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Forthcoming Titles

A New Sight towards Dye-sensitized Solar Cells:
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US$90.00/€90.00

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Advances in Fracture and
Damage Mechanics IX
978-0-87849-241-1, 2011 (02/2011), 1010 pages, paperback
US$298.00/€298.00

Bridge Health Monitoring,
Maintenance and Safety
978-0-87849-228-2, 2011 (02/2011), 142 pages, paperback
US$90.00/€90.00

Computational Methods in Fracture Mechanics
978-0-87849-238-1, 2011 (02/2011), 158 pages, paperback
US$100.00/€100.00

Manufacturing Automation
Technology Development
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Science and Processing of Cast Iron IX
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Materials Science Forum (32 volumes per year)
Key Engineering Materials (30 volumes per year)
Solid State Phenomena (12 volumes per year)
Defect and Diffusion Forum (12 volumes per year)
Journal of Nano Research (6 volumes per year)
Advanced Materials Research (10-20 volumes per year)
Journal of Biomimetics, Biomaterials, and Tissue
Engineering (4 volumes per year)
Journal of Engineering Research in Africa (4 vols./y)

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Must have Handbooks

NEW Biomaterials for Bone, Regenerative Medicine
Eds. N. Sooraj Hussain & J. D. Santos
Materials Science Foundations Vol. 62
978-0-87849-153-7, 2010, 210 pages, paperback
US$110.00/€80.00
The aim of “Biomaterials for Bone Regenerative Medicine” is to review extensively the latest developments in Biomaterials and their application to bone regeneration in vivo. This book is the result of a collaborations between active research groups having expertise in the hottest field of bone-tissue regeneration and reconstruction. It concisely covers materials ranging from the nano-scale to the macroscopic, and offers a comprehensive description of the subject for newcomers, as well as for professionals who may be somewhat unfamiliar with the ceramic aspects of the applications.

NEW Electronic Materials
H.L. Kwok
Materials Science Foundations Vols. 63-64
978-0-87849-154-4, 2010, 486 pages, paperback
US$166.00/€120.00
The electronic properties of solids have become of increasing importance in the age of information technology. This book aims to bridge the gap between solid-state physics, materials science and electronics. Its objective is to serve as a textbook covering all three areas, but having the ultimate goal of providing an understanding of the operation of devices. To make this book useful to a broad set of readers, the tendency is to treat the more difficult subjects, such as solid-state physics, using fewer mathematics and including worked examples where possible. By using such an approach, it is possible to include not only basic principles, but also the knowledge needed for applications. Keeping the subject matter at the elementary level as far as possible, the first 2 chapters introduce classical theories and address questions as elementary as, what are solids, before moving on to examine crystal structures and the link between crystal structures and materials properties. In the subsequent chapters, solids are examined in the sequence: metals; semiconductors; insulators; magnetic solids; superconductors; light-sensitive solids.

NEW Carbon Based Nanomaterials
Eds. Nasar Ali, Andreas Oechsner and Waqar Ahmed
Materials Science Foundations Vols. 65-66
US$166.00/€120.00
Carbon is an essential constituent element of all living organisms. A unique feature of carbon is the variety of forms that it can assume when two or more atoms bond. Carbon has thus attracted, and continues to attract, considerable R&D interest from researchers all over the world. The use of carbon in nanotechnology is a very promising area of research, and considerable government funding is being invested in carbon nanotechnology research. This work comprises ten comprehensive chapters, on carbon-based materials, written by experts in the field. The chapters contain up-to-date fundamental and practical information concerning carbon-based materials. They include work on diamondoid hydrocarbons, carbon nanotubes, nanocrystalline/microcrystalline/ultra-nanocrystalline diamond and carbon nanostructured materials, thus providing an uniquely valuable introduction to the subject.

NEW Advances in Concrete and Structures
Eds. Jingsi Huo, Yan Xiao, Zongjin Li and Shuaib Ahmad
Key Engineering Materials Vols. 400-402
978-0-87849-349-4, 2009, 992 pages, paperback
US$412.00/€298.00
The objective of this collection, devoted to Advances in Concrete and Structures (ICACS), is to bring together authoritative reports, by researchers, engineers, and public administrators - located all over the world - on the current state of knowledge concerning the latest advances in concrete structure use in the field of civil engineering. This will be essential reading for all those charged with the design or protection of concrete products.
Mechanism of High Temperature Corrosion
a kinetic approach
Pierre SARRAZIN et al.
Materials Science Foundations Vols. 36-37
978-0-87849-484-2, 2008, 335 pages, paperback
US$152.00/€110.00
The present work is an excellent summary of the basic principles; an understanding of which is of paramount importance in understanding the subject. The book begins with the basics of thermodynamics, followed by an up-to-date summary of experimental methods; many of which have not been covered by previous books. The usual supporting topics, such as defect structures in compounds, are presented with great clarity. The book concludes with numerous case-histories which give a good basis for solving practical problems, using the principles expounded in the book.

Advances in Organic Light-Emitting Device
Youngkyoo Kim and Chang-Sik Ha
Materials Science Foundations Vol. 40
978-0-87849-483-5, 2008, 140 pages, paperback
US$116.00/€84.00
This book describes the general principle of device operation, recent progress made in materials and device design, optimization of device structures, some pertinent processing issues, market trends and the future outlook for OLED-related applications.

Numerical and Experimental Investigation of Hollow Sphere Structures in Sandwich Panels
Thomas Fiedler
Materials Science Foundations Vol. 44
US$110.00/€80.00
This work addresses the performance of novel metallic hollow-sphere structures (MHSS) in sandwich panels. Numerical finite-element analyses and experimental tests are described. An invaluable source of data on this specialised topic.

Calcium Phosphate Based Bioceramics for Bone Tissue Engineering
Sergey Barinov and Vladimir Komlev
Materials Science Foundations Vol. 48
978-0-87849-380-7, 2008, 170 pages, paperback
US$116.00/€84.00
This book, “Calcium phosphate based bioceramics for bone tissue engineering”, presents an up-to-date overview of the latest developments made in the field of calcium phosphate ceramics, with particular emphasis being placed on the results obtained by its authors.
Latest Titles

**NEW** Reaction Diffusion and Solid State Chemical Kinetics
V.I. Dybkov
Materials Science Foundations Vols. 67-68
978-0-87849-156-8, 2010, 334 pages, paperback
US$166.00/€120.00

This monograph deals with a physico-chemical approach to the problem of the solid-state growth of chemical compound layers and reaction-diffusion in binary heterogeneous systems formed by two solids; as well as a solid with a liquid or a gas.

The book is addressed to research workers, engineers, post-graduates and students (physical, solid-state and inorganic chemists, metal and solid-state physicists, materials and corrosion scientists, metallurgists, etc.) who are involved in the study of solid-state processes and their practical applications. The latter include the solid-state synthesis of inorganic substances, protective coatings, corrosion, all-in-one joining of dissimilar metals, welding, soldering, brazing and thin-film electronics technology. It will also be of value to theoreticians, experimentalists and technologists.

**NEW** Design Against Fracture and Failure Design
Zainul Huda, Robert Bulpett and Kang Yong Lee
Materials Science Foundations Vol. 69
978-0-87849-157-5, 2010, 221 pages, paperback
US$138.00/€100.00

The aim of this book is to develop, in the reader, the necessary skills required for designing materials, components and structures so as to resist fracture and failure in engineering applications. In order to achieve this objective, the authors have adopted a combined materials science-fracture mechanics-design approach. Although the material covered is designed for an advanced undergraduate course in metallurgy/materials engineering, students coming from mechanical, civil or aerospace engineering backgrounds will also be able to use this text as a course/reference book. In addition to students, practising engineers and production mangers will also find this book very useful; particular with regard to designing components and machine elements so as to resist fracture and failure in critical applications.

This work should be essential reading for all those involved in the field.

**NEW** Advanced Materials for Sustainable Development
Eds. Atsushi Suzuki and G. Sundararajan
Advanced Materials Research Vol. 117
978-0-87849-261-9, 2010, 106 pages, paperback
US$116.00/€84.00

The purpose of this special volume was to provide young scientists from Asian countries with the opportunity of exchanging information on scientific research. It covers recent progress, achievements and innovations made in the field of advanced materials research and technology for a sustainable future world; especially in India, Japan and other Asian countries. The selected papers include experimental studies of structure, electrical and magnetic properties, thermodynamic and electrochemical properties, absorption, luminescence, permeability and self-assembly in systems involving steel and aluminum alloys, nanoparticles, nanowires, nanoplates, multilayers, thin films, membranes and multifunctional materials. The work thus provides a clear up-to-date survey of this important topic.

**NEW** Extending the Reach of Powder Diffraction Modelling
by User Defined Macros
Eds. Paolo Scardi and Robert E. Dinnebier
Materials Science Forum Vol. 651
978-0-87849-261-9, 2010, 226 pages, paperback
US$138.00/€100.00

The main focus of this special topic volume is the development and possibilities of the MACRO language within TOPAS, with a specific session dedicated to WPPM. The collection is presented here in the form of a “macro tutorial” for the benefit of the entire powder diffraction community. More than a collection of standard scientific papers, the contributions to this special issue provide methods, tutorials and practical suggestions and solutions for the proper use of TOPAS and WPPM in a number of applications; ranging from the most common to the most refined and specific cases. Readers will find it to be an invaluable source of ideas.

**NEW** Nanomaterials and Devices: Processing and Applications
Advanced Materials Research Vol. 67
978-0-87849-328-9, 2009, 312 pages, paperback
US$200.00/€145.00

The focus of this special collection was the applied aspects of nano-materials; with almost all of the papers presented discussing experimental research.

For full table of contents and descriptions of each title visit our web site at: http://www.ttp.net
Bioceramics 21
Eds. Marcelo Prado and Cecília Zavaglia
Key Engineering Materials Vols. 396-398
978-0-87849-353-1, 2009, 758 pages, hardcover
US$414.00/€300.00
The book includes a section which is devoted to theoretical modelling; an important and new issue which involves several fields of knowledge. Following the evolution of regenerative medicine, a third generation of bioceramics is represented in these Proceedings by the variety of papers on tissue engineering, nanotechnology and smart materials.

Artificial Muscle Actuators using Electroactive Polymers
Eds. Pietro VINCENZINI, Yoseph BAR-COHEN and Federico CARPI
Advances in Science and Technology Vol. 61
978-3-908158-27-1, 2009, 216 pages, paperback
US$166.00/€120.00
The 27 peer-reviewed papers collected here together offer a plenitude of up-to-date information on “Artificial Muscle Actuators using Electroactive Polymers”. The papers are conveniently arranged into the chapters: 1: Materials; 2: Analysis, physical mechanisms and characterization; 3: Devices and applications.

Nanocomposite Materials
Ed. Erich Kny
Solid State Phenomena Vol. 151
978-3-908451-67-9, 2009, 280 pages, paperback
US$207.00/€150.00
This special volume provides an overview of various aspects of nanoparticle composites and thus intensify the networking and cross-fertilization of ideas between geographically distant groups working on nano-reinforced polymers, ceramics and metals.

Nanocomposite Materials
Eds. Xiaozhou Liao and Yonghao Zhao
Materials Science Forum Vol. 579
978-0-87849-384-5, 2008, 166 pages, paperback
US$138.00/€100.00
The editors invited prominent researchers in this field to contribute research and review papers, on the advances made in nanostructured materials processing by SPD, to this special-topic book. The ten papers cover a wide range of issues that are of primordial interest to the SPD research community including: mechanical properties, microstructures, theoretical aspects of plastic behavior and recent development in practical SPD techniques. This book will therefore be essential reading for those having an interest in studying or using the SPD method.

Advances in
Semiconducting Materials
Eds. S. Velumani and René Asomoza
Advanced Materials Research Vol. 68
978-0-87849-323-4, 2009, 194 pages, paperback
US$138.00/€100.00
Updated knowledge on “Advances in semiconducting materials” is of great significance for both fundamental research and industrial application. The papers contained in this special volume address diverse topics related to recent trends in the science of semiconducting materials as related to synthesis, characterization, applications, etc.
The volume will offer readers a good opportunity to review state-of-the-art developments in, and future directions of, semiconducting materials and technology.

Metastable and
Nanostructured Materials III
Ed. Dilson S. dos Santos
Materials Science Forum Vol. 570
US$113.00/€89.00
This collection comprises 25 peer-reviewed contributions providing up-to-date knowledge in the field of “Metastable and Nanostructured Materials”.

Smart Materials
Ed. Tawee Tunkasiri
Advanced Materials Research Vols. 55-57
978-0-87849-356-2, 2008, 1000 pages, paperback
US$411.00/€298.00
The main topics covered are: devices, processing, applications, modeling and characterization of a wide range of materials including piezoelectric ceramics/polymers, magnetostri ctive materials, smart structural materials and composites, electro-optics and other photonic systems, carbon and other nanotubes, new nano and micromaterials, biomedical materials, sensors and divers smart materials.
Innovation in Materials Science
Eds. J. A. Sekhar and J. P. Dismukes
Key Engineering Materials Vol. 380
978-0-87849-389-0, 2008, 250 pages, paperback
US$180.00/€130.00
Presents key aspects of the fundamentals of the entire invention/innovation process; beginning with an article which describes the linkages between Mathematics and Invention in the previous and current centuries. This is followed by papers on Innovations in Energy Conversion Materials, Electronics, Jet Engines, Ophthalmological Materials, Glass, Wood, Aluminum and Steel.

Nanomaterials by Severe Plastic Deformation IV
Eds. Yuri Estrin and Hans Jürgen Maier
Materials Science Forum Vols. 584-586
US$434.00/€314.00
This special collection comprises 175 peer-reviewed articles on “Nanomaterials by Severe Plastic Deformation”. This large number of papers is a convincing demonstration of the relevance of bulk ultrafine grained and nanostructured materials, produced by severe plastic deformation, to a wide range of researchers and engineers.

Biomedical Applications of Smart Materials
Eds. Pietro VINCENZINI and Danilo DE ROSSI
Advances in Science and Technology Vol. 57
978-3-908158-23-3, 2009, 280 pages, paperback
US$166.00/€120.00
The papers are grouped under the headings: chapter 1: Advances in smart materials synthesis and functionality; chapter 2: Enabling tools; chapter 3: Medical diagnostic applications; chapter 4: Regenerative medicine and tissue engineering; chapter 5: New therapeutics and intelligent delivery systems; chapter 6: Mini / micro implantable devices; chapter 7: Medical applications of shape memory materials and smart textiles.

Smart Optics
Eds. Pietro VINCENZINI et al.
Advances in Science and Technology Vol. 55
978-3-908158-21-9, 2009, 240 pages, paperback
US$166.00/€120.00
This work consists of 33 peer-reviewed papers. Altogether, they offer a gamut of timely information on “Smart Optics”. The papers are conveniently arranged under the headings: chapter 1 - Smart optical materials; chapter 2 - Passive, active and adaptive optical devices & systems; chapter 3 - Ongoing applications and perspectives. This special volume has also been published online in the series, “Advances in Science and Technology” Vol. 55.
Materials Science & Engineering 2011

NEW Structural Analysis of Advanced Materials
Ed. Moussa Karama
Key Engineering Materials Vol. 446
US$124.00/€90.00


Altogether a stimulating source of new ideas and methods.

Engineering Materials III
Eds. Yung-Jen Lin and Wen-Cheng J. Wei
Advanced Materials Research Vol. 51
978-0-87849-374-6, 2008, 164 pages, paperback
US$135.00/€98.00

This issue comprises a collection of 20 selected peer-reviewed papers covering topics in three major areas: iron and steel, non-ferrous alloys, and ceramics and composites. The work constitutes and handy and succinct guide to the subject matter.

Advances in Fracture and Damage Mechanics VII
Eds. H.S. Lee, I.S. Yoon and M.H. Aliabadi
Key Engineering Materials Vols. 385-387
978-0-87849-369-2, 2008, 922 pages, paperback
US$412.00/€298.00

This volume is made up of contributions from researchers in 22 countries. It aims to promote exchange of the latest experimental and theoretical results on structural integrity, durability and failure analysis; with the emphasis on fracture and damage mechanics.

Ferromagnetic Shape Memory Alloys
Eds. P.K. Mukhopadhyay and S.R. Barman
Advanced Materials Research Vol. 52
978-0-87849-370-8, 2008, 250 pages, paperback
US$152.00/€110.00

This compilation comprises peer-reviewed papers, categorized into: I. Sample Preparation, II Thermal Treatments and Phase Stability, III. Magnetic and Structural characterization, IV. Microscopic studies of Magnetic Shape Memory Alloys, V. Effects of External Fields, VI. Coupled Effects: Magnetoresistance and Magnetocaloric effects.

Advanced Structural and Functional Materials for Protection
Eds. William Lau, Shang Huai Min et al.
Solid State Phenomena Vol. 136
978-3-908451-50-1, 2008, 216 pages, paperback
US$152.00/€110.00

This very special volume on ‘Advanced Structural and Functional Materials for Protection’ focuses on the choice of materials intended for the specific task of protecting civilians and soldiers against the effects of blast, fragmentation weapons and unconventional attacks, and also covers multi-functional materials intended for the enhancement of soldier performance. Protective materials represent one of the greatest challenges to synthesis and processing; due to the extreme requirements of the application. An understanding of the various mechanisms & sciences behind the behavior of materials will make an invaluable contribution to the development of materials for protective purposes in these uncertain times.

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Glass – The Challenge for the 21st Century
Eds. M. Liška, D. Galusek et al.
Advanced Materials Research Vols. 39-40
978-0-87849-387-6, 2008, 706 pages, paperback
US$318.00/€230.00

This special-topic volume covers various aspects of glass science and glass technology, mutual interactions between glass science and glass technology, and their influence upon the glass industry. Special attention is paid to new challenges to glass in the 21st century.

Progress in Fracture and Damage Mechanics
Eds. B.G. Falzon and M.H. Aliabadi
Key Engineering Materials Vol. 383
US$135.00/€98.00

This special-topic volume reports on new progress made in the analysis and understanding of fracture and damage mechanics. The Finite Element Method is a well-established analytical tool for theoretical fracture analysis. The development of interface elements which combine aspects of both fracture and damage mechanics has permitted the prediction of both crack initiation and propagation.

Advances in Shape Memory Materials
Ed. V.A. Chernenko
Materials Science Forum Vol. 583
978-0-87849-381-4, 2008, 302 pages, paperback
US$230.00/€167.00

This specialist book, the first of its kind, includes original and review articles which describe magnetic shape-memory alloys and the magnetic shape-memory effect.

Smart Materials & Micro/Nanosystems
Eds. Pietro VINCENZINI and Giuseppe D’ARRIGO
Advances in Science and Technology Vol. 54
978-3-908158-20-2, 2009, 496 pages, paperback
US$304.00/€220.00

This collection comprises 77 papers which, together, offer a wealth of up-to-date information on “Smart Materials & Micro/Nanosystems”. They are grouped under the rubrics: chapter 1 - Ferroelectrics, piezoelectrics, electrostrictive and magnetostrictive materials; chapter 2 - Stimuli responsive polymers and gels; chapter 3 - Shape memory polymers & magnetorheological fluids; chapter 4 - Smart multifunctional materials and composites; chapter 5 - Hybrid active materials systems; chapter 6 - Smart nanocomposites and nanomaterials; chapter 7 - Mems / nems; chapter 8 - Recent developments in electrical writable organic memory devices.

Smart Materials for Smart Devices and Structures
Eds. Marcin Leonowicz and Dariusz Oleszak
Solid State Phenomena Vol. 154
978-3-908451-70-9, 2009, 214 pages, paperback
US$166.00/€120.00

This volume highlights advances in the development of smart materials, with particular attention being paid to numerical modelling, fabrication methods, technologies, properties, sensing and processing capabilities. The coverage of these new capabilities, remarkable performance enhancement or cost reduction, new ideas and directions for future development will make the book essential reading for those working in materials science, physics, chemistry and engineering.

Size Effects in Metals, Semiconductors and Inorganic Compounds
Eds. Grégory Guisbiers and Dibyendu Ganguli
Key Engineering Materials Vol. 444
978-0-87849-265-7, 2010, 266 pages, paperback
US$166.00/€120.00

The fields of nanoscience and nanotechnology are now growing very rapidly. The properties of nanostructures are different to those of the bulk material, due to the high surface area to volume ratio and possible appearance of quantum effects at the nanoscale. The study of size and shape effects upon material properties has therefore attracted enormous attention.

This book describes the size effect upon thermal, electrical, magnetic, optical and mechanical properties. It provides a clear overview of size as being a new parameter that permits the tuning of material properties.

This book will be useful to undergraduate as well as graduate students as well as experienced researchers in materials science, physics, chemistry and engineering.
NEW Advanced Bioceramics in Nanomedicine and Tissue Engineering
Eds. M. Vallet-Regí and M.Vila
Key Engineering Materials Vol. 441
978-0-87849-343-2, 2009, 310 pages, paperback
US$230.00/€167.00

Nanoscience is revolutionizing the design of medical devices, tissue scaffolding and drug-delivery systems. New discoveries regarding nano-system, made in other research areas, have opened up the possibility of using them in biomedical. However, such nanoscience and its possibilities, which sometimes border on science fiction, have to be kept in perspective so as not to lose sight of the limitations with respect to safety that applications within the human body impose.

Nevertheless, nanomedicine focuses nowadays upon the treatment of cancer, upon tissue regeneration, and upon diagnosis and imaging.

The main goal of this book is to bring together some of the advanced new trends in biomedical that involve potential nano candidates for future treatments in the control of biological systems and in regenerative medicine. It will become an essential guide to the subject.

Thin Films and Porous Materials
Ed. N.Gabouze
Materials Science Forum Vol. 609
978-0-87849-335-7, 2009, 310 pages, paperback
US$207.00/€150.00

The main goal of the volume is to report the most recent scientific findings, and to highlight current challenges and opportunities in the promising field of porous materials and thin films. The in-depth coverage will make this volume almost a handbook guide to the subject.

Nanocomposites and Nanoporous Materials VIII
Ed. Chang Kyu Rhee
Solid State Phenomena Vol. 135
978-3-908451-48-8, 2008, 170 pages, paperback
US$135.00/€98.00

This collection comprises 35 peer-reviewed papers. The strong international participation and the high quality of the presentations is a sure indication of the interest shown in the fields of nanocomposites, nano-catalysts, ultrafine polymers, nano-adsorption, nano-characterization etc., as they affect fundamental research and applied engineering.

Stress Evaluation in Materials by Neutron or Synchrotron Radiation
Eds. A. R. Pyzalla, A. Borbély and H.-P. Degischer
Materials Science Forum Vols. 571-572
978-0-87849-393-7, 2008, 442 pages, paperback
US$276.00/€200.00

This collection addresses specific topics within the field of stress measurement in solids using neutrons, X-rays and synchrotron radiation. Particular attention is paid to multidisciplinary approaches involving an understanding of the measured stress field and the implications of the stress field for the behaviour of materials and components.

Advanced Materials Science and Technology
Ed. Jian Lu
Materials Science Forum Vol. 614
US$207.00/€150.00

This special collection of 44 peer-reviewed papers has, as its main focus, advanced materials science and technology, with the emphasis on nanostructured materials and nanostructures.

Diffusion in Solids and Liquids III
Eds. Andreas Öchsner and Graeme E. Murch
Defect and Diffusion Forum Vols. 273-276
978-3-908451-51-8, 2008, 860 pages, paperback
US$435.00/€315.00

The goal of the special volumes was to provide a unique opportunity for exchanging information and presenting the latest results, as well as reviewing relevant issues in contemporary diffusion research. The volume includes a special chapter (by J.Delgado) on Heat and Mass Transfer in Porous Media. More than 140 papers, presented by scientists and researchers from more than 25 countries, are included in this special volume. This large number of papers reflects the considerable academic and industrial interest in this topic.
Corrosion in the Military II
Eds. Vinod Agarwala, Francesco Bellucci
Advanced Materials Research Vol. 38
978-0-87849-390-6, 2008, 342 pages, paperback
US$246.00/€178.00

The collection is divided into: Section I: Coatings / Corrosion Inhibitors; Section II: Corrosion Prevention Control; Section III: Monitoring and Diagnostics; Section IV: Management and Data Analysis; Section V: Corrosion Mechanism / MIC; Section VI: Stress Induced Cracking; Section VII: Metal Joining Concepts.

Rapid Thermal Processing and Beyond: Applications in Semiconductor Processing
Eds. W. Lerch and J. Niess
Materials Science Forum Vols. 573-574
978-0-87849-391-3, 2008, 448 pages, paperback
US$273.00/€198.00

This special-topic book, “Rapid Thermal Processing and Beyond: Applications in Semiconductor Processing” focuses on various aspects of Rapid Thermal and Millisecond Annealing and is arranged so as to follow the major processing steps involved in high-performance transistor fabrication, without claiming to be a complete catalogue of all of the Rapid Thermal Processing (RTP) steps currently in use.

Advances in Electronic Materials
Eds. Erich Kasper et al.
Materials Science Forum Vol. 608
978-0-87849-347-0, 2009, 214 pages, paperback
US$166.00/€120.00

This special-topic volume, Advances in Electronic Materials, covers various fields of materials research such as silicon, silicon-germanium hetero-structures, high-k materials, III-V semiconductor alloys and organic materials, as well as nano-structures for spintronics and photovoltaics.

Advances in Materials and Systems Technologies II
Eds. A.O. Akii Ibhadode, I.A. Igbafe and B.U. Anyata
Advanced Materials Research Vols. 62-64
978-0-87849-337-1, 2009, 910 pages, paperback
US$386.00/€280.00

This work comprises a selection of 109, peer-reviewed papers on Engineering Research and Development: Innovations. It addresses a number of the scientific issues underlying innovations in Materials and Systems research at the global level, while paying particular attention to possible processes that may permit the realization of the Millennium Development Goals (MDGs) of the United Nations in Developing Countries.

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High-Performance Ceramics VI
Eds. Wei Pan and Jianghong Gong
Key Engineering Materials Vols. 434-435
978-0-87849-274-9, 2010, 930 pages, paperback
US$366.00/€265.00
This special volume presents the latest advances in the science and technology of high-performance ceramics. More than 600 excellent contributions were further refined, using a strict peer-review process, to give the more than 243 manuscripts included in this collection.
The contributions cover almost all aspects of the field including: functional ceramics, structural ceramics, processing of ceramics and the evaluation of ceramics.
The volume will therefore be of great interest to any scientist or engineer working in the field of high-performance ceramics.

Advances in Fracture and Materials Behavior
Eds. Wei Yang, Mamtimin Geni et al.
Advanced Materials Research 33-37
978-0-87849-399-9, 2008, 1554 pages, paperback
US$540.00/€391.00
This work on the fracture, fatigue and strength of materials comprises 238 peer-reviewed papers covering new ideas and up-to-date results. It is anticipated that this special volume will stimulate and enhance progress in fracture mechanics, materials behavior and computational science research, as well as advancing fundamental understanding in these fields. A truly comprehensive guide to the subject.

Advances in Abrasive Technology XI
Eds. Tsunemoto Kuriyagawa, Libo Zhou et al.
Key Engineering Materials Vols. 389-390
978-0-87849-364-7, 2009, 544 pages, paperback
US$276.00/€200.00
This volume comprises a collection of 88 selected papers, contributed by experts from all over the world and subject to rigorous peer-review and revision in order to ensure originality and quality.

Advances in Abrasive Technology XII
Eds. Han Huang, Liangchi Zhang et al.
Advanced Materials Research Vol. 76-78
978-0-87849-314-2, 2009, 752 pages, paperback
US$366.00/€265.00
This special issue brings together the latest advances in, and applications of, abrasive technologies. It comprises 122 selected peer-reviewed technical and review articles.

Advances in Grinding and Abrasive Technology XV
Eds. Bo Zhao, Xipeng Xu, Guangqi Cai and Renke Kang
Key Engineering Materials Vols. 416
978-0-87849-313-5, 2009, 648 pages, paperback
US$276.00/€200.00
This work presents the reader with the most recent advances in the field of abrasive technology: including the mechanics and control of abrasive processes, modeling, simulation and optimization of abrasive processes, green and clean production in abrasive processes, measurement and surface-quality assessment, cooling and coolants, polishing, wheel-truing and dressing, novel abrasive techniques, and novel machining techniques.
It will therefore be valuable to production and research engineers, research students and academics working in the field.
For full table of contents and descriptions of each title visit our web site at: http://www.ttp.net
Energy and Environment Materials
Eds. Yafang Han, Tianmin Wang and Shaoxiong Zhou
Materials Science Forum Vol. 650
978-0-87849-266-4, 2010, 388 pages, paperback
US$246.00/€178.00
The main theme of this special collection of 60 peer-reviewed papers is Energy and Environmental Materials. The collection is divided into 4 chapters: Eco-Materials, Energy Materials, Light Metals and Alloys, Low-Dimensional and Amorphous Materials, and provides an up-to-date survey of the topic.

Energy and Environment Engineering and Management
Eds. Paulo Sérgio Duque de Brito and José Gañán Gómez
Advanced Materials Research Vol. 107
978-0-87849-277-0, 2010, 164 pages, paperback
US$124.00/€90.00
This collection comprises selected papers from the 3rd International Congress on Energy and Environment Engineering and Management. Each Congress provides an opportunity for academics, scientific consultants and companies to share days of interaction that permit the free interchange of experience and, at the same time, create and renew links between different work-groups. This Congress included a total of six thematic areas, covering a broad spectrum within the applications associated with environmental engineering, energy installations, renewable energy, electromechanics, materials and project engineering. The contents therefore provide a handy introduction to the subject.

Progress in High Temperature Ceramics
Eds. Yashwant Mahajan & J. A. Sekhar
Key Engineering Materials Vol. 395
978-0-87849-361-6, 2009, 242 pages, paperback
US$180.00/€130.00
Advanced high-temperature ceramics are key players in the emerging new technologies which are pushing forward the structural-aerospace, propulsion-system, defense, nuclear, thermal and chemical industries. In this special volume, an attempt has been made to present a large number of the more well-known ultra high-temperature ceramics, refractory borides and oxides; together with their composites, plus intermetallics and CMCs.

Progress in Sol-Gel Production
Ed. Luis Esquivias
Key Engineering Materials Vol. 391
978-0-87849-365-4, 2009, 194 pages, paperback
US$138.00/€100.00
This book presents contributions covering the more recent applications of Sol-Gel science. Ceramics and films produced from gels were among the first applications developed by early sol-gel researchers. The possibility of tailoring the structure, and controlling particle growth, has permitted ever more advanced materials to be obtained. Several other potential applications were foreseen fifteen to twenty years ago, but their realization became possible only after extensive research on precursors had enabled progress towards the preparation of new pre-forms.

Advances in Materials Science of Wood
Ed. Pentti O. Kettunen
Materials Science Forum Vol. 599
978-0-87849-354-8, 2009, 184 pages, paperback
US$138.00/€100.00
The present collection of papers describes some of the advances made in the study of the micro- and nano-structures comprising the xylemic portion of the tree trunk, their relationship to deformation and other mechanical properties, plus the mechanical and chemical properties as seen at a more macroscopic scale.

Eco-Materials Processing and Design X
Eds. Hyungsun Kim, JienFeng Yang et al.
Materials Science Forum Vols. 620-622
978-0-87849-325-8, 2009, 820 pages, paperback
US$366.00/€265.00
The aim of this special volume is to give an overview of the historical background and present status of eco-materials processing and design for materials research, and to foresee future trends in the field.
Biohydrometallurgy 2009
a meeting point between Microbial Ecology, Metal Recovery Processes and Environmental Remediation
Eds. Edgardo R. Donati, Marisa R. Viera et al.
Advanced Materials Research Vols. 71-73
978-0-87849-322-7, 2009, 782 pages, hardcover
US$272.00/€197.00
The main focus of this collection of peer-reviewed articles is three different aspects of biohydrometallurgy: this is the field of microbial ecology which is the key to answering central questions concerning not only the diversity and behavior of micro-organisms in commercial operations, but also possible applications in biohydrometallurgy of extremophiles coming from very different environments. This covers metal recovery bioprocesses, including basic and applied studies of bioleaching and bio-oxidation; but also bioflotation.

Damage Assessment of Structures VIII
Eds. F. Chu, H. Ouyang, V. Silberschmidt et al.
Key Engineering Materials Vols. 413-314
978-0-87849-324-1, 2009, 846 pages, paperback
US$370.00/€268.00
The primary aim of this volume was to gather together the current knowledge and expertise of scientists and engineers working, in both academia and industry, on damage assessment, structural health monitoring (SHM) and non-destructive evaluation (NDE). The themes of the book reflect current interests existing in the wider field of damage assessment.

Materials Research
Eco/environmental materials, energy materials, magnesium, aerospace materials and biomaterials for medical application
Eds. Zhongwei Gu, Yafang Han et al.
Materials Science Forum Vols. 610-613
978-0-87849-340-1, 2009, 1450 pages, paperback
US$538.00/€390.00
This collection of 258 peer-reviewed papers focuses on the topics of eco/environmental materials, energy materials, magnesium, aerospace materials and biomaterials for medical applications. The papers are grouped into chapters on: I. Eco/Environmental Materials; II. Sustainable Energy Materials; III. Electronic/Packaging Materials; IV. Transportation Materials; V. Magnesium; VI. Biomaterials for Medical Applications.

Advances in Experimental Mechanics VI
Eds. J.M. Dulieu-Barton, J.D. Lord et al.
Applied Mechanics and Materials Vols. 13-14
978-0-87849-367-8, 2008, 318 pages, paperback
US$232.00/€168.00

Advance in Ecological Environment Functional Materials and Ion Industry
Eds. Jinsheng Liang and Lijuan Wang
Advanced Materials Research Vol. 96
978-0-87849-282-4, 2010, 304 pages, paperback
US$166.00/€120.00
This collection aims to promote increased international research and academic communication in the field of ecological environment-functional materials and ion technology. It focuses on the theory of ion-technology industries, industrialization of ion processing and the development of ecological environment-functional materials.

Ferromagnetic Shape Memory Alloys II
Eds. V.A. Chernenko and J.M. Barandiaran
Materials Science Forum Vol. 635
978-0-87849-295-4, 2010, 222 pages, paperback
US$166.00/€120.00
This work on Ferromagnetic Shape Memory Alloys contains selected peer-reviewed papers. Such materials belong to the most exciting and fastest-growing group of martensitic multifunctional materials. The selected papers cover the following topics of: Basic phenomena and theory; Structure and magnetic properties; Magnetomechanics and magnetocaloric effect; Thin films and composites; Modeling and simulations and Processing and engineering.

This volume will be useful to anyone who is already working with novel advanced materials, as well as to those seeking an accessible introduction to the relatively new field of FSMA's.


**Powder Technology and Application II**

Ed. Yuexin Han
Advanced Materials Research Vol. 92
978-0-87849-296-1, 2010, 300 pages, paperback
US$166.00/€120.00

The theme of this special collection of peer-reviewed papers is the preparation and application of High-Performance Mineral-based Powders (HQMP). Here, HQMP refers to powder prepared from natural minerals with high specifications. It is predicted that the area of application of HQMP will become increasingly extensive. The future development of HQMP lies in the further exploitation and improvement of the manufacturing and production technologies of HQMP orientated towards markets, and this collection will provide a handy roadmap for these likely developments.

**Advanced Polymer Processing**

Eds. Lianxiang Ma, Chuangsheng Wang and Weimin Yang
Advanced Materials Research Vols. 87-88
978-0-87849-298-5, 2010, 580 pages, paperback
US$273.00/€198.00

Polymers make up one of the three main raw material groups used in the modern world, together with metals and inorganic non-metals. They are widely used in all fields of economic development and scientific & technological innovation, and continue to play an increasingly important role. As China’s modern manufacturing forges ahead, going from a large producing country to a powerful manufacturing state, the extent of the knowledge, the tendency to innovation and the technical skill brought to bear on advanced polymer processing increase daily. There is a trend towards rapid development involving high performance and environmental-friendliness, backed up by lots of new research performed by the scientific and engineering communities.

This special collection of peer-reviewed papers thus brings to the reader the most up-to-date trends in advanced polymer processing technology.

**Theory, Modeling and Numerical Simulation**

Eds. Veena Tikare, Graeme E. Murch et al.
Solid State Phenomena Vol. 139
978-3-908451-56-3, 2008, 180 pages, paperback
US$138.00/€100.00

The aim of this special collection: “Theory, modeling and numerical simulation of multi-physics behavior”, with its 25 selected and peer-reviewed papers, is to highlight the theories, models and numerical techniques that have permitted multi-physics simulations to become an integral part of research and development programs.

**Flexible Manufacture of Lightweight Frame Structures**

Phase II: Integration
Eds. Klaus Weinert, Jürgen Fleischer et al.
Advanced Materials Research Vol. 43
978-0-87849-385-2, 2008, 186 pages, paperback
US$138.00/€100.00

The increasingly important interplay between technological development, simulation of production processes and problems of integration are reflected in this interesting collection of peer-reviewed articles by leading experts in their fields. It outlines key aspects of the theoretical and experimental work involved in setting up a processing route.

**Structural Integrity and Failure**

Eds. Xiaozhi Hu, Brent Fillery et al.
Advanced Materials Research Vols. 41-42
978-0-87849-386-9, 2008, 520 pages, paperback
US$276.00/€200.00

This collection comprises 71 peer-reviewed papers which summarise the most recent developments in the fields of advanced materials research and structural integrity. The papers contained in this special issue have been grouped into the categories of: (1) Bio- and Nano- Materials, (2) Fracture and Fatigue, (3) Ceramics, Concrete and Rock, (4) Composites, and (5) Structural Integrity.

**Deformation Processes of Rigid Plastic Materials**

Ed. Sergei Alexandrov
Materials Science Forum Vol. 623
978-0-87849-320-3, 2009, 130 pages, paperback
US$113.00/€88.00

This special issue presents a series of papers written of a group of leading scientists working in the field of the mechanics of plastic deformation.

The collection covers a broad spectrum of topics including: pressure-dependent plasticity, elastic-plastic deformation of thin plates, metal-forming analysis and design, constitutive behavior near to frictional interfaces and new developments in the upper-bound method.
Materials processing is an important and essential step in the production of useful products, and is one of the major wealth-generating activities. The volume consists of a collection of 124 peer-reviewed papers contributed by experts from all over the world. The topics covered include: new developments and applications in materials forming, subtractive, additive and joining processes, processing of advanced materials such as composites, polymers, semiconductors and bio-materials, and new development in the micro/nano-fabrication of engineering materials.

This work reflects the current ensemble knowledge of world-wide researchers and engineers/technologists working on various aspects of the processing, fabrication, structure/property evaluation and applications of both ferrous and non-ferrous materials; including biomaterials and smart/intelligent materials.


Like the main work, this collection brings together all of the current knowledge of researchers and engineers/technologists working on various aspects of the processing, fabrication, structure/property evaluation and applications of both ferrous and non ferrous materials; including biomaterials, and smart/intelligent materials.
**Nanostructured Materials, Thin Films and Hard Coatings for Advanced Applications**
Eds. Liliyana Kolakieva and Roumen Kakanakov
Solid State Phenomena Vol. 159
978-3-908451-77-8, 2010, 200 pages, softcover
US$166.00/€120.00

This special collection of peer-reviewed papers focuses on the technology, characterization and equipment required for handling nanocomposite films and hard and superhard coatings. It also covers subjects related to the development, properties and methods for the characterization of nanostructured materials for: solid-state electronics and energy technologies; nanocomposite films, hard and superhard coatings, tribiological / corrosion-resistant coatings; surfaces and interfaces; nano-sensors, nanodevices and nanosystems, Equipment for deposition and characterization of nanocomposite films and industrial application of hard and superhard coatings.

**Defects and Diffusion in Metals**
Ed. David J. Fisher
Defect and Diffusion Forum Vol. 278
978-3-908451-55-6, 2008, 222 pages, paperback
US$152.00/€110.00

These aspects are reflected in the 32 peer-reviewed papers which are to be found in this volume under the headings of: Diffusion and Reactions, Driven Systems, General Problems of Diffusion, and Structural & Phase Transformations.

**Semi-Solid Processing of Alloys and Composites X**
Eds. G. Hirt, A. Rassili, A. Bühlig-Polaczek
Solid State Phenomena Vols. 141-143
978-3-908451-59-4, 2008, 814 pages, paperback
US$366.00/€265.00

This special volume is dedicated to the science and technology of the semi-solid processing of metals. Since the recognition of the possibility of manipulating metals in the semi-solid state, during the seventies, this fascinating technology has experienced dynamic development and has led to a whole family of new production processes, new equipment and industrial applications.

Most titles now also available on CD, for details visit www.ttp.net
Apart from a few cases involving crystallographic martensitic transformations, all phase transformations are mediated by diffusion. Thus, proper control and understanding of the process of diffusion during nucleation, growth, oxidation, sintering, etc. are essential for optimising the properties of materials to meet specific needs. This importance of the topic is reflected by this special-topic volume on, “Phase Transformation and Diffusion”.

**New Titles**

**Applied Crystallography XXI**  
Eds. Danuta Stróż and Małgorzata Karolus  
Solid State Phenomena Vol. 163  
978-3-908451-83-9, 2010, 318 pages, paperback  
US$252.00/€186.00

The goal of this collection is to provide an opportunity for researchers working in many different fields to showcase their latest achievements in the area of structural studies, as applied to the materials commonly used in industry. Emphasis is placed upon topics such as the development of methods and techniques in X-ray studies, crystal structure determination methods, the crystallography of phase transformations, texture analysis, material structures – metals and alloys, ceramics, polymers, thin films, quasicrystals, amorphous materials, nanomaterials and molecular crystals. The book comprises 67 peer-reviewed papers which provide an excellent and up-to-date coverage of the subject.

**Solid State Chemistry and Photocatalysis of Titanium Dioxide**  
Eds. Maria K. Nowotny and Janusz Nowotny  
Solid State Phenomena Vol. 162  
978-3-908451-82-2, 2010, 360 pages, paperback  
US$138.00/€100.00

The goal of this special volume was to provide a unique opportunity to exchange information, to present the latest results and to review relevant issues affecting contemporary diffusion research. The large number (over 232) of peer-reviewed papers emphasizes the considerable academic and industrial interest in this field. This interesting book offers much food-for-thought concerning the topic.

**Robotics and Automation Systems**  
Eds. Cornel Brișan, Vistrian Mătieș et al.  
Solid State Phenomena Vols. 166-167  
978-3-908451-88-4, 2010, 472 pages, paperback  
US$242.00/€175.00

The papers cover the topics of: Robotics; Mechanical design of robot architectures, Sensors and actuators in robotics; Mobile robots navigation and obstacle avoidance; Mechatronics; Industrial automation, process control, manufacturing processes and automation; Micro- and nano-robots, parallel robots; Artificial intelligence, intelligent control, neuro-control, fuzzy control and their applications; Control system modeling, simulation techniques and methodologies; Biomedical and rehabilitation engineering, prosthetics and artificial organs; Tele-operation, tele-robotics, haptics, and tele-operated semi-autonomous systems; Robotics for automobile production; Virtual reality. The book thus constitutes a timely overview of this important subject.

**NEMS/MEMS Technology and Devices**  
Eds. Selin Teo, A. Q. Liu, H. Li and B. Tarik  
Advanced Materials Research Vol. 74  
978-0-87849-321-0, 2009, 334 pages, paperback  
US$218.00/€158.00

This second book on the subject of MEMS covers contemporary topics of importance to science, engineering and the technology of materials. The emphasis of this book has been placed on Nano electromechanical Systems (NEMS) / Micro electromechanical Systems (MEMS) technology and devices.

**Phase Transformation and Diffusion**  
Eds. G. B. Kale, M. Sundararaman et al.  
Defect and Diffusion Forum Vol. 279  
978-3-908451-61-7, 2008, 160 pages, paperback  
US$138.00/€100.00

Apart from a few cases involving crystallographic martensitic transformations, all phase transformations are mediated by diffusion. Thus, proper control and understanding of the process of diffusion during nucleation, growth, oxidation, sintering, etc. are essential for optimising the properties of materials to meet specific needs. This importance of this topic is reflected by this special-topic volume on, “Phase Transformation and Diffusion”.

**Mining Smartness from Nature**  
Eds. Pietro VINCENZINI et al.  
Advances in Science and Technology Vol. 58  
978-3-908158-24-0, 2009, 290 pages, paperback  
US$166.00/€120.00

The 37 peer-reviewed papers making up this collection together present a wealth of up-to-date information on, “Mining Smartness from Nature”. The papers are grouped into the following chapters: 1: Algorithms, mechanisms and structures in nature as an inspiration to mimicking; 2: Biomimetic materials; 3: Bio-inspired sensors and actuators; 4: Biologically inspired systems and robotics; 5: Biomimetic flow control in aquatic systems and its application to bio-inspired autonomous underwater vehicles.

**Mechatronic Systems and Materials II**  
Eds. Inga Skiedraite, et al.  
Solid State Phenomena Vol. 144  
978-3-908451-60-0, 2009, 310 pages, paperback  
US$218.00/€158.00

This interesting volume is divided into eight sections; each of which covers an aspect of the subject-matter: i) Robotics: Industrial, Micro robotics, Mobile Robots; ii) Sensors and Actuators in Mechatronics; iii) Analysis of Vibration; iv) Failure Analysis; v) Measurement Techniques; vi) Materials (properties, modeling, manufacturing and processing); vii) Education in the Fields of Mechatronic and Materials Science.
The main theme of this special volume encompasses the major technological advances of recent times, especially with respect to the significance of advanced materials and the associated technology. Young scientists, researchers and engineers working in almost any area of advanced materials science would benefit from reading this special volume.

**Progress in Measurement and Testing**

Ed. Yanwen Wu  
Advanced Materials Research Vols. 108-111  
978-0-87849-269-5, 2010, 1586 pages, paperback  
US$549.00/€398.00

The purpose of this special collection was to gather together the most up-to-date knowledge from researchers and practitioners in academia, industry, and government and to exchange their research ideas and results concerning the state of the art in the areas of advanced measurement and testing. The collection is divided into the chapters: 1) Intelligent Information Processing, 2) Control and Automation, 3) Intelligent Test and Measurement and 4) Industrial Application. The volume constitutes a handy and timely guide to the subject.

**Advanced Measurement and Test**

Ed. Yanwen Wu  
Key Engineering Materials Vols. 439-440  
978-0-87849-271-8, 2010, 1730 pages, paperback  
US$549.00/€398.00

This special collection on Advanced Measurement and Test is dedicated to the electronic testing of devices, boards and systems and covers the complete cycle: from design verification, design-for-testing, design-for-manufacturing, silicon debug, manufacturing test, system test, diagnosis, failure analysis and back to process and design improvement. Design, testing and yield professionals were invited to confront the challenges which the industry faces, and to learn how these challenges are being addressed by the combined efforts of academia, design tool and equipment suppliers, designers and test engineers.

Readers will find this to be an unique and imaginative guide to the subject.

**Measurement Technology and Intelligent Instruments IX**

Eds. Yuri Chugui, Yongsheng Gao, Kuang-Chao Fan, Roald Taymanov and Ksenia Sapozhnikova  
Key Engineering Materials Vol. 437  
US$304.00/€220.00

This special collection focuses on measurement science and metrology: micro- and nano-measurements; novel measurement methods and diagnostic technologies, including non-destructive and dimensional inspection, optical and X-ray tomography and interferometry, terahertz technologies for science, industry and biomedicine, intelligent measuring instruments and systems for industry and transport, measurements of geometrical and mechanical quantities, measurements and metrology for humanitarian fields and education in measurement science.
Solid Phase Transformations
Eds. J. Čermák and I. Stloukal
Solid State Phenomena Vol. 138
978-3-908451-49-5, 2008, 490 pages, paperback
US$273.00/€198.00
This special-topic book, devoted to “Solid Phase Transformations”, covers a broad range of phenomena which are of importance in a number of technological processes. Most commercial alloys undergo thermal treatment after casting, with the aim of imparting desired compositions and/or optimal morphologies to the component phases.

Fractography of Advanced Ceramics III
Eds. J. Dusza, R. Danzer, R. Morrell and G.D. Quinn
Key Engineering Materials Vol. 409
978-0-87849-332-6, 2009, 428 pages, paperback
US$263.00/€190.00
The aim of this book is to make an important contribution to the development of new functional and structural ceramic materials, which exhibit enhanced performances and improved lifetimes and reliability, by fostering a better understanding of the mechanisms of their deterioration and failure under various stress conditions at various operating temperatures.

Electrochemistry and Physical Chemical Methods in Serving Materials for Sustainable Development
Ed. Daniela Ionita
Key Engineering Materials Vol. 415
US$125.00/€91.00
The aim of this special volume is, as the title indicates, to point out the great power of electrochemistry and other physico-chemical methods (SEM, AFM, chemiluminescence, MOCVD, FT-IR, UV-VIS-NIR, X-Ray etc.) in obtaining and characterizing advanced materials.

Emboding Intelligence in Structures and Integrated Systems
Eds. Pietro VINCENZINI and Fabio CASCIATI
Advances in Science and Technology Vol. 56
978-3-908158-22-6, 2009, 640 pages, paperback
US$304.00/€220.00
A collection of 86 peer-reviewed papers offering an up-to-date overview of the topic of, “Emboding Intelligence in Structures and Integrated Systems”. The papers are grouped into chapters on: 1: Smart materials, sensors/actuators and microsystems; 2: Integration technologies; 3: Smart structures and integrated systems; 4: Structural monitoring; 5: Ongoing and perspective applications.
NEW Cost-Affordable Titanium III
Eds. M. Ashraf Imam, F. H. Froes, Kevin F. Dring
Key Engineering Materials Vol. 436
978-0-87849-276-3, 2010, 236 pages, paperback
US$138.00/€100.00
The main purpose of this special collection was to gather together up-to-date knowledge from scientists, researchers and technologists in order to review the status of processing technologies, materials development, emerging applications and economics/affordability issues.
The papers are grouped into several main chapters: Overview and Low Cost Processing, Low Cost Materials and Processing, Powder Consolidation and Properties I, Powder Consolidation and Properties II, Creative Processing and Property Enhancement I and Creative Processing and Property Enhancement II.
Overall, this constitutes an exhaustive and unique survey of the topic.

NEW Advances in Liquid Crystals
Ed. Yuan Ming Huang
Key Engineering Materials Vols. 428-429
978-0-87849-291-6, 2010, 620 pages, paperback
US$304.00/€220.00
Liquid crystals are substances that have properties which are intermediate between those of a conventional liquid and those of a solid crystal. This special collection comprises peer-reviewed papers that are concerned with all aspects of liquid crystal science and technology. The volume consists of five parts: plenary lectures, the molecular design and synthesis of liquid crystals, the characterization of liquid crystals, the applications of liquid crystals, and the emerging technologies and materials relevant to information display.
The information contained in this special volume will serve both as an educational aid and as a technical guide for anyone involved with liquid crystals from the viewpoint of materials science, physics, chemistry and information display.

Defects and Diffusion in Metals
An Annual Retrospective XI
Ed. David J. Fisher
Defect and Diffusion Forum Vol. 293
978-3-908451-75-4, 2009, 298 pages, paperback
US$120.00/€166.00

Surface Reconstructions
Ed. D.J. Fisher
Defect and Diffusion Forum Vols. 287-288
978-3-908451-71-6, 2009, 378 pages, paperback
US$178.00/€246.00
The present work is a selection of 914 abstracts covering the whole of the field since its inception. It is hoped that this will be useful to researchers seeking to identify patterns of behavior in the reconstruction process, or to those wishing to know what work has already been done.

Synthesis and Properties of Surface Coatings
Eds. Huibin Xu, Khiam Aik Khor et al
Advanced Materials Research Vol. 75
978-0-87849-319-7, 2009, 80 pages, paperback
US$125.00/€91.00
This volume on the Synthesis and Properties of Surface Coatings includes presentations covering areas such as the properties and characterization of surface coatings and modifications, deposition and modification processes, plasma and ion-beam physics, industrial applications and novel processes.

Diffusion in Materials
DIMAT2008
Eds. A. Agüero, J.M. Albella, M.P. Hierro et al
Defect and Diffusion Forum Vols. 289-292
978-3-908451-72-3, 2009, 812 pages, paperback
US$435.00/€315.00
This special volume covers the fundamental contributions made by diffusion to various areas where its application plays a major role in industrial processes.

Diffusion in Solids and Liquids IV
Eds. Andreas Öchsner, Graeme E. Murch et al
Defect and Diffusion Forum Vols. 283-286
978-3-908451-69-3, 2009, 724 pages, hardcover
US$435.00/€315.00
The goal of this special volume was to provide a unique opportunity to exchange information, present the latest results and to review relevant issues in contemporary diffusion research. The large number (over 111) of peer-reviewed papers emphasizes the considerable academic and industrial interest in this field. Also included is a special chapter on Thermodynamics, Kinetics and Structure of Interfaces and Associated Phenomena.
Cost-Affordable Titanium III
Eds. M. Ashraf Imam, F. H. Froes, Kevin F. Dring
Key Engineering Materials Vol. 436
978-0-87849-276-3, 2010, 236 pages, paperback
US$138.00/€100.00
The main purpose of this special collection was to gather together up-to-date knowledge from scientists, researchers and technologists in order to review the status of processing technologies, materials development, emerging applications and economics/affordability issues. Overall, this constitutes an exhaustive and unique survey of the topic.

Defects and Diffusion in Ceramics XI
Ed. D.J. Fisher
Defect and Diffusion Forum Vols. 295-296
978-3-908451-79-2, 2010, 356 pages, paperback
US$246.00/€178.00
This eleventh volume in the series covering the latest results in the field includes abstracts of papers which have appeared since the publication of Annual Retrospective X (Volumes 280-281). As well as the 589 ceramics abstracts, the issue includes original papers on all of the major material groups, and theory.

Defects and Diffusion in Semiconductors XII
Ed. David J. Fisher
Defect and Diffusion Forum Vols. 303-304
978-3-908451-87-7, 2010, 404 pages, paperback
US$246.00/€178.00
This twelfth volume in the series covering the latest results in the field includes abstracts of papers which have appeared since the publication of Annual Retrospective XI (Volume 282). As well as the 565 semiconductor-related abstracts, the issue includes – in line with the policy of including original papers on all of the major material groups.

Mechatronic Systems and Materials
Materials Production Technologies
Eds. Andrejus H. Marcinkevičius and Algirdas et al.
Solid State Phenomena Vol. 165
978-3-908451-86-0, 2010, 450 pages, paperback
US$242.00/€175.00
The goal of this collection is to disseminate news of recent progress made in the area of mechatronic systems and materials production technologies, to discuss future development in mechatronics and materials science, to analyse issues related to engineering education in these fields and to bring together experts from various countries and institutions in order to exchange state-of-the-art know-how and research data.

Diffusion in Solids and Liquids V
Eds. Andreas Öchsner, Graeme E. Murch, Ali Shokuhfar and João M.P.Q. Delgado
Defect and Diffusion Forum Vols. 297-301
978-3-908451-80-8, 2010, 1600 pages, hardcover
US$729.00/€528.00
Current water-treatment technologies require considerable energy consumption. Thus, closely linked to the problem of water shortage is the impending energy crisis. Therefore, intensive research is being aimed at developing water purification processes that are based upon using renewable energy, such as solar energy, rather than energy generated using fossil fuels. There has been an accumulation of reports on the development of photocatalysts, which enable water purification using solar energy as the only driving force. Such photocatalysts, based upon oxide semiconductors, permit the conversion of solar energy into the chemical energy that is required for the oxidation of toxic organic compounds in water. The most promising photocatalyst is titanium dioxide, TiO2, and its solid solutions. The research on TiO2 photocatalysis is multidisciplinary, and progress in this area requires the application of concepts of catalysis and photocatalysis as well as concepts of solid-state chemistry. Therefore, the aim of the present volume, collecting together papers on TiO2 photocatalysis as well as on the chemistry and defect chemistry of TiO2, is to offer an interdisciplinary platform for a dialogue between those working in these two research areas.

Gettering and Defect Engineering in Semiconductor Technology XIII
Eds. M. Kittler and H. Richter
Solid State Phenomena Vols. 156-158
978-3-908451-74-7, 2010, 610 pages, paperback
US$367.00/€266.00
This collection aims to address the fundamental aspects, as well as the technological problems, which are associated with defects in electronic materials and devices. The invited papers, submitted by internationally recognized experts in the field, review the state-of-the-art and likely future trends in their respective research field. Upon comparing this volume with previous volumes, it is clearly seen that defect engineering in photovoltaics is becoming a topic of ever-increasing interest. The collection is divided into the chapters: - Multi-crystalline silicon for solar cells, - Advanced semiconductor materials: Strained Si, SOI, SiGe, SiC, - Impurities (oxygen, carbon, nitrogen, metals) and point defects in Si and SiGe, - Modeling and simulation of growth, gettering and characterization, - Defect aspects and defect engineering, - Gettering and hydrogen passivation, - Defect and impurity characterization, - Nanostructures and new devices, - Silicon-based opto-electronics and defect luminescence.
Corrosion, Processes and Advanced Materials in Industry
Ed. Amir Eliezer
Advanced Materials Research Vol. 95
US$124.00/€90.00

The aim of this edition is to increase the worldwide awareness of corrosion-related issues and to develop national and international industrial-scientific cooperation in order to find practical solutions to the US$1.8 trillion/pa corrosion-cost worldwide.

The papers focus on major corrosion issues such as corrosion costs, biomaterials, corrosion in concrete, corrosion in industry, corrosion protection and magnesium science and technology.

This is an invaluable guide to a much-neglected subject.

Functional and Structural Materials
Eds. Severino Jackson G. de Lima et al.
Materials Science Forum Vol. 643
978-0-87849-292-3, 2010, 156 pages, paperback
US$136.00/€98.00

This special collection provides up-to-date knowledge concerning the field of functional materials such as shape memory alloys, piezoelectric ceramics and aluminium alloys. The articles therein also deal with recent investigations of quasicrystals and geopolymers: two classes of hybrid material that have attracted great scientific interest, given their unusual properties and potential engineering applications.

In the first part, the papers address key issues concerning the application of two classes of functional alloy: In the second part, three articles deal with two hybrid materials: quasicrystals and geopolymers.

This work provides a handy guide to these rather specialized topics.
The objective of this collection, devoted to Advances in Concrete and Structures (ICACS), is to bring together authoritative reports, by researchers, engineers, and public administrators - located all over the world - on the current state of knowledge concerning the latest advances in concrete structure use in the field of civil engineering.

Advances in Ceramic Materials
Ed. Ping Xiao and Brian Ralph
Materials Science Forum Vol. 606
978-0-87849-350-0, 2009, 160 pages, paperback
US$138.00/€100.00

The topics covered include: Thermal barrier coatings on nickel superalloy substrates; Silicon nitride ceramics; Challenges to the integration of piezoelectric ceramics into micro-electromechanical systems; When should microwaves be used to process technical ceramics?: Ceramic and glass matrix composites containing carbon nanotubes; Stresses in multilayered ceramics subjected to biaxial flexure; Advanced nano-scale metrology for the characterization of ceramic materials in the scanning electron microscope; Finite element calculation of sintering deformation using limited experimental data; Microstructural modeling of ferroelectric materials: state-of-the-art challenges and opportunities; Processing, microstructure and properties of nanograin barium titanate ceramics by spark plasma sintering.

Advances in Ceramic Materials
Ed. Ping Xiao and Brian Ralph
Materials Science Forum Vol. 606
978-0-87849-350-0, 2009, 160 pages, paperback
US$138.00/€100.00

This topical book, containing as it does state-of-the-art reviews, neatly encompasses the current status of research into ceramic materials.

Advances in Semiconducting Materials
Eds. S. Velumani and René Asomoza
Advanced Materials Research Vol. 68
978-0-87849-323-4, 2009, 194 pages, paperback
US$138.00/€100.00

Updated knowledge on “Advances in semiconducting materials” is of great significance for both fundamental research and industrial application. The papers contained in this special volume address diverse topics related to recent trends in the science of semiconducting materials as related to synthesis, characterization, applications, etc.
Advances on Hot Extrusion and Simulation of Light Alloys
Eds. A. Erman Tekkaya and Nooman Ben Khalifa
Key Engineering Materials Vol. 424
978-0-87849-302-9, 2010, 294 pages, paperback
US$193.00/€140.00
This special collection comprises 36 peer-reviewed papers giving an insight into the latest advances in extrusion technology and its simulation. The papers cover a wide range of topics and are grouped into the categories of: benchmark, microstructure, seam welds and composite extrusion, material flow and constitutive equations, dies and tools and process control and optimization. However, many other topics, such as new materials (magnesium and its composites) and new composite profiles, are covered.
In particular, the benchmark section is aimed at exploiting FEM code capabilities and users’ expert knowledge in the simulation of industrial extrusion processes. This book will therefore be a welcome addition to the literature on the subject.

Mechanical Properties of Solids XI
Ed. Nicolás de la Rosa Fox
Key Engineering Materials Vol. 423
978-0-87849-303-6, 2010, 182 pages, paperback
US$138.00/€100.00
This special collection on the Mechanical Properties of Solids gives an accurate picture, of the distribution of current research, from the viewpoint of the mechanical properties of solids.
The topics are presented in traditional form: Ceramics, Composites and models, Metals and Polymers, and the six invited talks attempt to cover the most currently important areas, such as superplasticity and superelasticity, nanostructured materials, shape-memory alloys, viscoelasticity in polymers, micromcrystalline metals, mechanical behaviour of bioactive materials, etc.

Electrophoretic Deposition
Fundamentals and Applications III
Eds. A. R. Boccaccini, O. van der Biest et al.
Key Engineering Materials Vol. 412
978-0-87849-333-3, 2009, 324 pages, paperback
US$218.00/€158.00
This volume is entirely focussed on electrophoretic deposition (EPD) as a processing technique for the fabrication of both traditional and novel materials.

Light Metals Technology 2009
Eds. M.S. Dargusch & S.M. Keay
Materials Science Forum Vol. 618-619
978-0-87849-327-2, 2009, 670 pages, paperback
US$273.00/€198.00
The aim of this special collection was to provide an opportunity for companies, academic institutions and government research agencies to share, in a collaborative manner, their new research and development work. . The main focus was light metals and their applications.

Manufacturing Automation Technology
Eds. Guanglin Wang, Huifeng Wang and Jun Liu
Key Engineering Materials Vols. 392-394
978-0-87849-363-0, 2009, 1074 pages, paperback
US$411.00/€298.00
The present volume comprises a collection of peer-reviewed papers covering innovations and practical experience regarding manufacturing automation education; current and developing manufacturing automation; advanced manufacturing technology including flexible manufacturing, virtual manufacturing, Green manufacturing and re-manufacturing, and web-based manufacturing; computer-integrated manufacturing systems; CAD/CAE/CAPP/CAM; product lifecycle management (PLM); computerized numerical control systems and flexible manufacturing systems; industrial robotics; process monitoring and quality control of manufacturing systems; group technology (GT); PDM, ERP, logistics and supply chains.

Micro and Nano Technology
Ed. Xiaohao Wang
Advanced Materials Research Vols. 60-61
978-0-87849-339-5, 2009, 506 pages, paperback
US$276.00/€200.00
This volume presents a selection of over 98 peer-reviewed papers from the 1st International Conference of CSMNT, held on Nov. 19-22, 2008, in P.R. China.
It is focussed entirely on the Micro/Nano field, and acquaints the reader with the latest development in MEMS and nanotechnology.
It will thus be a great help to those working in this specialist field.
Strength and ductility are two of the most important mechanical properties of structural materials, but this usually involves a trade-off, because of the fundamental inverse proportionality of these two features. This special topic volume brings together fifty-eight invited papers, from twenty countries, covering a wide range of issues related to the ductility of bulk nanostructured materials. They include topics such as: deformation mechanisms, basic conceptions and reviews of ductility, ductility-structure relationships, processing and microstructural evolutions. This work provides authoritative guidance on developing strategies to improve the ductility of nanostructured materials and will permit materials designers to optimize the mechanical properties of nanostructured materials.

This special collection brings to the reader the latest developments in the science and technology of electroceramics. It focuses on contributing to the exchange of Electroceramics knowledge; both scientific and industrial. The 245 peer-reviewed papers cover all of the major topics; such as, dielectrics, piezoelectrics, ferroelectrics, semiconductors, magnetic ceramics, thin films, batteries and cells, memory devices and optical devices. It is certain that this volume will be found invaluable for both research and educational purposes.

This special collection on digital design and manufacturing technology explains the ins and outs of CAD/CAM technologies, and how these tools can be used to model and manufacture building components and industrial design products. It offers a comprehensive overview of the field and expertly addresses a broad range of recent initiatives and other issues related to the design of parts and assemblies for manufacturing: including a broad range of software, numerically controlled machines, manufacturing processes and prototyping methods.
NEW Progress in Micromechanical Research of Fracture of Composite Materials
Eds. P.W.R. Beaumont and Y. Shibuya
Key Engineering Materials Vol. 430
978-0-87849-286-2, 2010, 144 pages, paperback
US$124.00/€90.00
This special issue collects together selected papers from the oeuvre of Professor Hideki Sekine concerning micromechanical research into the fracture of composite materials. Micromechanical research into the fracture of composite materials is the main focus of his academic career. The phenomenon which we measure in terms of fracture toughness or fracture strength is a macro-scale behavior. It results from fiber-bridging, fiber-breakage, interface debonding, matrix cracking, matrix yielding, matrix creep and so on at the micro-scale. An important aim of his research is to extract meaningful factors affecting the fracture of composite materials and to incorporate those factors into the relevant mathematical model.

NEW Information Technology for Manufacturing Systems
Ed. Qi Luo
Applied Mechanics and Materials Vols. 20-23
978-0-87849-287-9, 2010, 1556 pages, paperback
US$483.00/€350.00
The objective of this special collection was to provide a outlet for researchers, educators, engineers and government officials, involved in the general areas of Intelligent Manufacturing, Manufacturing Systems and Processes, Modeling and Simulation, to disseminate their latest research results and exchange views on the future research directions of these fields. The result will certainly be of especial interest to anyone working in these areas.

NEW Nanomaterials Synthesis and Applications
Ed. Umapada Pal, JNanoR Vol. 5
978-0-87849-331-9, 2009, 246 pages, paperback
US$166.00/€120.00

NEW Advances in Optics Design and Precision Manufacturing Technologies
Eds. Guo Fan JIN et al.
Key Engineering Materials Vols. 364-366
US$494.00/€358.00
These papers cover optical design and fabrication, ultra-precision manufacturing, optical metrology and other related topics. It will be invaluable to industrial production workers and academics everywhere.

NEW New Frontiers in Materials Processing Training and Learning
Ed. M. Marcos
Materials Science Forum Vol. 625
978-0-87849-308-1, 2009, 124 pages, paperback
US$124.00/€90.00
This special volume on New Frontiers in Materials Processing Learning and Training reports these latest developments and novel applications, and describes theoretical research and case studies related to innovative education as applied to materials processing.

NEW New Materials for Extreme Environments
Ed. Ch. Linsmeier and M. Reinelt
Advanced Materials Research Vol. 59
978-0-87849-344-9, 2009, 344 pages, paperback
US$218.00/€158.00
The development of materials designed for application in extreme environments is a very active field of research. In recent years, it has been realized by the materials science community that solutions to demanding applications in different fields can be identified by implementing common materials concepts.

NEW Positron and Positronium Chemistry
Materials Science Forum Vol. 607
978-0-87849-348-7, 2009, 282 pages, paperback
US$207.00/€150.00
This special volume covers nearly every relevant area of positron and positronium chemistry, the peer-reviewed papers being grouped into 6 sections: 1. Fundamental Aspects of Positronium Chemistry, and Symposium on Positronium Molecules; 2. Polymer and Insulator; 3. Surface and Interface, Non-Metallic Solids; 4. Porous Materials and Nanostructures; 5. Liquids and Bio-Application; 6. Advances in Experimental Methods.

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Advances on Extrusion Technology and Simulation of Light Alloys
Eds. Luca Tomesani and Lorenzo Donati
Key Engineering Materials Vol. 367
US$177.00/€128.00
This collection offers a fully representative snapshot of modelling activities as applied to processes involving extrusion. It covers a wide range of topics, grouped into the categories: benchmark, keynotes, material flow and constitutive equations, microstructure, seam welds and process optimization, dies and tools.

New Trends in Mechanics and Transport
Eds. Tadeusz Uhl and Andrzej Chudzikiewicz
Applied Mechanics and Materials Vol. 9
978-0-87849-468-2, 2008, 182 pages, paperback
US$135.00/€99.00
This collection of 13 refereed papers is the result of a unique opportunity offered to the scientific and technical communities for them to interact and to consolidate the application of current achievements in mechanical science as applied to transport. It covers topics which include theoretical, numerical and experimental studies of transport-related areas. All-in-all, it represents a succinct state-of-the-art survey.

Eco-materials Processing and Design IX
Eds. Byungsei Jun, Hyungsun Kim et al.
Materials Science Forum Vol. 569
978-0-87849-472-9, 2008, 384 pages, paperback
US$253.00/€183.00
This up-to-date collection, “Eco-Materials Processing and Design IX”, covers – on a global scale – the outstanding advances made in investigating, producing and using eco-materials. It furnishes materials scientists and end-users with a valuable source of information and new concepts covering the complete spectrum of ecology, eco-materials, nano-materials, bio-materials, recycling, environmental protection and energy conversion related materials.

Interaction Between Defects and Anelastic Phenomena in Solids
Eds. Igor S. Golovin and DaniiI M. Levin
Solid State Phenomena Vol. 137
978-3-908451-53-2, 2008, 242 pages, paperback
US$152.00/€110.00
The principal purpose of assembling this special volume was to create a truly international body of peer-reviewed contributions on “Interaction between defects and anelastic phenomena in solids”.

Aluminium Cast House Technology XI
Eds. J. A. Taylor, J. F. Grandfield, A. Prasad
Materials Science Forum Vol. 630
978-0-87849-316-6, 2010, 272 pages, hardcover
US$177.00/€128.00
The Aluminium Cast-house Technology Conference in Australia is truly an international event where leaders in the aluminium industries of the five developed continents meet every two years. These proceedings contain the technical papers presented at the conference and serve as an important reference work for anyone involved with aluminium. The 31 peer-reviewed papers are grouped into: industry directions, safety & environment, dross generation & handling, furnaces & refractories, melt quality & treatment, cast-house productivity, direct chill & continuous casting, and ingot casting.

Advanced Materials Forum V
Eds. Luís Guerra Rosa and Fernanda Margarido
Materials Science Forum Vols. 636-637
978-0-87849-288-6, 2010, 1600 pages, paperback
US$497.00/€360.00
Chapter 1: biomaterials and integration of materials into biological systems; Chapter 2: ceramics; Chapter 3: composite materials; Chapter 4: electronic, magnetic and photonic materials; Chapter 5: metals and alloys; Chapter 6: nanoscaled materials; Chapter 7: polymers; Chapter 8: materials for energy production, transport and storage; Chapter 9: powder materials and powder technology processes; Chapter 10: surface modification, thin films, coatings, and corrosion; Chapter 11: simulation and modelling of materials and structures; Chapter 12: aggregate, petrous and cementitious materials; Chapter 13: recycling, eco-friendly materials and processes; Chapter 14: fracture, fatigue, creep and wear; Chapter 15: sensors and inspection techniques. The comprehensive coverage will be a boon to researchers.
**Materials Science & Engineering 2011**

**NEW**

**Manufacturing Science and Engineering I**

Eds. Zhengyi Jiang and Chunliang Zhang  
Advanced Materials Research 97-101  
978-0-87849-280-0, 2010, 4720 pages, paperback  
US$646.00/€468.00

This book brings together the latest advances in, and applications of, manufacturing science and engineering. It comprises 976 papers, selected from among 3062 papers which were submitted by universities and industrial laboratories all over the world. All of chosen papers were subjected to strict peer-review.

This book will provide readers with a broad overview of the latest advances in the field of manufacturing science and engineering, and will become an invaluable reference work for researchers in the fields of manufacturing science and engineering.

**NEW**

**Advances in Fracture and Damage Mechanics VIII**

Eds. M.H Aliabadi, S. Abela et al.  
Key Engineering Materials Vols. 417-418  
978-0-87849-315-9, 2010, 994 pages, paperback  
US$414.00/€300.00

This special collection covers the latest theoretical, computational, and experimental research on fracture and damage mechanics as well as on structural integrity and durability. It therefore covers a remarkably wide range of topics: Fracture mechanics, Failure analysis, Corrosion, Creep, Nonlinear problems, Dynamic fracture, Residual stress, Environmental effects, Crack propagation, Repair techniques, Composites, Ceramics, Polymers, Metallic and concrete materials, Probabilistic aspects, Risk analysis, Damage tolerance, Fracture control, Computer modelling methods (Finite elements, Boundary elements and meshless), Microstructural and Multiscale aspects.

This work therefore presents an up-to-date overview of the latest developments in the fields of fracture and damage mechanics, and will be essential reading for anyone having an interest in this key research field.

**Powder Technology and Application**

Ed. Guosheng Gai  
Advanced Materials Research Vol. 58  
978-0-87849-352-4, 2009, 244 pages, paperback  
US$166.00/€120.00

This collection of peer-reviewed papers focuses on powder preparation and new materials, as related to industrial applications. Most of the papers concentrate on the topics of nano-powder preparation and application to new materials, and powder-processing technology as applied to chemicals and minerals. This makes the book an invaluable guide to the state-of-the-art of this field.

**SiAlONs and Non-oxides**

Eds. Katsutoshi Komeya, Yi-Bing Cheng et al.  
Junichi Tatami and Mamoru Mitomo  
Key Engineering Materials Vol. 403  
978-0-87849-345-6, 2009, 280 pages, paperback  
US$166.00/€120.00

The papers presented in this volume are authored by leading international experts on SiAlON and non-oxide materials and therefore give an excellent overview of current and future trends in the field.

**Silicon Carbide and Related Materials**

ECSCRM 2008  
Eds. Amador Pérez-Tomás et al.  
Materials Science Forum Vols. 615-617  
978-0-87849-334-0, 2009, 1030 pages, hardcover  
US$483.00/€350.00

The volume is arranged into seven chapters which cover the topics of SiC and related materials, bulk and epi-growth, extended and point defects, physical properties, theoretical modeling, surface- and nano-structures, the development of device processing, and the requirements demanded of electronic devices which can operate under extreme conditions and exhibit outstanding performance.

**Silicon Carbide and Related Materials**

ICSCRM 2009  
Eds. Akira Suzuki, Hajime Okumura et al.  
Materials Science Forum Vols. 600-603  
978-0-87849-357-9, 2009, 1434 pages, paperback  
US$482.00/€349.00

This two-volume set comprehensively documents the present understanding of various topics of scientific and technological interest: such as the growth of bulk crystals, the growth of epitaxial layers, extended and point defects, physical properties, theoretical modeling, surface- and nano-structures, the development of device processing, and the requirements demanded of electronic devices which can operate under extreme conditions and exhibit outstanding performance.

Most titles now also available on CD, for details visit www.ttp.net
The papers presented in this special issue, “Glass Science and its Applications”, cover the physics and chemistry of conventional glasses, sol gel glasses and glass ceramic materials as used in technological and biomedical applications; for example, the first paper describes the optimization of ormosil glasses for luminescence-based dissolved-oxygen sensor applications. Here, the main aim was to prepare and evaluate various sol gel film compositions in order to identify those most promising for oxygen sensing.

This special issue will therefore be of great interest to those searching for a general overview of glass science and its application in various fields.

This special collection contains a selection of 49 peer-reviewed papers covering: Theory, Global Texture and Local Texture. The book can thus serve as a guide, covering both applied and fundamental topics, to this challenging scientific field. The expected readership will include materials scientists, physicists, engineers, those working in bio- and geosciences, as well as students who are entering this field.

This collection of 142 papers was carefully selected from the more than 300 papers submitted. The collection covers the latest theoretical and experimental research on machining and advanced manufacturing technology. It covers a remarkably wide range of topics: Theory and technology of cutting and grinding, Advanced manufacturing processes and technology, Micro-nano technology and micro-systems, Mechanical manufacturing experiment and detection technology, Automation and modern manufacturing systems, Advanced manufacturing models and strategies.

This is an up-to-date overview of the latest developments in the fields of machining and advanced manufacturing technology, and will be essential reading for anyone having an interest in this research field.
Eco-Materials Processing and Design XI
Eds. Hyungsun Kim, JianFeng Yang et al.
Materials Science Forum Vol. 658
978-0-87849-244-2, 2010, 530 pages, paperback
US$276.00/€200.00
This special collection presents the fruits of a forum where researchers were able to present the most advanced and novel scientific results and technological developments in the field of eco-materials processing and design. The aim was to overview the current status and to foresee future likely trends in the field of eco-materials processing and design of energy- and environment-related materials. Many fruitful and exciting research achievements are presented here; not only in conventional areas, but also in sustainable energy sources such as solar cells and fuel cells, photochemistry, porous materials, biomass, and bio-inspired technologies for developing microstructures offering superior surface and bulk properties. Altogether, this work presents a unique overview of the topic.

Surface Finishing Technology and Surface Engineering II
Eds. Qiusheng Yan, Jiabin Lu, Jun Wang et al.
Advanced Materials Research Vol. 135
978-0-87849-233-6, 2010, 482 pages, paperback
US$252.00/€183.00
This volume comprises a collection of papers selected from submissions made to the International Conference on Surface Finishing Technology & Surface Engineering (IC-SFT2010); one of the academic conferences instigated by the Chinese Committee for Surface Finishing Technology of CMES (Chinese Mechanical Engineering Society), held in Guangzhou, China, from the 5th to 7th November, 2010. The aim of IC-SFT2010 was to offer an opportunity to bring together academic researchers and industrial technologists for the purpose of exchanging information on the latest developments and applications in advanced surface engineering and surface finishing technologies, and to promote friendly and interdisciplinary research collaborations. The work offers interesting insights into the topic.

Processing and Applications of Structural Metals and Alloys
Eds. Marcello Cabibbo and Stefano Spigarelli
Materials Science Forum Vols. 604-605
978-0-87849-355-5, 2009, 442 pages, paperback
US$270.00/€196.00
This volume brings together the most exciting ideas of international, and especially European, researchers concerning the latest developments in severe plastic deformation techniques and in the thermomechanical processing of materials for both structural and functional applications. The areas of interest include not only the conventional hot- and cold-deformation of metals but also recently developed severe plastic deformation processes for the production of ultrafine and nanostructured materials.

Sheet Metal 2009
Eds. B. Shirvani, R. Clarke et al.
Key Engineering Materials Vols. 410-411
US$346.00/€251.00
The main focus of this special volume is on innovation in forming processes, high-strength materials and joining technologies. The 72 papers are grouped into chapters on: Hydroforming, Joining, Manufacturing Systems, Micro Technologies, Quality/Surface Conditioning, Tooling, Stamping, Tube-Forming, Incremental Forming, Modelling, Materials and Testing, Drawing, Bending, and Roll-Forming.

Progress in Biocermics
Ed. Maria Vallet-Regi
Key Engineering Materials Vol. 377
978-0-87849-395-1, 2009, 284 pages, paperback
US$221.00/€160.00
The main purpose of this special-topic book, devoted to current trends in bioceramics, is to survey the present situation in this field, and to cover as fully as possible the various lines of research. The book includes many ceramic materials having clinical applications; some of them already entirely feasible, while others are expected to be available in the very near future. The 14-chapter volume encompasses widely differing studies and reviews dealing with various aspects of the currentworld of bioceramics.

Explosion, Shock Wave and Hypervelocity Phenomena in Materials II
Eds. S. Itoh and K. Hokamoto
Materials Science Forum Vol. 566
978-0-87849-465-1, 2008, 400 pages, paperback
US$246.00/€178.00
The objective of this special-topic volume was to disseminate work on current trends in Explosion, Shock Wave and Hypervelocity Phenomena in Materials. The 66 peer-reviewed papers cover topics such as: shock waves, detonation and combustion, materials processing, numerical simulation and high strain-rate phenomena.
Latest Titles

Smart Textiles
Eds. Pietro VINCENZINI and Rita PARADISO
Advances in Science and Technology Vol. 60
978-3-908158-26-4, 2009, 190 pages, paperback
US$166.00/€120.00
This timely collection comprises 24 peer-reviewed papers which, between them, present a comprehensive survey of “Smart Textiles”. The papers are grouped into the handy chapters: 1: Adaptive / active textiles; 2: E-textiles; 3: Functionality and applications.

NEW Creation of High-Strength Structures and Joints
by Setting up Local Material Properties
Eds. Heinz Palkowski and Kai-Michael Rudolph
Advanced Materials Research Vol. 137
US$276.00/€200.00
The purpose of SFB 675 is to develop materials and manufacturing processes for high-strength structures, having graduated and locally engineered properties, by exploiting material, physical and/or geometrical effects. The incorporation of locally altered material properties, tailored to handle the strains expected to be encountered during use, lead to increases in the efficiency of the whole structure. This book offers an interesting overview of this intriguing topic.

Multi-Functional Materials and Structures II
Eds. Yansheng Yin and Xin Wang
Advanced Materials Research Vols. 79-82
978-0-87849-304-3, 2009, 2374 pages, paperback
US$500.00/€690.00

NEW Light Weight Metal Corrosion and Modeling
Eds. Stefano Trasatti and Juliet Ippolito
Advanced Materials Research Vol. 138
978-0-87849-231-2, 2010, 158 pages, paperback
US$124.00/€90.00
The editors of this special volume made every effort to invite all of those corrosion specialists working in the field of lightweight alloys and, specifically, their modeling. Their expertise provided a basis upon which to discuss corrosion problems and solutions for Military and Aerospace Systems and Facilities; thus laying a solid foundation for the tackling of yet-unsolved issues. The objectives of the workshop were to seek state-of-the-art ideas, from outside of the continental United States, in the field of low-density metallic materials and composites for structural applications, as well as modeling and simulation software tools which are capable of generating and identifying damage evolution data for health monitoring, corrosion control, life prediction and assessment of civil and military hardware systems.

NEW Materials Science, Testing and Informatics V
Eds. P. J. Szabó and T. Berecz
Materials Science Forum Vol. 659
978-0-87849-235-0, 2010, 545 pages, paperback
US$276.00/€200.00

NEW Advances in Functional Manufacturing Technologies
Eds. Dunwen Zuo, Hun Guo, Hongli Xu et al.
Applied Mechanics and Materials Vol. 33
978-0-87849-236-7, 2010, 726 pages, paperback
US$345.00/€250.00
The primary goal of this special collection is to communicate the latest progress and research results concerning new theories, technologies, methods, equipment and so on, in the field of advanced manufacturing technology, and to explore the updated technological and research trends driving international communications and cooperation with respect to production, education and research in this field. The major topics covered include: Innovation and Experience in Manufacturing Systems and Technologies, Materials Science and Technology in Manufacturing and Administrative Skills in Advanced Manufacturing etc. It thus constitutes a useful and timely guide to the subject.

For full table of contents and descriptions of each title visit our web site at: http://www.ttp.net
**NEW**

**Frontier in Functional Manufacturing Technologies**
Eds. Dunwen Zuo, Hun Guo, Hongli Xu, Chun Su, Chunjie Liu and Weidong Jin
Advanced Materials Research Vol. 136
US$200.00/€145.00

These special volumes are intended to communicate the latest progress made and research advances in theory, technology, methods, equipment etc., within the field of advanced manufacturing technology, and to review the updated technological and research trends driving international communication and cooperation on production, education and research in the field. The result is a veritable encyclopedia devoted to the subject.

**NEW**

**Structural Analysis of Historic Constructions**
Eds. Xianglin Gu and Xiaobin Song
Advanced Materials Research Vols. 133-134
978-0-87849-239-8, 2010, 1336 pages, paperback
US$483.00/€350.00

Increasing urbanization constitutes a mounting threat to cultural heritage sites around the world; especially in developing countries. Natural and man-made environmental hazards are causing more damage to historic constructions than ever before. The conservation of historical constructions is facing new challenges introduced by waves of immigration and industrialization. The present papers on this subject are organized into two volumes, and the topics of interest span the entire spectrum of structural analyses of historic constructions: including Materials and Structural Configuration, Structural Inspection and Monitoring, Structural Analysis and Assessment, Seismic Analysis and Evaluation, Strengthening Technologies, Rehabilitation and Retrofitting and Sustainable Utilization of Historic Constructions in China. It is the hope of the editors that this special collection will stimulate scientists and technologists to develop further theories and technologies and help them in their endeavors in conserving historic constructions, now and tomorrow.

**Sintering Fundamentals**
Ed. G.S. Upadhyaya
Materials Science Forum Vol. 624
978-0-87849-318-0, 2009, 152 pages, paperback
US$166.00/€120.00

This book comprises state-of-the-art reviews written by acknowledged experts who are active in sintering science. This volume thus offers a stimulating and thorough overview of the topic.

**Sintering of Systems with Interacting Components**
A.P. Savitskii
Materials Science Foundations Vols. 57-58
978-0-87849-150-6, 2009, 290 pages, paperback
US$166.00/€120.00

The aim of this publication is to acquaint those readers who are interested in the fundamentals of powder materials sintering, with the latest scientific achievements which are important to its successful practice. The book contains new information, not previously known in the West, as well as offering a totally fresh view of this vital issue. The work discloses to western eyes a new scientific trend in the science of sintering systems with interacting components; a trend of which many experts are unaware. The new approach will considerably enrich and advance investigations into the theory and practice of sintering and aid their further development.

**Solid Phase Transformations II**
Eds. J. Čermák and I. Stloukal
Solid State Phenomena Vol. 150
978-3-908451-66-2, 2009, 230 pages, paperback
US$166.00/€120.00

This topical volume includes ten invited papers that cover selected areas of the field of solid phase transformations. Overall, this work provides a useful guide to the above topics.

**Bioceramics 20**
Eds. Guy Daculsi and Pierre Layrolle
Key Engineering Materials Vols. 361-363
978-0-87849-457-6, 2008, 1428 pages, paperback
US$494.00/€358.00

Some of the topics covered deal with advanced materials and technologies that support the exciting technique of the regeneration of osteoarticular tissues using minimal invasive surgery and bioactive prostheses. This book will be invaluable to materials scientists, bioengineers, molecular and cellular biologists, bone biologists, dentists and clinicians.
Ultra Clean Processing of Semiconductor Surfaces IX
Eds. Paul Mertens, Marc Meuris and Marc Heyns
Solid State Phenomena Vols. 145-146
978-3-908451-64-8, 2009, 412 pages, paperback
US$246.00/€178.00
This special collection covers every aspect of ultra-clean technology as applied to large-scale device integration on semiconductors, including cleaning and contamination control in both front-end-of-line (FEOL) and back-end-of-line (BEOL) processing. This work will be essential reading matter for those working in the field.

Advances in New Catalytic Materials
Eds. Jin-An Wang, Guozhong Cao et al.
Advanced Materials Research Vol. 132
978-0-87849-240-4, 2010, 300 pages, paperback
US$166.00/€120.00
The search for new catalytic materials has grown into a very important multidisciplinary research field; including novel strategies for catalytic materials synthesis, control and manipulation of solid-state chemistry and surfaces, innovative characterization techniques and rapidly expanding catalysis applications, and has thus attracted the attention of large numbers of scientists and engineers all over the world. This special volume on Advanced Materials Research comprises new contributions covering aspects of catalyst preparation and characterization, as well as various applications of catalysis.

Applied Mechanics and Mechanical Engineering
Ed. Honghua Tan
Applied Mechanics and Materials Vols. 29-32
978-0-87849-245-9, 2010, 2924 pages, paperback
US$483.00/€350.00
The goal of these collection was to bring together researchers from academia and industry, as well as technologists, to share ideas, problems and solutions related to the multifaceted aspects of applied mechanics and mechanical engineering.

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Advanced Mechanical Engineering
Eds. Zhenyu Du and Bin Liu
Applied Mechanics and Materials 26-28
978-0-87849-249-7, 2010, 1302 pages, paperback
US$376.00/€272.00
This collection of peer-reviewed papers contain new research results in the field of advanced mechanical engineering. The object was to bring together researchers, development engineers and users from around the world, and from both industry and academia, in order to share state-of-art ideas for exploring new areas of research and development, and to discuss emerging issues facing advanced mechanical engineering. Workers in the field will welcome this timely coverage of the subject.

Current Application of Polymers and Nano Materials
Ed. Amir Al-Ahmed
Materials Science Forum Vol. 657
US$138.00/€100.00
This Special Topic Volume constitutes the contributions of thirty-nine experts from the international scientific community who are involved in this field of research. It covers thoroughly some of the latest applications of polymers and nano-materials to solar-cells, fuel cells, catalysis, coatings, ion-exchange and sensors. It presents an up-to-date and in-depth coverage of the chemistry, physics, materials science and engineering applications of polymers and nano-materials.

Nanotechnology and Computer Engineering
Eds. Donald C. Wunsch II, Honghua Tan, Dehuai Zeng, Qi Luo
Advanced Materials Research Vols. 121-122
978-0-87849-251-0, 2010, 1094 pages, paperback
US$411.00/€298.00
Nanotechnology refers to the creation of useful materials, devices and systems via the manipulation of matter on a miniscule scale; a nanometer being a billionth of a meter. Nanotechnology is being applied to almost every field imaginable, including electronics, magnetism, optics, information technology, materials development and biomedicine. The 190 selected peer-reviewed papers presented here are grouped into: Chapter 1: Nanotechnology and Industrial Application, Chapter 2: Computer Science and Engineering, Chapter 3: Communications and Management, Chapter 4: Control and Automation. This is an excellent introduction to the field for those interested in the exploitation of nanotechnology.

Fracture Mechanics
Eds. Alexander Balankin et al.
Key Engineering Materials Vol. 449
978-0-87849-253-4, 2010, 124 pages, paperback
US$124.00/€90.00
This work comprises selected peer-reviewed papers on the topic of, “Fracture Mechanics”. The volume covers topics related to all aspects of the mechanics and phenomena of fracture, fatigue, fracture mechanics approach, strength of materials, failure analysis and general structural integrity. The aim of this collection was to bring together state-of-the-art developments related to fracture mechanics and in this it has succeeded admirably.

Ultra-High-Pumpability and High Performance Concrete Technology
Eds. Hao-Wen Ye and Gai-Fei Peng
Key Engineering Materials Vols. 405-406
978-0-87849-341-8, 2009, 420 pages, paperback
US$276.00/€200.00
The main theme of this special collection was the preparation and properties of high-strength/high-performance concrete, and covered a wide range of topics and scopes, such as preparation of high strength/high performance concrete, durability, raw materials, workbility, chemical admixture, new applications of concrete, property characterization, and the behavior of concrete structures.

Ultra-Precision Machining Technologies
Eds. Julong Yuan, Shiming Ji et al.
Advanced Materials Research Vols. 69-70
978-0-87849-326-5, 2009, 740 pages, paperback
US$345.00/€250.00
This special volume presents the very latest findings and ideas in the field of ultra-precision machining.

Materials and Product Technologies II
Eds. L.Y. Xie, M.N. James, Y.X. Zhao and W.X. Qian
Advanced Materials Research Vols. 118-120
978-0-87849-254-1, 2010, 1030 pages, paperback
US$411.00/€298.00
This three-volume set is a collection of 190 peer-reviewed papers on the topic of Advances in Product Development and Reliability. It addresses the scientific and technological issues underlying improvements in performance, reliability and lifetime. Its remit embraces the design and manufacturing aspects of product development and reliability, as well as operational life prediction and extension. This collection focuses on the development and reliability of consumer products as well as the integrity, reliability and operation of engineering structures and systems.

The objective of this special collection was to provide an excellent platform for updating and discussing the latest advances in precision engineering-related fields by researchers and engineers from research laboratories, academia and industry all over the world. The volume covers a wide gamut of topics in precision engineering-related fields, ranging over precision machining, advanced measurement technologies and green and sustainable manufacturing.

The study of nanomaterials is an active area of 21st-century research in physics, chemistry and materials engineering as well as biomedical engineering. Nanomaterials which are defined as substances that are in the form of spherical dot, rod, thin plate or voids of any irregular shape, but smaller than 100nm, find wide application in materials science and technology due to their very distinctive properties as compared with their bulk counterpart.

This special volume is focused on two fundamental issues related to the stability of nanomaterials.

The aim of this collection was to provide an opportunity for the sharing of information and to facilitate cooperation in mechatronics and new materials research, and to disseminate new research results in this multi-disciplinary field.

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Perspectives of Nanoscience and Nanotechnology
Eds. Witold Łojkowski and John R. Blizzard
Solid State Phenomena Vol. 140
978-3-908451-57-0, 2008, 230 pages, paperback
US$189.00/€137.00
The contents are divided into: Nanostructures for Photonics, Oxide Nanostructures, Carbon Nanostructures, Nanostructures for Medicine, Bulk Metal Nanostructures, and constitute a useful guide to these topics.

Surface Engineering
Eds. M.K. Lei, X.P. Zhu et al.
Key Engineering Materials Vols. 373-374
978-0-87849-397-5, 2008, 870 pages, paperback
US$381.00/€276.00
This collection of 201 peer-reviewed papers is grouped into seven sections: I. Thermal Spray Technology, II. Vapor Deposition Technologies, III. Electrodeposition and Electroless Deposition, IV. Energetic Beams and Plasma Surface Treatments, V. Wear and Corrosion Behavior of Engineering Surfaces, VI. Functional Films and Coatings and VII. Surface Machining and Mechanical Processing Technologies. This work therefore offers valuable insights into the scientific & technological achievements already made in this field and into the important progress still being made.

High Temperature Corrosion and Protection of Materials 7
Eds. Pierre Steinmetz et al.
Materials Science Forum Vols. 595-598
978-0-87849-366-1, 2008, 1278 pages, hardcover
US$440.00/€319.00
The book is divided into the topics: I. Materials and Coatings for Gas Turbines, II. Power Boilers and Incinerators; H2 Syngas and Biofuel Production, III. HT Materials for Nuclear Processes, IV. HT Corrosion in the Processing Industries, V. HT Corrosion of Functional Materials and Coatings, VI. Fundamentals,

Advances in Light Emitting Materials
Eds. B. Monemar, M. Kittler, H. Grimmeiss
Materials Science Forum Vol. 590
978-0-87849-358-6, 2008, 288 pages, paperback
US$230.00/€167.00
This special-topic volume, Advances in Light-Emitting Materials, makes an important contribution to the field of silicon and III-nitride semiconductors. It begins with a brief history of visible-light emitting diodes. Altogether, this volume presents an in-depth review of this important topic.

Advances in Materials Manufacturing Science and Technology XIII/I
Advanced Manufacturing Technology, Equipment and Manufacturing Systems & Automation
Eds. Dongming Guo, Jun Wang et al.
Materials Science Forum Vols. 626-627
978-0-87849-311-1, 2009, 842 pages, paperback
US$366.00/€265.00
This special volume comprises a collection of 139 papers chosen, from among 510 submissions from universities and industries all over the world, on the basis of their quality and relevance to the central topic. All of the papers were peer-reviewed by selected experts and mirror the latest developments in the field of materials manufacturing technology; ranging from the fundamentals, to new technologies and applications. The papers specifically cover the topics of advanced manufacturing technology and equipment, and manufacturing systems and automation.

Advances in Materials Manufacturing Science and Technology XIII/II
Modern Design Theory and Methodology, MEMS & Nanotechnology, Material Science & Technology in Manufacturing
Eds. Dongming Guo, Jun Wang et al.
Materials Science Forum Vols. 628-629
978-0-87849-312-8, 2009, 764 pages, paperback
US$366.00/€265.00
This volume consists of a collection of 125 peer-reviewed papers submitted by universities and industrial laboratories all over the world.

Multi-functional Materials and Structures
Eds. Alan K.T. Lau, J. Lu et al.
Advanced Materials Research Vols. 47-50
978-0-87849-378-4, 2008, 1612 pages, paperback
US$473.00/€343.00
The present 376 papers are the cream of 650 submitted abstracts, selected after rigorous review, and focus mainly on the front-line research work done by the various authors. They therefore represent the best current guide to the state-of-play in this field.

Advances in Strength of Materials
Ed. Liviu MARSAVINA
Key Engineering Materials Vol. 399
US$180.00/€130.00
This collection is the result of bringing together scientists from various countries in order to combine their knowledge concerning the latest analytical, experimental and numerical developments in the fields of Strength of Materials, Fracture Mechanics and Fatigue.
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