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Physics and Materials Science Catalogue 2019

January - June
New and Forthcoming Titles



Welcome

Welcome to the January to June 2019 Physics and Materials Science Catalogue.

Physics is the study of matter, energy, and their interactions, whilst Materials Science is an interdisciplinary field dealing with the discovery and design of new materials. This catalogue includes titles to do with classical mechanics, acoustics, optics, thermodynamics, electromagnetism, quantum mechanics, particle/high energy physics, and atomic physics.

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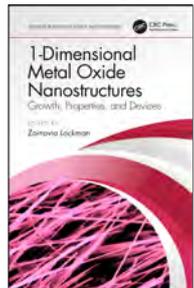
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1-Dimensional Metal Oxide Nanostructures

Growth, Properties, and Devices



Edited by **Zainovia Lockman**, Universiti Sains Malaysia, Malaysia

Series: Advances in Materials Science and Engineering

This book covers recent developments in synthesis and growth process of 1-D metal oxide nanostructures with a focus on semi-templated method of oxidation origin. Thermal and anodic oxidation processes are reviewed with an aim to offer an in-depth understanding of mechanisms of 1-D nanostructure formation and their characteristics by these processes. Other more common methods are also discussed including sol-gel, hydrothermal, and other templated methods. Important applications of 1-D nanostructures are then presented focusing on oxides like zinc oxide, titanium oxide, zirconium oxide, niobium oxide, copper oxide, iron oxide, and tungsten trioxide.

CRC Press

Market: Nanoscience & Technology

December 2018: 235 x 156: 331pp

Hb: 978-1-138-57752-7: **£140.00**

eBook: 978-1-351-26672-7

* For full contents and more information, visit: www.crcpress.com/9781138577527

Advances in Welding Technologies for Process Development

Edited by **Vishvesh J. Badheka**, Mechanical Engineering Department, School of Technology, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India and **Jaykumar Vora**, Mechanical Engineering Department, School of Technology, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India

Within manufacturing, welding is by far the most widely used fabrication method used for production, leading to rise in research and development activities. This book primarily addresses recent advances in various welding processes across the domain including arc welding and solid-state welding process, followed by experimental processes.

CRC Press

Market: Material Science

March 2019: 235 x 156: 368pp

Hb: 978-0-815-37707-8: **£130.00**

eBook: 978-1-351-23482-5

* For full contents and more information, visit: www.crcpress.com/9780815377078

Biological Processing of Solid Waste

Edited by **Ronghua Li**, **Mukesh Kumar Awasthi**, **Zengqiang Zhang** and **Sunil Kumar**, CSIR-NEERI, Nagpur, Maharashtra, India

This book covers fundamentals, technologies, and management of biological processing of solid waste. It discusses kinetic modeling and synergistic impact evolution during bioprocessing of solid waste, environmental impacts such as greenhouse gas emission from biological processing of solid waste, energy recovery from solid waste, and biotrying of solid waste. It also presents cases and challenges from different countries, successful business models, and economic analyses of various processing options.

CRC Press

Market: Engineering - Chemical

March 2019: 235 x 156: 368pp

Hb: 978-1-138-10642-0: **£145.00**

eBook: 978-1-315-10144-6

* For full contents and more information, visit: www.crcpress.com/9781138106420

Biomaterials Science and Technology

Fundamentals and Developments



Edited by **Yaser Dahman**, Ryerson University

This book presents a broad scope of the field, focusing on theory, advances, and applications of biomaterials. It reviews fabrication and properties of different classes of biomaterials and biocompatibility. It details methods used to characterize major properties of biomaterials and their modification to tailor properties for different applications. It discusses nanotechnology in biomaterials, reviews applications, and defines the set of tailored properties. Major applications are in the emerging fields of regenerative medicine as soft and hard tissues scaffolds, 3D printing as bioinks, and drug delivery.

CRC Press

Market: Materials Science

February 2019: 235 x 156: 360pp

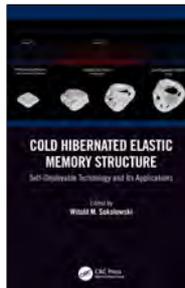
Hb: 978-1-138-61147-4: **£125.00**

eBook: 978-0-429-46534-5

* For full contents and more information, visit: www.crcpress.com/9781138611474

Cold Hibernated Elastic Memory Structure

Self-Deployable Technology and Its Applications



Edited by **Witold M. Sokolowski**, Jet Propulsion Laboratory, Pasadena, California, USA

Series: Polymeric Foams

Cold hibernated elastic memory (CHEM) is a smart material technology that uses shape memory polymers in open cellular (foam) structures. CHEM foams are self-deployable and use the foam's elastic recovery plus their shape memory to erect structures. This book describes CHEM self-deployable structure technology, provides basic property data and characteristics, discusses advantages over other deployable structures, and identifies potential space, commercial, and biomedical applications, including medical devices such as stents for use in endovascular treatment of aneurysms, deployable thermal

insulation, and self-repairing bumpers.

CRC Press

Market: Materials Science

December 2018: 235 x 156: 374pp

Hb: 978-1-482-23615-6: **£159.00**

eBook: 978-0-429-42595-0

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Concentrated Emulsion Polymerization

Edited by **Eli Ruckenstein**, State University of New York, Buffalo, USA, **Hangquan Li**, Beijing University of Chemical Technology and **Chong Cheng**, University at Buffalo, the State University of New York

Series: Functional and Modified Polymeric Materials

Concentrated emulsion polymerization not only possess the merits of conventional emulsion polymerization; systems, but also can yield a broad variety of products with high synthetic efficiency. Comprised of carefully curated chapters previously published by Prof. Ruckenstein and colleagues, this volume offers a comprehensive view of the subject and presents functional and modified polymer materials prepared by concentrated emulsion polymerization approaches. It covers conductive polymer composites, core-shell latex particles, enzyme/catalyst carriers, and plastics toughening and compatibilization polymerization.

CRC Press

Market: Polymer Science

April 2019: 235 x 156: 312pp

Hb: 978-0-367-13455-6: **£111.00**

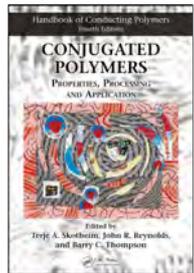
eBook: 978-0-429-02657-7

* For full contents and more information, visit: www.crcpress.com/9780367134556

4th Edition

Conjugated Polymers

Properties, Processing, and Applications



Edited by **Terje A. Skotheim**, Intex, Tucson, Arizona, USA, **John R. Reynolds** and **Barry C. Thompson**, University of Southern California, Department of Chemistry, USA

Series: Handbook of Conducting Polymers, Fourth Edition

This book covers properties, processing, and applications of conducting polymers. It discusses properties and characterization, including photophysics and transport. It then moves to processing and morphology of conducting polymers, covering such topics as printing, thermal processing, morphology evolution, conducting polymer composites, thin films, RoXS, OFETs, and photovoltaics. Finally the book discusses applicatons, including the use of conducting polymers in sensors,

electrochromic polymer devices, electrochemical devices, biomedical applications, redox active polymers, supercapacitors, and aerospace applications.

CRC Press

Market: Polymer Science

March 2019: 254 x 178: 832pp

Hb: 978-1-138-06570-3: **£155.00**

Prev. Ed Hb: 978-1-420-04360-0

* For full contents and more information, visit: www.crcpress.com/9781138065703**Corrosion Protection for the Oil and Gas Industry**

Pipelines, Subsea Equipment, and Structures

Mavis Sika Okyere, Ghana National Gas Company Ltd. Accra, Ghana

Corrosion Protection for the Oil and Gas Industry: Pipelines, Subsea Equipment, and Structures summarizes the main causes of corrosion and requirements for materials protection, selection of corrosion-resistant materials and coating materials commonly used for corrosion protection, and the limitations to their use, application, and repair.

This book is aimed at students, practicing engineers, and scientists as an introduction to corrosion protection for the oil and gas industry, as well as to overcoming corrosion issues.

CRC Press

Market: Materials Science

February 2019: 235 x 156: 168pp

Hb: 978-0-367-17280-0: **£104.00**

eBook: 978-0-429-05645-1

* For full contents and more information, visit: www.crcpress.com/9780367172800**Engineered Repairs of Composite Structures**

Rikard Benton Heslehurst, University of New South Wales, Canberra, Australia

Engineered Repairs of Composite Structures provides a detailed discussion, analysis, and procedure for effective and efficient repair design of advanced composite structures. It discusses the identification of damage types and the effect on structural integrity in composite structures, leading to the design of a repair scheme that focusses on the restoration of the structural integrity and damage tolerance.

Aimed materials engineers, mechanical engineers, aerospace engineers, and civil engineers, this practical work is a must have for any industry professional working with composite structures.

CRC Press

Market: Materials Science

March 2019: 235 x 156: 224pp

Hb: 978-1-498-72626-9: **£99.00**

eBook: 978-0-429-19865-6

* For full contents and more information, visit: www.crcpress.com/9781498726269**Firefighters' Clothing and Equipment**

Performance, Protection, and Comfort



Edited by **Guowen Song**, Iowa State University, Ames, USA and **Faming Wang**, Soochow University, Suzhou, Jiangsu, People's Republic of China

This book describes an in-depth review of firefighting clothing and equipment, and explicitly addresses the performance of protection and comfort in textile engineering, clothing design, and evaluation. Covered topics include protection and comfort requirements for firefighting clothing and equipment, testing methods, standards and performance evaluation etc.

CRC Press

Market: Materials Science

November 2018: 254 x 178: 358pp

Hb: 978-1-498-74273-3: **£160.00**

eBook: 978-0-429-44487-6

* For full contents and more information, visit: www.crcpress.com/9781498742733**Functional and Modified Polymeric Materials, Two-Volume Set**

Edited by **Eli Ruckenstein**, State University of New York, Buffalo, USA, **Hangquan Li**, Beijing University of Chemical Technology and **Chong Cheng**, University at Buffalo, the State University of New York

Series: Functional and Modified Polymeric Materials

Comprised of carefully curated chapters previously published by Prof. Ruckenstein and colleagues, this two-volume set offers a comprehensive overview of functional and modified polymeric materials focusing on concentrated emulsion polymerization, conducting polymers, living ionic polymerization, degradable polymers, polymer membranes, and polymer-inorganic hybrid materials. The first volume presents functional and modified polymer materials prepared by concentrated emulsion polymerization approaches. The second covers functional and modified polymer materials prepared mainly through solution polymerization and surface polymerization.

CRC Press

Market: Polymer Science

April 2019: 235 x 156: 776pp

Hb: 978-0-367-13454-9: **£190.00*** For full contents and more information, visit: www.crcpress.com/9780367134549**Fundamentals and Operations in Food Process Engineering**

Susanta Kumar Das, Indian Institute of Technology, Kharagpur, India and **Madhusweta Das**, Indian Institute of Technology, Kharagpur, India

'Fundamentals and Operations in Food Process Engineering' deals with basic engineering principles and transport processes applied to food processing, followed by specific unit operations with large number of worked out examples and problems for practice in each chapter. This book is divided into four sections namely, fundamentals in food process engineering, mechanical operations in food processing, thermal operations in food processing and mass transfer operations in food processing. This volume aims at students pursuing courses on food science and food technology including broader section of scientific personnel working in food processing and related industries.

CRC Press

Market: Engineering - Chemical

March 2019: 254 x 178: 592pp

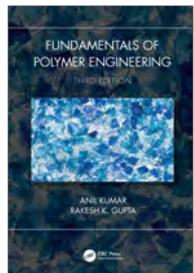
Hb: 978-1-466-56090-1: **£104.00**

eBook: 978-0-429-05876-9

* For full contents and more information, visit: www.crcpress.com/9781466560901

3rd Edition

Fundamentals of Polymer Engineering



Anil Kumar, Indian Institute of Technology Kanpur, India and Rakesh K. Gupta

This textbook for a first course on polymers assumes some familiarity with thermodynamics and transport phenomena. It covers physical and chemical aspects and the concept of property being determined by structure. It discusses polymer synthesis, associated kinetics and molecular weights and uses this information for reactor design. It covers emulsion polymerization, polymer characterization and thermodynamics, and behavior of polymers as melts, solutions and solids. It examines crystallization, diffusion of and through polymers, polymer processing, and introduces new information on polyolefin technology, biobased plastics, and post-consumer plastic recycling. Chapters updated throughout.

CRC Press

Market: Polymer Science

December 2018: 254 x 178: 598pp

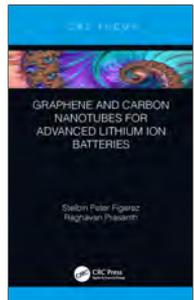
Hb: 978-1-498-75950-2: **£89.00**

eBook: 978-0-429-39850-6

Prev. Ed Hb: 978-0-824-70867-2

* For full contents and more information, visit: www.crcpress.com/9781498759502

Graphene and Carbon Nanotubes for Advanced Lithium Ion Batteries



Stelbin Peter Figerez, Cochin University of Science and Technology, India and Raghavan Prasanth, Cochin University of Science and Technology, India

Carbon nanotubes and graphene are promising and widely explored materials for the development of high performance lithium ion batteries that can operate at a wide range of temperatures. This book deals with carbon nanotube and graphene composite materials for both electrodes and electrolytes in lithium ion battery applications.

CRC Press

Market: Nanoscience & Technology

December 2018: 216 x 140: 176pp

Hb: 978-1-138-35312-1: **£54.00**

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4th Edition

Handbook of Conducting Polymers 2 Volume Set



Edited by Terje A. Skotheim, Intex, Tucson, Arizona, USA, John R. Reynolds and Barry C. Thompson, University of Southern California, Department of Chemistry, USA

Series: Handbook of Conducting Polymers, Fourth Edition

In the last 10 years there have been major advances in fundamental understanding and applications and a vast portfolio of new polymer structures with unique and tailored properties was developed. Work moved from a chemical repeat unit structure to one more based on structural control, new polymerization methodologies, properties, processing, and

applications. The 4th Edition takes this into account and will be completely rewritten and reorganized, focusing on spin coating, spray coating, blade/slot die coating, layer-by-layer assembly, and fiber spinning methods; property characterizations of redox, interfacial, electrical, and optical phenomena; and commercial applications.

CRC Press

Market: Polymer Science

March 2019: 254 x 178: 1480pp

Hb: 978-1-138-06551-2: **£230.00**

eBook: 978-1-315-15966-9

Prev. Ed Hb: 978-1-574-44665-4

* For full contents and more information, visit: www.crcpress.com/9781138065512

Introduction to Steels

Processing, Properties, and Applications

P.C. Angelo, PSG College of Technology, Coimbatore, INDIA and B. Ravisankar, National Institute of Technology, Tiruchirappalli, INDIA

The book briefly describes the structure, properties and applications of various grades of steel, covering most of the important types of steels including iron-carbon diagram, heat treatment, surface hardening methods, effect of alloying, specific applications, selection of materials, case studies and so forth.

CRC Press

Market: Materials Science

April 2019: 235 x 156: 176pp

Hb: 978-1-138-38999-1: **£96.00**

eBook: 978-0-429-42359-8

* For full contents and more information, visit: www.crcpress.com/9781138389991

3rd Edition

Liquid Vapor Phase Change Phenomena

An Introduction to the Thermophysics of Vaporization and Condensation Processes in Heat Transfer Equipment, Third Edition

Van P. Carey, University of California, Berkeley, USA

Since the second edition of Liquid Vapor Phase Change Phenomena was written, research has substantially enhanced the understanding of the effects of nanostructured surfaces, effects of microchannel and nanochannel geometries and the effects of extreme wetting on liquid-vapor phase change processes. This edition includes significant new coverage of microchannels and nanostructures along with many other updates. More worked examples and numerous new problems have been added along with a complete solutions manual and electronic figures for classroom projection.

CRC Press

Market: Engineering - Mechanical

January 2019: 235 x 156: 700pp

Hb: 978-1-498-71661-1: **£82.00**

eBook: 978-1-498-71667-3

Prev. Ed Hb: 978-1-591-69035-1

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Natural Gas Transmission and Distribution Business

Pramod Paliwal, School of Petroleum Management, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India and Sudhir Yadav, School of Petroleum Management, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India

The natural gas business consists of two major aspects, sourcing and transportation, and distribution has been a growing area of interest to industry, government and academia. With the emphasis on promoting natural gas sector, there is an increasing need to have a well documented book that deals with the business issues, particularly the transportation and distribution of this sector, specifically aimed at petroleum engineers and professionals. This book fills this gap to provide structured material that deals with managerial and regulatory aspects with an applied technical perspective wherever needed.

CRC Press

Market: Chemical Engineering

February 2019: 235 x 156: 186pp

Hb: 978-1-138-59830-0: **£59.99**

eBook: 978-0-429-48642-5

* For full contents and more information, visit: www.crcpress.com/9781138598300

Oilfield Microbiology

Edited by **Torben Lund Skovhus**, VIA University College, Denmark and **Corinne Whitby**

There is an increasing need for the oil industry to monitor microbial communities to address issues and benefits of these microbes. This book offers fundamental insight into how molecular microbiological methods have enabled researchers in the field to analyze and quantify in-situ microbial communities and their activities in response to changing environmental conditions. Such information is fundamental to the oil industry to employ more directed, cost-effective strategies to prevent the major problems associated with deleterious microbial activities (e.g., souring and biocorrosion), as well as to encourage beneficial microbe activity.

CRC Press

Market: Engineering - Chemical
March 2019: 235 x 156: 324pp
Hb: 978-1-138-05775-3: **£130.00**
eBook: 978-1-315-16470-0

* For full contents and more information, visit: www.crcpress.com/9781138057753

Petroleum Fluid Phase Behavior

Characterization, Processes, and Applications

Raj Deo Tewari, Abhijit Y. Dandekar and Jaime Moreno Ortiz

Series: Emerging Trends and Technologies in Petroleum Engineering

This book deals with complex fluid characterization of oil and gas reservoirs, emphasizing the importance of PVT parameters for practical application in reservoir simulation and management. It covers modeling of PVT parameters, QA/QC of PVT data from lab studies, EOS modeling, PVT simulation and compositional grading and variation. It describes generation of data for reservoir engineering calculations in view of limited and unreliable data and techniques like downhole fluid analysis and photophysics of reservoir fluids. It discusses behavior of unconventional reservoirs, particularly for difficult resources like shale gas, shale oil, coalbed methane, reservoirs, heavy and extra heavy oils.

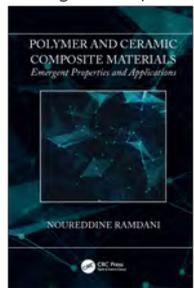
CRC Press

Market: Engineering - Chemical
January 2019: 235 x 156: 412pp
Hb: 978-1-138-62638-6: **£99.00**
eBook: 978-1-315-22880-8

* For full contents and more information, visit: www.crcpress.com/9781138626386

Polymer and Ceramic Composite Materials

Emergent Properties and Applications



Noureddine Ramdani, Harbin Engineering University, China

This book summarizes recent advances in the fabrication methods, properties, and applications of various ceramic-filled reinforced polymer matrix composites. The surface-modification methods and the chemical functionalization of the ceramic fillers have been explored in details. The outstanding thermal and mechanical properties of the polymer-ceramic composites, the modeling of some of their thermal and mechanical parameters, and their major potential applications are discussed along with detailed examples. It summarizes a huge number of references in the polymer-ceramic field that can help readers easily advance their research.

CRC Press

Market: Materials Science
February 2019: 235 x 156: 416pp
Hb: 978-1-138-30221-1: **£130.00**
eBook: 978-0-203-73185-7

* For full contents and more information, visit: www.crcpress.com/9781138302211

Practical Nanotechnology for Petroleum Engineers

Chun Huh, Department of Petroleum and Geosystems Engineering, University of Texas at Austin, United States (retired), **Masa Prodanovic, Hugh Daigle and Valentina Prigiobbe**

The reader through this book will learn nanotechnology (NT) fundamentals, be introduced to important NT products and applications from other industries and learn about the current state of development of various NT applications in the upstream oil industry.

CRC Press

Market: Chemical Engineering
March 2019: 235 x 156: 408pp
Hb: 978-0-815-38149-5: **£125.00**
eBook: 978-1-351-21036-2

* For full contents and more information, visit: www.crcpress.com/9780815381495

Radio Frequency Identification (RFID) Technology and Application in Fashion and Textile Supply Chain

Technology and Application in Garment Manufacturing and Supply Chain

Rajkishore Nayak, RMIT University, Vietnam

Series: Textile Institute Professional Publications

This book highlights the technology of Radio Frequency Identification (RFID) and its application in textile and garment manufacturing and supply chain management. It discusses the history, technology, and workings of RFID and types of RFID systems. It compares advantages and disadvantages of RFID and barcode technologies. It also covers application in textile production, fashion production, supply chain, and retail, and RFID-based process control in textile and fashion production. It offers case studies of RFID adoption by famous fashion brands detailing the competitive advantages and discusses modelling and simulation of RFID applications and challenges.

CRC Press

Market: Materials Science
February 2019: 235 x 156: 200pp
Hb: 978-0-815-37627-9: **£230.00**
Pb: 978-0-815-37623-1: **£115.00**
eBook: 978-1-351-23825-0

* For full contents and more information, visit: www.crcpress.com/9780815376279

Solution and Surface Polymerization

Edited by **Eli Ruckenstein**, State University of New York, Buffalo, USA, **Hangquan Li**, Beijing University of Chemical Technology and **Chong Cheng**, University at Buffalo, the State University of New York

Series: Functional and Modified Polymeric Materials

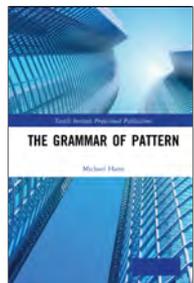
Comprised of curated chapters published by Prof. Ruckenstein and colleagues, this book presents functional and modified polymer materials prepared mainly through solution polymerization and surface polymerization. It shows significant approaches to special classes of polymer materials including functional polymers by living ionic polymerization, degradable and decrosslinkable polymers, semi- and interpenetrating polymer network pervaporation membranes, and soluble conducting polymers. It also focuses on preparing and modifying conductive surface of polymer or polymer-based materials.

CRC Press

Market: Polymer Science
April 2019: 235 x 156: 496pp
Hb: 978-0-367-13456-3: **£111.00**
eBook: 978-0-429-02742-0

* For full contents and more information, visit: www.crcpress.com/9780367134563

The Grammar of Pattern



Michael Hann, School of Design, University of Leeds, UK
Series: *Textile Institute Professional Publications*

The Grammar of Pattern includes original black-and-white line drawings and color images. The modular nature of patterns is explored, and attention is focused on the vast diversity of pattern types which can emerge from a small inventory of components. The book features material that is easily accessible with obvious mathematical content kept to a minimum and offers fresh perspectives on the nature of tessellating and other all-over patterns.

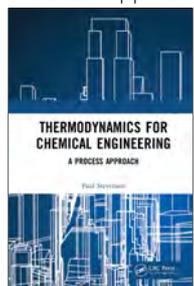
CRC Press

Market: Materials Science
March 2019: 254 x 178: 154pp
Hb: 978-1-138-06561-1: **£115.00**
Pb: 978-1-138-06558-1: **£46.99**
eBook: 978-0-429-19696-6

* For full contents and more information, visit: www.crcpress.com/9781138065581

Thermodynamics for Chemical Engineering

A Process Approach



Paul Stevenson, University of Hull, East Yorkshire, United Kingdom

The text teaches thermodynamics in a logical and approachable manner and in the context of modern process industries. It specifically targets keystone concepts that impede students if they do not rapidly gain comprehension and provides many worked examples. The text recognises the will of accrediting institutions (ICE and IChE) that safety and design are covered in courses. Thus, each chapter has a design exercise, which are performed in common process simulation software like Aspen HYSYS and Honeywell UniSim. It also develops soft skills of engineering communication alongside the technical material, by for example suggesting exercises involving consultancy

situations.

CRC Press

Market: Engineering - Chemical
February 2019: 235 x 156: 216pp
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eBook: 978-1-498-74763-9

* For full contents and more information, visit: www.crcpress.com/9781498747622

Wetting Experiments



Eli Ruckenstein, State University of New York, Buffalo, USA
and Gersh Berim, State University of New York, Buffalo, USA
Series: *Wetting: Theory and Experiments, Two-Volume Set*

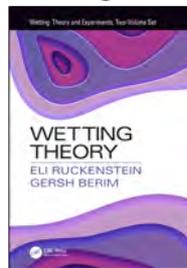
Understanding of wetting is important for numerous practical applications such as preparation of self-cleaning surfaces, manufacturing of artificial blood vessels, development of new lubricants, and non-adhesive dishes. The book provides new insight in wetting experiments. The papers in the book are arranged in the order which allows the reader to follow the development of the different parts of the suggested approach (static and dynamics properties of wetting) and how these tools are applied to specific problems.

CRC Press

Market: Materials Science
December 2018: 254 x 178: 375pp
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Understanding of wetting is important for numerous practical applications such as preparation of self-cleaning surfaces, manufacturing of artificial blood vessels, development of new lubricants, and non-adhesive dishes. The existing classical theory of wetting possesses a lot of shortcomings which restrict its application. The book provides new insight in the theory of wetting which is of critical importance for the field. The papers

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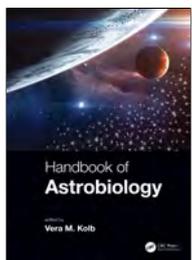
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Edited by **Vera M. Kolb**, Department of Chemistry, University of Wisconsin-Parkside, USA

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Investigating Life in the Universe

Astrobiology and the Search for Extraterrestrial Life

Christopher K. Walker, Steward Observatory, University of Arizona

This book provides a lively and engaging introduction to the science and technology of astrobiology and our prospects for interacting with extraterrestrial life. In just over two decades, there are now more than 3,000 known extrasolar planets, some of which may be Earth-like. From the author's long experience teaching a course on this topic, he uses the Drake equation as a theme for explaining many aspects of astrobiological study, such as estimating the number of planets with microbial life, intelligent life, and communicative life. The book also includes a final chapter with examples from modern day science fiction.

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Zygmunt Gryczynski, University of North Texas Health Science Center, Fort Worth, USA and **Ignacy Gryczynski**, University of North Texas Health Science Center, Fort Worth, USA

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eBook: 978-1-315-19238-3

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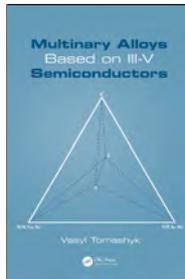
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Olivier Fruchart

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Series: *Monograph Series in Physical Sciences*

Hereostructured nanoparticles have the capability for a broad range of novel and enhanced properties, which leads to appealing biomedical and environmental applications. This timely new book addresses the design and preparation of multiphase nanomaterials with desired size, shape, phase composition, and crystallinity, as well as their current applications. It emphasizes key examples to motivate deeper studies, including nanomaterial-based hyperthermia treatment of cancer, nanohybrids for water purification, nanostructures used in the removal or detection of bioagents from waste water, and so on.

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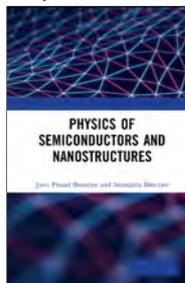
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Physics of Semiconductors and Nanostructures



Jyoti Prasad Banerjee, Institute of Radio Physics and Electronics, University of Calcutta, Kolkata, West Bengal and Suranjana Banerjee, West Bengal University of Technology, Hooghly, India

This book covers the physics of semiconductor materials, basic concepts of quantum mechanics and nanoelectronics, band theory of solids, and transport phenomena in semiconductors, along with the physics of low-dimensional quantum nanostructures, heterojunctions, and superlattices. It supplies a solid foundation for understanding the principles of operation and application of different types of microelectronic, optoelectronic, and quantum-effect devices based on semiconductor materials and nanostructures. Complete with

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Paolo Biagioni, Politecnico di Milano, Italy and Massimiliano Labardi, Istituto per i Processi Chimico-Fisici, Pisa, Italy

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CRC Press

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Statistical Methods for Materials Science

The Data Science of Microstructure Characterization

Edited by Jeffrey P. Simmons, Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio, USA, Lawrence F. Drummy, Carnegie Mellon University, Materials Science and Engineering Department, Pittsburgh, Pennsylvania, USA, Charles A.

Bouman, Purdue University, ECE and Biomedical Engineering, West Lafayette, Indiana, USA and Marc De Graef, Carnegie Mellon University, Department of Materials Science and Engineering, Pittsburgh, Pennsylvania, USA

Data analytics has become an integral part of materials science. This book provides the practical tools and fundamentals needed for researchers in materials science to understand how to analyze large datasets using statistical methods, especially inverse methods applied to microstructure characterization. It contains valuable guidance on essential topics such as denoising and data modeling. Additionally, the analysis and applications section addresses compressed sensing methods, stochastic models, extreme estimation, and approaches to pattern detection.

CRC Press

Market: Materials Science

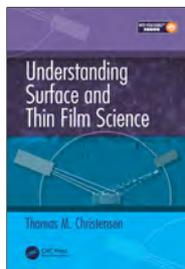
January 2019: 254 x 178: 527pp

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Thomas M. Christensen, University of Colorado at Colorado Springs, USA

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December 2018: 235 x 156: 300pp

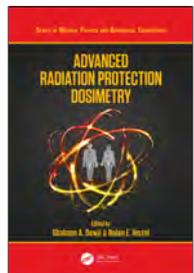
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CRC Press

Market: Physics

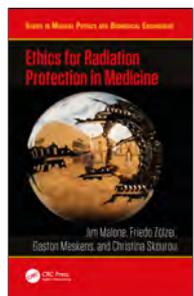
February 2019: 254 x 178: 282pp

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Ethics for Radiation Protection in Medicine



Jim Malone, Trinity College Dublin, **Friedo Zölzer**, University of South Bohemia, Czech Republic, **Gaston Meskens** and **Christina Skourou**, St. Luke's Radiation Oncology Network

Series: Series in Medical Physics and Biomedical Engineering

This book surveys existing ethical frameworks for radiological protection and medical practice and provides the latest developments and new protocols in the field. It presents an approach to ethics in medical radiation protection rooted in the medical tradition, and alert to contemporary social expectations. It provides readers with a practical, ethical framework with which they can carry out safe and acceptable medical procedures, taking due account of the patients' concerns. This book will be an invaluable reference for medical physicists and practitioners,

in addition to researchers working within radiation protection and students studying the field.

CRC Press

Market: Physics

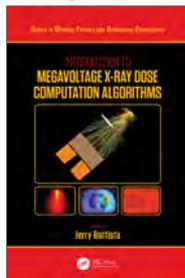
November 2018: 235 x 156: 182pp

Hb: 978-1-138-55388-0: **£74.99**

eBook: 978-1-315-14877-9

* For full contents and more information, visit: www.crcpress.com/9781138553880

Introduction to Megavoltage X-Ray Dose Computation Algorithms



Edited by **Jerry Battista**, Medical Biophysics Department, University of Western Ontario, Canada

Series: Series in Medical Physics and Biomedical Engineering

A critical element of radiation treatment planning is the accurate prediction and placement of dosage treatments, to minimise collateral damage to healthy tissue. The answer lies in three-dimensional (3D) dose computation algorithms, which simulate the passage of radiation through tissue and account for diffusion into healthy tissue.

This book explores the physics and mathematics that underlie the dose computation algorithms used in modern radiation oncology. It is an invaluable reference for clinical practitioners and researchers who wish to utilise the software, in addition to graduate students and residents in medical physics and radiation oncology.

CRC Press

Market: Physics

December 2018: 254 x 178: 418pp

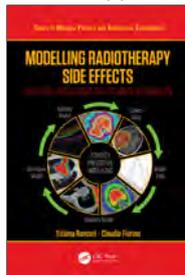
Hb: 978-1-138-05684-8: **£118.00**

eBook: 978-1-315-16511-0

* For full contents and more information, visit: www.crcpress.com/9781138056848

Modelling Radiotherapy Side Effects

Practical Applications for Planning Optimization



Tiziana Rancati, Istituto Nazionale dei Tumori and **Claudio Fiorino**

Series: Series in Medical Physics and Biomedical Engineering

The treatment of a patient with radiation therapy is planned to find the best way to treat a tumour while minimizing the dose received by the surrounding normal tissues. In order to better exploit the possibilities of this process, the availability of accurate and quantitative knowledge of the peculiar responses of the different tissues is of paramount importance.

This book provides an invaluable tutorial for radiation oncologists, medical physicists, and dosimetrists involved in the planning optimization phase of treatment. It presents a practical, accessible, and comprehensive summary of the field's current research and knowledge regarding the response of normal tissues to radiation.

CRC Press

Market: Physics

March 2019: 254 x 178: 472pp

Hb: 978-1-138-19809-8: **£133.00**

eBook: 978-1-315-27081-4

* For full contents and more information, visit: www.crcpress.com/9781138198098

Monte Carlo Methods for Medical Physics

A Practical Introduction

Jan Schuemann, Ph.D., Massachusetts General Hospital, Boston, Massachusetts, USA, **Xun Jia, Ph.D.**, University of Texas Southwestern Medical Center, Dallas, USA and **Harald Paganetti, Ph.D.**, Massachusetts General Hospital and Harvard Medical School, Boston, USA

The Monte Carlo (MC) method, established as the gold standard to predict results of physical processes, is now fast becoming a routine clinical tool for applications that range from quality control to treatment verification. This book provides a basic understanding of the fundamental principles and limitations of the MC method in the interpretation and validation of results for various scenarios. It shows how user-friendly and speed optimized MC codes can achieve online image processing or dose calculations in a clinical setting. It introduces this essential method with emphasis on applications in hardware design and testing, radiological imaging, radiation therapy, and radiobiology.

CRC Press

Market: Physics

February 2019: 254 x 178: 384pp

Hb: 978-1-498-73671-8: **£125.00**

eBook: 978-1-498-73672-5

* For full contents and more information, visit: www.crcpress.com/9781498736718

Nanoparticle-aided Radiation Therapy

Principles, Methods, and Applications

Edited by **Wilfred F. Ngwa**, Dana Farber, Harvard Cancer Center and University of Massachusetts Lowell, **Erno Sajo**, University of Massachusetts, Lowell, USA and **Piotr Zygmanski**, Harvard

This book is a summary of the interdisciplinary field of cancer nanomedicine, specifically nanoparticle-aided radiation therapy. It gives an overview of optimal nanoparticle design and fabrication, effective nanoparticle delivery methods, clinical applications, modalities, treatment planning, and quality assurance issues. The book begins with an introduction to the basics of radiotherapy, its potential and limitations. Chapters provide detail on nanoparticle design and fabrication for different nanoparticles, dosimetry for treatment planning, radiobiology, and theranostics, and future directions.

CRC Press

Market: Physics

June 2019: 254 x 178: 320pp

Hb: 978-1-138-19747-3: **£140.00**

* For full contents and more information, visit: www.crcpress.com/9781138197473

Nanotechnology in Biomedicine

Preeti Nigam Joshi

This book covers the basics of nanotechnology and its role in biomedical engineering. It clubs different applications of nanotechnology in medicine, disease diagnostics, artificial implants; nano-enabled implantable devices and nanorobots as future mode of treatment of various diseases. It provides a comprehensive overview to the reader about the basics of above areas as well as advanced implementation strategies. Case studies included in the book will help readers get a proper understanding of the subject and how nanotechnology is a boon for medical and bioengineering.

CRC Press

Market: Physics

January 2019: 254 x 178: 345pp

Hb: 978-1-498-77165-8: **£95.00**

* For full contents and more information, visit: www.crcpress.com/9781498771658

Principles of Radiation Protection

Paul de Luca, University of Wisconsin--Madison and **Bryan P. Bednarz**, University of Wisconsin - Madison Department of Medical Physics

Series: Imaging in Medical Diagnosis and Therapy

The importance of reducing patient and worker exposure to ionizing radiation is more widely recognized, and now comes into the fore whenever new therapeutic treatment techniques are being developed. This textbook provides an overview of fundamentals with sufficient depth to be useful to developers, users, and regulators of new technologies and applications employing radiation. It addresses the fundamental aspects of the interaction of radiation with matter, the complex aspects of radiation dosimetry, various radiation detectors, and the broad area of radiation effects on humans, animals and cells.

CRC Press

Market: Physics

April 2019: 254 x 178: 350pp

Pb: 978-1-138-19677-3: **£82.00**

* For full contents and more information, visit: www.crcpress.com/9781138196773

2nd Edition

An Introduction to Quantum Optics

Photon and Biphoton Physics

Yanhua Shih, University of Maryland, MD, USA

Series: Series in Optics and Optoelectronics

This text offers a complete revision for its introduction to the quantum theory of light, including notable developments as well as improvements in presentation of basic theory and concepts, with continued emphasis on experimental aspects. The author provides a thorough overview on basic methods of classical and quantum mechanical measurements in quantum optics, enabling readers to analyze, summarize, and resolve quantum optical problems. The broad coverage of concepts and tools and its practical, experimental emphasis set it apart from other available resources. New discussions of timely topics such as the concept of the photon and distinguishability bring the entire contents up to date.

CRC Press

Market: Physics

June 2019: 254 x 178: 480pp

Hb: 978-1-138-60125-3: £79.99

Prev. Ed Hb: 978-0-750-30887-8

* For full contents and more information, visit: www.crcpress.com/9781138601253**Fiber Optic Sensor Multiplexing Techniques**

Manuel Lopez, Universidad Publica de Navarra, Pamplona, Navarra, Spain, Rosa A. Perez-Herrera, Universidad Publica de Navarra, Pamplona, Navarra, Spain and Daniel Leandro, Universidad Publica de Navarra, Pamplona, Navarra, Spain

Series: Series in Fiber Optic Sensors

Use of multiple sensors in a network (multiplexing) is cheaper while retaining the benefits of fiber optic networks. This book shows readers how to take into account various modulation techniques, network topologies, and decoding methods when designing a network. It deals with multiplexing networks for point and quasi-distributed optical fiber sensors and explains the principles of these systems, their components, and categorization. The author compares and contrast various multiplexing networks for optical fiber sensors, including those based on optical amplification and lasing multiplexing systems, and presents several illustrative examples.

CRC Press

Market: Engineering - Electrical

June 2019: 235 x 156: 224pp

Hb: 978-1-138-19671-1: £100.00

* For full contents and more information, visit: www.crcpress.com/9781138196711

2nd Edition

Handbook of Laser Technology and Applications,

Laser Components, Properties, and Basic Principles (Volume One)

Edited by Chunlei Guo, The Institute of Optics, University of Rochester, NY, USA

Series: Handbook of Laser Technology and Applications

This comprehensive handbook gives a fully updated guide to lasers and laser systems, including the complete range of their technical applications. The first volume outlines the fundamental components of lasers, their properties and working principles. The second volume gives exhaustive coverage of all major categories of lasers, from solid-state and semiconductor diode to fiber, waveguide, gas, chemical, and dye lasers. The third volume covers modern applications in engineering and technology, including all new and updated case studies spanning telecommunications and data storage to medicine, optical measurement, defense and security, nanomaterials processing and characterization.

CRC Press

Market: Physics

May 2019: 254 x 203: 384pp

Hb: 978-1-138-03261-3: £140.00

* For full contents and more information, visit: www.crcpress.com/9781138032613

2nd Edition

Handbook of Laser Technology and Applications

Laser Design and Laser Systems (Volume Two)

Edited by Chunlei Guo, The Institute of Optics, University of Rochester, NY, USA and Subhash Chandra Singh

Series: Handbook of Laser Technology and Applications

This comprehensive handbook gives a fully updated guide to lasers and laser systems, including the complete range of their technical applications. The first volume outlines the fundamental components of lasers, their properties and working principles. The second volume gives exhaustive coverage of all major categories of lasers, from solid-state and semiconductor diode to fiber, waveguide, gas, chemical, and dye lasers. The third volume covers modern applications in engineering and technology, including all new and updated case studies spanning telecommunications and data storage to medicine, optical measurement, defense and security, nanomaterials processing and characterization.

CRC Press

Market: Physics

May 2019: 254 x 203: 320pp

Hb: 978-1-138-03262-0: £140.00

* For full contents and more information, visit: www.crcpress.com/9781138032620

2nd Edition

Handbook of Laser Technology and Applications

Applications (Volume Three)

Edited by Chunlei Guo, The Institute of Optics, University of Rochester, NY, USA

Series: Handbook of Laser Technology and Applications

This comprehensive handbook gives a fully updated guide to lasers and laser systems, including the complete range of their technical applications. The first volume outlines the fundamental components of lasers, their properties and working principles. The second volume gives exhaustive coverage of all major categories of lasers, from solid-state and semiconductor diode to fiber, waveguide, gas, chemical, and dye lasers. The third volume covers modern applications in engineering and technology, including all new and updated case studies spanning telecommunications and data storage to medicine, optical measurement, defense and security, nanomaterials processing and characterization.

CRC Press

Market: Physics

May 2019: 254 x 203: 384pp

Hb: 978-1-138-03332-0: £155.00

* For full contents and more information, visit: www.crcpress.com/9781138033320**Holography**

Principles and Applications

Raymond K. Kostuk, University of Arizona, Tucson, USA

Series: Series in Optics and Optoelectronics

This self-contained treatment of the principles, techniques, and applications of holography examines theory and practice, image analysis, specialized techniques, and a range of applications of both analog and digital holographic methods. The author, an esteemed professor in the field, describes the nature of holographic and lithographic diffraction gratings and the tools necessary for their design and analysis. Suitable for researchers and graduate students in physics and optics, the book includes exercise problems to enhance understanding.

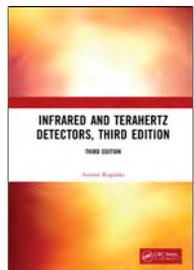
CRC Press

February 2019: 235 x 156: 288pp

Hb: 978-1-439-85583-6: £77.00

* For full contents and more information, visit: www.crcpress.com/9781439855836

3rd Edition

Infrared and Terahertz Detectors

Antoni Rogalski

This new edition of *Infrared and Terahertz Detectors* provides a comprehensive overview of infrared and terahertz detector technology, from fundamental science to materials and fabrication techniques. It contains a complete overhaul of the contents including several new chapters and a new section on terahertz detectors and systems. It includes a new tutorial introduction to technical aspects that are fundamental for basic understanding. The other dedicated sections focus on thermal detectors, photon detectors, and focal plane arrays.

CRC Press

Market: Physics

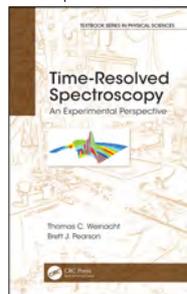
December 2018: 254 x 178: 1044pp

Hb: 978-1-138-19800-5: £222.00

eBook: 978-1-315-27133-0

* For full contents and more information, visit: www.crcpress.com/9781138198005**Time-Resolved Spectroscopy**

An Experimental Perspective



Thomas Weinacht, Stony Brook University, New York, USA and Brett J. Pearson, Dickinson College, Carlisle, Pennsylvania, USA

Series: *Textbook Series in Physical Sciences*

This concise and carefully developed text offers a reader friendly guide to the basics of time-resolved spectroscopy with an emphasis on experimental implementation. The authors carefully explain and relate for the reader how measurements are connected to the core physical principles. They use the time-dependent wave packet as a building block for understanding quantum dynamics, progressively advancing to more complex topics. The topics are discussed in paired sections, one discussing the theory and the next presenting the related

experimental methods.

CRC Press

Market: Physics

December 2018: 235 x 156: 342pp

Hb: 978-1-498-71673-4: £96.00

eBook: 978-1-498-71674-1

* For full contents and more information, visit: www.crcpress.com/9781498716734**Microwave Semiconductor Devices**

Physics and Application

Jyoti P. Bandyopadhyay, University of Calcutta, Kolkata, India and Suranjana Banerjee, Academy of Technology, Hooghly, India

This book makes an attempt to introduce the physical concept behind the operation of microwave and millimeter wave semiconductor devices in detail. It is written for undergraduates and postgraduates of Physics, Electronics, Electrical and Electronics Engineering. This book will also help Engineers and Scientists working in the field to understand the theoretical analysis, design and experimental realization of the devices. It will cover the physics and application of various important and emerging semiconductor devices as sources of microwave and mm-wave power.

CRC Press

Market: Physics

April 2019: 235 x 156: 432pp

Hb: 978-1-498-73909-2: £82.00

eBook: 978-1-498-73912-2

* For full contents and more information, visit: www.crcpress.com/9781498739092**Organic and Hybrid Electronics**

Science, Technology, Devices and Applications

Thomas Brown, Università degli Studi di Roma, Italy

This practical introduction to the field focuses on the design, architecture, and operation of technologies based on organic compounds and conjugating molecules. It shows the reader how material structure relates to semiconducting properties, and then explores in detail the electronic devices that harness their unique properties. The author also extends the discussion to printed electronics, covering large-area, low-cost film deposition, patterning, processing, and encapsulation. The reader will gain a deep understanding of how the devices work and how the applications are designed and operate.

CRC Press

May 2019: 254 x 178: 320pp

Pb: 978-1-466-59226-1: £77.00

eBook: 978-1-466-59227-8

* For full contents and more information, visit: www.crcpress.com/9781466592261

Atmospheric Pressure Nonequilibrium Plasma Jets

Fundamentals, Diagnostics, and Medical Applications

XinPei Lu, HuaZhong University of Science and Technology, Wuhan, Hubei, People's Republic of China, **Stephan Reuter**, Zentrum für Innovationskompetenz (ZIK) plasmatis, Greifswald, MV, Germany and **Mounir Laroussi**, Old Dominion University, Electrical & Computer Engineering, Norfolk, Virginia, USA

Atmospheric pressure non-equilibrium plasma jets (APNJs) generate plasma in open space rather than in a confined discharge gap and can be utilized for applications in medicine. This book provides a complete introduction to this fast-emerging field, from the fundamental physics to experimental approaches and reactive species diagnostics. It gives an overview of development of a wide range of plasma jet devices, including plasma bullets, and discusses in detail the exciting application of this technology for cancer treatment.

CRC Press

Market: Physics

February 2019: 235 x 156: 412pp

Hb: 978-1-498-74363-1: **£129.00**

eBook: 978-0-429-05366-5

* For full contents and more information, visit: www.crcpress.com/9781498743631

Biomembrane Simulations

Computational Studies of Biological Membranes

Edited by **Max L. Berkowitz**

Series: Series in Computational Biophysics

There has been a tremendous growth in the development of computational tools for addressing questions in membrane biophysics. This book showcases current methods for simulations of biological membranes, from atomistic to multiscale modeling approaches. It reflects the exciting advances in computational techniques that enable to perform simulations over longer accessible time and probe larger length scales. Each chapter addresses an important issue related to our understanding of biological membranes and simulation results will be connected to available experimental information.

CRC Press

Market: Chemistry

March 2019: 235 x 156: 256pp

Hb: 978-1-498-79979-9: **£130.00**

eBook: 978-1-351-06031-8

* For full contents and more information, visit: www.crcpress.com/9781498799799

Complex Liquids, Polymers and Membranes

Alokmay Datta, Saha Institute of Nuclear Physics, Kolkata, India

Soft materials play an essential role in our daily life. They are used for clothing, medicines, dyes, paints, adhesives, lubricants, sports goods, and many other purposes. Even our bodies are mostly composed of soft materials. *Complex Liquids, Polymers and Membranes* describes how soft materials like liquids, polymers, and liquid crystals behave. It enables the reader to understand the experimental and theoretical tools required to study their structure, bonding, and properties. The book also introduces biomaterials as well as thin films and tubes made out of soft materials.

CRC Press

February 2019: 235 x 156: 600pp

Hb: 978-1-466-57704-6: **£63.99**

eBook: 978-1-466-57706-0

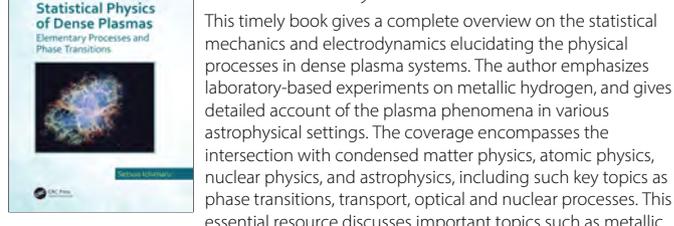
* For full contents and more information, visit: www.crcpress.com/9781466577046

Statistical Physics of Dense Plasmas

Elementary Processes and Phase Transitions

Setsuo Ichimaru, Tokyo University Department of Physics

Series: Frontiers in Physics



This timely book gives a complete overview on the statistical mechanics and electrodynamics elucidating the physical processes in dense plasma systems. The author emphasizes laboratory-based experiments on metallic hydrogen, and gives detailed account of the plasma phenomena in various astrophysical settings. The coverage encompasses the intersection with condensed matter physics, atomic physics, nuclear physics, and astrophysics, including such key topics as phase transitions, transport, optical and nuclear processes. This essential resource discusses important topics such as metallic

hydrogen, stellar and planetary magnetisms, pycnonuclear reactions, and gravitational waves.

Chapman and Hall/CRC

Market: Physics

December 2018: 254 x 178: 192pp

Hb: 978-1-138-36468-4: **£145.00**

Pb: 978-1-138-36466-0: **£61.99**

* For full contents and more information, visit: www.crcpress.com/9781138364684

Applied Laser Spectroscopy

Robert P. Lucht, Purdue University, West Lafayette, Indiana, USA

This book provides a detailed treatment of the fundamental principles underlying the interaction of laser radiation with gas-phase atomic and molecular resonances, with emphasis on a practical approach. The focus is on presentation of the essential material needed to understand laser interactions with molecular and atomic resonances using a consistent and fundamental framework with detailed illustrative examples and numerous tables. In addition, there is a thorough overview of the full breadth of engineering applications for diagnostic probes.

CRC Press

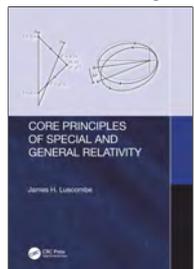
March 2019: 235 x 156: 450pp

Pb: 978-1-439-81364-5: **£63.99**

eBook: 978-1-439-81365-2

* For full contents and more information, visit: www.crcpress.com/9781439813645

Core Principles of Special and General Relativity



James H. Luscombe

This book provides an accessible, yet thorough, introduction to special and general relativity, crafted and class-tested over many years of teaching. Suitable for advanced undergraduate and graduate students, this book provides clear descriptions of how to approach the mathematics and physics involved. It is also contains the latest exciting developments in the field, including dark energy, gravitational waves, and frame dragging.

The table of contents has been carefully developed in consultation with a large number of instructors teaching courses worldwide, to ensure its wide applicability to modules on relativity and gravitation.

CRC Press

Market: Physics - MPA

December 2018: 254 x 178: 388pp

Hb: 978-1-138-54294-5: **£54.99**

eBook: 978-0-429-02383-5

* For full contents and more information, visit: www.crcpress.com/9781138542945

Electrical and Mechanical Sensing in Cell Membranes

Edited by Francesco Tombola, University of California, Irvine

Bioprocesses such as brain signaling to sound perception, muscle contraction, and blood pressure regulation all depend on our cells' ability to detect electrical & mechanical cues from the environment and neighboring cells. This book presents a coherent introduction to the physiological significance, the mechanisms, and the pathological implications of electrical and mechanical sensing. This authoritative book covers the fundamental principles and recent discoveries of new molecular sensors, as well as experimental and computational techniques used in the field. It also provides an overview on the pharmacological tools that can restore defective detection of electrical & mechanical stimuli.

CRC Press

Market: Physics

June 2019: 254 x 178: 448pp

Hb: 978-1-138-03601-7: **£145.00**

* For full contents and more information, visit: www.crcpress.com/9781138036017

Experimental Neutrino Physics

Jonathan M. Link, Virginia Tech

Neutrinos have a smaller mass than any other known particle and are the subject of intense recent studies, as well as this book. The author provides a coherent introduction to the necessary theoretical background and experimental methods used by modern neutrino physicists. It's designed as a one-stop reference addressing what is currently known about the neutrino hypothesis, discovery of the neutrino, theory of weak interactions, solar neutrino puzzle, and neutrino oscillation. It then gives a detailed account of practical approaches for study of precision oscillations, neutrino mass and other neutrino properties, sterile neutrinos, and neutrino messengers from space and Earth's interior.

CRC Press

Market: Physics

June 2019: 254 x 178: 320pp

Hb: 978-1-138-62674-4: **£115.00**

eBook: 978-1-315-21379-8

* For full contents and more information, visit: www.crcpress.com/9781138626744

2nd Edition

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Michel Barsoum

Series: *Series in Materials Science and Engineering*

This second edition of Fundamentals of Ceramics adds a section on density functional theory calculations for shedding light on properties. It also adds more on applications, including solid oxide fuel cells as a case study and a major overhaul of the last chapter on optical properties. There's also new and extended discussion of such topics as non-parabolic oxidation, dislocation creep, thermal conductivity, ferroelectric ceramics, ferromagnetic ceramics, scattering mechanisms, surface tension, and processing of ceramics from aqueous environments.

CRC Press

Market: Materials Science

February 2019: 229 x 204: 736pp

Pb: 978-1-498-70813-5: **£63.99**

eBook: 978-1-498-70816-6

Prev. Ed Pb: 978-0-750-30902-8

* For full contents and more information, visit: www.crcpress.com/9781498708135



Handbook of Neurophotonic

Edited by Francesco S. Pavone, European Laboratory for Non Linear Spectroscopy (LENL), Italy and Shy Shoham

Series: *Series in Cellular and Clinical Imaging*

This book provides the first dedicated overview of neurophotonic, covering the use of advanced optical technologies to record, stimulate, and control the activity of the brain, yielding new insight and advantages over conventional tools due to the adaptability and non-invasive nature of light. Chapters address functional studies of neurovascular signaling, metabolism, electrical excitation, and hemodynamics, as well as clinical applications for imaging and manipulating brain structure and function. The unifying theme throughout is not only to highlight the technology, but to show how these novel methods are becoming critical to breakthroughs that will lead to advances in our ability to manage and treat human diseases of the brain.

CRC Press

Market: Physics

December 2018: 254 x 178: 448pp

Hb: 978-1-498-71875-2: **£155.00**

* For full contents and more information, visit: www.crcpress.com/9781498718752

Nanomagnets

Olle G. Heinonen, Argonne National Laboratory, Illinois, USA

This book provides a complete introduction to nanomagnets and gives researchers the tools they need to create a new generation of nanoscale magnetic systems. Coverage begins with the origin of magnetism, domains in bulk magnets and the basic equation describing magnetization dynamics. It then turns to patterned nanoscale magnets, static magnetization structures and magnetic exchange interactions, followed by the dynamics of magnetism in nanostructures, spin torque and magnetic noise. It closes with a detailed look at existing and near-future applications.

CRC Press

February 2019: 235 x 156: 300pp

Hb: 978-1-482-23257-8: £110.00

* For full contents and more information, visit: www.crcpress.com/9781482232578

2nd Edition

Optics for Engineers

Charles A. DiMarzio, Northeastern University, Boston, Massachusetts, USA

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CRC Press

Market: Engineering - Electrical

January 2019: 229 x 204: 576pp

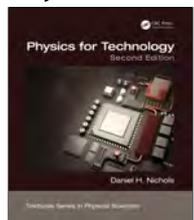
Pb: 978-1-482-26323-7: £77.00

Prev. Ed Pb: 978-1-439-80725-5

* For full contents and more information, visit: www.crcpress.com/9781482263237

2nd Edition

Physics for Technology



Daniel H. Nichols, Matanuska-Susitna College, University of Alaska Anchorage, USA

Series: *Textbook Series in Physical Sciences*

This text provides an introduction to the important physics underpinning current technologies, highlighting key concepts in areas that include linear and rotational motion, energy, work, power, heat, temperature, fluids, waves, and magnetism. This revision reflects the latest technology advances, from smart phones to the Internet of Things, and all kinds of sensors. The author also provides more modern worked examples with useful

appendices and laboratories for hands-on practice. There are also two brand new chapters covering sensors as well as electric fields and electromagnetic radiation as applied to current technologies.

CRC Press

Market: Physics

December 2018: 229 x 204: 410pp

Hb: 978-0-815-38292-8: £100.00

* For full contents and more information, visit: www.crcpress.com/9780815382928

2nd Edition

Quantitative Understanding of Biosystems

Thomas M. Nordlund, University of Alabama at Birmingham and Peter M. Hoffmann, Wayne State University

Series: *Foundations of Biochemistry and Biophysics*

This new edition provides a complete update to the most accessible yet thorough introduction to the physical and quantitative aspects of biological systems and processes involving macromolecules, subcellular structures, and whole cells. It includes two brand new chapters covering experimental techniques, especially atomic force microscopy, complementing the updated coverage of mathematical and computational tools. The authors have also incorporated additions to the multimedia component of video clips and animations, as well as interactive diagrams and graphs.

CRC Press

Market: Physics

March 2019: 279 x 216: 536pp

Hb: 978-1-138-63341-4: £115.00

eBook: 978-1-315-20760-5

Prev. Ed Hb: 978-1-420-08972-1

* For full contents and more information, visit: www.crcpress.com/9781138633414



2nd Edition

Quantum Principles and Particles

Walter Wilcox, Baylor University, Waco, Texas, USA

Series: *Textbook Series in Physical Sciences*

This textbook offers a unique introduction to quantum mechanics progressing gradually from elementary quantum mechanics to aspects of particle physics. It presents the microscopic world by analysis of the simplest possible quantum mechanical system (spin 1/2). A special feature is the author's use of visual aids known as process diagrams, which show how amplitudes for quantum mechanical processes are computed. The second edition include a new chapter on time-dependent processes, in addition to many new problems and improved illustrations.

CRC Press

Market: Physics

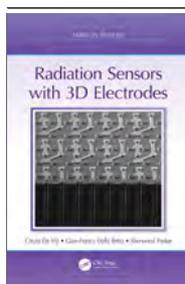
March 2019: 254 x 178: 456pp

Hb: 978-1-138-09041-5: £140.00

Pb: 978-1-138-09037-8: £92.00

* For full contents and more information, visit: www.crcpress.com/9781138090415

Radiation Sensors with 3D Electrodes



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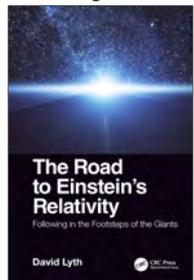
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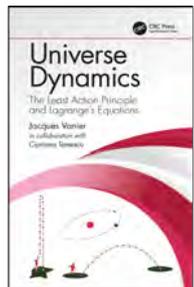
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