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Sci-Tech Book News Reviews

Susan Fingerman

Sci-Tech Book News Reviews Susan Fingerman, Selector

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

PSYCHOLOGY

BF76 2006-017236 978-0-07-353196-0
Essentials of behavioral research; methods and data analysis, 3d ed.
Rosenthal, Robert and Ralph L. Rosnow.
McGraw-Hill, ©2008 842 p. $126.25
This update of the 1991 and 1984 editions is designed to be useful to graduate students and researchers in fields from biology and business to school psychology and statistics. Psychologists Rosenthal (U. of California, Riverside) and Rosnow (emeritus, Temple U., Philadelphia) present deeper discussions of methodological and philosophical issues. While their approach remains intuitive and concrete rather than strictly mathematical, they integrate basic concepts with recommendations by a 1999 task force (e.g., a greater emphasis on reporting and interpreting confidence intervals, a method to make inferences from non-random data). The text includes hypothetical rather than real-world data examples to facilitate conceptual understanding, a summary list of chapter equations, statistical tables, and a glossary.

GEOGRAPHY, HYDROLOGY, ENVIRONMENT

G70 2006-032486 978-0-471-74697-3
Hyperspectral data exploitation; theory and applications.
Title main entry. Ed. by Chein-I Chang.
Wiley-Interscience, ©2007 430 p. $120.00
This collection of articles explains the theory and practices behind this popular remote sensing technique. Contributors describe tutorials, specifically hyperspectral imaging systems and information-processed matching filters for hyperspectral target detection and classification, theory, including an optical real-time adaptive spectral identification system, stochastic mixture modeling, unmixing hyperspectral data through independent and dependent component analysis, maximum volume transform for end member spectra determination, hyperspectral data representation, optimal and selection and utility evaluation for spectral systems, feature reduction for classification purposes, and semi-supervised support vector machines for classification of hyperspectral remote sensing devices. Applications include decision fusion of hyperspectral classification, morphological hyperspectral image classifications in a parallel processing perspective and three-dimensional wavelet-based compression of hyperspectral imagery.

G855 2006-031326 978-0-415-97024-2
Encyclopedia of the Antarctic; 2v.
Title main entry. Ed. by Beau Riffenburgh.
Routledge, ©2007 1232 p. $425.00
From "adaptation and evolution" to "zooplankton and krill," the 495 alphabetical entries in this encyclopedia assembled by Riffenburgh (Scott Polar Research Institute, U. of Cambridge, UK) provide a cross-disciplinary summary of the field of knowledge concerning the Antarctic. They range from short 500-word factual entries to longer 6,000-word thematic and analytical discussions. Thematically, the entries cover atmosphere and climate; birds; conservation and human impact; geography; geology; glaciology; history, exploration, and history of science; marine biology; marine mammals; oceanography; research programs, international organizations; and the Atlantic Treaty System; sea ice; solar-terrestrial physics and astronomy; technology and transport; and terrestrial biology and limnology. Each entry includes a list of references and further reading. Also included are 16 maps; an analytical index; and appendices providing the texts of the Antarctic Treaty and the Protocol on Environmental Protection to the Antarctic Treaty, a list of treaty signatories, a chronology of Antarctic exploration, a list of Antarctic academic journals, a list of scientific research stations in the region as of the austral winter of 2005, and the SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica.

PRODUCTION, INDUSTRY, COMMERCE

HD9696 2006-016793 978-0-8155-1536-4
China's electronics industry; the definitive guide for companies and policy makers with interest in China.
Pecht, Michael.
William Andrew Publishing, ©2007 247 p. $345.00 (pa)
Electronics is now China's largest industry and is growing at a rate of nearly 20 percent annually. Pecht (founder and director, Center for Advanced Life Cycle Engineering, U. of Maryland) describes the technologies, manufacturing, capabilities, and infrastructure that have made this possible. Chapters cover economic conditions and policy; China's science and technology organizational structure, infrastructure, and development programs; and the historical development of the electronics industry. He then provides reviews of current conditions among the various electronics sectors: semiconductors; electronic manufacturing service industries; connectors, cable assemblies, and backplanes; computers; telecommunications; software; and select others including avionics and military electronics. A final chapter addresses pros and cons of conducting business in China.

HV551 2006-929179 1-58603-631-9
Scientific networking and the global health network supercourse.
Title main entry. Ed. by Faina Linkov and Ronald LaPorte. (NATO Security through science series; D: Information and Communication Security; v.5)
IOS Press, ©2006 207 p. $144.00
The Global Health Network Supercourse, supported by NASA and the National Institutes of Health, created a network of some 600 scientists in the former Soviet Union region. As part of the Supercourse project, the directors of an August 2005 NATO Advanced Research Workshop held in Lithuania networked 31,000 public health professionals in 151 countries researching in the area of natural and man-made disasters. Papers from the workshop are presented, offering insight on improving existing global health networks and finding new cost-effective information distribution channels. They demonstrate how to use Internet-based information distribution channels to share disaster preparedness and mitigation research information using a free library of 2,500 low-bandwidth Supercourse lectures. Research and research models from NATO countries are also presented, on issues such as biosecurity, the impact of environmental factors on psychiatric disorders, radionuclide contamination of the marine environment, and seismic risk reduction. The editors are affiliated with the University of Pittsburgh. There is no subject index.

KF8961 2006-031576 978-0-8493-0561-0
Computer forensics; evidence, collection, and management.
Newman, Robert C.
Auerbach Publications, ©2007 404 p. $79.95
This work by Newman (information systems, Georgia Southern U.) is intended to give computer users in the business, government, and education communities a basic technical competency in computer forensics, which essentially involves the identification, retrieval, and protection of electronic evidence found on computers for litigation and prosecution. Topics addressed in the first section include investigation basics; policies, standards, laws, and legal processes; types of crimes and incidents involved in computer forensics; the computing environment and types of evidence; and investigative tools, technical training, and forensic equipment. The second half of the text focuses on evidence collection and management and includes chapters on managing the crime/incident scene, investigating computer center incidents, computer systems disks and file structures, the computer and electronic forensic lab, extracting computer and electronic evidence, e-mail and Internet investigations, mobile phone and PDA investigations, and court presentations and testimony. Where the topics are nation-specific (laws, regulations, and such), the material is geared towards a US readership. Distributed in the US by Taylor & Francis.

SCIENCE (GENERAL)

Q183 978-0-471-38734-3
Excel for scientists and engineers; numerical methods.
Billo, E. Joseph.
Wiley-Interscience, ©2007 454 p. $50.00 (pa)
Billo, a former professor of chemistry at Boston College, describes how to use Microsoft Excel for calculations in chemical, biochemical, physical, engineering, biological, and medicinal problems. He covers using worksheets and formulas, using the tools in Excel, and writing programs using Visual Basic for Applications (VBA) programming language (introduced in the first two chapters). No background in programming is needed–so the text can be used by undergraduates and graduate students–and mathematical theory is kept to a minimum. The CD-ROM contains

spreadsheets, charts, VBA code for examples, solutions to problems, and a workbook.

Q185 2006-035871 0-13-145835-3
The labVIEW style book.
Blume, Peter A.
Prentice Hall, ©2007 372 p. $89.00
LabVIEW (Laboratory Virtual Instruments Engineering Workbench) is a platform and development environment or the visual programming language "G" from National Instruments used for data acquisition, instrument control, and industrial automation. Here, Blume (who wrote the LabVIEW development guidelines for Bloomy Controls Inc., of which he is also founder and president) presents a reference manual covering recommended LabVIEW development practices. He presents style rules intended to optimize the ease of use, efficiency, readability, maintainability, robustness, simplicity, and performance of applications. Explanations of each rule include examples and illustrations. The text assumes a working knowledge of fundamental LabVIEW principles and terminology and experience developing and deploying applications.

MATH, COMPUTERS

QA76.5 2006-938348 978-0-7695-2770-3
Computing; theory and applications; proceedings.
International conference on Computing: Theory and Applications (2007: Kolkata, India)
Computer Society Press, ©2007 740 p. $270.00 (pa)
Held in Kolkata, India, in March 2007, the International Conference on Computing: Theory and Applications was organized by the Computer and Communication Sciences Division of the Indian Statistical Institute on the occasion of the Institute's platinum jubilee. According to the conference organizers, the primary goal was to "present the state-of-the-art scientific results, encourage academic and industrial interaction, and promote collaborative research and developmental activities in computing–involving scientists, engineers, professionals, researchers, and students from India and abroad." The conference covered algorithms and architectures in sessions on parallel and distributed computing, mobile and wireless networks, VLSI design, high performance computing, architectures, and algorithms. It also discussed pattern recognition and soft computing in sessions devoted to artificial neural networks, fuzzy sets, support vector machines and clustering, data mining and soft computing, bio informatics, classification and prediction, and application in image analysis. Document, language, and signal processing were discussed in another track of sessions, and the final track explored image processing, computer vision, and graphics, with individual sessions dedicated to graphics, content based image retrieval, image processing, motion and three-dimensional vision, watermarking, biometrics, and remote sensing and image analysis. Including the keynote speech on oncological image analysis and the plenary and invited lectures accompanying each of the four tracks, 126 contributions are presented in all.

QA76.58 1-60021-202-6
Advanced parallel and distributed computing; evaluation, improvement and practice.
Dai, Yuan-Shun et al. (Distributed, cluster and grid computing)
Nova Science Publishers, ©2007 321 p. $89.00
This work showcases novel tools and approaches for realizing parallel and distributed systems. Several early chapters review recent technologies, various models useful in the study of parallel and distributed systems, research on SGC, and work on survivability. Later chapters cover Grid environments, models for creating Grid applications, and stochastic models for evaluating proactive fault management in operational software systems. Other subjects examined include autonomic management of space missions, the next-generation wireless Internet, and Grid-email. Dai is affiliated with the Department of Computer and Information Science at Indiana University, Purdue University.

QA76.73 2007-921515 978-0-7695-2769-7
Model-based methodologies for pervasive and embedded software; proceedings.
International Workshop on [Title] (4th: 2007: Braga, Portugal) Ed. by João M. Fernandes et al.
Computer Society Press, ©2007 137 p. $182.00 (pa)
This proceedings volume contains 12 papers from the 4th International Workshop on Model-Based Methodologies for Pervasive and Embedded Software (MOMPES 2007). It opens with a discussion of the applicability scope of model driven engineering (MDE). Other topics include (for example) a generic execution framework for models of computation, and the design of a unified process for embedded systems. The volume lacks a subject index.

QA76.75 2006-932822 978-1-58603-673-7
New trends in software methodologies, tools and techniques; proceedings.
International Conference on New Trends in Software Methodologies, Tools and Techniques (5th: 2006: Quebec, Canada) Ed. by Hamido Fujita. (Frontiers in artificial intelligence and applications; v.147)
IOS Press, ©2006 475 p. $138.00
In one of the world's fasted-growing technologies, researchers and developers are coming up with more ideas than they can shake a stick at, if that is their idea of a good time. These proceedings of the October 2006 conference include plenty of those ideas, as contributors present their work in software specification and comprehension models, software development and related methodologies, network security and applications, software security and program bugs, validation and diagnosis, practical artifacts, program conversion and related software validation, intelligent software deign and maintenance, and end user requirements engineering and testing. Specific papers include new theory, cryptography, system development life-cycle support issues and a common criteria approach to J2ME CLDC security requirements.

QA76.76 2007-005313 1-58450-503-6
Game writing handbook.
Chandler, Rafael.
Charles River Media, ©2007 295 p. $39.99 (pa)
Chandler draws from seven years of game writing experience, as well as interviews with others in the industry, to create this guide on creating, developing, and organizing video game storylines. Fourteen chapters discuss the differences between game and screen writing and teach readers to develop concept, context, and characters; structure the narrative, understand the technical parameters and technical writing demands, work with cinematics; integrate dialogue; direct voice actors; and get a job in the field. Sample spreadsheets, screenplays, and fictional projects support the text.

QA76.76 1-4200-4426-5
Six Sigma software development, 2d ed.
Tayntor, Christine B.
Auerbach Publications, ©2007 458 p. $64.95 (pa)
This guide describes the application of Six Sigma concepts to various aspects of the system development process, including the waterfall model, legacy systems, and recent innovations like rapid application development, packaged software implementation, and outsourcing. A case study details the applications of Six Sigma to the system development process, quality assurance, and the Software Engineering Institute Capability Maturity Model. The elimination of defects and improved customer satisfaction are stressed. The second edition adds six chapters on Design for Six Sigma. Distributed by Taylor & Francis.

QA76.9 2007-922437 978-0-7695-2775-8
Availability, reliability and security; proceedings.
International Conference on Availability, Reliability and Security (2007: Vienna, Austria)
Computer Society Press, ©2007 1259 p. $308.00 (pa)
The 212 papers of this enormous volume of proceedings were first presented at the April 2007 Second International Conference on Availability, Reliability, and Security, held at the Vienna U. of Technology, in Vienna, Austria. The papers are organized by their session or workshop, with major topics that include trust model and management, software security, security models, access control, authentication, and fault-tolerant distributed computing. The papers present current research and methods. Authored by a fully international group of contributors, each paper includes an abstract and list of index terms, and list of references. Author indexed only.

QA76.9 2007-921744 978-0-7695-2833-5
Cluster computing and the grid; proceedings.
IEEE International Symposium on Cluster Computing and the Grid (7th: 2007: Rio De Janeiro, Brazil)
Computer Society Press, ©2007 907 p. $253.00 (pa)
This dense volume contains the 72 papers selected for the May 2007 symposium as well as the 38 papers presented during the seven workshops. The symposium papers explore distributed storage, collaboration, scheduling, cluster technologies, replica management, workload modeling, communication infrastructure, and reliability. Topics include a semantic framework for integrated asset management in smart oilfields, processing mesoscale climatology in a grid environment, profiling computation jobs, a distributed query execution engine, and standardization of an API for distributed resource management systems. The workshops focus on agent-based grid computing, biomedical computations, peer-to-peer computing, programming models, and context-awareness in grid computing. No subject index is provided.

QA76.9 2006-940978 978-0-7695-2811-3
Informatics research for development of knowledge society infrastructure; proceedings.
Int'l Conference on Informatics Research for Development of Knowledge Society... (2007: Kyoto, Japan) Ed. by Masao Fukushima et al.
Computer Society Press, ©2007 193 p. $185.00 (pa)
The Second International Conference on Informatics Research for Development of Knowledge Society Infrastructure (ICKS'07) was held in Kyoto, Japan on January 29, 2007. Attendees included those who had just completed a five-year informatics research project at Kyoto U. as well as several invited guest speakers. This proceedings volume contains 23 papers discussing such topics as modeling the dynamic structure of human communication; stochastic and robust approaches to optimization problems under uncertainty; and efficient query evaluation in XML information subscription systems. The volume lacks a subject index.

QA76.9 978-1-59693-113-8
Role-based access control.
Ferraiolo, David F. et al. (Artech House computer security series)
Artech House, ©2007 381 p. $89.00
Role-based access control (RBAC) helps simplify the security administration of large networked applications by using roles, hierarchies, and constraints to organize access privileges. Bringing together the research literature on RBAC into one volume, the authors (all of the Computer Security Division at the National Institute of Standards and Technology) explain the technology, describe its cost advantages, and discuss issues related to implementation and migration from conventional access control methods. For the second edition they have added chapters on privacy and regulatory issues and on role engineering. Intending the treatment to be useful to security professionals, technology managers, and users in industry and government; software developers for database systems, enterprise management, security, and cryptographic products; and computer science and information technology students and instructors, they have relegated mathematical descriptions of RBAC properties to sidebars and the text is understandable without reference to them.

QA76.9 2006-934373 978-0-7695-2738-3
World haptics; proceedings.
Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems (2nd: 2007: Tsukuba, Japan)
Computer Society Press, ©2007 609 p. $262.00 (pa)
Teleoperators and other haptic technologies are computer-based interfaces that function by providing feedback to the human sense of touch. This volume presents 123 research papers originally given as oral or poster presentations at the March 2007 Second Joint EuroHaptics Conference and Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems. The oral presentations were presented in sessions covering psychophysics, device design, control and dynamics, modeling and rendering, and haptic systems and applications and the poster papers and shorter "sketch" papers cover essentially the same material. Some examples of specific topics covered include a behavioral adaptation approach to identifying visual dependence of haptic perception, the relationship between haptic feedback and force skill learning, tactile perception of rotational sliding, an infrared thermal measurement system for evaluating model-based thermal displays, design guidelines for wave variable controllers in time delayed telerobotics, transparent rendering of tool contact with compliant environments, incorporating geometric algorithms in impedance- and admittance-type haptic rendering, user perception and preference in model mediated telemanipulation, and a haptic/acoustic application to allow the blind access to spatial information.

QA247 2006-052720 978-1-58488-851-2
Simple extensions with the minimum degree relations of integral domains.
Oda, Susumu and Ken-ichi Yoshida. (Lecture notes in pure and applied mathematics)
Chapman & Hall/CRC, ©2007 277 p. $169.95 (pa)
This comprehensive treatment of an under-studied aspect of commutative algebra describes various simple extensions and their properties, in particular properties of simple ring extensions of Noetherian integral domains. Oda (mathematics, Kochi U.) and Yoshida (mathematics, Okayama U. of Science) explore anti-integral, super-primative and ultra-primitive extensions along with other subtopics such as flatness, integrality and "unramifiedness." They focus on simple algebraic extensions and show that simple extensions of a Noetherian domain R can be complicated even if they are bi-rationally equal to R. They also provide many recent results and facts so

readers can keep up with related research. This is directed at graduate students and researchers.

QA274 2006-045837 1-58488-659-5
Analytical methods for Markov semigroups.
Lorenzi, Luca and Marcello Bertoldi. (Monographs and textbooks in pure and applied mathematics; 283)
Chapman & Hall/CRC, ©2007 526 p. $99.95
This is the first full-length look at Markov semigroups both in spaces of bounded and continuous functions as well as in Lp spaces relevant to the invariant measure of the semigroup. With plenty of examples of techniques and results, this also offers and updates a review of the literature on Markov semigroups. The text covers the elliptic equation and the Cauchy problem under certain conditions, one-dimensional theory, uniqueness results, conservation of probability and maximum principles, properties of {T(t)} in spaces of continuous functions, uniform estimates for the derivatives of {T(t)}, point-wise estimates for the derivatives of {T(t)}, certain invariant measures in semigroups, the Ornstein-Uhlenbeck operator, a class of nonanalytic Markov semigroups, the Cauchy-Dirichlet problem, the Cauchy-Newman problem in the convex and nonconvex case, and a class of Markov semigroups associated with degenerate elliptic operators.

QA274 2006-045490 1-58488-646-3
A course on queuing theory.
Jain, Joti Lal et al. (Statistics; textbooks and monographs; v.189)
Chapman & Hall/CRC, ©2007 461 p. $89.95
As science becomes increasingly interdisciplinary, researchers are finding that engineering has much to offer those working in such diverse fields as management science, communications as well as in theoretical work and aspects of computation. This text is evidence of the inroads engineering is making, covering a broad range of theory and applications and emphasizing Markovian structures and the techniques of different models. The bank of international authors cover the basics of queues, including their features and characteristics, graphical methods, modeling, scope and organization, Markovian queues, including optimization, regenerative non-Markovian queues, computational methods, statistical inference and simulation, general queues, discrete-time queues in transient solutions, and miscellaneous topics such as priority queues, queues with infinite servers, design and control of queues, and networks. Each chapter includes exercises and the authors provide appendices with basic information on such topics as random variables, stochastic processes and statistical processes.

QA278 2006-029955 978-0-470-02423-2
Structural equation modeling; a Bayesian approach.
Lee, Sik-Yum. (Wiley series in probability and statistics)
John Wiley & Sons, ©2007 432 p. $120.00
Lee (statistics, Chinese U. of Hong Kong) describes this multivariate method that allows the evaluation of a series of simultaneous hypotheses about the effects of latent and manifest variables on other variables, taking measurement errors into account, and shows how a Bayesian approach allows the inclusion of prior information. The results are improved parameter estimates, latent variable estimates, and statistics for model comparison with more reliable results using smaller samples. He describes standard structural equation models, such as exploratory factor analysis and the Bentler-Weeks model, examines covariance structure analysis, then presents the Bayesian approach. He covers model comparison and model checking, structural equation models with continuous and ordered categorical variables, structural equation models with dichotomous variables, nonlinear structural equation models, two-level nonlinear structural equation models, multisample analysis, finite mixtures, structural equation models with missing data, and structured equation models with an exponential family of distributions.

QA280 1-58488-613-7
Nonlinear time series; semiparametric and nonparametric methods.
Gao, Jiti. (Monographs on statistics and applied probability; 108)
Chapman & Hall/CRC, ©2007 237 p. $79.95
Although useful in the theoretical and empirical analysis of nonlinear time series data, recent research has shown that semiparametric methods may be applied to dimensionality problems arising from fully non-parametric models and methods. Gao (mathematics, U. of Western Australia) focuses on various non-parametric methods in model estimation, specification testing and selection of time series data, covering estimation in nonlinear time series, nonlinear time series specifications, model selection in nonlinear time series, continuous time diffusion models and long-range dependent time series. He uses a number of examples and provides both bibliographical and technical notes for each chapter along with author and subject appendices.

QA402 2006-016018 978-0-470-08188-4
Advanced dynamic-system simulation; model-replication techniques and Monte Carlo simulation.
Korn, Granino A.
John Wiley & Sons, ©2007 221 p. $89.95
Recent advances in technology have made it possible to conduct advanced simulation programming for interactive modeling and simulation on standard personal computers. Here practitioner Korn demonstrates software that can handle large simulation studies for interactive modeling and simulation of dynamic systems for such applications as aerospace vehicles, control systems and biological systems. Korn introduces dynamic-system simulation to graduate students and professionals, then describes models with difference equations as well as limiters and switches, programs with vector-matric operations and submodels, parameter-influence studies, model replication, Monte Carlo simulation, random-process simulation and Monte Carlo studies with noisy signals, vector models of neural networks, and applications of vectors models such as vectorized simulation with logarithmic plots, modeling fuzzy-logic function generations, and partial differential equations.

QA402 2006-040842 1-57524-283-4
The Volterra and Wiener theories of nonlinear systems.
Schetzen, Martin.
Krieger Publishing Co., ©2006 595 p. $72.50
Schetzen (mathematics, Northeastern U.) has updated his work on the analysis, design and characterization of these non-linear systems by adding a new chapter on the method of using Gate functions for the construction by which optimum systems can be determined for any input and desired output for any proper weighted or unweighted error criterion. With more material on likely applications in biology and engineering in new appendices, Schetzen covers first-order linear systems, second-order and higher-order Volterra systems, second-order and higher-order Kernel transforms, the *p*th order inverse, the application of Volterra theory to nonlinear system analysis, the motivational basis for the Wiener theory of nonlinear systems, system responses, the Wiener *G*-functionals, determining Wiener kernels of a system by cross-correlation, the average of a product of two *G*-functionals, nonlinear system identification, orthogonal representations and development of the Winer *G*-functionals, the detailed Wiener model (including from a statistical standpoint), Hermite polynomials, and optimization.

QA433 2006-938300 978-1-84564-093-4
Advanced vector analysis for scientists and engineers.
Rahman, M.
WIT Press, ©2007 306 p. $165.00
This text illustrates the application of vector calculus to physical problems, and provides a wealth of solved problems to demonstrate the application of the theory. Coverage progresses from the algebra of vectors and vector functions of one variable, through integral theorems and orthogonal curvilinear coordinate systems. Learning features include chapter summaries and exercises, plus appendices of solutions for selected exercises, a summary of important vector formulae, and an overview of the historical background of vector analysis. The text is suitable for a one-semester course for senior undergraduates and beginning graduate students in science and engineering. The author teaches applied mathematics and fluid mechanics at Dalhousie University, Canada. The US office of WIT Press is Computational Mechanics.

QA927 2006-938301 978-1-84564-157-3
Solitary waves in fluids.
Title main entry. Ed. by R.H.J. Grimshaw. (International series on advances in fluid mechanics; v.47)
WIT Press, ©2007 183 p. $130.00
Solitary waves, or solitons, were first described in the middle of the 19th century, but remained an obscure curiosity until the 1960s and the rise of nonlinear wave equations. Interest has leaked since then from mathematics to the physical sciences. Here mathematicians and physicists discuss how the theory of solitons has been exploited in several fluid flow contexts, primarily in a geophysical and environmental framework. Their topics include solitary waves in water and in rotating fluids; and internal, planetary, and envelope solitary waves. The US office of WIT Press is Computational Mechanics.

ASTRONOMY

QB462 2006-938400 978-1-58381-227-3
Numerical modeling of space plasma flows; proceedings.
International conference on Numerical Modeling of Space Plasma Flows Astronum (1st: 2006: Palm Springs, CA) (Astronomical Society of the Pacific conference series; v.359)
Astronomical Soc./Pacific, ©2006 312 p. $77.00
In these proceedings of the March 2006 conference, the first in a series on this topic, contributors keep specialists in applied mathematics, space physics, astrophysics and

computer science in mind as they cover topics related to the solar structure, the heliosphere, the sun-earth connection, and astrophysical phenomena. Papers cover numerical methods, algorithms and frameworks (including central finite volume methods in multidimensional MHD, turbulence and cosmic ray transport (including particle acceleration in galactic winds), large-scale fluid-based simulations (including MHD models), large-scale kinetic and hybrid calculations (including hybrid simulation applied to space plasmas), data handling and visualization (including virtual observatories).

QB476 978-1-904868-29-3
Radioastronomical tools and techniques.
Kardashev, N.S. and S.A. Dagkesamanskii.
Cambridge Scientific Publisher, ©2007 405 p. $111.00
Dagkesamanskii and Kardashev (with the Astro Space Center, Lebedev Physical Institute, Russian Academy of Sciences) compile 42 papers on tools, technologies, and current discussions in radio astronomy for postgraduates and researchers. The works are divided into two main parts: the first covers topics related to space projects such as Radioastron, Millimetron, and Submillimetron; the second addresses groundbased radio telescopes. Sample topics include: new orbit and new possibilities of the Radioastron Project, VLBI observations of sources of maser radiation by a ground-space interferometer, the use of lens antennae in radio astronomy, multichannel spectrum analyzer for observation of pulsars, and synthesis of VLBI images using the regularization methods. This book is distributed by Enfield.

PHYSICS

QC173 2006-002295 1-60021-023-6
New topics in condensed matter research.
Title main entry. Ed. by John V. Chang.
Nova Science Publishers, ©2007 219 p. $129.00
The field of condensed matter is more than active and ranges from superfluidity and magnetism to the optical, electronic and mechanical properties of materials such as semiconductors, polymers and carbon nanotubes and virtually every hard surface you can name. Given its reach and relationship to profitability, the range of papers in this collection is also wide and also at the leading edge of research. Topics include the structure and properties of a specific John-Teller polaron, GaN-based spintronics, a new compound and its homologues exhibiting strong magnetic frustration, the nonlinear dynamics of ID classical magnetic systems, anisotropic domain walls in magnetic nanostructures with perpendicular anisotrophy, the use of polarized neurons in condensed matter research in Australia and solid state cathodoluminescence.

QC174 2007-270101 978-0-19-921570-6
Introduction to quantum information science.
Vedral, Vlatko. (Oxford graduate texts)
Oxford U. Press, ©2006 183 p. $70.00
This compact introduction to the field of quantum information began life as a series of lecture conducted at various universities. Vedral (quantum information, U. of Leeds) packs a great deal into a small space as he describes classical and quantum information, including elements of quantum mechanics, the basics of quantum information, quantum communication with entanglement, entanglement itself, witness quantum entanglement, quantum entanglement in practice, measures of entanglement and issues of quantum computation, including quantum algorithms, entanglement with computation and quantum measurements, and quantum error correction. Each section includes examples and a summary, and Vedral includes a summary of the outlook for the field.

QC374 2006-018372 1-60021-289-1
New research on optical materials.
Title main entry. Ed. by Sherman J. Litchitika.
Nova Science Publishers, ©2007 255 p. $129.00
Covering the physical properties of crystals, glasses, polymers, metals, liquids and gases, the contributors of these seven articles describe materials used in all types of optical systems, including lasers. They analyze linear and nonlinear optical properties as well as mechanical, thermal, electrical, magnetic and elasto-optic properties as they describe recent advances in the study of single crystals in micro-pulling-down methods, the preparation and properties of microcapsules in electronic inks used in display applications, studies of Group-IV semiconductor nanostructures for optoelectronic applications, silicon-based nanostructures (including the diazo derivatives of the amphiphilic, monomeric and polymer characters) for integrated photonic devices, the efficacy of light emission properties of lathanide-doped novel optical glasses in photonic devices, and unconverted visible luminescence under infrared excitations in certain laser hosts, especially those doped with rare earth. The articles are well-illustrated.

QC443 2006-030741 978-0-470-01608-4
Spectroscopic ellipsometry; principles and applications.
Fujiwara, Hiroyuki.
John Wiley & Sons, ©2007 369 p. $180.00
Spectroscopic ellipsometry is a contactless optical technique for the investigation of the dielectric properties of thin films that has grown to wider use because rapid advances in computer technology in the 1990s have allowed the automation of ellipsometry instruments and ellipsometry data analyses. Writing for researchers unfamiliar with the technique, Fujiwara (National Institute of Advanced Industrial Science of Technology, Japan) introduces the fundamentals of its measurement and data and analysis methods. Coverage include the data analysis of anisotropic materials; data analysis examples of insulator materials, semiconductor materials, biomaterial, metals, and other materials; and applications of spectroscopic ellipsometry for growth monitoring and feedback control of processing. Aiming for simplicity, he has eliminated unnecessary equations for electromagnetics and quantum mechanics, relying instead only on the derivations of important formulae.

QC482 2006-037726 978-1-905209-21-7
X-ray diffraction by polycrystalline materials.
Guinebretière, René.
ISTE Ltd., ©2007 351 p. $140.00
Guinebretière (X-ray diffraction, Ecole Nationale Supérieure de Céramiques Industrielles, Limoges, France) provides graduate students, engineers, and active researchers with a physical approach to the diffraction phenomenon and its applications in materials science. Following an historical overview of the discovery of X-rays and the first studies in X-ray diffraction, the author focuses on the description of the basic theoretical concepts, the instrumentation and the presentation of traditional methods for data processing and the interpretation of the results, and the quantitative study of the microstructure by X-ray diffraction. The text contains a large number of figures and results taken from international literature, and presents the most recent developments in the views discussed. It contains an extensive bibliography of some 400 references for individuals interested in further reading. Distributed in the U.S. by the Independent Publishers Group.

QC665 2006-049684 978-0-470-09771-7
Fundamentals of the physical theory of diffraction.
Ufimtsev, Pyotr Ya.
Wiley-Interscience, ©2007 329 p. $120.00
A pillar of research into the theory of the diffraction and propagation of electromagnetic and acoustic waves, Ufimtsev explains a high-frequency asymptotic technique for investigating antennas and scattering problems, and presents the first complete and comprehensive description of the modern physical theory of diffraction based on the concept of elementary edge wages. He writes for industrial and academic researchers working on antennas and scattering problems, but also includes chapter-end questions for use in an undergraduate course.

QC981 2006-934137 978-1-84542-944-7
Europe and global climate change; politics, foreign policy and regional cooperation.
Title main entry. Ed. by Paul G. Harris.
Edward Elgar Publishing, ©2007 415 p. $165.00
This collection of 16 articles by international and multidisciplinary contributors take a single environmental issue, climate change, and explore responses at the European Union (EU) level, providing extensive commentary on projects, studies and policies. Contributors examine national political approaches to global climate change issues from a variety of angles, describing domestic sources of German foreign policy on the issue, the awkward role of the United Kingdom, the reliance on middle power leadership in foreign policy negotiations in the Netherlands, Polish and Swedish policies in the EU context, Spain's new enthusiasm and Norway's traditional NGO approach. Topics on the EU acting as its own entity include creating consensus, creating common policy, developing policy diffusion, meeting the Kyoto commitments, tracking policy shifts as the EU expands, sharing ideas and burdens, and explaining how domestic aims and international policy work together.

CHEMISTRY

QD75 2006-030737 978-0-470-01686-2
Applied chemometrics for scientists.
Brereton, Richard G.
John Wiley & Sons, ©2007 379 p. $100.00
Chemometrics, which began primarily as a method of using multivariate statistical methods for the analysis of analytical chemistry data, has developed over the past decade or so into a valuable tool for a wide range of disciplines and research. Brereton (chemistry, U. of Bristol)

has revamped his popular articles appearing on ChemWeb from 1999 to through 2003 to produce a primary text that maintains his primary themes while presenting the most up-to-date information. He keeps the practical clearly in sight as he covers the history of chemometrics, experimental design, statistical concepts, sequential methods, pattern recognition, calibration, coupled chromatography, equilibria, reactions, process analysis, improving yields and processes suing experimental designs, biological and medical applications, biological macromolecules, multivariate image analysis and food applications, including how to determine the origin of a food product using chromatography.

QD75 2006-014548 978-0-19-516212-7
Quality assurance in the analytical chemistry laboratory.
Hibbert, D. Brynn.
Oxford U. Press, ©2007 306 p. $99.50
Although their industries may vary widely and their expectations and intentions may fluctuate to suit, as Hibbert (chemistry, U. of New South Wales) notes all analytical chemistry labs have the same concerns about quality assurance. He comes to the rescue starting with a general introduction, in which he describes measurement, the generally accepted definition of quality, and statistical tools. He also covers the relationship of quality to experimental design, general quality control tools, including control charts and other graphics, laboratory studies, including those of an international nature for accreditation, measurement uncertainty, metrological traceability, validation and collaborative studies. Hibbert intends this to be an overview, so he frequently refers to other materials so students can study further. The graphics are particularly helpful.

QD79 2006-026963 978-0-471-74043-8
Columns for gas chromatography; performance and selection.
Barry, Eugene F. and Robert L. Grob.
John Wiley & Sons, ©2007 298 p. $100.00
Gas chromatography is a standard analytical technique for separating chemicals in a complex sample. Barry (chemistry, U. of Massachusetts Lowell) and Grob (d. 2006, emeritus, analytical chemistry, Villanova U.) point out that the last decade has seen innovations in this method. They focus on the selection of the core of a packed gas chromatograph, the gas chromatographic column, especially via the use of computer software assistance for optimizing column separations. Among the reasons given for this emphasis is the considerable expense involved, the lack of an update of Supina's classic textbook, *The Packed Column in Gas chromatography*, and available Web resources (listed). Appendices consist of guides to column selection.

QD341 978-0-470-87171-3
The chemistry of anilines; 2v.
Title main entry. Ed. by Zvi Rappoport. (Patai series; the chemistry of functional groups)
John Wiley & Sons, ©2007 1139 p. $945.00
Contributors from ten countries have written the 17 chapters of this two-volume handbook, which will be essential for researchers and graduate students in the field. Three initial chapters provide detailed treatment of the historical background of anilines, their general and theoretical aspects and their structural chemistry. Subsequent chapter topics include mass spectrometry and gas-phase chemistry, NMR spectra, substituted anilines as solvatochromic probes, and the hydrogen bonds of anilines. Aspects of the manufacture and uses of anilines and their toxicological and environmental aspects are the topics of two chapters in the second volume. Each chapter is illustrated with b&w and color diagrams and includes both a detailed table of contents of the chapter and a full list of references. Rappoport is at the Hebrew U. in Jerusalem, Israel.

QD382 2006-032502 978-0-470-02969-5
Self-doped conducting polymers.
Freund, Michael S. and Bhavana A. Deore.
John Wiley & Sons, ©2007 326 p. $135.00
Applications and advances abound in the field of organic conducting polymers, largely due to the vast amount of research already done on organic chemistry, polymer science, electronic materials and solid-state physics. Freund and Deore (both: chemistry, U. of Manitoba) describe the wide range of up-to-date approaches that have been developed to synthesize, characterize and use self-doped polymers. They begin by describing conducting polymers in general and their mechanisms, including p-type and n-type doping and auto doping. They describe recent applications such as transistors and e-beam lithography, then explain self-doped derivatives of polyaniline, including nanostructures. They continue with boronic acid substituted self-doped polyaniline, including their properties and applications, then move to self-doped polythiophenes and miscellaneous self-doped polymers including carboxylic derivatives. The result is a compact and well-organized reference that should spark interest in new applications, materials and processes.

QD509 2006-021794 978-1-57444-513-8
Powders and fibers; interfacial science and applications.
Title main entry. Ed. by Michel Nardin and Eugéne Papirer. (Surfactant science series; 137)
CRC / Taylor & Francis, ©2007 660 p. $199.95
This text on the materials science of powders and fibers is presented, as the editors (both of the Centre National de la Recherche Scientifique, Institut de Chimie des Surfaces et Interfaces, France) note in their preface, for the purposes of presenting modern methods for their surface characterization; describing important applications; and discussing the formation and role of solid-gas, solid-liquid, and solid-polymer interfaces and interphases in relation to the performance of powder and fiber materials. Following an introduction to the thermodynamics of interfacial systems with special reference to powders and fibers, 15 contributions examine such topics as surface properties characterization by inverse gas chromatography applications, application of inverse gas chromatography to the study of rubber reinforcement, probing the molecular details of the surfaces of powders and fibers using infrared spectroscopy, chemical characterization of silica powders and fibers, an application for the characterization of wear or comfort properties of modern fabrics, wettability of fibers and powders and its application to reinforced polymeric materials, principles and applications for scanning probe microscopy of micro- and nanofibers, polymer dynamics at solid-liquid interfaces, rheological properties in reactive resin systems, surface characteristics and the biocompatibility of powdered materials, and computer simulation of silicate glass surfaces.

GEOLOGY

QE538 2006-100346 978-0-87590-435-1
Earthquakes; radiated energy and the physics of faulting. (CD-ROM included)
Title main entry. Ed. by Rachel Abercrombie et al. (Geophysical monograph; 170)
American Geophysical Union, ©2006 327 p. $88.00
Abercrombie and her coeditors from the American Geophysical Union (Washington, DC) present 28 chapters on the energy changes associated with earthquakes for use by Solid Earth scientists, researchers, and students–particularly those working in seismology, tectonophysics, rock mechanics, and geodesy. The chapters cover current research and theory in the following main subjects: how earthquake energy is measured, effects of earthquake size and tectonic setting, geological fault zone research, insights from numerical simulations, and the efficiency of the "earthquake machine." The text is also provided on the accompanying CDROM.

BIOLOGY

QH324 2006-049140 1-58488-569-6
Introduction to bioinformatics.
Tramontano, Anna. (Mathematical and computational biology series)
Chapman & Hall/CRC, ©2007 174 p. $59.95 (pa)
"Bioinformatics," a term that emerged in the early 1990s, refers to the discipline that "uses the instruments of informatics to analyze biological data in order to formulate hypotheses about life." But in introducing a field made possible by high-speed computers and the Web, Tramontano (biochemistry, U. of Rome La Sapienza, Italy) notes that an operational definition is in order. Therefore, she describes the rationale; biological, statistical, and programming knowledge required; and limitations and future evolution of the tools and methods used for such applications as genomic (gene sequencing), modeling, and other "omics" projects. The book includes chapter problems and a list of commonly used Web sites.

QH541 2006-049394 1-56670-634-3
Ecological risk assessment, 2d ed.
Title main entry. Ed. by Glenn W. Suter.
CRC Press, ©2007 643 p. $99.95
Aiming to provide scientifically sound advice on ecological risk assessment to environmental decision makers (who have a basic knowledge of biology, chemistry, mathematics, and statistics), Suter (science advisor, US Environmental Protection Agency's National Center for Environmental Assessment) and colleagues provide an introduction to the field, focusing on risks for chemicals and chemical mixtures. Introductory chapters discuss risk assessment frameworks; ecological epidemiology and causal analysis; variability, uncertainty, and probability; dimensions, scales, and levels of organization; modes and mechanisms of action; mixed and multiple agents; and quality assurance. Planning and problem formulation is explored, followed by chapters on the analysis of exposure which cover source identification and characterization; sampling, analysis, and assays; mathematical models of chemical transport and fate; and exposure to chemicals and other agents. Exposure-response relationships, testing, biological surveys, organism-level extrapolation models, population modeling, and ecosystems effects

modeling are explored under the "analysis of effects" heading and concluding chapters discuss risk characterization and risk management.

QP360 2006-032060 978-1-59385-404-1
Social neuroscience; integrating biological and psychological explanations of social behavior.
Title main entry. Ed. by Eddie Harmon-Jones and Piotr Winkielman.
Guilford Pr., ©2007 512 p. $65.00
Good social neuroscience, assert Harmon-Jones (psychology, Texas A&M U.) and Winkielman (psychology, U. of California at San Diego), avoids the charges of reductionism and can benefit both parent fields of neuroscience and social psychology by deriving novel psychological hypotheses, testing these policies using a broad range of methods from both fields, and providing cross-disciplinary perspectives that provide better understanding in problems found other domains. They present 22 papers that provide programmatic overviews of recent research into emotion processes; motivation processes; attitudes and social cognition; person perception, stereotyping, and prejudice; and interpersonal relationships. The papers have been selected to represent a wide variety of theoretical approaches, including social, cognitive, clinical, biological, personality, and evolutionary perspectives, and authors have been asked to write such that their work is accessible to researchers in other fields.

QP519 2006-015412 1-58829-571-0
Quantitative proteomics by mass spectrometry.
Title main entry. Ed. by Salvatore Sechi. (Methods in molecular biology; 359)
Humana Press Inc., ©2007 218 p. $99.50
According to Sechi (National Institute of Diabetes and Digestive and Kidney Diseases), recent advances in mass spectrometry have dramatically improved the throughput in protein identification and quantification and mass spectrometry quantitative proteomics promises to become an essential tool for studying complex biological systems and diseases. In this work, he presents 14 contributions that describe recent methods and protocols in this growing field. Topics include using stable isotope tagging and mass spectrometry to characterize protein complexes and to detect changes in their composition, stable isotope labeling by amino acids in cell culture for quantitative proteomics, quantification of proteins and metabolites without isotopic labeling, an isotope coding strategy for proteomics involving both amine and carboxyl group labeling, tandem mass spectrometry in the detection of inborn errors of metabolism for newborn screening, computational analysis of quantitative proteomics data using stable isotope labeling, and quantitative proteomic analysis of phosphotyrosine-mediated cellular signaling networks.

QP535 2006-022828 978-0-470-01671-8
Nickel and its surprising impact in nature.
Title main entry. Ed. by Astrid Sigel et al. (Metal ions in life sciences; v.2)
John Wiley & Sons, ©2007 702 p. $355.00
Forty-six internationally recognized experts contribute 17 chapters focusing on the vibrant research area surrounding nickel and its complexes and their role in nature. Coverage includes the biogeochemistry of nickel and its release into the environment; the impact of nickel on the metabolism of cyanobacteria and eukaryotic plants; the complex formation of nickel with amino acids and peptides, and with sugar residues, nucleobases, phosphates, ucleosides, and nucleic acids; synthetic models for the active sites of nickel- containing enzymes; the role of nickel in enzymes such as ureases, hydrogenases, superoxide dismutases, acireductone dioxygenases, acetyl-coenzyme A synthases, carbon monoxide dehydrogenases, and methyl-coenzyme M reductases; chaperones of nickel metabolism; the role of nickel in environmental adaptation of the gastric pathogen *Helicobacter pylori*; nickel-dependent gene expression; and nickel toxicity and carcinogenesis. Intended as a resource for scientists in a wide range of fields, from inorganic biochemistry to medicine.

MICROBIOLOGY

QR53 2006-051256 978-1-57808-434-0
Modern industrial microbiology and biotechnology.
Okafur, Nduka.
Science Publishers, Inc., ©2007 530 p. $85.00
These fast-growing and potentially extremely profitable fields concentrate on the most valuable microbes but one of the results of such research has been a greatly enhanced understanding of molecular biology. Okafur (industrial microbiology, Clemson U.) covers the range of basic science and applications associated with these fields, and writes for advanced undergraduates and beginning graduate students as he covers the changing scope of biotechnology and industrial microbiology, some organisms commonly used, molecular biology and informatics, industrial media and nutrition of industrial

organisms, metabolic pathways, overproduction of metabolites, screening for productive strains, preservation of the gene pool and culturing, and information relative to such products as vinegar, single cell protein, yeast, microbial pesticides, innoculents, fermented foods, organic acids and industrial alcohol, immobilized cells and enzymes, mining microbiology, antibiotics and anti-tumor agents, ergot alkaloids, steroids, vaccines and drug discovery. He then covers the use of microbes in industrial waste management.

QR69 2006-031854 978-1-55581-392-5
Antisepsis, disinfection, and sterilization; types, action, and resistance.
McDonnell, Gerald E.
ASM Press, ©2007 361 p. $119.95
Targeting an audience that includes microbiologists, chemists, facilities managers, health care professionals, infection and contamination control practitioners, and application engineers, McDonnell (vice president of research and European Medicines Agency affairs, STERIS Limited, UK) intends this work to give a basic understanding of microbial control methods and technologies of chemical and physical antisepsis, disinfection, and sterilization. He opens with a discussion of general microbiology, subsequently describing methods of physical and chemical contamination control and disinfection, antiseptics and antisepsis, physical and chemical sterilization, mechanisms of action, and mechanisms of microbial resistance.

QR186 2006-047535 0-8493-3528-0
Making and using antibodies; a practical handbook.
Title main entry. Ed. by Gary C. Howard and Matthew R. Kaser.
CRC / Taylor & Francis, ©2007 394 p. $139.95
Scientists at US companies and universities provide detailed recipes by which biomedical researchers and students can whomp up a batch of antibodies in the laboratory and use them to study a wide range of phenomena in biology and medicine. Among their topics are producing polyclonal antibodies, the quantitative production of monoclonal antibodies, making antibodies in bacteria, immuno-histo-chemical methods, flow cytometry, Though new methods for making and using antibodies are certain to emerge, the ones currently being used are so embedded in their application that they will remain current for a long time. The plastic claw binding allows the book to lie flat on the bench.

MEDICINE (GENERAL & PUBLIC ASPECTS)

R853 2006-012326 0-8018-8501-9
Evaluating the science and ethics of research on humans; a guide for IRB members.
Mazur, Dennis J.
Johns Hopkins U. Press, ©2007 252 p. $29.95 (pa)
Using his experience as with the IRB of the Department of Veteran Affairs Medical Center in Portland, Oregon, Mazur (medicine, Oregon Health and Science U.) aims to help members of institutional review boards–especially new ones–understand their role in judging whether research projects should be allowed to proceed. He focuses on the areas of drugs, medical devices, survey research, behavioral research, and genetic information, and goes over the questions asked, process of decision-making, and approaches to protecting participants. Coverage also includes a discussion of the scientific protocol and informed consent form, ethical issues, feedback, and minimizing mistakes.

R853 2006-030225 978-1-57444-610-4
Handbook of regression and modeling; applications for the clinical and pharmaceutical industries.
Paulson, Daryl S. (Biostatistics; 18)
Chapman & Hall/CRC, ©2007 503 p. $99.95
Writing for researchers in the pharmaceutical, applied microbiological, and healthcare-product-formulation industries, Paulson (Bioscience Laboratories, Inc) describes the use of linear regression models that are more complicated than the simple models he included in his 2003 *Applied Statistical Designs for the Researcher* (Marcel Dekker, Inc). After introducing basic statistical concepts and simple linear regression, he discusses multiple linear regression procedures and matrix algebra, aspects of correlation analysis and partial correlation analysis, common problems of multiple linear regression such as multiple collinearity and ridge regression bias, polynomial regression and its uses, residual analysis, the use of indicator or dummy variables, forward and stepwise selections of *x<in>i* and backward elimination in statistical software, and covariance analysis.

R856 2006-038741 978-0-470-01595-7
Medical device epidemiology and surveillance.
Title main entry. Ed. by S. Lori Brown et al.
John Wiley & Sons, ©2007 501 p. $225.00
Medical device epidemiology is a developing field that encompasses the use and public

health impact of medical devices, device use in various populations, post-market studies on medical device safety and effectiveness, and the development of research methodology to describe and study medical device issues. Surveillance refers to the monitoring of medical device safety by the US Food and Drug Administration. Brown (Center for Devices and Radiological Health) collects perspectives on the field from contributors representing the medical device industry, academia, and consumer advocacy. In addition to general information, the book offers epidemiological studies on specific devices, including cochlear implants, drug-eluting stents, hemostatic devices, contact lenses, breast implants, and electronic fetal monitors. The book will be of interest to clinicians, researchers, device manufacturers, and regulatory agencies.

R857 978-3-527-31388-4
Nanomaterials for biosensors.
Title main entry. Ed. by Challa S.S.R. Kumar. (Nanotechnologies for the life sciences; v.8)
Wiley-VCH, ©2007 408 p. $175.00
Scientists mostly from the US and East Asia explore biomolecular sensing using a variety of nanomaterials, such as carbon nanutubes, nanowires, nanocantilevers, fullerenes, dendrimers, and metallic and quantum dot nanoparticles. Some look at using nanomaterials for enhancing the capabilities of conventional biosensing platforms, while others consider newer approaches such as biomimetic and reagent-less biosensing. The series is projected to comprise 10 volumes.

R857 2006-031905 978-0-8493-3759-8
Smart biosensor technology.
Title main entry. Ed. by George K. Knopf and Amarjeet S. Bassi. (Optical science and engineering; 118)
CRC / Taylor & Francis, ©2007 636 p. $139.95
A smart biosensor, as Knopf (mechanical and materials engineering, U. of Ontario, Canada) and Bassi (chemical and biochemical engineering, U. of Ontario) define it, is "a compact analytical device that combines a biological, or biologically derived, sensing element with an electrical, optical, or chemical transducer." Stressing that it is the synergistic functional integration of component parts that makes a biosensor "smart," they present 23 chapters that together provide a multidisciplinary perspective on the field. Opening chapters discuss the intelligent properties of biological macromolecules, optical methods of single molecule detection, nanoscale optical biosensors and biochips for cellular diagnostics, conducting polymer nanowire- based biomolecular field-effect transistor, machine learning and smart biosensor functions, and neuronal network biosensors. Seven chapters then address issues of material design and selection, followed by a section on bioelectronics. The volume concludes with six chapters on applications in detection and monitoring, including optical biosensors in foodborne pathogen detection, multiarray biosensors for toxicity monitoring and bacterial pathogens, approaches to allergy detection using aptasensors, biosensors for virus detection, and detection of influenza.

R857 978-1-59693-124-4
Systems bioinformatics; an engineering case-based approach. (CD-ROM included)
Title main entry. Ed. by Gil Alterovitz and Marco F. Ramoni.
Artech House, ©2007 386 p. $95.00
Beginning from an engineering perspective and written for engineering students, this textbook presents applications in systems bioinformatics, the intersection of systems biology and bioinformatics. The approach adopted by the editors (both of Harvard Medical School) is to match familiar engineering ideas, such as analysis, design, and reverse engineering with their applications in systems bioinformatics. Thus, a section on signal processing addresses biological signal processing and signal processing methods for mass spectrometry, a section on control and systems explores modeling cellular networks, and a section on probabilistic data networks and communications contains chapters on topological analysis of biomolecular networks and on Bayesian networks for genetic analysis. Other topics addressed include fundamentals of design for synthetic biology, applied cellular engineering, DNA/RNA sequence hybridization, biomolecular computing and cryptography, and chemotaxis. The CD-ROM contains a variety of computer programs for data analysis, modeling, and other purposes.

HEALTH, MEDICINE

RA652 2006-053118 978-0-470-06812-0
Disease surveillance; a public health informatics approach.
Title main entry. Ed. by Joseph S. Lombardo and David Buckeridge.
John Wiley & Sons, ©2007 458 p. $105.00
The AIDS pandemic, emerging diseases, proliferation of antibiotic-resistant microbes, and possibility of bioterrorism have made complacency about having conquered dread diseases of the past dangerous. Following an

introduction to the growing role of informatics in public health disease surveillance, Lombardo (bioinformation systems, Johns Hopkins U. Applied Physics Laboratory) and Buckeridge (epidemiology, biostatistics, and occupational health, McGill U., Montreal, Canada) present a dozen North American perspectives on surveillance systems utilizing the latest analytical tools and information technology. Issues discussed include data acquisition, sharing, and comparison via algorithms approaching real-time analysis. Chapters include screen captures from computer simulations of the spread of diseases, case studies from developed and developing countries, and study questions.

TECHNOLOGY (GENERAL)

T11 978-0-471-72509-1
How to prepare defense-related scientific and technical reports; guidance for government, academia, and industry.
Rice, Walter W.
John Wiley & Sons, ©2007 342 p. $59.95
Rice (applied physics laboratory, Johns Hopkins U.) provides a comprehensive guide to the exacting art and craft of preparing technical reports to the DoD, right down to the page formats and approved abbreviations. He covers the official standards, organization and design, including visuals, front matter such as the title page and authoring, notices, intelligence control markings, abstracts, logos, tables of contents, the body of the report including the executive summary, and back matter such as indices, appendices and bibliographies. The references are well-chosen and the appendices include an explanation of the workings of the Defense Technical Information Center.

T55 2006-922867 1-58603-599-1
Intelligent textiles for personal protection and safety.
Title main entry. Ed. by Sundaresan Jayaraman et al.
(NATO security through science series; D, Information and communication security; v.3)
IOS Press, ©2006 147 p. $108.00
These textiles will not warn you that your tie clashes with your shirt, or that this is the same dress you wore to last year's Christmas party. Rather, they are designed for combating terrorism and protecting ordinary citizens, first responders, and soldiers from danger. New materials are sorely needed, because the old ones are somehow not getting to the people who need them. Nine papers look at the wearable motherboard, flexible displays on textiles, optical chemical sensors, the ergonomics of protective clothing, and other topics. There is no subject index.

T56 2007-004422 978-0-9792343-8-5
The road to integration; a guide to applying the ISA-95 standard in manufacturing.
Scholten, Bianca.
ISA, ©2007 235 p. $99.00 (pa)
The ISA-95 standard of integrating enterprise and control systems was developed in the 1990's to reduce the risks, costs, and errors involved in implementing manufacturing control systems and integrating them with enterprise resource planning (ERP) systems. This work explains how to apply ISA-95 in manufacturing enterprise systems (MES) and vertical integration projects, and covers the latest ISA-95 models and terminology. The book's discussion of ISA-95 in the broader context of modern information exchange technologies will be useful for project managers, consultants, programmers, and information architects. Scholten is a consultant in information and communication technology and management.

T174 2006-032327 978-1-905209-55-2
Innovation engineering; the power of intangible networks.
Title main entry. Ed. by Patrick Corsi et al.
ISTE Ltd., ©2006 400 p. $190.00
Contributors in such diverse areas as engineering, technology transfer, artificial intelligence, and marketing look at the historical and theoretical bases of innovation engineering, detail the methods and technologies used to apply innovation in enterprises, and explore the human and social dimensions of innovation projects. Some specific topics discussed include community-based collaborative environments, virtual reality technologies for innovation, intellectual property for networks and software, financing innovation, and a virtual decision support system for innovation. Corsi is affiliated with Angers University, France. The book is distributed in the US by the Independent Publishers Group.

T385 2006-027649 978-0-471-78629-0
Enhanced visualization: making space for 3-D images.
Blundell, Barry G.
Wiley-Interscience, ©2007 425 p. $100.00
Physicist and engineer Blundell continues his long interest in three-dimensional display and interactive systems by focusing on two general classes of such displays: volumetric systems in which images may be depicted within a transparent physical volume, and varifocal systems that support the formation

of images within a virtual space. Chapters discuss such topics as aspects of the visual system, subtypes such as low parallelism swept-volume systems, and the graphics pipeline and interaction issues. The Investigations at the end of each chapter could well serve as exercises for graduate or undergraduate classroom use.

ENGINEERING (GENERAL, CIVIL)

TA168 2006-007920 1-60021-119-4
Systems engineering using swarm particle optimisation.
Title main entry. Ed. by Nadia Nedjah and Luiza de Macedo Mourelle. (Intelligent systems engineering)
Nova Science Publishers, ©2007 135 p. $89.00
The "ant colony optimization" (ACO) is a probabilistic technique for solving computational problems which can be reduced to optimal paths, in the manner of ants finding the shortest path to food by laying down pheromone trails. Particle swarm optimization (PSO), in contrast mimics fish with particles in multidimensional space; the particles have a position and a velocity. This collection of articles describes both processes as they are planned and engineered with topics such as a meta-heuristic for subset selection problems, beam angle optimization, fast exponentiation, dynamically reconfigurable sensor electronics and diffusion controlled cellular automaton performing mesh partitioning.

TA355 2006-100170 978-1-4200-5317-3
Computer techniques in vibration.
Title main entry. Ed. by Clarence W. de Silva.
CRC / Taylor & Francis, ©2007 $69.95
This is a reference guide for engineers, technicians, researchers, and others on computer techniques, tools, and signal analysis for understanding mechanical vibration. De Silva (U. of British Columbia, Canada) presents six chapters covering numerical techniques, vibration modeling and software tools, computer analysis of flexibly supported multibody systems, finite element applications in dynamics, vibration signal analysis, and concepts and applications of wavelets. Significant information and results are summarized in windows, tables, graphs, and lists and application examples are provided throughout.

TA417 2006-032329 978-1-905209-69-9
Advanced ultrasonic methods for material and structure inspection.
Title main entry. Ed. by Tribikram Kundu.
ISTE Ltd., ©2007 393 p. $180.00
Kundu (civil engineering and engineering mechanics, U. of Arizona) compiles 10 chapters that cover new developments in ultrasonic research for material and structure inspection, with application in engineering and biological materials, including ultrasonic NDE and other areas that go beyond traditional imaging techniques of internal defects. New inspection and material characterization techniques are presented as well. Contributors from the US, Europe, and Japan who work in the fields of engineering discuss failure mechanisms, current techniques, the analysis of impact damage, the measurement and interpretation of the ultrasonic properties of soft biological tissues, monitoring corrosion and erosion, modeling, wave propagation characteristics, health monitoring, acoustic signal modulation, and measuring the dynamic response of materials. Distributed in the US by the Independent Publishers Group.

TA417 978-1-55899-944-2
Materials research at high pressure; proceedings.
Symposium on Materials Research at High Pressure (2006: Boston, MA) Ed. by M. Riad Manaa et al. (Materials Research Society; 987)
Materials Research Society, ©2007 199 p. $113.00
The 25 papers report on developments in high-pressure material research since the previous Society conference in 1997. Among the areas they consider are the synthesizing new superhard materials, chemical reactions in molecular crystals at high pressure, biological systems under strain, liquid-liquid transformations, and ionization and conductivity phenomena under extreme conditions.

TA418 978-3-527-31299-3
Hybrid materials; synthesis, characterization, and applications.
Title main entry. Ed. by Guido Kickelbick.
Wiley-VCH, ©2007 498 p. $190.00
This work has been produced by Kickelbick (Institute of Materials Chemistry, Vienna U. of Technology, Austria) and his contributors as a "broad and educational" introductory text on the topic of hybrid materials and nanocomposites for graduate students and scientists that have no prior experience with the topic. It covers basic synthetic and characterization approaches and provides an overview of potential applications. Eleven chapters specifically discuss nanocomposites of polymers and inorganic particles, hybrid organic/inorganic particles, intercalation compounds and clay nanocomposites, porous hybrid materials, sol-gel processing of hybrid organic-inorganic materials based on polysilsesquioxanes, natural and artificial hybrid materials, medical

applications, optical applications, electronic and electrochemical applications, and inorganic/organic hybrid coatings.

TA418 2006-299261 0-470-03188-3
Microporomechanics.
Dormieux, Luc et al.
John Wiley & Sons, ©2006 328 p. $175.00
Microporomechanics is concerned with the investigation of the mechanics and physics of multiphase porous materials at the micro scale. Aimed at research scientists and engineers as well as graduate students, this text provides a thorough introduction to the field, describing its fundamental concepts and exploring some more recent theories. A sampling of topics includes micro-to-macro diffusive transport of a fluid component; linear microporoelasticity; non-saturated microporomechanics; and microporofracture and damage mechanics. Dormieux is affiliated with the Ecole Nationale des Ponts et Chaussées, France.

TA418 2006-027643 978-0-471-77276-7
Microbiologically influenced corrosion.
Little, Brenda J. and Jason S. Lee. (Wiley series in corrosion)
Wiley-Interscience, ©2007 279 p. $80.00
Little and Lee (marine molecular processes and materials and corrosion engineering, Naval Research Laboratory, Stennis Space Center) discuss microbiologically influenced corrosion in a volume meant for scientists, engineers, researchers, designers, managers, and operators. They summarize material from several disciplines that use electrochemical, metallurgical, surface analytical, microbiological, biotechnological, and biophysical analyses. This material relates to biofilm formation, causative organisms, electrochemical techniques, diagnosing and monitoring, the impact of alloying elements, and design features. Case histories for general and specific environments and industries are provided. Also covered are nonmetallics and the control or prevention of microbiologically influenced corrosion. It is assumed that readers have a basic understanding of corrosion processes.

TA418 2006-024024 978-0-471-72405-6
Synthesis, properties, and applications of oxide nanomaterials.
Title main entry. Ed. by José A. Rodríguez and Marcos Fernández-García.
Wiley-Interscience, ©2007 717 p. $135.00
Due to their limited size and high density of corner or edge surface sites, oxide nanoparticles can exhibit unique physical and chemical properties that promise potential in a broad range of technological applications, including sorbents, sensors, fuel cells ceramic materials, photo-devices, as well as catalysts for reducing environmental pollution, transforming hydrocarbons, and producing H<in>2. The 22 chapters presented in this volume by Rodríguez (senior chemist, Brookhaven National Laboratory, US) and Fernández-García (Institute of Catalysis and Petrochemicals, Spain) cover a number of topics related to these materials, beginning with fundamental quantum-mechanical and thermodynamic aspects determining the behavior and growth modes of nanostructured oxides. Following these fundamental issues, it offers chapters examining liquid-solid and gas-solid transformation in the synthesis and preparation of metal-oxide nanoparticles and techniques for their study and characterization. Chapters on physicochemical properties discuss oxide particle stability and chemical reactivity, adsorption of probe molecules on nanostructured oxides, surface adsorption studies from gas- and liquid-phase environments, and transport properties and oxygen handling. Finally, industrial and technological applications are reviewed, including all of those mentioned above.

TA459 2006-044676 1-57444-634-7
Advanced structural materials; properties, design optimization, and applications.
Title main entry. Ed. by Wole Soboyejo. (Materials engineering)
CRC Press, ©2007 512 p. $139.95
In aerospace, biomedical, automotive, sporting goods, and other industries, structural metallic materials and their fracture properties are becoming increasingly important to designers, engineers, and researchers. This collection of 14 articles takes the needs of the variety of disciplines and applications involved with structural metallic materials into consideration by using accessible language and examples to describe new research into such topics as small scale contact and adhesion in nano- and bio-systems, mechanical characterization of thin film materials for MEMS devices and porous metallic materials. Advances presented include glass formation abilities of certain alloys, applications of shape-memory alloys, cobalt alloys and composites, aluminum alloys, metal matrix composites and titanium alloys, with special attention to high-temperature materials such as niobium alloys and composites, Mo-Si-B alloys for ultrahigh temperature applications, and nickel-based alloys.

TA460 2006-929310 978-1-84564-065-1
Plasticity of cold worked metals; a deductive approach.
Paglietti, A.
WIT Press, ©2007 173 p. $125.00
Plasticity theory is a tool used in structural analysis to evaluate the ultimate strength and the post-elastic behavior of ductile structures, explains Paglietti (strength of metals and engineering, U. of Cagliari, Italy), but its application to real materials is undermined by the evolution law of the yield surface, also known as the work-hardening rule, which lacks realistic rules that can be entered into analysis algorithms. He addresses the work-hardening problem starting from a few elementary facts and working out their inescapable consequences until a practical solution is obtained. He focuses on von Mises materials, a class to which most metals belong, but the wily engineer should be able to apply his method to other ductile materials as well. The US office of WIT Press is Computational Mechanics.

TA492 2006-020963 978-1-905209-54-5
Fatigue life analyses of welded structures.
Lassen, Tom and Naman Récho.
ISTE Ltd., ©2006 407 p. $170.00
Taking most of the examples form the offshore oil industry, this text by Lassen (U. of Stavanger, Norway) and Récho (National Center for Scientific Research, France) introduces fatigue analysis of steel structures made by fusion welding. They describe basic understandings of fatigue behavior based on theoretical considerations and experimental results and present a fracture mechanics approach with numerical computations together with the S-N approach, which measures the magnitude of a cyclical stress (S) against cycles of failure (N). Uncertainties in crack growth and life predictions are discussed in terms of reliability modeling and risk assessments, as well as the random nature of the fatigue damage process and stochastic modeling. Finally, recent advances are covered in chapters on a new type of S-N curve, physical modeling of the entire fatigue process, a notch stress field approach to the prediction of fatigue life, multi-axial fatigue of welded joints, and the effects of overloads on fatigue life. Distributed in the US by the Independent Publishers Group.

TA640 2006-026708 978-0-7844-0850-6
Modeling complex engineering structures.
Title main entry. Ed. by Robert E. Melchers and Richard Hough.
Am. Society of Civil Engineers, ©2007 359 p. $120.00
This work gives an overview of the latest developments in computational theory and techniques as currently applied in various fields of structural analysis in the US and around the world. A discussion is also included, at a practical level, of concepts of uncertainty in system representation and the implications for performance and safety. Material is accessible to readers with experience at the student or practitioner level in at least one area of structural analysis. The book's cross-disciplinary presentation is designed to stimulate cross-fertilization of modeling approaches, computational techniques, and ways of viewing satisfactory performance. Melchers teaches civil engineering at the University of Newcastle, Australia. Hough teaches multidisciplinary design at the University of New South Wales, Australia.

TA1630 978-1-59693-092-6
Statistical multisource-multitarget information fusion.
Mahler, Ronald P. S. (Artech House information warfare library)
Artech House, ©2007 856 p. $139.00
Mahler applies his decades of experience in tactical systems along with his expertise in theory to this all-inclusive resource on finite-set statistics (FSST), a new method that unites much of information fusion under a single Bayesian paradigm. He focuses on the needs of practitioners for complete information on unified single-target multisource integration, including single-target filtering, general data modeling, random set uncertainty representation, measurements of UGA and AGA as well as AGU, generalized state estimates and finite-set measurements, then covers unified multitarget multisource integration in terms of conventional filtering, calculus, likelihood functions, Markov densities, and the Bayes filter. He closes with approximate multitarget filtering including particle and moment approximation, and Bernoulli approximation. Each chapter includes exercises, and Mahler supplies support information for such complex topics as Dirac delta functions, mathematical proofs, probability theory, gradient derivatives and Gaussian identity.

BUILDING CONSTRUCTION

TH1074 2006-024023 978-0-471-73426-0
Flame retardant polymer nanocomposites.
Morgan, Alexander B. and Charles A. Wilkie.
John Wiley & Sons, ©2007 421 p. $125.00
Materials scientists, chemists, and related researchers explore polymer nanocomposites designed for flammability applications for newcomers to materials flammability research and to polymer nanocomposites. They discuss the fundamentals of flammability and of nanocomposites, several specific flame retardant systems, recent developments in the science and technology, and current and potential applications.

MECHANICAL ENGINEERING & MACHINERY

TJ163 2006-016748 1-60021-261-1
Artificial intelligence in energy and renewable energy systems.
Title main entry. Ed. by Soteris Kalogirou.
Nova Science Publishers, ©2007 471 p. $79.00
Various applications of artificial intelligence are described for use in the modeling, prediction, and control of energy and renewable energy processes. International contributors in computer, electronics, and systems engineering explore areas such as artificial neural networks in solar thermal energy systems, the application of control algorithms for wind speed prediction and active power generation, learning control of fluidized-bed combustion processes for power plants, and the application of computational intelligence techniques to architectural and building acoustics. The editor is affiliated with the Higher Technical Institute of Cyprus.

TJ1058 2007-003333 978-1-905209-29-3
Mechanical vibrations; active and passive control.
Krysinski, Tomasz and François Malburet.
ISTE Ltd., ©2007 367 p. $180.00
Krysinki, a dynamics specialist in industry and Malburet, (engineering, l'Ecole Nationale superieure d'arts et metiers, France) use studies of helicopters as primary examples of suppression or reduction of vibration. Without extensive use of mathematics they describe sources of vibrations, unbalance and gyroscopic effects, the effects of piston engines, the dynamics of a rotor, rotor control, non-homokinetic couplings, aerodynamic excitations, suspensions and active suspensions, self-tuning systems, absorbers and self-adjusting absorbers, active absorbers, resonators and self-adapting resonators, and active systems. Distributed in the US by the Independent Publishers Group.

ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING

TK1081 978-0-470-10709-6
Elements of tidal-electric engineering.
Clark, Robert H.
Wiley-Interscience, ©2007 280 p. $130.00
While the rest of us were consuming fossil fuels distinguished practitioner Clark was studying and developing systems that use the tides to generate electricity, and has done so since 1950. One result is this, the first comprehensive treatment of tidal-electric power generation focusing on the feasibility study, including understanding the types and workings of tides, assessing the potential for tidal power and selecting an appropriate site, managing and organizing investigations, developing tidal power schemes and modes of operation, collecting and analyzing basic data, choosing hydraulic and numerical models, performing civil engineering and selecting electromechanical equipment, optimizing output, integrating output with electric utility systems, evaluating the economics of the project and its social and regional impact, and determining environmental aspects. Clark provides working case studies and describes potential developments and describes tidal generation optimization models.

TK5101 2006-033562 978-0-470-02441-6
Network convergence; services, applications, transport, and operations support.
Hanrahan, Hu.
John Wiley & Sons, ©2007 461 p. $110.00
Diminishing separations between fixed networks, mobile telephone networks, data communications, and enterprise networks have led to the development of the concept of next generation networks that will incorporate both telecommunications and information technology characteristics for new services and applications. Rather than simply describe these emerging technologies, Hanrahan (U. of Witwatersrand, South Africa) provides an analytic treatment of next generation networks that aims to establish concepts, principles, and architectural frameworks that can help guide the evolution of present day networks, services, and operations towards the future forms of next generation networks. Chapters discuss software methodologies for converged networks and services; managed voice over Internet Protocol networks; integrated enterprise information and communication technology systems; broadband Integrated

Services Digital Network, Telecommunication Information Network Architecture, and Telecommunications Internet Protocol Harmonization Over Networks; third generation mobile communication systems; opening the network using application programming interfaces; and operation support systems.

TK5103 2006-036016 978-0-8493-3924-0
Microwave photonics.
Title main entry. Ed. by Chi H. Lee. (Optical science and engineering series; no.124)
CRC / Taylor & Francis, ©2007 422 p. $129.95
Microwave photonics is the study of photonic devices operating at microwave or millimeter wavelengths and even terahertz frequencies, and their use in microwave or photonic systems. Electrical and electronic engineers, practicing and research, review the current status for the benefit of people just entering the field, which began slowly during the 1980s and in many ways is still not mature. Their topics include femtosecond all-optical devices for ultrafast communication and signal processing, concepts and prospects of hybrid fiber radio, and tera sampler-per-second time-stretched analog-to-digital conversion.

TK5103 978-1-58053-641-7
OFDM towards fixed and mobile broadband wireless access.
Jha, Uma Shanker and Ramjee Prasad. (Artech House universal personal communications series)
Artech House, ©2007 200 p. $119.00
Practitioners and managers Jha and Prasad describe what works behind the next wave of broadband wireless access technology, including the standards developed in IEEE 802.16. With accessible text and illustrations they introduce wireless network classifications, range, signaling, infrastructure, WiMAX, WiBri, and new high-data rate wireless communications technologies. They describe and analyze orthogonal frequency division multiplexing systems and their issues, including frequency-hopping, orthogonal frequency division multiple access schemes, broadband wireless access fundamentals, fixed broadband wireless access, and mobile broadband wireless access, giving a wide variety of current and future applications for each, along with relevant standards. The result is a well-balanced approach to learning complex concepts and standards, so this will serve as a text, self-study guide and reference for some time to come.

TK5103 978-0-470-06533-4
UMTS signaling; UMTS interfaces, protocols, message flows and procedures analyzed and explained, 2d ed.
Kreher, Ralf and Torsten Rüdebusch.
John Wiley & Sons, ©2007 553 p. $155.00
Thoroughly updated to reflect new developments and practices and redesigned for ease of use by professionals and students, this foundational guide to universal mobile telecommunications systems addresses trial, deployment, operation and troubleshooting, the biggest challenges for designers and engineers. Concentrating on the needs of engineers in network operations, integrators, system suppliers and graduate students specializing in telecommunications, this covers the basics in standards and network architecture, interfaces, domain architecture, security, user plane protocol, medium access protocol, radio access network applications, terminal adaptation functions, network modeling and troubleshooting, signaling procedures with a variety of other standards and devices, and signaling procedures in the 3G core network. The authors, both master practitioners are especially proficient in explaining what can be confusing standards by relating their application to real world situations. The illustrations are especially clear and helpful.

TK5103 2006-040493 0-8493-3188-9
Wireless crime and forensic investigation.
Kipper, Gregory.
Auerbach Publications, ©2007 251 p. $79.95
Consultant Kipper writes for his fellow consultants, private investigators, and information technology security professionals but also considers those who need to know about the current technologies, including personal area networks, wireless local area networks, metropolitan area networks, and wide area networks. He covers the various wireless threats, vulnerabilities, security, crime fighting, digital forensic principles and wireless forensics and the wireless future. Within each topic he describes situations, features and devices and the means of deflecting, detecting and investigating the eavesdropping and information-gathering methods that apply in each case. Distributed by Taylor & Francis.

TK5103 2006-100063 0-8493-8771-X
Wireless security and cryptography; specifications and implementations.
Sklavos, Nicolas and Xinmiao Zhang.
CRC / Taylor & Francis, ©2007 400 p. $89.95
Researchers in electronics and computer science point out key issues that need to be addressed in order to achieve desirable levels of security in wireless communications, where devices are becoming a bit cramped for security software developed for systems with a little more leg room. Their goal is to help develop protocols and approaches that can be used in the next several generations of wireless systems. Among the topics are hardware design issues in elliptic curve cryptography, a security enhancement layer for Bluetooth, and binary algorithms for multiplicative inversion.

TK5105 978-0-470-08460-1
Collaborative process improvement; with examples from the software world.
Yeakley, Celeste Labrunda and Jeffrey D. Fiebrich.
Wiley-Interscience, ©2007 178 p. $60.00 (pa)
Designed as a guidebook with plenty of practical advice, this puts quality awareness into human terms, something you do not always see in the software world. Practitioners Yeakley and Fiebrich take readers step by step through the process of creating and running a process improvement program, starting with thoroughly understanding the situation onsite and preparing the first steps, including proposing the process and establishing leadership. They describe finding advocates and champions, initiating the program, training the organization, addressing quality issues, acknowledging cultural diversity, managing change, encouraging perpetual process improvement, engaging with supporters and detractors, assessing and evaluating progress, rewarding and recognizing wok, building meaningful quality indicators, and realigning your site with the world. This could also serve as an in-service or seminar text.

TK5105 2004-108262 1-58705-208-3
Penetration testing and network defense.
Whitaker, Andrew and Daniel P. Newman. (Cisco Press networking technology series)
Cisco Press, ©2006 598 p. $60.00 (pa)
Also known as "ethical hacking," penetration testing aids in the assessment of an organization's network security by simulating a malicious attack. This text guides practitioners through the development of a testing plan and then discusses a number of commonly used methods. These include (for example) performing social engineering, attempting session hijacking, cracking passwords, using Trojan horses, and penetrating wireless networks. A template for creating a security policy is provided in the appendix. The authors are consultants specializing in Cisco and security technologies.

TK6590 978-1-59693-206-7
Dielectric resonator antenna handbook.
Petosa, Aldo. (Artech House antennas and propagation library)
Artech House, ©2007 308 p. $119.00
The final two decades of the 20th century saw the emergence of the dielectric resonator antenna as a viable alternative to conventional low-gain elements such as dipoles, monopoles, and microstrip patches. Petosa (antenna design and development, Communications Research Centre, Canada) synthesizes the growing body of knowledge about them into a single volume that can serve as a textbook or a design handbook. The example designs use simple equations for graphs to allow rapid design without resort to complex analytical or numerical calculations.

TK7868 978-0-470-10761-4
Instantaneous power theory and applications to power conditioning.
Akagi, Hirofumi et al.
Wiley-Interscience, ©2007 379 p. $100.00
The concept of instantaneous active and reactive power was first elaborated in Japan in 1982, and has been considerably modified since then for three-phase four-wire circuits, circuits more than three-phase, and power electronics equipment. Electrical engineers Akagi (Tokyo Institute of Technology), Edson Hirokazu Watanabe, and Mauricion Aredes (both Federal U. of Rio de Janeiro, Brazil) have been among the pioneer researchers, and here undertake what is apparently the first comprehensive reference on the theory and its applications in controllers of compensators that are generically classified here as active power line conditioners.

TK7871 2006-299994 978-0-470-03255-8
Ultra-wideband; antennas and propagation for communications, radar and imaging.
Title main entry. Ed. by Ben Allen et al.
John Wiley & Sons, ©2007 475 p. $135.00
The proper design of commercial ultra-wideband (UWB) devices of civil areas of data communication, imaging, and radar requires an in-depth understanding of the both the UWB communication channel and the antenna elements. Combining theoretical treatment with practical examples, the editors (affiliated with

France Télécom R&D and the UK's U. of Oxford, U. of Manchester, and BAE Systems Advanced Technology Centre) present 21 chapters, beginning with discussions of fundamental electromagnetic theory, basic antenna elements, antenna arrays, beamforming, and antenna diversity techniques. They then present a section on antennas for UWB communications covering the theory of UWB antenna elements, antenna elements for impulse radio, planar dipole-like antennas for consumer products, UWB antenna elements for consumer electronic applications, UWB arrays, and UWB beamforming. Propagation measurements and modeling is discussed in chapters on analysis of UWB signal attenuation through typical building materials, large- and medium-scale propagation modeling, small-scale UWB propagation modeling, antenna design and propagation measurements and modeling for UWB wireless body area networks, and UWB spatial channel characteristics. The remaining contributions introduce localization in non-line of sight scenarios with UWB antenna arrays, antennas for ground-penetrating radar, wideband antennas for biomedical imaging, and UWB antennas for radar and related applications.

TK8360 2007-000344 978-0-8194-6535-1
High-operating-temperature infrared photodetectors.
Jozef Piotowski and Antoni Rogalski. (Press monograph; 169)
SPIE, ©2007 240 p. $69.00 (pa)
Cryogenic cooling has always been a challenging part of sensitive infrared (IR) systems, adding weight, size, cost, power consumption and inconvenience to what is otherwise an efficient and efficacious design. Concentrating on the latest developments for efficiently cooling detectors that operate in the middle- and long-wavelength IR spectrum, practitioner Piotowski and Rogalski (applied physics, Military U of Technology, Warsaw) describe innovations in the cooling of many types of IR photodetectors with emphasis on HgCdTe alloy based detectors. They describe the fundamental performance limitations of IR photodetectors, materials used for and the operation of intrinsic photodetectors, and applications to a range of devices including photoconductors, photoelectromagnetic and Denber effect detectors and photodiodes. They include commentary on the innovations to date and a summary of what we can expect shortly. Although written primarily for graduate students, this can also serve as a reference for practitioners.

MOTOR VEHICLES, AERONAUTICS, ASTRONAUTICS

TL152 2006-016747 1-60021-260-3
Intelligent vehicle systems; a 4D/RCS approach.
Title main entry. Ed. by Raj Madhavan et al.
Nova Science Publishers, ©2006 342 p. $79.00
The editors (all presently or formerly of the Intelligent System Division of the Manufacturing Engineering Laboratory at the National Institute of Standards and Technology) present ten chapters that describe current autonomous mobility capabilities for ground vehicles together with anticipated advances and explain the theoretical foundations and engineering approaches underpinning these capabilities. Topics addressed include a methodology for the derivation and organization of knowledge for real-time control systems, behavior generation, world modeling and knowledge representation, sensory processing, temporal registration of sensed range images for autonomous navigation, advanced laser detection and ranging for driving unmanned ground vehicles, standards-based architectural framework for intelligent autonomous vehicles, performance evaluation of autonomous mobile robots, and the development of the Department of Defense's autonomous robotic ground vehicles.

TL573 2007-001438 978-1-56347-875-8
Modeling and simulation of aerospace vehicle dynamics, 2d ed.
Zipfel, Peter H.
Am. Inst. of Aero. & Astro., ©2007 567 p. $94.95
Aerospace engineer Zipfel (U. of Florida) takes a two track approach to teaching modeling and simulation to aerospace students and professionals. First, he deals with invariant modeling of flight dynamics, laying out the mathematical foundations of modeling with Cartesian tensors, matrices, and coordinate systems. This part of the text uses the rotational time derivative and the Euler transformation of frames to formulate equations of motions in tensor form, Newton's law to yield the translational equations, and Euler's law to produce the attitude equations. Perturbation equations and aerodynamic derivatives complete the discussion of modeling. The second part applies these concepts to computer simulations of aerospace vehicles, from simple three-degrees-of-freedom trajectory simulations of hypersonic aircraft, rockets, and single-stage-to-orbit

vehicles to six-degrees-of-freedom simulations of hypersonic aircraft and missiles. He matches aerodynamics, autopilots, actuators, inertial navigation systems, and seekers with the full translational and attitude equations of motion.

CHEMICAL TECHNOLOGY

TP9 978-3-527-31605-2
Ullmann's modeling and simulation.
Title main entry.
Wiley-VCH, ©2007 443 p. $190.00
Based on the latest online edition of Ullmann's Encyclopedia of Industrial Chemistry (including some unpublished articles), this volume serves as a comprehensive survey of mathematical fundamentals, complementary computational approaches, and applications of modeling and simulation in chemistry and engineering. Contributors in sciences and engineering from the US and France provide articles on mathematics in chemical engineering, model reactors and their design equations, mathematical and molecular modeling, molecular dynamics simulation, computational fluid dynamics, the design of experiments, and microreactors. Both subject and author indexes are provided.

MANUFACTURES

TS228 2007-060365 978-0-87170-840-3
Friction stir welding and processing.
Title main entry. Ed. by Rajiv S. Mishra and Murray W. Mahoney.
ASM International, ©2007 360 p. $199.00
First applied to aluminum alloys about 15 years ago, friction stir welding/processing (FSW/P) has built up an impressive amount of data but until now that data has not been compiled into one set of detailed references. This accessible review of the state of the art describes a young technology but does so in depth, with 15 chapters covering friction stir tooling, temperature distribution and resulting metal flow, microstructure development in aluminum allow friction stir welds and the alloys' mechanical properties, friction stir welding of ferrous and nickel alloys, microstructure and mechanical properties of friction stir welded titanium and copper alloys, corrosion in welded aluminum alloys, process modeling, robots and machines for FSW/P, friction stir spot welding, application of welding to related technologies, friction stir processing and the future of FSW/P.

MILITARY SCIENCE

UG479 978-1-59693-081-0
Concepts, models, and tools for information fusion.
Bossé, Éloi et al. (Artech House intelligence and information operations library)
Artech House, ©2007 376 p. $129.00
The ever-increasing amount of raw data and information in the contemporary world poses a significant challenge to command and control systems for military and public security operations, necessitating practices of data and information fusion, broadly characterized by the authors (of DRDC Valcartier, a Canadian military research organization, and the Defence Science and Technology in Organisation in Australia) as "the process of utilizing one or more data sources over time to assemble a representation of aspects of interest in an environment." These "aspects of interest" include traditional issues of military target tracking and newer issues pertaining to biography, economy, society, transport and telecommunications, geography, and politics. Drawing on concepts from psychology, human factors, knowledge representation, artificial intelligence, mathematical logic, and signal processing, they provide an explanation of data and information fusion for command and control systems. Concepts, definitions, and models are introduced, followed by discussion of quantitative, qualitative, and hybrid approaches to information fusion. Finally, the authors review computational implementation of information fusion, covering such topics as the design and performance of information systems and concepts in knowledge-based and artificial intelligence systems that impact higher-level fusion processes.

UG479 978-1-58053-935-7
Counterdeception principles and applications for national security.
Bennet, Michael and Edward Waltz.
Artech House, ©2007 335 p. $119.00
Bennet (an intelligence consultant with both government and private sector experience) and Waltz (Intelligence Innovation Division, BAE Systems Advanced Technologies) provide a technical overview of the principles and practices of deception and counterdeception when dealing with foreign intelligence organizations. They first introduce the topic of deception, covering cognitive aspects and technical methods. Turning to counterdeception, they offer chapters on nontechnical approaches, technical methods, and organizational architectures and technologies. ❖