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## Sci-Tech Book News Reviews

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## Sci-Tech Book News Reviews Susan Fingerman, Selector



The following section consists of 100 book reviews selected from *Sci-Tech Book News*, reprinted with the permission of Book News Inc. This review journal is published four times a year, each issue reviewing over 2,000 new titles in the physical and biological sciences, mathematics, engineering, computer science, technology, and agriculture. For a sample issue and subscription information, contact Book News Inc. at 5739 NE Sumner Street, Portland, OR 97218. Phone: (503)281-9230; Fax: (503)287-4485; E-mail: booknews@booknews.com.

### PSYCHOLOGY

BF176 2006-004957 1-4129-2484-7

#### **Foundations of psychological testing; a practical approach, 2d ed.**

McIntire, Sandra A. and Leslie A. Miller.

*Sage Publications*, ©2007 631 p. \$84.95

This introductory textbook uses a conversational format to teach undergraduate students of psychology, education, and business the fundamental principles of psychological testing. In contrast to books that explain how to administer or interpret individual tests, the focus here is on helping students to become informed consumers, whether as test users or test takers. The second edition contains new content on computerized testing.

### GEOGRAPHY, HYDROLOGY, ENVIRONMENT

G70 2006-050486 0-415-31681-2

#### **Local models for spatial analysis.**

Lloyd, Christopher D.

*CRC Press*, ©2007 244 p. \$69.95

For geographers and others concerned with analyzing spatial data in the physical or social sciences, Lloyd (Queen's U., Belfast) explains models that can account for local variation that global models miss by throwing all the data into a big bucket and stirring it up. Describing and illustrating a number of approaches, he discusses such concepts as spatial scale, non-stationarity, and definitions of local models. Readers are assumed to have prior experience of Geographical Information Systems in their own field.

G70 2006-051183 978-0-8194-6235-0

#### **Remote sensing from air and space.**

Olsen, R.C. (SPIE Press monograph; 162)

*SPIE*, ©2007 255 p. \$76.00

For students interested in remote sensing as a tool for studying military and intelligence problems, Olsen (remote sensing and classified military systems, Naval Postgraduate School,

California) looks at the technology of remote sensing, focusing more on the acquisition of data than the application of it. He looks first at basic physics, then visible optical systems, then infrared and radar systems, developing the necessary physics as he goes along and describing representative operational systems for each. One chapter considers how orbital mechanics influences remote sensing, a topic not usually covered in such a text.

G70 2006-009330 0-8493-5091-3

#### **Signal and image processing for remote sensing.**

Title main entry. Ed. by C.H. Chen.

*CRC / Taylor & Francis*, ©2007 648 p. \$129.95

Dealing with signal processing and image processing in two separate sections, Chen (electrical and computer engineering, U. of Massachusetts, Dartmouth) and his contributors describe methodologies of processing in remote sensing. The emphasis of the chapters is on the mathematical techniques that are thought to be more enduring than changing sensor, software, and hardware technologies. In the area of signal processing, topics include statistical pattern recognition, construction of seismic images by ray tracing, application of factor analysis in seismic profiling, blind separation of convolutive mixtures for canceling active sonar reverberation, and neural network retrievals of atmospheric temperature and moisture profiles from high-resolution infrared and microwave sounding data, to name a few. Examples of image processing methodologies discussed include random forest classification of remote sensing data, supervised image classification of multi-spectral images based on statistical machine learning, change-detection methods for location of mines in synthetic aperture radar imagery, data fusion for remote-sensing applications, and quality assessment of remote-sensing multi-band optical images.

G109 2006-045071 978-0-470-04190-1  
**Global positioning systems, inertial navigation and integration, 2d ed. (CD-ROM included)**

Grewal, Mohinder S. et al.

*Wiley-Interscience*, ©2007 525 p. \$99.95

Grewal, Weill, and Andrews (electrical engineering and applied mathematics, California State U., Fullerton, and Rockwell Science Center) provide a guide to combining Global Navigation Satellite Systems, Inertial Navigational Systems, and Kalman filters for engineers, computer scientists, and students in introductory courses at the senior or first year graduate level. Aiming to give readers a working familiarity with theoretical and practical aspects, they use real world problems as examples and cover aspects of implementation. This edition includes new MATLAB programs, signal structures, developments in augmentation systems for satellite navigation, algorithms, and new chapters on satellite system integrity monitoring and GNSS/INS integration. INS technology is also covered more extensively. The CD-ROM contains MATLAB m-files and background material.

GE300 978-1-84564-048-4

**Management of natural resources, sustainable development and ecological hazards.**

Title main entry. Ed. by C.A. Brebbia et al. (WIT transactions on ecology and the environment; v.99)

*WIT Press*, ©2007 839 p. \$485.00

These proceedings from the first international conference, which was held in Patagonia, Argentina in 2006, are subtitled "The Ravage of the Planet" to reflect the sorry and perhaps irreversible state of the environment. Papers cover such topics as holistic sustainability, working beyond predictability and sustainable global civilization, with sets of papers on political and social issues such as the collision of federal and local global warming policies in the US, planning and development, including a study land recycling ecology, with a survey of coral reefs, design and sustainability, safety, and water resources, such as hydropower systems and toxins. Papers also cover complex systems under extreme conditions and those on air and soil quality cover such topics as global climate change. The collection concludes with papers on energy, particularly that which is sustainable. The US office of WIT Press is Computational Mechanics.

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**PRODUCTION, INDUSTRY, COMMERCE**

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HD45 2006-029530 978-1-56720-496-4

**Managing path-breaking innovations; CERN-ATLAS, Airbus, and stem cell research.**

Liyanage, Shantha et al. (Technology, innovation, and knowledge management)

*Praeger*, ©2007 328 p. \$160.00

Liyanage (Macquarie Institute for Innovation, U. of Macquarie, Australia), Wink (international economics, U. of Applied Sciences, HTWK, Germany) and Nordberg (resources coordinator, ATLAS project, CERN, Switzerland) explore the connection between scientific progress and patterns of innovations by investigating three central programs: the particle physics experiments in the CERN-ATLAS collaboration, aviation research at the Airbus consortium, and biotechnology advances in stem cell research groups. Describing "path-breaking innovation" as a constellation of events, situations and manifestations of change, learning, leadership and motivation, the authors organize their study around the themes of change processes, work and production philosophies, strategies and collaborations, change environment, spatial dimension, leadership and funding. They conclude that path-breaking innovations are based on good science embedded in a social-system of openness, tolerance, respect and patience.

HD9665 2006-012223 0-566-08675-1

**Forecasting for the pharmaceutical industry; models for new product and in-market forecasting and how to use them.**

Cook, Arthur G.

*Gower Publishing*, ©2006 141 p. \$114.95

Noting that one's view of forecasting changes according to what role one plays in the pharmaceutical industry, Cook (principal of ZS Associates, a management and sales consulting firm) boils down the definition to: "the need to provide inputs for multiple decisions within an organization." Over the course of six chapters he introduces the history of forecasting and its use in the pharmaceutical industry; examines the tools, methods, and analytics available to forecasters; describes the approaches and algorithms that can be used in new product and in-market forecasting; considers the future role of forecasting in pharmaceuticals; and presents a case study illustrating the application of forecasting. Distributed in the US by Ashgate.

HT166 2006-013706 0-8493-9199-7

**Urban remote sensing.**

Title main entry. Ed. by Qihao Weng and Dale A. Quattrochi.

CRC Press, ©2007 412 p. \$99.95

A textbook for graduate or advanced undergraduate students, perhaps in geography or environmental sciences, explains methods of remote sensing to measure and monitor aspects of cities, particularly their production of waste and air and water pollution, but also settlement patterns and other matters. Contributors from universities and government agencies in the US, Europe, Puerto Rico, and China review the literature on basic concepts and methodologies, present case studies, discuss ways of applying new techniques, and explain how to analyze results.

KF3030 2006-020632 978-1-55570-570-1

**Technology and copyright law; a guidebook for the library, research, and teaching professions, 2d ed.**

Bielefield, Arlene and Lawrence Cheeseman.

Neal-Schuman, ©2007 263 p. \$65.00 (pa)

Bielefield (information and library science, Southern Connecticut State U.) and Cheeseman, a practicing law librarian, offer advice to professionals in libraries and schools to help them anticipate and avoid potential problems with copyright and other intellectual property law. No date is noted for the first edition, but the second incorporates the Digital Millennium Copyright Act; each chapter also begins with a list of what is new, so readers of the first edition can skip what they already know.

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**SCIENCE (GENERAL)**

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Q105 2005-035445 978-0-7591-0652-9

**Handbook for small science centers.**

Title main entry. Ed. by Cynthia C. Yao.

AltaMira Press, ©2006 310 p. \$95.00

Yao et al. compile 50 essays on how to start and expand a science center by contributors from around the world who share their own experiences. Case studies from 11 museums in the US, Canada, the UK, and Denmark are discussed, in addition to center management, exhibits and special exhibit spaces, education programs, staff, and understanding the audience. Other topics include governance, transitioning a center for growth, and science center history, also discussed from a European perspective. Yao is the founder of the Ann Arbor Hands-On Museum.

Q180 2006-021534 978-0-8108-5241-9

**Literature search strategies for interdisciplinary research; a sourcebook for scientists and engineers.**

Title main entry. Ed. by Linda G. Ackerson.

Scarecrow Pr., ©2007 132 p. \$35.00 (pa)

Ackerson (library science, U. of Illinois at Urbana-Champaign) edits this guide designed to help scientists and engineers plan a successful strategy for the often harrowing task of interdisciplinary research. Each chapter tackles a specific discipline in physical science, mathematics, life science, applied science, and social science, informing the reader how the majority of literature in that discipline is arranged and how to access the best publications, both print and electronic, for interdisciplinary interests. Chapters also provide a brief history of each subject and an overview of the unique characteristics of its literature and research. Specifically, the ten chapters cover the following disciplines: paleontology, crystallography, quaternary research, human factors engineering, nanotechnology, atmospheric chemistry, bioethics, computational biology, engineering entrepreneurship, and machine learning.

Q327 978-0-19-929706-1

**Pattern theory; from representation to inference.**

Grenander, Ulf and Michael I. Miller.

Oxford U. Press, ©2007 596 p. \$99.50 (pa)

Aimed at graduate students in biomedical engineering, mathematics, computer science and electrical engineering, this text provides a comprehensive and accessible overview of the modern challenges in signal, data and pattern analysis in speech recognition, computational linguistics, image analysis and computer vision. The authors begin with an overview of pattern theory and the basics of statistics and estimation theory, before discussing the role of representation of patterns via conditioning structure and groups of geometric transformation applied to the representation of geometric objects. They also discuss probabilistic structures in the continuum, the Bayes estimation of shapes, the estimation of infinite dimensional shape in computational anatomy, and inference.

## MATH, COMPUTERS

QA37 978-1-58488-502-3

### **Handbook of mathematics for engineers and scientists.**

Polyanin, Andrei D. and Alexander V. Manzhirov.

*Chapman & Hall/CRC*, ©2007 1509 p. \$99.95

This reference reviews hundreds of the formulas, functions, methods, equations, solutions, and transformations frequently applied in various areas of physics, mechanics, and engineering. The authors, who are professors at the Russian Academy of Sciences, devote particular attention to methods for obtaining exact solutions to the equations that underlie mathematical modeling of scientific phenomena and mechanical processes. The last quarter of the dense book lists finite sums, infinite series, integrals, transforms, differential equations, linear equations, systems of partial differential equations, and functional equations.

QA76.58 2006-045099 978-0-89871-619-1

### **Parallel processing for scientific computing.**

Title main entry. Ed. by Michael A. Heroux et al.  
(Software, environments, tools)

*SIAM*, ©2006 397 p. \$90.00 (pa)

Suggesting that scientific computing is "emerging as a peer to experimentation and theory," Heroux (Sandia National Laboratories), Raghavan (computer science and engineering, Pennsylvania State U.), and Simon (Lawrence Berkeley National Laboratory) present this work as a reference and introductory overview of the current state of the art in parallel processing for computational modeling and simulation and related computer science and applied mathematics aspects. They cover performance modeling, analysis, and optimization; parallel algorithms and software for common problems of modeling and simulation applications; tools and environments important to the process of application development; and a sampling of applications that require parallel computing for scaling to solve large and realistic models for science and engineering.

QA76.76 2006-044680 0-8493-0524-1

### **Applied software risk management; a guide for software project managers.**

Pandian, C. Ravindranath.

*Auerbach Publications*, ©2007 244 p. \$89.95

Written as a guide for those who manage projects, this book introduces risk management best practices for software development and, to a lesser extent, decision analysis. The first seven chapters introduce and define the basics of risk management, covering risk culture,

risk management process, risk attributes, risk identification, risk analysis, responding to risk, and risk tracking. The remaining five "are meant to be optional, additional ideas" and discuss risk models, risk intelligence, feed forward (a paradigm of knowledge-based control), integrated risk management, and risk management draft procedures. Distributed in the US by Taylor & Francis.

QA76.76 978-0-7695-2685-0

### **Asia-Pacific software engineering conference; proceedings.**

Asia-Pacific Software Engineering Conference (13th: 2006: Bangalore, India) Ed. by Pankaj Jalote.

*Computer Society Press*, ©2006 494 p. \$211.00 (pa)

Drawn primarily from Asia, the 59 papers selected for the December 2006 conference explore new developments in component-based software engineering, service-oriented architecture, formal methods, testing and program checking, empirical software engineering, software process improvement, and maintenance. The researchers propose integration of stateful services for a grid workflow, a fault tolerant architecture using Object-Z, a practical estimation method for complex requirements engineering, and a pattern-based model evolution approach. Other topics include cohesion analysis in Linux kernel, usage patterns of the Java standard API, a portable interceptor mechanism on SOAP for continuous audit, and measuring architectural layering violations in source code. No subject index is provided.

QA76.76 2006-930647 978-0-7695-2692-8

### **Semantic media adaptation and personalization; proceedings.**

Int'l workshop on Semantic Media Adaptation and Personalization (1st: 2006: Athens, Greece) Ed. by Phivos Mylonas et al.

*Computer Society Press*, ©2006 163 p. \$178.00 (pa)

This publication consists of the proceedings of the First International Workshop on Semantic Media Adaptation and Personalization held in Athens, Greece, in December of 2006. Twenty-eight papers are included, written by computer scientists and engineers from all over the world. Mylonas (National Technical U., Greece) et al. compile papers on knowledge modeling, integration, and management for personalization; ontology-based personalization and exploitation of user contexts; user and group modeling and profiling; preferences representation, generation, extraction and update; content authoring, delivery and access;

intelligent interfaces; adaptive hypermedia and information retrieval; filtering; multimedia summarization; syndication and aggregation; and e-learning. The index lists author only.

QA76.87 978-0-470-05669-1

**Handbook of neural engineering.**

Title main entry. Ed. by Metin Akay.

*Wiley-IEEE Press*, ©2007 662 p. \$150.00

Featuring contributions from 140 international experts from academia, industry, and private and government organizations, this resource text highlights recent advances in wearable and implantable neural sensors/probes and computational neural science and engineering. It incorporates fundamentals of neuroscience, engineering, mathematical, and information sciences. Forty chapters are organized into sections addressing neural signal and image processing and modeling; neuro-nanotechnology, artificial implants and neural prosthesis; and neurorobotics and neural rehabilitation engineering. A sampling of contents: optimal signal processing for brain-machine interfaces, functional characterization of adaptive visual encoding, restoration of movement by implantable neural motor prostheses, advances in retinal neuroprosthetics, muscle synergies for motor control, cable equation model for myelinated nerve fiber, and nonlinear approaches to learning and memory.

QA76.88 2006-049559 1-58488-681-1

**Quantum computing devices; principles, designs, and analysis.**

Title main entry. Ed. by Goong Chen et al.

*Chapman & Hall/CRC*, ©2007 542 p. \$79.95

Having sifted through the hundreds of proposals and thousands of papers that make up the literature, six physicists and a mathematician review the current state of quantum electronic devices as quantum gates. They begin by setting out the basic ideas, fundamentals, and algorithms of quantum computing and information. Then, for the most promising candidates for quantum computers, they discuss the physical properties, the setup of qubits, the control actions that bring about the quantum gates, the measurements, and the decoherent properties.

QA76.9 2006-024028 978-0-8493-9367-9

**Autonomic computing; concepts, infrastructure, and applications.**

Title main entry. Ed. by Manish Parashar and Salim Hariri.

*CRC Press*, ©2007 539 p. \$99.95

The scale, complexity, heterogeneity, and dynamism of computing networks, systems, and

applications has necessitated a new paradigm for system and application design inspired by the human autonomic nervous system, according to Parashar (electrical and computer engineering, Rutgers U.) and Hariri (electrical and computer engineering, U. of Arizona), the goal of which is to engineer computer and software systems and applications that can manage themselves using self-configuration, self-healing, self optimization, and self-protection with only high-level guidance from human beings. Their handbook provides an overview of this emerging paradigm. Twenty-three chapters are presented in four sections that introduce the underlying concepts, challenges, requirements, and proposed architectures of autonomic computing; explore different approaches and infrastructures for achieving autonomic "self" properties; describe enabling systems, technologies, and services that support the realization of "self" properties in autonomic systems and applications; and introduce specific realizations of the paradigm, including dynamic server allocation, runtime reconfiguration in managed execution environments, self-organizing scheduling on the organic grid, autonomic data streaming for high-performance scientific applications, autonomic power and performance management of Internet data, trace analysis for fault detection in application servers, and anomaly-based self protection against network attacks.

QA76.9 2006-929311 978-1-84564-055-2

**Grid technologies; emerging from distributed architectures to virtual organizations.**

Title main entry. Ed. by M.P. Bekakos et al. (Advances in management information series; v.5)

*WIT Press*, ©2006 475 p. \$280.00

Grid computing is an approach to utilizing distributed computer resources that are not subject to centralized control, and shows potential for fulfilling requirements arising in the context of high-performance computing applications, especially in computational science and engineering. Contributors from computer science, electrical engineering, information technology, and other fields survey current Grid technologies from the perspective of providing web services, middleware, applications of processor network architectures, and various distributed computational methods.

QA76.9 2006-934374 978-0-7695-2745-1

**Intelligent information hiding and multimedia signal processing; proceedings.**

International Conference on [Title] (2d: 2006: Pasadena, CA) Ed. by Wai-Chi Fang et al.

*Computer Society Press*, ©2006 711 p. \$267.00 (pa)

Sponsored by the Institute of Electrical and Electronics Engineers (IEEE), the 2006 International Conference on Intelligent Information Hiding and Multimedia Signal Processing drew researchers from around the world to discuss recent developments in the field. This proceedings volume contains some 160 papers and keynote speeches that were presented there. A sampling of topics includes spread spectrum audio steganography using sub-band phase shifting; a new watermarking protocol of copyright protection; and the recognition of human behavior in video images. The volume lacks a subject index.

QA184 2006-045491 1-58488-510-6

**Handbook of linear algebra.**

Title main entry. Ed. by Leslie Hogben. (Discrete mathematics and its applications)

*Chapman & Hall/CRC*, ©2007 -- p. \$119.95

Appropriate for statisticians, scientists, and engineers, this dense handbook reviews the principles of linear algebra, combinatorial matrix theory, numerical methods for linear systems, computational software, and applications to optimization, probability, analysis, computer science, and geometry. Each of the 77 chapters defines relevant terms, summarizes facts, and provides at least one example. Topics include determinants and eigenvalues, functions of matrices, linear preserver problems, bipartite graphs, matrix completion problems, the implicitly restarted Arnoldi method, Markov chains, signal processing, Lie algebras, Matlab, Maple, and Mathematica. The editor teaches at Iowa State University.

QA274 2006-025156 978-0-8493-9083-8

**Stochastic hybrid systems.**

Cassandras, Christos G. and John Lygeros. (Automation and control engineering; 24)

*CRC / Taylor & Francis*, ©2007 286 p. \$119.95

Stochastic hybrid systems (SHS) combine time- and event-driven dynamics and have applications in a variety of fields, including mathematical finance, molecular biology, and air traffic management. Featuring contributions from mathematicians and engineers from around the world, this volume provides a detailed overview

of the theoretical basis, computational methods, and applications of SHS. It is aimed primarily at researchers in academia and industry with an interest in systems and control engineering. Cassandras is co-founder of Boston University's Center for Information and Systems Engineering. Lygeros teaches at ETH Zürich, Switzerland.

QA377 2006-049622 1-58488-663-3

**Exact solutions and invariant subspaces of nonlinear partial differential equations in mechanics and physics.**

Galaktionov, Victor A. and Sergey R. Svirshchevskii.

(Chapman & Hall/CRC applied mathematics and nonlinear science series; 10)

*Chapman & Hall/CRC*, ©2007 498 p. \$89.95

Writing for those professionals and students seeking an introduction to the general theory of nonlinear evolution partial differential equations (PDEs) of different orders and types, Galaktionov (mathematics, U. of Bath) and Svirshchevskii (Keldysh Institute of Applied Mathematics) provide the first book-length systematic construction of exact solutions by way of linear invariant subspaces for nonlinear differential operators. They focus on new exact solutions on linear invariant subspaces for nonlinear operators and include applications from fluid mechanics, reaction-diffusion, wave propagation and thin-film theory, and supply a number of open-ended mathematical problems, including moving-mesh methods, blow-up aspects and discrete operators. They also include new examples of nonlinear models along with the standard, including nonlinear dispersion and Harry Dym equations, and offer exact solutions on invariant subspaces from some unharmonious lattices.

QA808 2006-048958 0-8493-9779-0

**Continuum mechanics; elasticity, plasticity, viscoelasticity.**

Dill, Ellis H.

*CRC / Taylor & Francis*, ©2007 352 p. \$99.95

This volume is intended as a reference for professional engineers as well as a teaching text for first-year graduate students in engineering. It features concise, yet thorough coverage of the following aspects of continuum mechanics: elasticity, fluid mechanics, plasticity, and viscoelasticity. It also provides an introduction to the continuum model for fatigue and fracture mechanics as well as a complete derivation of the basic equations and solution procedures for the finite element method. Direct solutions of the basic equations are not discussed beyond the simple deformations. Dill teaches mechanical and aerospace engineering at Rutgers U.

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**ASTRONOMY**


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QB462 2006-050481 0-7503-0883-4

**Numerical methods in astrophysics; an introduction. (CD-ROM included)**

Title main entry. Ed. by Peter Bodenheimer et al. (Series in astronomy and astrophysics)

*Taylor & Francis*, ©2007 329 p. \$79.95

Featuring numerous illustrative examples, this practical guide for students, researchers, and professionals introduces numerical methods that may be used to solve key problems in astrophysics. Coverage includes (for example) Eulerian equations of hydrodynamics, Navier-Stokes equations, stellar structure equations, and equations of radiation hydrodynamics. Numerical codes and graphs of sample results are provided on the accompanying CD-ROM. Bodenheimer is affiliated with the U. of California, Santa Cruz.

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**PHYSICS**


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QC20 2006-050868 1-58488-772-9

**Geometric algebra and applications to physics.**

De Sabbata, Enzo and Bidyut Kumar Datta.

*Taylor & Francis*, ©2007 168 p. \$89.95

This textbook introduces researchers and advanced students to the discipline of geometric algebra and explains how it may be applied to a number of fundamental problems in physics. Particular attention is paid to the use of these mathematical techniques in experimental situations. Coverage includes such topics as multivectors, spinor theory, space-time algebra, and quantum gravity. De Sabbata teaches at the Universities of Bologna and Ferrara, Italy, and Datta is affiliated with the M.P. Birla Institute of Fundamental Research in Calcutta.

QC21 2006-028115 978-0-9778582-1-7

**Physics for engineers and scientists.**

Oppen, G. von. and F. Melchert.

*Infinity Science Press*, ©2007 400 p. \$69.95

Developed at the Technical University of Berlin, this textbook explains the principles of mechanics, thermodynamics, wave motion, electromagnetic radiation, the atomic structure of matter, and quantum gasses. Advanced sections on the lattice structure of crystals and semiconductors make the text uniquely useful for the computer chip industry. Originally published in German as *Physik für Ingenieure* by Pearson Studium in 2005.

QC174 2006-049558 1-58488-638-2

**Introduction to non-Kerr law optical solitons.**

Biswas, Anjan and Swapan Konar. (Chapman &amp; Hall/CRC applied mathematics and nonlinear science series)

*Chapman & Hall/CRC*, ©2007 198 p. \$89.95

Biswas (applied mathematics and theoretical physics, Delaware State U.-Dover) and Konar (applied physics, Birla Institute of Technology, India) deal exclusively with soliton propagation in optical media that possess the sort of non-linearity that does not conform to Kerr's law about refractive index and light intensity. Such non-linearity, they say, displays many new and interesting behaviors that might be of use in optical communications systems. They write for graduate students of applied mathematics, physics, and engineering and for bold undergraduates with a knowledge of partial differential equations, perturbation theory, and elementary physics.

QC793 2006-018871 978-0-7503-0935-6

**An introduction to the passage of energetic particles through matter. (CD-ROM included)**

Carron, N.J.

*Taylor & Francis*, ©2007 362 p. \$209.95

Researcher Carron provides here a general introduction for specialists and non-specialists, even providing a background in the basic physics. He explores the interactions with matter and energetic particles, including photons, electrons, protons, alpha particles and neutrons with a variety of applications including photon and neutron cross sections, charged particle stopping powers, electron mean ranges and angular distributions, covering photons as they appear in long wavelengths and other configurations and as an element of photoelectric absorption, electrons, including in elastic scattering from and atom and in the case of collision energy loss, protons and heavier ions, including proton and alpha particle stopping powers in selected materials, and a range of topics on neutron interactions. He is especially careful in describing identifying where to access data, including extracting a subset from available resources, and knowing how to interpret the format in which the data are presented.



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**CHEMISTRY**

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QD381 90-04-15424-8

**Poly(butylene terephthalate) synthesis and properties.**

Mikitaev, A.K. and T.A. Borukaev. (New concepts in polymer science)

BRILL, ©2006 203 p. \$201.00

Polymeric materials based on what is informally known as PBT have attracted much attention from scientists and manufacturers because of their mechanical characteristics, good resistance to chemicals and water, and other profitable features. Mikitaev and Borukaev (not otherwise identified) describe not only the mechanism of PBT synthesis by equilibrium polycondensation reactions, but also the reagents, catalysts, and stabilizers that are used in the process. They write for advanced students, lecturers, and scientists interested in polycondensation methods for polymer synthesis. They do not provide an index.

QD382 90-04-15362-4

**Photodegradation and light stabilization of heterochain polymers.**

Niyazi, F. et al.

BRILL, ©2005 193 p. \$201.00

This work presents recent work on the use of light stabilizer chemical substances intended to counter the problem of photodegradation of heterochain polymers as they age. The three chapters address the stabilization and modification of cellulose diacetate, polycapraamide, and polyethyleneterephthalate. For each, the chemistry of photodegradation is presented and the light stabilizer properties of a range of chemical substances are described. Distributed in the US by ISBS.

QD411 2006-023013 978-0-471-73015-6

**Frontiers in transition metal-containing polymers.**

Title main entry. Ed. by Alaa S. Abd-El-Aziz and Ian Manners.

Wiley-Interscience, ©2007 533 p. \$135.00

Abd-el-Aziz (a chemist currently serving as an academic and research associate vice-president at the U. of British Columbia, Canada) and Manners (chemistry, U. of Bristol, UK) present recent research in the field of synthetic polymers that incorporate metal atoms, which have only recently emerged as functional materials. Following a history of the field's development and an overview of recent developments, 11 chapters discuss block copolymers with transition metals in the main chain, metal-containing pi-conjugated polymers, metal

coordination polymers for nanofabrication, rigid-rod polymetallaynes, polymers with metal-metal bonds along their backbones, structures and properties of one-dimensional transition metal-containing coordination/organometallic polymers and oligomers built upon assembling diphosphine and diisocyanide ligands, redox-based functionalities of multinuclear metal complex systems, metalloendrimers and their potential utilitarian applications, metallodendritic iron complexes, polypeptide-based metallobiopolymers, and supramolecular metal arrays on artificial metallo-DNAs and peptides.

QD921 978-3-527-31506-2

**Making crystals by design.**

Title main entry. Ed. by Dario Braga and Fabrizia Grepioni.

Wiley-VCH, ©2007 347 p. \$190.00

Braga and Greponi (both chemistry, U. of Bologna, Italy) offer an introductory overview of all aspects of modern crystal engineering methods and techniques. Intended for students, teachers, spectroscopists, physical and inorganic chemists, and materials scientists in nanotechnology and the pharmaceutical industry, the 12 chapters of the book detail geometry and energetics (supramolecular and intermolecular interactions, networks, topologies, and entanglements), design and reactivity (including making coordination frameworks), and characterizations and applications (diffraction studies, solid state NMR, polymorphism, nanoporosity, and gas storage and sensing). Contributors are chemists from around the world.

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**BIOLOGY**

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QH450 2006-028894 978-0-87969-724-2

**Epigenetics.**

Title main entry. Ed. by C. David Allis et al.

Cold Spring Harbor Lab., ©2007 502 p. \$150.00

One of the definitions of epigenetics is the study—or perhaps the phenomenon (scientists have trouble distinguishing)—of a change in phenotype that is heritable but does not involve DNA mutation; the change must be switched on or off rather than graded, and must be heritable even if the initial conditions that caused the switch disappear. Biological scientists discuss such aspects as fungal models, the epigenetics of ciliates, transcriptional silencing by polycomb group proteins, genomic imprinting in mammals, human disease, and epigenetic determinants of cancer.

QH588 2006-006484 978-1-58829-664-1

**Stem cells and myocardial regeneration.**

Title main entry. Ed. by Marc S. Penn. (Contemporary cardiology)

*Humana Press Inc.*, ©2007 315 p. \$145.00

Said to promise major advances in therapies for cardiac dysfunction, stem cell research may hold hope for the near-epidemic status of chronic heart failure (CHF) worldwide. These 21 articles help readers understand the ravages of CHF and the successes and failures of optimal medical therapies and give the basic science behind stem cell research, including the different stem cell types (including hematopoietic, mesenchymal, multipotent adult progenitor cells, umbilical cord blood stem cells, endogenous cardiac stem cells and embryonic stem cells) and the critical physiological pathways including chemokine and homing factor expression, stem cell differentiation toward a cardiac myocyte phenotype and mechanisms of arrhythmia including electrical coupling. Articles then review strategies for cell delivery, clinical trials, therapies such as whole bone marrow transplantation, clinical angioplasty therapy and the use of skeletal myoblasts and other techniques, and the future of the field.

QP82 978-0-8493-9539-0

**Bioengineering and biophysical aspects of electromagnetic fields.**

Title main entry. Ed. by Frank S. Barnes and Ben Greenebaum. (Handbook of biological effects of electromagnetic fields, 3d ed.)

*CRC / Taylor & Francis*, ©2007 440 p. \$99.95

This edition reflects the newest research available on recent theoretical developments as well as new data on material properties and interactions with weak and strong static magnetic fields. Topics of this volume in the series include environmentally and occupationally encountered fields, endogenous electric fields in animals, magnetic properties of biological material, interactions of direct current and extremely low-frequency electric fields with biological materials and systems, magnetic field effects on free radical reactions, biological effects of static magnetic fields, the ion cyclotron resonance hypothesis, computational methods for predicting field intensity and temperature change, exposure assessment, electromagnetic imaging of biological systems. This volume is also sold as a set with *Biological and Medical Aspects of Electromagnetic Fields* under the title *Handbook of Biological Effects of Electromagnetic Fields* (set ISBN: 978-0-8493-2952-4).

QP517 2006-024030 978-0-8493-7198-1

**Introduction to genomic signal processing with control.**

Datta, Aniruddha and Edward R. Dougherty.

*CRC Press*, ©2007 271 p. \$99.95

One of the results of the current genome craze is an increased interest in studying large sets of genes in order to understand collection function, and it turns out that engineering approaches for prediction, signal processing, and control are well suited to analyzing such multi-variate interaction. Datt and Dougherty (both electrical and computer engineering, Texas A&M U.-College Station) introduce readers with a background in mathematics but not necessarily in biology to genomic signal processing, including the use of control theory to obtain optimal intervention strategies for gene regulatory networks.

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**MICROBIOLOGY**

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QR92 1-904933-23-8

**Research and applications in bacteriocins.**

Title main entry. Ed. by Margaret A. Riley and Osnat Gillor.

*Horizon Bioscience*, ©2007 218 p. \$218.00

The rise in antibiotic-resistant bacteria has led to renewed efforts to find new antimicrobials, and bacteriocins, or toxins commonly found in most microbial species, appear to be a promising alternative because they are active against moth pathogens, already exist in nature, are stable, and are not toxic to human cells. These nine focused essays, opening with an introduction by Riley (biology, U. of Massachusetts) and Gillor (environmental hydrology and microbiology, Ben Gurion U. of the Negev), cover the latest research in bacteriocin structure and function and their means of biosynthesis, genetically modified bacteriocins, potential applications, cytotoxic activity of bacteriocin against eukaryotic cells, *Streptococcus mutans* and their uses in the treatment of dental caries and as antibiotics, the use of bacteriocins in livestock and the food industry, and the past, present and future of Nisin.

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**MEDICINE (GENERAL & PUBLIC ASPECTS)**

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R853 2006-009481 1-59140-982-9

**Handbook of research on informatics in healthcare and biomedicine.**

Title main entry. Ed. by Athina A. Lazakidou.

*Idea Group Publishing*, ©2006 448 p. \$215.00

Presented by Lazakidou (U. of Piraeus, Greece), the 55 contributions to this handbook are collectively intended to provide broad coverage of the most important issues, concepts, trends,

and applications related to the use of information and communication technologies in healthcare and biomedicine. The chapters are gathered into 13 sections covering medical data and health information systems, standardization and classification systems in medicine, virtual reality applications in medicine, virtual learning environments in healthcare and biomedicine, computer-assisted diagnosis, data mining and medical decision making, current aspects of knowledge management in medicine, telemedicine and e-health services, image processing and archiving systems, signal processing techniques, use of new technologies in biomedicine, ergonomic and safety issues in computerized medical equipment, and health economics and health services research.

R856 2005-054864 978-0-8493-2121-4

**Biomedical engineering fundamentals.**

Title main entry. Ed. by Joseph D. Bronzino. (The electrical engineering handbook series, 3d ed)

*CRC / Taylor & Francis*, ©2006 -- p. \$139.95

This textbook (the first in a three-volume series) outlines the major areas of modern biomedical engineering. Bronzino (applied science, Trinity College) compiles 87 chapters by biomedical and medical specialists from around the world, in sections on physiologic systems; physiological modeling, simulation, and control; bioelectric phenomena; biomaterials; biomechanics; and rehabilitation and human performance engineering. Changes to this edition include new sections on neuroengineering, molecular biology, bionanotechnology, bioinformatics, infrared lighting, and ethics. All sections have been revised. The volume is meant as an introduction or review text for students, and as a reference for professionals.

R857 2006-025589 978-0-7503-0938-7

**An introduction to biomedical optics.**

Splinter, R. and B. A. Hooper. (Series in optics and optoelectronics; 3)

*Taylor & Francis*, ©2007 602 p. \$79.95

Splinter (Analytica Sciences Inc., North Carolina) and Hooper (Areté Associates, Virginia) introduces a range of theoretical and practical issues concerning the application of optical technology for biomedical therapeutic and diagnostic purposes to the "inquisitive novice" physics, biology, electrical engineering, or medical student. General biomedical optics theory is covered in chapters discussing fundamentals of optical principles; optical interaction properties; light-tissue interaction variables; light-tissue interaction theory; numerical and deterministic methods in light-

tissue interaction theory; and photophysical, photochemical, and photobiological mechanisms and applications. Six chapters then discuss diagnostic applications in the photophysical, photochemical, and photobiological realms and therapeutic applications for the same.

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**HEALTH, MEDICINE, PSYCHIATRY**

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RA410 978-0-470-85626-0

**Statistical analysis of cost-effectiveness data.**

Willan, Andrew R. and Andrew H. Briggs. (Statistics in practice)

*John Wiley & Sons*, ©2006 196 p. \$85.00

For novices to the technique Willan (U. of Toronto) and Briggs (U. of Glasgow) skillfully provide an overview of the statistical methods used, and for veterans they provide the key developments in statistical issues related to cost-effectiveness comparisons over the last decade. Writing primarily for biostatisticians and health economists in academia and industry, government regulators, and postgraduate students, the authors use examples from their own experience throughout to describe basic concepts, estimating parameters for censored and non-censored data, performing the analysis (with a range of interesting examples), determining power and sample size, from both classical and Bayesian approaches, performing covariate adjustment and sub-group analysis, conducting multicenter and multinational trials and modeling cost-effectiveness. They thoughtfully provide both author and subject indices. The result is both useful and thorough.

RA792 2006-015875 1-58948-148-8

**GIS tutorial for health. (CD-ROM included)**

Kurland, Kristen S. and Wilpen L. Gorr.

*ESRI Press*, ©2006 317 p. \$69.95 (pa)

Developed at Carnegie Mellon University, these ten tutorials introduce the ArcMap and ArcCatalog user interfaces, and provide step-by-step instructions for visualizing health data with GIS software, designing maps for a health study, projecting spatial data, and geocoding tabular data. Spiral binding allows the computer lab workbook to lie flat. The CD-ROMs contain data sets and a trial version of ArcGIS 9.

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**PATHOLOGY**


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RB155 0-8247-5564-2

**Encyclopedia of medical genomics and proteomics; 2v.**Title main entry. Ed. by Jürgen Fuchs and Maurizio Podda. *Marcel Dekker*, ©2005 1388 p. \$495.00

Drawing on the expertise of an international team of over 400 contributors, the editors have compiled a thorough and completely updated resource to a rapidly developing field. The entries describe the current methods and technologies used for medical testing and disease management. Each entry is several pages in length and offers an introductory overview of the term or condition, then describes its clinical or experimental aspects, diagnosis, protocols, and other practical aspects. Concluding comments, b&w photos and diagrams, and a lengthy list of references are provided following each entry. Both editors are in the department of dermatology at the Johann Wolfgang Goethe U. in Frankfurt, Germany.

RB155 978-0-471-63181-1

**Genomics and proteomics engineering in medicine and biology.**

Title main entry. Ed. by Metin Akay.

*Wiley-Interscience*, ©2007 297 p. \$99.95

Biologists, computer scientists, and electrical engineers describe mathematical and engineering methods for understanding biology at a systems level and complex biological processes. Their topics include gene regulation bio-informatics of microarray data, genome-wide motif identification using a dictionary model, and the computational analysis of proteins. They write for students in biology and biomedical engineering and researchers in genomics, proteomics and systems biology.

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**INTERNAL MEDICINE, PSYCHIATRY**


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RC347 2006-020445 978-1-888799-97-2

**Clinical neuropathology; text and color atlas.**

Haberland, Catherine.

*Demos Medical Publishing, Inc.*, ©2007 324 p. \$89.95

Incorporating advances in the field of neurology in the past decade, this text is designed to provide a solid foundation for medical students and psychiatrists in the clinical manifestations, structural alterations, molecular pathology, and pathogenesis of commonly and less commonly encountered cerebrovascular, neurodegenerative, and nervous system diseases and conditions due to infections, cancer/cancer treatment,

traumatic injuries, and congenital malformations. Lamenting the "regrettable decline in autopsies," Haberland (neurology, pathology, and psychiatry, Chicago Medical School at Rosalind Franklin U./VA Medical Center, North Chicago) notes that pathologists-in-training should also find this material useful. The well-illustrated volume includes review questions with an answer key.

RC489 978-0-7619-4114-9

**Art therapy, research and evidence-based practice.**

Gilroy, Andrea.

*Sage Publications*, ©2006 177 p. \$110.00

Gilroy (art psychotherapy, Goldsmiths College, U. of London) is known as a premier researcher in art therapy, and here she concentrates on issues related to evidence-based practice (EBP), focusing most closely on the philosophies, politics and practices that constitute research and EBP and how these interact with art therapy. She finds that although traditional research and EBP inform each other they comprise substantially different activities, and she argues that art therapy should develop a pluralistic evidence base appropriate to the discipline. She describes EBP and its attachments of anxiety, empowerment and strategy, the development of guidelines relating to art therapy, the audit, methodological debates, generating evidence, and applying the evidence to art therapy with adults, children and adolescents. She includes an initial appraisal checklist and a critical appraisal checklist for use by researchers and a comprehensive list of references.

RC521 978-1-904392-58-3

**Therapeutic strategies in dementia.**

Title main entry. Ed. by C.W. Ritchie et al.

*Clinical Publishing*, ©2007 362 p. \$89.95 (pa)

The variety of possible approaches to therapy for Alzheimer's disease is evident in these papers, which cover a wide range of pathophysiological mechanisms and disease areas. The contributors, who are international experts in psychiatry, neurology and geriatrics, review current and evolving therapeutic options, including anti-amyloid therapies, neuro-protective strategies, and pharmacological and non-pharmacological symptomatic treatments. The volume also includes updates on several recent and ongoing clinical trials, the development of new biomarkers to aid recognition of disease and earlier intervention, and a discussion of the pharmacoeconomics of treating dementia. Distributed by CRC Press.

RC552 0-88937-321-3

**Treating victims of mass disaster and terrorism.**

Housley, Jennifer and Larry E. Beutler. (Advances in psychotherapy; evidence-based practice)

*Hogrefe & Huber Publishers*, ©2007 75 p. \$24.95 (pa)

This concise reference for psychotherapists offers practical, evidence-based guidance on the diagnosis and treatment of victims following a mass disaster or terrorist attack. It presents a three-stage model for early intervention that was developed by a task force jointly sponsored by the Society of Clinical Psychology and the North American Society for Psychotherapy Research. The volume concludes with suggestions for further reading and some sample handouts. It is not indexed.

RC553 2005-046674 978-0-8493-2732-2

**Understanding autism; from basic neuroscience to treatment.**

Title main entry. Ed. by Steven O. Moldin and John L.R. Rubenstein.

*CRC / Taylor & Francis*, ©2006 526 p. \$159.95

Autism spectrum disorders have been found in as many as 73 per 10,000 people, with great emotional and financial costs to families and society. In response researchers are searching for cures with "bottom-up" approaches such as genetic studies as well as "top-down" approaches such as neuroscience. This collection of 20 articles describing the efforts of top researchers includes descriptions of phenotypes and diagnosis, epidemiology, genetics, endophenotypes, quantitative trait locus mapping, expression profiling, a mixed epigenetic and genetic and mixed *de novo* and inherited model, fragile X syndrome and the neurobiology of related disorders, fear and anxiety pathways, anatomical hypotheses, language, the prefrontal cortex, the social brain and amygdala, the thalamus and neuromodulatory systems, modeling features in animals, anatomical and chemical studies, psychology and imaging in the social brain, structural imaging, the psychology and physiology of autism, pharmacological treatment, treatments including the behavioral and educational, and the costs of autism.

**THERAPEUTICS, PHARMACOLOGY, NURSING**

RM301 978-3-527-31775-2

**Research and development in the chemical and pharmaceutical industry, 2d ed.**

Bamfield, Peter.

*Wiley-VCH*, ©2006 277 p. \$100.00

Independent chemistry and research and development consultant Bamfield provides guidance on the management skills important to organizing scientific research and development inside the chemical and pharmaceutical industry. He covers the management of scientific personnel, management within various organization structures, and project management of innovation. Coverage is broad and touches upon such wide ranging issues as technology choice, quality management systems, dealing with trade unions, budgets and financing, intellectual property law, selection and evaluation of projects, the innovation chain, and project management skills.

RS164 978-3-527-31443-0

**Medicinal plant biotechnology; from basic research to industrial applications; 2v.**

Title main entry. Ed. by Oliver Kayser and Wim J. Quax.

*Wiley-VCH*, ©2007 576 p. \$290.00

Surprised to not find any recent works on medicinal plants and biotechnological techniques at the "high comprehensive level" appropriate to the discipline's status as an important subfield of pharmaceutical biotechnology, the editors (professors of pharmaceutical biology at the U. of Groningen, the Netherlands) set out to create it themselves, gathering experts from pharmaceutical biology, biotechnology, biochemistry, and genetics in order to assemble this two-volume overview of research and applications. The first section concerns links between plants, genes, and biotechnology and includes papers on metabolomics, high performance liquid chromatography and nuclear magnetic resonance techniques for plant extract analysis, plant-associated microorganisms as a source of bioactive natural products, DNA profiling of plants, "bioprospecting" (the search for bioactive lead structures from nature), and biotechnological approaches for the production of promising plant-based chemotherapeutics. The next nine papers are devoted to issues of genetic modifications, transgenic plants, and potentials of medicinal plants in gene technology and biotechnology and discuss, for example, glycosylation of recombinant proteins in plants,

production of therapeutic antibodies in plants, and exploring and accessing plant natural product biosynthesis in engineered microbial hosts. Remaining papers are presented under the heading "plants as drug factories" and include such topics as intellectual property protection of plant biotechnology, breeding of medicinal plants, camptothecin production in cell cultures of *Ophiorrhiza*, and biological production of artemisinin for malaria therapy.

RS189 2006-049131 0-8247-5814-5

**Thermal analysis of pharmaceuticals.**

Title main entry. Ed. by Duncan Craig and Michael Reading.

*CRC Press*, ©2007 400 p. \$139.95

Thermal analysis is a family of common techniques for characterizing mostly the physical but sometimes also the chemical properties of chemicals. US, French, and British pharmacists and other researchers focus on using these methods in pharmaceutical systems. They do not describe every technique used, but cite examples that demonstrate certain principles or procedures. Coupled methods are not included. Among their topics are basic principles of thermogravimetric analysis, thermal microscopy, and high-sensitivity differential scanning calorimetry.

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**PLANT CULTURE, ANIMAL CULTURE**

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SB472 2006-009369 978-0-471-47755-6

**Landscape architectural graphic standards.**

Title main entry. Ed. by Leonard J. Hopper.

*John Wiley & Sons*, ©2007 1074 p. \$175.00 Large (9.5x11.75") and weighty, this is a thorough and comprehensive reference to the standards and practices of landscape architecture and design necessary for producing professional drawings, based in format on Wiley's classic *Architectural graphic standards*. The work is divided into four parts: practice; standards and guidelines; process, implementation, and application; and materials. The over 150 chapters were written by over 100 authors who bring their own experience and expertise to the subject. The chapters are organized in a clear outline format, and provide history and background to the topic, the design factors to be considered, the legal and building code requirements, and description of examples. Particularly notable is the wealth of detailed and annotated illustrations, often including measurements and notes on materials and use. A list of references concludes each chapter. Two sections of color plates are included. Appendices contain drawing methods and geometry, the metric system, and the ASLA

declaration on the environment and sustainability. This work will be invaluable to landscape architects, architects, engineers, planners, urban designers and those in related fields.

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**TECHNOLOGY (GENERAL)**

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T50 2006-027515 978-0-87389-704-4

**The quality calibration handbook; developing and managing a calibration program.**

Bucher, Jay L.

*ASQ Quality Press*, ©2007 190 p. \$80.00

Bucher (retired from the Precision Measurement Equipment Laboratories program of the US Air Force) introduces a quality calibration system that he describes as a "tried-and-true quality calibration system that every organization can use as a foundation for its personalized program," which can then be modified to meet specific requirements and regulations. Defining calibration as a comparison of test equipment with an unknown uncertainty to a standard with a known uncertainty or the comparison of a piece of test equipment with a standard, he provides guidance both on the basics of the program, developing the program process, and ongoing program management.

T55 2006-020647 978-0-7546-4649-5

**Safety cases and safety reports; meaning, motivation, and management.**

Maguire, Richard.

*Ashgate Publishing Co.*, ©2006 176 p. \$99.95

Maguire details methods for assessing and constructing safety cases and reports in all hazardous industries, including nuclear, rail, chemical, defense, and construction fields, with examples from the UK, US, and other countries. He describes the meaning and measurement of safety and risk, the motivation behind constructing a safety case, the management of generating and presenting one, and maintenance. Developing risk matrices, demonstrating ALARP, safety targets, the value of presenting a fatality, and tools and techniques for assessments are discussed. Other chapters cover human, software, and management factors, and how they influence safety performance and cultures.

T174 978-0-85404-857-1

### **Nanoscopic materials; size-dependent phenomena.**

Roduner, Emil.

*Royal Soc. of Chemistry*, ©2006 285 p. \$69.95

Yes, size matters. Nanoscience, the manipulation of matter at the atomic and molecular level, has produced nanomaterials so small their behavior and characteristics deviate from those of macroscopic specimens and maybe predicted by scaling laws or by quantum confinement effects. Writing for postgraduate students of chemistry and materials science and researchers new to nanoscience and nanotechnology, Roduner (physical chemistry, U. of Stuttgart) introduces clusters, nanoparticles and Feynman's vision, then describes bulk and interface, geometric structure, magic numbers, coordination numbers of small clusters, electronic structure, magnetic properties, thermodynamics for finite size systems, absorption, phase behavior, the dynamics of surface layers and in pores, nucleation and phase transitions within the dynamics of clusters, phase transitions of two-dimensional systems, and catalysis by metallic particles. He closes with applications (both fact and fiction) for nanomaterials for nanotechnologies. Distributed in the US by Springer-Verlag.

T210 2006-030758 978-0-471-78379-4

### **Patent searching; tools & techniques.**

Hunt, David et al.

*John Wiley & Sons*, ©2007 188 p. \$70.00

Contributors from a Virginia company that does patent searches for the legal and business communities explain the ropes, skipping the theoretical underpinnings to the extent possible. They cover patent law and examination as the context, types of searches, the mechanics, patent analysis, approaches to reporting results, and search tools. They expect readers to be patent attorneys, patent agents, and their staffs.

## **ENGINEERING (GENERAL, CIVIL)**

TA177 2006-018328 978-0-8493-8212-3

### **Engineering economics and economic design for process engineers.**

Brown, Thane.

*CRC Press*, ©2007 347 p. \$99.95

Providing guidance on integrating technical and economic decision making, Brown (U. of Cincinnati) introduces the topics of engineering economics and economic design methodology. The focus of the section on engineering economics is on the early stages of development: process development, feasibility engineering,

and conceptual design. The material covered in this section includes time value of money, capital and production cost estimation, economic evaluation methods, and risk analysis. The economic design methodology he later presents is based on a three-phase model of defining objectives, creating options, and analyzing and selecting options, each of which is discussed in a separate chapter. The design methodology is further illustrated in a series of design case studies ranging from finding the optimal catalyst usage in a reactor/filter screen to finding the economically optimal number of production plants.

TA190 2006-042638 978-0-8493-9202-3

### **Macroengineering; an environmental restoration management process.**

Darabaris, John.

*CRC / Taylor & Francis*, ©2006 217 p. \$99.95

The Resource Conservation and Recovery Act (1976) birthed environmental restoration. Darabaris, who holds graduate degrees in geologic engineering and finance and has worked on government and industry environmental projects, provides expertise on complex restoration projects. Because models, regulations, and mobile lab equipment are constantly evolving, his examples underscore the macroengineering process and issues generally involved. But he does address specific EPA and other agency requirements. Stressing the need for project integration, he covers all phases from the pre-conceptual baseline study to quality control measures and contracting issues. Site investigation methods are summarized in one of the text's many tables.

TA357 2006-025242 978-0-926487-21-5

### **Functional Reynolds stress modeling. (CD-ROM included)**

Moore, Joan G. and John Moore.

*Pocahontas Press, Inc.*, ©2006 392 p. \$90.00

Applied mathematician Joan and John (emeritus, mechanical engineering, Virginia Polytechnic Institute and State U.) have collaborated on turbulence and fluid dynamics research for 40 years. Here they further the understanding of turbulence centered around the development and application of a family of Reynolds stress models for incompressible rotating flows. They begin by setting out the fundamentals and development of the models. Then they survey a number of applications and special topics, including the effects of walls on turbulence, axially rotating pipes, and high rotation and

elliptic flows. The included CD-ROM contains appendices, exercise solutions, and figures.

TA403 2006-000149 978-0-8493-3669-0  
**Combinatorial and high-throughput discovery and optimization of catalysts and materials.**

Title main entry. Ed. by Radislav A. Potyrailo and Wilhelm F. Maier. (Critical reviews in combinatorial chemistry series)

*CRC / Taylor & Francis*, ©2007 473 p. \$199.95

Combinatorial materials science involves using advanced materials fabrication methods which produce a large number of different materials on a substrate in one experiment under identical conditions, thus allowing for screening for desired physical properties by high-throughput characterization tools such as parallel or fast sequential methods. Among the issues addressed by the 23 chapters on combinatorial materials science presented in this volume by Potyrailo (General Electric Global Research Center, US) and Maier (technical chemistry, Saarland U., Germany) are: the level of acceleration in materials development adequate in combinatorial experiments, whether robotic manipulations of material libraries can be utilized to replace human-guided materials research, adequate levels of automation, and whether complex materials have become the subject of successful high-throughput studies. The chapters are presented in sections covering general aspects, catalysis, development of functional polymers, energy-related materials development, electronic materials development, and optic materials development.

TA418 2006-044264 978-0-471-44709-2  
**Pulsed laser deposition of thin films; applications-led growth of functional materials.**

Title main entry. Ed. by Robert Eason.

*Wiley-Interscience*, ©2007 682 p. \$175.00

In 1994, Wiley published what became the standard handbook for the technique, but both the technique itself and its range of applications have grown so much that a second reference was deemed necessary. Researchers engaged with the underlying physics, device design, and applications focus here on applying the technique to different materials and in different conditions. They cover complex materials, nonstandard or conventional format, the growth and characterization of a range of materials, applications to various material classes and with various devices, and new concepts. A third

volume is predicted in about a decade, when the technique has gained full commercial application.

TA418 2006-045549 978-1-57444-520-6  
**Rheology of particulate dispersions and composites.**

Pal, Rajinder. (Surfactant science series; v.136)

*CRC / Taylor & Francis*, ©2007 413 p. \$159.95

Knowledge of the rheological properties (plasticity and non-Newtonian fluid mechanics under stress) of particulate dispersions and two-phase solid composites are required in many engineering applications. Pal (U. of Waterloo, Canada) presents a systematic treatment of the rheology of these materials for a variety of material systems, emphasizing exact rheological constitutive equations based on the fundamental laws of mechanics (empirical results are generally avoided). Introductory chapters are followed by sections covering the rheology of dispersions of rigid particles, rheology of dispersions of nonrigid particles, rheology of composites, and linear viscoelasticity of particulate dispersions and composites.

TA1630 2005-932880 1-58603-536-3  
**Data fusion for situation monitoring, incident detection, alert and response management; proceedings.**

NATO Advanced Study Institute on Data Fusion for Situation Monitoring, Incident... (2006: Yerevan, Armenia) Ed. by Elisa Shahbazian et al. (NATO science series; series III, Computer and systems sciences; v.198)

*IOS Press*, ©2005 820 p. \$180.00

The 48 lectures delivered during the August 2003 seminar held in Armenia explore data fusion approaches to the detection and prevention of incidents, approaches that integrate information from multiple sources and derive maximum information about the phenomenon being observed. The contributors discuss human-computer interaction, image exploitation for security applications, distributed tracking, and complex sensor networks. Topics include uncertainty management for intelligence analysis, a genetic algorithm for resource optimization during naval warfare, neural network-based fusion of image and non-image data, and blast impact assessment in iron ore mines. No subject index is provided.



TA1637 2006-021814 978-1-4200-4306-8  
**Multispectral image analysis using the object oriented paradigm. (CD-ROM included)**

Navulur, Kumar.

*CRC / Taylor & Francis*, ©2007 165 p. \$79.95

Navulur explores the new object-oriented paradigm of image analysis for students, researchers, and practitioners who have a basic understanding of remote sensing principles, image processing, and applications of remotely sensed data. The paradigm creates objects, he explains, by grouping pixels with similar spectral and spatial characteristics so that, for example, identifying and characterizing a field of crops involves several groups rather than several thousand pixels. The disk contains sample data for exercises.

## ENVIRONMENTAL TECHNOLOGY

TD427 2006-049391 0-8493-3777-1  
**Modeling phosphorus in the environment.**

Title main entry. Ed. by David E. Radcliffe and Miguel L. Cabrera.

*CRC Press*, ©2007 420 p. \$129.95

Despite its importance in the environment and the need to track it consistently and effectively, approaches to modeling phosphorus have not changes since the 1980s. To correct this situation, contributors here describe basic approaches to modeling phosphorus, show how the current models implement these approaches, and suggest improvements. The 17 corresponding chapters cover basic approaches, including methods of modeling phosphorus movement from agriculture to surface waters and in runoff and erosion, modeling phosphorus leaching, transport in streams, and uncertainty estimation in models. The models include the Soil and Water Assessment Tool (SWAT), a hydrologic simulation program in Fortran, the Annualized Agricultural Nonpoint Source (AnnAGNPS) model, the ANSWERS-2000 model which addresses water and sediment losses along with phosphorus, the Watershed Ecosystem Nutrient Dynamics-Phosphorus (WEND-P) models and the Generalized Watershed Loading Functions (GWLF) model. Contributors describe phosphorus indices, best management practices and calibration data and make suggestions to improve modeling of phosphorus.

## BUILDING CONSTRUCTION

TH438 2006-008516 978-1-4051-2431-7  
**The management of major projects; a relationship approach.**

Title main entry. Ed. by Stephen Pryke and Hedley Smyth. *Blackwell Publishing*, ©2006 316 p. \$69.95 (pa)

Focusing on the creation and maintenance of effective relationships between clients and the project team, this book for students, academics, and practitioners contains 13 essays on construction and non-construction project environments. Pryke and Smyth (both: construction and project management, U. College London, UK) bring together essays by scholars in project management, organizational behavior, business, marketing, technology, and engineering from around the world, who emphasize projects that are contracted out for delivery by another organization. Case material from the infrastructure and construction industries is provided. Concepts behind the relationship approach are detailed, while subsequent chapters deal with mindsets, behaviors, and competencies such as learning to manage projects better, emotional intelligence, and trust. Others cover relationships involving the client, design team, and contractor, and project clusters and supply chains.

## MECHANICAL ENGINEERING & MACHINERY

TJ211 2006-002975 1-58450-851-5  
**Robot modeling and kinematics. (CD-ROM included)**

Manseur, Rachid.

*Da Vinci Engineering Press*, ©2006 367 p. \$49.95

Designed as an introduction to robotics but mathematically rigorous enough to serve an undergraduate population, this text makes ample use of software and interactive animated computer graphics illustrations and modeling to allow for a clear understanding. Manseur (electrical and computer engineering, U. of West Florida) covers the basics of viewing VRML files and the types of robots, advancing to object location, robot modeling, forward kinematics, inverse kinematics, kinematics of four-joint and six-joint robot arms and five-joint robots, Jacobian and Velocity kinematics, robot singularities and redundant arms. Appendices include a mathematics review including material on trigonometric equations. Da Vinci Engineering Press is an imprint of Charles River Media.

TJ843 2006-004245 978-0-8247-9956-4  
**Hydraulic power system analysis. (CD-ROM included)**

Akers, Arthur et al.

*CRC / Taylor & Francis*, ©2006 365 p. \$139.95

Despite the decline of its glamour quotient in recent years, fluid power systems remain attractive in many applications as compared to electrical or mechanical power transmission methods. Nevertheless, designers first approaching fluid power have found few resources to help in design and analysis. Akers and his co-authors, all from Iowa State U., answer the call by presenting modern computer-aided analytical techniques used to power nonlinear, dynamic fluid power systems. They describe the properties of fluids and their units, steady state modeling, dynamic modeling, linear systems analysis, frequency response and feedback, valves and their uses, pumps and motors, axial piston pumps and motors, hydrostatic transmissions, pressure regulating valves, valve model expansion, flow division and noise control. The CD contains programs using Excel, Mathcad and MATLAB that support the exercises and examples in the text.

TJ1185 2006-025617 978-0-8493-3837-3  
**Handbook of advanced ceramics machining.**

Title main entry. Ed. by Ioan D. Marinescu.

*CRC / Taylor & Francis*, ©2007 365 p. \$149.95

This volume presents the most recent developments in the machining of advanced ceramics. It is aimed at a broad audience that includes engineers, technicians, students, and researchers. Written by international experts from industry and academia, the 17 contributions look at various types and aspects of the lapping and grinding processes. Some of the methods discussed include laser- assisted grinding, ductile grinding, ultrasonic machining, and the new electrolytic in-process dressing (ELID) grinding method. Editor Marinescu is an engineering professor and director of the U. of Toledo's (Ohio) Precision Micro-Machining Center.

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**ELECTRICAL ENGINEERING,  
 ELECTRONICS, NUCLEAR ENGINEERING**

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TK5103 2006-047509 978-0-471-46052-7  
**Optical networking best practices handbook.**

Vacca, John R.

*Wiley-Interscience*, ©2007 472 p. \$110.00

Consultant Vacca starts with the fundamentals and proceeds to the leading edge of the science

in this reference, explaining the underlying concepts and defining key terms by way of case studies, examples and projects. He starts by explaining such optical networking basics as fiber optics, distributed Internet protocol routing and the distributed optical frame synchronized ring, then analyzes the types of optical networking technology, including that still in the research stage, optical transmitters, types of optical fiber, carriers' networks, passive optical components, free-space optics, optical formats, wave division multiplexing, the basics of optical switching and optical packet witching, optical network configuration, and developing areas in optical networking. He concludes with a summary with conclusions recommendations and includes an optical ethernet enterprise case study and glossary. The result is a rigorous but compact desk reference.

TK5103 2005-029359 978-0-470-01144-7

**Ultra-wideband wireless communications and networks.**

Title main entry. Ed. by Xuemin (Sherman) Shen et al.

*John Wiley & Sons*, ©2006 309 p. \$120.00

Because ultra-wideband (UWB) transmission offers many advantages, including operating with emission levels that are commensurate with common digital devices, there is growing industry and academic interest in its applications in wireless communications. In their introductory chapter of a dozen by international experts in field, Shen (U. of Waterloo) and his Canadian and US co-editors present an overview of UWB's historical development, regulation, applications, system options, and special technical issues. They also discuss emerging technologies and other future directions. The other contributors amplify such basic and advanced topics as modulation and signal detection, pulse- and multi carrier based systems, precision localization in impulse radio technology, Gaussian statistics applied to indoor noise analysis, and analog-to-digital conversion.

TK5105 1-58705-179-6

**Comparing, designing, and deploying VPNs.**

Lewis, Mark.

*Cisco Press*, ©2006 1043 p. \$80.00 (pa)

Aimed at network and IT professionals, this volume describes the design, deployment, and configuration of the most popular virtual private network (VPN) technologies. Coverage includes IPsec, MPLS Layer 3, L2TPv3, L2TPv2, ATOM, and SSL VPNs. Particular attention is paid to differentiating among the various types of VPNs and selecting the right one. Review questions

are found at the end of each chapter, with answers given at the back of the volume. Lewis is technical director of MJL Network Solutions.

TK5105 2006-007168 978-0-470-01461-5  
**Internet measurement; infrastructure, traffic, and applications.**

Crovella, Mark and Balachander Krishnamurthy.

*John Wiley & Sons*, ©2006 495 p. \$75.00

Crovella (computer science, Boston U.) and Krishnamurthy (co-founder of the Internet Measurement Conference) believe the emerging discipline of internet measurement to be important for commercial, social, and technical endeavors. This text explains current knowledge in internet measurement, beginning with essential background on internet architecture and statistical methods. Strategies then follow for the quantitative assessment of three main components: infrastructure (e.g. links and routers), traffic, and applications (e.g. DNS, Web, peer-to-peer, online games). Within each area the authors address the properties that may be measured and the metrics used, the challenges to measurement, and the necessary tools for measuring and overcoming challenges. A concluding section examines issues of anonymization and security, and offers case studies for further understanding. This text is intended for practitioners, researchers, and analysts of internet traffic, as well as students taking advanced networking or internet security.

TK5105 1-59140-561-0

**Encyclopedia of multimedia technology and networking; 2v.**

Title main entry. Ed. by Margherita Pagani.

*Idea Group Publishing*, ©2005 1140 p. \$495.00

What exactly is the elaboration likelihood model and what is its relation to web-based persuasion? What does FTTP have to do with the FCC? How important is online discussions to student success in web-based education? With over 1,350 terms and definitions and more than 3,200 references, no piece of hardware or acronym is left unturned in this collection of articles ranging from the purely technological to end user computing, copper solutions, information systems in small firms, the television of the future, mobile and land communications, and the psychology of multimedia technologies, this includes a very helpful set of indices by authors and topics and a very efficient cross-reference of key terms, figures and information. The articles are comprehensive enough for first inquiry by teachers, researchers and technology

professionals but accessible enough for novices to peruse with confidence they will find basic concepts and well-chosen references for further study.

TK5105 2005-415032 0-470-09120-7  
**Next generation SDH/SONET; evolution or revolution?**

Helvoort, Huub van.

*John Wiley & Sons*, ©2005 240 p. \$100.00

Helvoort, a networking consultant in the Netherlands, offers a description of the enablers of efficient data transport over any synchronous network. Writing for manufacturers, engineers, postgraduate students, and those involved in deploying SDH, SONET, and OTN technology, he explains the extensions and adaptations made to the telecommunication standards to provide more granularity for accommodating the bandwidth requirements of the data signals. Design considerations and use of virtual concatenation is emphasized, as well as the Link Capacity Adjustment Scheme and the Generic Framing Procedure.

TK5105 2006-001395 978-0-470-01554-4

**Web engineering; the discipline of systematic development of web applications.**

Title main entry. Ed. by Gerti Kappel et al.

*John Wiley & Sons*, ©2006 366 p. \$65.00 (pa)

Battered by business interests, jumped upon by enthusiasts, and blamed for everything that goes wrong, web engineers have enough to flinch about without having to cope with slipshod design and dumpy deliverables. This collection of 14 cohesive chapters written by the best in the field addresses issues faced by both students and professionals, including requirements engineering, modeling web applications, web application architectures, technology-aware web application design, technologies for web application, testing, operation and maintenance, project management, the development process (including handling short development cycles), usability (including design guidelines), performance, and security (including issues for clients and service providers). The final chapter illuminates the semantic web, including the technical concepts and specifics of the network of meanings in the network of web documents. The editors include a glossary and bibliography. The result is practical, accessible, and very likely to reduce the flinch factor.

TK6580 2006-040641 978-0-470-07476-3  
**Remote sensing with polarimetric radar.**

Mott, Harold.

*Wiley-Interscience*, ©2007 309 p. \$110.00

In a textbook for an undergraduate or graduate course, and a reference for engineers and scientists, Mott (emeritus electrical engineering, U. of Alabama) sets out the principles necessary to understand polarized radiation, transmission, scattering, and reception in communications systems and polarimetric-radar remote sensing. He begins at an introductory level and gradually increases the complexity, but says even the later chapters should be accessible to readers with an understanding of calculus, vector analysis, matrices, and elementary physics.

TK7872 2006-042733 0-8493-7058-2

**Security in sensor networks.**

Title main entry. Ed. by Yang Xiao.

*Auerbach Publications*, ©2007 341 p. \$99.95  
 Because of their limited energy, memory space, and computational capability, sensor networks have some security vulnerabilities that are different from those of traditional networks. This reference for researchers, educators, and practitioners provides broad coverage of sensor security and related issues. The thirteen invited contributions from international security specialists are organized into five main sections: attacks; encryption, authentication, and watermarking; key management; secure routing; and secure aggregation, location, and cross-layer. Editor Xiao teaches computer science at the U. of Alabama. Distributed in the U.S. by Taylor & Francis.

TK7875 2006-044660 0-8493-9299-3

**Spintronic materials and technology.**

Title main entry. Ed. by Yongbing Xu and Sarah Thompson. (Series in materials science engineering)

*Taylor & Francis*, ©2007 423 p. \$179.95

Spintronics exploits the fact that electrons have spin as well as charge, and spintronics devices already play a role as the active element in the read head of most hard disk storage devices, but the physicists and materials scientists here discuss how such devices may be able to overcome such problems as heat dissipation and quantum size effects, which threaten to inhibit advances in microelectronics and nanoelectronics. Writing for graduate students and new researchers with little background in the field, they cover material and characterization, spin torque and domain wall magneto-resistance, and spin injection and spin devices.

TK8304 2006-011669 978-0-7503-0889-2  
**High-speed photonic devices.**

Title main entry. Ed. by Nadir Dagli. (Series in optics and optoelectronics)

*IOP Publishing Ltd.*, ©2007 253 p. \$129.95

Electrical and electronic engineers from the US and Japan who specialize in different aspects of the high-speed photonic devices that allow people around the world to share data faster than greased lightning, explain the current status and the potential for such devices as compound semiconductor electro-optic modulators, polymer optical modulators and their applications, photodetectors and photoreceivers, and technologies for future lightwave communications systems. Distributed in the US by Taylor & Francis.

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**MOTOR VEHICLES, AERONAUTICS,  
 ASTRONAUTICS**

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TL574 2006-015974 0-470-01891-7

**Stability and control of aircraft systems;  
 introduction to classical feedback  
 control.**

Langton, Roy.

*John Wiley & Sons*, ©2006 238 p. \$120.00

Striving to make a complex subject clear, Langton (no affiliation given) provides an overview of control theory, which reduces varied technical components into their important dynamic characteristics, expressed as transfer functions, from which the subtleties of dynamic behaviors can be analyzed. Langton's description uses minimal mathematics and focuses on simple rules, tools and methods for the analysis and testing of feedback control systems. He uses real systems engineering design and development examples. This volume is part of the Aerospace Series, which provides practical and topical books to engineers, operators, users and allied professionals in the aerospace industry.

TL789 2006-026191 1-56347-844-7

**Space exploration and astronaut safety.**

Pelton, Joseph N. and Peter Marshall.

*Am. Inst. of Aero. & Astro.*, ©2006 386 p. \$49.95

Pelton (space and advanced communications research, George Washington U.) and journalist Marshall use an interdisciplinary approach that combines history, technology and policy analysis to describe the present state of the space shuttle program, the International Space Station, and the upcoming Project Constellation. They examine the new era that may be approaching in space exploration, US astronaut programs of the past, present and future, the purpose of the space shuttle and safety programs, management

and institutional issues, the status and vulnerabilities of the International Space Station, the unsuccessful X-Projects, private space vehicle development, and lessons learned. In appendices they provide detail technical reviews of vulnerabilities in the shuttle and space station.

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## MINING ENGINEERING

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TN871 2006-045658 0-8247-0694-3

### **Phase behavior of petroleum reservoir fluids.**

Pedersen, Karen Schou and Peter L. Christensen.

*CRC / Taylor & Francis*, ©2007 406 p. \$159.95

Writing for an audience expected to consist of petroleum engineers engaged in reservoir simulation, flow assurance studies, and laboratory work, the authors (both of Calsep A/S, Denmark) describe how oil and gas behave under various natural and industrial conditions and how this behavior can be mathematically modeled. They offer chapters on petroleum reservoir fluids, compositional analyses, pressure-volume-temperature (PVT) experiments, cubic equations of state,  $C_{7+}$  characterization, flash and phase envelope calculations, physical properties, regression to experimental PVT data, transport properties, wax formation, asphaltenes, gas hydrates, compositional variations with depth, minimum miscibility pressure, formation water and hydrate inhibitors, and scale precipitation.

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## CHEMICAL TECHNOLOGY

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TP155 978-3-527-31424-9

### **Propellants and explosives; thermochemical aspects of combustion, 2d ed.**

Kubota, Naminosuke.

*Wiley-VCH*, ©2007 509 p. \$175.00

Kubota (senior research scientist of the propellant combustion laboratory, Asahi Kasei Chemicals, Japan) presents an introductory text on the combustion of energetic materials for readers engaged in rocketry or explosives technology. He opens with fundamental aspects of the conversion from chemical energy to aerothermal energy, covering the foundations of pyrodynamics, the thermochemistry of combustion, and combustion wave propagation. He then deals with the energetics of chemical compounds used as propellants and explosives, such as heat of formation, heat of explosion, adiabatic flame temperature, and specific impulse. The results of measurements on the burning rate of crystalline and polymeric materials, double-based propellants, composite propellants composite

modified double based propellants, and explosives are then presented. Remaining chapters discuss the formation of energetic pyrolants (metal-based pyrotechnic compositions), combustion propagation of pyrolants, emission from combustion products, transient combustion of propellants and pyrolants, rocket thrust modulation, and ducted rocket propulsion.

TP156 2006-031627 978-0-8493-4240-0

### **Solubility in supercritical carbon dioxide.**

Gupta, Ram B. and Jae-Jin Shim.

*CRC Press*, ©2007 909 p. \$189.95

Mining research articles, reports, and theses so as to make life easier for chemical engineers in many industries, Gupta (chemical engineering, Auburn U.) and Shim (chemical engineering, Yeungnam U., Republic of Korea) have present over 1,200 data tables in an accessible format. The tables present experimental solubility data and are referenced and indexed; empirical and theoretical correlations or predictions are not addressed (except for a brief discussion of modeling in the introduction). Supercritical fluids play a part in the extraction of, for example, petrochemicals, foods, pharmaceutical, fragrances, and flavors as well as in polymerization and biological reactions, the cleaning of semiconductors and precision machinery; aerogel manufacturing; textile dyeing; metal de-binding; and the manufacture of micro- and nano-particles.

TP248 978-3-527-31384-6

### **Nanodevices for the life sciences.**

Title main entry. Ed. by Challa S.S.R. Kumar.

(Nanotechnologies for the life sciences; v.4)

*Wiley-VCH*, ©2006 469 p. \$175.00

Contributors from physical and biological sciences and engineering, including many disciplines that overlap those boundaries, review the theory, physics, chemistry, biology, and engineering of nano-devices that are being constructed in the laboratory as well as natural processes that can serve as models for them. Among their topics are drug delivery, devices based on micro-cantilevers, self-assembly and bio-directed approaches for carbon nanotubes, biosensing, and nano-technology for biomedical devices.

TP370 2006-001546 978-0-8493-7244-5

### **Measurement and control in food processing.**

Bhuyan, Manabendra.

*CRC / Taylor & Francis*, ©2007 340 p. \$159.95

This volume presents a single common source for answering the cross-disciplinary questions that arise in today's food processing industry.

Bhuyan discusses the current techniques of computerized measurement, instruments design and control schemes and explains the applicability of these tools to enhancing quality and productivity. Integrating food processing and instrumentation engineering, the text examines digital processing, computer-based measurement and advanced detection sensors such as electronic nose, biosensors and fuzzy logic controls. Bhuyan uses case studies, photographs of commercial units, over 200 block, schematic and circuit diagrams, and easy reference tables to supplement his detailed discussions.

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## MANUFACTURES

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TS156 2006-040588 1-58488-544-0

### **Bayesian process monitoring, control and optimization.**

Title main entry. Ed. by Bianca M. Colosimo and Enrique Del Castillo.

*Chapman & Hall/CRC*, ©2007 336 p. \$89.95  
 Statisticians and industrial engineers offer a reference to applications of Bayesian statistics in process monitoring, process control or adjustment, and process optimization. They write for applied statisticians working in industry, process engineers, quality engineers working in manufacturing, and graduate students and instructors in such fields. Books abound on applying Bayesian techniques, but none focus on these areas of industrial engineering.

TS156 2006-022034 0-13-238599-6

### **Commercializing great products with Design for Six Sigma.**

Perry, Randy C. and David W. Bacon.

*Prentice Hall*, ©2007 621 p. \$89.99

In this resource for executives, designers, and marketers, Perry and Bacon show how the tools of Design for Six Sigma (DFSS) may be applied to the process of new product commercialization. A start-to-finish case study illustrates each stage of the process, from the identification of market opportunities and preparation of a business plan through the launch of a new product and generation of a follow-up report. Over 100 reproducible templates and analysis tools (also available at a companion website) can be modified for use in the development of any product. The authors are consultants with Sigma Breakthrough Technologies, Inc.

TS156 2005-046670 978-0-8493-3682-9

### **Optical inspection of microsystems.**

Title main entry. Ed. by Wolfgang Osten.

*CRC / Taylor & Francis*, ©2007 503 p. \$129.95

Complex devices are now being made so small that conventional methods of testing them do not work. Researchers of very tiny things, and of various imaging techniques, describe a family of full-field optical methods that may solve the problem because of their fast response potential, high sensitivity and accuracy, high resolution of data points, automatic analysis of results, and data processing to meet requirements of the testing model being used. They review the research into applying optical measurement techniques to inspecting microsystems and survey some of the major methods, including light scattering, scanning probe microscopy, fringe projection, and laser Doppler vibrometry.

TS160 2006-051802 978-0-8493-7979-6

### **RFID metrics; decision making tools for today's supply chains.**

Hedgepeth, William Oliver.

*CRC / Taylor & Francis*, ©2007 131 p. \$79.95

This textbook, based on Hedgepeth's (logistics, U. of Alaska Anchorage) experience testing and implementing RFID (radio frequency identification) metrics in industrial and military cases, explains how to evaluate the need for this technology in an organization. It is a systems-centric view of RFID and is meant for students of supply chain management, logistics, business and project management, and corporate and military decision makers. It is not a technical book, but instead focuses on how technology has changed the way decision makers use operations management tools since the computer age and origin of RFID. It describes how to build a metrics frame of reference, construct an ongoing metrics laboratory, and how to run an RFID war game. Applications in different countries are noted, and analyzing data is explained.

TS176 2006-013504 0-8493-7494-4

### **Process oriented analysis; design and optimization of industrial production systems.**

Meyer, Urs B. et al.

*CRC / Taylor & Francis*, ©2007 520 p. \$89.95

Meyer et al. describe the principles and applications of Process Oriented Analysis (POA) for use by engineers in analyzing, designing, and optimizing production systems. Their

method is integral and detailed and aimed at manufacturing systems in a broad sense. It does not explain how to make business-related software, but has a thorough understanding of processes and plants and provides a basis for real-time and simulation program coding. Examples in the form of six case studies—based on the industrial and educational experience of the authors—are provided. They define and describe the different diagrams of POA, real world systems analysis and design skills, static and dynamic analysis tools, and how complex systems are modeled in an efficient way. POA is also compared with well-known system modeling tools. The book serves as a textbook for those at the graduate or postgraduate level.

TS227 2006-051209 978-0-87170-841-0

**Corrosion of weldments.**

Title main entry. Ed. by J.R. Davis.

*ASM International*, ©2006 225 p. \$172.00

Bringing together research from the fields of welding metallurgy and the fundamentals of corrosion, this work examines corrosion in welding joints and how the welding process can influence both microstructural and corrosion behavior. It addresses hydrogen-induced cracking of steel weldments, sensitization and subsequent intergranular corrosion of stainless steel weldments, sulfide stress cracking of pipeline steel weldments, microbiologically induced corrosion of weldments, and stress-corrosion cracking of weldments. Emphasis is placed on carbon and stainless steels, but non-ferrous alloys such as high-nickel alloys, aluminum alloys, and titanium alloys are also discussed. Methods of monitoring and testing receive some coverage as well.

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**MILITARY & NAVAL SCIENCE**

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U163 978-1-58053-517-5

**Information operations planning.**

Allen, Patrick D. (Artech House information warfare series)

*Artech House*, ©2007 323 p. \$109.00

Allen is a retired colonel in the US Army and has developed decision support tools and strategic technology plans for military and governmental organizations. To paraphrase the US Department of Defense, information operations (IO) is the combined use of electronic warfare, computer network operations, psychological operations, military deception and operations security for purposes of military defense, offense, and influence. This text instructs planners and warfighters in the tools, methodologies, technologies, and logistics of modern IO planning,

including information on monitoring and re-planning during operations. The introduction offers examples of the use of IO in Operation Desert Storm, Kosovo (by the Serbs), and Operation Iraqi Freedom and its aftermath. Other chapters cover the characteristics and categories of IO planning, its legal limitations, and its increasing importance in military operations. The final chapters address how the US military can plan now for future success.

UG1242 2006-050410 978-1-56347-849-9

**Introduction to the design of fixed-wing micro air vehicles; including three case studies.**

Title main entry. Ed. by Thomas J. Mueller et al. (AIAA education series)

*Am. Inst. of Aero. & Astro.*, ©2007 287 p. \$84.95

The long-term goal of attempts to develop micro air vehicles (MAVs) is to design aircraft systems that weight less than 30 grams, have about an eight centimeter wing span, and can fly for 20 to 30 minutes at between 30 and 65 kilometers per hour. Following an overview of the historical development of MAVs, editors Mueller (U. of Notre Dame), Kellogg (US Naval Research Laboratory), Ifju (U. of Florida), and Shkarayev (U. of Arizona) present chapters that examine the current state of the field, discussing elements of aerodynamics, propulsion, and design; autopilot integration into micro air vehicles; and case studies of micro tactical expendable rigid-wing MAVs, flexible wing MAVs, and MAVs with in-flight adaptive wing.

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