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Sci-Tech Book News Reviews

Susan Fingerman

*Johns Hopkins University Applied Physics Laboratory, susan.fingerman@jhuapl.edu*Follow this and additional works at: <http://jdc.jefferson.edu/scitechnews> Part of the [Physical Sciences and Mathematics Commons](#)[Let us know how access to this document benefits you](#)

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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.

GEOGRAPHY

G70 2007-039305 978-0-470-02167-5

Self-organising maps; applications in geographic information science.

Title main entry. Ed. by Pragya Agarwal and André Skupin. *John Wiley & Sons*, ©2008 205 p. \$145.00

Kohonen, or self-organizing, maps are an approach to the intense computation of with massive sets of geographical data that are becoming more common in geographical information systems (GIS). Researchers in geography and related earth sciences describe in great detail the technique that, inevitable, is already known as SOM. The topics include detecting geographic associations in English dialect features in North America within a visual data-mining environment that integrates SOMs, visualizing human movement in attribute space, and automating road extraction from remotely sensed imagery.

SOCIAL SCIENCES

H62 2008-010387 978-1-4129-4918-7

The handbook of social research ethics.

Title main entry. Ed. by Donna M. Mertens and Pauline Ginsberg.

Sage Publications, ©2009 667 p. \$130.00

Going far beyond which forms to file and which committees to impress, this collection of 37 essays address many of the sources of questions as well as appraisals of many of the recent lapses. Contributors cover the history and philosophy of social science research ethics, including research ethics in the postmodern context, feminist perspectives, critical race theory, disability theory, and transformational research, and articles on ethical regulation address government regulation, institutional review, indigenous control, and program evaluation. Research methods considered here include sociological research, experiments and quasi-experiments, ethnography, covenantal ethics, and peacemaking; those on research

practice include self-evaluation, relationships between researchers and subjects, indigenous voices, partnership, and visual representation. The final two sections cover ethics within diverse cultural groups and the future of research in the ethics of social research.

PRODUCTION, INDUSTRY, COMMERCE

HD45 2008-010317 978-1-60566-038-7

Principle concepts of technology and innovation management; critical research models.

Title main entry. Ed. by Robert S. Friedman et al. *IGI Publishing*, ©2008 305 p. \$165.00

Although research will never become a luxury, it has come under fire increasingly as managers expect more applicability to commercial projects, better cost-effectiveness and ever-shorter lead times. This expansive treatment aimed at practitioners, researchers, students and managers covers a full range of issues in technology and innovation management, and includes an excellent introduction to the field. It covers research and development process models, technology development and innovative practice, and social influences and human interactions with technology. They offer an organizational perspective on diffusion and innovation, a review of knowledge in changing organizations, organizational innovation strategies, and new product development, as well as an executive summary on technology and management information systems, including open source and software development innovations. The result is an overview that does not sacrifice on detail when appropriate to satisfy the needs of professionals and students.

HD9502 978-1-84542-660-6

Heat, power and light; revolutions in energy services.

Fouquet, Roger.

Edward Elgar Publishing, ©2008 470 p. \$160.00

The effect of newer sources of fuel on existing energy systems is explored by Fouquet (U. of the South Pacific, Fiji), who takes a look at recent innovations and developments in the industry and notes their impact upon communities and the environment. Using vast amounts of research data, the author uncovers some of the underlying motivations for each type of energy service, and how recent concerns over carbon emissions and climate change really affect decisions at the executive level of energy companies. Written for economists, environmentalists and policymakers, this volume also explores the competition for future energy sources.

HF5548 2008-932460 978-0-7695-3395-7
E-business engineering; proceedings.

IEEE International Conference on e-Business Engineering (2008: Xi'an, China) Ed. by Jen-Yao Chung and Muhammad Younas.

Computer Society Press, ©2008 788 p.
 \$266.00 (pa)

The 46 regular length and 26 short papers of this proceedings were first presented at the 2008 IEEE International Conference on e-Business Engineering, held in October 2008 in Xi'an, China. The research presented reflects the international state of the field, with contributors based in China, the US, Australia, South Korea, the UK, and other countries. The papers are grouped according to their session topic, with topics that include data models, knowledge in data, service discovery and description, trust evaluation and real-time transactions, and privacy and security. Each paper includes an abstract, list of keywords, numerous tables and other visual aids, and a list of references. Author indexed only.

MATH, COMPUTERS

QA76.15 2008-030048 978-0-19-923400-4
A dictionary of computing, 6th ed.

Title main entry.

Oxford U. Press, ©2008 583 p. \$50.00

This dictionary for computer users, students, and lecturers of computing and related fields contains about 6,500 concise entries on terms and people in the field. This edition has 250 new entries, and feature spreads on XML, object-oriented programming, quantum computing, computer graphics, SQL, and the anatomy of an internet address. It also has new recommended web links and a new chronology. Obsolete entries have been deleted.

QA76.59 2007-050624 978-1-4200-5184-1
Broadband mobile multimedia; techniques

and applications.

Title main entry. Ed. by Yan Zhang et al. (Wireless networks and mobile communications; v.9)

CRC / Taylor & Francis, ©2008 566 p. \$99.95

This research field is, to put it mildly, hot; and the present and future commercial applications are even hotter, because multiple service providing is likely to be one of the prerequisites for the success of the next generation of wireless networks. This collection of 15 articles includes a range of introductory concepts, fundamental techniques, new advances and open research issues to satisfy experienced designers as well as novices, with topics such as multimedia systems (design challenges, performance analysis of multimedia traffic, interactive mobile TV technologies, and multiparty auto-conferencing), multimedia over ad hoc and sensor networks (routing, multipath unicast and multicast video communication), multimedia over wireless local area networks (including wireless local area networks and improvement of video quality) and quality of service and enabling technologies (including end-to-end quality support of video deliver and packet scheduling).

QA76.59 2008-008315 978-1-4200-5537-5
Unlicensed mobile access technology; protocols, architectures, security, standards and applications.

Title main entry. Ed. by Yan Zhang et al. (Wireless networks and mobile communications; v.11)

CRC / Taylor & Francis, ©2009 405 p. \$99.95

Unlicensed Mobile Access (UMA) is a relatively new field within the realm of wireless technologies, and this textbook investigates how these systems can be integrated into GSM and GPRS networks so that services to subscribers are clear and seamless. Zhang (Simula Research Laboratory, Norway), Yang (St. Francis Xavier U., Nova Scotia) and Ma (Hosei U., Japan) have edited this book to explore such popular developments as Bluetooth, WiMax and Wi-Fi, and to show telecommunications engineers and technicians how to design algorithms for any wireless environment. A strong emphasis is placed upon Quality-of-Service (QoS) issues, especially as they pertain to vertical and horizontal handoff.

QA76.76 2008-273363 978-0-13-600663-3
Modern operating systems, 3d ed.

Tanenbaum, Andrew S.

Prentice Hall, ©2008 1076 p. \$122.00

This text examines principles and practice of modern operating systems, with an emphasis on Linux, Windows Vista, and embedded, real-time, and multimedia systems. Drawing on

his experience as designer or co-designer of three operating systems, the author begins by covering basic concepts of operating systems, then progresses through material on memory management, file systems, multimedia operating systems, security, and operating system design. Chapter-length case studies are presented on Linux, Windows Vista, and Symbian OS. This third edition is substantially revised to reflect the latest technology, offering more of a focus on the operating system as the creator of abstractions. There is new material on operating systems found in cell phones and PDAs, and on exploiting code bugs and defending against malware. A new section on virtualization technology and virtual machines has been added, using VMware as an example. Tanenbaum teaches computer science at Vrije University, Amsterdam, The Netherlands.

QA76.76 2007-941915 978-1-58603-818-2
Ontology learning and population; bridging the gap between text and knowledge.

Title main entry. Ed. by Paul Buitelaar and Philipp Cimiano. (Frontiers in artificial intelligence and applications; v.167) IOS Press, ©2008 273 p. \$161.00

Contributors from natural language processing, machine learning, knowledge representation and engineering, and user interface design explore theories and practices by which people can learn simply by reading a text. Their topics include extracting concept description from the Web, the unsupervised learning of semantic relations for molecular biology ontologies, automatically harvesting and ontologizing semantic relations, strategies for evaluating ontological learning. There is no subject index.

QA76.76 2008-008331 978-0-471-78911-6
Software testing and quality assurance; theory and practice.

Naik, Kshirasagar and Priyadarshi Tripathy.

John Wiley & Sons, ©2008 616 p. \$100.00

Written for software engineers, software quality professionals, developers, and students, this book sets out fundamentals of testing theory and describes common testing practices. Rather than addressing the characteristics of specific software systems, the book presents testing theory and practice as stepping stones that will help students understand and develop testing practices for more complex systems. Learning features include test questions, examples, teaching suggestions, and chapter summaries. The book can be used as a reference for professionals and as an introductory text for undergraduate courses in software testing, quality assurance, and software engineering.

Naik teaches in the Department of Electrical and Computer Engineering at the University of Waterloo, Canada. Tripathy conducts software testing for grid-based storage applications.

QA76.76 2008-274657 978-0-470-14707-8
Software maintenance management; evaluation and continuous improvement.

April, Alain and Alain Abran.

Wiley-Interscience, ©2008 314 p. \$65.00 (pa) For software managers, students, and others, April and Abran (software engineering, U. of Québec, Canada) describe software maintenance management through their model, which covers process management, request management, and evolution engineering and support. Case studies of the use of the model in industry are included. They also discuss the theoretical concepts and fundamentals of the identification and evaluation of maintenance processes. The book draws on best practices from many managers around the world and refers to the Capability Maturity Model Integration published by the Software Engineering Institute.

QA76.9 2007-943828 978-1-58603-831-1
Adaptive web sites; a knowledge extraction from web data approach.

Velásquez, Juan D. and Vasuke Palade. (Frontiers in artificial intelligence and applications; Knowledge-based intelligent engineering systems; v.170)

IOS Press, ©2008 272 p. \$161.00

Velásquez (industrial engineering, U. of Chile) and Palade (computing laboratory, Oxford U.) take the approach that building effective adaptive web sites is an application of systematic web mining methodology. They focus necessarily on commercial sites, explaining the operation of the web and the information typically contained in a web page. They describe the process of locating and extracting information, consolidating data and applying data mining tools such as artificial neural networks, self-organizing feature maps, K-means and K-nearest neighbor methods, decision trees, Bayesian networks, decision trees and support vector machines. They describe how to operate web information repositories and mine the web, how to use web-based personalization systems, and how to acquire and maintain knowledge extracted from web data, concluding with a proposed framework for developing adaptive web sites from extracted knowledge.

QA76.9 978-0-470-23055-8
Dependability benchmarking for computer systems.

Title main entry. Ed. by Karama Kanoun and Lisa

Spainhower.

John Wiley & Sons, ©2008 362 p. \$96.00 (pa)
Kanoun (LAAS-CNRS, France) and Spainhower (IBM) have edited these articles on metrics for the dependability, reliability, availability and serviceability of computer systems. Using the most common benchmarks for extracting this data, contributors from both industrial and academic sources outline measurement protocols by describing specific examples and case studies used in such companies as IBM, Intel, Microsoft and Sun Microsystems. Designed as a tutorial for network engineers, researchers, system vendors and consultants, this book also reports the findings of the D-bench research project, which was commissioned by the European Union to develop a reliable system for benchmarking. Co-published by Wiley and IEEE/Computer Society.

QA76.9 2008-030801 978-1-60566-010-3
Encyclopedia of data ware-housing and mining, 2d ed.; 4v.

Title main entry. Ed. by John Wang.
Information Science Reference, ©2009
2542 p. \$1,195.00

An international group of contributors provided the articles of this resource, many of them presenting the results of their own work on data warehousing and mining. A sampling of article topics includes a method for recognizing entity and relation, OLAP visualization, reasoning about frequent patterns with negation, rough sets and data mining, sampling methods in approximate query answering systems, and summarization in pattern mining. Each article concludes with a list of references and a helpful list of keywords and their definitions. The articles are arranged alphabetically by first word of the article's title, making this 4-volume work appropriate for browsing. However, a second table of contents is provided that presents the articles by topic or keyword, such as data streams, decision, evolutionary algorithms, graphs, and modeling. The articles are written in an explanatory style, each including sections of introduction, background, future trends, and conclusion, making the work especially suitable for college students and researchers.

QA76.9 2008-002695 978-0-470-03554-2

Handbook of granular computing.

Title main entry. Ed. by Witold Pedrycz et al.

John Wiley & Sons, ©2008 1116 p. \$300.00
This extremely large and comprehensive handbook on granular computing traces this relatively new discipline's roots in artificial intelligence, interval computing and quotient space theory and explores the growing interest in this subject due to advances in bioinformatics, data mining, wireless technologies and e-commerce. Pedrycz (computational intelligence, U. of Alberta, Canada), Skowron (mathematics and computer science, Warsaw U., Poland) and Kreinovich (mathematics and computer science, U. of Texas) have edited information from leading computing experts on the basics of fuzzy set theory, interval analysis and hybrid methodologies. Students and practitioners of system modeling, operations research and bioinformatics should gain a more robust understanding of cutting-edge research in the field, especially in terms computational intelligence and neural networks.

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QA76.9 2008-013104 978-1-56881-332-5

Haptic rendering; foundations, algorithms, and applications.

Title main entry. Ed. by Ming G. Lin and Miguel A. Otaduy. *AK Peters Ltd.*, ©2008 611 p. \$64.00

This introduction to interfaces between humans and computers that exploit the human sense of touch emphasizes algorithmic perspectives that are important to researchers and developers, and discusses fundamental concepts in the psychophysics of touch, and issues in device and interface design. It also surveys current rendering algorithms and novel applications. Lin is the Beverly W. Long Distinguished Professor in Computer Science at the University of North Carolina-Chapel Hill; Otaduy is an assistant professor at Universidad Rey Juan Carlos (URJC Madrid), where he works at the Modeling and Virtual Reality Group (GMRV), in the Department of Computer Science.

QA76.9 2008-930028 978-0-7695-3347-6

Information security threats data collection and sharing; proceedings.

WOMBAT Workshop on Information Security Threats Data Collection and Sharing (2008: Amsterdam, Netherlands)

Computer Society Press, ©2008 79 p. \$169.00 (pa)

Seven papers describe approaches and actual software for protecting the integrity of computer networks. Most involve honeypots, or related approaches. Topics include the SANS Internet storm center, the cooperation of intelligent pots to detect unknown malicious codes, and a comparison of techcrafters and makecrafters as two populations of hackers. Only the authors are indexed.

QA178 2008-012848 978-0-521-89545-3

Groups, graphs, and trees; an introduction to the geometry of infinite groups.

Meier, John. (London mathematical society student; texts 73)

Cambridge U. Press, ©2008 231 p. \$110.00

Meier has the rare ability to make complex concepts assessable to novices while simultaneously challenging the experienced. He takes a modern, geometric approach to group theory, which is particularly useful in the study of infinite groups, focusing on Cayley's theorems first, including his basic theorem, the symmetry groups of graphs, or bits and stabilizers, generating sets and Cayley graphs, fundamental domains and generating sets, and words and paths. After a brief sojourn into groups generated by reflections, he works through groups acting on trees, including free products

of groups, Baumslag-Solitar groups, words and Dehn's word problems, a finitely generated infinite torsion group, ray kiddier languages and normal forms, the "Lamplighter" group, the geometry of infinite groups, Thompson's group, and the large scale geometry of groups. With well-chosen illustrations and examples, Meier succeeds brilliantly in this unique approach.

QA276 2008-006507 978-0-521-85225-8

Model selection and model averaging.

Claeskens, Gerda and Nils Lid Hjort. (Cambridge series in statistical and probabilistic mathematics; 27)

Cambridge U. Press, ©2008 312 p. \$70.00

This graduate text presents several methods that data analysts and statisticians can use to help them choose which models to use for different purposes. Akaike's information criterion (AIC), the Bayesian information criterion (BIC), and the focused information criterion (FIC) are explained and compared. Worked examples with real data are complemented by derivations that provide deeper insight into the methodology. For many of the examples and methods, the authors indicate how they can be applied using available software. Chapter exercises, both theoretical and data-based, are included. All data analyses are compatible with open-source R software, and data sets and R code are available from a companion web site. Readers are assumed to have prior basic knowledge of likelihood functions, applied regression, and basic matrix computations. Claeskens is affiliated with the Leuven Statistics Research Center at the Katholieke Universiteit Leuven, Belgium. Hjort teaches mathematical statistics at the University of Oslo, Norway.

QA277 2008-009435 978-0-470-29089-7

Statistical meta-analysis with applications.

Hartung, Joachim et al. (Wiley series in probability and statistics)

John Wiley & Sons, ©2008 247 p. \$95.00

Hartung, Guido Knapp (both statistics, Dortmund U. of Technology, Germany) and Bimal K. Sinha (statistics, U. of Maryland-Baltimore County) describe how to combine the results of two or more research studies in order to strengthen the conclusions, a process also called research synthesis, research integration, and evidence pooling. They emphasize the need for concern about the nature of the underlying studies, the nature of information available from them, and the nature of assumptions about the distribution of random variables arising in the studies. Readers are assumed to have at least a masters-level background in statistics.

QA279 2007-045556 978-0-470-06030-8
Bayesian networks; a practical guide to applications.

Title main entry. Ed. by Olivier Pourret et al. (Statistics in practice)

John Wiley & Sons, ©2008 428 p. \$110.00

The term "Bayesian" has become endemic in any field that requires analysis, simulation, prediction, diagnosis or virtually any other range of study that combines elements of artificial intelligence with statistics. The editors and contributors take the wide range of applications in mind as they give researchers and practitioners a solid enough introduction to the concepts behind Bayesian networks to solve practical problems. They provide 20 real life case studies in medicine, computing, natural sciences, engineering and other fields (including such topics as terrorism risk management and improving human cognition), describe the strengths and weaknesses of Bayesian networks in each, and compare their performance to such modeling techniques as neural networks, fuzzy logic and fault trees. They also offer comparisons of commercially available software packages, full citations and avenues of future research. This works well as a comprehensive self-study guide as well as a classroom text.

QA565 2007-051872 978-0-470-82307-1
Mathematics of shape description; a morphological approach to image processing and computer graphics.

Ghosh, Pijush K. and Koichiro Deguchi.

John Wiley & Sons, ©2008 254 p. \$130.00

To reduce imaging processing problems by reducing noise and other uncertainties, Ghosh (Center for Development of Advanced Computing, India) and Deguchi (information sciences, Tohoku U.) apply morphological and set theories to develop a simple shape model using two basic shape generators. As they build their case for the shape generators (Minkowski addition and decomposition) they explain fundamental and advanced relationships between the algebraic system and shape descriptions through set theory, build image processing geo-chronology and mathematics through algebraic geometry, and provide a shape description notational scheme. This approach produces not only a very interesting framework but workable algebraic structures for shape description and comprehensive models for both shape description and the Minkowski operators. The authors advance to fascinating material on the arithmetics of geometric shape, morphological operations on nonconvex

objects and the morphological decomposition and non-decomposition of binary shapes.

QA935 2008-015670 978-981-238-267-2
Numerical simulation of waves and fronts in inhomogeneous solids.

Berezovski, Arkadi et al. (World Scientific series on nonlinear science; series A; v.62)

World Scientific, ©2008 223 p. \$88.00

Focusing on advanced methods and introducing important applications, this acknowledges the difficulty of moving discontinuities such as phase transition fronts or cracks. The authors (from Tallinn U. of Technology, Estonia and U. Pierre et Marie Curie, France) assert that the origin of these difficulties is a constitutive deficiency in the thermomechanical description of the corresponding irreversible processes. Leading to an uncertainty in jump relations at moving discontinuities. They aim to provide a framework for the description of moving discontinuities in solids and its implementation in a finite-volume numerical algorithm, and describe material inhomogeneities in thermodynamics, local phase equilibrium and jump relations at moving discontinuities, linear thermoelasticity, wave propagation in inhomogeneous solids, macroscopic dynamics of phase-transition fronts, two-dimensional elastic waves in inhomogeneous media, two-dimensional waves in functionally graded materials, phase transition fronts in two dimensions and the dynamics of a straight brittle crack.

ASTRONOMY

QB461 2007-049521 978-1-60456-332-0
Astrophysics and condensed matter.

Title main entry. Ed. by Thomas G. Hardwell. (Horizons in world physics; v.262)

Nova Science Publishers, ©2008 269 p.

\$129.00

Physicists explore phenomena at the scale of stars and galaxies by looking at atomic and even subatomic structures and behaviors of the compounds that have been detected, or sometimes predicted, way out there. The topics include crystallographic research developments, magnetism in pure and doped manganese clusters, muon colliders and Higgs boson physics, and chemical bonding theory of single crystal growth.

PHYSICS

QC173 2008-009440 978-0-470-11631-9
Structure and dynamics of membranous interfaces.

Title main entry. Ed. by Kaushik Nag.

John Wiley & Sons, ©2008 447 p. \$115.00
For researchers and students, Nag (biochemistry and physics, Memorial U., Newfoundland, Canada) assembles 15 chapters on the structural and dynamic aspects of diverse membranous systems. Written by scientists from around the world, chapters consider membrane structure, dynamics and molecular events at membrane interfaces, and complex membranous systems, including bacterial and neural membranes, lung surfactants, and other colloidal systems.

QC174 2008-003224 978-0-521-64168-5

Nonequilibrium quantum field theory.

Calzetta, Esteban A. and Bei-Lok B. Hu. (Cambridge monographs on mathematical physics)

Cambridge U. Press, ©2008 535 p. \$90.00
Bringing together key ideas from nonequilibrium and statistical mechanics and methodology from quantum field theory, Calzetta (physics, U. de Buenos Aires) and Hu (physics, U. of Maryland, College Park) fully address concepts and technologies. They present full derivations or detailed possibility arguments throughout, begins with the of nonequilibrium statistical mechanics and turning to dissipation, relaxation, noise and fluctuations, quantum open systems, basics of non equilibrium quantum field theory, quantum fields of time dependent backgrounds, quantum fields, functional methods and nonequilibrium quantum field theory, dissipation, entropy, noise and decoherence, entropy generation and decoherence of quantum fields, thermal kinetics and hydrodynamics, thermal field and linear response theory, and quantum kinetic field theory. They include applications to selected research, including Bose-Einstein condensates and quantum processes in the early universe. A valuable reference for graduate students and researchers in particle physics, gravitation, cosmology, atomic optical and condensed matter physics.

QC176 978-3-908451-52-5

Diffusion and ionic conduction in oxides; data compilation.

Title main entry. Ed. by D.J. Fisher. (Diffusion and defect forum; vs.269-271)

Trans Tech Publications, ©2007 445 p.
\$395.00 (pa)

Fisher (Trans Tech Publications, Switzerland) has edited this compilation of data on diffusion and ionic conduction in oxides for engineers and researchers who need a streamlined reference for these chemical reactions. Data

is arranged alphabetically according to the chemical symbols of the compounds involved, and each entry is accompanied by findings on the ionic conduction and the type of diffusion involved, whether it be hydrogen, oxygen, gold, silver, iron or other compounds. Charts and graphs also illustrate the density and temperatures involved with each testing protocol.

QC176 2008-921784 978-1-934115-35-0

Nanostructure design; methods and protocols.

Title main entry. Ed. by Ehud Gazit and Ruth Nussinov. (Methods in molecular biology; 474)

Humana Press Inc., ©2008 267 p. \$79.95
These 12 articles on experimental and computational approaches to nano-structured design address include significant new information on the molecular design of performance proteins with repetitive sequences. Other topics include hybrid nanorods made from sequences of natural trimeric fibrous proteins using the fibrin trimerization motif, the Leucine zipper as a building block for self assembled protein fibers, biomimetic synthesis of biomorphic nanostructures, synthesis and primary characterization of self assembled peptide-based hydrogels, and the assembly of nanospecies on repetitive DNA sequences generated on gold nanoparticles by rolling circle amplification. Computational approach topics include protocols for the design of RNA nanostructures, self-assembly of fused homo-oligomers to create nanotubes, computational methods in nano-structured design, replica exchange simulations of self-assembled peptides, amyloid fibroid formation models, computer modeling in biotechnology, and what can we learn from highly connected beta rich structures in structural interface design.

QC762 978-981-4241-06-9

Spin wave confinement.

Title main entry. Ed. by Sergej O. Demokritov. *Pan Stanford Publishing*, ©2009 229 p.
\$155.00

Editor and contributor Demokritov (nonlinear magnetic dynamics, Münster U.) describes recent scientific achievements in the investigation of magnetic dynamics in confined magnetic systems. He and his contributors describe ferrous magnets, spin waves that play an important role in very small magnetic systems, magnetic sensors, magnetic nano-contacts, quantized models in lateral confinement, Brillouin light scattering studies of spin dynamics (in patterned nano-elements from a

single layer to multilayered structures), non-uniform magnetization dynamics in ultra-small ferromagnetic planar elements, mode structures of ferromagnetic squares, spin waves in the inhomogeneous internal field of nano-structured rings, and localized spin wave modes excited by polarized current. Includes material which originated from different groups of experimental scientists and theoreticians dominating the field since the discovery of the effect. Distributed in North America by World Scientific.

CHEMISTRY

QD281 2008-459893 978-3-527-31862-9

Modern reduction methods.

Title main entry. Ed. by Pher G. Andersson and Ian J. Munslow.

Wiley-VCH, ©2008 501 p. \$215.00
Andersson and Munslow (chemistry, Uppsala U., Sweden) have written this guide to reductions in synthetic organic chemistry for researchers who require solutions in industrial and catalytic environments. The authors explain how reductions are the counterparts of oxidations and result from hydrogenations, hydride transfers and electron transfers, and show the quickest and easiest way to accomplish these processes in the lab. Kinetic resolutions and hydrogenolysis methods are also described for natural product chemists who require a handy reference in lab settings.

QD381 2008-009439 978-0-470-31286-5

Advances in polymer chemistry and methods reported in recent U.S. patents.

DeRosa, Thomas F.

John Wiley & Sons, ©2008 735 p. \$125.00
DeRosa (chemistry, Borough of Manhattan Community College of the City U. of New York) reviewed 2006-2007 US patents in 25 subject areas pertinent to polymer chemistry and of interest to academic, government, and industrial researchers who want to stay up to date on developments and identify trends. In his preface he points out that the audience extends beyond the borders of polymer chemistry, because with some modifications and with the structural depictions of reagents, intermediates, and products provided, the information can be applied to other material applications. The following broad subject areas are addressed: additives, adhesives, bioactive, coatings, cosmetics, dental, electroactive, energetic polymers, fibers, fluorine, gels, imaging agents, ink, liquid crystals, nanoparticles, new synthetic methods, optical materials, photoactive polymers, polymerization methods, regulators, photoresists, separations,

and thermosets. The first section focuses on polymerization reactions, presenting for each entry the specifics of experimental procedures along with references to US patents, methods for preparing derivatives and analogues, and product applications. The second section emphasizes modification of existing polymeric materials.

QD476 2008-011002 978-0-470-01474-5

Biophysical chemistry of fractal structures and processes in environmental systems.

Title main entry. Ed. by Nicola Senesi and Kevin J.

Wilkinson. (Series on analytical and physical chemistry of environmental systems)

John Wiley & Sons, ©2008 323 p. \$260.00
Scientists in physical, biological, and environmental sciences from Europe, the US, The Caribbean, and Australia show how fractal geometry can be used to develop a quantitative description of the complex physico-chemical systems encountered in environmental analysis. Among their topics are methods and techniques for the fractal analysis of environmental systems, fractal mechanisms in coagulation/flocculation processes, human materials, and aerosol particles. The series is devoted to providing literature reviews for practicing scientists.

QD516 2007-046640 978-0-470-09442-6

Combustion residues; current, novel and renewable applications.

Cox, Michael et al.

John Wiley & Sons, ©2008 430 p. \$200.00
Millions of tons of combustion residues, in particular fly ash and municipal waste bottom ash, are generated every year worldwide, requiring either utilization or disposal. This book reviews the traditional uses of combustion residues, then concentrates on novel products derived from the new generation of combustion ashes resulting from mixed fuels for power generation and new combustion technologies. These novel products include zeolites, ceramics, glass fibers, fire-resistant materials, and glass polyalkenoate cements for biomedical applications. The final chapter discusses some of the legislative and marketing issues that affect products from ash. The book is relevant to managers and engineers working in industries that produce combustion residues or use them in their manufacturing processes, such as power generation, municipal incineration, cement and concrete manufacturing, ceramic industries, and polymer production. The book will also be of use to academics and researchers in civil engineering, materials, and fuel and combustion, as well as regulatory

bodies and government departments. Cox is affiliated with the University of Hertfordshire, UK.

BIOLOGY

QH207 2007-025865 978-0-7637-3874-7

Bioimaging; current techniques in light and electron microscopy.

Chandler, Douglas E. and Robert W. Roberson.

Jones & Bartlett, ©2009 440 p. \$115.95

This undergraduate or graduate text serves as a professional reference for research scientists and others requiring expertise in bioimaging. While comparing a wide variety of classical and modern techniques, Chandler and Roberson first offer a brief history of microscopic image reproduction, then moved directly to the preparation of specimens for light and electron microscopy. They introduce cell structure, electromagnetic radiation and its interaction with matter, optical contrast methods (including phase, interference and polarization methods), the transmission electron microscope, the scanning electron microscope, cryogenic techniques in electron microscopy, video microscopy and electronic imaging, fluorescence microscopy, microscopic localization and the dynamics of biological molecules, imaging imaging ions and intracellular messengers, imaging macromolecules and supermolecular complexes, and image processing and presentation. The illustrations are well-chosen and helpful.

QH212 978-981-279-733-9

In-situ electron microscopy at high resolution.

Title main entry. Ed. by Florian Banhart.

World Scientific, ©2008 311 p. \$98.00

Editor Banhart (physical chemistry, U. de Strasbourg, France) has collected these research articles on in-situ electron microscopy to reflect the increased attention on sophisticated instruments that can measure on the micro, nano and atomic scales. Written for graduate students and practitioners in the field of chemistry and physics, these papers are the result of scientific research all over the world, covering such in-situ topics as electron irradiation of nanomaterials, observation of atomic defects in carbon nanostructures, transmission electron microscopy and high-resolution observations of chemical reactions between solids, liquids and gases. Studies on ion and electron beam effects on nanomaterials are also examined.

QH324 978-1-84816-258-7

Applications of fuzzy logic in

bioinformatics.

Xu, Dong et al. (Series on advances in bioinformatics and computational biology; v.9)

Imperial College Press, ©2008 225 p. \$88.00

Four researchers at the University of Missouri-Columbia show how fuzzy set theory and fuzzy logic can be used to process the massive data that is generated in biology by gene sequencing and other new technologies. Their examples are measuring ontological similarity, predicting and analyzing protein structure, and analyzing microarray data. The study is suitable as a reference for researchers or as a textbook for a graduate or advanced undergraduate course. Readers and students are assumed to have a grounding in college calculus but not necessarily any background in biology. Distributed in the US by World Scientific.

QH324 2008-018595 978-0-07-159306-9

Bioinformatics; sequence alignment and Markov models.

Sharma, Kal Renganathan.

McGraw-Hill, ©2009 320 p. \$115.00

Now spurred by advances in biochips and genome research, this relatively new field has grown dramatically from the days when it was primarily used to yield detailed, accurate information on the progress of disease in the population and service levels. Sharma (chemical engineering, Prairie View A&M U.) clearly appreciates the diversity of bioinformatics and the researchers practicing it, beginning by reviewing molecular biology, probability and statistics and notation. He then covers sequence alignment and representation, including alignment of a pair of sequences, sequence representation and string algorithms and multiple-sequence alignment. He offers a wealth of information on hidden Markov models (HMMs) and specifics on gene finding and protein secondary structure, moving to detail measurement techniques applying to biochips and electrophoretic methods and the finite speed of diffusion. Sharma's exercises with each chapter make this a good self-study guide as well as a comprehensive classroom text.

QH588 2008-022785 978-1-4129-5908-7

Encyclopedia of stem cell research; 2v.

Title main entry. Ed. by Clive N. Svendsen and Allison D. Ebert.

Sage Publications, ©2008 902 p. \$250.00

This 2-volume reference offers an A-Z encyclopedia of articles discussing the many issues related to stem cell research. Written for the general reader, the articles describe the medical and scientific aspects of the research, the

history of stem cell science, the main institutions involved, and biographies of the main scientists involved. Volume Two contains the articles from R-Z and a group of lengthy appendices, including a glossary, list of scientists, an overview of Federal research funding and oversight, the Congressional hearings on stem cells and cloning, and reports to the President's council on bioethics. The contributors are scientists and independent scholars worldwide. Both editors are at the Stem Cell and Regenerative Medicine Center of the U. of Wisconsin, Madison.

ANATOMY, PHYSIOLOGY

QM23 978-0-443-06684-9

Gray's anatomy; the anatomical basis of clinical practice, 40th ed. (includes online access)

Title main entry. Ed. by Susan Standring.
Churchill Livingstone, ©2008 1551 p. \$199.00
 The new edition of this essential work, updated with care, is worthy of the honor of 150-year anniversary edition. Containing 1800 superb color anatomical images, a wealth of supporting radiograph, CT, microphotography, MR, and other images, and a completely reorganized and revised text, the volume is both thorough and clearly organized. The artwork is especially noteworthy, with care given to clarity and consistency throughout. Standring (emeritus in anatomy at Kings College, London, the UK) edited the work in conjunction with 9 section editors, all at institutions in the UK. Massive in size—it's 9.25x12" and 2.75" thick—the volume is beautifully printed and bound, and authoritative in content, making this a worthwhile investment for the clinician.

QP303 2008-003601 978-0-8247-5831-8

Applied biomedical engineering mechanics.

Title main entry. Ed. by Dhanjoo N. Ghista.
CRC / Taylor & Francis, ©2009 528 p. \$139.95
 Already proven in the development of prosthetics, biomedical engineering continues to expand in scope and quality. This collection of articles incorporates materials from solid mechanics, fluid mechanics, dynamics and vibrations, control systems, and mathematical modeling. Contributors use a problem-based format to explain diagnostic and intervention procedures based on analysis of physiological and organs systems. They provide biomechanical guidelines for internal fixation of bone and spinal fractures as well as a treatment of herniated disks, heart function, heart structures, noninvasive

determination of aortic pressure, detection of infarcted myocardial segments, treatment of degenerated heart valves, modeling of lung ventilation, and analysis and treatment of other human anatomical structures and processes. Along with applications they provide a strong background in theory and the most recent research cardiological engineering, pulmonary engineering, glucose and insulin regulation, orthopedic engineering, and engineering related to fitness and sports mechanics.

QP514 2007-050369 978-0-470-84531-8

Essentials of chemical biology; structure and dynamics of biological macromolecules.

Miller, Andrew and Julian Tanner.
John Wiley & Sons, ©2008 573 p. \$75.00
 With a focus on understanding the way biology works at the molecular level, this relatively new field of study provides a detailed understanding of the synthesis, structures and behaviors of biological macromolecules and molecular lipid assemblies that are primary constituents of all cells. Miller (chemistry, Imperial College London) and Tanner (biochemistry, U. of Hong Kong) assume readers have experience in physical and organic chemistry as they introduce the structures of biological macromolecules and lipid assemblies, chemical and biological synthesis, molecular biology as a way of studying chemical biology, electronic and vibrational spectroscopy, magnetic resonance, diffraction and microscopy, molecular recognition and binding, kinetics and catalysis, mass spectrometry and proteomics, and molecular selection and evolution. This is also suitable for biochemists, molecular biologists, and professionals within medicine pharmaceutical industries. This is extremely well-illustrated.

MEDICINE (GENERAL & PUBLIC ASPECTS)

R858 2008-023343 978-1-60566-050-9

Medical informatics; concepts, methodologies, tools, and applications; 4v.

Title main entry. Ed. by Joseph Tan.
Medical Information Science Reference, ©2009 2672 p. \$2,495.00
 An international group of contributors provide the articles of this resource, many of them presenting the results of their own work in the field. Each article concludes with a list of references and a helpful list of keywords and their definitions. The material is grouped into eight broad areas: fundamental concepts and theories; development and design; tools and technologies; applications, organizational and

social implications, managerial impact, critical issues; and emerging trends. A sampling of topics includes knowledge management in hospitals, nonparametric decision support systems in medical diagnosis, PDA usability for telemedicine support, computerization of primary care in the US, and developing trust practices for e-health. Representing an international viewpoint, the articles are written in an explanatory style, each including sections of introduction, background, future trends, and conclusion, making the work especially suitable for college students and professionals. Medical Information Science Reference is an imprint of IGI Global.

R859 2007-051645 978-1-59904-996-0
Advancing artificial intelligence through biological process applications.

Title main entry. Ed. by Ana B. Porto Pazos et al.
Medical Information Science Reference,
 ©2009 436 p. \$225.00

Artificial intelligence (AI), in simulating features of biological processes in computational models, offers clues to the complex functioning of the nervous system and applies these to real-life problems, e.g., Turing's COLOSSUS machine which deciphered coded Nazi messages. Pazos (computer science, U. of A Coruña, Spain) and international, multidisciplinary contributors review recent advances in AI models based on better understanding of biological information processing. Application examples include genetic algorithms, artificial neural networks, and a bio-inspired design for an information grid system. The 20 chapters include future research trends, further reading, and a glossary of key terms. The text is suitable for students and researchers in bioinformatics and other fields. Medical Information Science Reference is an imprint of IGI Global.

THERAPEUTICS

RM950 2008-009568 978-0-471-71155-1
The engineering handbook of smart technology for aging, disability, and independence.

Title main entry. Ed. by Abdelsalam (Sumi) Helal et al.
John Wiley & Sons, ©2008 944 p. \$275.00
 Scientists and engineers in computer and information fields survey some high-technology approaches to allowing elderly people and those living with disabilities to maintain independence. A first section sets out definitions, classifications, and policies for both the population and the technologies. Other themes include users and needs, human-machine interaction an alternative communication, assistive robotics, user mobility,

smart environments, cyber-infrastructures, and emerging standards and guidelines.

TECHNOLOGY (GENERAL)

T55 978-1-4200-8051-3

Safe use of chemicals; a practical guide.

Dikshith, T. S. S.

CRC / Taylor & Francis, ©2009 289 p. \$99.95
 Suitable for the library of virtually any laboratory, this comprehensive reference fills the gap between data sheets and chemical safety encyclopedias. Dikshith, an expert on environmental health and chemical safety, makes good use of a wide variety of sources to explain the characteristics of solvents, pesticides, metals, air pollutants, and toxic gases and drugs, as well as other substances commonly found in laboratories. He ensures that entries are accessible to non-experts as he explains chemical substances and their categorization, elements of toxicology and chemical safety, industrial and laboratory use of chemicals, the relationship between chemical substances and cancer, and the effects of chemical substances on neurotoxicity and nephrotoxicity. He includes appendices on labeling, handling, incompatible chemical substances, and storage, along with a glossary and references.

T57 2008-007571 978-1-59904-887-1

Handbook of research on modern systems analysis and design technologies and applications.

Title main entry. Ed. by Mahbubur Rahman Syed and Sharifun Nessa Syed.

Information Science Reference, ©2009 668 p. \$215.00

Sixty-seven international academics and researchers contribute 35 chapters conveying the current state of knowledge regarding systems analysis and design. The material is organized into eight topic areas covering system development methodologies, modeling processes, agile software development, system design and considerations, object oriented development, design applications, medical applications, and educational applications. This resource text is designed for practitioners, educators, advanced undergraduate and graduate students, researchers, and professionals in software/systems engineering, programming, analysis, and design; business/management information technology and systems; computer networking technology; and mobile computing and communications technology.

T58 2008-013084 978-0-8493-8517-9

Enterprise architecture A to Z; frameworks, business process modeling, SOA, and infrastructure technology.

Minoli, Daniel.

CRC Press, ©2008 481 p. \$79.95

Drawing on his extensive technical and managerial experience at telecom/networking providers and financial companies, Minoli enlightens senior managers and other decision-makers on designing and managing cost-effective, state-of-the-art information technology (IT) infrastructures and data centers. First he surveys enterprise architecture planning goals, roles, mechanisms, and business modeling and application development via Service-Oriented Architecture (SOA) modeling. Part II focuses on infrastructure technologies including high-speed communications mechanisms (e.g., SANs, Gigabit Ethernet, metro Ethernet); Internet and WAN communication technologies; network virtualization via SOA modeling; and grid computing and server virtualization. The text helpfully includes diagrams of IT conceptual frameworks and models, and a glossary.

T58 2008-19461 978-1-60566-088-2

Selected readings on the human side of information technology.

Title main entry. Ed. by Edward J. Szewczak.

Information Science Reference, ©2009 525 p. \$195.00 (pa)

The planning and execution of electronic resources within libraries is analyzed in this reference volume, which is geared to students and practitioners of library science. Szewczak (Canisius College) has edited these essays from contributors all over the world which focus on managing the lifecycles of these resources, with explicit tips on how to compare, order and catalog each database. Each application is reviewed by the contributors in terms of Web presentation, user support and independent evaluations as well.

T174 2008-019075 978-1-4200-6019-5

Nanotechnology and the environment.

Sellers, Kathleen et al.

CRC / Taylor & Francis, ©2009 281 p. \$99.95

Environmental engineer and chemist Sellers and her co-authors provide the fundamentals professionals need to assess and understand the life cycle of nanomaterials and the effects of those materials in the environment. They focus on the most common nanomaterials including titanium dioxide, zero valent iron, silver, carbon black, fullerenes and carbon nanotubes, following those materials from their manufacture and use to their fate in the environment and

in our bodies. With close attention to methods and regulations they define nanoscale materials and their properties, overview I environmental regulations, analyzed nanoparticles in the environment, their treatment in wastewater, their potential ecological hazards, their toxicology and risk, their use in pollution control, and means of balancing their risks and rewards.

ENGINEERING (GENERAL, CIVIL)

TA23 2008-013220 978-0-309-11483-7

The offshoring of engineering; facts, unknowns, and potential implications.

National Academy of Engineering. Committee on the Offshoring of Engineering.

National Academies Press, ©2008 230 p. \$54.00 (pa)

The National Academy of Engineering has commissioned this study of the outsourcing of engineering research from the United States to affiliated and non-affiliated entities, which explores whether or not the recent decline of manufacturing employment is caused by this globalization. The NAE presents an objective look at this shift in technology, providing comprehensive data sets for engineers and policymakers who are confronted with pressures to compete in increasingly lean industries. The effects of "offshoring" are also examined in the IT industry, where recent expansions in China have affected the flow of technological progress in unexpected ways.

TA165 978-0-87849-382-1

Measurement technology and intelligent instruments 8.

Title main entry. Ed. by Wei Gao et al. (Key engineering materials; vs.381-382)

Trans Tech Publications, ©2008 664 p. \$304.00 (pa)

Gao (nanomechanics, Tohoku U., Japan), Yasuhiro Takaya (nanomechanics, Osaka U., Japan), Yongsheng Gao (nanomechanics, Hong Kong U. of Science and Technology) and Michael Krystek (nanomechanics, Physikalisch Technische Bundesanstalt) have edited this collection of 163 research articles on new measurement technologies in the manufacturing sector, combining both basic research projects with applied systems already used in industry. Written for fellow engineers and students in manufacturing sciences and nanotechnology, these papers cover such topics as micro and nano-metrology, precision measurement advances, online and in-process measurement, surface metrology, optical metrology and image

processing, biomeasurement, sensor technology and intelligent measurement and instrumentation. The latest methods of signal processing and associated algorithms are also discussed.

TA165 2008-017675 978-0-470-86691-7

Smart sensor systems; principles and practice.

Title main entry. Ed. by Gerard C.M. Meijer.

John Wiley & Sons, ©2008 385 p. \$110.00
Assembling material used in a multidisciplinary course taught at Delft University of Technology since 1995, researchers in mathematics and physics present the basic principles of advanced sensor systems for designers and users of them. The topics include interface electronics and measurement techniques for smart sensor systems, physical chemosensors, and universal asynchronous sensor interfaces.

TA167 2008-025079 978-0-8058-6151-8

Applications of cognitive work analysis.

Title main entry. Ed. by Ann M. Bisantz and Catherine M. Burns.

CRC / Taylor & Francis, ©2009 383 p. \$89.95
Bisantz (industrial and systems engineering, U. of Buffalo, State U. of New York) and Burns (systems design engineering, U. of Waterloo, Canada) assemble 13 chapters that outline the five phases of cognitive work analysis for use in the analysis and design of complex, human-technology systems. Contributors working in engineering and psychology in the US and Canada provide examples of all of the phases of cognitive work analysis in a variety of real-world domains to show the application of techniques in practice. Analysis in an air traffic control simulation, health care system, and other settings is included, as are applications of work domain, control task, social-organizational analysis, and strategies analysis, and techniques from other research and design traditions.

TA168 2008-026812 978-1-58488-769-0

Multi-resolution methods for modeling and control of dynamical systems.

Singla, Puneet and John L. Junkins. (Chapman & Hall/CRC applied mathematics and nonlinear science; 16)

Chapman & Hall/CRC, ©2009 299 p. \$119.95
This book examines existing approximation methods and explores methods for developing new methods for the approximate solution of large-scale dynamical system problems. It offers a framework for understanding the advantages, drawbacks, and application areas of algorithms for input- output approximation. It also presents novel adaptive learning algorithms that can be

adjusted in real time to the various parameters of unknown mathematical models. The book brings together ideas from classical orthogonal function approximation, neural network input-output approximation, finite element methods for distributed parameter systems, and various approximation methods employed in adaptive control and learning theory. Computational implications are illustrated with benchmark problems. An appendix of color charts is included.

TA342 978-1-60021-977-1

Leading-edge applied mathematical modeling research.

Title main entry. Ed. by Matías P. Alvarez.

Nova Science Publishers, ©2008 384 p. \$69.00

This collection of data and research on mathematical modeling concentrates on applications in the fields of environmental processes, manufacturing and industrial systems. Nova staff editor <A>lvarez (whose credentials are not listed) has assembled these highly technical papers to focus on the latest innovations in the field such as using stochastic flows to study ocean turbulence, and intelligent manufacturing systems based on Petri net modeling. These articles will be of interest to mathematics and engineering practitioners in associated research fields.

TA403 978-0-87170-867-0

Elements of metallurgy and engineering alloys.

Title main entry. Ed. by F.C. Campbell.

ASM International, ©2008 656 p. \$134.00
Covering fundamentals of metallurgy and the specifics of major engineering alloys, this reference is for anyone who deals with metals, including designers, structural engineers, materials and process engineers, manufacturing engineers, and production personnel. It does not aim to replace handbooks on engineering alloys; rather, it allows readers to compare the metallurgy, properties, and applications of the most important engineering alloy systems. Part I covers fundamentals of physical and mechanical metallurgy. Part II deals with specific ferrous and nonferrous metals and their alloys. The last chapter deals with metal-matrix composites. Appendices list conversions, crystalline system calculations, and crystallographic planes and directions. A first course in materials science is helpful but not necessary to understand the book. Information on the author is not given.

TA403 2008-001782 978-0-470-82298-2

Materials characterization; introduction to microscopic and spectroscopic methods.

Leng, Yang.

John Wiley & Sons, ©2008 337 p. \$110.00
Materials science and its techniques have stretched across a wide range of disciplines, a condition that has also stretched the knowledge and skills of professionals and students alike. Leng (materials science, Hong King U. of Science and Technology) provides a range of content and level of accessibility suitable for both groups of readers, keeping the theoretical down to a minimal level in terms of mathematics and physics. He relies on examples of characterization techniques that focus on the interpretation and analysis of outputs as well as excellent exercises that lend themselves well to self-study as well as classroom use, covering light microscopy, x-ray diffraction, transmission electron microscopy, scanning electron microscopy, scanning probe microscopy. His instructions for analysis include x-ray spectroscopy for elemental analysis, electron spectroscopy and secondary ion mass spectrometry for surface analysis, vibration spectroscopy for molecular analysis and thermal analysis. The illustrations are exceptionally well-chosen.

TA418 2008-459657 978-3-527-31720-2
Carbon nanotube devices; properties, modeling, integration and applications.

Title main entry. Ed. by Christofer Hierold. (Advanced micro & nanosystems; 8)

Wiley-VCH, ©2008 363 p. \$230.00
Academic and industrial scientists in Europe and Canada survey some possible applications of the wee tubes in mainstream technology. Among them are microelectronics, transducers, sensor-based devices, and field emission devices. They also consider research methods, such as characterizing nanotubes by optical spectroscopy, and multiscale modeling and simulation for fluid mechanics at the nanoscale.

TA418 978-0-470-04140-6
Electrochemical impedance spectroscopy.

Orazem, Mark E. and Bernard Tribollet. (Electrochemical Society series)

John Wiley & Sons, ©2008 523 p. \$100.00
Orazem (chemical engineering, U. of Florida) and Tribollet's (Centre National de la Recherche Scientifique, France) text provides the background and training suitable for application of impedance spectroscopy to a broad range of applications, such as corrosion, biomedical devices, semiconductors and solid-state devices,

sensors, batteries, fuel cells, electrochemical capacitors, dielectric measurements, coatings, electrochromic materials, analytical chemistry, and imaging. Presenting generally applicable fundamentals rather than detailed treatment of applications, the book is suitable as a textbook for graduate students in electrochemistry, materials science, and chemical engineering, and as a self-study guide and reference for scientists and engineers. An opening section on essential background—complex variables, differential equations, statistics, electrical circuits, electrochemistry, and instrumentation—is followed by sections on experimental techniques; process models; interpretation strategies; statistical analysis; an integrated approach to impedance spectroscopy combining experimental observation, model development, and error analysis; and reference materials.

TA418 978-3-527-31531-4
Nanomaterials; an introduction to synthesis, properties and application.

Vollath, Dieter.

Wiley-VCH, ©2008 352 p. \$115.00 (pa)
Vollath draws material he uses in lectures as a consultant to industry and at Graz (Austria) University of Technology to provide engineers an elementary introduction to nanomaterials. The selection of topics is necessarily shaped by his personal interests and experience, he explains, but hopes they are ones of use to most readers. They include surfaces in nanomaterials, optical properties, nanofluids, and characterization.

TA418 978-3-527-40740-8
Plasma nanoscience; basic concepts and applications of deterministic nanofabrication.

Ostrikov, Kostya (Ken).

Wiley-VCH, ©2008 538 p. \$145.00
Clearly written and of interest to advanced undergraduates and graduate students, as well as to specialists, this volume presents an overview of the science and uses of plasma nanoscience, its history, current trends, and future prospects. Ostrikov (CSIRO Materials science and engineering, Australia and the U. of Sydney) discusses the approach of plasma-generated building units to create nanoassemblies in a variety of contexts and with consideration of related issues, especially those that concern the surface science of plasma-exposed surfaces, the use of nanodot arrays, and various nanoscale objects which focus ion fluxes. The applications, benefits, and advantages of the processes described

are stressed; a lengthy conclusion summarizes the various situations suitable for using low-temperature plasmas for nanoscale materials synthesis and processing. The volume is well illustrated with diagrams and other visual aids.

TA418 2007-027362 978-0-471-79059-4

Science and technology of polymer nanofibers.

Andrady, A.L.

John Wiley & Sons, ©2008 403 p. \$100.00

With a broad range of practical applications such as filters, fabrics, sensors, catalysts, scaffolding, drug delivery, and wound dressings, these materials seem to have endless possibilities. Practitioner and academic Andrady shares other researchers' enthusiasm for polymer nanofibers and shares his expertise in the underlying science and technology, along with an expert assessment of polymer nanofibers' potential for commercialization. He begins by describing electrostatic spinning and nanofibers' application areas, then introduces polymer solutions including macromolecular models and concentrated polymer solutions. He goes into detail about electrospinning basics, and factors affecting nanofibers' quality, then describes a characterization of nanofibers and mats, composite nanofibers', biomedical applications, applications of Nana fiber mats as sensors and filters, and describes recent developments in electrospinning. The possibilities are fascinating, and Andrady includes plenty of tantalizing ideas on tissue engineering and biomedical applications.

TA1530 2007-044308 978-1-58488-972-4

Principles of nanophotonics.

Title main entry. Ed. by Motoichi Ohtsu et al. (Series in optics and optoelectronics)

Chapman & Hall/CRC, ©2008 228 p. \$79.95

Instructors affiliated with the University of Tokyo and other Japanese schools outline physically intuitive concepts of nanophotonics using a novel theoretical framework that differs from conventional wave optics. Led by a major innovator in the field of nanophotonics, the authors describe the operational principles of nanophotonic devices based on the control of excitation transfer between nanomaterials via optical near fields, nanophotonic fabrication methods based on the localized photon model, and nanophotonic information and communication systems than can overcome the integration-density limit imposed by the diffraction of light with ultra-low-power operation.

TA1630 978-1-59693-281-4

High-level data fusion.

Das, Subrata.

Artech House, ©2008 373 p. \$129.00

Master practitioner Das explains cutting-edge diffusion techniques that help professionals develop powerful situation assessment skills, providing them the tools they need to design high level fusion services, select algorithms and software, simulate performance, and evaluate systems. He assesses object and situation fusion processes that handle uncertainties as well as emerging technologies such as particle filtering, spatiotemporal clustering, net-centricity, agent formalism, and distributed fusion. He also explains models, architecture, and data through target tracking, target classification and aggregation, model base situation assessment, modeling time for situation assessment, nonlinear and hybrid models, decision support, linear effusion models, cognitive agents for data fusion, and distributed fusion. Das provides all the necessary algorithms and mathematical preliminaries. This is also suitable as a classroom text or supplemental.

TA1705 2007-047449 978-1-60456-181-4

Solid-state lasers; properties and applications.

Title main entry. Ed. by Thomas O. Hardwell.

Nova Science Publishers, ©2008 227 p. \$79.00

This work gathers new research on solid state lasers, by academic researchers in Turkey, the US, Singapore, China, Japan, Germany, Russia, Poland, and Malaysia. There are seven chapters in all, covering topics such as thermal effects and power scaling of diode- pumped solid-state lasers, novel bismuth-activated glasses with infrared luminescence, and fabrication and characterization of InP- biased diode lasers. Other subjects examined are lead chalcogenide solid solution semiconductors, long-wavelength quantum-dot lasers, and transverse modes in nitride vertical-cavity surface-emitting diode lasers. B&w and color images are included. Information on the editor is not given.

TA1750 2008-274922 978-0-470-02579-6

Silicon photonics; the state of the art.

Title main entry. Ed. by Graham T. Reed.

John Wiley & Sons, ©2008 330 p. \$150.00

Reed (optoelectronics, U. of Surrey, UK) compiles nine chapters that form an overview of silicon photonics, in this volume directed at photonics engineers and professionals working with optical networks, optical communications, and semiconductor electronics, as well as graduate students. An international group of computer

and electrical engineers discuss the integrated photonic circuit, silicon photonic and photonic bandgap waveguides, mechanisms for optical modulation in silicon, silicon-based light sources, optical detection technologies, passive devices, photonic and electronic integration approaches, and applications in communications and sensors.

ENVIRONMENTAL TECHNOLOGY

TD193 2007-050817 978-1-60456-249-1
Laser applications in environmental monitoring.

Title main entry. Ed. by Luca Fiorani and Francesco Colao.
Nova Science Publishers, ©2008 265 p.
 \$89.00

In the opening chapter of this collection, Mitev (CSEM Switzerland) explains the science and math behind atmospheric laser radars (lidars) and describes the three main atmospheric lidar techniques. The remaining four chapters discuss airborne lidar bathymetry for coastal zone monitoring, laser-induced fluorescence for hydrographic measurements, soil analysis by laser-induced breakdown spectroscopy, and three-dimensional laser rangefinding scans of underground cavities. Black and white images and color charts are provided.

BUILDING CONSTRUCTION

TH880 2008-030633 978-0-07-154601-0
Green building through integrated design.

Yudelson, Jerry. (Greensource)
McGraw-Hill, ©2009 261 p. \$65.00

A licensed engineer and head of a Tucson, Arizona-based green building consultancy, Yudelson has spent his professional career engaged with energy and environmental issues; he has extensive experience with the design, construction, and operation of numerous residential and commercial green buildings. Written for commercial and institutional building designers, owners, and builders, Yudelson's text explains the process of building a certified green building, including project costs; the business case for green buildings; green technologies; rating and certification systems, and the certification process; integrated project management; design considerations and development; construction; and operations. It includes case studies of 30 LEED Platinum projects in the U.S. and Canada, and interviews with designers and builders, which highlight the relevant issues, difficult challenges, and problem-solving techniques involved in the integrated design process. Illustrated throughout with

b&w photographs, diagrams, charts, and tables.

MECHANICAL ENGINEERING & MACHINERY

TJ211 2007-041223 978-1-60021-997-9
Robotics research trends.

Title main entry. Ed. by Xing P. Guo.
Nova Science Publishers, ©2008 367 p.
 \$69.00

Nova Science staff editor Guo has compiled research papers from 27 contributors from around the world on the subject of research trends in robotics, and how this once futuristic concept has evolved into practical applications in everyday life. Topics from these researchers include 3-D reconstruction from digital imaging, vision surveillance techniques in robotics, adaptive swarms and the architecture for unmanned marine vehicles. Written for engineers in the field, these highly technical papers also concentrate on exciting new applications of robotics, such as "smart" prosthetic limbs.

TJ211 978-1-84816-006-4
Robotics; state of the art and future challenges.

Bekey, George et al.
World Scientific, ©2008 144 p. \$58.00

The authors (from the U. of Southern California, U. of Pennsylvania, Rensselaer Polytechnic Institute, Ohio State U., and the National Aeronautics and Space Administration in the United States and the Korea Aerospace U. in South Korea) describe the state-of-the-art in six key areas of robotics research and development around the world: robotic vehicles; space robotics; humanoid robots; industrial, service, and personal robots; robotics in biology and medicine; and networked robots. Each chapter defines the area; discusses its importance; describes major applications with examples; outlines present and future challenges; summarizes major activities in the United States, Korea, Japan, and Europe; and provides a qualitative comparison of those research and development activities.

TJ808 2007-040768 978-1-59726-103-6
Energy for sustainability; technology, planning, policy.

Randolph, John and Gilbert M. Masters.
Island Press, ©2008 790 p. \$85.00

Once a startling new concept, sustainability has moved to the core of discourse about global development, economies at all scales, and equity. Randolph (environmental planning, Virginia Polytechnic Institute and State U.) and

Masters (environmental engineering emeritus, Stanford U.) offer an interdisciplinary and encyclopedic approach seeking to inform policy makers and technologists in equal shares. They describe energy patterns and trends, including the energy imperative and patterns of use, resources and sustainability, and energy futures; energy fundamentals, including energy science, and life-cycle assessment; buildings and energy, including energy efficiency, solar energy, and moving toward whole-community energy; sustainable electricity, including centralized electric power systems, distributed energy resources, photovoltaic systems, and large scale renewables (i.e., wind and solar); sustainable transportation and land use, including biofuels, biomass, and whole community energy; and energy policy and planning, including market transformation and changes in US state and local policies.

ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING

TK5102 2008-025443 978-1-4200-4601-4
Adaptive signal processing in wireless communications.

Title main entry. Ed. by Mohamed Ibnkahla. (The electrical engineering and applied signal processing series)
CRC / Taylor & Francis, ©2009 504 p. \$99.95
Contributors from a fair sampling of the industrial world offer electronic engineers and related professionals a tutorial survey of adaptation in the physical layer of wireless and mobile communications systems. Their topics include modeling and identifying adaptive channels adaptive receiver design and equalization, modulation and coding, multiple-input/multiple-output systems, adaptive and opportunistic beam forming, and cooperative diversity.

TK5102 2008-009173 978-1-4200-6702-6
Applied signal processing; concepts, circuits, and systems.

Hamdy, Nadder.
CRC / Taylor & Francis, ©2009 517 p. \$99.95
Improvements in digital circuitry and processors have prompted a significant switch to digital signal processing techniques rather than the traditional analog. However, the two share important concepts and ideas useful in design and applications. Hamby (electronics and signal processing, Arab Academy of Science and Technology, Egypt) presents a unified treatment of both analog and digital signal processing, giving a solid background of both, before describing analog a signal processing

and filter design in detail, moving to data converters, digital signal processing, digital filter design, multi rate signal processing, discrete time transforms, digital signal processors, and digital signal Processing Systems. He includes an array of circuits and related material, as well as a wealth of real-life examples and applications. The result serves as a classroom text and also as a professional reference for engineers entering into the digital world.

TK5102 2008-004941 978-0-470-18092-1
Digital signal processing techniques and applications in radar image processing.

Wang, Bu-Chin. (Information and communications technologies)
John Wiley & Sons, ©2008 338 p. \$100.00
Wang, a research engineer specializing in DSP processor design, has written this textbook for radar imaging for both engineering students and colleagues. The author covers the fundamentals of DSP techniques and applications, including signal characteristics in analog and digital domains, advance signal sampling, interpolation techniques, antenna theory and the algorithms used for radar image processing. Satellite image files processed by Range-Doppler and Stolt interpolation algorithms are also presented, and MATLAB is used to display these signals during the various processing stages.

TK5102 2008-008995 978-1-84821-045-5
Switching processes in queueing models.

Anisimov, Vladimir V. (Applied stochastic methods series)
ISTE/Wiley, ©2008 345 p. \$140.00
While at Kiev University and Bilkent University in Turkey, statistician Anisimov developed switching processes for describing the operation of stochastic systems with the property that their development in time varies spontaneously at some random points of time that may depend on the previous system trajectory. He looks at the limit theorems of averaging principle and diffusion approximation type in the case of fast switching, limit theorems for switching processes with slow switching, and the asymptotic aggregation of switching processes in different time scales.

TK5103 978-0-8493-8250-5
Security in wireless mesh networks.

Title main entry. Ed. by Yan Zhang et al.
CRC / Taylor & Francis, ©2009 536 p. \$89.95
Zhang et al. bring together 15 chapters in this guide to security issues in wireless mesh networks, by computer science and electrical engineering researchers from around the world. They address issues such as intrusion detection,

secure routing, hop integrity, authentication, trust, and privacy, and security in wireless PAN and LAN mesh networks, IEEE cluster-based networks, and wireless sensor networks.

TK5103 2008-023925 978-0-07-148256-1
Wireless mesh networking.

Aggélou, George.

McGraw-Hill, ©2009 525 p. \$99.95

This volume explains the theory and applications of in-demand wireless mesh networks that provide wireless broadband access over wide areas. It covers basic principles, standards, and aspects of network operation such as antenna technologies and energy management. Aggélou (Ministry of Transport and Communications, Athens, Greece) also describes how and why the technology works, capacity principles, security issues, access control, and autonomic selfware.

TK5105 2008-008472 978-1-59904-855-0
Handbook of research on information security and assurance.

Title main entry. Ed. by Jatinder N.D. Gupta and Sushil K. Sharma.

IGI Publishing, ©2009 557 p. \$265.00

The contributors of these 47 articles assure us that threats to information security and assurance are very real, and that only constant and quick attention will save valuable data and information. They focus on enterprise security, addressing such issues as reasonware, the benefits of vigilance, holistic approaches, a research framework, and an audit-and-control approach to risk management. Other articles address security approaches, frameworks, tools (including their use, design and protocols), techniques, policies and procedures, and a full complement of ways to mitigate safety risks, including terrorism and bioterrorism. Each article includes full references, making this a good source of research topics as well as a handbook.

TK5105 2007-026336 978-0-470-05537-3
Policy-driven mobile ad hoc network management.

Chadha, Ritu and Latha Kant.

John Wiley & Sons, ©2008 391 p. \$115.00

With widespread applications in consumer markets and the military, the basic concepts seem to have settled down and standards are beginning to emerge. The authors, both expert consultants, focus on increasing automation in the management of mobile ad hoc networks (MANETs), starting with a brief technical and terminology interview. They describe policy language and frameworks, policy conflict

detection and resolution, and management of networks, configuration, fault, performance, and security. They offer comprehensive materials on devices, software, and appropriate design, along with technical foundations when needed, lessons learned, classical and state-of-the-art approaches, and directions for upcoming research. Although written primarily as a professional reference, this also works well as a self-study guide and is also applicable to classroom use.

TK5105 2008-036070 978-1-58705-469-3
Voice over IP security.

Park, Patrick.

Cisco Press, ©2009 361 p. \$55.00 (pa)

This book analyzes current and future threats to voice-over-IP (VoIP) security, evaluates security products, describes methods for protection, and outlines the best practices for architecture design and service deployment. The book not only covers technology concepts and issues, but also provides detailed design solutions featuring current products and protocols, so that readers can deploy a secure VoIP service in real world situations. Chapter summaries are included. The book is for managers and engineers planning to deploy VoIP systems, systems engineers and architects, network administrators, security consultants, and developers who implement VoIP products or solutions. Park is a VoIP test engineer.

TK6575 978-1-59693-347-7
Radar system analysis, design, and simulation. (CD-ROM included)

Kang, Eyung W. (The Artech House radar library)

Artech House, ©2008 367 p. \$139.00

Kang offers an authoritative and highly-technical guidebook for radar system engineers who want to optimize system performance and for graduate students who wish to learn radar system design. The author is a former instructor with several years of experience with Goodyear Aerospace Corp., Samsung, ITT Federal Laboratories, and others. The book discusses the need to master system analysis, verification, and design skills, as well as the ability to verify correct analyses through computer simulation. The examples used in this introductory book are extremely detailed and supported by numerous illustrations. A CD-ROM with more than 200 simulation and implementation tools, written in C++, is included.

TK7867 2007-048859 978-0-8493-7617-7
Electronic circuit design; from concept to implementation.

Kularatna, Nihal et al.

CRC Press, ©2008 483 p. \$99.95

Drawing on 30-plus years of experience in professional and research environments, electronics engineer Kularatna (U. of Waikato, New Zealand) presents a text to aid electrical engineering students and professionals in understanding the total design process and the development of prototypes which require little to no debugging prior to release. The work addresses several areas of analog and mixed signal design, including power supply design, signal conditioning, essentials of data conversion, and signal processing, while also summarizing a large amount of information from theory texts, application notes, design bulletins, research papers, and technology magazine articles. While Kularatna serves as the primary author, four subject area experts from New Zealand, Australia, and Korea also contribute material on the design process; configurable logic blocks for digital systems design; oscillators, phase lock loops, and direct digital synthesis; and system-on-a-chip design and verification.

TK7871 2008-008473 978-1-59904-988-5

Handbook on advancements in smart antenna technologies for wireless networks.

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

Information Science Reference, ©2009 561 p. \$195.00

Featuring chapter contributions from leading experts in academia and industry, this reference explains terms, concepts, methods, and applications related to smart antennas in various wireless systems. Chapters are in sections on smart antenna combining algorithms, performance issues, applications of smart antennas, and experiments and implementations. Some applications described include smart antennas for code division multiple access systems, cross-layer performance of scheduling and power control schemes, mobile ad hoc networks exploiting multi-beam antennas, and smart antennas for automatic radio frequency identification readers. Detailed chapter overviews are included. Sun is affiliated with the Ubiquitous Mobile Communications Group at the National Institute of Information and Communications Technology in Japan. The book will be useful to those involved in computer networking, wireless data transfer, internet connectivity, and dataflow.

TK7871 2008-022523 978-1-891121-73-9

Microstrip and printed antenna design, 2d ed.

Bancroft, Randy.

SciTech Publishing, ©2009 287 p. \$95.00
Bancroft updates his succinct treatment of wireless designs in this book written for non-specialist electrical engineers as well as for designers of planar microstrip antennas who design antennas for wireless applications, and for those who design antennas for the aerospace industry. When mathematics beyond algebra is presented, such as integrations and infinite sums, appendices are provided which explain how to undertake numerical computation. Results are presented with input dimensions and parameters which were used to generate them. The six revised chapters cover the design of rectangular, circular, broadband, and dual-band microstrip antennas, as well as microstrip arrays.

TK7871 2007-050162 978-0-470-03634-1

Modern antenna handbook.

Balanis, Constantine A.

John Wiley & Sons, ©2008 1680 p. \$195.00
This massive textbook on modern antenna technologies is designed to assist field engineers and students in achieving a more thorough understanding of signal parameters, metamaterials, microelectromechanical systems, frequency selective surfaces and radar cross sections. Balanis (Arizona State U.) has edited this information to include both practical methods and theory used today and future developments on the horizon, with a broad emphasis on mobile wireless communications and medical applications. Five chapters are devoted to the numerical and computational methods currently employed to design and test antenna technologies.

TK7872 2008-925581 978-1-58603-813-7

Wireless sensor network security.

Title main entry. Ed. by Javier Lopez and Jianying Zhou.

(Cryptology and information security series; v.1)

IOS Press, ©2008 313 p. \$140.00

Lopez (U. of Malaga, Spain) and Zhou (Institute of Infocomm Research, Singapore) present 12 chapters exploring security threats to and security mechanisms of wireless sensor networks. The opening chapter describes a generic adversary model and a framework for security analysis, after which the remaining chapters discuss the goals and modes of operation of symmetric cryptographic primitives; public-key cryptography solutions for encryption, digital signatures, authentication, and key establishment; key distribution, discovery, establishment, and update solutions; security frameworks at the link-layer and the services they provide to the upper layers; how to secure wireless sensor network routing protocols; the security vulnerabilities of

data aggregation systems within wireless sensor networks; the requirements and challenges of privacy preserving deployments; intrusion detection systems; sensor network node identity properties and identity verification mechanisms; and the functionality of the less resource-demanding cryptographic algorithms.

TK7875 978-1-86094-862-6

Advances in multiphysics simulation and experimental testing of MEMS.

Title main entry. Ed. by Attilio Frangi et al. (Computational and experimental methods in structures; v.2)

Imperial College Press, ©2008 489 p. \$142.00

Microelectromechanical systems (MEMS) and nanoelectromechanical systems (NEMS) may be ubiquitous already, but there is still plenty of room for more, and for better simulation and experimental testing procedures. These 13 extended chapters cover the newest topics in multiphysics simulation and testing, including the challenges in modeling liquid and gas flows in micro/nano devices, using kinetic equations for MEMS and NEMS, applying the direct simulation Monte Carlo method to gas-filled MEMS devices, simulation of micro-fluidics, gas damping in MEMS using fast integral equations solvers, experimental techniques for damping characterization, nonlinear dynamics of the electrostatically actuated MEMS, couple deformation analysis of thin MEMS plates, assessment of Coulomb and Casimir forces, numerical simulation of bioMEMS, continuous modeling of multiphysics problems of Microsystems for topology optimization, mechanical characterization of polysilicon, and testing of nano wires and tubes. Distributed by World Scientific.

TK7875 2008-017717 978-0-8155-1577-7

Fabrication and design of resonant microdevices.

Bahreyni, Behraad. (Micro & nano technologies; 3)
William Andrew Publishing, ©2008 181 p.
\$165.00

Bahreyni (engineering science, Simon Fraser U., Canada) walks fellow engineers through the various considerations when designing resonant devices destined to be mass produced and used as part of the mechanical dimension of micro-electro-mechanical systems (MEMS). These include micro-fabrication, modeling dynamics, damping mechanism, interfacing, and packaging. His examples of applications are resonant microsensors, signal processing, and time and frequency references.

TK7875 2008-459617 978-3-527-31494-2

Reliability of MEMS.

Title main entry. Ed. by Osamu Tabata and Toshiyuki Tsuchiya. (Advanced micro & nanosystems; v.6)
Wiley-VCH, ©2008 303 p. \$230.00

Tabata and Tsuchiya (micro engineering, Kyoto U., Japan) have edited this textbook for students and researchers in the field of micro and nanosystems (AMN) to reveal new technologies and devices that control and shape our world at an atomic level. Concentrating on the reliability of MEMS materials and devices, contributors from all over the world address such relevant topics as inertial sensors, the Eco Scan MEMS resonant mirror and the uniaxial tensile test for MEMS materials. The performance, reliability and safety of these micromechanical parts and the methods used to test these parameters are also discussed at length.

TK7876 2008-038352 978-1-891121-77-7

Multifunctional adaptive microwave circuits and systems.

Steer, Michael B. and W. Devereux Palmer.
SciTech Publishing, ©2009 460 p. \$139.00

This collection of nine articles addresses adaptive, tunable, and reconfigurable radio frequency circuits for multi band and broadband radar, radio and sensor systems. These systems can receive and modulate electromagnetic signals from any direction, and can be configured to implement a variety of radio and sensor functions while adapting to the local ambient environment to improve signal reception, reject interference, and compensate for multi path affects. Contributors cover radio frequency system design, radio frequency MEMS components (including switches), devices for reconfigurable circuits and antennas, tunable dielectrics for RF circuits, adaptive server approaches for microwave transmitters, broadband network design, tunable filters, retrodirective array technology, multifunctional radar, communication and radiometry systems. The editors include a glossary. This summarizes the findings of five-year project on multifunctional adaptive radial radar and sensors that ran from funded by the U.S. Army Research Office.

TK9203 2008-271965 978-1-58603-803-8

Experimental and numerical stability investigations on natural circulation boiling water reactors.

Marcel, Christian Pablo.
IOS Press, ©2007 141 p. \$68.00 (pa)
Marcel (nuclear engineering, U. Nacional de Cuyo) notes that for safety reasons the next generation of nuclear reactors will likely be

active rather passive, requiring further research in natural circulation as a primary cooling mechanism. Here he investigates a number of open issues about the stability characteristics of natural circulation boiling water reactors (BWRs), including the effects of downscaling the thermal hydraulics of natural circulation BWRs, experiments about the stability of natural circulation BWRs, the results of an experimental parametric study of natural circulation BWRs, experimental and analytical investigations on flashing-induced instabilities in a single channel, and flashing-induced oscillations in parallel channels. His appendices on the technical details of his case study as well as related models and concepts are particularly interesting.

AERONAUTICS, ASTRONAUTICS

TL783 978-1-56347-951-9

Nuclear space power and propulsion systems.

Title main entry. Ed. by Claudio Bruno. (Progress in astronautics and aeronautics; v.225)

Amer. Inst. of Aeronautics & Astronautics, ©2008 282 p. \$89.95

Coming from a study prepared for the Space Technology and System Development Commission of the International Academy of Astronautics, this report reviews studies on the possibilities of developing nuclear power and propulsion systems for space applications. The study group describes the possible advantages of using nuclear energy for this type of application despite concerns about safety and the performance limits of nuclear propulsion. The group introduces the technical side of nuclear propulsion and addresses nuclear thermal rocket propulsion systems, applications of ion thrusters to nuclear electric missions, high power and high-thrust-density electric propulsion for space transportation, metric configurations, and the legal issues and policies that need to be developed about the safety of nuclear propulsion systems and applications. Appendices include information on radiation doses and risks in nuclear propulsion and on the events at Chernobyl. Includes well-chosen photographs and line drawings.

TL1102 2007-030618 978-0-89464-061-2

Space nuclear safety.

Marshall, Albert C. (Orbit Foundation series)

Krieger Publishing Co., ©2008 463 p. \$175.00

This text/reference on space nuclear safety covers both radioisotope power sources and space reactors systems. After a review of basic nuclear concepts and an overview of nuclear

power systems and space nuclear safety issues, early chapters in the book cover deterministic safety analysis methods, while later chapters cover probabilistic safety assessments and consequence analysis. The last chapter reviews the process used to assure safety for space nuclear missions. Chapter exercises can be solved with a handheld calculator. Although the book is oriented toward nuclear engineers and aerospace safety professionals, brief discussions of nuclear engineering principles and concepts are included for readers without nuclear engineering backgrounds, making the material accessible to engineers, scientists, graduate students, and advanced undergraduates. Contributing authors are recognized experts from the US and Russia who have conducted safety assessments for major space nuclear programs. Marshall is retired from Sandia National Laboratories.

TL1489 2008-009538 978-1-56347-926-7

The space environment and its effects on space systems.

Pisacane, Vincent L. (Education series)

Amer. Inst. of Aeronautics & Astronautics, ©2008 421 p. \$94.95

Pisacane (aerospace engineering, US Naval Academy and biomedical engineering, Johns Hopkins U.) gives students and professionals a better understanding of the environment of space and its effects on spacecraft design. Realistically, he begins by describing the failures caused by the space environment and the associated risks, overviews the solar system (including asteroids and comets, the sun and its activity), then proceeds to magnetic and electric fields, gravitational fields, the magnetosphere, the neutral environment, plasma interactions, radiation interactions, and spacecraft contamination. He closes with very interesting chapters on meteoroids and space debris and their effects on the design of spacecraft, and the ever present problem of thermal control. He focuses primarily on the earth's environment but includes significant material on the extraterrestrial and the effects of radiation on humans in space.

CHEMICAL TECHNOLOGY

TP358 2007-049887 978-1-4200-5124-7

Biofuels; biotechnology, chemistry, and sustainable development.

Mousdale, David M.

CRC Press, ©2008 404 p. \$119.95

A British biochemist working for a genetics engineering company, Mousdale contributes

some technical perspectives to the volatile debate about the science, economics, and ethics of turning biological material into fuel for vehicles and other uses. He places current proposals and practices into historical context, surveying data, ideas, and bioproducts that have been visited at various times over the past half century. Many of the scientific results, he points out, contradict each other; he blames lack of communication rather than conflicting interests.

TP1120 2008-011624 978-1-4200-8062-9
Plastics fabrication and recycling.

Chanda, Manas and Salil K. Roy.

CRC / Taylor & Francis, ©2009 -- p. \$89.95

Chanda (chemical engineering emeritus, Indian Institute of Science) and Roy (civil engineering, Petra Christian U., Indonesia) present molding and fabrication processes of plastics but also describe several important features of plastics recycling to build into design. They describe a full array of processes, including molding, die forming and tooling, compression molding, transfer molding, injection molding, and extrusion. They introduce thermoforming, casting processes, reinforcing processes, reaction injection molding, foaming processes, and rubber compounding and processing technologies, along with miscellaneous processing techniques such as coating, powder molding, adhesive bonding, and welding. A full range of information is included on the recycling of polymers, including the recycling of polyethylenes, polyurethanes, and polyvinyl chloride, and even ground rubber tires and car batteries. This is a valuable reference for all practitioners in the plastics industry.

UG590 978-1-59693-391-0
Foundations of communications electronic warfare.

Poisel, Richard. (Artech House electronic warfare library)

Artech House, ©2008 444 p. \$129.00

Researcher and specialist Poisel addresses the theoretical as well as the practical side of electronic warfare (EW) as it applies to communication systems. With examples, illustrations, and algorithms he introduces professionals and students to the art of jamming, including its association with information theory and game theory, the mathematical underpinnings, including the algebras sets, the mathematical theory of probability, and random variables, the properties of signals and systems, including Fourier series, transmissions of signals through linear systems, and detection and estimation theory, digital communication systems, the association of information theory

and EW, source coding, channel coating, jam are performance in difficult channels, jamming performance evaluation using dynamic and non-cooperative games, noise jamming, pulsed noise jamming, and tone jamming. He includes appendices on relevant functions and equations.

LIBRARY SCIENCE, BIBLIOGRAPHY

Z675 2008-026988 978-1-55570-622-7
The Medical Library Association essential guide to becoming an expert searcher; proven techniques, strategies, and tips for finding health information.

Jankowski, Terry Ann.

Neal-Schuman, ©2008 137 p. \$65.00 (pa)

This text is geared toward librarians, information specialists, and library school students with less than five years of bibliographic database searching experience. It can be used as a text for a course or for self-study. Material is organized to follow the database search process from start to finish, with examples and descriptions of databases from health and biological sciences. The book guides readers through basics of search construction, offers practical guidelines for deciding what resources to start with, and reviews the usefulness of some of the most popular health science databases, such as MEDLINE, PubMed, PsychoInfo, CAB Abstracts, ABI/Inform, and ERIC. Learning features include checklists, exercises, and a glossary. Jankowski is a librarian at the University of Washington.

Z6675 2008-028793 978-1-55570-616-6
Drug information; guide to current resources, 3d ed.

Snow, Bonnie. (Medical Library Association guides)

Neal-Schuman, ©2008 546 p. \$195.00 (pa)

The third edition of this guide to drug information and resources has been updated to reflect current databases, websites, news services and other online references. Snow (Thomson Reuters) has more than 30 years of experience in this field, and she organizes these resources to facilitate quick and accurate research for pharmacists, medical librarians and scientists in the health sciences. Each entry contains subject area, source content and practical information, with a detailed index that can narrow down searches when quick diagnoses are required. Unlike similar reference volumes in the past that focus primarily on medical resources within the United States, this guide includes plenty of information from global sources as well.

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