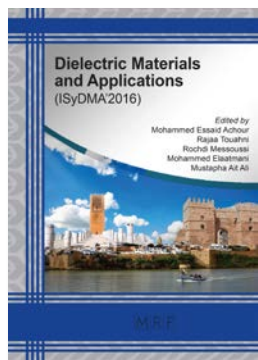
*THz and IR Detectors, THz and IR Sources, Superconducting Photon Detectors, Superconducting THz Detectors, Graphene-based Detectors, THz Sensors with Metamaterials, Photoconductive Antenna Detectors, Imaging, Communication, Spectroscopy, Sensing, Security Screening, Surveillance, Astronomy, Biomedicine, 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### Dielectric Materials and Applications

ISyDMA'2016

Eds. Mohammed Essaid Achour, Rajaa Touahni, Rochdi Mes-soussi, 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

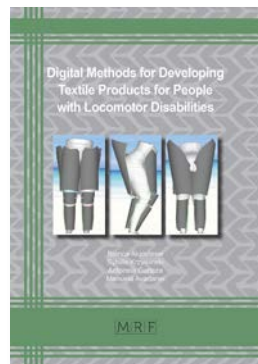
Bianca Aluculesei, Sybille Krzywinski, Antonela Curteza, Manuela Avadanei

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.

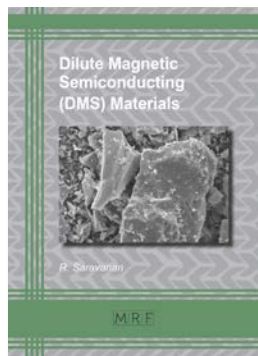
*Disabilities, Clothing for Disabled Persons, Wheelchair Users, Paraplegia, Functional Clothes, Kinematic Model, Scanning Procedure, 2D-3D/ 3D-2D Virtual Prototype, Body Posture Simulation, Virtual Pattern Making, Garment Fit Simulation*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

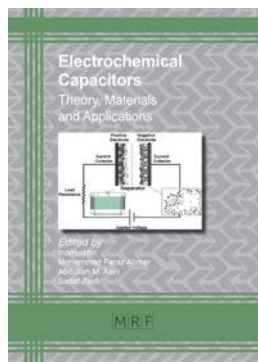
Eds. Inamuddin, Mohammad Faraz Ahmer, Abdullah M. Asiri

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*

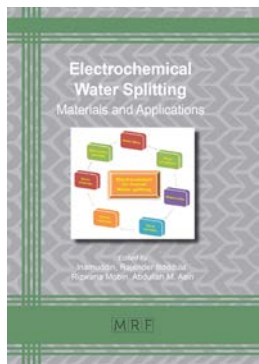
<https://www.mrforum.com/product/electrochemical-capacitors>

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



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<http://www.mrforum.com>

## Current Book List



### 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

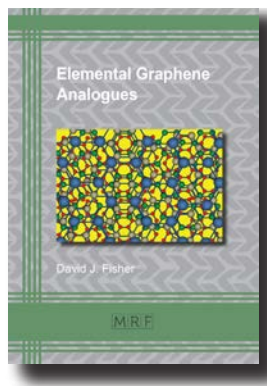
A recent innovation has been the discovery and preparation of graphene; single-monolayer carbon having a remarkable strength. This success has naturally led researchers to ask whether other materials might also be prepared in an analogous monolayer form and offer similarly amazing properties.

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.

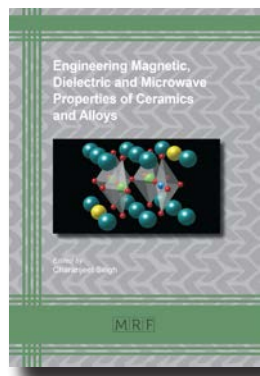
*2-Dimensional Materials, Antimonene, Arsenene, Bismuthene, Borophene, Chair Structure, Germanene, Indiene, Monolayers, Nano-Materials, Phosphorene, Silicene, Spintronics, Stanene, Tinene, Valleytronics, Zig-Zag Structure*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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  $\text{PbFe}_{12}\text{O}_{19}$  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,  $\text{PbFe}_{12}\text{O}_{19}$  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

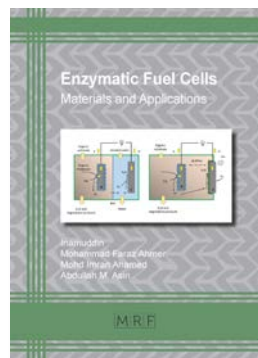
Eds. Inamuddin, Mohammad Faraz Ahmer, Mohd Imran Ahamed, Abdullah M. Asiri

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.

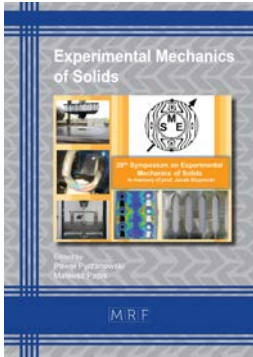
*Fuel Cells, Biofuel cells, Enzyme Catalysts, Energy Conversion, Fuel catalysis, Sucrose Fuel, Fructose Fuel, Glucose Fuel, Implantable Gadgets, Biosensors, Pacemakers, Catheters, Defibrillators, Insulin pumps, Artificial Muscles, Mesoporous Materials, Graphene Composites, Conducting polymers, Fuel Cell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



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### Experimental Mechanics of Solids

Eds. Pawel 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>

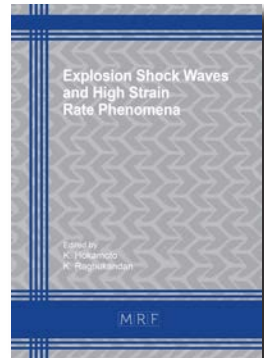
9781644900208, 2019, 178 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900215)

### 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 (ESHPR).

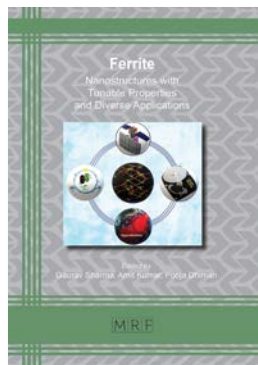
*Explosion Shock Waves, High Strain-Rate Phenomena, Manufacturing using Impact Loading, Flammable Gas Detonation, Auxetic Cellular Structures, Underwater Shock Waves, Magnetic Pressure Welding, Shock Synthesis of Oxides, Impact Joining of Dissimilar Metals, Dislocation Wall Structures, Strength of Rock 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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>

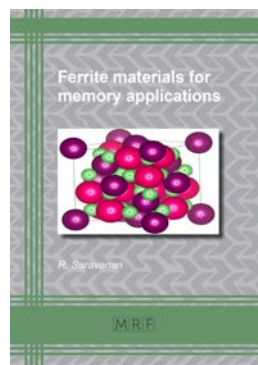
9781644901588, 2021, 378 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644901595)

### 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.

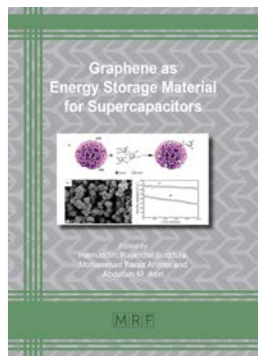
*Magnetic Materials, Nano Ferrite Materials Characterization Techniques, Dielectric Studies, Maximum Entropy Method (MEM), Magnetic Properties, Optical Properties, Dielectric Properties*



<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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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 En-*

*gineered Graphene Materials, Electric Power Systems*

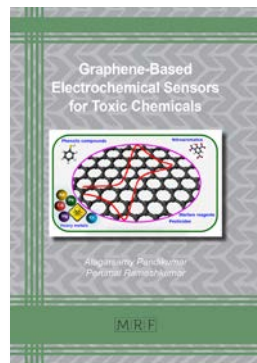
<https://www.mrforum.com/product/graphene-energy-storage-material-supercapacitors>  
9781644900543, 2020, 284 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900550)

### 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.

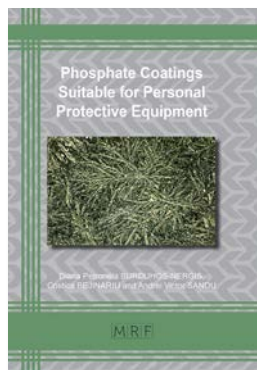
*Graphene-based Nanocomposites, Electrochemical Sensors, Toxic Chemicals, Sensors for Toxic Molecules, Graphene-Metal Oxides, Graphene-Metal Chalcogenides, Graphene-Polymer Nanocomposites, Graphene-Carbon Nanotubes, Graphene-Carbon Nitrides, Graphene-MOF Composites, Heavy Metals, Phenolic Compounds,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

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### Green Materials Obtained by Geopolymerization for a Sustainable Future

Petrica VIZUREANU and Dumitru-Doru BURDUHOS-NER-GIS

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>

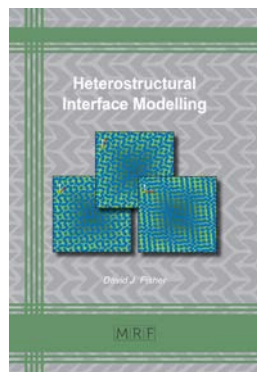
9781644901120, 2021, 212 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901137)

### 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.

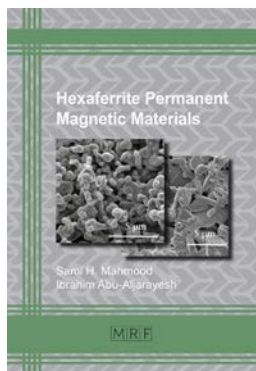
*Interface Modelling, Lattice Theory, Semiconductor Electronics, Lithium-ion Conductor, Graphite Filaments, Graphite Sheets, Interface Stresses, Epitaxial Deposition, Composite Design, Coincidence-Site Lattice Theory, Ionic Conductivity, Interfacial Lattice Strain, Epitaxial Thin Films, Compatible-Material-Combination Software, Lattice-Matching to Silicon, Lattice-Matching to Semiconductors, 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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)

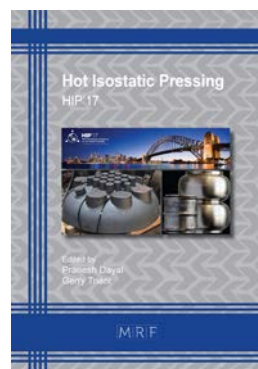
### Hot Isostatic Pressing

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.

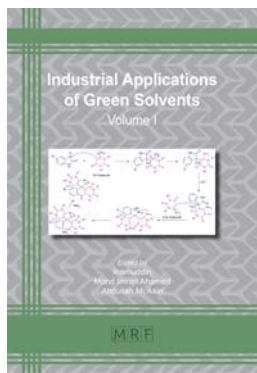
*Hot Isostatic Pressing, Radioactive Nuclear Waste, Cast Aluminum Alloys, Ceramic Materials, Superalloys, Manufacturing of Turbine Blisks, Additive Manufacturing, Diffusion Welding, Turbopump Components, Valve Spindles, Ni-base Superalloys, Titanium Aluminide, Stainless Steels, Metal Matrix Composites, 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

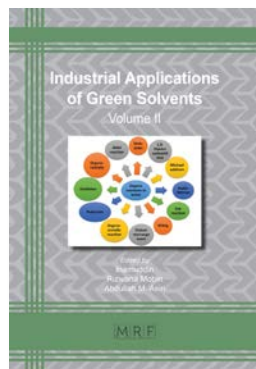
Eds. Inamuddin, Rizwana Mobin and Abdullah M. Asiri

The book explores industrial applications of green solvents in industrially important areas such as oil extraction, sensors and biosensors, CO<sub>2</sub> 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, CO<sub>2</sub> 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### **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**

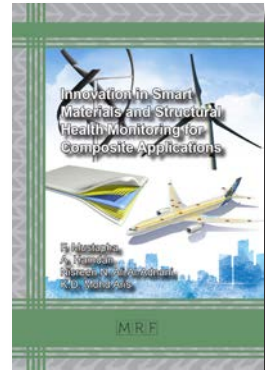
F. Mustapha, A. Hamdan, Nisreen N. Ali Al-Adnani,  
K.D. Mohd Aris

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.

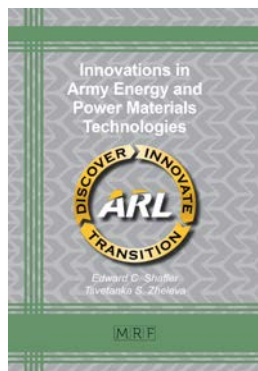
*Smart Materials, Composites, Structural Health Monitoring, Non-destructive Test, Composite Aircraft Structures, Root Mean Square Deviation (RMSD), Wind Turbine System, Biocomposite Turbine Blade, Vertical Axis Wind Turbine, Micro Energy Harvester*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### **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 Laboratory (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**

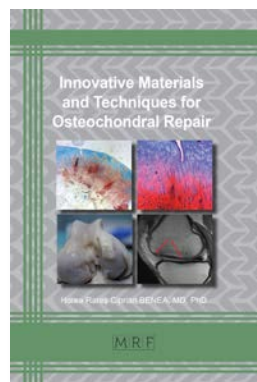
Horea Rareș Ciprian Benea

The book presents research in treating focal joint cartilage defects. Lipos aspirate 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.

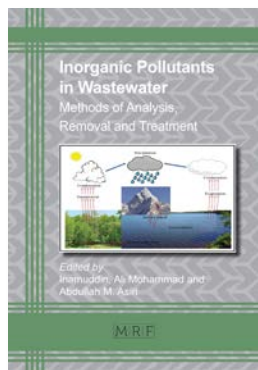
*Biomaterials, Osteochondral Repair, Lipos aspirate Fluid (LAF) Cells, Arthritis, Focal Joint Cartilage Defects, Physiopathology of Cartilage Lesions, Diagnosis of Cartilage Lesions, Treatment of Cartilage Lesions, Plastic Surgery, Vascular Surgery, Repair Surgery, Orthopedics, Biological Arthroplasties*

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

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



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<http://www.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, De-*

*salination, Electrochemical Technologies*

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

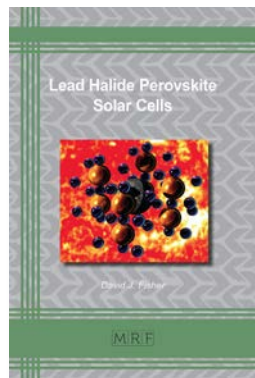
9781945291340, 2017, 458 pages, full color SC book, USD 135.00, also available as eBook PDF (9781945291357)

### **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*

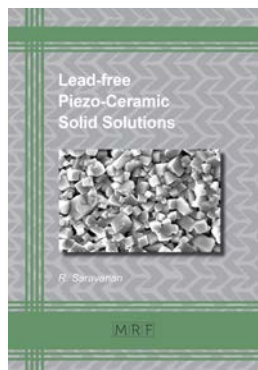


<https://www.mrforum.com/product/lead-halide-perovskite-solar-cells>

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

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<http://www.mrforum.com>

## Current Book List



### 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

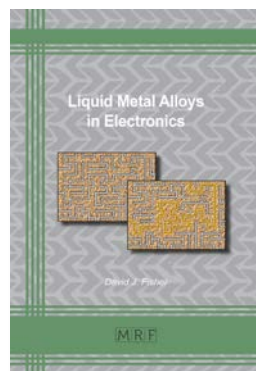
David J. Fisher

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.

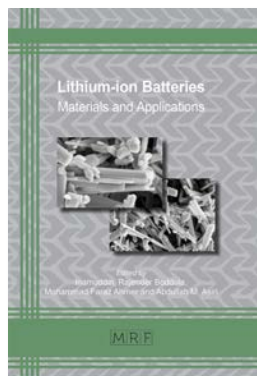
*Liquid Metals, Gallium-Indium Alloys, Galinstan, EGaln, Self-Assembled Monolayers, Energy-Harvesting, Reconfigurable Antennae, Sensors, Conformable Electrodes, Stretchable Wires and Interconnects, Self-Healing Circuits, Gallium-Lyophilic Surfaces, Wettability of Liquid Metal, Substrate Topology, Selective 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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 TiO<sub>2</sub> 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*

*ers, Fabrication of Device Assemblies, and Electrochemical Performance of LIBs*

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

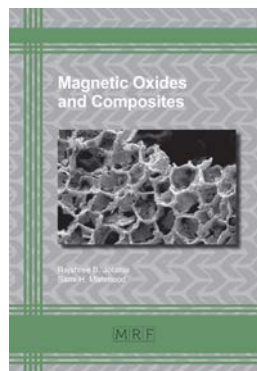
9781644900901, 2020, 208 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644900918)

### 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.

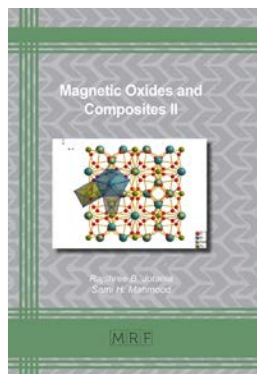
*Magnetic Oxides, Spinel Ferrites, Hexaferrites, Magnetoelectric Ceramic Composites, Soft Ferrites, Nano-Size Spinel Ferrites, Magnetic Nanoparticles, Device Miniaturization*



[https://www.mrforum.com/product/magnetic\\_oxides\\_and\\_composites](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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

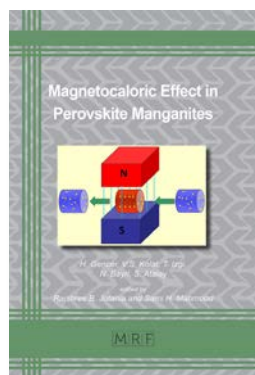
H. Gencer, V.S. Kolat, T. Izgi, N. Bayri, S. Atalay

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*

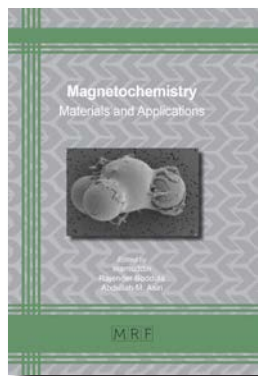
<https://www.mrforum.com/product/magnetocaloric-effect-in-perovskite-manganites>

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



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<http://www.mrforum.com>

## Current Book List



### 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

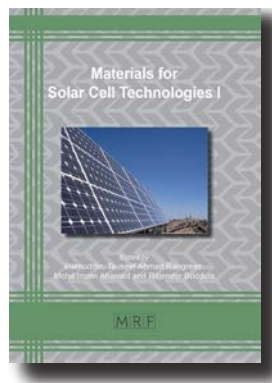
Eds. Inamuddin, Tauseef Ahmad Rangreez, Mohd Imran Ahamed and Rajender Boddula

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*

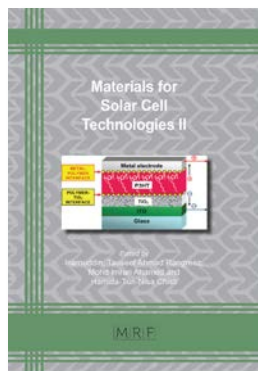
<https://www.mrforum.com/product/materials-for-solar-cell-technologies>

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



For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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

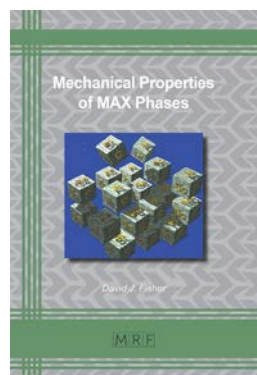
D.J. Fisher

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*

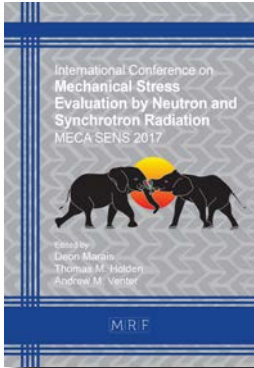
<https://www.mrforum.com/product/max-phases>

9781644901267, 2021, 134 pages, full color SC book, USD 100.00, also available as eBook PDF (9781644901274)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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

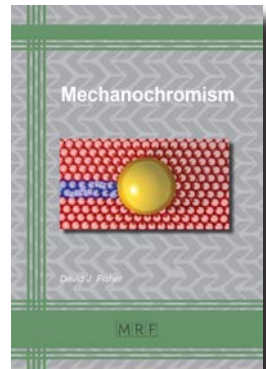
David J. Fisher

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.

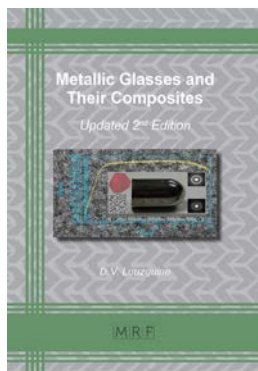
*Mechanochromism, Piezochromism, Piezoelectricity, Triboluminescence, Electroluminescence, Thermoluminescence, Photoluminescence, Stress Recording, Wear Monitoring, Fracture Detection, Pressure Monitoring, Incipient Damage Detection, Shock Wave Effects, Mechanoluminescent Polymers, Nanosensors, Spiropyran, 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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](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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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](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

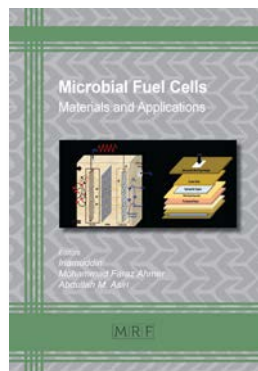
Eds. Inamuddin, Mohammad Faraz Ahmer et al.

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*

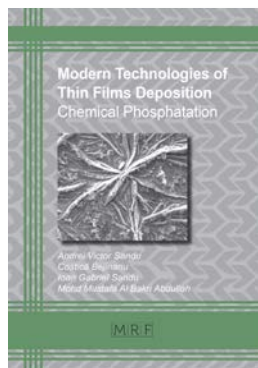
<https://www.mrforum.com/product/microbial-fuel-cells>

9781644900109, 2019, 364 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900116)



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<http://www.mrforum.com>

## Current Book List



### 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

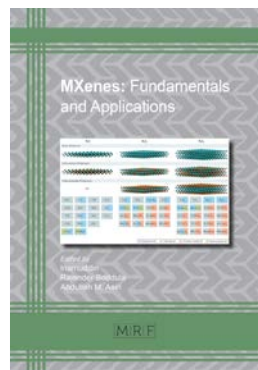
Eds. Inamuddin, Rajender Boddula and Abdullah M. Asiri

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.

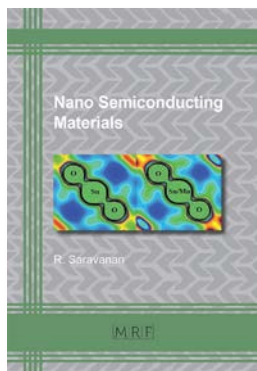
*MXenes, Nanomaterials, Two-dimensional Materials, Transition Metal Carbides, Transition Metal Nitrides, Electrical Conductivity, Hydrophilicity, Chemical Stability, Catalysis, Membrane Separation, Supercapacitors, Hybrid-ion Capacitors, Batteries, Flexible electronics, Hydrogen Storage, Nanoelectronics, 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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, TiO<sub>2</sub>, NiO, Ga doped ZnO, Mn doped SnO<sub>2</sub>, Mn doped CeO<sub>2</sub> and Mn doped ZrO<sub>2</sub>.

*Nano Semiconducting Materials, characterization, powder X-ray diffraction, UV-visible spectrophotometry, Raman spectrometry, scanning electron microscopy, transmission electron microscopy, vibrating sample magnetometry, ZnS, TiO<sub>2</sub>, NiO, Ga*

*doped ZnO, Mn doped SnO<sub>2</sub>, Mn doped CeO<sub>2</sub>, Mn doped ZrO<sub>2</sub>*

<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

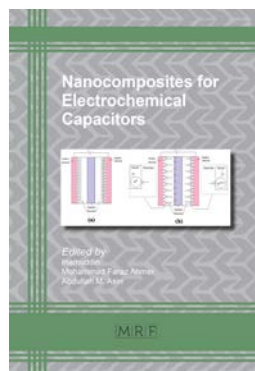
Electrochemical capacitors or supercapacitors offer a number of advantages over batteries; they are more safe and reliable, charge quicker, have an indefinite lifespan, exhibit a high power density and a wide range of working temperature. Supercapacitors demonstrate an extraordinary potential in both 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 on 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*

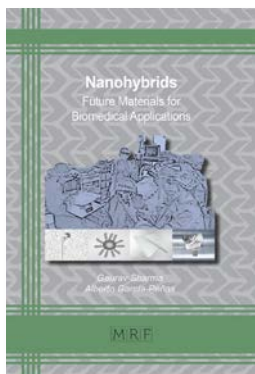
<https://www.mrforum.com/product/nanocomposites-for-electrochemical-capacitors>

9781945291524, 2018, 210 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291531)



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<http://www.mrforum.com>

## Current Book List



### Nanohybrids

Future Materials for Biomedical Applications

Eds. Gaurav Sharma and Alberto García-Peñas

The book covers preparation, designing and utilization of nano-hybrid 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>

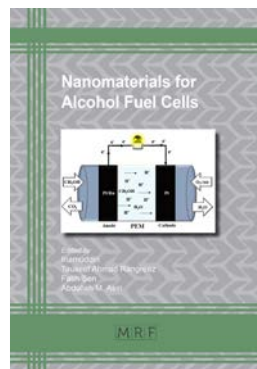
9781644901069, 2021, 278 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901076)

### 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.

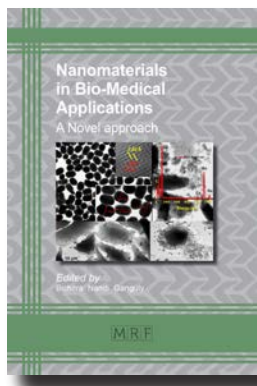
*Alcohol Fuel Cells, Direct Methanol Fuel Cells, Alcohol Oxidation, Nano-Catalysts, Carbon-Based Nanomaterials, Polymer Electrolyte Membranes, Nanomaterials for Oxygen Reduction, Polymer-based Nanocomposites, Electrocatalysts, Ethanol Electro-Oxidation, Proton Electrolyte Membranes, Methanol Oxidation, 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

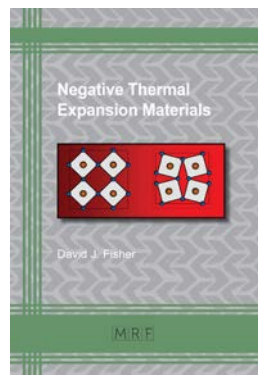
All you want to know about negative thermal expansion materials in an easy to read condensed format. In everyday life, minute thermally-induced elongations are essentially invisible to the naked eye; but even minute expansions can fatally degrade device processing and performance in – for example – the 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*

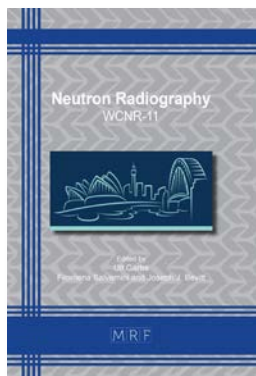
<https://www.mrforum.com/product/negative-thermal-expansion-materials>

9781945291487, 2018, 178 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291494)



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<http://www.mrforum.com>

## Current Book List



### Neutron Radiography

WCNR-11

Eds. Ulf Garbe, Filomena Salvemini and Joseph J. Bevvitt

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

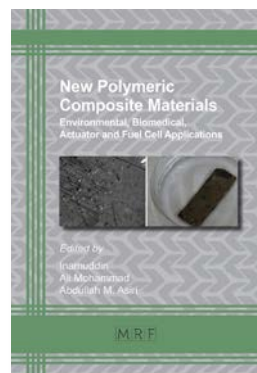
Polymeric and composite materials are in high demand and their continuing development is making our life style more comfortable. The present book reviews the latest research results in the field and explores the technological advantages of these materials in environmental, biomedical, actuator and fuel 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*

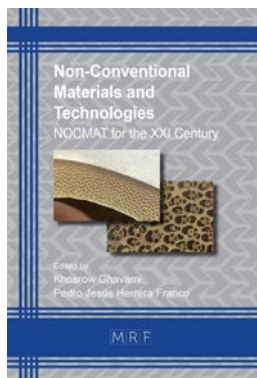
<https://www.mrforum.com/product/new-polymeric-composite-materials/>

9781945291081, 2016, 402 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291098)



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<http://www.mrforum.com>

## Current Book List



### 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>

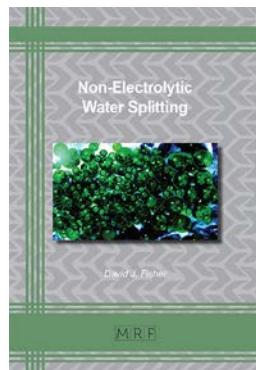
9781945291821, 2018, 820 pages, full color SC book, USD 170.00, also available as eBook PDF (9781945291838)

### 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.

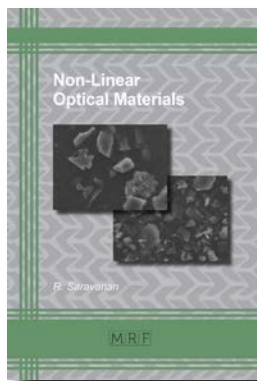
*Water-Splitting, Hydrogen Production, Solar Energy Conversion, Photocatalytic Water-Splitting, Thermochemical Water-Splitting, Mechano-Catalysis, Photocatalysis, Electrocatalysis, Light-induced Ionization of Semiconductors, Z-Schemes of Photosynthesis*



<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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

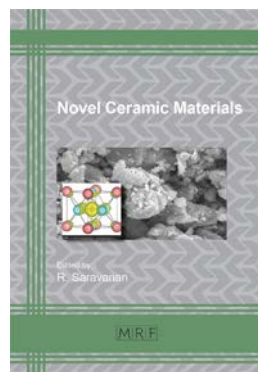
Ed. R. Saravanan

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 LaMnO<sub>3</sub> and Sb-doped NKN (Sodium-Potassium-Niobates), as well as materials with ferrite structures, and with multi-ferroic structures

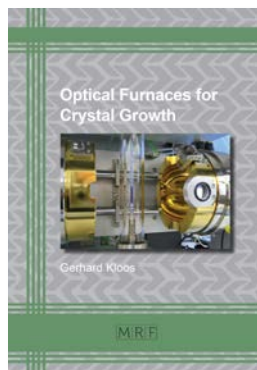
*materials science, structural characteristics, piezoelectric ceramics, zirconia ceramics, doped NiO ceramic nanostructures, novel ceramics, BST ceramics (Barium-Strontium-Titanates), manganite ceramics, Ce-doped LaMnO<sub>3</sub> and Sb-doped NKN (Sodium-Potassium-Niobates), ferrite structures materials, multi-ferroic structures materials, XRD (X-ray diffraction), SEM (Scanning electron microscopy), EDX (Energy Dispersive X-ray analysis), UV-Visible 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

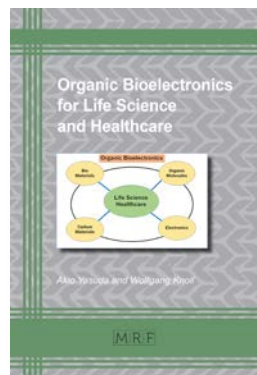
Eds. Akio Yasuda and Wolfgang Knoll

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.

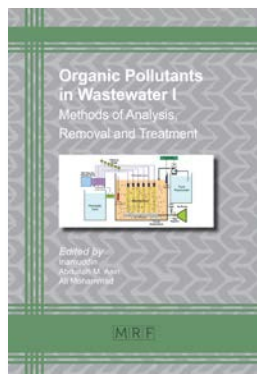
*Organic Bioelectronics, Bioelectronic Devices, Biosensing Technologies, Organic Field Effect Transistor (OFET), OFET-based Sensor, Functional Bio-Interlayer OFET, Electrolyte-gated OFET, Organic Charge-Modulated FET, Graphene-based Materials, Carbon Nanotube, Carbon-based Biosensors, Inkjet Printing, 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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. TiO<sub>2</sub> 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)

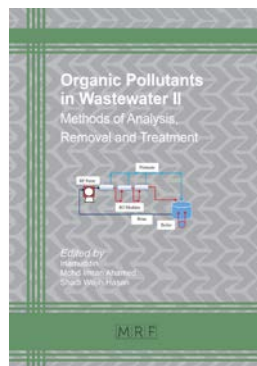
### Organic Pollutants in Wastewater II

Methods of Analysis, Removal and Treatment

Eds. Inamuddin, Mohd Imran Ahamed, Shadi Wajih Hasan

The book focuses on the following topics:

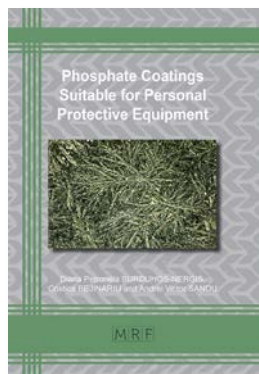
Biological Wastewater Treatment Technologies. Pesticides and their Treatment in Wastewater. Adsorption Removal of Organic Pollutants using Graphene-based Nanocomposites. Reverse Osmosis for the Removal of Organic Compounds from Wastewater. Treatment of Refractory Organic Pollutants using Ionic Liquids. 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

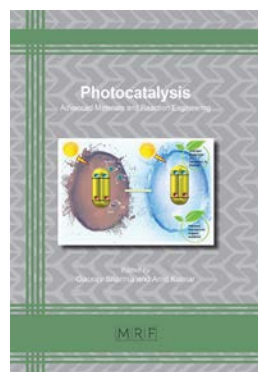
Eds. Gaurav Sharma and Amit Kumar

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 CO<sub>2</sub> conversion into fuels. Further, photocatalytic N<sub>2</sub> 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.

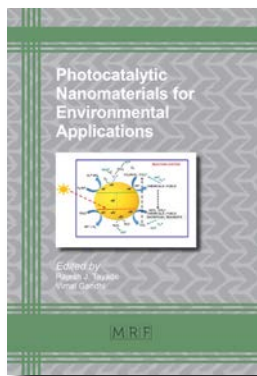
*Photocatalysis, Pollutant Degradation and Mineralization, Pharmaceutical Effluents, Dyes, Pesticides, Endocrine Disruptors, Water Detoxification, Photocatalytic Hydrogen Production, CO<sub>2</sub> Conversion into Fuels, N<sub>2</sub> Fixation, Degradation of Organic Molecules, Heavy Metal Removal from 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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)

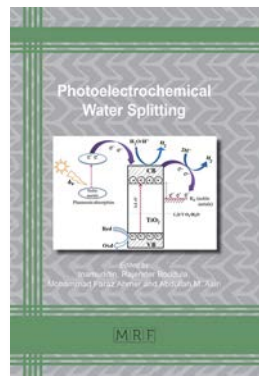
### Photoelectrochemical Water Splitting

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.

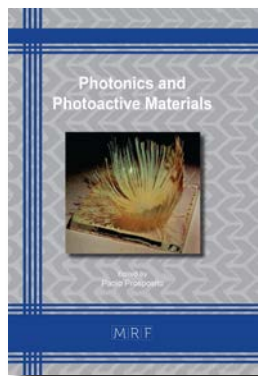
Renewable Energy Sources, Solar Energy Conversion, Hydrogen Production, Photoelectrochemical Water Splitting, Electrode Materials for Water Splitting, Transition Metal Chalcogenide Electrodes, Narrow Bandgap Semiconductor Electrodes, Ti-based Electrode Materials, BiVO<sub>4</sub> Photoanodes, Noble Electrode 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### Photonics and Photoactive Materials

Ed. Paolo Proposito

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/photronics-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.

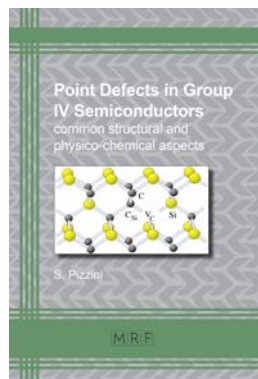
This book focuses on the properties of defects in group IV semiconductors and seeks to clarify whether full knowledge of their chemical nature can account for several problems encountered in practice.

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.

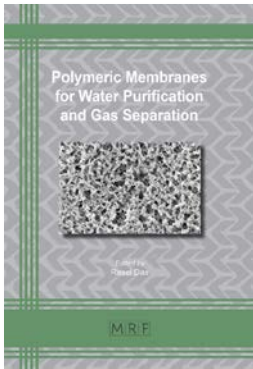
*Point Defects in Silicon, Point Defects in Germanium, Point Defects in Diamond, Point Defects in Silicon Carbides, Point Defect-Impurity Complexes, Defect Modeling, Self-Diffusion, Impurity Diffusion*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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, O<sub>2</sub>/N<sub>2</sub> Separation, CO<sub>2</sub>/CH<sub>4</sub> Separation, H<sub>2</sub>/N<sub>2</sub> 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)

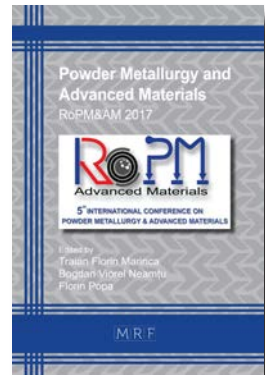
### Powder Metallurgy and Advanced Materials

RoPM&AM 2017

Eds. Traian Florin Marinca, Bogdan Viorel Neamtu, 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*

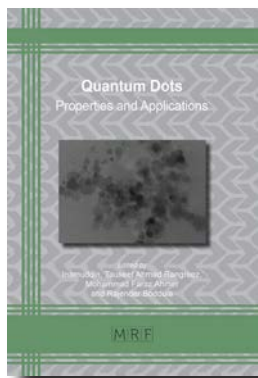


<https://www.mrforum.com/product/powder-metallurgy>

9781945291982, 2018, 344 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291999)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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 Col-*

*umn, 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.

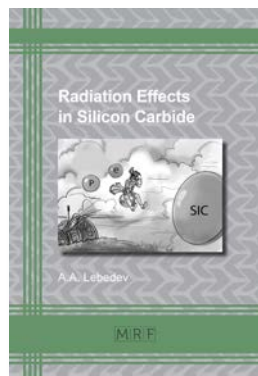
Specific features of the crystal structure of SiC are considered. It is shown that, when wide-bandgap semiconductors are studied, it is necessary to take into account the temperature dependence of the carrier removal rate, which is a standard parameter for determining the radiation hardness of semiconductors.

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.

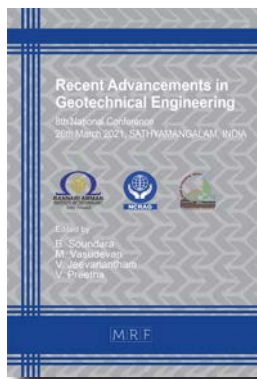
*Silicon Carbide, Defects, Carrier Recombination, Annealing, Detectors, Electron Irradiation, Neutron Irradiation, Ion Irradiation*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

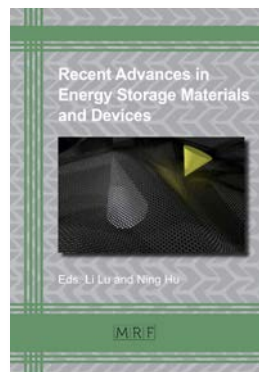
Eds. Li Lu and Ning Hu

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.

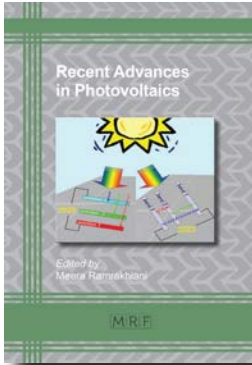
*Lithium Ion Batteries, Cathode Materials, Anode Materials, Nanostructured Materials, Electrolytes, Ion Conductive Ceramics, All-Solid-State Li Batteries, Redox Flow Lithium Batteries, Advanced Supercapacitors, Carbon Nanotubes*

<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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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>

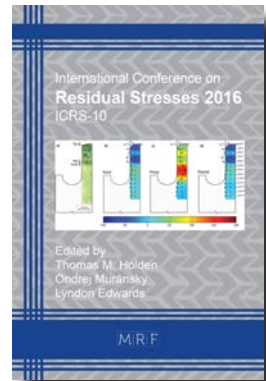
9781945291364, 2017, 358 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291371)

### 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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>

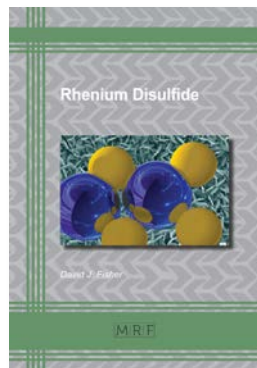
9781945291883, 2018, 310 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291890)

### 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*

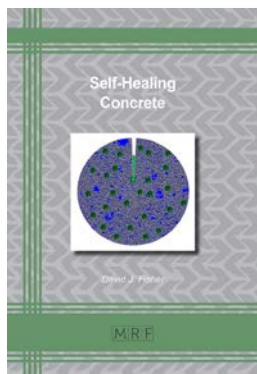


<https://www.mrforum.com/product/rhenium-disulfide>

9781945291920, 2018, 150 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291937)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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

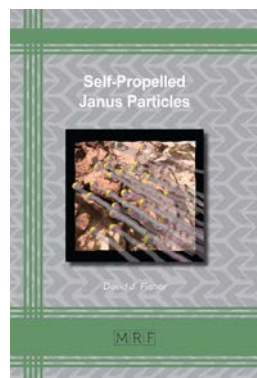
D.J. Fisher

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.

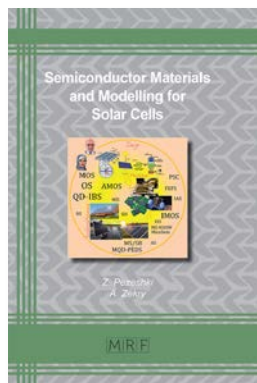
*Janus Particles, Bio-imaging, Bio-sensing, Drug Delivery, Environmental Remediation, Electronic Engineering, Asymmetrical Colloidal Particles, Catalysis-propelled Particles, Nanoscale Engines, Chemical Asymmetry, Self-propulsion, Diffusiophoresis, Electrophoresis, Thermophoresis, Bubble Generation, 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)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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>

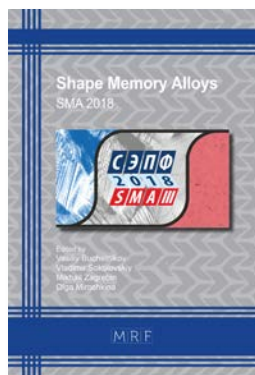
9781644901427, 2021, 94 pages, full color SC book, USD 65.00, also available as eBook PDF (9781644901434)

### Shape Memory Alloys

SMA 2018

Eds. Vasily 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.

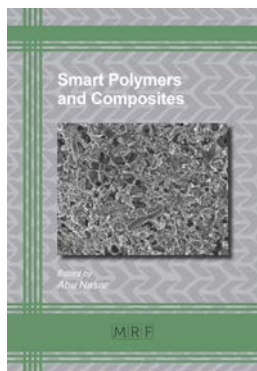


*Shape Memory Alloys, Martensitic Transformations, Biocompatible Porous Materials, Ni-Mn Intermetallic Alloys, Superelastic Alloys, Ti-Ni Shape Memory Alloys, Novel Superelastic Ti-Zr-Based Alloys, Solid State Cooling, Pulsed Electron Beam Treatment, Surface Modification, Carbon Polytypes, Fluorographene, 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

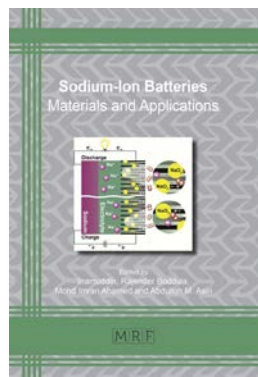
Eds. Inamuddin, Rajender Boddula, Mohd Imran Ahamed and Abdullah M. Asiri

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-O<sub>2</sub> Batteries, NASICON Electrodes, Organic Electrodes, Polyacetylene, Polyaniline, Polyphenylene, Redox Mediators, Reversible Capacity, Singlet Oxygen, Superoxide Stability*

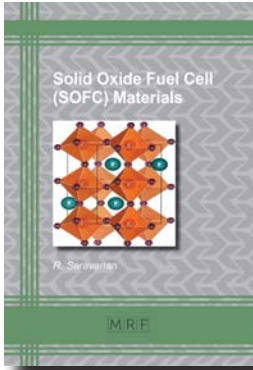
<https://www.mrforum.com/product/sodium-ion-batteries>

9781644900826, 2020, 278 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900833)



For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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 NO<sub>x</sub> 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)

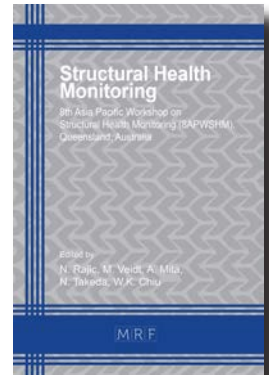
### Structural Health Monitoring

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.

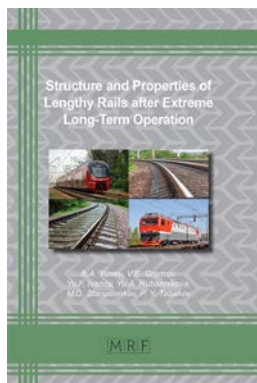
*Bridges, Buildings, Aircraft Structures, Space Structures, Nuclear Reactors, Defense Platforms, UAV Photogrammetry, Strain Monitoring, Infrared Detection, Acoustic Emission Testing, Residual Stress Measurements, Fiber Optical Sensing, Thermographic Inspection, Vibration Analysis, Piezoelectric Sensing, 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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

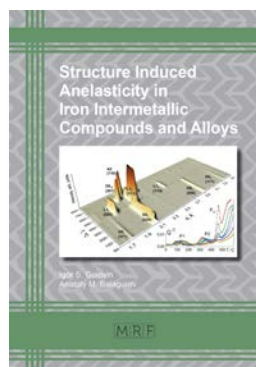
Different anelastic phenomena are discussed in this book with respect to iron-based binary and ternary alloys and intermetallic compounds of  $\text{Fe}_3\text{Me}$  type, where Me are  $\alpha$ -stabilizing elements Al, Ga, or Ge. An introduction into anelastic behavior of metallic materials is given, 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, Magnetostriction, Structure Transitions, Phase Transitions, Fe-Based Alloys, Intermetallic Compounds, Mechanical Spectroscopy, In Situ Neutron Diffraction*

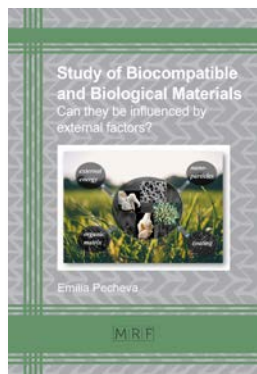
<https://www.mrforum.com/product/Structure-induced-anelasticity>

9781945291647, 2018, 256 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291654)



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<http://www.mrforum.com>

## Current Book List



### 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>

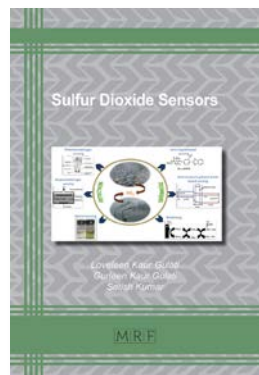
9781945291241, 2017, 220 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291258)

### 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 SO<sub>2</sub>, Health Effects of SO<sub>2</sub>, Potentiometric Gas Sensing, Amperometric Gas Sensing, Optical Gas Sensing, Colorimetric Gas Sensing, Fluorescence-based Gas Sensing, Ionic Liquids for SO<sub>2</sub> Sensing, Semi-conducting Metal-Oxides for SO<sub>2</sub> Detection, Photoacoustic Gas Detectors, Biosensors for SO<sub>2</sub> Monitoring*

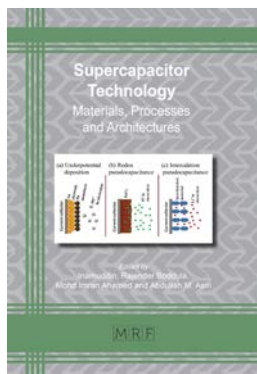


<https://www.mrforum.com/product/so2-sensing>

9781644901229, 2021, 76 pages, full color SC book, USD 55.00, also available as eBook PDF (9781644901236)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>

## Current Book List



### 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

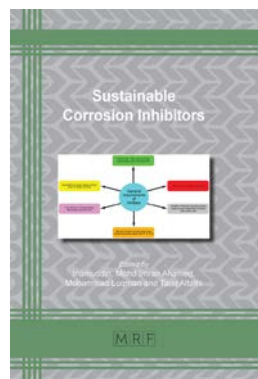
Eds. Inamuddin, Mohd Imran Ahamed, Mohammad Luqman and Tariq Altalhi

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*

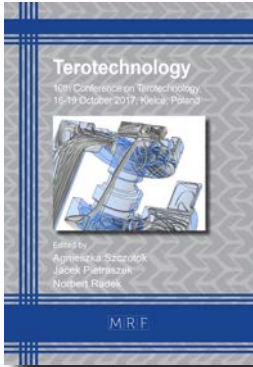
<https://www.mrforum.com/product/sustainable-corrosion-inhibitors>

9781644901489, 2021, 228 pages, full color SC book, USD 85.00, also available as eBook PDF (9781644901496)



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<http://www.mrforum.com>

## Current Book List



### 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

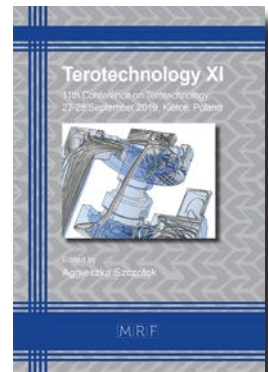
Ed. Agnieszka Szczotok

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.

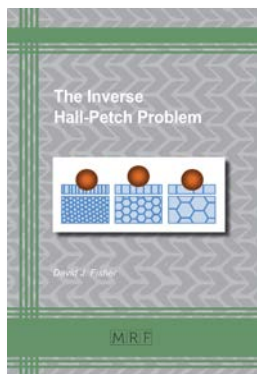
*Terotechnology, Manufacturing Machinery, Transportation Equipment, Spool Control Valves, CFD Simulation, Turbine Nozzle Outlet, Foundry Simulation Codes, Risk Assessment, Flow Control Valves, Hydraulic Drive and Control Systems, Bearing Housing, Defects in Metal Matrix Composites, Controlling Cast Iron 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](https://www.mrforum.com/product/terotechnology_XI)

9781644901021, 2020, 290 pages, full color SC book, USD 95.00, also available as eBook PDF (9781644901038)



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<http://www.mrforum.com>



### 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>

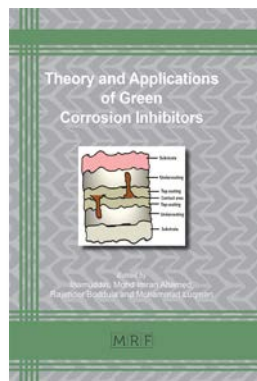
9781644900345, 2019, 152 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900352)

### 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.

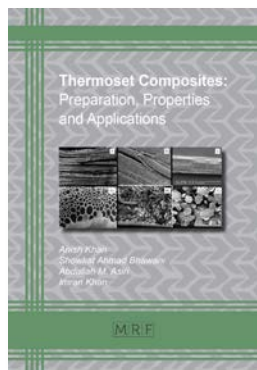
*Biocorrosion Prevention, Green Corrosion Inhibitors, Corrosion Prevention of Metals & Alloys, Corrosion Inhibitors for Concrete, Corrosion Prevention for Electronic Devices, Biological Wastes, Biodegradable Plants, Smart Coatings, Quantum Chemistry, Molecular Dynamics, Simulation, Quantitative Structure 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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>

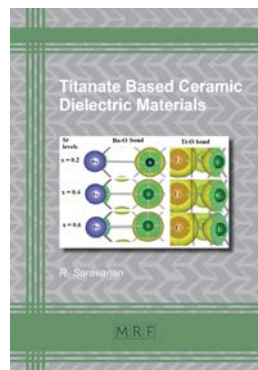
9781945291869, 2018, 350 pages, full color SC book, USD 125.00, also available as eBook PDF (9781945291876)

### 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.

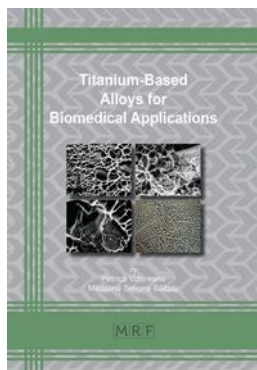
*Barium Titanate, Barium Titanate Doping, Dielectric Ceramics, Permittivity, Tunability, Transducers, Piezoelectric Actuators, Memory Storage Devices, Multilayer Ceramic Capacitors, Optoelectronic Devices, X-Ray Diffraction Data, UV-Visible Spectrophotometry, Energy Dispersive X-Ray Spectroscopy, Interatomic 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)

For more details and a free preview please visit our website:  
<http://www.mrforum.com>



### 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*

*ential 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

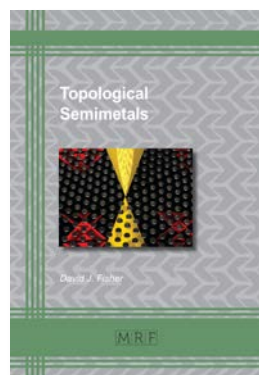
David. J. Fisher

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)



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## Current Book List



### 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 NO<sub>2</sub> 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, Spinel, 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

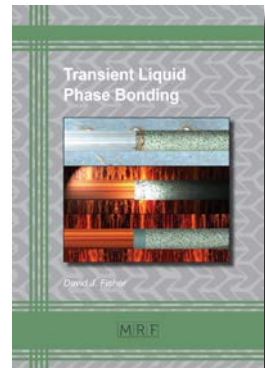
David. J. Fisher

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>

9781644900048, 2019, 166 pages, full color SC book, USD 125.00, also available as eBook PDF (9781644900055)



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A scanning electron micrograph (SEM) showing a dense, intricate network of fine, fibrous structures. The fibers are intertwined, creating a complex, three-dimensional web-like pattern. The lighting highlights the texture and depth of the material.

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