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Sci-Tech Book News Reviews

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GEOGRAPHY, HYDROLOGY, ENVIRONMENT

G70 2008-008412 978-1-4200-7068-2
Creating spatial information infrastructures; toward the spatial Semantic Web.
Title main entry. Ed. by Peter van Oosterom and Sisi Zlatanova.
CRC / Taylor & Francis, ©2008   185 p. $129.95
Semantically meaningful models for the spatial information infrastructure (SII) must be developed in order to foster interoperability. This work presents solutions to problems preventing the launch of an effective SII. Leading experts in SII development present a complete overview of SII, including user and application needs, theoretical and technological foundations, and examples of realized working SIIs. The book offers practical solutions to both technical and nontechnical obstacles, discussing legal and organizational issues, copyrights, and pricing policies. About half of the chapters originated at a June 2007 seminar held in London. The other half are invited contributions. The book is for those who are involved in realizing parts of the current spatial information infrastructure either in practice or research. Oosterom and Zlatanova are affiliated with the GIS Technology Section, OTB Research Institute at Delft University of Technology, The Netherlands.

G109   978-1-59693-103-9
Ubiquitous positioning.
Mannings, Robin. (Artech House GNSS library)
Artech House, ©2008   203 p. $69.00
Mannings (Lancaster U., UK) explores the field of ubiquitous positioning, which places people and objects in a digital context for use in related networks and technologies. By coining the term "whereness," the author is able to provide the fundamentals for a new and comprehensive discipline that can be used to develop innovations in radio positioning, mapping and "geo-tagging."

This book offers plenty of new ideas for engineers in the field of mobile communications.

GE170 2007-034392 978-0-8493-7423-4
GIS for environmental decision-making; proceedings.
National Conference on GIS Research UK (12th: 2004: Norwich, England) Ed. by Andrew Lovett and Katy Appleton. (Innovation in GIS)
CRC Press, ©2008 259 p. $99.95
This book takes an interdisciplinary look at the use of GIS for environmental decision making, emphasizing the importance of matters related to data, analysis, and modeling tools, as well as stakeholder participation. The first section stresses the ability to integrate data from different sources as a defining characteristic of GIS. The second section gives examples on the use of GIS for suitability mapping and strategic planning exercises through illustrative examples. The last section of the book examines the use of GIS-based techniques to facilitate public participation in the decision-making process, and overviews developments in the integration of GIS, modeling, and 3d landscape visualization techniques. Material originated at an April 2004 conference held at the University of East Anglia, UK. The original conference papers have been reviewed and revised for publication, and two other invited contributions are included. Appleton is affiliated with the Zuckerman Institute for Connective Environmental Research at the University of East Anglia, UK. Lovett teaches environmental sciences at the University of East Anglia.

HC79   978-1-84542-586-9
The handbook of technology foresight; concepts and practice.
Title main entry. Ed. by Luke Georghiou et al. (Prime series on research and innovation policy)
Edward Elgar Publishing, ©2008   428 p. $220.00
This volume takes a number of different approaches towards explaining the subject of technology foresight, which involves

predicting, understanding, and reacting to technological change. The editors (all of the Manchester Institute of Innovation Research, U. of Manchester, UK) first present chapters that seek to define the field, explore its distinguishing characteristics as compared to other types of future studies, and provide an overview of the field's methods. They then present ten papers exploring technology foresight experiences in the United Kingdom, France, Germany, the United States, Japan, Nordic countries, smaller countries, industrializing Asia, Latin America, and Central and Eastern Europe. Finally, they present four chapters on policy transfer and learning, scoping and planning foresight, evaluation and impact of foresight, and emerging practices.

PRODUCTION, INDUSTRY, COMMERCE

HD30 2008-009113 978-1-60566-018-9
Technology due diligence; best practices for chief information officers, venture capitalists and technology vendors.
Andriole, Stephen J.
Information Science Reference, ©2009 402 p. $165.00
This book develops a due diligence framework for anyone who must select among competing technologies or invest in technologies intended to help their business achieve results, including executives and managers, venture capitalists, and technology vendors, as well as managers who wrestle with day-to-day technology acquisition challenges. The book offers actual case studies that incorporate due diligence methodology. Chapters are in sections on due diligence strategies and tactics, due diligence case studies, and tools and techniques. Case studies examine areas such as venture investing in wireless communications technology, enterprise investing in remote access technology, enterprise investing in RFID, and investing in knowledge-based user-computer interaction. About 100 pages of appendices offer analysis of trends in pervasive computing, intelligent systems technology, and business technology integration. Andriole is affiliated with Villanova University.

HD9502 2007-050316 978-1-59370-134-5
Energy, risk, & competitive advantage; the information imperative.
Randall, Scott.
PennWell Books, ©2008 284 p. $85.00
Randall, an expert in the field of operational risk management, has written this book focusing on the need for corporate management and executives to obtain accurate and meaningful market information in order to gain a competitive edge. The author concentrates on the development of an effective set of informational "tools," and how developing a proper business model for gathering and interpreting information is the key to success. Written for anyone responsible for risk assessment, market strategies and fiscal integrity, this book also covers the need for security while using external data resources.

HE7631 2007-049405 978-1-60456-158-6
Telecommunications research trends.
Title main entry. Ed. by Hans F. Ulrich and Ernst P. Lehrmann.
Nova Science Publishers, ©2008 260 p. $129.00
Contributors from the US, Europe, and Asia present the latest research in telecommunications, with emphasis on a global perspective. Some specific areas covered are European Union mobile telecommunications in the context of further enlargement, the privatization of Intelsat, the privatization of Turk Telekom, and influencing infrastructure performance through cross-border networks of regulatory agencies. Other areas explored include strategic bundling in telecommunications and its antitrust implications for intermodal competition, new challenges in Raman amplification for fiber communication systems, and fiber Bragg gratings in high birefringence optical fibers.

HV551 2007-042702 978-0-415-42247-5
Geospatial information technology for emergency response.
Title main entry. Ed. by Sisi Zlatanova and Jonathan Li. (International Society for Photogrammetry and Remote Sensing book series; v.6)
Taylor & Francis, ©2008 381 p. $189.95
The result of a collaborative effort involving 33 researchers located in 10 countries, this book shares technological advances that allow wider, faster, and more effective use of geospatial information in emergency response situations. The first section describes practice and legislation, focusing on the use of geospatial information in recent disaster events, as well as resulting legislative attempts to share and access data. The second part focuses on data collection and data products, and the third part describes data management and routing in 3D. The fourth section of the book focuses on emerging technology, including positioning, virtual reality, and simulation models, and the fifth section looks at the integration of heterogeneous data. The final section describes how geospatial information technology can be used in different disaster scenarios, illustrated with case studies

of transport accidents, floods, and fires. The book is aimed at researchers, practitioners, and students who work in disciplines related to geospatial information technology for emergency response. Zlatanova teaches GIS technology at Delft University of Technology, The Netherlands. Li teaches in the Department of Geography at the University of Waterloo, Canada.

HV8079 2008-922923 978-0-7695-3171-7
Systematic approaches to digital forensic engineering; proceedings.
International Workshop on Systematic Approaches to Digital Forensic Engineering (3d: 2008: Berkeley, CA)
Computer Society Press, ©2008 157 p. $176.00 (pa)
Papers from a May 2008 workshop, 15 in all, report on recent work in technical digital forensics research, digital forensics engineering theory, and related legal issues. Some specific areas examined include a skin tone detection algorithm for contraband image analysis, combining physical and digital evidence in vehicle environments, finding evidence in tamper-evident workstation logs, protecting digital legal professional privilege, and implications of attorney experiences with digital forensics and electronic evidence in the US. Other subjects include network data and state seizures in the US, multidimensional correlation of software source code, and node-based probing and monitoring to investigate the use of peer-to-peer technologies for distribution of contraband material. There is no subject index.

LB1028 2008-001871 978-1-59904-863-5
Handbook of research on computer mediated communication; 2v.
Title main entry. Ed. by Sigrid Kelsey & Kirk St. Amant.
Information Science Reference, ©2008 1020 p. $495.00
This two-volume research handbook on computer-mediated communication can't pretend to be comprehensive, admit editors Kelsey (Louisiana State U.) and St. Amant (East Carolina U.), but they believe its 69 chapters are far-reaching enough to establish a foundation of knowledge across a wide range of readers, including academics, researchers, industry representatives, educators, and lay persons. The chapters are organized into sections discussing how educational and training practices have change and might continue to change in response to advances in online media, how the plasticity and open access nature of cyberspace is influencing how one assesses the credibility of information and thinks about the

identity of oneself and others, how computer-mediated communications has influenced the way individuals exchange ideas and opinions as individuals and within communities, the impact of computer-mediated communications on cultural and linguistic issues, and issues specific to specific tools and technologies related to computer-mediated communication.

LANGUAGE, LITERATURE

P96 2007-043952 978-1-59904-970-0
Handbook of research on digital information technologies; innovations, methods, and ethical issues.
Title main entry. Ed. by Thomas Hansson.
Information Science Reference, ©2008 544 p. $265.00
In this resource, Hansson (pedagogy, U. of Southern Denmark and Blekinge Institute of Technology, Sweden) offers 33 chapters on ethical issues, methods, theories, and challenges related to the use of electronic resources in libraries, focusing on strategic planning, operational guidelines, and management practices, from selection to cataloging, web presentation, and user support. Topics include digital storytelling, e-learning, language labs, multimedia, web-course designs, and science teaching. The book is meant for use in academic libraries in the US and abroad and by undergraduate and graduate students. Contributors work in education, science, technology, and other fields around the world.

SCIENCE (GENERAL)

Q179 2007-049561 978-1-59904-986-1
Online science learning; best practices and technologies.
Title main entry. Ed. by Kevin F. Downing and Jennifer K. Holtz.
Information Science Publishing, ©2008 353 p. $99.95
One of the most exciting aspects of the Internet is the possibility of educating students of all ages who might not normally have access to qualified teachers. Downing and Holtz, both experts in online science teaching at DePaul University, give an overview of this new field from its inception. They note that many people now are setting up online classes without taking the nature of the technology into account. Holtz and Downing evaluate the current programs available and then give detailed advice for setting up classes in the sciences. Early introduction to science is particularly fascinating. Young children with a passion for dinosaurs can take a virtual paleontology tour and ask questions of a real

scientist. The possibilities are almost endless. For more advanced students, the authors explore the ways in which they can monitor and manipulate an experiment taking place miles away. They even propose tangible learning systems where a glove can be used that will relay movements either to a 3-D screen or a robotic arm. Anyone setting up or revising a distance learning science class will find useful suggestions in this book.

Q223 2007-042978 978-0-415-38617-3
Handbook of public communication of science and technology.
Title main entry. Ed. by Massimiano Bucchi and Brian Trench.
Routledge, ©2008 263 p. $190.00
Seventeen papers presented by Bucchi (sociology of science, U. of Trento, Italy) and Trench (communications, Dublin City U., Ireland) provide a survey of the current state of the field of science and technology communication. The papers discuss popular science books, science journalism, science museums and science centers, cinematic science, theories of public communication of science, health campaign research, the politics and ethics of metaphorical framing in genetics and genomics, survey research and the public understanding of science, scientists as public experts, public relations in science, environmental groups and other nongovernmental organizations as communicators of science, public participation and dialogue, science communication and the Internet, risk and public science communication, public communication of science and technology in developing countries, communicating the social sciences, and evaluating public communication of science and technology.

Q327 2007-037396 978-1-59904-807-9
Pattern recognition technologies and applications; recent advances.
Title main entry. Ed. by Brijesh Verma and Michael Blumenstein.
Information Science Reference, ©2008 435 p. $180.00
For academics, researchers, practitioners, and students, this volume details pattern-recognition techniques and applications. Verma (computing sciences, Central Queensland U., Australia) and Blumenstein (information
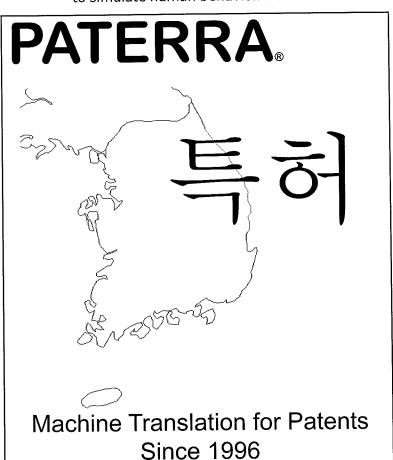
and communication technology, Griffith U., Gold Coast Campus, Australia) compile 17 chapters that describe theoretical and applied research in topics such as handwriting and speech recognition, signature verification, gender classification, occlusion sequence mining, and vector machines. Others discuss human detection techniques, brain-inspired recognition architecture, and clustering techniques. Chapter authors work in technology, computer engineering and science, electronic engineering, and other fields, in various parts of the world.

Q334   978-981-277-983-0
Foundations of decision-making agents; logic, probability and modality.
Das, Subrata.
World Scientific, ©2008 366 p. $88.00
Intelligent agent is an artificial intelligence system, explains Das, and an epistemic state is an actual or possible cognitive state that drives human behavior at any given moment, and must be simulated by an intelligent agent for it to simulate human behavior. He describes three

broad and fundamental approaches—logical, probabilistic, and modal—to representing and reasoning in the context of decision making. His study could be used as a textbook in a graduate or undergraduate course on artificial intelligence, or as a reference for researchers.

Q337 2007-044556 978-0-470-06031-5
Cooperative control of distributed multi-agent systems.
Title main entry. Ed. by Jeff S. Shamma.
John Wiley & Sons, ©2007 435 p. $180.00
The results of a collaborative project amongst four universities (UCLA, MIT, Cornell and Caltech), this collection of 17 papers describes the dimensions of cooperative control in terms of distributed control and computation, adversarial interactions, uncertain evolution and complexity management. Topics include swarms in micro-filter networks, connectivity and convergence in formulations, stability through move suppression, distributed predictive control, task assignment for mobile agents, the value of information in dynamic multiple-vehicle problems, optimal agent cooperation with local information, multi-agent cooperation through "egocentric" modeling, mixed linear programming, linear programming in multi-vehicle path planning, characterization of games with different information patterns, the modal estimation of jump linear systems, conditionally-linear filtering in jump-linear systems, cohesion of languages in grammar networks, complexity management in the state estimation of multi-agent systems and abstraction-based command and control with patch models. The primary application is to military vehicles.

Q342 2007-040640 978-1-59904-498-9
Multi-objective optimization in computational intelligence; theory and practice.
Title main entry. Ed. by Lam Thu Bui and Ricardo Sameer Alam.
Information Science Reference, ©2008 475 p. $132.00
Multi-objective optimization (MO) is an emerging field in computational intelligence research. This book provides scholars, academics, and practitioners with a collection of research on MO optimization techniques and their uses in the provision of electronic resources in libraries, with emphasis on strategic planning, operational guidelines, and practices. The book primarily focuses on management practices of the life-cycle of commercially acquired electronic resources. The first part of the book deals with

issues of applicability of various techniques, such as swarm optimization, differential evolution, and artificial immune systems. The second part of the book concentrates on various applications, such as wireless sensor network design, DNA sequence design, and military applications. The book is for professionals and advanced students in library science, especially those working in academic libraries. The editors are affiliated with the University of New South Wales, Australia.

MATH, COMPUTERS

QA76.54 2007-045063 978-1-84821-013-4
Modeling and verification of real-time systems; formalisms and software tools.
Title main entry. Ed. by Stephan Merz and Nicolas Navet.
ISTE/Wiley, ©2008 393 p. $195.00
Solidly rooted in the real world, including its constant need for the highest possible reliability at the fastest possible speed, these systems require a thorough understanding of a range of models and techniques. Researchers Merz and Navet and their contributors therefore offer a variety of tools, starting with analysis methods and verification of time Petri nets, verification of reactive systems through verification and performance testing, model checking (including of timed automata), specification and analysis of asynchronous systems using technology, synchronous program verification, synchronous functional programming, verification with real-time probabilistic systems, verification of probabilistic systems methods and tools, modeling and verification of real-time systems, and architecture description languages, including a case study. This is a professional reference but would also serve as a course text.

QA76.58 2007-038842 978-1-58488-808-6
Parallel iterative algorithms; from sequential to grid computing.
Bahi, Jacques Mochine et al. (Chapman & Hall/CRC numerical analysis and scientific computing series)
Chapman & Hall/CRC, ©2008 217 p. $89.95
Focusing on grid computing and asynchronism, this book explores the theoretical and practical aspects of parallel numerical algorithms, and illustrates how to apply these algorithms to solve linear and nonlinear numerical problems in parallel environments, including local, distant, homogeneous, and heterogeneous clusters. Each chapter contains a theoretical discussion, an algorithmic section that fully details implementation examples and specific algorithms, and an evaluation of the advantages and drawbacks of the algorithms. Chapter exercises and an appendix of mathematical results are also

included. The book is written to be accessible to non-specialists as well as researchers.

QA76.592 2007-019887 978-0-470-17927-7
Intelligent wearable interfaces.
Xu, Yangsheng et al.
John Wiley & Sons, ©2008 192 p. $100.00
Xu, Wen Jung Li (both: mechanical and automation engineering, Chinese U. of Hong Kong) and Ka Keung Lee (mechanical engineering, Hong Kong Polytechnic U.) report on research at Chinese University of Hong Kong into developing interfaces with a certain level of intelligence that humans can wear to enhance their capabilities in communications, actions, monitoring, and control. Writing for other designers and engineers, they describe such examples as automatic language translation, a fingertip interface with a computers, and a mobile airbag system.

QA76.75 2008-008469 978-1-59904-968-7
Engineering service oriented systems; a model driven approach.
Karakostas, Bill and Yannis Zorgios.
IGI Publishing, ©2008 399 p. $99.95
As intelligent systems expand and continue to relate to each other, they adapt, evolve and becoming increasingly complex. Karakostas (informatics, City U. London) and practitioner Zorgios write for those willing to make the relatively small investment necessary for service-oriented architecture in their information technology systems, linking systems theory and model-driven software engineering. With both the needs of business and technology in mind, they explain the "service" concept and service-oriented architecture, service dependencies and business architecture, standards for web services and service coordination, model-driven service engineering, ontology for model-driven software engineering and engineering based on the modeling notation IDEF, service deployment execution and management, and platforms. They include a case study involving accounts receivable and accounts payable, a number of examples (including screen shots) and references for each chapter, making this work well as a classroom text as well as a professional reference.

QA76.758 2008-008468 978-1-59904-699-0
Designing software-intensive systems; methods and principles.
Title main entry. Ed. by Pierre F. Tiako.
Information Science Reference, ©2009 559 p. $180.00
This work addresses the complex issues associated with software engineering environment capabilities for designing and maintaining real-time embedded software systems. It provides theoretical foundations, principles, methods, frameworks, and the latest research findings in the field. Chapters are in sections on process support specification and modeling techniques, requirements and traceability, software architectures and architectural alternatives, evaluation and optimization, and best practices and integrations. Contributors are affiliated with academic departments of computer and information science and engineering around the world. The book is for students and researchers in computer science, software engineering, manufacturing engineering, business administration, Web technology, and information systems. Tiako directs the Center for Information Technology Research at Langston University.

QA76.76 2007-008293 978-0-8493-9383-9
Manage software testing.
Farrell-Vinay, Peter.
Auerbach Publications, ©2008 573 p. $99.95
Written for testers who want to become managers, this book examines the why, how, when, and what of software testing and recommends strategies for planning tests, tracking bug reports, documenting specifications, recruiting the test team, and outsourcing. The second half of the book delves into the principles of functional and structural test techniques, static analysis, the unit test process, system testing, the usability test process, and metrics. Wayward attitudes and experiences of unnamed companies begin each chapter. The appendices contain 11 examples, 20 checklists, and 15 tools.

QA76.76 2008-008470 978-1-59904-492-7
Software engineering for modern Web applications; methodologies and technologies.
Title main entry. Ed. by Daniel M. Brandon.
Information Science Reference, ©2008 380 p. $180.00
The 15 articles collected here by Brandon (Christian Brothers U., Tennessee) review current topics for engineers creating software for the web. The text may be appropriate as a supplement to textbooks, but most content is for experienced engineers. Topics include: model-centric architecting process; architecture, specification, and design of service-oriented systems; using patterns for engineering high-quality web applications; applying agility to database design, testing methods, outsourcing issues in web development, engineering wireless mobile applications, project management,

and component-based deployment. Resources are included in the final chapters.

QA76.88 2007-045065 978-1-84821-009-7
Nanocomputers and swarm intelligence.
Waldner, Jean-Baptiste.
ISTE/Wiley, ©2008 267 p. $135.00
They are ever smaller and ever faster, but fairly soon integrated circuits will have reached their physical unit. What will take their place? Here consultant Waldner surveys the next generation, including quantum computing, nanotubes in molecular transistors and DNA computing. He describes new methods of production; the rise and (anticipated) decline of the silicon economy; the rebuilding of high tech atom by atom through scanning tunneling microscopes, nanomachines and other devices; the revolutionary new computers, including distributed platforms; information systems; and business mutations and digital opportunities, including such elements as highly diffused information systems, web applications and a mutation of what information technology is and does. The result is designed for professional reference in the engineering community but is accessible enough to serve a wider readership, including managers, executives and the informed general public.

QA76.9 2008-008466 978-1-59904-657-0
Data mining applications for empowering knowledge societies.
Title main entry. Ed. by Hakikur Rahman.
Information Science Reference, ©2009 332 p. $180.00
Data mining applications are becoming a more common part of corporate intelligence systems, and this textbook shows how these techniques are used to preserve historical data as well as predict future performance and financial trends. Rahman (Sustainable Development Networking Foundation, Bangladesh) presents an overview of all current application for data mining, including nanotechnology, knowledge societies, contemporary CRM, image mining, satellite technology and data warehousing. Designed for anyone who uses historical data to predict future outcomes in business, this book also focuses on the interface between commerce and electronic resources in libraries.

QA76.9 2007-044568 978-0-471-79959-7
The handbook of information and computer ethics.
Title main entry. Ed. by Kenneth Einar Himma and Herman T. Tavani.
John Wiley & Sons, ©2008 671 p. $125.00
With the maturation of the field of information and computer ethics there is a pressure to fragment into subfields or for subfields to be subsumed into previously existing fields, but Himma (philosophy, Seattle Pacific U.) and Tavai (philosophy, Rivier College) present this work in an effort to keep the field whole. Their goal in presenting the volume's 27 chapters is to identify foundational issues, provide theoretical perspectives, and include analyses of a range of applied and practical issues. The papers are organized into sections devoted to foundational issues and methodological frameworks; theoretical issues affecting property, privacy, anonymity, and security; professional issues and the information- related professions; responsibility issues and risk assessment; regulatory issues and challenges; and access and equity issues.

QA76.9 978-1-59693-289-0
Homeland security technology challenges; from sensing and encrypting to mining and modeling.
Title main entry. Ed. by Giorgio Franceschetti and Marina Grossi. (Artech House intelligence and information operations series)
Artech House, ©2008 294 p. $89.00
Franceschetti (U. Federico II, Italy) and Grossi (chief executive officer, SELEX Sistemi Integrati, a Finmeccanica company) present nine papers exploring what they see as key technological facets of homeland security practice: data acquisition and processing; storage, handling, and mining of sensed data; and design, model, scaling, and simulation of the integrated system designed to handle crisis occurrences. Following an introductory essay, chapters specifically address embedded wireless sensor networks; visual detection and classification of humans, their pose, and their motion; cyber security basic defenses and attack trends; mining databases and data streams; private information retrieval: single-database techniques and applications; tapping vehicle sensors for homeland security; modeling and analysis of wireless networked systems; and large systems modeling and simulation.

QA76.9 2008-010630 978-0-8493-8067-9
Information assurance architecture.
Willett, Keith D.
CRC Press, ©2008 588 p. $79.95
This book provides the security industry with a formal information assurance architecture that complements enterprise architecture, systems engineering, and enterprise life-cycle management. The framework provided here offers a reference model for the consideration of security in many contexts and from many perspectives. The book is primarily for security engineers, security architects, security management, and other security personnel with an interest in identifying and addressing business risk. It is also useful for enterprise architects and systems architects who desire to integrate information assurance in their solutions. Business managers, project managers, and program managers will find the book useful for understanding information assurance in the context of the enterprise, including concepts of business need, business fit, and business justification for information assurance. Readers should have at least an intermediate knowledge of information technology and information assurance. Author information is not given.

QA274 2007-030349 978-1-4200-5883-3
Mathematical models of information and stochastic systems.
Kornreich, Philipp.
CRC / Taylor & Francis, ©2008 364 p. $99.95
Predicting the future from the past has a long history widely diverse in its applications, and Kornreich gives modern-day soothsayers a solid background in understanding the information they need to develop models that foretell the future of a system. He begins by ably explaining basic principles of probability theory and how to apply them to predict the behavior of those systems based on what is know about them. He covers events and their density, probabilities (joint, conditional and total), random variables and their functions, conditional distribution functions and the sum of two random variables, average values and moments as well as correlations of random variables and of their functions, randomness and average randomness, random systems (or at least most of them), information (such as information in genes and transmissions), random processes, spectral densities, data analysis and chaotic systems, which sounds like an oxymoron but certainly is not.

QA402 2008-008413 978-1-4200-6301-1
The 3-D global spatial data model; foundation of the spatial data infrastructure.
Burkholder, Earl F.
CRC / Taylor & Francis, ©2008 364 p. $119.95
The aim of this text is to define and describe a global spatial data model that is easy to use because it is based upon rules of solid geometry, is standard between disciplines and can be used all over the world, accommodates modern measurement and digital data storage technologies, supports both analog map plots and computer visualization of digital data, preserves geometrical integrity and does not distort physical measurements, combines horizontal and vertical data into a single three-dimensional database, facilitates rigorous error propagation and standard deviation computations, and provides (and defines assumptions associated with) various choices with respect to spatial data accuracy. Results are presented first and justification for the results are presented next. This is followed by a presentation of the fundamental mathematical concepts and then relevant concepts from surveying, geodesy, and cartography.

ASTRONOMY

QB462 2006-938400 978-1-58381-333-1
Numerical modeling of space plasma flows; proceedings.
International conference on Numerical Modeling of Space Plasma Flows Astronum (2d: 2007: Paris, France) Ed. by Nikolai V. Pogorelov et al. (Astronomical Society of the Pacific conference series; v.385)
Astronomical Soc./Pacific, ©2008 334 p. $77.00
These proceedings of the June 2007 conference include a range of subjects, including kinetic and hybrid simulations, numerical methods, algorithms and frameworks. General topics include turbulence and cosmic ray transport (including the implications of the Hall Effect for turbulent molecular clouds), astrophysical flows (including fragmentation and turbulence in the interstellar medium), space plasma flows (including numerical simulations of solar wind disturbances by coupled models), kinetic and hybrid simulations (including an implicit particle-in-cell model) and a range of papers on data handling, visualization and computation. This will be of interest to specialists in applied mathematics, astrophysics, space physics and computer science. The editors include an author index.

PHYSICS

QC174 2008-001249 978-0-521-89783-9
Quantum mechanics for scientists and engineers.
Miller, David A.B.
Cambridge U. Press, ©2008 551 p. $85.00
Miller teaches electrical engineering and applied physics at Stanford, so he is aware of the pitfalls in learning quantum mechanics. This text is a lucid introduction to the subject, even for those who haven't studied linear algebra. He even gives the Greek alphabet in an appendix so the formulae can be read out loud without embarrassment. The book is designed for a two-term course. It begins with Schroedinger's equation and its implications. He continues with approximation methods, perturbation theory, quanta in crystalline materials, various matrices, harmonic oscillators and photons, and fermions. Each chapter closes with a review of terms used. Miller ends with possible used for quantum mechanics in computing, cryptography and even teleportation, although he warns that the last does not mean stepping into the transporter beam any time soon.

QC318 978-981-277-913-7
Non-equilibrium thermodynamics of heterogeneous systems.
Kjelstrup, Signe and Dick Bedeaux. (Series on advances in statistical mechanics; v.16)
World Scientific, ©2008 434 p. $88.00
Kjelstrup and Bedeaux (both Norwegian U. of Science and Technology) explain how to use non-equilibrium thermodynamics to describe the transport of heat, mass, charge, and chemical reactions through complex, heterogeneous media. Their textbook is designed for a graduate course for physicists, physical chemists, and chemical or mechanical engineers; it assumes a knowledge of basic thermodynamics.

QC793 2008-003951 978-1-58488-988-5
Chromatic monitoring of complex conditions.
Title main entry. Ed. by Gordon Rees Jones et al. (Series in sensors)
CRC / Taylor & Francis, ©2008 281 p. $119.95
This book describes and explains one approach, the chromatic methodology, for the intelligent monitoring of complex systems. It demonstrates that chromatic processing is analogous to human vision yet also extends into a wide range of non-optical domains. Taking a practical approach that uses many examples and graphs, the book presents the origin and methodology of chromaticity, describing characteristics of chromatic systems and chromatic processing algorithms such as H, S, V transformation and basic x, y, z algorithms. It then delves into the various applications of chromatic methods, in areas including electrical plasmas, industrial liquids, broadband interferometry and polarimetry, biological tissues and fluids, and acoustical and vibration signals. The art program includes color and b&w photos and images, and examples of graphical polar plots. Jones is affiliated with the Center for Intelligent Monitoring Systems at the University of Liverpool, UK.

CHEMISTRY

QD96 2007-026621 978-1-57444-650-0
Coherent vibrational dynamics.
Title main entry. Ed. by Sandro De Silvestri et al.
(Practical spectroscopy series; v.36)
CRC / Taylor & Francis, ©2008 267 p. $139.95
De Silvestri (physics, Politecnico of Milan, Italy) explains fundamental methods and tools of vibrational spectroscopy and describes advanced developments in the field in this work for students and researchers. The book outlines principles and tools used in time-domain vibrational spectroscopy and provides a general introduction to the subject of coherent phonons. It describes methods for tunable ultrashort pulse generation from infrared to visible UV frequencies, and reviews coherent vibrational dynamics in small molecules in liquids and in carbon-based conjugated materials. It also explores phonon dynamics in semiconductors (bulk and heterostructures) and in quasi-one-dimensional systems. The book is for graduate students and researchers investigating materials in physics, chemistry, and biology. It can also serve as a starting point for those who want to pursue research in the field of ultrafast optics and spectroscopy.

QD281 978-1-4200-6819-1
Polymer science; a text book.
Ahluwalia, V.K. and Anuradha Mishra.
CRC / Taylor & Francis, ©2008 219 p. $69.95
This branch of chemistry applies to the manufacturing of plastics, elastomeric materials and fibers, biomedical products, defense and aerospace materials as well as to a significant amount of research, the result being a high demand for engineers and technicians. Here Ahluwalia (biomedical research, U. of Delhi) and Mishra (chemistry and polymer engineering, Institute of Engineering and Technology,

Kanpur U.) give undergraduates in chemical engineering or graduate students in chemistry a solid background in polymers, focusing on practical applications. They start by defining polymers and their classifications and behaviors, then describe the basics of chain growth polymerization, step growth polymerization and copolymerization. They describe the properties of polymers, including transitions and degradation, and cover a range of polymer characterization methods and results, common polymerization practices and processes, and commercially important polymers, including those that are synthetic, rubber, conducting, inorganic, and considered biopolymers. They include a very helpful glossary and illustrations.

QD381 2008-270050 978-0-521-81419-5
Polymer dynamics and relaxation.
Boyd, Richard H. and Grant D. Smith.
Cambridge U. Press, ©2007 255 p. $150.00
Boyd and Smith (both at the U. of Utah) have written an authoritative text describing the relaxation processes of polymers and the many methods used for their study that will be essential reading for researchers and graduate students of materials science, physics, and chemistry. The initial 5 chapters are devoted to methodology, with descriptions of mechanical and dielectric relaxation, NMR spectroscopy, dynamic neutron scattering, and molecular dynamics simulations of amorphous polymers. The three stages from primary transition region, secondary (subglass) relaxations, and the transition from melt to glass of amorphous polymers are described in separate chapters, with discussion of the molecular basis of the transition from melt to glass. The volume concludes with discussion of semi-crystalline polymers and miscible polymer blends, including the models for miscible blend dynamics. Two appendices describe the Rouse model and site models for localized relaxation.

BIOLOGY

QH313 2008-000782 978-1-4200-4343-3
Forensic biology.
Li, Richard.
CRC / Taylor & Francis, ©2008 430 p. $89.95
Designed for students but also useful for those on the job, this focuses on the science behind the forensic analysis of biological evidence and on serologic and DNA analysis. Li (forensics, Indian U.-Purdue U. Indianapolis) starts by describing the basics behind forensic biology, then addresses sources of DNA evidence, crime scene investigation and laboratory analysis of biological evidence; essential serology, including concepts and techniques; forensic serology, including identification of blood, species identification, identification of semen and saliva, blood groups typing and protein profiling; basic DNA techniques, including a precise introduction and descriptions of extraction, quantification, amplification by polymerase chain reaction, electrophoresis and detection methods; forensic DNA profiling, including variable number tandem repeat profiling, autosomal STR profiling, Y chromosome profiling and gender typing, single nucleotide polymorphism profiling, and mitochondrial DNA profiling; and related forensic subjects such as DNA databases, the evaluation of the results, quality assurance and quality control.

QH324 2007-037128 978-981-270-704-8
Computational systems bioinformatics; methods and biomedical applications.
Zhou, Xiaobo and Stephen T.C. Wong.
World Scientific, ©2008 387 p. $65.00
Although no longer in its infancy, computational system biology remains a remarkably dynamic field of study with great potential as it quickly examines the structure and processes of biological systems at the molecular, cellular, tissue and organ levels. Zhou (Harvard Medical School) and Wong (Brigham and Women's Hospital) aim at keeping up with the quick pace of change in this field from the systems perspective. They focus on the high-throughput techniques used in computation system bioinformatics, namely gene expression microarray studies, describe how to combine DNA sequencing information and gene microarray information to study gene regulation, and review image informatics for molecular and cellular imaging, creating objective quantitative phenotypes. They include sections on principles of mathematics, statistics and data mining, on missing value estimation using KNN and Bayesian methods, conducting cross-platform comparisons, protein structure informatics, biomarker discover and related methods.

QP84 2007-026861 978-1-60021-876-7
Progress in circadian rhythm research.
Title main entry. Ed. by Anne-Laure Léglise.
Nova Biomedical Books, ©2008 254 p. $129.00
The formal study of the innate 24-hour biological cycles characteristic of most living organisms is briefly introduced as chronobiology. In 11 chapters, international scientists present new research and theories in this field of particular interest in relation to human health and

cognitive performance. Contributors discuss recent research including the implications for therapy for cancer of the impact of hypnosis on biorhythms and immunity, implications for neuropsychiatric diseases of defects in physiological clock mechanisms and their resetting, and whether scales measuring "night owl" and "lark" circadian types are universally valid. The editor's professional affiliation is not given.

QP303 2008-020965 978-0-7360-6679-2
Neuromechanics of human movement, 4th ed.
Enoka, Roger M.
Human Kinetics Pub., ©2008 549 p. $78.00
This text provides a scientific foundation for the study of human movement by exploring how the nervous system controls the actions of muscles in relation to biomechanical principles. Part I focuses on Newton's laws of motion and their application to the study of human movement. Part II introduces essential concepts from neurophysiology needed to understand how movement is produced by the nervous system and muscles. Part III focuses on the acute and chronic changes that can occur in the motor system in response to various interventions. Content is visually reinforced with about 750 b&w illustrations in a reader-friendly layout. A glossary and reference appendices are included. This fourth edition contains new material on electromyography, expanded discussion of neuromuscular system adaptations to rehabilitation, and additional examples that underscore recent research developments. Enoka is affiliated with the University of Colorado-Boulder.

QP519 2007-046854 978-0-470-22945-3
Biomedical vibrational spectroscopy.
Title main entry. Ed. by Peter Lasch and Janina Kneipp.
John Wiley & Sons, ©2008 385 p. $225.00
With the biomedical field increasingly interested in vibrational spectroscopy to probe the structure and dynamics of molecules in gases, liquids, interfaces, and mineralized tissues (e.g., teeth), this volume focuses on applications most relevant to diagnosing health conditions and conducting biochemical studies. In introducing 16 chapters by international scientists in the field, Lasch (Robert Koch Institute, Berlin, Germany) and Kneipp (Federal Institute for Materials Research and Testing, Berlin, Germany/photomedicine; Harvard Medical School, Boston) explain that methods such as infrared spectroscopy and Raman spectroscopy provide objective information on the molecular structure and composition of samples under investigation - in an automatic,

efficient, reagent-free, and cost-effective manner. Contributors provide details on specific methods. Figures include color chemical mapping images of a single cell of infectious agents.

MEDICINE (GENERAL & PUBLIC ASPECTS)

R119 2007-050727 978-1-4200-6046-1
Mobile telemedicine; a computing and networking perspective.
Title main entry. Ed. by Yang Xiao and Hui Chen.
CRC / Taylor & Francis, ©2008 420 p. $79.95
Today doctors can consult in real time across continents, and patients in remote areas have access to the latest diagnostic technology. Xiao (computer science, University of Alabama) and Chen (mathematics and computer science, Virginia State University) have put together articles that address various aspects of telemedicine. They discuss the use of long distance monitoring of patients in general, heart patients and people with diabetes. These articles deal with practical application. Another section is on the problem of maintaining patient confidentiality. Four articles cover the technical challenge of maintaining the network. The final section looks ahead to possible future medical networks and the challenges in making them a reality. The writing refreshingly clear with terms explained in plain English so that both medical professionals and IT professionals can access the information.

R857 2007-042613 978-0-8493-7973-4
Biomaterials fabrication and processing handbook.
Title main entry. Ed. by Paul K. Chu and Xuanyong Liu.
CRC / Taylor & Francis, ©2008 701 p. $149.95
Biomaterials used in the biomedical industry to repair or replace injured/nonfunctional tissues are a growth industry. Chu (City U. of Hong Kong) and Liu (Hunan U.; Shanghai Institute of Ceramics, Chinese Academy of Sciences), professors of materials engineering, introduce 21 illustrated chapters by international contributors presenting the latest information on different types of biomaterials and their fabrication in sections on tissue engineering and scaffold materials, drug delivery systems, nanobiomaterials and biosensors, and other biomaterials. The chapters on tissue engineering discuss the development of inorganic and composite material scaffolds capable of interacting with biological tissues. The focus in drug delivery systems, e.g., in cancer treatment, is on nanoparticles. Other authors treat specific types of biomaterials,

their composition, structure, and applications.

R857 2007-025204 978-0-470-01905-4
Handbook of biosensors and biochips; 2v.
Title main entry. Ed. by Robert S. Marks et al.
John Wiley & Sons, ©2007 1339 p. $860.00
Seeking to survey and describe the science and technology of biosensors and biochips in use, this impressive two-volume handbook meets this ambitious goal, with 85 articles, each written by a specialist in that technology, that describes the history, theory, technology, use, and future prospects of the topic described. The material is grouped into 10 major areas, including biological and molecular recognition systems; the biology-materials interface; transducer technologies; miniaturized, microengineered, and particle systems; array technologies; data analysis, conditioning, and presentation; applications; and commercialization and regulation. Three introductory chapters offer an overview of the technology, analytical needs, and history of development. The articles are thorough, incorporating an initial descriptive introduction of the technology or issue, its methodology, development, and uses, then providing a detailed description of all aspects of the technology, with summarizing material on use and outcome. Lengthy lists of references and detailed illustrations accompany each article. Both volumes include subject and author indexes as well as a full list of acronyms and abbreviations. The contributors are research scientists at universities and private labs in the US, Canada, Europe, India, Israel, Australia, Japan, and Senegal.

R857 2008-013040 978-1-4200-5182-7
Nanotechnology and tissue engineering; the scaffold.
Title main entry. Ed. by Cato Laurencin and Lakshmi Nair.
CRC Press, ©2008 359 p. $149.95
This book offers a concise yet detailed account of current research in tissue engineering and nanotechnology. Coverage encompasses fundamentals of scaffolds used for tissue engineering, analysis of cellular responses toward nanostructured materials, emerging nanofabrication techniques for developing biomimetic nanostructures for tissue engineering, and recent breakthroughs in neural, vascular, and musculoskeletal tissue engineering with nanostructures. Contributors are pioneering scientists writing about their own research. The book will be useful as a reference for all those working in the area

of biomaterials, tissue engineering, and bio-nanotechnology, including engineers, scientists, clinicians, and advanced students. Laurencin is professor of biomedical engineering and chemical engineering at the University of Virginia. Nair teaches in the Department of Orthopedic Surgery at the University of Virginia.

R857 2008-007358 978-0-470-51294-4
Wearable robots; biomechatronic exoskeletons.
Title main entry. Ed. by Jose L. Pons.
John Wiley & Sons, ©2008 338 p. $130.00
For students and engineering researchers interested in assistive robotics, this volume provides an overview of wearable robot systems that are designed around the shape and function of the human body. Pons (Instituto de Automática Industrial, CSIC, Spain) compiles 10 chapters by scientists from Europe who discuss mechanics, biometric and bioinspired design, cognitive and physical human-robot interaction, technologies, kinematics, dynamics, and control. Also presented are many case studies, such as that of a lower limb active orthosis for a human leg, a full-body exoskeleten, and a robot that suppresses upper limb tremor. The book is the result of research by the Bioengineering Group (CSIC) on the use of robotics to assist handicapped people.

R858 2008-002698 978-0-470-06035-3
Computer modeling in bioengineering; theoretical background, examples, and software.
Title main entry. Ed. by Milos Kojic et al.
John Wiley & Sons, ©2008 446 p. $160.00
With principles from engineering applied to dealing with challenges in health and medicine, bioengineering has a broad range of possible applications and a startling record of success, requiring this comprehensive reference to sort out all the possibilities in research and applications. The contributors include computational methods for modeling bones, tissues, muscles, cardiovascular components, cartilage, cells, and spider silk and provide techniques to work with thrombosis, cellular mechanotransduction and cancer nanotechnology. The authors are particularly adept at tying theory to practical examples. They also provide algorithms, line drawings and color plates, and the text is accessible to students as a course text as well as for professionals as a reference.

R858 2007-940963 978-1-58603-806-9
Current principles and practices of telemedicine and e-health.
Title main entry. Ed. by Rifat Latifi. (Studies in health technology and informatics; no.131)
IOS Press, ©2008 287 p. $161.00
How is long-distance delivery of health care faring in developing countries? In these 20 articles contributors help practitioners, administrators, policy makers and technical professionals keep track of current ideas and applications. Along with a narrative on the development of a virtual hospital in the Balkans, topics include the art of integrating telemedicine and e-health, what to do and what not to do when establishing telemedicine and e-health facilities, last challenges and barriers, creating telehealth networks from existing infrastructures, satellite technology, changing to a paperless hospital, telemedicine in extreme conditions such as disasters and war, technologies for complex and critical care, intensive care telemedicine, and clinical applications (including neurosciences, primary health care. home health and the new patient, rehabilitation, wounds, pathology, dermatology and oncology). Final articles cover medicine on the Internet and telepresence and telemedicine in trauma and emergency.

R895   978-3-527-40822-1
Health physics in the 21st century.
Bevelacqua, Joseph John.
Wiley-VCH, ©2008 562 p. $175.00
The lines between what were once discrete disciplines of science are increasingly blurred. Here practitioner and consultant Bevelacqua bridges the gap between health physics textbooks and the reference materials needed by practicing health physicists as he focuses on radiation-generating technologies. He considers both mature and emerging technologies as he describes fission and fusion energy (including power production) accelerators (including colliders and charged particle (including accelerators and light sources), and health physics in space (including manned planetary missions and deep space missions). In an extensive string of appendices he provides such materials as production equations in health physics, internal dosimetry, Muon characteristics, the special theory of relativity, computer codes, and curvature systematics in general relativity. The many exercises include solutions. Even with changes in technology, this is a career-long companion.

RA648 2007-027747 978-1-4200-4661-8
Chemical warfare agents; chemistry, pharmacology, toxicology, and therapeutics, 2d ed.
Title main entry. Ed. by James A. Romano et al.
CRC / Taylor & Francis, ©2008 723 p. $159.95
Edited by Romano (senior principal life scientist, Science Applications International Corporation), Lukey (commander of the US Army Medical Research Institute of Chemical Defense), and Salem (chef scientist for life sciences, US Army Edgewood Chemical Biological Center), this volume discusses methods and products for preventing, diagnosing, and treating the acute and chronic effects of exposure to toxic chemical warfare agents, focusing on key developments in the field since 2001. Following a brief history of chemical warfare, 24 chapters address the chemistry of chemical warfare agents; chemical warfare agent threats to drinking water; health effects of low-level exposure to nerve agents; toxicokinetics of nerve agents; application of genomic, proteomic, and metabolomic technologies to the development of countermeasures against chemical warfare agents; novel approaches to medical protection against chemical warfare nerve agents; progress in development of a new mode of protection against organophosphorous exposure; in vitro suppression of amyloid fibril formation by butyrylcholinesterase and its synthetic c-terminal peptide; inhalation toxicology of nerve agents; vesicants and oxidative stress; health effects of exposure to vesicant agents; toxicology, clinical presentation, and medical management of cyanides; mechanism of action of botulinum neurotoxin and medical countermeasures; ricin and related toxins; clinical detection of exposure to chemical warfare agents; personal protective equipment; chemical warfare agent decontamination from skin; chemical warfare and terrorism and traumatic stress responses; domestic preparedness, first response, and public health considerations with regards to emergency response to a chemical warfare agent incident; and emergency medical response to a chemical terrorist attack.

INTERNAL MEDICINE, PSYCHIATRY

RC78 2007-052818 978-0-7918-0273-1
Biomedical applications of vibration and acoustics for imaging and characterisations.
Title main entry. Ed. by Mostafa Fatemi and Ahmed Al-Jumaily.
ASME, ©2008 294 p. $139.00
This collection of 13 articles describes methods that use acoustic radiation force of acoustic waves, describing their dynamics and use in numerical modeling for the assessment and design of ultrasound vibroacoustography systems, strain induced by dual acoustic radiation force and its ultrasonic measurement, computational inverse problem techniques, and fundamental concepts and image formation in acoustic radiation force impulse imaging. Applications include cardiovascular elasticity imaging, harmonic motion imaging in high intensity focused ultrasound (as used in breast cancer detection, and characterization of skeletal muscle elasticity using magnetic resonance elastography. Articles also cover the vibration and acoustics of tissue characterization, including acoustic response of the human arteries, a non-invasive methods for measuring local viscoelasticity of arterial vessels, tissue harmonic motion estimation for tissue characteristics using ultrasound and the Kalman filter, characterization of tissue viscoelasticity from shear wave speed dispersion, and bone characterization. Includes appendices on bioeffects, safety standards, and guidelines for practice.

TECHNOLOGY (GENERAL)

T55 2008-002764 978-1-4200-5265-7
Emergency response handbook for chemical and biological agents and weapons, 2d ed.
Cashman, John R.
CRC / Taylor & Francis, ©2008 493 p. $99.95
Cashman has been writing about hazardous materials response and control for 30 years, and has published numerous magazine articles and six books on the topic. His updated resource text covers the fundamental practices and advanced tactics of emergency response to chemical and biological agents, and is designed for local hazardous materials response teams and first responders, and the federal government agencies who assist them. The text has been updated throughout to reflect the advances that have been made since 9/11, including in-depth coverage of actual response techniques and new approaches for handling critical situations caused by criminal activity, industrial accidents, and mini-epidemics; up-to-date tools such as checklists and streamlined procedures for on-scene coordination; the latest detection devices, cost/recovery and hazard analyses, diagnostic methods, pretreatments, vaccines, decontamination techniques, antidotes, and medical treatments available; and a review developments in military protocols and procedures.

T55 2008-007188 978-0-470-18024-2
Hazardous chemicals desk reference, 6th ed.
Lewis, Richard J.
John Wiley & Sons, ©2008 1953 p. $175.00
This reference serves the information needs of those who work with hazardous chemicals. Over 5,800 entries are included, about 500 of them new for this edition. Most of the new entries were selected because they are on the EPA TSCA Inventory. Emphasis has been placed on adding and updating physical properties and updating all DOT Classifications. The information presented in the book was extracted from the 11th edition of *Dangerous Properties of Industrial Materials*. Citation to toxicity data and other less relevant information can be found in that work. Whenever available, physical description, formulas, molecular weights, melting and boiling points, explosion limits, flash points, and the like have been supplied in the entries. The discussion of human exposures includes details on target organs and specific effects reported. Fire and explosion hazards are briefly summarized in terms of conditions of flammable or reactive hazard. Where feasible, firefighting materials and methods are discussed. Each entry concludes with a summary of the hazards presented by the substance. Three cross-indices are provided as appendices to permit rapid location of a material by CAS number, synonym, or DOT guide number. The book will be used by industrial hygienists, environmental safety and fire safety professionals, toxicologists, plant managers, emergency planners, and students. Lewis, a chemist, is former manager of information systems for the National Institute for Occupational Health and Safety. The previous edition of the book was cited in *Guide to Reference Books*, 11th edition, and in *Resources for College Libraries*.

T56 2007-049113 978-1-4200-7393-5
Global engineering project management.
Atesmen, M. Kemal.
CRC / Taylor & Francis, ©2008 152 p. $79.95
Drawing on real cases, this book covers the challenges that the manager of an international engineering project commonly encounters during the life of a project. The book is divided into six chapters that take the reader through an international engineering project from start to finish, from planning to post-project evaluation and protecting intellectual property, with advice on how to navigate the technological, economic, political, and legal issues unique to global engineering project management. Each chapter ends with a summary checklist providing the project manager with a list of reminders. Atesman is a life member of the American Society of Mechanical Engineers.

ENGINEERING (GENERAL, CIVIL)

TA357 2008-008774 978-0-521-85548-8
Homogeneous turbulence dynamics.
Sagaut, Pierre and Claude Cambon.
Cambridge U. Press, ©2008 463 p. $120.00
Still a hot topic for research in fluid mechanics, due in part to its applicability to engineering, geophysics and astrophysics, this field and its related tools lends itself well to the study of any nonlinear chaotic phenomena. Sagaut (mechanics, U. Pierre et Marie Curie) and Cambon (mechanics, French National Center for Scientific Research) draw upon their significant research in their examples, and consider the needs of the practitioner in their organization, starting with an explanation of the statistical analysis of homogeneous turbulent flows and moving on to incompressible homogeneous isotropic turbulence, including pure rotation (anisotropic) strain, pure shear, buoyancy and stable stratification. They cover couples effects (rotation, stratification, strain and shear) as well as isotropic turbulence's shock interactions and perturbations. They close with descriptions of linear interactions and theories and anisotropic nonlinear triadic closures.

TA403 2007-011010 978-1-60021-654-1
Materials science research trends.
Title main entry. Ed. by Lawrence V. Olivante.
Nova Science Publishers, ©2008 352 p. $129.00
Leading-edge research in materials science is collected here, from contributors in Norway, Italy, India, the US, Canada, Japan, the UK, Germany, and Taiwan. Specific topics covered include the effect of aging treatments on severely deformed microstructure of different Al-Mg-Si alloys, atomistic analysis of crystal plasticity in a copper nanowire during tensile loading, advances in materials engineering using microstructural characterization tools, and high-rate and low-temperature film growth technology using stable glow plasma at atmospheric pressure. Other subjects are superselection rules induced by infrared divergence, microstructure evolution and electronic transport in ultra-thin Al films, and double ignition maps for combustion-synthesizing NiAl compounds. B&W and color images are included.

TA418 2008-297263 978-0-521-85300-2
Computational physics of carbon nanotubes.
Rafii-Tabar, H.
Cambridge U. Press, ©2008 493 p. $140.00
This book presents the key computational modeling and numerical simulation tools to investigate carbon nanotube characteristics. In particular, methods applied to bonding, mechanical, thermal, transport, and storage properties are addressed. The first half describes classic statistical and quantum mechanical simulation techniques (including molecular dynamics, Monte Carlo simulation, and ab initio molecular dynamics), atomistic theory, and continuum based methods. The second half discusses the application of these numerical simulation tools to emerging fields such as nanofluidics and nanomechanics. Experimental results are used to help clarify theoretical concepts. The audience includes researchers in nanotechnology, engineering, materials science, and physics. Rafil-Tabar is professor of computational nano-science and head of the Medical Physics and Biomedical Engineering Department at Shahid Beheshti University of Medical Sciences in Iran.

TA418 2007-015321 978-0-521-84201-3
Elasticity with Mathematica; an introduction to continuum mechanics and linear elasticity.
Constantinescu, Andrei and Alexander Korsunsky.
Cambridge U. Press, ©2007 255 p. $110.00
Constantinescu (engineering, French National Center for Scientific Research and École Polytechnique, Palaisea) and Korsunsky (engineering science, U. of Oxford) use plane and three-dimensional problems, general theorems, fundamental solutions, displacements and stress potentials to introduce key ideas and principles in the theory of elasticity. They keep the narrative relatively simple, provide study

aids such as outlines and summaries and offer exercises students can work using "notebooks" from the popular software product. The result is a significant advance in the study of elasticity, with topics such as kinematics (in terms of displacement and strains), dynamics and stress (in terms of stresses and equilibrium, with full due to Cauchy), linear elasticity, general principles (including that of Saint Venant), stress functions (including the work of Kelvin, Williams, Kirsch and Inglis), displacement potentials (including Papkovich-Neuber potentials and the Galerkin vector), energy principles and variational formulations. They include a nice appendix on helpful software tricks.

TA418   978-1-55899-989-3
Fundamentals of nanoindentation and nanotribology; proceedings.
Symposium on Fundamentals of Nanoindentation and Nanotribology (4th: 2007: Boston, MA) Ed. by Eric Le Bourhis et al.
Materials Research Society, ©2008   183 p. $114.00
These proceedings of the November 2007 symposium include a range of papers in these dynamic disciplines within materials science. Evolving and complementary, nanoindentation and nanotribology substantially add to the evidence that biomechanical research has caused a number of disciplines to overlap. In addition, researchers are finding new mechanical tests that can measure smaller and smaller forces and displacements. This situation is reflected in the 27 papers with general topics including the relation among nanomechanics, tribology and nanostructures; size effects and indentation of thin films (including an invited paper on the mechanical properties of 3C-SiC films for MEMS applications); nanotribology and friction (with an invited paper on quasi-static and oscillatory indentation in linear viscoelastic solids); and nanomechanics of polymers in time-dependent characterization.

TA418 2007-052383 978-0-470-24883-6
Self-assembly and nanotechnology; a force balance approach.
Lee, Yoon S.
John Wiley & Sons, ©2008 344 p. $100.00
An information analysis in colloid and surface chemistry, Lee sets out the concepts and principles of self-assembly as they relate to nanotechnology for graduates and undergraduates who have completed courses in basic organic, physical, or inorganic chemistry. The first part explains self-assembly, and the second samples materials and techniques relating to its application in

the nanotechnology of colloids and surfaces.

TA483 2007-465747 978-3-527-31321-1
Alloy physics; a comprehensive reference.
Title main entry. Ed. by Wolfgang Pfeiler.
Wiley-VCH, ©2007 973 p. $430.00
This book covers current research and principles in alloy physics, offering readers an understanding of the structural changes in metals and alloys. Chapter topics include crystal structure and chemical bonding, solidification and grown-in defects, lattice statics and lattice dynamics, point defects, and dislocations and mechanical properties. Other topics covered are phase equilibria and phase transformations, kinetics in nonequilibrium alloys, statistical thermodynamics and model calculations, magnetic media, spintronics, and superconductors. Pfeiler is a professor at the Institute of Materials Physics of the University of Vienna.

TA645 2007-278255 978-0-470-03313-5
Health monitoring of structural materials and components; methods with applications.
Adams, Douglas E.
John Wiley & Sons, ©2007 460 p. $140.00
Health monitoring of structural materials is a relatively new field, and has been enhanced through the use of computer modeling and data analysis. Adams (Purdue U.), one of the pioneers of structural health monitoring, presents this textbook to guide students and structural engineers in the field how to use methods such as *in situ* damage identification, loads identification and damage and performance prediction. Case studies are also offered to help illustrate the effectiveness of health monitoring, and to identify emerging technologies in the future. A companion website uses MATLAB programming to enhance instruction.

TA660 2007-028688 978-0-521-88329-0
Nonlinear vibrations and stability of shells and plates.
Amabili, Marco.
Cambridge U. Press, ©2008 374 p. $99.00
In this impressively thorough work, Amabili (U. of Parma, Italy) utilizes nonlinear shell and plate theory to analyze shell stability in the presence of vibration, beginning the volume with an overview of the nonlinear theory of rectangular and circular plates and circular cylindrical and spherical shells. Nonclassical nonlinear theories are described in the second chapter, with attention to shear deformation and rotary inertia, and an

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overview of thermal stresses. Building on these foundations, Amabili turns to detailed discussion of nonlinear dynamics, stability, bifurcation analysis, and computational tools, with particular emphasis on the Galerkin method and Lagrange equations of motion and their applications to a variety of applications concerning discretizing plates and shells. Discussion of numerical techniques and various classical nonlinear shell theories follow, as these are applied for large amplitude vibrations of various shells and panels. Other chapters discuss stability under static and periodic loads, the methods for modeling aerodynamic loads, and problems arising from fluid-structure interaction, among other topics.

TA684   978-1-904275-29-9
Design and optimization of metal structures.
Farkas, Józef and Károly Jármai.
Horwood Publishing, ©2008 300 p. $79.00
Farkas (metal structures emeritus, U. of Miskolc) and Jármai (mechanical engineering, U. of Miskolc) offer researchers, structural designers, manufacturers and managers in such industries as building, transport, shipbuilding, aircraft, offshore and chemical engineering as well as students from the undergraduate to graduate level the benefit of their considerable expertise in the modeling and analysis of industrial steel structures, combining the best of classical theory with the most modern trends in numerical optimization. Amongst their subjects they cover newer mathematical optimization methods, cost calculations, seismic-resistant design, fire-resistant design, welded I-beams, frames, welded stiffened plates and stiffened cylindrical shells, and tubular structures. They include name and subject indices and references, making this a good candidate for the classroom as well as the professional bookshelf. Distributed in the US by ISBS.

TA705 2007-046228 978-1-84821-020-2
Constitutive modeling of soils and rocks.
Title main entry. Ed. by Pierre-Yves Hicher and Jian-Fu Shao.
ISTE/Wiley, ©2008 439 p. $215.00
This book examines the theories underlying different approaches for modeling soils and rocks. After a general presentation of the different types of constitutive models of mechanical behaviors at the macroscopic scale, each chapter describes modeling approaches for a given class of materials. The first three chapters are devoted to the elastoplasticity theory applied to soils and sedimentary rocks.

The behavior of hard rocks is then studied through the use of the damage theory at different scales. The modeling of poromechanical behavior is also introduced in order to shed light on hydromechanical coupling in saturated porous rocks. A final chapter is devoted to parameter identification procedures. The book is of interest to civil and mechanical engineers and geologists, especially those concerned with planning and designing foundations. The book was first published in France in 2002 by Hermes Science/Lavoisier as *Modèles de comportment des sols et des roches*, vols. 1 and 2. Hicher teaches at L'Ecole Centrale, France. Shao teaches at the University of Science and Technology.

TA1634   978-1-59693-224-1
Next generation artificial vision systems; reverse engineering the human visual system.
Bharath, Anil and Maria Petrou. (Bioinformatics & biomedical imaging)
Artech House, ©2008 438 p. $95.00
In addressing the topic of reverse-engineering the human visual system for technological applications, Bharath (image analysis, Imperial College London, UK) and Petrou (signal processing, Imperial College London, UK), together with an interdisciplinary team of contributing authors, address the topic in separate sections from the perspectives of physiology and cognitive psychology, software engineering, and hardware engineering. With respect to physiology and cognitive psychology, they offer chapters on the physiology/psychology of vision, dynamical modeling of the retina, the functional organization of receptive field characteristics of the cells in V1 (the primary visual cortex), and psychophysical experiments for probing models of V1 processing and visual attention. Software engineering topics include modeling V1 as a spatial frequency analyzer, the mathematics of image processing with irregularly sampled data, the relationship between super-resolution techniques and the eye movements known as tremor and microsaccades, eye vergence and depth perception as they pertain to a robotic assisted surgery application, and motion detection algorithms. And finally hardware is addressed in chapters on polymer sensors for imitating the spectral response characteristics of the human retina, hybrid chips that combine organic (polymer) sensors and analog circuitry, models of very large scale integrated analog circuits for implementing classical simple cell V1 receptive fields, implementation of previously discussed algorithms in digital hardware, and

aspects of pre-attentive vision in terms of spatial and temporal saliency created by motion.

ENVIRONMENTAL TECHNOLOGY

TD195 2007-931763 0-309-10834-9
Environmental impacts of wind-energy projects.
National Research Council.
National Academies Press, ©2007 376 p. $69.00 (pa)
Long a favorite of those who believe sustainability has a chance, wind power has nevertheless been surprisingly controversial. Aesthetics aside, wind turbines can kill flying wildlife and the regulatory framework of wind power is still immature in the US. This report considers the many ways wind power can affect the environment (including disruptions in air, water and habitat and commercial, aesthetic, social and political implications) to establish appropriately in action-space. Researchers explain the process of generating electricity from wind energy, the effects observed in the US (particularly in the mid-Atlantic highlands), the ecological effects of such development, the impact on humans in terms of health and well-being (in terms of electromagnetic interference in particular) as well as economic considerations. They provide a set of guidelines for wind energy planning, development, and the review of proposals.

MECHANICAL ENGINEERING & MACHINERY

TJ164   978-0-87170-869-4
Advances in materials technology for fossil power plants; proceedings.
Int'l Conference on Advances in Materials Technology for Fossil Power Plants (5th: 2007: Marco Island, Florida)
ASM International, ©2008 1022 p. $170.00
An October 2007 conference allowed scientists and engineers from around the world to exchange information on advanced, high-efficiency coal power plants. Papers from the conference are presented here, in sections on boilers, turbines, oxidation, creep/life management, welding, and oxy fuel. Some specific topics include materials solutions for advanced steam power plants, consideration of weld behavior in the design of high temperature components, nickel alloys for high efficiency fossil power plants, and material development and mechanical integrity analysis for advanced steam turbines. Other subjects are ferritic and austenitic grades for a new generation of steam power plants, the impact of steam-side oxidation on boiler heat-exchanger tube design, and oxy-combustion technology for utility coal-fired boilers.

TJ211 2007-048137 978-1-60456-185-2
Autonomous robots research advances.
Title main entry. Ed. by Weihua Yang.
Nova Science Publishers, ©2008 356 p. $129.00
Given the most common definition, a number of common household or industrial devices perform tasks without continuous human guidance, but the contraptions and concepts described here go far beyond the household dishwasher or the paint sprayer on the assembly line. Contributors of these 11 articles report on robots that can be used in dangerous or dirty situations in construction, underwater vehicles with independent navigation and control systems, vision systems applicable to intelligent autonomous vehicles (two articles with different approaches), behavioral multi-agent control architectures, advanced lane detection for autonomous automobile navigation, vehicle path planning for narrow passages with goal positioning, perception through scattered media for autonomous vehicles, conceptual design and modeling of a mobile parallel manipulator, and very large scale integration architectures for autonomous robots.

TJ260 2008-012305 978-0-8493-7307-7
Microscale and nanoscale heat transfer; fundamentals and engineering applications.
Sobhan, Choondal B. and G.P. Peterson.
CRC Press, ©2008 409 p. $99.95
Through analyses, experimental results, and worked-out numerical examples, this book explores the methods and observations of thermophysical phenomena in size-affected domains. Compiling relevant findings from the literature, along with results from their own research activities, the authors treat the main concepts and practical design engineering aspects of heat transfer. They discuss various modern engineering applications, such as microchannel heat sinks, micro heat exchangers, and micro heat pipes. They also cover methods such as discrete computation, and optical measurement techniques for microscale applications. Fundamentals of nanoscale thermal phenomena in fluids are also presented. The book concludes with a chapter devoted to numerical examples of microscale conduction, convective heat transfer, and radiation, as well as nanoscale thermal phenomena. Sobhan is affiliated with the National Institute of Technology, India. Peterson is affiliated with the University of Colorado.

TJ812 2007-047468 978-1-4200-5429-3
Introduction to nonimaging optics.
Chaves, Julio. (Optical science and engineering series; 134)
CRC / Taylor & Francis, ©2008 531 p. $139.95
Chaves, of Light Prescriptions Innovators in Madrid, has written this textbook on the newly emerging field of non-imaging optics to address global concerns on energy consumption. Designed as an introduction to this discipline for optical engineers, this book also addresses design concerns in illumination engineering and solar energy collection as well. The author summarizes emerging data on this type of optics, such as rays and wave fronts, reflection and refraction and principles of symmetry.

ELECTRICAL ENGINEERING, ELECTRONICS

TK2931 2007-465762 978-3-527-31474-4
Molten carbonate fuel cells; modeling, analysis, simulation, and control.
Title main entry. Ed. by Kai Sundmacher et al.
Wiley-VCH, ©2007 243 p. $145.00
This important and dynamic field studies fuel cells that can achieve higher efficiencies for energy conversion than conventional systems based on the Carnot cycle. Contributors describe how to design and operate molten carbonate fuel cells (MCFC), with special focus on a type that integrates the generation of hydrogen by methane steam reforming and electrochemical oxidation of hydrogen in a single unit. They describe analysis with mathematical models that describe interactions (generally of mass, energy and charge transport phenomena), index analysis of models, parameter identification, steady state and dynamic process analysis, hot spot formation and steady state multiplicity, conceptual design and reforming concepts, model reduction and state estimation, optimal control strategies, and optimization of reforming catalyst distribution. The editors provide a complete set of equations and parameters for the benchmark problem and each article includes references.

TK3001 2007-050178 978-0-470-06561-7
Handbook of power quality.
Title main entry. Ed. by Angelo Baggini.
John Wiley & Sons, ©2008 618 p. $190.00
This handbook examines the full spectrum of power quality (PQ) disturbances, with background theory and guidelines on measurement procedures and problem solving. It incorporates the perspectives of both power suppliers and electricity users, with scientific and practical information on areas

such as frequency variations, the characteristics of voltage, and the relationship of PQ with power systems, distributed generation, and the electricity market. An accompanying web site contains case studies for each chapter, demonstrating PQ practice. The web site also includes extensive appendices listing current standards, mathematical formulas, and principles of electrical circuits. The book is for practicing power systems engineers, researchers, and students. It can also serve as a reference for electrical engineers and technical managers. The book is organized to cover five themes: power system issues, PQ phenomena, practice, problems, and economical aspects of PQ. Baggini is affiliated with the University of Bergamo, Italy.

TK5102 2007-044557 978-0-470-51188-6
Fundamentals of signal processing for sound and vibration engineers.
Shin, Kihong and Joseph K. Hammond.
John Wiley & Sons, ©2008 403 p. $110.00
Hammond (U. of Southampton, UK) and Shin (Andong National U., Korea) have written this textbook on the fundamentals signal processing based upon the course Hammond taught for many years. Written for novice sound and vibration engineers, this book covers the essentials of the field while focusing on the differences and properties of deterministic and random signals. Links to a companion site are also provided to outline 50 different MATLAB codes.

TK5102 2007-036301 978-1-59904-899-4
Handbook of research on wireless security; 2v.
Title main entry. Ed. by Yan Zhang et al.
Information Science Reference, ©2008 823 p. $495.00
The chapters in this two-volume reference discuss security issues in wireless technology and use, including malware, firewall, security architectures for various types of mobile networks, and fundamentals of security. Each article concludes with a list of references and of keywords and their definitions, making the work of use to graduate seminars. The material is comprehensive in its discussion and provides a useful starting point for the myriad issues of the field. The contributors are at universities and private corporations worldwide. Two of the three editors, Zhang and Miao Ma, are at the National Institute of Information and Communications Technology in Singapore; the third editor, Jun Zheng, is at the City U. of New York.

TK5102 2007-033010 978-0-470-51649-2
Next Generation Networks; perspectives and potentials.
Salina, Jingming Li and Pascal Salina.
John Wiley & Sons, ©2007 229 p. $110.00
This work explores the benefits, applications, and potential of next generation networks (NGNs) and provides an outlook on future services for end-users and opportunities for network operators. Covering basic and advanced concepts, the book examines NGN technology, architecture, transport, and services. Chapters on business opportunities examine NGN standardization, development, and corporate responsibility. A glossary is included. Readership for the book includes network operators, equipment vendors, researchers, regulators, and engineers. The book will also be of interest to graduate students in electrical engineering and computer science. The authors are consultants in Switzerland.

TK5103 2008-022953 978-0-8194-7234-2
Advances in information optics and photonics.
Title main entry. Ed. by Ari T. Friberg and René Dändliker. (SPIE Press Monograph; v.PM183)
SPIE, ©2008 724 p. $96.00 (pa)
The International Commission for Optics (ICO) commissioned this book as part of an ongoing series to discuss research trends in the field of optical science such as beam optics, laser photonics, electromagnetic coherence, holographic imaging and photonic processing. Editors Friberg and Dändliker, both associated with the ICO, have assembled these articles to inform the scientific community about work of the organization, and to raise awareness about recent advances in the field. A special section is dedicated to communication networks that use optic technologies.

TK5103 2007-011241 978-0-8493-8227-7
Millimeter wave technology in wireless Pan, Lan, and Man.
Xiao, Shao-Qiu et al. (Wireless networks and mobile communications series)
CRC / Taylor & Francis, ©2008 436 p. $129.95
Consumer and commercial demand has driven research in gigabit wireless personal area networks (WPANs), high-speed wireless local area networks (WLANs) and high-speed wireless metropolitan area networks (WMANs). This collection of 11 articles covers fundamental concepts and recent advances as well as descriptions of upcoming research and new products. Topics include millimeter-wave monolithic integrated circuits for WLAN, package technologies for millimeter-wave circuits and systems, antennas and channel modeling in WPANs, WLANs and WMANs, media access control protocols for millimeter-wave WLAN and WPAN, millimeter waves for wireless networks, the WiMedia standard for WPANs, the millimeter-wave-based IEEE 802.16 standard for WMAN, the millimeter-wave dedicated short-range communications standard (including applications and experimental studies, interference in millimeter-wave WMAN cellular configurations, principles and applications of millimeter-wave radar, and optical generation and transmission of millimeter-wave signals.

TK5105   978-1-59693-228-9
Securing information and communications systems; principles, technologies, and applications.
Title main entry. Ed. by Steven M. Furnell et al. (Artech House computing security series)
Artech House, ©2008 362 p. $89.00
Written by an international team of security experts, this compact reference gives professionals comprehensive information on the newest types of threats and sufficient background to learn how to smell even newer ones coming. The contributors describe security concepts, services, threats, business-integrated information security management, user authentication technologies (including authentication based on secret knowledge and biometrics), authorization and access control (including classic methods, role-based techniques and attribute-based control), applications centered on data, modern cryptology, security for networks, standard public key and privilege management infrastructures, smart cards and tokens, privacy-enhancing technology, content filtering technologies (and how the law applies), models for cybercrime investigation, systemic and holistic approaches, mobile wiki systems security, and in a particularly interesting chapter, security methods pertaining to electronic voting systems.

TK5105   978-981-270-368-2
Trust and security in collaborative computing.
Zou, Xukai et al. (Computer and network security; v.2)
World Scientific, ©2008 229 p. $75.00
According to Zou (Indiana U.-Purdue U.), Dai (U. of Tennessee), and Pan (Georgia State U.), collaborative computing applications include multi-party military actions, teleconferencing, telemedicine, interactive and collaborative decision making, grid-computing, information distribution, and pay per view services.

Collaborative computing environments are group-oriented and involve a large number of entities and shared resources and therefore pose challenges for building trust in security and dependability. This monograph explores issues connected to trust in collaborative computing, including secure group communication and interaction, data sharing/exchange and access control, intrusion attacks and their corresponding detection and response technologies, grid reliability analysis and modeling, grid security, and the integration of security and reliability technologies into medical information systems.

TK6553 2007-049103 978-1-4200-5514-6
Ionosphere and applied aspects of radio communication and radar.
Blaunstein, Nathan and Eugeniu Plohotniuc.
CRC / Taylor & Francis, ©2008   577 p. $149.95
With a continuously evolving technology and an historic split between eastern and western researchers, Blaunstein (communications systems engineering, Ben-Gurion U. of the Negev) and Plohotniuc (electronics and informatics, Alecu Russo State U., etc.) offer a comprehensive review of new and classic research along with insights into a range of topics. Designed as a reference but also suitable for classroom use, this covers the main characteristics and processes of the regular ionosphere, nonlinear phenomena and plasma instability in the disturbed regular ionosphere, radio signal presentation in the ionospheric communication channels, evaluation of plasma irregularities in the ionosphere, modern radiophysical methods of investigation of ionospheric irregularities, performance of radio communications in ionospheric channels, optical and radio systems for investigation of the ionosphere and ionospheric communication channels, and the performance of land-satellite communication links passing through the irregular ionosphere.

TK6575 2008-014584 978-1-4200-6643-2
Radar signal analysis and processing using MATLAB.
Mahafza, Bassem R.
CRC / Taylor & Francis, ©2009   479 p. $99.95
This text for two graduate-level courses on signals and signal processing introduces numerous programs and functions of MATLAB (R2007a). Unlike other books on the subject, the emphasis is not on signal processing per se, but on signals and signal processing in the context of radar applications. After an

overview of radar systems operation and design, the book reviews elements of signal theory relevant to radar detection and radar signal processing, along with random variables and processes. It then presents the matched filter and develops a general formula for matched filter output that is valid for any waveform. Several analog waveforms are analyzed, including the linear frequency modulation pulse and stepped frequency waveforms, as well as unmodulated pulse-train, binary, polyphase, and frequency codes. Other topics covered include radar target detection, radar Doppler processing, and beamforming. All MATLAB programs and functions provided in the book can be downloaded from the publisher's web site. Mahafza is affiliated with deciBel Research Inc.

TK7836 2008-005195 0-07-149594-0
Green electronics design and manufacturing; implementing lead-free and RoHS-compliant global products.
Shina, Sammy G.
McGraw-Hill, ©2008 379 p. $99.95
Shina (mechanical engineering, U. of Massachusetts Lowell) brings together contributors from the entire electronics chain to show how to master the strategy, design, testing, and implementation issues of meeting global environmental regulations. Sections include the environmental process in electronics products, statistical analysis of green electronic products, reliability of green electronic systems, environmental strategy and integration, managing the global design team in compliance with green design and manufacture, successful conversion to lead-free assembly, product development going green, fabrication of green printed wiring boards, green finishes for IC components, and nanotechnology opportunities in green electronics. The book is intended for design, production, quality, and process engineers and their managers.

TK7871 2007-041305 978-0-8493-9284-9
Introduction to organic electronic and optoelectronic materials and devices.
Title main entry. Ed. by Sam-Shajing Sun and Larry R. Dalton. (Optical science and engineering; 133)
CRC / Taylor & Francis, ©2008   910 p. $119.95
In addition to their increased speed, reduced power consumption and better brightness, "plastic" optoelectronics support processing that will lead to flexible devices and low-cost mass production. As nearly everyone (outside of specialist researchers) is new to this field,

the 29 articles here are accessible as well as comprehensive and include exercises suitable for the classroom or self-study. Topics build from introductions to optoelectronic materials and device principles to basic electronic structures and charge carrier generation in organic optoelectronics materials, charge transport, classes of organic small molecules and conjugated polymers, low energy gap and other polymers, carbon nanotubes, organic superconducting materials, molecular semiconductors for organic FETs, organic LEDs and devices, organic non-linear optical materials and devices, organic and polymeric photo-reactive materials and devices, organic/metal interface properties, conducting polymer actuators, polymer photonics for information technology, an self-assembly of organic optoelectronic materials and devices.

TK7871 2007-037113 978-0-470-05818-3
Luminescent materials and applications.
Kitai, Adrian. (Wiley series in materials for electronic and optoelectronic applications)
John Wiley & Sons, ©2008 278 p. $180.00
This book presents the physics and the materials aspects of the field of solid-state luminescence. It describes a range of luminescent materials and applications of current interest, including organic and inorganic light emitting diode materials and devices, down-conversion materials, nanomaterials, and powder and thin-film electroluminescent phospher materials and devices. The book can be used as a reference to gain an understanding of various types and mechanisms of luminescence and of the implementation of luminescence into practical devices. The book is aimed at postgraduate students in physics, electrical engineering, materials science, and engineering, and researchers in industry and academia studying conduction in solids and electronic materials. It will also provide a starting point for all scientists interested in luminescent materials. Kitai is affiliated with the departments of science and engineering and engineering physics at McMaster University, Canada.

TK7872 2008-003751 978-0-470-03360-9
Analysis of electromagnetic fields and waves; the method of lines.
Pregla, Reinhold.
John Wiley & Sons, ©2008 507 p. $160.00
The Method of Lines is a numerical method for solving partial differential equations that describe physical phenomena, and Pregla (Fern U., Hagen, Germany) explains how it can be applied to electromagnetic fields and

waves. He writes for engineers and graduate students in electrical engineering, applied physics, and mathematics who have a basic knowledge of electromagnetic field theory and wave propagation, partial differential equations, linear algebra, and computer languages like MATLAB. He envisions applications in microwave and optical wave technology.

TK7872 2008-003735 978-0-470-72374-6
Mobile displays; technology and applications.
Title main entry. Ed. by Achintya K. Bhowmik et al.
(Wiley-SID series in display technology)
John Wiley & Sons, ©2008 625 p. $170.00
With contributions from experts in industry and academia, this book presents fundamentals of mobile displays and a detailed overview of recent developments in the field. Human factors considerations, transflective liquid crystal display technologies, LED backlighting, and mobile display digital interfaces are some areas discussed. Other topics examined include image reconstruction on color sub-pixelated displays, electronic paper displays, 3D displays for portable handheld devices, and eyewear displays. The book is valuable for electronics and display engineers working on the development of mobile displays and their applications, and for graduate students in courses on display technologies. Bhowmik is a program committee member for SID and IEEE. He has taught at Kyung Hee University in Korea.

TK7874 2008-297758 978-1-86094-823-7
Current at the nanoscale; an introduction to nanoelectronics.
Durkan, Colm.
Imperial College Press, ©2008 211 p. $79.00
As the scale of electronic devices begins to approach the nanometer level, notes Durkan (U. of Cambridge, UK), it is becoming increasingly important to understand the details of electric current flow in reduced dimensions. In this work, he provides an introductory overview of transport phenomena from the macroscale to the atomic level. Chapters describe the role of quantum level events in traditional resistors and transistors; the quantum nature of current flow (i.e. the relationship between current and voltage and the origins of electrical resistance); the role of geometry, size, and microstructure in determining resistance at the nanoscale; techniques for probing the electrical properties of structures and devices at the nanoscale; heating and electromigration in nanowires; and the emerging field of molecular electronics.

Distributed in the US by World Scientific.

TK7874 2007-041701 978-0-470-01307-6
Molecular electronics; from principles to practice.
Petty, Michael C. (Wiley series in materials for electronic and optoelectronic applications)
John Wiley & Sons, ©2007 517 p. $240.00
Petty (Center for Molecular and Nanoscale Electronics, Durham University, UK) provides an introduction to the interdisciplinary subject of molecular electronics, with detailed examples of applications. He offers insight into the physics and chemistry of organic materials, and explores the means that are now available to manipulate these materials and to measure their properties. An overview is provided of what has already been achieved in the field, in terms of technological applications, and what may be accomplished in the near future, including in the area of bioelectronics. The book is aimed at final year science or engineering undergraduate students. It will also be accessible to readers from a wide range of backgrounds in industry and academia.

TK7874 2008-004929 978-0-470-12948-7
RF measurements for cellular phones and wireless data systems.
Scott, Allan W. and Rex Frobenius.
Wiley-IEEE Press, ©2008 503 p. $110.00
It is predicted that by the year 2010, all digital wireless communications equipment will have data transfer capabilities of over 1 Mbps. As this turning point approaches, this book presents background on the radio frequency (RF) measurements and tests that must be made on this new generation of digital wireless communications equipment. Presenting just enough theory required for comprehension, the book reviews basic RF principles and terminology, and describes RF measurement equipment such as signal generators, power meters, and vector signal analyzers. The book examines the RF devices that are used in cellular phone and wireless data transmission equipment, looking at how they work, what their critical performance parameters are, and how they're tested. It will be useful to engineers, technicians, and managers involved in the construction, installation, and maintenance of cell phones and wireless data equipment. Scott is a training consultant. Frobenius is a curriculum developer.

TK7874 978-1-59693-317-0
VLSI circuits for biomedical applications.
Title main entry. Ed. by Krzysztof Iniewski.
Artech House, ©2008 435 p. $139.00
Very large scale integration (VLSI) is the process of creating integrated circuits by combining thousands of transistor-based circuits into a single chip. Written by international experts in industry and academia, this resource presents an overview of VLSI circuit design for a wide range of applications in biology and medicine. Coverage encompasses integrated circuits for wireless and wired biosensing, body implants and microneedles, biosensing interfaces with the human body, and molecular biology dealing with DNA and bacteria. Emerging circuit design techniques, new materials, and innovative system approaches are explored. Some specific areas covered include visual cortical neuroprosthesis, integrated circuits for neural interfacing, CMOS circuits for biomedical implantable devices, and silicon-based microfluidic systems for nucleic acid analysis. The book is of interest to those working in electronic design for future technologies in the healthcare sector. Iniewski is director of a CMOS consulting company.

TK7875 2007-040799 978-0-8493-8069-3
MEMS and nanotechnology-based sensors and devices for communications, medical, and aerospace applications.
Jha, A.R.
CRC / Taylor & Francis, ©2008 401 p. $129.95
They include such wide-ranging applications as automobile control and safety and medicine; and they frequently combine electronic devices, mechanical elements, sensors and actuators and such materials as silicon, ceramics and carbon nanotubes. Micro-electromechanical systems (MEMS) are not only microsystems but models of reliability and capability. Master practitioner and consultant Jha starts with the history of MEMS devices involving nanotechnology, then describes potential actuation mechanisms as well as their performance capabilities and applications, the latest and most unique methods for actuation, packaging, processing, materials requirements, RF-MEMS switches operative at microwave and millimeter-wave frequencies, RF/MEMS microwave MEMS phase shifters, applications of micropumps and microfluidics, devices and sensors for military applications, and materials for MEMS and nanotechnology-based sensors and devices. Jha provides summaries and extensive references, making this a professional reference and graduate-level text.

TK7881 2007-042793 978-0-470-03350-0
Spatial audio processing; MPEG surround and other applications.
Breebaart, Jeroen and Christof Faller.
John Wiley & Sons, ©2007 209 p. $120.00
Written for audio processing and coding engineers, this comprehensive guide reviews all of the latest technologies concerning spatial audio coding, including research on psychoacoustics, manipulation of spatial audio channels and the synthesis of audio channels. Breebaart (Philips Research, the Netherlands) and Faller (EPFL, Switzerland) pay special attention to the higher compression ratios that distinguish the latest coding trends from the conventional methods used in the past.

TK7882 2007-039292 978-0-470-51739-0
Advances in digital speech transmission.
Title main entry. Ed. by Rainer Martin et al.
John Wiley & Sons, ©2008 543 p. $130.00
Editors Martin (Ruhr U. Bochum, Germany), Heute (Christian-Albrechts U., Germany) and Antweiler (RWTH Aachen U., Germany) have compiled the latest research in the field of digital speech transmission to explain the latest advances to engineering students and field technicians. These academic papers cover both fundamental information on widespread and emerging technologies such as Voice over IP, soft-decision source-coding and Turbo DeCodulation. Practical applications of these systems are also explained in detail.

TK7895 2007-043927 978-1-84821-000-4
Cooperating embedded systems and wireless sensor networks.
Title main entry. Ed. by Michel Banatre et al.
ISTE/Wiley, ©2008 418 p. $150.00
With a rapidly expanding industry and intense competition, different system concepts are likely to emerge. The contributors of these five extended articles, however, argue that many concepts share ideas on control, heterogeneity, wireless communications, dynamics, cost and other factors. After an introduction to the concept of cooperating objects and sensor networks, topics include applications, in such markets as control and automation or logistics, application scenarios, such as sustainable bridges and smart surroundings, paradigms for algorithms and interactions, including wireless sensor networks and robots, vertical system functions, such as context and location management, system architectures and programming models, and a road map of cooperating objects including methodology and structure. Each article includes

its own references and the editors provide an author list along with the general index.

TK7895 2008-010485 978-0-8493-7197-4
High performance embedded computing handbook; a systems perspective.
Title main entry. Ed. by David R. Martinez et al.
CRC Press, ©2008 567 p. $149.95
This book covers the many subsystems and components of high-performance embedded computing (HPEC) systems, addressing design trade-offs, implementation options, and current techniques. Emphasis is on a systems perspective, but complemented with specific implementations. Coverage includes analog-to-digital converters, front-end signal processing addressing compute-intensive operations, and back-end processing requiring intensive parallel and programmable processing. Concepts are reinforced through specific HPEC system examples in application areas such as radar, communications, electro-optical, and sonar. Later chapters expand on a number of representative HPEC systems, and the book concludes with a discussion of future trends. Material is covered at a level accessible to practicing engineers and HPEC computational practitioners. The editors are affiliated with the Lincoln Laboratory of the Massachusetts Institute of Technology.

AERONAUTICS, ASTRONAUTICS

TL521 978-1-56347-934-2
NASA space science vision missions.
Title main entry. Ed. by Marc Allen. (Progress in astronautics and aeronautics; v.224)
Amer. Inst. of Aeronautics & Astronautics, ©2008 434 p. $124.95
Loaded with ideas that take your breath away, this collection of possible future missions includes such techniques as solar sails, remote sensing instruments on Saturn, nuclear electric propulsion, magnetic activity measurement devices and a telescope designed to find and analyze the chemical history of earth and other structures. Clearly cognizant of technology investment planning, the contributors of these 12 essays nevertheless describe their biggest and most ambitious ideas, from the Solar Polar Imager to the Titan Explorer (for Saturn's moon Titan), Neptune Orbiter (probing and landing on Neptune) a nuclear-powered interstellar probe that will leave the heliosphere, the Stellar Imager (stars), the Modern Universe Space Telescope, the single aperture far infrared observatory, a kilometer-baseline far-infrared/submillimeter interferometer in space, the Generation-X vision mission, and the advanced Compton Telescope

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mission. Investors and dreamers, take note.

MILITARY & NAVAL SCIENCE

UA10 2007-928084 978-1-58603-760-4
Scientific support for the decision making in the security sector; proceedings.
NATO Advanced Workshop on Scientific Support for the Decision Making in the Security Sector (2006: Velingrad, Bulgaria) (NATO science for peace and security series; D, Information and communication; v.12)
IOS Press, ©2007 342 p. $150.00
Kounchev and Tsachev (Institute of Mathematics and Informatics, Bulgaria), Willems (TNO Defense and Security, the Netherlands), and Shalamanov (Institute for Parallel Processing, Bulgaria) present the results of a conference bringing together specialists from mathematics and computer and information sciences together with specialists on European security issues in order to lay the groundwork for a synthesis of these respective areas. The papers are organized into sections on planning for security; mathematical, computer, and information science methods for security; environmental security; and dynamic optimization for security. Some examples of specific topics addressed include scenario simulation for the military safety maintenance of the state, planning of security sector capabilities for protection of maritime strategy, database structure for radiation incidents and for treatment of affected people, the affect of multi-modality image displays on decision making, calculation of maximal outlets of small mountainous rivers in Armenia, a real-time air quality operational forecasting system for industrial and urban areas, and a computational approach for assessment of critical infrastructure in network systems. ❖