2020 MATERIALS SCIENCE & NANOSCIENCE

New books available on WorldSciNet
About World Scientific Publishing
World Scientific Publishing is a leading independent publisher of books and journals for the scholarly, research, professional and educational communities. The company publishes about 600 books annually and about 140 journals in various fields. World Scientific collaborates with prestigious organisations like the Nobel Foundation, US National Academies Press, amongst others, to bring high quality academic and professional content to researchers and academics worldwide. To find out more about World Scientific, please visit www.worldscientific.com

How to Order
Please contact our representatives and the World Scientific office nearest to you.

You can also order online at www.worldscientific.com or from your regular bookseller.

Textbook Inspection Copies
These are available upon request to lecturers for textbook adoption purposes. Please email us at sales@wspc.com or visit our website at www.worldscientific.com/page/inspection-copy

Interested in Writing a Book?
We would be delighted to hear from you if you are considering writing a book. Please contact any of our worldwide offices or email us at editor@worldscientific.com for more information. Alternatively, you can visit our website at www.worldscientific.com

Other Catalogues
We have produced these catalogues for the year 2020. Please email us at mkt@wspc.com to request for any of them.
• Asian Studies
• Business and Management
• Chemistry
• Civil Engineering
• Computer Science
• Earth, Energy and Environmental Science
• Economics and Finance
• Electrical and Electronic Engineering
• Life Sciences
• Mathematics
• Materials Science and Nanoscience
• Medical Science
• Nonlinear Science
• Physics
• Popular Science

Stay Updated
Join our Mailing List to be informed of our latest publications, worldwide conferences, special offers on our books and journals, and much more!

To join, please visit our website at www.worldscientific.com/page/newsletter-sign-up

Or email your contact information to us at mkt@wspc.com with “Subscribe to Materials Science & Nanoscience” in the subject line.

Materials Science & Nanoscience
Journals

Materials Science & Nanoscience
Journals

Materials Science

Materials Science & Nanoscience
Journals

Nanoscience

Title Index/Author Index
Defects in Functional Materials

Edited by Francis Chi-chung Ling (University of Hong Kong, Hong Kong), Shengqiang Zhou (Institute of Ion Beam Physics and Materials Research, Germany) & Andrei Kuznetsov (University of Oslo, Norway)

The research of functional materials has attracted extensive attention in recent years, and its advancement has played a role in the developments of modern sciences and technologies like green sciences and energy, aerospace, medical and health, telecommunications, and information technology. This book summarizes the research activities carried out in recent years by understanding the physics and chemistry of how the defects play a role in the electrical, optical and magnetic properties and the applications of the different functional materials in the fields of magnetism, optoelectronic, and photovoltaic etc.

300pp  May 2020
978-981-120-316-9  US$128  £115

Sustainable Chemistry Series - Vol 3

Functional Materials from Lignin: Methods and Advances

Edited by Xian Jun Loh (Agency for Science, Technology and Research, Singapore & NUS, Singapore), Dan Kai (Agency for Science, Technology and Research, Singapore) & Zibiao Li (Agency for Science, Technology and Research, Singapore)

This book brings together leading engineering approaches to address the challenges of lignin valorization. It presents the chemistry and properties of different types of lignin, and explores the cutting-edge approaches of lignin modifications. Unlike any existing texts, this book not only summarizes the traditional ways of using lignin, but also presents various potential applications of lignin materials together with advanced processing techniques.

The basis of lignin (its chemistry, types and properties) is described, as are different approaches to modify it. The features of lignin and its copolymers are explored and aligned with their potential applications. In addition to the carbon materials from lignin, the advanced fabrication approaches to engineer lignin-based micro/nano-structural materials are summarized.

Readership: Advanced undergraduates and graduate students in materials science and engineering; chemists and materials scientists.

232pp  Jul 2018
978-1-78634-520-2  US$108  £95

The Promise of Science

Essays and Lectures from Modern Scientific Pioneers

Edited by Lorie Karnath (Molecular Frontiers Foundation, Germany)

This book summarizes the research activities carried out in recent years, and its advancement nitrifies the developments of modern sciences and technologies like green sciences and energy, aerospace, medical and health, telecommunications, and information technology. This book summarizes the research activities carried out in recent years by understanding the physics and chemistry of how the defects play a role in the electrical, optical and magnetic properties and the applications of the different functional materials in the fields of magnetism, optoelectronic, and photovoltaic etc.

180pp  Jul 2019
978-981-3273-28-3  US$78  £70

Digital resources made convenient for your students at a lower cost.

eTextbooks Available!
World Scientific Series on Carbon Nanoscience - Vol 9 & 10
Handbook of Carbon Nanomaterials
(In 2 Volumes)
Volume 9: Optical Properties of Carbon Nanotubes
Volume 10: Optical Properties of Carbon Nanotubes
A Volume Dedicated to the Memory of Professor Mildred S Dresselhaus
edited by R Bruce Weisman (Rice University, USA), Junichiro Kono (Rice University, USA)

This 2-volume set focuses on the optical properties and spectroscopy of single-wall carbon nanotubes. It contains chapters on diverse experimental and theoretical aspects of the field, written by internationally recognized experts. The volume serves as an important resource for researchers and students interested in carbon nanotubes.

Contents: Introduction to Optical Spectroscopy of Single-Wall Carbon Nanotubes (R Bruce Weisman & Junichiro Kono); Effects of Environment and Collapsing on Optical Properties of Nanotubes (Tsuneya Ando); Spectroscopy of Ground- and Excited-State Charge Carriers in Single-Wall Carbon Nanotubes (Jeffrey L Blackburn, Andrew J Ferguson, and Obadiah Reid); Raman Spectroscopy for Practical Characterization of Single-Wall Carbon Nanotubes in Various Environments (Shohei Chiashi, Yoshikazu Homma, and Shigeo Maruyama); Optical Spectroscopy of Doped Carbon Nanotubes (Tobias Hertel); Exciton Physics in Single-Carbon-Nanotube Photonic and Optoelectronic Devices (A Ishii, H Machiya, T Uda, and Y K Kato); Tip-Enhanced Spectroscopy and Imaging of Carbon Nanomaterials (Ado Jorio, Luiz Gustavo Cancado, Sebastian Heeg, Lukas Novotny, and Achim Hartschuh); Probing the Intrinsic Vibrational and Optical Properties of Individual Chirality-Identified Carbon Nanotubes by Raman Spectroscopy (Thierry Michel, Dmitry Levshov, Ahmed-Azmi Zahab, Jean-Louis Sauvajol, and Matthieu Paillet); Photoeffects Arising from Trions in Carrier-Doped Carbon Nanotubes (Kazunari Matsuda); Metrological Assessment of Carbon Nanomaterials (Ado Jorio, Luiz Gustavo Cancado, Sebastian Heeg, Lukas Novotny, and Achim Hartschuh); Probe the Intrinsic Vibrational and Optical Properties of Individual Chirality-Identified Carbon Nanotubes by Raman Spectroscopy (Thierry Michel, Dmitry Levshov, Ahmed-Azmi Zahab, Jean-Louis Sauvajol, and Matthieu Paillet); Cryogenic Spectroscopy of Carbon Nanotubes: The Role of Exciton Localization (J C No e, M S Hofmann, J T Glückert, and A Hö gele); Electronic, Optical, and Thermal Properties of Suspended Carbon Nanotubes (Nirakar Poude, Jihan Chen, and Stephen B Cronin); Resonance Raman Spectroscopy of Graphene and Carbon Nanotubes (Riichiro Saito);

Readership: Post-graduate students and researchers in the field of nanomaterials and carbon nanotubes.

912pp  Mar 2019
978-981-3235-45-8(Set)  US$320  £280

For more information, visit: www.worldscientific.com
3D Local Structure and Functionality Design of Materials
edited by Hiroshi Daimon (Nara Institute of Science and Technology, Japan), Yuji C Sasaki (The University of Tokyo, Japan)

- Placing the emphasis on local structure analysis, covering the knowledge required for the precise material development
- Introduce practical examples as well as theory and compactly summarized necessary knowledge to learn in general

Active-site is the region at the central atom’s position where functional activated reactions occur in many materials. Hence, it is important for the present study of material sciences to take into consideration this information of atomic structures in the reaction center of the localized impurities and catalyst and phase boundary and the photosynthetic reaction centers. However, it is very difficult to determine a three-dimensional atomic structure directly in the center positions of many functional materials.

This book is written for readers to gain the basic knowledge of this “active-site”. It will benefit those who want to know the function and structure of the inorganic, organic and biological materials.

220pp Jan 2019
978-981-3273-66-5 US$88 £75

Materials and Energy - Vol 9
Conjugated Polymers and Oligomers
Structural and Soft Matter Aspects
edited by Matti Knaapila (Technical University of Denmark, Denmark)

This book identifies modern topics and current trends of structural and soft matter aspects of conjugated polymers and oligomers. Each chapter recognizes an active research line where structural perspective dominates research and therefore the book covers fundamental aspects of persistent conjugated polymer backbone, water soluble conjugated polyelectrolytes and surfactants, conjugated molecules and biomolecules and DNA and the advanced use of synchrotron radiation and electron microscopy to find out structural details in conjugated molecule films and devices as well as under ambient and extreme conditions.

Readership: The book is useful for physicists and chemists — particularly physical chemists and colloid chemists and materials chemists — and materials scientists and chemical engineers.

204pp Jan 2018
978-981-3225-75-6 US$98 £86

Soft, Hard, and Hybrid Janus Structures
Synthesis, Self-Assembly, and Applications
edited by Zhiquan Lin (Georgia Institute of Technology, USA), Bo Li (University of Illinois at Urbana-Champaign, USA)

This book investigates recent progress in synthesis of soft, hard and hybrid Janus structures and looks at processing strategy, such as emulsion polymerization, microfluidics, co-jetting and seeded growth. Also reviewed are both the experimental and theoretical studies on the unique self-assembly behaviour of Janus particles.

Readership: Graduate students and researchers in the fields of chemistry, materials science, engineering, biotechnology and applied physics, as well as practitioners in these industries.

544pp Dec 2017
978-1-78634-312-3 US$178 £157

Optical Properties of Graphene
edited by Rolf Binder (University of Arizona, USA)

516pp Jan 2017
978-981-3148-74-1 US$160 £133

Gels Handbook
Fundamentals, Properties and Applications (In 3 Volumes) Volume 1: Fundamentals of Hydrogels; Volume 2: Applications of Hydrogels in Regenerative Medicine; Volume 3: Application of Hydrogels in Drug Delivery and Biosensing
edited by Utkan Demirci (Stanford), Ali Khademhosseini (Harvard)

1172pp Apr 2016
978-981-4656-10-8 (Set) US$1100 £913

Innovative Thermoelectric Materials
Polymer, Nanostructure and Composite Thermoelectrics
edited by Howard E Katz (Johns Hopkins University, USA), Theodore O Poehler (Johns Hopkins University, USA)

292pp Apr 2016
978-1-78326-605-0 US$130 £108

Materials and Energy - Vol 5
Handbook of Green Materials
Processing Technologies, Properties and Applications (In 4 Volumes)
edited by Kristiina Oksman (LuleåUniversity of Technology, Sweden), Aji P Mathew (LuleåUniversity of Technology, Sweden), Alexander Bismarch (Vienna University of Technology, Austria), Orlando Rojas (North Carolina State University, USA) & Mohini Sain (University of Toronto, Canada)

1124pp Jun 2014
978-981-4566-45-2 (Set) US$1580 £1311
Packaging materials, assembly processes, and the detailed understanding of multilayer mechanics have enabled much of the progress in miniaturization, reliability, and functional density achieved by modern electronic, microelectronic, and nanoelectronic products. The design and manufacture of miniaturized packages, providing low-loss electrical and/or optical communication, while protecting the semiconductor chips from environmental stresses and internal power cycling, require a carefully balanced selection of packaging materials and processes. Due to the relative fragility of these semiconductor chips, as well as the underlying laminated substrates and the bridging interconnect, selection of the packaging materials and processes is inextricably bound with the mechanical behavior of the intimately packaged multilayer structures, in all phases of development for traditional, as well as emerging, electronic product categories.

It provides a comprehensive coverage of the configurations and techniques, assembly materials and processes, modeling and simulation tools, and experimental characterization and validation techniques for electronic packaging.

Each of the volumes presents the accumulated wisdom and shared perspectives of leading researchers and practitioners in the packaging of electronic components.

It will be of great interest to packaging engineers, electronic product development engineers, and product managers, as well as to researchers in the assembly and mechanical behavior of electronic and photonic components and systems.

**Readership:** It will be most beneficial to undergraduate and graduate students studying materials, mechanical, electrical, and electronic engineering, with a strong interest in electronic packaging applications.

**Introductory Offer till Dec 31, 2019**

US$990  £870
### Materials Concepts for Solar Cells

**2nd Edition**

by Thomas Dittrich (Helmholtz Center Berlin for Materials and Energy, Germany)

The last five years had several breakthroughs in photovoltaics and in the research on solar cells and solar cell materials. These are added in this second edition. For example, the high potential of crystalline silicon with charge-selective hetero-junctions and alkaline treatments of thin-film absorbers, based on chalcopyrite, enabled new records. Research activities were boosted by the class of hybrid organic-inorganic metal halide perovskites, a promising newcomer in the field.

<table>
<thead>
<tr>
<th>Pages</th>
<th>Date</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>568pp</td>
<td>Mar 2018</td>
<td>US$72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US$128</td>
</tr>
</tbody>
</table>

### Surface Photovoltage Analysis of Photactive Materials

by Thomas Dittrich (Helmholtz-Zentrum Berlin für Materialien und Energie, Germany), Steffen Fengler (Helmhut-Schmidt-Universität, Germany)

This book shares experience in measuring and analyzing SPV signals and addresses researchers and developers interested in learning more about and in applying SPV methods. For this purpose, basics about processes in photactive materials and principles of SPV measurements are combined with examples from research and development over the last two decades.

SPV measurements with Kelvin probes, fixed capacitors, electron beams and photoelectrons are explained. Details are given for continuous, modulated and transient SPV spectroscopy. Simulation principles of SPV signals by random walks are introduced and applied for small systems. Application examples are selected for the characterization of silicon surfaces, gallium arsenide layers, electronic states in colloidal quantum dots, transport phenomena in metal oxides and local charge separation across photocatalytic active crystallites.

<table>
<thead>
<tr>
<th>Pages</th>
<th>Date</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>290pp</td>
<td>Nov 2019</td>
<td>US$98</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US$128</td>
</tr>
</tbody>
</table>
This book describes the application of ultrafast laser science and technology in materials and processing relevant to industry today, including ultrafast laser ablation where fundamental studies have led to the development of the world’s first femtosecond photomask repair tool. Semiconductor manufacturing companies worldwide use the tool to repair photomask defects, saving hundreds of millions in production costs.

The most up-to-date ultrafast laser technologies are described and methods to generate high harmonics for photoelectron spectroscopy of industrially important materials are covered. Polycrystalline photovoltaic materials from single- and polycrystalline materials are described. Extensions to new implementation. Basic device physics merged with photoemission studies from single- and polycrystalline materials are described. Extensions to new methods for extracting key device properties of metal-oxide-semiconductor structures, including band offsets, effective work functions, semiconductor band bending and defect-related charging in a number of technologically important gate oxides are detailed. Polycrystalline photovoltaic materials and heterostructures as well as organic light emitting materials are covered.

This book describes both the history, and most recent applications of ultrafast laser science to industrially relevant materials, processes and devices.

Readership: This book provides a basis for researchers and technologists interested in the applications of ultrafast lasers and as such will be relevant to a wide range of readers in both large and small industrial settings as well as materials science and engineering schools at universities.

208pp May 2018
978-981-4569-00-2 US$138 £115

Popular Book

Ivan Stranski

The Grandmaster of Crystal Growth
by Ivan V Markov (Bulgarian Academy of Sciences, Bulgaria)

This book describes the life and scientific achievements of Ivan Stranski, Bulgarian-German physical chemist and the father of crystal growth, against the historical backdrop of wars, massacres, and remarkable scientific discoveries in the 20th century. The Kossel-Stranski model of crystal growth and the Stranski-Krastanov mode of growth of thin epitaxial films are named after Ivan Stranski — just two of the many scientific ideas and concepts.

224pp Jan 2019
978-981-3270-45-9 US$78 £70

Crystal Growth for Beginners

Fundamentals of Nucleation, Crystal Growth and Epitaxy
3rd Edition
by Ivan V Markov (Bulgarian Academy of Sciences, Bulgaria)

632pp Feb 2017
978-981-3143-42-5 US$148 £123

Materials and Energy - Vol 6

Handbook of Solid State Batteries
2nd Edition
edited by Nancy J Dudney (Oak Ridge National Laboratory, USA), William C West (Nagoya University, Japan) & Jagjit Nanda (Oak Ridge National Laboratory, USA)

836pp Aug 2015
978-981-4651-89-9 US$235 £195

Contemporary Topics in Semiconductor Spintronics

Electronic and Photonic Applications
edited by Supriyo Bandyopadhyay (Virginia Commonwealth University, USA), Marc Cahay (University of Cincinnati, USA) & Jean-Pierre Leburton (University of Illinois at Urbana-Champaign, USA)

272pp Mar 2017
978-981-3149-81-6 US$128 £106

Materials and Energy - Vol 8

Thin Films on Silicon

X-Ray Scattering from Semiconductors and Other Materials
3rd Edition
by Paul F Fewster (PANalytical Research Centre, UK)

552pp Oct 2016
978-981-4740-47-0 US$168 £139

X-Ray Scattering from Semiconductors and Other Materials

3rd Edition
by Paul F Fewster (PANalytical Research Centre, UK)

512pp Apr 2015
978-981-4436-92-2 US$119 £99

Engineering Materials for Technological Needs - Vol 2

Functional Materials

Electrical, Dielectric, Electromagnetic, Optical and Magnetic Applications
by Deborah D L Chung (State University of New York at Buffalo, USA)

364pp Apr 2010
978-981-4287-16-6 US$45 £37
978-981-4287-15-9 US$85 £71
World Scientific Reference on Spin in Organics
(In 4 Volumes)
Volume 1: Spin Injection and Transport
Volume 2: Spintface
Volume 3: Magnetic Field Effects
Volume 4: Spin in Organics
edited by Zeev Valy Vardeny (University of Utah, USA), Markus Wohlgenannt (University of Iowa, USA)

This reference work on Spin in Organics contains four volumes dedicated to spin injection, spin transport, spin pumping, organic magnetic field effect, and molecular spintronics.

The book series is comprehensive in that it summarizes all aspects of Organic Spintronics to date. The first two volumes deal with spin injection, spin transport, spin manipulation and spin pumping into organic semiconductors. The main device that is thoroughly discussed here is the organic spin-valve, where spinterface states at the interface between the organic semiconductor and the ferromagnetic (FM) electrode has been the focus of many chapters. An interesting emerging subject is the role of chirality in the organic layer of the device. A relatively new method of achieving spin aligned carriers in organic semiconductors is spin pumping, where magnons in the FM substrate generate spin aligned carriers in the organic layer at the FM/organic interface.

The third volume deals mainly with magnetic field effect in organic devices. Several spin-mixture processes that lead to magnetic field effect in devices and films are thoroughly discussed, such as hyperfine interaction, direct spin-orbit coupling, indirect spin-orbit coupling via $\Delta g$, triplet-triplet annihilation, and thermal spin alignment. The similarity between the magnetic field effect obtained in optoelectronic devices based on organic semiconductors and the novel hybrid organic-inorganic semiconductors is also a subject of intense interest. The fourth volume deals with spin in molecular films and devices. It includes thorough discussion of spin exchange interaction that leads to organic ferromagnets, as well as manifestation of various spin interactions in thin molecular films and devices.

Readership: Advanced graduate students, scientists and researchers in the field of spintronics and related fields.

World Scientific Reference of Hybrid Materials
(In 3 Volumes)
Volume 1: Block Copolymers
Volume 2: Devices from Hybrid and Organic Materials
Volume 3: Sol-Gel Strategies for Hybrid Materials

Editor-in-chief: Mato Knez (CIC nanoGUNE, Spain & IKERBASQUE, Spain)

Volume editors: Yong Wang (Nanjing Tech University, China), Vida Turkovic (University of Southern Denmark, Denmark), Morten Madsen (University of Southern Denmark, Denmark), Horst-Günter Rubahn (University of Southern Denmark, Denmark) and Mohamed Oubaha (Technological University Dublin, Ireland)

The World Scientific Reference of Hybrid Materials is a set of 3 volumes, which covers the fascinating area of materials science at the intersection between purely polymeric, organic or inorganic materials. The rapidly developing research on hybrid materials is largely driven by the steadily increasing need of multifunctional materials in various branches of technology. However, much of the research is also driven by the curiosity of the researchers and the long lasting wish to merge the most beneficial properties of the various materials into one. The flexibility of polymers could, for example, be merged with the electronic conductivity of metals or the mechanical resistance of ceramics, which will be of great value for the industries.

This reference covers the areas of synthesis of such hybrid materials, which cover the fascinating area of materials science at the intersection between purely polymeric, organic or inorganic materials. The rapidly developing research on hybrid materials is largely driven by the steadily increasing need of multifunctional materials in various branches of technology. However, much of the research is also driven by the curiosity of the researchers and the long lasting wish to merge the most beneficial properties of the various materials into one. The flexibility of polymers could, for example, be merged with the electronic conductivity of metals or the mechanical resistance of ceramics, which will be of great value for the industries.

This reference covers the areas of synthesis of such hybrid materials, which cover the fascinating area of materials science at the intersection between purely polymeric, organic or inorganic materials. The rapidly developing research on hybrid materials is largely driven by the steadily increasing need of multifunctional materials in various branches of technology. However, much of the research is also driven by the curiosity of the researchers and the long lasting wish to merge the most beneficial properties of the various materials into one. The flexibility of polymers could, for example, be merged with the electronic conductivity of metals or the mechanical resistance of ceramics, which will be of great value for the industries.

Readership: Research students and researchers in the field of new materials.

Introductory Offer till Nov 30, 2019
Compendium on Electromagnetic Analysis
From Electrostatics to Photonics: Fundamentals and Applications for Physicists and Engineers (In 5 Volumes)
Volume 1: Electrostatic and Magnetic Phenomena
Volume 2: The New Generation of Electric Machines
Volume 3: Antennas, Antenna Arrays and Microwave Devices
Volume 4: Optics and Photonics I
Volume 5: Optics and Photonics II
Editor-in-chief: Igor Tsukerman (University of Akron, USA)
Edited by Michael Donahue (National Institute of Standards & Technology, USA), Yilmaz Sozer (University of Akron, USA), Thomas Bauerfeind (Graz University of Technology, Austria) & Vadim A Markel (University of Pennsylvania, USA)
The five-volume set may serve as a comprehensive reference on electromagnetic analysis and its applications at all frequencies, from static fields to optics and photonics. The material includes micro- and nanomagnetics, the new generation of electric machines, renewable energy, hybrid vehicles, low-noise motors; antennas and microwave devices, plasmonics, metamaterials, lasers, and more. Written at a level accessible to both graduate students and engineers, Electromagnetic Analysis is a comprehensive reference, covering methods and applications at all frequencies (from statics to optical). Each volume contains pedagogical/tutorial material of high archival value as well as chapters on state-of-the-art developments.

1300pp Dec 2019
978-981-3270-16-9 (Set)
US$1380  £1215
US$1280  £1125
Introductory Offer till Feb 28, 2020

Essential Textbooks in Chemistry
The Essence of Crystallography by Mark Ladd (University of Surrey, UK)
250pp Oct 2019
978-1-78634-631-5
US$68  £60

Explosive Ferroelectric Generators From Physical Principles to Engineering by Sergey I Shkuratov (Loki Incorporated, USA)
240pp May 2019
978-981-3278-57-8
US$118  £105

Critical Materials Underlying Causes and Sustainable Mitigation Strategies edited by S Erik Offerman (Delft University of Technology, The Netherlands)
392pp Mar 2019
978-981-3271-04-3
US$138  £120

Dental Biomaterials 3rd Edition edited by Edward Sacher (École Polytechnique Montréal, Canada), Rodrigo França (University of Manitoba, Canada)
402pp Jan 2019
978-981-3225-67-1
US$158  £140

Peking University-World Scientific Advanced Physics Series - Vol 6
Superconductivity Centennial edited by Rushan Han (Peking University, China)
296pp Nov 2018
978-981-3273-13-9
US$118  £105

Pyrolysis – Gas Chromatography Mass Spectrometry of Polymeric Materials by Peter Kusch (Bonn-Rhein-Sieg University of Applied Sciences, Germany)
268pp Nov 2018
978-1-78634-575-2
US$108  £95

Peking University-World Scientific Advanced Physics Series - Vol 5
Quasi-One-Dimensional Organic Superconductors by Wei Zhang (Renmin University of China, China)
300pp Aug 2018
978-981-3272-94-1
US$108  £95

Fundamentals of Tribology 3rd Edition by Ramsey Gohar (Imperial College London, UK), Homer Rahnejat (Loughborough University, UK)
520pp Sep 2018
978-1-78634-517-2
US$128  £115

Complex Oxides An Introduction edited by Thomas Vogt (University of South Carolina, USA), Douglas J Buttrey (University of Delaware, USA)
240pp May 2019
978-981-3278-57-8
US$118  £105

Electromagnetic Anisotropy and Bianisotropy A Field Guide 2nd Edition by Tom G Mackay (University of Edinburgh, UK & Pennsylvania State University, USA), Akhlesh Lakhtakia (Pennsylvania State University, USA)
288pp May 2019
978-981-120-313-8
US$98  £85
NANO
http://www.worldscientific.com/nano
Impact Factor: 1.293
Indexed in Web of Science & Scopus
NANO is an international peer-reviewed journal for nanoscience and nanotechnology that presents forefront fundamental research and new emerging topics. It features timely scientific reports of new results and technical breakthroughs and also contains interesting review articles about recent hot issues.

Functional Materials Letters
http://www.worldscientific.com/fml
Impact Factor: 1.333
Indexed in Web of Science & Scopus
Functional Materials Letters is an international peer-reviewed scientific journal for original contributions to research on the synthesis, behavior and characterization of functional materials. The journal seeks to provide a rapid forum for the communication of novel research of high quality and with an interdisciplinary flavor. The journal is an ideal forum for communication amongst materials scientists and engineers, chemists and chemical engineers, and physicists in the dynamic fields associated with functional materials.

Surface Review and Letters
http://www.worldscientific.com/srl
Indexed in Web of Science & Scopus
The scope of the journal covers a broad range of topics in experimental and theoretical studies of surfaces and interfaces. Both the physical and chemical properties are covered. The journal also places emphasis on emerging areas of cross-disciplinary research where new phenomena occur due to the presence of a surface or an interface. Representative areas include surface and interface structures; their electronic, magnetic and optical properties; dynamics and energetics; chemical reactions at surfaces; phase transitions, reconstruction, roughening and melting; defects, nucleation and growth; and new surface and interface characterization techniques.

SPIN
http://www.worldscientific.com/spin
Indexed in Web of Science & Scopus
Spin electronics encompasses a multidisciplinary research effort involving magnetism, semiconductor electronics, materials science, chemistry and biology. SPIN aims to provide a forum for the presentation of research and review articles of interest to all researchers in the field.

International Journal of Modern Physics B
http://www.worldscientific.com/ijmpb
Indexed in Web of Science & Scopus
This journal covers the most important aspects and the latest developments in Condensed Matter Physics, Statistical Physics, as well as Atomic, Molecular and Optical Physics. A strong emphasis is placed on topics of current interest, such as cold atoms and molecules, new topological materials and phases, and novel low dimensional materials. One unique feature of this journal is its review section which contains articles with permanent research value besides the state-of-the-art research work in the relevant subject areas.

International Journal of Computational Materials Science and Engineering
http://www.worldscientific.com/ijcmse
Impact Factor: 1.333
Indexed in Web of Science
The objective of the journal is the publication and wide electronic dissemination of innovative and consequential research in all aspects computational materials science and engineering, featuring the most advanced mathematical modeling and numerical methodology developments. It will aim to attract and solicit high-quality original research papers in all aspects of computational materials science and engineering with special emphasis on the most current topics of interest to the associated research communities.

Nano LIFE
http://www.worldscientific.com/nl
Indexed in Web of Science
Nano LIFE facilitates interactions and collaborations between the nano and medical research communities that are more focused on solving key problems based on emerging nanoscience and technologies. It summarizes the wealth of experimental results in both nanomaterials and biomedicine and introduces new aspects of nanoscience relevant to biological and medical applications.

International Journal of Nanoscience
http://www.worldscientific.com/ijn
Indexed in Web of Science & Scopus
This inter-disciplinary, internationally-reviewed research journal covers all aspects of nanometer scale science and technology. Articles in any contemporary topical areas are sought, from basic science of nanoscale physics and chemistry to applications in nanodevices, quantum engineering and quantum computing.
Journal of Molecular and Engineering Materials
http://www.worldscientific.com/imem
Indexed in Web of Science
JMEM targets at reviews, communications and regular papers in all areas under molecular materials and engineering materials. Molecular materials is an intersecting field of materials and molecular science, whereas engineering materials integrates materials research with the broad engineering field. The journal aims to publish novel, high-quality, and high-impact works in (1) materials design, synthesis and growth; (2) materials analysis and characterization; (3) materials properties and functions; (4) materials fabrication and device manufacturing; and (5) system integration and applications of materials.

Journal of Micromechanics and Molecular Physics
http://www.worldscientific.com/jmmp
The journal provides an international academic forum to disseminate fundamental researches and developments in nanomechanics and micromechanics of materials. The Journal focuses on theoretical developments, experimental innovations, and computational and simulation methods in the field of nanoscale and nanostructured materials, composite materials, defect mechanics and physics, and discovery of novel advanced materials, with emphasis on mechanics and physics of microstructures, characterization and modeling, and material design and material manufacture processing, and interrelation/coloration between material micro- and nanostructure with macroscale functions.

Journal of Advanced Dielectrics
http://www.worldscientific.com/jad
Indexed in Web of Science & Scopus
Journal of Advanced Dielectrics is an international peer-reviewed journal for original contributions on the understanding and applications of dielectrics in modern electronic devices and systems.

Molecular Frontiers Journal
http://www.worldscientific.com/mfi
Indexed in Web of Science & Scopus
Launched in June 2017
Original lecture topics of Molecular Frontiers Foundation (hosted by the Royal Swedish Academy of Sciences)
The Molecular Frontiers Journal fosters exploration and discovery, helping to realize science’s promise. Connecting scientists from a multitude of disciplines around matters of global significance, to encourage new perspectives on scientific quandaries that can lead to breakthroughs.
This journal is a compilation representing a sampling of the wide-range of lecture topics held through MFF over the past decade.

Technology
http://www.worldscientific.com/technology
Fashioned as a high-impact, high-visibility, top-echelon publication, this new ground-breaking journal - TECHNOLOGY - will feature the development of cutting-edge new technologies in a broad array of emerging fields of science and engineering. The content will have an applied science and technological slant with a focus on both innovation and application to daily lives. It will cover diverse disciplines such as health and life science, energy and environment, advanced materials, technology-based manufacturing, information science and technology, and marine and transportation technologies.

Virtual Issues by Topics

Virtual Issue on Lithium Ion Batteries
Virtual Issue: Photoelectrochemical
Virtual Issue: Sodium Ion Batteries

Free access to featured articles and sample issues

Materials Science journals
Visit https://tinyurl.com/mscjournal

Nanoscience journals
Visit https://tinyurl.com/nanojnl

Get alerted about:
- Subscriber Discount
- New and forthcoming publications
- Free online chapters
- New book reviews
- Podcasts and videos of author interviews
- Useful tips in research

Sign up now @ www.worldscientific.com/page/newsletter-sign-up

Join over 500,000 subscribers who receive our email newsletters.
Lessons from Nanoscience: A Lecture Notes Series - Vol 7
Applied Thermal Measurements at the Nanoscale
A Beginner’s Guide to Electrothermal Methods
by Zhen Chen (Southeast University, China), Chris Dames (University of California, Berkeley, USA)

- This book serves as a practical guide for novices to design and conduct measurements of thermal properties at the nanoscale using electrothermal techniques.
- A handbook or manual for a novice researcher to get up to speed and effective in performing their own measurements independently. It is particularly helpful for someone setting up their own experiment for the first time.
- Integrated use of thermal design coupled with practical experimental considerations, an approach showing how a microfabricated experimental platform can be optimized to make the measurement results most sensitive to the property of the unknown sample, and highlights the trade-offs between simplicity of microfabrication and simplicity of the heat transfer model.
- Offers some of the most beginner-friendly treatments available for various practical experimental matters, notably including the Monte Carlo approach to uncertainty analysis and detailed advice on configuring a lock-in amplifier for delicate electrothermal measurements

160pp  Sep 2018
978-981-3271-10-4  US$98  £85

2D Inorganic Materials beyond Graphene
edited by C N R Rao (Jawaharlal Nehru Centre for Advanced Scientific Research, India & Indian Institute of Science, India), U V Waghmare (Jawaharlal Nehru Centre for Advanced Scientific Research, India)

- Advanced Textbooks in Physics
Quantum States and Scattering in Semiconductor Nanostructures
by Camille Ndebeka-Bandou (ETH Zürich, Switzerland), Francesca Carosella (Ecole Normale Supérieure, France) & Gérard Bastard (Ecole Normale Supérieure, France)

448pp  Sep 2017
978-1-78634-302-4(pbk)  US$68  £60
978-1-78634-301-7  US$118  £98

Size Really Does Matter
The Nanotechnology Revolution
by Colm Durkan (University of Cambridge, UK)

This book works to dispel the myths and unravel the truth about this branch of science and technology that has already touched many aspects of our lives, from cheaper and faster medical diagnostic tools and more effective ways to deliver existing ones to helping to create new medicines and electronic devices.

It is written in an accessible style with genuine enthusiasm for the topics it addresses, including how nanotechnology hopes to address problems in several fields, such as cancer research, novel devices, new materials and improved manufacturing methods for existing products.

Readership: General audience interested in nanotechnology and its relation to everyday life.

236pp  Mar 2019
978-1-78634-797-8(pbk)  US$28  £15
978-1-78634-661-2  US$58  £38

Nanomaterials for Energy Conversion and Storage
edited by Dunwei Wang (Boston College, USA), Guozhong Cao (University of Washington, USA)

The use of nanomaterials in energy conversion and storage represents an opportunity to improve the performance, density and ease of transportation in renewable resources. This book looks at the most recent research on the topic, with particular focus on artificial photosynthesis and lithium-ion batteries as the most promising technologies to date. Research on the broad subject of energy conversion and storage calls for expertise from a wide range of backgrounds, from the most fundamental perspectives of the key catalytic processes at the molecular level to device scale engineering and optimization.

836pp  Jan 2018
978-1-78634-362-8  US$239  £210
Lessons from Nanoscience: A Lecture Notes Series - Vol 6
Fundamentals of Nanotransistors
A Beginner’s Guide to Electrothermal Methods
by Mark Lundstrom (Purdue University, USA)

- The lectures take a unique approach that is physically insightful, mathematically simple, and that works for nano-devices as well as for micro and macro devices
- The lectures are designed to be broadly accessible to anyone with an undergraduate degree in the physical sciences or engineering
- The lectures are complemented with online lecture by the author

The book provides readers with an understanding of the essential physics of nanoscale transistors as well as some of the practical technological considerations and fundamental limits. This book is written in a way that is broadly accessible to students with only a very basic knowledge of semiconductor physics and electronic circuits.

Readership: Any student and professional with an undergraduate degree in the physical sciences or engineering.

388pp Sep 2017
978-981-4571-73-9pbk) US$40 £35
978-981-4571-72-2 US$85 £71
World Scientific Series in Nanoscience and Nanotechnology - Vol 16
World Scientific Handbook of Metamaterials and Plasmonics
(In 4 Volumes)

Volume 1: Electromagnetic Metamaterials
Volume 2: Elastic, Acoustic, and Seismic Metamaterials
Volume 3: Active Nanoplasmonics and Metamaterials
Volume 4: Recent Progress in the Field of Nanoplasmonics

Editor-in-Chief: Stefan A Maier (Imperial College London, UK)
Volume editors: Ekaterina Shamonina (University of Oxford, UK), Richard Craster (Imperial College London, UK), Sébastien Guenneau (Institut Fresnel and Aix-Marseille Université, France), Ortwin Hess (Imperial College London, UK), Javier Aizpurua (Center for Materials Physics in San Sebastian (CSIC-UPV/EHU), Spain)

The first of its kind to cover the whole spectrum of metamaterials, from electromagnetic to acoustic, elastic, seismic
Charts the progress of the field over the last three years
Written in an accessible style to be of use for students, teachers, industry researchers
With contributions from the leading experts of the field
Includes a special volume with recent progress in nanoplasmonics, the basic of photonic metamaterials

Metamaterials represent a new emerging innovative field of research which has shown rapid acceleration over the last couple of years. This 4-volume Handbook presents the richness of the field of metamaterials in its widest sense, describing artificial media with sub-wavelength structure for control over wave propagation in four volumes.
Volume 1 focuses on the fundamentals of electromagnetic metamaterials in all their richness, including metasurfaces and hyperbolic metamaterials. Volume 2 widens the picture to include elastic, acoustic, and seismic systems, whereas Volume 3 presents nonlinear and active photonic metamaterials. Finally, Volume 4 includes recent progress in the field of nanoplasmonics, used extensively for the tailoring of the unit cell response of photonic metamaterials.

Readership: Advanced graduate students, scientists and researchers in the field of nanomaterials and nanostructures.

1992pp Dec 2017
978-981-3270-63-3 (Set) US$1850 £1628

Titles of Interest

Computational and Mathematical Methods in Cardiovascular Physiology
by Liang Zhong (National Heart Centre Singapore, Singapore), Ru San Tan (National Heart Centre Singapore, Singapore), Eddie Yin Kwee Ng (Nanyang Technological University, Singapore) & Dhanjoo N Ghista (University 2020 Foundation, USA)
460pp May 2019
978-981-3270-63-3 (Set) US$1850 £1628

History of Concrete
A Very Old and Modern Material
by Per Jahren (P J Consult AS, Norway), Tongbo Sui (Sinoma Research Institute, China)
404pp Jul 2018
978-981-3145-73-3 US$135 £112

Flexoelectricity in Solid, Soft and Living Matter
by Yordan G Marinov (Bulgarian Academy of Sciences, Bulgaria), Alexander G Petrov (Bulgarian Academy of Sciences, Bulgaria)
300pp Feb 2020
978-981-3279-00-1 US$118 £105

Engineering Models in High-Speed Penetration Mechanics and Their Applications
by Gabi Ben-Dor (Ben-Gurion University of the Negev, Israel), Anatoly Dubinsky (Ben-Gurion University of the Negev, Israel) & Tov Elperin (Ben-Gurion University of the Negev, Israel)
1116pp Mar 2019
978-981-3273-46-7 (Set) US$595 £525

Optoelectronic Devices
by Niloy K Dutta (University of Connecticut, USA), Xiang Zhang (University of Connecticut, USA)
588pp Aug 2018
978-981-3236-69-1 US$168 £148

Optical Spectroscopy
Fundamentals and Advanced Applications
by Emil Roduner (University of Stuttgart, Germany & University of Pretoria, South Africa), Tjaart Krüger (University of Pretoria, South Africa), Patricia Forbes (University of Pretoria, South Africa) & Katharina Kress (University of Stuttgart, Germany)
268pp Jan 2019
978-1-78634-610-0 US$98 £85
Title Index

Author Index

For more information, visit: www.worldscientific.com
World Scientific Series in Nanoscience and Nanotechnology - Volume 18

Handbook of Synthetic Methodologies and Protocols of Nanomaterials
In 4 Volumes

Editor-in-chief
Yadong Yin
University of California, Riverside, USA

Volume editors
Yu Lu (University of California, Riverside, USA)
Yat Li (University of California, Santa Cruz, USA)
Yiding Liu (Southwest Petroleum University, P R of China)
Le He (Soochow University, P R of China)
Yihan Zhu (Zhejiang University of Technology, P R of China)
Yu Han (King Abdullah University of Science and Technology, Saudi Arabia)

Volume 1: Solution Phase Synthesis of Nanomaterials
Volume 2: Gas Phase Synthesis of Nanomaterials
Volume 3: Unconventional Methods for Nanostructure Fabrication
Volume 4: Characterization Methods for Nanostructures

With over 100 illustrations, this comprehensive book set includes four volumes, covering the methods and protocols for the synthesis, fabrication, and characterization of nanomaterials.

• This 4-volume Handbook set is a comprehensive reference covering an exhaustive list of nanomaterials in various compositions, morphologies, and surface properties
• It is organized appropriately to allow quick finding of the nanomaterials of interest and the methods of making it
• In addition to protocols for the synthesis and fabrication of the nanomaterials, it also introduces methods for characterizing their morphological and physical properties

2500pp Oct 2019
978-981-3277-78-6 (Set) US$1950 £1715
978-981-3277-87-8 (ebook) US$2925 £2575

Introductory Offer till Dec 31, 2019
US$1750 £1540

Sample chapters & more info at https://tinyurl.com/ws11200
Chemistry/Materials Science/Nanotechnology Collections

At World Scientific we offer flexible purchasing models to help meet our customers’ needs. You can purchase our Chemistry/Materials Science/Nanotechnology books in a subject collection or, if you prefer, use our Pick and Choose option. Our Chemistry/Materials Science/Nanotechnology collection is just one part of our full e-books list – a list which now stands at over 7,000 titles!

Purchase Options

<table>
<thead>
<tr>
<th>Collection</th>
<th>Count</th>
<th>List Price (US$)</th>
<th>Discounted Price (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>60</td>
<td>20,000</td>
<td>Contact us for a quote</td>
</tr>
<tr>
<td>2018</td>
<td>60</td>
<td>20,000</td>
<td>US$2,000 – US$10,000</td>
</tr>
<tr>
<td>1981–2017</td>
<td>519</td>
<td>155,860</td>
<td>&gt;US$10,000 15% discount</td>
</tr>
</tbody>
</table>

Why purchase our Chemistry/Materials Science/Nanotechnology Collection?

✦ Content written by prominent Chemistry/Materials Science/Nanotechnology experts such as Nobel Laureates & Wolf Prize-winners
✦ A great resource of monographs, review papers and conference proceedings
✦ A wide range of topics covering all aspects of Chemistry/Materials Science/Nanotechnology
✦ Generous discounts when buying a collection
✦ Indexed in Primo Central Index, EBSCO Discovery Services, WorldCat/OCLC, CNKI
✦ Electronic archiving with Portico

Main features of our E-Books:

✦ Perpetual access model
✦ No minimum purchase required
✦ DRM-free content
✦ 24 x 7 access for unlimited concurrent users

In addition, your library will enjoy

✦ A fully integrated platform to search across e-journals, e-archives and e-books
✦ MARC records for easy integration to OPAC
✦ Counter-compliant usage statistics
✦ No hosting fees

For prices and title listing, please refer to [https://www.worldscientific.com/page/librarians](https://www.worldscientific.com/page/librarians)