

Materials Science 2012

DIGITAL IMAGING DETECTORS FOR ELECTRON MICROSCOPY

by **August I Kirkland & Grigore Moldovan**
(University of Oxford, UK)

This book provides a comprehensive introduction to electron detectors, bringing together the most important achievements and highlighting the most important advances. It discusses theoretical, technological and functional aspects of electron detectors, building a natural progression through the main concepts in detection as well as providing an excellent resource for teaching and for new researchers in electron microscopy. The book also presents a critical outline of the new generation of electron detectors, which highlights the latest breakthroughs and illustrates how these will further push the limits of electron microscopy.

Readership: Undergraduates and graduates in materials science, materials scientists and electron microscopists.

400pp Jun 2012
978-1-84816-284-6 US\$102 £70
978-1-84816-285-3(pbk) US\$68 £47

SCANNING TRANSMISSION ELECTRON MICROSCOPY OF NANOMATERIALS

Basics, Present Status and Future Prospects
by **Nobuo Tanaka**

(Nagoya University, Japan)

Textbook

The basics, present status and future prospects of high-resolution scanning transmission electron microscopy (STEM) are described in the form of a textbook for advanced undergraduates and graduate students. This volume covers recent achievements in the field of STEM obtained with advanced technologies such as spherical aberration correction, monochromator, high-sensitivity electron energy loss spectroscopy and the software of image mapping. The future prospects chapter also deals with z-slice imaging and confocal STEM for 3D analysis of nanostructured materials.

Readership: Graduate students and researchers in the field of nanomaterials and nanostructures.

400pp Jun 2012
978-1-84816-789-6 US\$128 £83
978-1-84816-790-2(ebook) US\$166

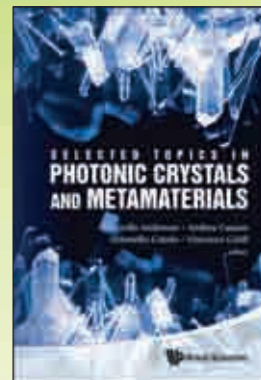
SELECTED TOPICS IN PHOTONIC CRYSTALS AND METAMATERIALS

edited by **Antonello Andreone** (University of Naples "Federico II", Italy), **Andrea Cusano**, **Antonello Cutolo** & **Vincenzo Galdi** (University of Sannio, Italy)

This volume focuses on a research field that has emerged in the last decade as one of the most promising and rapidly advancing. The interest towards photonic crystals and metamaterials and their strategic importance are evident in the steadily growing rate of topical publications, the recent creation of topical journals, conferences and workshops promoted by several scientific societies, the research efforts at international level, and the number of proposed novel applications based on them.

Readership: Graduate students, researchers and academics interested in electromagnetics, optics, information and communication technologies.

548pp Jun 2011
978-981-4355-18-6 US\$150 £98 • 978-981-4355-19-3(ebook) US\$195



ADAPTIVE AND FUNCTIONAL POLYMERS, TEXTILES AND THEIR APPLICATIONS

by **Jinlian Hu** (The Hong Kong Polytechnic University)

Adaptive polymers include those which are responsive to different stimuli — namely physical, mechanical, chemical and biological — with controlled and/or predictable behavior. Many technological breakthroughs and scientific advances have been made in the last few decades and this volume aims to cover the most up-to-date studies and achievements in some adaptive polymers, in terms of principles of adaptiveness, properties, structure design and characterization with an emphasis on their applications, particularly in textiles, skin care, medicine and other related areas.

Readership: Chemists, graduate students and researchers involved in polymers and textiles.

416pp Feb 2011
978-1-84816-475-8 US\$118 £73 • 978-1-84816-476-5(ebook) US\$153



COMPUTATIONAL STUDIES OF NEW MATERIALS II

From Ultrafast Processes and Nanostructures to Optoelectronics, Energy Storage and Nanomedicine
edited by **Thomas F George** (University of Missouri, St Louis, USA), **Daniel Jelski** (State University of New York, New Paltz, USA), **Renat R Letfullin** (Rose-Hulman Institute of Technology, USA) & **Guoping Zhang** (Indiana State University, USA)

This book was published by World Scientific in 1999 and edited by Daniel Jelski and Thomas F George. Much has happened during the past decade. Advances have been made on the same materials discussed in the 1999 book, including fullerenes, polymers and nonlinear optical processes in materials, which are presented in this 2010 book. In addition, different materials and topics are comprehensively covered, including nanomedicine, hydrogen storage materials, ultrafast laser processes, magnetization and light-emitting diodes.

Readership: Graduate students and researchers in academy, industry and governmental labs who are interested in computational studies of materials.

540pp Jan 2011
978-981-4287-18-0 US\$155 £101 • 978-981-4287-19-7(ebook) US\$202





IISc Research Monographs Series

AQUEOUS LUBRICATION

Natural and Biomimetic Approaches

edited by **Nicholas Spencer** (*ETH Zurich, Switzerland*)

Man lubricates mostly with oil. Nature lubricates exclusively with water. Pure water is a poor lubricant, but the addition of proteins, especially glycoproteins, can modify surfaces to make them far more lubricating at slow speeds. A host of important applications of water-based lubrication are already in place in the personal care and food industries, and further industrial applications of water-based lubrication could have a significant positive impact on the environment. This book is the first of its kind. It brings together the latest research in biological and biomimetic, water-based lubrication and is authored by the world's experts in the field.

Readership: Academic and industrial tribologists, materials scientists, biomechanics professionals, and physicists and chemists with an interest in tribology.

300pp **Apr 2012**
978-981-4313-76-6 **US\$95** **£59**
978-981-4313-77-3(ebook) **US\$124**

EVAPORATIVE SELF-ASSEMBLY OF ORDERED COMPLEX STRUCTURESedited by **Zhiqun Lin** (*Iowa State University, USA*)

This book is unique in this regard in providing a wide spectrum of recent experimental and theoretical advances in evaporative self-assembly techniques. The ability to engineer an evaporative self-assembly process that yields a broad range of complex, well-ordered and intriguing structures with small feature sizes composed of polymers of nanocrystals of different size and shapes as well as DNA over large areas offers tremendous potential for applications in electronics, optoelectronics, photonics, sensors, information processing and data storage devices, nanotechnology, high-throughput drug discovery, chemical detection, combinatorial chemistry, and biotechnology.

Readership: Graduate students, scientists and engineers in materials science and engineering, chemical engineering and physics.

300pp **Oct 2011**
978-981-4304-68-9 **US\$99** **£68**
978-981-4304-69-6(ebook) **US\$129**

IISc Centenary Lecture Series - Vol. 5

TAILORING SURFACES

Modifying Surface Composition and Structure for Applications in Tribology, Biology and Catalysis

by **Nicholas D Spencer** (*ETH Zurich, Switzerland*)

The works of the author — many of his crucial papers are included — deal with the understanding and modification of surfaces and span fields including catalysis, analytical surface science, self-assembled monolayers, tribology, biomaterials, superhydrophobicity and polymer coatings.

Readership: Academics, researchers, scientists, engineers involved in materials science and/or surface chemistry. In particular, those interested in modifying surfaces for tribological or biological purposes.

692pp **Mar 2011**
978-981-4289-42-9 **US\$220** **£136**
978-981-4289-43-6(ebook) **US\$286**

FUNCTIONAL PROPERTIES OF BIO-INSPIRED SURFACES**Bestseller**

Characterization and Technological Applications

edited by **Eduardo A Favret** (*Instituto Nacional de Tecnologia Agropecuaria, Argentina*) & **Néstor O Fuentes** (*Comisión Nacional de Energía Atómica, Argentina*)

"The book surveys an equally remarkable range of techniques for observing, manipulating, and quantifying the behavior of surfaces. In short, it is a book to be read to broaden one's appreciation of the range of relevant phenomena and then kept close at hand when a person plunges into a project."

Steven Vogel
Professor Emeritus (Duke University, USA)

Readership: Academics and professionals in biomimeticism and materials science.

416pp **Dec 2009**
978-981-283-701-1 **US\$141** **£97**
978-981-283-702-8(ebook) **US\$183**

World Scientific Lecture and Course Notes in Chemistry - Vol. 7

SPECTROSCOPY AND DYNAMICS OF ORIENTATIONALLY STRUCTURED ADSORBATESby **V M Rozenbaum** & **S H Lin** (*Academia Sinica, Taiwan*)

This book provides a detailed and rigorous presentation of the spectroscopy and dynamics of orientationally structured adsorbates. It is intended largely for specialists and graduate students in solid state theory and surface physics. To make the book readable also for beginners in surface science, a lucid style is used and a wealth of references on orientational surface structures and vibrational excitations in them is offered. The book is supplemented with two indices (alphabetical listing of subjects and authors, as well as cross-references) which will enable the reader to easily access the information both on principal concepts involved and on specific adsorbate compositions.

208pp **Nov 2002**
978-981-238-175-0 **US\$82** **£54**
978-981-277-650-1(ebook) **US\$107**

THE STRUCTURE OF RARE-EARTH METAL SURFACES**Bestseller**by **S D Barrett** (*University of Liverpool, UK*) & **S S Dhesi** (*European Synchrotron Radiation Facility, France*)

"The first chapter provides an excellent overview to the rare-earths ... The book is aimed at graduate students with an interest in crystallography, but has minimized the rigorous mathematical treatment favored by physicists."

RIC News

Readership: Researchers in surface and interface science, crystallography, condensed matter physics and computational physics.

260pp **Aug 2001**
978-1-86094-165-8 **US\$99** **£66**
978-1-84816-173-3(ebook) **US\$129**

SILICON SURFACES AND FORMATION OF INTERFACES

Basic Science in the Industrial World

by **Jarek Dabrowski** & **Hans-Joachim Müssig** (*Institute for Semiconductor Physics, Frankfurt*)

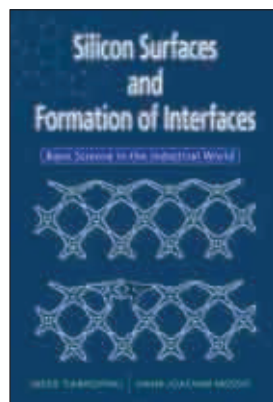
"... this book is well written and highly educational. I strongly recommend it for materials scientists interested in the properties of silicon as a microelectronic device material, and for micromechanical and photonics applications as well."

Physics Today

Readership: Graduate students and researchers in condensed matter physics, chemical physics and materials science.

576pp
978-981-02-3286-3
978-981-281-365-7(ebook)

May 2000
US\$146 £96
US\$190



POLYMER SURFACES, INTERFACES AND THIN FILMS

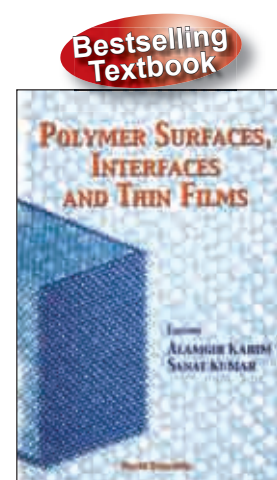
edited by **Alamgir Karim** (*National Institute of Standards & Technology, USA*) & **Sanat Kumar** (*Pennsylvania State University, USA*)

The theoretical and experimental study of polymers, polymer surfaces and thin films has undergone a revolution in the last 25 years. This book captures recent advances in this field. It covers equilibrium aspects, kinetics and reactions at interfaces. It is aimed not only at a research audience but also at beginners.

Readership: Scientists and engineers.

304pp
978-981-02-3864-3

Apr 2000
US\$145 £95



GLASSES, INSULATORS AND OPTICAL MATERIAL

FOUNDATIONS OF PHOTONIC CRYSTAL FIBRES (2nd Edition)

by **Frédéric Zolla**, **Gilles Renversez**, **André Nicolet**, **Sébastien Guenneau** (*Aix-Marseille University, France*), **Didier Felbacq** (*University of Montpellier II, France*), **Alexander Argyros**, **Boris Kuhlmeiy** & **Sergio Leon-Saval** (*The University of Sydney, Australia*)

The focus of this book lies at the meeting point of electromagnetic waveguides and photonic crystals. Although these are both widely studied topics, they have been kept apart until recently. The purpose of the first edition of this book was to give state-of-the-art theoretical and numerical viewpoints about exotic fibres which use "photonic crystal effects" and consequently exhibit some remarkable properties.

Readership: Researchers, lecturers, postgraduate students, professionals in physics and materials science.

500pp
978-1-84816-728-5

Jan 2012
US\$128 £83

Textbook

Bestseller



INTERACTIONS OF PHOTONS AND NEUTRONS WITH MATTER (Second Edition)

by **Sow-Hsin Chen** (*Massachusetts Institute of Technology*) & **Michael Kotlarchyk** (*Rochester Institute of Technology*)

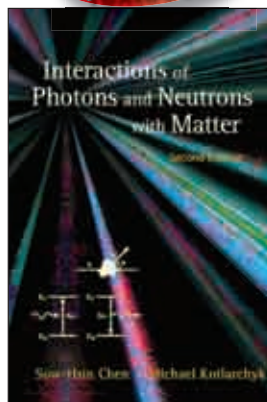
This invaluable book is based on lecture notes developed for a one-semester graduate course entitled "Interaction of Radiation with Matter", taught in the Department of Nuclear Science and Engineering at the Massachusetts Institute of Technology. The main objective of the course is to teach enough quantum and classical radiation theory to allow students in engineering and the applied sciences to understand and have access to the vast literature on applications of ionizing and non-ionizing radiation in materials research.

Readership: Students of engineering, materials science, physics and chemistry, as well as interdisciplinary researchers in science and engineering.

460pp
978-981-02-4214-5

Mar 2007
US\$125 £83

Bestselling Textbook



PHOTONIC GLASSES

edited by **Fuxi Gan** & **Lei Xu** (*Fudan University, China*)

This book introduces the fundamental mechanism of photonic glasses — the linear and nonlinear optical effects in glass under intense light irradiation: phot-induced absorption, refraction, polarization, frequency, coherence and monochromaticity changes. Emphasis is placed on new developments in the structure, spectroscopy and physics of new glassy materials for photonics applications, such as optical communication, optical data storage, new lasers and new photonic components and devices. The book presents the research results of the authors in new glasses for photonics over the last decade.

Readership: Graduate students and researchers in optical materials.

460pp
978-981-256-820-5
978-981-277-348-7(ebook)

Sep 2006
US\$137 £90
US\$178



Book Series on Complex Metallic Alloys - Vol. 4

MECHANICAL PROPERTIES OF COMPLEX INTERMETALLICS

edited by **Esther Belin-Ferré** (*Université Pierre et Marie Curie, France*)

This book will be the last one in a series of 4 books issued yearly as a deliverable of the research school established within the European Network of Excellence CMA (for Complex Metallic Alloys). It is written by reputed experts in the fields of metal physics, surface physics and chemistry, metallurgy and process engineering, combining expertise found inside as well as outside the network.

Readership: Master level students in physics and chemistry of condensed matter, metallurgy, mechanics of solids, process engineering and computer physics.

468pp **Nov 2010**
978-981-4322-16-4 **US\$150 £93**
978-981-4322-17-1(ebook) **US\$195**

Book Series on Complex Metallic Alloys - Vol. 3

SURFACE PROPERTIES AND ENGINEERING OF COMPLEX INTERMETALLICS

edited by **Esther Belin-Ferré** (*Université Pierre et Marie Curie, France*)

This book is the third in a series of 4 books issued yearly as a deliverable of the research school established within the European Network of Excellence CMA (for Complex Metallic Alloys). It is written by reputed experts in the fields of surface physics and chemistry, metallurgy and process engineering, combining expertise found inside as well as outside the network.

Readership: Advanced undergraduate and graduate students in physics, chemistry and materials science.

408pp **Feb 2010**
978-981-4304-76-4 **US\$133 £88**
978-981-4304-77-1(ebook) **US\$173**

Book Series on Complex Metallic Alloys - Vol. 2

PROPERTIES AND APPLICATIONS OF COMPLEX INTERMETALLICS

edited by **Esther Belin-Ferré** (*Université Pierre et Marie Curie, France*)

This book is the second of a series of books issued yearly as a deliverable to the European Community of the School established within the European Network of Excellence CMA. Written by reputed experts in the fields of metal physics, surface physics, surface chemistry, metallurgy, and process engineering, this book brings together expertise found inside as well as outside the network to provide a comprehensive overview of the current state of knowledge in CMAs.

Readership: Advanced undergraduate and graduate students in physics, chemistry and materials science; researchers and engineers.

460pp **Aug 2009**
978-981-4261-63-0 **US\$133 £88**
978-981-4261-64-7(ebook) **US\$173**

Bestseller

Bestseller

NANOSOLS AND TEXTILES

by **B Mahltig** (*GMBU, Germany*) &
T Textor (*DTNW, Germany*)

The book provides a short introduction to the sol-gel process, principles in modification of the sols and technical details of the application on textiles, covering in particular the chemical content of the topic. New properties of textiles gained from nanosols are summarized and explained in a broad range, focusing on the mechanical and thermal stability, repellent properties, optical properties, antistatic coatings and bioactive coatings.

Readership: Materials scientists, chemists, and textile engineers from academia and industry; biologists and other people working on the development of medical devices.

236pp **Oct 2008**
978-981-283-350-1 **US\$97 £64**
978-981-283-351-8(ebook) **US\$126**

World Scientific Lecture Notes in Physics - Vol. 76

EFFECTIVE FIELD APPROACH TO PHASE TRANSITIONS AND SOME APPLICATIONS TO FERROELECTRICS (2nd Edition)

by **Julio A Gonzalo**
(*Universidad Automa de Madrid, Spain*)

The main coverage is devoted to specific applications of the effective field concept to ferroelectric systems, both hydrogen bonded ferroelectrics, like those in the TGS family, and oxide ferroelectrics, like pure and mixed perovskites.

Readership: Materials scientists, physicists and chemists in academy and industry; final year undergraduates and graduates in materials science.

468pp **Aug 2006**
978-981-256-875-5 **US\$170 £112**
978-981-277-312-8(ebook) **US\$221**

For more information, visit:
www.worldscibooks.com

LIQUID CRYSTALS AND CRYSTALLOGRAPHY

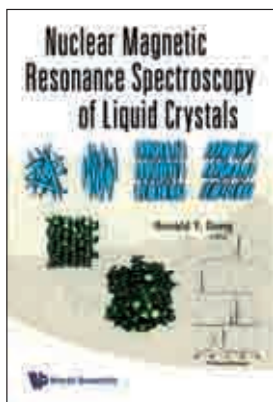
NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY OF LIQUID CRYSTALS

edited by **Ronald Y Dong**
(University of British Columbia, Canada)

This edited volume provides an extensive overview of how nuclear magnetic resonance can be an indispensable tool to investigate molecular ordering, phase structure, and dynamics in complex anisotropic phases formed by liquid crystalline materials. The chapters, written by prominent scientists in their field of expertise, provide a state-of-the-art scene of developments in liquid crystal research. The review volume also covers topics ranging from solute studies of molecules in nematics and biologically ordered fluids to theoretical approaches in treating elastic and viscous properties of liquid crystals.

Readership: Chemists, physicists and material scientists. In particular, NMR spectroscopists.

464pp **Sep 2009**
978-981-4273-66-4 **US\$147 £97**
978-981-4273-67-1(ebook) **US\$191**



LIQUID CRYSTALS: FRONTIERS IN BIOMEDICAL APPLICATIONS

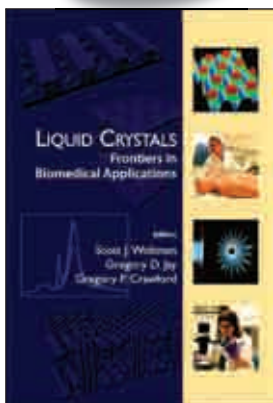
edited by **Scott J Wolman**
(Brown University, USA),
Gregory D Jay (Rhode Island Hospital & Brown University, USA) & **Gregory P Crawford**
(Brown University, USA)

"... on the whole, this is a fantastic book. Containing new and important information, this is a worthwhile purchase both for postgraduates, and for more seasoned liquid crystal researchers and bio-engineers who want to be inspired in a new research direction."

Liquid Crystals Today

Readership: The interdisciplinary nature of this text allows for a broad potential readership: professors, graduate or upper-level undergraduate students, researchers, and industry/medical professionals active in the fields of liquid crystals and biomedical engineering.

516pp **Aug 2007**
978-981-270-545-7 **US\$180 £119**
978-981-277-887-1(ebook) **US\$234**



Series on Neutron Techniques and Applications - Vol. 2

SINGLE CRYSTAL NEUTRON DIFFRACTION FROM MOLECULAR MATERIALS

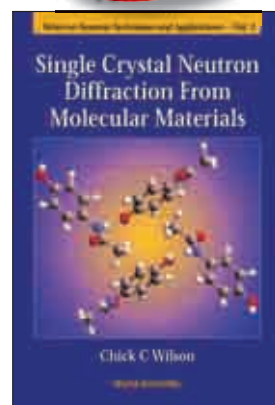
by **Chick C Wilson**
(CLRC Rutherford Appleton Laboratory, UK)

The book endeavours to show why the technique is an essential method for studying areas as diverse as hydrogen bonding and weak interactions, organometallics, supramolecular chemistry and crystal engineering, metal hydrides, charge density and pharmaceuticals. It is an ideal reference source for the research worker interested in using neutron diffraction to study the structure of molecules.

Readership: Students and researchers involved in structural science, especially chemical crystallography.

384pp **Feb 2000**
978-981-02-3776-9 **US\$92 £60**

Bestselling Textbook



MATERIALS SCIENCE

USEFUL QUASICRYSTALS

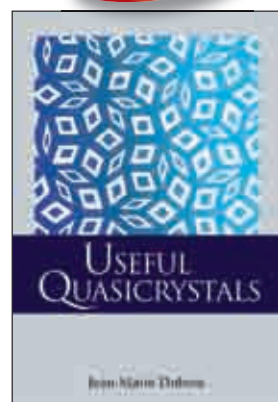
by **Jean-Marie Dubois**
(Ecole des Mines de Nancy, France)

The aim of this book is to acquaint the reader with what the author regards as the most basic characteristics of quasicrystals — structure, formation and stability, properties — in relationship with the applications of quasicrystalline materials. This valuable book discusses those various facets of quasicrystals in five chapters, ending with the author's own interpretation of the properties with respect to their unique structure.

Readership: Materials scientists, condensed matter physicists and solid state chemists.

504pp **Apr 2005**
978-981-02-3254-2 **US\$171 £113**
978-981-256-188-6(pbk) **US\$93 £61**
978-981-256-788-8(ebook) **US\$222**

Bestseller



Journal

Journal of Porphyrins and Phthalocyanines (JPP)

<http://www.worldscinet.com/jpp/>

The *Journal of Porphyrins and Phthalocyanines* (JPP) covers research in the chemistry, physics, biology and technology of porphyrins, phthalocyanines and related macrocycles. Research papers, review articles and short communications deal with the synthesis, spectroscopy, processing and applications of these compounds.

Editor-in-Chief
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University of Houston, USA

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Professor Kevin M. Smith (Louisiana State University, USA)
Professor Tomas Torres (Universidad Autonoma de Madrid, Spain)



MICROELECTRONICS AND AMORPHOUS MATERIALS

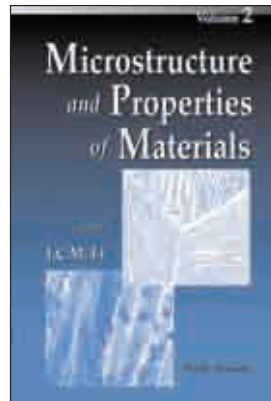
MICROSTRUCTURE AND PROPERTIES OF MATERIALS (Volume 2)

by J C M Li (*University of Rochester*)

This is the second volume of an advanced textbook on microstructure and properties of materials. (The first volume is on aluminum alloys, nickel-based superalloys, metal matrix composites, polymer matrix composites, ceramics matrix composites, inorganic glasses, superconducting materials and magnetic materials). It covers titanium alloys, titanium aluminides, iron aluminides, iron and steels, iron-based bulk amorphous alloys and nanocrystalline materials.

Readership: Researchers and graduate students in materials science and solid state physics.

452pp Oct 2000
978-981-02-4180-3 US\$112 £74



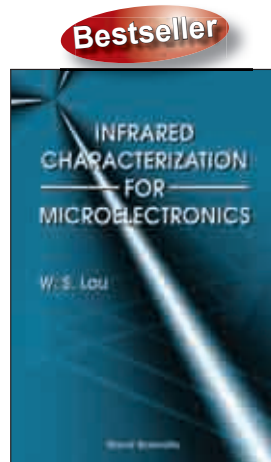
INFRARED CHARACTERIZATION FOR MICROELECTRONICS

by W S Lau (*Chartered Semiconductor Manufacturing Limited, Singapore*)

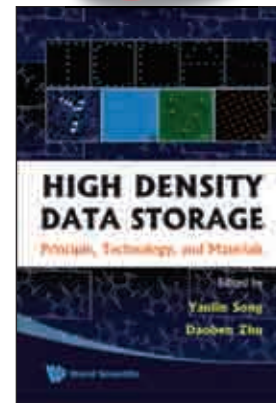
Most of the books on infrared characterization are for applications in chemistry and no book has been dedicated to infrared characterization for microelectronics. The focus of the book will be on practical applications useful to the production line and to the research and development of microelectronics. The background knowledge and significance of doing a particular type of infrared measurement will be discussed in detail. The principal purpose of the book is to serve as a useful handbook for practising engineers and scientists in the field of microelectronics.

Readership: Materials scientists and engineers.

172pp Oct 1999
978-981-02-2352-6 US\$47 £31
978-981-281-746-4(ebook) US\$61



Bestseller



HIGH DENSITY DATA STORAGE

Principle, Technology, and Materials

edited by Yanlin Song & Daoben Zhu
(*Chinese Academy of Sciences, P R China*)

This original book presents a comprehensive introduction to the significant research achievements on high-density data storage from the aspects of recording mechanisms, materials and fabrication technologies, which are promising for overcoming the physical limits of current data storage systems.

Readership: Advanced undergraduates and graduate students in materials, chemistry, physics, optic/electric engineering and devices science.

272pp Apr 2009
978-981-283-469-0 US\$96 £63
978-981-283-470-6(ebook) US\$125

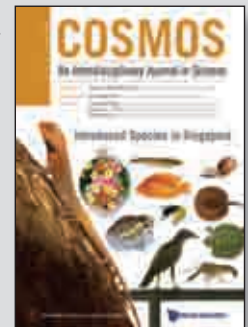
Journal

COSMOS

<http://www.worldscinet.com/cosmos/>

Aims & Scope

COSMOS, the Journal of the Singapore National Academy of Science, publishes invited review articles with the aim of promoting interdisciplinary research in Science and Mathematics. Each volume, published twice a year, focuses on a specific topic or field and should be accessible to researchers from other scientific disciplines. Interested contributors should contact the Managing Editors regarding the topics to be featured in the coming issues. Proposals to serve as issue editor of specific topics will also be considered. Previous issues have covered the areas of Statistics, Quantum Information and Nanoscience.



Editor-in-Chief

Andrew Wee Thye Shen
(*National University of Singapore*)

Journal

Journal of Advanced Dielectrics (JAD)

<http://www.worldscinet.com/jad/>

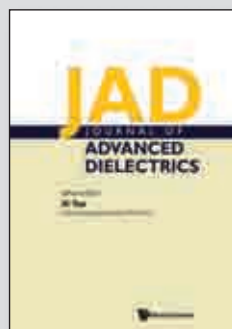
Aims & Scope

The *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. The journal seeks to provide an interdisciplinary forum for the rapid communication of novel research of high quality.

JAD was sponsored by International Center for Dielectric Research (ICDR), Xi'an Jiaotong University, China.

Editor-in-Chief

Xi Yao (*Xi'an Jiaotong University, P.R. China*)



Selected Topics in Electronics and Systems - Vol. 23

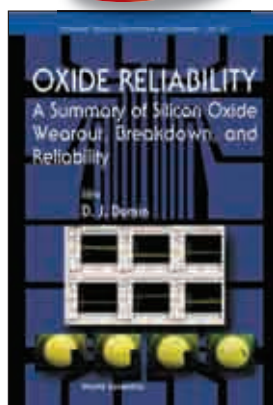
OXIDE RELIABILITY

A Summary of Silicon Oxide Wearout, Breakdown, and Reliability

edited by **D J Dumin**
(Clemson University, USA)

This book presents in summary the state of our knowledge of oxide reliability. The articles have been written by experts who are among the most knowledgeable in the field. The book will be an invaluable aid to reliability engineers and manufacturing engineers, helping them to produce and characterize reliable oxides. It can be used as an introduction for new engineers interested in oxide reliability, besides being a reference for engineers already engaged in the field.

280pp **Jan 2002**
978-981-02-4842-0 **US\$122 £81**
978-981-277-806-2(ebook) **US\$159**



Bestseller

AN INTRODUCTION TO PHYSICS AND TECHNOLOGY OF THIN FILMS

by **Alfred Wagendristel** (Tech. Univ. Vienna) & **Yuming Wang** (Jilin Univ.)

"This book discuss mainly the systems of deposited thin films on a substrate ... The book is mainly focused on the processes in film formation and the microstructural properties such as amorphous, polycrystalline and single crystalline films ... The book is very handy in the thin film laboratory when one need to find quickly some answers on the most relevant questions around the subjects mentioned above."

Cock Lodder

Readership: Materials scientists.

160pp **Sep 1994**
978-981-02-1616-0 **US\$61 £40**
978-981-281-298-8(ebook) **US\$79**



Bestseller

POLYMERS AND CERAMICS

GIANT MOLECULES

Here, There, and Everywhere

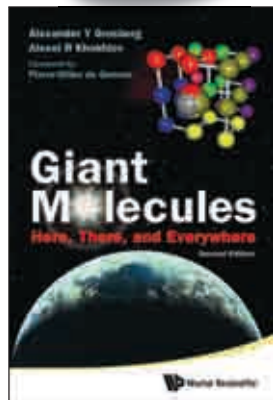
(Second Edition)

by **Alexander Y Grosberg** (New York University, USA) & **Alexei R Khokhlov** (Moscow State University, Russia)

This book describes the basic facts, concepts and ideas of polymer physics in simple, yet scientifically accurate, terms. In both scientific and historic contexts, the book shows how the subject of polymers is fascinating, as it is behind most of the wonders of living cell machinery as well as most of the newly developed materials.

Readership: Undergraduate and graduate students in physics, chemistry and biophysics, chemical and biomedical engineering; advanced high school students

348pp **Sep 2010**
978-981-283-922-0 **US\$75 £47**
978-981-283-923-7(ebook) **US\$98**



Bestseller

POLYMER TRIBOLOGY

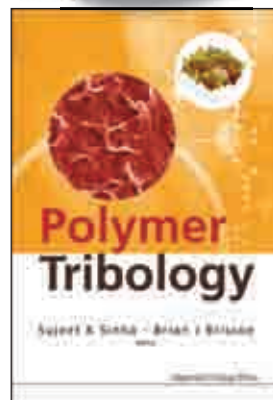
edited by **Sujeet K Sinha**
(National University of Singapore) & **Brian J Briscoe**
(Imperial College London, UK)

"This book brings together a vast wealth of research data and a fundamental understanding of the basic principles in this important research area. Those working in the field of polymer tribology will find it helpful in learning about the most recent developments. Those new to the area will find its many chapters on the fundamentals of polymer tribology very instructive."

IEEE Electrical Insulation Magazine

Readership: Engineering professionals working on polymers for designing bearing materials; managers and researchers in materials laboratories; graduate students in the area of materials/tribology.

724pp **Mar 2009**
978-1-84816-202-0 **US\$268 £177**
978-1-84816-204-4(ebook) **US\$348**



Bestseller

Series in Soft Condensed Matter - Vol. 1

POLYMER THIN FILMS

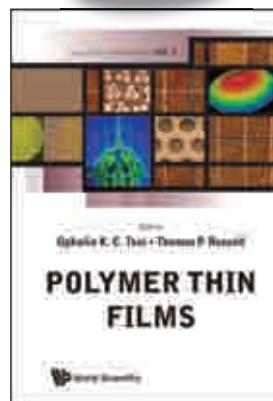
edited by **Ophelia K C Tsui**
(Boston University, USA) & **Thomas P Russell** (University of Massachusetts Amherst, USA)

"This is a topical book that offers a comprehensive and up-to-date set of bibliographical references that will prove very useful to the understanding of the theories and conceptual framework presented in it. The editors are renowned polymer physicists who have selected some of the leadings experts in the field."

Revista de Plásticos Modernos

Readership: Chemists, chemical engineers, materials engineers, material scientists and physicists.

312pp **Nov 2008**
978-981-281-881-2 **US\$132 £87**
978-981-281-882-9(ebook) **US\$172**



Bestseller

Journal

Functional Materials Letters (FML)

<http://www.worldscinet.com/FML/>

Aims & Scope

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.

Editor-in-Chief

Li Lu (National University of Singapore)



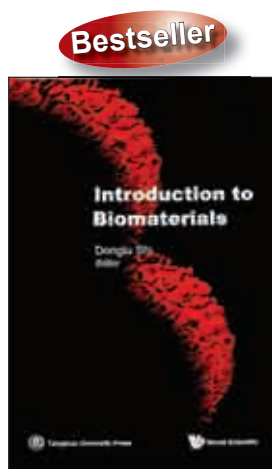
INTRODUCTION TO BIOMATERIALS

edited by **Donglu Shi**
(University of Cincinnati, USA)

This book provides a comprehensive introduction to the fundamentals of biomaterials including ceramics, metals, and polymers.

Both graduate and undergraduate students will find it a valuable reference on tissue engineering related topics, including biostructures and phase diagrams of complex systems, hard tissue prosthetics, novel biomaterials processing methods, and new materials-characterization techniques.

272pp **Dec 2005**
978-981-256-627-0 **US\$82 £54**
978-981-270-085-8(ebook) **US\$107**

**PERSPECTIVES ON THE MACROMOLECULAR CONDENSED STATE**

by **Ren yuan Qian**
(Chinese Academy of Sciences, China)

The main topics discussed in this book are the formation of the macromolecular condensed state from isolated long chain macromolecules in dilute solution, the salient physical behavior of the polymeric amorphous state, the liquid crystalline state of rigid chain polymers, the crystallization process and the single chain condensed state, all based on experimental results.

Readership: Graduate students and researchers in polymer physics and polymer materials.

252pp **Jan 2003**
978-981-02-4915-1 **US\$108 £72**
978-981-279-138-2(ebook) **US\$140**

**LIQUID CRYSTALLINE POLYMERS**

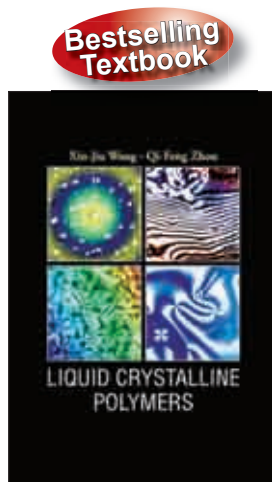
by **Xin-Jiu Wang**
(Avery Research Center, USA) &
Qi-Feng Zhou (Peking University, China)

"Their book is a most useful resource for approaching a large literature that even a specialist needs help to assimilate. It covers many widely separated areas — synthetic chemistry to theoretical physics, fundamental science to applications."

Professor Mark Warner
Cavendish Laboratory, Cambridge, UK

Readership: Researchers and college upper-level undergraduates and graduates majoring in liquid crystalline polymers and LCDs.

388pp **Apr 2004**
978-981-238-410-2 **US\$110 £72**

**IMPERIAL COLLEGE INAUGURAL LECTURES IN MATERIALS SCIENCE AND MATERIALS ENGINEERING**

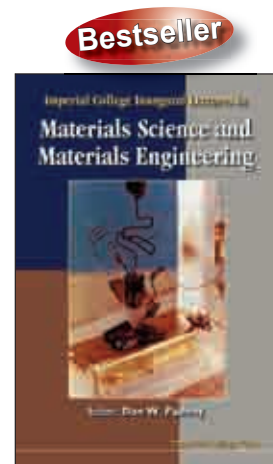
edited by **Don W Pashley**
(Imperial College, UK)

"Each lecture is written in such a way as to appeal to a wide-ranging audience, from those with little knowledge of the subject area to those well versed in the field. The relatively short chapters on each subject area give the reader an excellent overview of some important areas in materials science ..."

IEEE Electrical Insulation Magazine

Readership: Scientists and engineers with a general interest in materials science and materials engineering.

244pp **Apr 2001**
978-1-86094-106-1 **US\$69 £45**
978-1-84816-174-0(ebook) **US\$90**

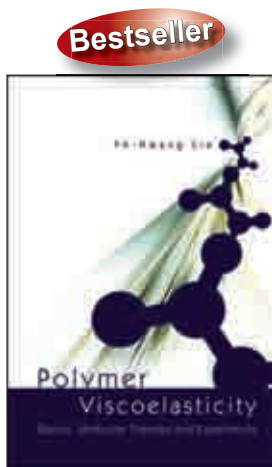
**POLYMER VISCOELASTICITY**

Basics, Molecular Theories and Experiments
by **Yn-Hwang Lin** (National Chiao Tung University, Taiwan)

In this book, the studies of the Rouse, Doi-Edwards, and extended reptation theories are developed in a consistent manner from a basic level and discussed in detail. Viscoelastic properties of nearly monodisperse linear flexible polymers in both the entanglement and entanglement-free regions are analyzed quantitatively in terms of the molecular theories.

Readership: Graduate students, academics and industrial researchers in polymer science and physical chemistry.

264pp **Dec 2003**
978-981-238-394-5 **US\$128 £84**
978-981-238-417-1(pbk) **US\$70 £45**
978-981-279-514-4(ebook) **US\$166**



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COMPOUND SEMICONDUCTOR BULK MATERIALS AND CHARACTERIZATIONS (Volume 2)

by **Osamu Oda** (*Aichi Science & Technology Foundation, Japan*)

This book is concerned with compound semiconductor bulk materials, and has been written for students, researchers and engineers in material science and device fabrication. It provides the elementary and intermediate knowledge of compound semiconductor bulk materials necessary for entry into this field. The first volume described the physical properties, crystal growth technologies, principles of crystal growth, various defects in crystals, characterization techniques and applications, and reviewed various III-V and II-V compound semiconductor materials. In this second volume, other materials are reviewed, including those that have recently received attention such as GaN, AlN, SiC and ZnO for optical and electronic devices.

300pp **Feb 2012**
 978-981-283-505-5 **US\$99 £68**
 978-981-283-506-2(ebook) **US\$129**

COMPOUND SEMICONDUCTOR BULK MATERIALS AND CHARACTERIZATIONS

by **Osamu Oda** (*Aichi Science & Technology Foundation, Japan*)

This book is concerned with compound semiconductor bulk materials and has been written for students, researchers and engineers in material science and device fabrication. It offers them the elementary and intermediate knowledge of compound semiconductor bulk materials necessary for entering this field.

Readership: Materials scientists, applied physicists and engineers working on compound semiconductor materials and devices.

556pp **Apr 2007**
 978-981-02-1728-0 **US\$208 £137**
 978-981-277-038-7(ebook) **US\$270**

SEMICONDUCTOR OPTICAL AMPLIFIERS

by **Niloy K Dutta & Qiang Wang** (*University of Connecticut, USA*)

This invaluable book provides a comprehensive treatment of the design and applications of the semiconductor optical amplifier (SOA). SOAs are important components for optical communication systems with applications as in-line amplifiers and as functional devices in evolving optical networks.

Readership: Professionals, engineers and graduates in electrical and electronic engineering, semiconductors and related areas.

312pp **Feb 2006**
 978-981-256-397-2 **US\$110 £92**
 978-981-270-723-9(ebook) **US\$182**

Selected Topics in Electronics and Systems - Vol. 33

GaN-BASED MATERIALS AND DEVICES

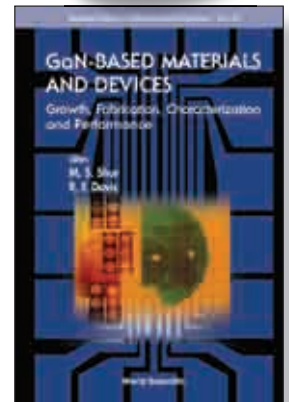
Growth, Fabrication, Characterization and Performance

edited by **M S Shur** (*Rensselaer Polytechnic Institute, USA*) & **R F Davis** (*North Carolina State University, USA*)

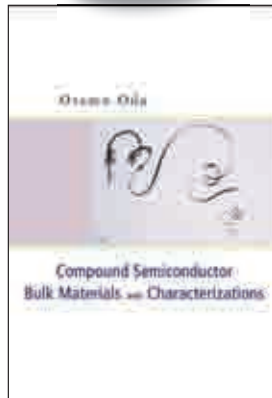
This volume, written by experts on different aspects of nitride technology, addresses the entire spectrum of issues related to nitride materials and devices, and it will be useful for technologists, scientists, engineers, and graduate students who are working on wide bandgap materials and devices. The book can also be used as a supplementary text for graduate courses on wide bandgap semiconductor technology.

300pp **May 2004**
 978-981-238-844-5 **US\$165 £109**
 978-981-256-236-4(ebook) **US\$215**

Bestseller



Bestseller



X-RAY SCATTERING FROM SEMICONDUCTORS (2nd Edition)

by **Paul F Fewster** (*PANalytical Research Centre, UK*)

This book presents a practical guide to the analysis of materials and includes a thorough description of the underlying theories and instrumental aberrations caused by real experiments. The main emphasis concerns the analysis of thin films and multilayers, primarily semiconductors, although the techniques are very general.

Readership: Postgraduate researchers in crystallography, materials science, semiconductors and physics.

316pp **Jul 2003**
 978-1-86094-360-7 **US\$141 £93**
 978-1-86094-458-1(ebook) **US\$183**

Bestseller



Journal

Surface Review and Letters (SRL)

<http://www.worldscinet.com/srl/>

Aims & Scope

Surface Review and Letters is an international journal devoted to the elucidation of properties and processes that occur at the boundaries of materials. The scope of the journal covers a broad range of topics in experimental and theoretical studies of surfaces and interfaces. The latter include solid-solid and liquid-solid 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.

Editor-in-Chief

Qi-Kun Xue (*Dept. of Physics, Tsinghua University, P. R. China*)



SUPERCONDUCTIVITY AND MAGNETIC MATERIALS

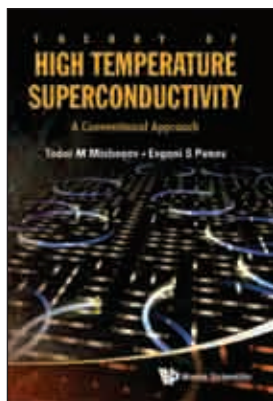
THEORY OF HIGH TEMPERATURE SUPERCONDUCTIVITY

A Conventional Approach

by **Todor M Mishonov** (*St Clement of Ohrid University at Sofia, Bulgaria*) & **Evgeni S Penev** (*University of California, Santa Barbara, USA*)

Drawing from the broad spectrum of phenomena, described in more than 100,000 articles on high-Tc superconductivity, in this book, the authors analyze those basic properties for which understanding can be achieved within the framework of traditional methods of theoretical physics.

Readership: Undergraduate, graduate students and researchers working in low temperature physics, superconductivity and condensed matter physics.



276pp **Mar 2011**
978-981-4343-14-5 **US\$88** **£57**
978-981-4343-15-2(ebook) **US\$114**

STRONGLY CORRELATED SYSTEMS, COHERENCE AND ENTANGLEMENT

edited by **J M P Carmelo**,

J M B Lopes dos Santos (*Universidade do Porto, Portugal*), **V Rocha Vieira** & **P D Sacramento** (*Instituto Superior Técnico, Portugal*)

This volume presents a collection of review papers on recent work in the connected areas of strongly correlated systems, the effects of coherence on macroscopic systems, and entanglement in quantum systems.

Readership: Researchers in fundamental and applied physics, condensed matter and information theory; graduate students can use the book as an overview for some research topics in condensed matter physics.



612pp **Jul 2007**
978-981-270-572-3 **US\$197** **£136**
978-981-277-220-6(ebook) **US\$256**

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SPECTROSCOPY AND OTHER ANALYTICAL TECHNIQUES

IISc Centenary Lecture Series - Vol. 4

WATCHING ULTRAFAST MOLECULAR MOTIONS WITH 2D IR CHEMICAL EXCHANGE SPECTROSCOPY

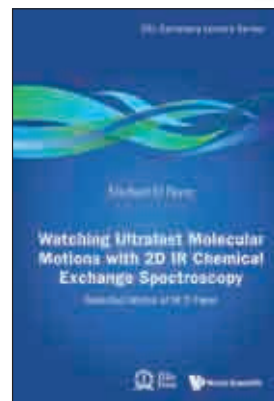
Selected Works of M D Fayer

by **Michael D Fayer** (*Stanford University, USA*)

The compilation will be very useful because it presents the historical background, motivation, methodology, and experimental results at a level that is accessible to the non-expert. The reprints of the scientific papers, from review articles to detailed theoretical papers, provide rigorous supporting material so that the reader can delve as deeply as desired into the subject.

Readership: Advanced undergraduates, graduates and researchers interested in ultrafast two-dimension infrared (2D IR) vibrational echo spectroscopy.

384pp **May 2011**
978-981-4355-62-9 **US\$170** **£111**
978-981-4355-63-6(ebook) **US\$221**



SCANNING PROBE MICROSCOPY

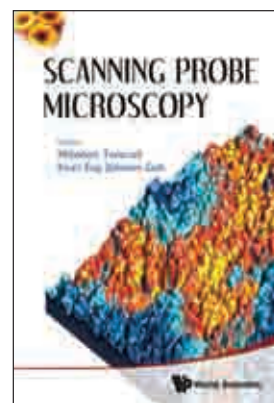
edited by **Nikodem Tomczak** &

Kuan Eng Johnson Goh (*A*STAR, Singapore*)

This book highlights recent advances in the field of SPM with sufficient depth and breadth to provide an intellectually stimulating overview of the current state of the art. The book is based on a set of carefully selected original works from renowned contributors on topics that range from atom technology, scanning tunneling spectroscopy of self-assembled nanostructures, SPM probe fabrication, scanning force microscopy applications in biology and materials science down to the single molecule level, novel scanning probe techniques, and nanolithography.

Readership: Academics, professionals and final year undergraduates in materials science and nanotechnology.

276pp **Dec 2010**
978-981-4324-76-2 **US\$98** **£61**
978-981-4324-77-9(ebook) **US\$127**



COLLECTIVE EXCITATIONS IN UNCONVENTIONAL SUPERCONDUCTORS AND SUPERFLUIDS

by **Peter Brusov** (*University of Houston, USA & Rostov State University, Russia*) & **Pavel Brusov** (*Case Western Reserve University, USA*)

The monograph creates the new scientific direction — the spectroscopy of collective modes in unconventional superfluids and superconductors. It will be useful for both theorists and experimentalists, studying superfluids and superconductors, low temperature physics, condensed matter physics, solid state physics. It could be used by graduate students specializing in the same areas.

860pp **Nov 2009**
978-981-277-123-0 **US\$190** **£131**
978-981-277-124-7(ebook) **US\$247**

