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Sci-Tech Book News Reviews

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Sci-Tech Book News Reviews Carol Lucke, Selector

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

GEOGRAPHY

G70 2007-050932 978-1-59385-565-9
A primer of GIS; fundamental geographic and cartographic concepts.
Harvey, Francis.
Guilford Pr., ©2008 310 p. $50.00
This textbook examines the choices considered when creating geographic representations and cartographic representations, transforming spherical coordinates to planar coordinates, and modeling geographic data. Harvey (geography, University of Minnesota) introduces the three generic options for recording the locations and characteristics of things and events, the principles of remote sensing, map design elements, and geostatistical methods. Fifteen color plates are provided in the middle of the book, while black and white images are scattered throughout.

PRODUCTION, INDUSTRY, COMMERCE

HD9502 2007-036185 978-1-60021-957-0
Energy outlook until 2030.
Title main entry. Ed. by Timothy A. Burlingame.
Nova Science Publishers, ©2007 326 p. $98.00
This volume reproduces the text of *Annual Energy Outlook 2007*, a report produced by the Energy Information Administration, the independent statistical agency within the US Department of Energy. The report presents long-term projections of energy supply, demand, and prices through 2030 that are based on results from EIA's National Energy Modeling System. In addition to summarizing projected energy market trends, it also includes discussion of evolving legislation and regulatory issues and key energy issues, such as the potential for biofuels in US transportation markets and the impact of rising construction costs on energy markets. The report is also available at the Energy Information Administration's website.

SCIENCE (GENERAL)

Q183 978-1-904275-32-9
Essentials of scientific computing; numerical methods in science and engineering.
Zalizniak, Victor.
Horwood Publishing, ©2008 218 p. $100.00 (pa)
Before a student or research scientist can master the idea of computer modeling, the basics of classical numerical methods must be learned. Zalizniak (Krasnoyarsk State U., Russia) reviews the various mathematical numerical techniques for students of engineering, physics and computer science, and shows how iterative processes, extrapolation and matrix factorization are related. An introduction to MATLAB is also included. Distributed in the US by ISBS.

Q336 2007-032031 978-1-59904-705-8
Artificial intelligence for advanced problem solving techniques.
Title main entry. Ed. by Dimitris Vrakas and Ioannis P. Vlahavas.
Information Science Reference, ©2008 370 p. $180.00
Vrakas and Vlahavas, both of the Aristotle U. of Thessaloniki, have written this book to teach IT researchers, system engineers, educators and students about the latest research on automated problem solving. Focusing on the development, programming and analysis of artificial intelligence software systems, the authors discuss optimization techniques, heuristics, constraint satisfaction, software configuration and planning. Emphasis is placed upon the relationship between advanced problem solving techniques and search categories.

Q342 2008-271034 978-0-470-10526-9
Computational intelligence in bioinformatics.
Title main entry. Ed. by Gary B. Fogel et al.
John Wiley & Sons, ©2008 355 p. $79.95
Bioinformatics has become increasingly useful in science and industry, but the limitations of traditional algorithms have made modeling difficult. At the same time, researchers have made significant advances in computational intelligence, and it appears from these 13 articles their work could significantly ease the current bottleneck. Papers address gene expression analysis and systems biology (including such topics as neural classifier and swarm intelligence in multi-class cancer diagnosis, gene expression profiles and evolutionary computation, clusters in gene expression data, and the application of evolutionary computing to gene networks), sequence analysis and feature detection (including fuzzy-granular models for identification of marker genes, evolutionary feature selection, fuzzy approaches to the analysis of CpG island methylation patterns), molecular structure and phylogenetics (including evolutionary algorithms in a variety of applications and machine learning approaches for prediction of human mitochondrial proteins), and medicine (featuring evolutionary algorithms for chemotherapy and fuzzy ontology text mining of biomedical texts).

MATH, COMPUTERS

QA9 2007-007725 978-0-521-70757-2
An introduction to many-valued and fuzzy logic; semantics, algebras, and derivation systems.
Bergmann, Merrie.
Cambridge U. Pr., ©2008 329 p. $36.99 (pa)
Suitable for graduate and advanced undergraduate courses, this opens with a succinct review of the philosophy of fuzzy logic, its history and scope. Bergmann (computer science emerita, Smith College) then reviews classical propositional logic, including its language and semantics, and the language and semantics of first-order logic. She then describes alternative semantics for truth-values and truth-functions (with numeric truth-values and abstract algebras), then covers the semantics of three-valued propositional logics, derivation systems for three-valued propositional logic, three-valued first-order logic semantics, derivation systems for three-valued first-order logic, alternative semantics for three-valued logic, fuzzy propositional logics, fuzzy algebras, semantics of fuzzy first-order logics, derivation systems for fuzzy first-order logic, extensions

of fuzziness and fuzzy membership functions. Bergmann provides exercises with each chapter.

QA76 978-89-31434-38-5
Windows Vista accelerated
Hart-Davis, Guy.
YoungJin.com, ©2007 314 p. $24.99 (pa)
Hart-Davis has been writing about computers, Windows, and widely-used programs for 15-plus years, and is the author of several books and an online newsletter. He offers users an accessible guide to the latest version of Microsoft's leading operating system, Windows Vista. Applicable to the Home Basic, Home Premium, Business, and Ultimate editions of Windows Vista, the text takes users step-by-step through the features: installing and upgrading to Windows Vista; navigating the user interface and running applications; working with files and folders; customizing Windows to suit individual needs; connecting to the internet and using Internet Explorer; enjoying music, video, DVD, and TV; using e-mail and Instant Messaging; managing hardware, printers, and fonts; handling security concerns; troubleshooting problems; and using the Windows Vista Ultimate features. Illustrated throughout with full-color, crisp screenshots and graphics.

QA76.5915 2007-037380 978-1-59904-840-6
Advances in ubiquitous computing; future paradigms and directions.
Title main entry. Ed. by Soraya Kouadri Mostefaoui et al.
IGI Publishing, ©2008 361 p. $99.95
We are now wired cradle to grave, or at least most of the time in between. The technological and social implications are immense, but fortunately the 12 articles in this look into the future are comprehensive, and they are drawn from those presented at the Third International Workshop on Ubiquitous Computing held in 2007. Topics include mobile phones and visual tags that link the physical world to the digital, context-aware mobile learning on the semantic web, model-driven development for pervasive information systems, device localization in ubiquitous computing environments, programmable ubiquitous computing environments from a middleware perspective, determinants of user acceptance for a ticketing system, kinetic user interfaces, mobile traffic information and monitoring systems, ambient business through open innovation in a ubiquitous computing world, activity-oriented computing, and threats to privacy in emerging applications. The editors include a comprehensive index.

QA76.76 2007-036760 0-7897-3727-2
100 things you need to know about Microsoft Windows Vista.
Geier, Eric.
Que Publishing, ©2008 204 p. $24.99 (pa)
Written for PC users with moderate Windows experience, this guide reviews the system requirements for upgrading to Vista, tours the new Windows interface, and explains what is different from Windows XP. Step-by-step instructions demonstrate how to revert to the Windows classic look, access desktop settings, find renamed applications, speed up performance with a USB flash drive, and capture screenshots.

QA76.9 2007-038084 978-0-393-06228-1
The big switch; rewiring the world, from Edison to Google.
Carr, Nicholas.
W.W. Norton, ©2008 278 p. $25.95
Just as electricity provision moved from a model of in-house generation to supply by utilities, Carr (a former executive editor of the *Harvard Business Review*) predicts that the world of information technology is undergoing a "big switch" to a utility-based model in which personal computers will become obsolete in the face of the World Wide Computer. He presents a wide-ranging analysis of the implications of the "big switch" for a general audience, examining likely impacts on corporate economies, consumer habits, software integration, media creation, war, democracy, religion, and other spheres of life.

QA76.9 2007-010253 978-0-470-04492-6
Handbook of applied algorithms; solving scientific, engineering, and practical problems.
Title main entry. Ed. by Amiya Nayak and Ivan Stojmenovic.
Wiley-Interscience, ©2008 544 p. $100.00
Providing a combination of theory, algorithms, and simulations, this handbook bridges the gap between algorithmic theory and its applications. It explains how to apply algorithms and discrete mathematics to practical problems in application areas such as computational biology, computational chemistry, wireless networks, and computer vision. It also covers adapt mining, evolutionary algorithms, game theory, and basic combinatorial algorithms and their applications. The book's 18 self-contained chapters contain chapter exercises. It can be used as a text for a graduate course in basic algorithmic, combinatorial, and graph theoretical subjects and their applications in other disciplines. It can also serve as a resource for researchers, practitioners, and students in computer science,

life science, and engineering. The authors are both affiliated with the University of Ottawa, Canada.

QA402 2007-061748 978-0-89871-643-6
Linear programming with MATLAB.
Ferris, Michael C. et al. (MPS-SIAM series on optimization; 7)
SIAM, ©2007 266 p. $45.00 (pa)
As part of the *MPS-SIAM series on Optimization*, this textbook introduces computer programmers and IT professionals to MATLAB software, and how it is used to develop algorithms and optimize mathematical applications. The authors, who all teach in the computer science department at U. of Wisconsin-Madison, show how to use MATLAB in a variety of applications, such as solving large linear problems, sensitivity analysis and parametric linear programming. A mathematical review is offered for those who need a refresher course in the basics of linear algebra and the simplex method.

ASTRONOMY

QB981 2007-282019 978-0-521-86875-4
Elements of string cosmology.
Gasperini, Maurizio.
Cambridge U. Pr., ©2007 552 p. $85.00
The fascinating and emerging science relating string theory's impact on the foundations of primordial cosmology are clearly presented in this detailed text. Designed to present string theory to astrophysicists and, in turn, cosmology to string theorists, the volume presents chapters on basic string cosmology equations, conformal invariance and string effective actions, duality symmetries and cosmological solutions, inflationary kinematics, and the string phase. Subsequent chapters describe scalar perturbations, the anisotropy spectrum of the CMB radiation, dilaton phenomenology, and elements of brane cosmology. Gasperini (theoretical physics, U. of Bari, Italy) has presented a Ph.D. course on this topic and organized the chapters and content accordingly, with more advanced topics and computations presented in separate appendices at the end of many of the chapters. The text is designed for teaching graduate courses, and will also be of interest to readers with basic knowledge of relativity and quantum field theory.

QB981 2007-033467 978-1-56881-309-7
The wraparound universe.
Luminet, Jean-Pierre.
AK Peters Ltd., ©2008 316 p. $39.00
An astrophysicist at the Paris-Meudon Observatory in France, Luminet champions one particular approach in a debate about the size and shape

of the universe—cosmic topology—that has been going on now for some 25 centuries. One consequence of a wraparound universe—he personally favors a spherical dodecahedron—is that the whole shebang may be a lot smaller than it looks. Eric Novak's translation of *Univers chiffonné*, published in 2001 by Librarie Arthème Fayard, includes corrections and an afterword reporting the latest observations.

PHYSICS

QC75 2007-030290 978-0-385-52069-0
Physics of the impossible; a scientific exploration into the world of phasers, force fields, teleportation, and time travel.
Kaku, Michio.
Doubleday, ©2008 329 p. $26.95
Kaku (theoretical physics, City University of New York), well known to viewers of science documentaries as an entertaining and understandable science interpreter, continues as such in this new book. He confesses his lifelong fascination with science fiction and the ideas of force fields, invisibility rays, hyperspeed space ships, time travel and more, and then examines each of these science fiction staples, concluding that one day we may manage almost all of them. Kaku writes in a conversational style with clear explanations of the physics involved. Happily, he also largely avoids irritating analogies, which generally confuse rather than clarify but are often used by scientists to explain their work to laymen. Kaku respects the intelligence of his readers, even if they haven't studied non-linear equations.

QC174   978-981-270-702-4
The physics of the Z and W bosons.
Tenchini, Roberto and Claudio Verzegnassi.
World Scientific, ©2008 419 p. $89.00
As an advanced study of the Standard Model of particle physics, Tenchini and Verzegnassi's textbook explains most of the properties of current reactions, including Flavour Changing Neutral Currents (FCNC) and Neutral Weak Currents. Through detailed and persistent explanations, the authors track the development in this field from the first theoretical proposal of the W boson to today's consistent and repeatable mathematical applications. Starting with weak current interactions, the book guides physics students through the characteristics of Z and W bosons within the Standard Model in a technical, straightforward manner. Tenchini is affiliated with INFN Pisa, Italy; Verzegnassi, with the U. of Trieste, Italy.

QC670 2007-050220 978-1-934015-20-9
Maxwell's equations and the principles of electromagnetism.
Fitzpatrick, Richard.
Infinity Science Press, ©2008 438 p. $69.95
Suitable for upper-division electromagnetism courses or as a professional reference, this gives readers a solid background before launching into Maxwell's equations and electromagnetic waves. Working with text, examples, and illustrations, Fitzpatrick (physics, U. of Texas, Austin) begins with vectors and vector fields, moving immediately to time-independent Maxwell equations. Time-dependent Maxwell equations, electrostatic calculations, dielectric and magnetic media, magnetic induction, electromagnetic energy and momentum, electromagnetic radiation, and relativity and electromagnetism. He provides information on physical constraints, useful vector identities, and Gaussian units in appendices, provides a concise list of further reading, and supplies summaries at the beginning and exercises at the end of every chapter. This is an accessible and well-organized treatment of an essential discipline.

QC688 2007-031117 978-0-8194-6961-8
Field guide to lasers.
Paschotta, Rüdiger. (SPIE field guides; v.FG12)
SPIE, ©2008 139 p. $37.00 (pa)
Intended for practicing engineers and scientists, this desktop reference reviews the construction, operation, and physics of laser beams, optical resonators, waveguides, and semiconductor, solid-state bulk, fiber, and gas lasers. Topics include gain saturation, Gaussian beams, diode bars and stacks, wavelength tuning, pulse generation, Q switching, mode locking, laser noise, and safety. Spiral binding.

QC793 2007-041605 978-1-56881-345-5
Beyond the nanoworld; quarks, leptons, and gauge bosons.
Dosch, Hans Günter.
AK Peters Ltd., ©2008 282 p. $39.00
Writing for readers with a general interest in science, Dosch (emeritus, physics, U. of Heidelberg, Germany) describes the development of particle physics in its search for particles and forces beyond the world of atoms and molecules (the nanoworld). He chronologically traces the history of the science in order to give readers a basic understanding of lepton, quarks, and gauge bosons, the elementary building blocks underlying atomic structure. He also discusses the ongoing search for the so-called Higgs boson, which must exist if the standard model

of particle physics is correct. In addition to providing readers with a basic understanding of these particles, he also aims to show how closely intertwined theoretical and experimental advances have been in the search for them.

QC871 2007-034585 978-0-8493-3588-4
Atmospheric acoustic remote sensing.
Bradley, Stuart.
CRC / Taylor & Francis, ©2008   271 p. $119.95
Used to determine wind speed, wind direction and turbulence in the atmosphere, sonic detection and ranging (SODAR) systems and radio acoustic sounding systems (RASS) apply sound waves as a methods of measurement. Devices with these features are increasingly popular in environmental applications as well to determine such measurements as ground-level pollution. Bradley (physics, U. of Auckland) reviews the basic science behind these systems first, then describes the working environment, which is atmosphere near the ground and sound in the atmosphere, and examines sound transmission and reception, SODAR systems and signal quality, SODA signal analysis, RASS systems, and applications in environmental and boundary layer research and measurements of wind power and loading, complex terrain and sound speed. For students and nonspecialist professions he gives the requisite mathematical background and also gives sample data sets and MatLab codes. Especially handy is an appendix on the installation of SODAR or RASS.

QC981   978-0-521-70597-4
Climate change 2007: impacts, adaptation and vulnerability. (CD-ROM included)
Title main entry. Ed. by Martin Parry et al.
United Nations Publications, ©2007   976 p. $85.00
Climate Change 2007 is the Fourth Assessment Report of the Intergovernmental Panel on Climate Change and consists of three main volumes. This volume addresses the impacts of climate change, the vulnerability of natural and human environments, and the potential for response through adaptation. It evaluates evidence that observed changes in the climate have already affected physical and biological systems; assesses potential impacts on ecosystems, water resources, agriculture and food security, human health, coastal and low-lying regions, industry, and settlements; provides assessment for the major regions of the world; discusses the relationship between

mitigation and adaptation; evaluates key vulnerabilities to climate change; and assesses aggregate damage levels and the role of multiple stresses. The other volumes discuss the physical science basis of climate change and mitigation strategies. The CD-ROM reproduces the report in electronic form. The paperbound edition is distributed in the US by the United Nations.

CHEMISTRY

QD196 2007-010102 978-1-60021-656-5
Inorganic polymers.
Title main entry. Ed. by Roger De Jaeger and Mario Gleria.
Nova Science Publishers, ©2007   925 p. $145.00
With interest increasing in inorganic macromolecules for their potential in industrial and technological applications, editors De Jaeger (U. des Sciences et Technologies de Lille, France) and Gleria (Instituto ISTM del CNR, Padova, Italy) decided to offer a follow-up to their 2004 book titled *Phosphazenes: A Worldwide Insight*. Nineteen contributed chapters (by authors based in Europe, the US, and Japan; their e-mail addresses are supplied) discuss silicones in industrial applications, nanostructured materials, photochemistry of polysiloxanes, polysilanes, polycarbosilanes, polysilazanes, chiral inorganic polymers, and luminescent dendrimers based on metal complexes, among other topics.

QD381 2007-029090 978-0-471-72543-5
Organic and physical chemistry of polymers.
Gnanou, Yves and Michel Fontanille.
Wiley-Interscience, ©2008 617 p. $100.00
The aim of this text is to break the traditional boundaries between polymer chemistry and the physical chemistry and physics of polymers. The text provides a thorough introduction to the fundamentals of polymers, including their structure and synthesis as well as their chemical and physical properties. Emphasis is on the nature of synthesis of polymer chains, polymers as a class of materials that exhibit both viscous and elastic behaviors, and the assembly of polymer chains. The book can be used as a text for advanced undergraduate and graduate students in physical and polymer chemistry, and as a practical reference for researchers and professionals in the polymer industry. Gnanou is director of research at the National Center for Scientific Research in Organic Polymer Chemistry at the University of Bordeaux, France. Fontanille is emeritus professor at the University of Bordeaux, France.

QD461 2007-024689 978-0-470-18096-9
Dihydrogen bonds; principles, experiments, and applications.
Bakhmutov, Vladimir I.
Wiley-Interscience, ©2008 241 p. $125.00
Focusing on its role in organizing interactions in different chemical functions and molecular aggregations, Bakhmutov (chemistry, Texas A&M U.) includes an introduction to weak covalent interactions and dihydrogen bonding for non-specialists and includes experimental and theoretical approaches to investigations for the experienced. He defines hydrogen-bonded systems in a brief summary and provides the concepts of dihydrogen bonding in a concise overview, then describes the experimental criteria of dihydrogen bond formation, theories and experiments related to intramolecular dihydrogen bonds, intermolecular dihydrogen-bonded complexes from Groups 1A-4A to Xenon dihydrogen-bonded complexes, intermolecular dihydrogen bonding in transition metal hydride complexes, correlation relationships for intermolecular dihydrogen bonds, dihydrogen bonding in supramolecular chemistry and crystal engineering, and dihydrogen bonds as intermediates in intermolecular proton transfer reactions. Each chapter includes references. The result is eminently practical and remarkably accessible.

QD462 2007-002393 978-1-60021-620-6
Quantum chemistry research trends.
Title main entry. Ed. by Mikas P. Kaisas.
Nova Science Publishers, ©2007 261 p. $129.00
Nova staff editor Kaisas has enlisted the help from contributors all over the world to discuss the latest trends in quantum chemistry, and how quantum mechanics and field theory are being used to address problems in the general field of chemistry. These articles, which are written with research chemists in mind, discuss such trends as new tools for treating intermolecular interactions, calculating quantum dot structures and using the Hamilton-Jacobi Equation in relativistic quantum chemistry.

GEOLOGY

QE522 2007-038441 978-0-632-05443-5
Fundamentals of physical volcanology.
Parfitt, Elizabeth A. and Lionel Wilson.
Blackwell Publishing, ©2008 230 p. $69.95 (pa)
For those curious about volcanos, especially those of us who live within sight of an active one. This well written textbook covers the formation of volcanos, the different types of eruptions, lava flows, monitoring for volcanic activity, climatic results of eruptions, and even volcanos on other planets. Parfitt is a research fellow at U. of Lancaster UK, and Wilson is in the environmental science department at the same university. The work is complete with a glossary, many photos, and questions for discussion and further research.

QE606 2007-032819 978-0-8137-2434-8
Exhumation associated with continental strike-slip systems.
Title main entry. Ed. by Alison B. Till et al. (Special paper (Geological Society of America); 434)
Geological Society of America, ©2007 270 p. $80.00 (pa)
This collection of geological studies on the subject of exhumation concentrates on strike-slip faults, and how plate boundaries can affect these natural but potentially dangerous occurrences. Edited by Till (U.S. Geological Survey, Roeske (U. of California, Davis), Sample (Northern Arizona U.) and Foster (U. of Florida), these papers discuss such geological exhumation topics such kinematics, deformation processes, dextral offset and patterns of bedrock uplift. This series of highly-technical articles was written primarily for geologists in the field.

QE627 2007-018635 978-0-8137-2431-7
Tectonic growth of a collisional continental margin; crustal evolution of southern Alaska.
Title main entry. Ed. by Kenneth D. Ridgway et al. (Special paper; 431)
Geological Society of America, ©2007 658 p. $155.00 (pa)
This work integrates new geophysical and geologic data, including many field-based studies, to better link the sedimentary, structural, geochemical, and magmatic processes that are important for understanding the development of collisional continental margins. Material is in sections on synthesis of the regional geophysical and geological framework; Mesozoic magmatism, deformation, and basin development; Cenozoic magmatism, deformation, and basin development; and investigations related to mineral exploration. All of the research presented focuses on the convergent margin region of southern Alaska. Numerous b&w maps, color photos, and color images are included. Ridgway is affiliated with the Department of Earth and Atmospheric Sciences at Purdue University.

BIOLOGY

QH75   978-1-59726-135-7
State of the wild; a global portrait of wildlife, wildlands, and oceans, 2008-2009.
Title main entry. Ed. by Sharon Guynup. (Series: title)
Island Press, ©2008 286 p. $29.95 (pa)
Forty-two international conservation specialists and writers contribute 29 chapters to the second text in a science-based series produced by the Wildlife Conservation Society which addresses emerging issues in wildlife conservation, the conversation of wild places, and future directions of conservation efforts. Where the first volume focused on wildlife hunting and trade, the second book turns to the integration of wildlife health, human health, and the health of domestic animals—an increasingly critical dimension of conservation that is underappreciated by the mainstream conservation community. Also included are essays on the conservation of wildlife; conservation of wild places; people, culture and conservation; and the art and practice of conservation. Illustrated throughout with b&w photographs, the text is academic but accessible to general readers concerned about conservation issues.

QH324 2007-034278 978-0-470-04144-4
Analysis of biological networks.
Title main entry. Ed. by Bjorn H. Junker and Falk Schreiber. (Bioinformatics; computational techniques and engineering)
Wiley-Interscience, ©2008 346 p. $90.00
Junker, a biologist with a strong background in bioinformatics, has teamed with Schreiber, a noted computer scientist, to edit this textbook on biological networks and modern analytical protocols. Designed for graduate level courses in biochemistry and bioinformatics, this book covers such topics as the basics of graph theory, network motifs and clustering, ecological networks, signal transduction and network centralities. This book is the latest entry in the *Bioinformatics: Computational Techniques and Engineering* series from Wiley.

QH390   978-1-58829-777-8
Environmental genomics.
Title main entry. Ed. by C. Cristofre Martin. (Methods in molecular biology.)
Humana Press Inc., ©2008 364 p. $99.50
Environmental genomics seeks to predict how organisms will respond at the genetic level to changes in their external environment; more generally it encompasses the impact that environmental conditions have on gene transcription, protein levels, the stability of the genome itself, or the diversity of genomes in a population. Here scientists describe methods for profiling gene expression, detecting whole-genome mutation, and determining species diversity.

QH438 2007-035291 978-0-313-34900-3
Just genes; the ethics of genetic technologies.
Barash, Carol Isaacson.
Praeger, ©2008 264 p. $49.95
Barash is head of a private consulting firm founded in 1994, which specializes in genetics, ethics, and policy. She has worked with leading public and private institutions worldwide on the ethical integration of new genomic technologies, has published numerous articles and books, and has taught ethics at several American universities. Her text offers general readers an opportunity to better understand the complexities involved in adopting new genetic technologies, and to learn how to better identify and analyze ethical issues arising in several areas in which genetic advances are already affecting health care and agriculture. Using case studies and examples throughout, she explores a range of current topics, from stem cell research to genetically modified food, genetic mapping and cloning.

QH506 2007-930588 978-1-58829-899-7
Chromosomal mutagenesis.
Title main entry. Ed. by Gregory D. Davis and Kevin J. Kayser. (Methods in molecular biology; 435)
Humana Press Inc., ©2007 235 p. $99.50
Forty-two international academics and researchers contribute 16 chapters reflecting the variation among organisms regarding the ease of chromosomal mutagenesis and manipulation. The papers focus on a range of chromosomal mutagenesis techniques for both prokaryotic and eukaryotic organisms, and present a variety of state-of-the-art methods in step-by-step laboratory format, including insertional gene disruptions, gene knockouts, stimulated homologous recombination techniques and novel tools based on integrases, eukaryotic transposons, triplex forming oligonucleotides, group II introns, and engineered site-directed nucleases. In particular, the authors seek to highlight techniques that expand the genetic toolbox beyond model organisms into a wider variety of cell types and organisms.

BOTANY

QK110 2007-030688 978-0-7627-4298-1
Medicinal plants of North America; a field guide.
Meuninck, Jim.
FalconGuide, ©2008 159 p. $16.95 (pa)
A biologist who has extensively studied plants used as medicine by Native Americans, herbalists, and holistic practitioners, defines what makes a wild plant medicinal and types of herbal preparations. With color photos, references to Germany's Commission E, and cautions, Meuninck profiles traditional and modern uses of plants found in yards, Eastern U.S. forested areas, wetlands, the mountain West, and deserts. The guide includes a list of life expectancies in several countries, top garden herbs, and resources. FalconGuide is an imprint of Globe Pequot Press.

ZOOLOGY

QL368 2007-048391 978-0-415-25785-5
Paramecium genetics and epigentics.
Beale, G.H. and John R. Preer.
CRC Press, ©2008 191 p. $99.95
Honored and emeritus now, long-term researchers into the pathogenic protozoa here describe how it can be used as a model for studying both the simple Mendelian aspects of genetics and all other aspects of inheritance, conveniently bundled into the term epigenetics. They explain laboratory techniques for investigating such topics as genetic processes, mating types, microneuclei and macronuclei, cortical morphogenesis, and behavior.

QP356 2007-046827 978-1-58562-273-3
Science and psychiatry; groundbreaking discoveries in molecular neuroscience.
Snyder, Solomon H.
American Psychiatric Pub., ©2008 477 p. $65.00
A Nobel Prize-winner in physiology/medicine introduces Snyder (Johns Hopkins U.), a pioneer in the field of psychopharmacology who helped identify receptors for neurotransmitters and drugs and their role in how psychotropic agents work. This collection reprints about two dozen research papers authored/coauthored by Snyder from 1973-2005, with accompanying commentaries by peers on topics in the book's nine sections. They review major discoveries in the field or point out their relevance to clinical practice. In the closing piece, Snyder speculates about factors conducive to creativity in scientific discovery.

QP406 2007-050489 978-0-87893-669-4
The neurobiology of learning and memory.
Rudy, Jerry W.
Sinauer Associates, ©2008 380 p. $74.95
Besides psychology, says Rudy (U. of Colorado-Boulder), biochemistry, cellular-molecular biology, electro-physiology, neuroanatomy, neuropsychology, and other disciplines now have something to say about learning and memory. He integrates the findings into a coherent framework that can be understood by students with a rudimentary background in psychology and the neurosciences. He covers the synaptic basis of memories, molecules, and neural systems.

QP519 2007-930114 978-1-58829-659-7
Affinity chromatography; methods and protocols, 2d ed.
Title main entry. Ed. by Michael Zachariou. (Methods in molecular biology; v.421)
Humana Press Inc., ©2008 343 p. $99.50
This second-edition volume from Humana Press's "Methods in Molecular Biology" series provides practical knowledge for beginners and also serves as an up-to-date reference for more seasoned researchers who are developing affinity separations for various applications. The new edition expands on traditional approaches and features new protocols as well. Twenty-one contributed chapters edited by Zachariou, a pharmaceutical project-management director, are arranged in three sections focusing on various modes of affinity chromatography; the use of purification tags; and various applications, among them: monolithic bioreactors for macromolecules, plasmid DNA purification, phosphorylated proteins, and analysis of proteins in solution using affinity capillary electrophoresis.

QP551 2007-040536 978-0-470-51297-5
Computational methods for mass spectrometry proteomics.
Title main entry. Ed. by Ingvar Eidhammer et al.
John Wiley & Sons, ©2007 284 p. $100.00
As explained by the authors, proteomics is "the study of the subsets of proteins present in different parts of an organism and how they change with time and varying conditions." Eidhammer and Flikka (both from the U. of Bergen, Norway) are joined by Martens (European Bioinformatics Institute) and Mikalsen (Norwegian Radium Hospital Oslo) to present the various technologies and methods currently employed in the field of proteomics. Recent developments in instrumentation should appeal to graduate students in bioinformatics and molecular biology, as well as research

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scientists currently working in the field.

QP551 2007-942569 978-1-58829-864-5
Molecular modeling of proteins.
Kukol, Andreas. (Methods molecular biology; 443)
Humana Press Inc., ©2008 390 p. $99.50
As it grows in popularity and possible applications, biomolecular simulation has moved from a small group of specialists to the wider academic community. Nonspecialists, however, will likely need help in the step-by-step processes they need to solve problems, particularly when they are dealing with software packages dedicated to molecular modeling. This collection of articles gives tips on troubleshooting and avoiding pitfalls as well as basic procedures and concepts and reviews of methods. General topics include methodology (including Monte Carlo simulations), free energy calculation (including those applied to membrane proteins), molecular modeling of membrane proteins (including implicit membrane models for simulation) protein structure and determination, conformational change (including protein mis-folding in disease), and applications to drug design (including molecular docking). Includes links to free software.

QP606 2007-933147 978-1-58829-683-2
Telomerase inhibition; strategies and protocols.
Title main entry. Ed. by Lucy G. Andrew and Trygve O. Tollefsbol. (Methods in molecular biology; 405)
Humana Press Inc., ©2007 193 p. $95.50
Due in part to the selective nature of telomerase inhibition as an anticancer approach, this field has expanded considerably over the past decade. In this text, 30 international academics and researchers contribute 14 chapters providing researchers with a diverse and comprehensive set of tools with which to study telomerase inhibition. These include recently developed methods having widespread application, such as targeting the telomerase holoenzyme, its RNA template, and other elements associated with telomerase activity. Additional methods involving the screening of telomerase inhibitors and telomerase inhibition combined with other chemotherapeutic agents are also presented.

MICROBIOLOGY

QR82 2007-037155 978-0-375-42430-4
Microcosm; E. coli and the new science of life.
Zimmer, Carl.
Pantheon Books, ©2008 243 p. $25.95
The bacteria *E. coli* is perhaps most popularly recognized as an agent of human disease, but in fact most forms of *E. coli* are harmless and, even more significantly for the purposes of Zimmer (a science writer for *The New York Times*), the bacteria has been the subject of sustained study by scientists for over 100 years, making it an ideal window into the history of life. He gives the general reader a tour of the science of *E. coli*, describing its lessons for the nature of life, processes of evolution, and even modern genetic engineering.

QR84 2007-029416 978-0-8493-9214-6
Thermophiles; biology and technology at high temperatures.
Title main entry. Ed. by Frank Robb et al.
CRC / Taylor & Francis, ©2008 353 p. $159.95
Tools like whole genome analysis and community sequencing have changed all areas of biology, but perhaps the study of thermophiles more radically than most, because scientists can now examine data in air conditioned offices instead of elusive microbes in really hot places, at least sometimes. Researchers from the US, Europe, and Japan discuss the molecular basis of thermostability, heat-stable enzymes and metabolism, the genetics of thermophiles, and minimal complexity model systems.

QR201 2007-941654 978-1-58829-740-2
Bacterial pathogenesis; methods and protocols.
Title main entry. Ed. by Frank R. DeLeo and Michael Otto. (Methods in molecular biology; 431)
Humana Press Inc., ©2008 311 p. $99.50
Bacterial infections are a leading cause of death around the world, and this textbook, part of the *Methods in Molecular Biology Series* from Humana Press, focuses on the pathogenesis of the most common types. Edited by DeLeo (Rocky Mountain Laboratories) and Otto (National Institutes of Health), this book presents a variety of studies from leaders in microbiology, cell biology and related fields that examine the mechanisms of bacterial pathogenesis, and the relationships between the host and these pathogens. Case studies involving animal models are also discussed, along with therapeutic options commonly used to treat these deadly pathogens.

MEDICINE (GENERAL & PUBLIC ASPECTS)

R853 2007-029936 978-1-58488-577-1
Computational methods in biomedical research.
Title main entry. Ed. by Ravindra Khattree and Dayanand Naik. (Biostatistics series; 24)
Chapman & Hall/CRC, ©2008 408 p. $99.95
Written by active researchers in the field, this work explores current and emerging computational statistical methods used in biomedical research. It introduces each topic at a basic level, before moving on to more advanced discussion of applications. The book begins with microarray data analysis, machine learning techniques, and mass-spectrometry-based protein profiling. It then uses state space models to predict US cancer mortality rates and provides an overview of the application of multistate models in analyzing multiple failure times. Also described are various Bayesian techniques, the sequential monitoring of randomization tests, mixed- effects models, and the classification rules for repeated measures data. The book concludes with estimation methods for analyzing longitudinal data. A few color figures are included. The book will be useful for those involved in advanced biomedical and pharmaceutical research, including biostatisticians, medical researchers, pharmaceutical scientists, and reviewers in regulatory agencies. Khattree is affiliated with Oakland University. Naik is affiliated with Old Dominion University.

R859 2007-018568 978-0-06-137336-7
Dr. Weinberg's guide to the best health resources on the Web.
Weinberg, Harlan R.
Harper Collins Publishers, ©2008 275 p. $14.95 (pa)
To simplify Internet medical topic searches, Dr. Weinberg (Northern Westchester Hospital, Mt. Kisco, New York) presents an annotated list of reliable general online health resources, collections by disease/topic, and even aerospace medicine resources. The guide lists academic and consumer sites ranging from AIDS/HIV to wound care, indicating whether they are free or require subscription. Patients are apt to be especially interested in sites on clinical trials and patients' rights.

PSYCHIATRY

RC552 2007-030542 978-0-521-88422-8
Therapy after terror; 9/11, psychotherapists, and mental health.
Seeley, Karen M.
Cambridge U. Pr., ©2008 242 p. $35.00
In the days immediately following 9/11 even those of us who watched from the other side of the country vividly recalled images and needed immediate answers to questions. Mental health professionals on the front lines in New York had to deal with the horror placed upon their own souls in the dust and ruin along with that of their clients. Practitioner Seely (anthropology, Columbia U; psychology, Barnard College) explains how the crisis affected those professionals who counseled the victims and were themselves victims. Basing her observations on interviews, she shows the remarkable variety of behaviors in the first minutes and days, the impact on those already in care, and the personal and professional consequences for therapists. She includes commentary on the political dimension of mental health practices and the increasing medicalization of the mental health system.

PLANT CULTURE, FORESTRY

SD387 2007-045097 978-1-4200-5341-8
Hyperspectral remote sensing of tropical and sub-tropical forests. (CD-ROM included)
Title main entry. Ed. by Margaret Kalacska and G. Arturo Sanchez-Azofeifa.
CRC / Taylor & Francis, ©2008 320 p. $129.95
Found useful in assessing ecosystem characteristics in temperate environments, hyperspectral sensors and data are coming to the tropics. This reference includes the basics but moves quickly on to describe applications and analysis techniques that have the potential to work well in complex tropical conditions. The 13 articles address how remote sensing relates to plant functional groups (in terms of physiology, ecology and spectroscopy), assessment of carbon dynamics and the biodiversity of forests, the affects of soil type and leaf characteristics, spectral expression of gender, species classification of tropical leaf reflectance, spectral data in the study of a *Sirex noctilio* attack on pine forests and on exposed wood and deciduous trees, using hyperspectral imagery to assess damage caused by logging, reflectance calibration of airborne hyperspectral spectrometer data, an assessment of phenologic variability, and remote sensing of canopy chemistry and

physiology as well as biodiversity in rain forests.

TECHNOLOGY (GENERAL)

T11 2007-006412 978-0-89503-337-6
Motives for metaphor in scientific and technical communication.
Giles, Timothy D. (Baywood's technical communications series)
Baywood Publishing Co., ©2008 178 p. $44.95
Giles (technical communication, Georgia Southern U.) gives a thoughtful and scholarly presentation on the use of metaphor in scientific and technical disciplines. The author uses the current controversy over cloning as an example of why scientists should be aware of how they use metaphor to describe and explain science to the general public and how it can be useful in research. The book includes a historical examination of the use of metaphor and analogy in the research and explanations of discoveries by science icons such as Newton and Descartes. Topics also include re-introducing metaphor in technical communication classrooms and texts. The intended audience is professors and students of technical communication, technical communication professionals, and scientists and engineers.

T11 2007-532617 978-1-55111-814-7
A strategic guide to technical communication.
Graves, Heather and Roger Graves.
Broadview Press, ©2007 310 p. $36.95 (pa)
Serving as an introduction to the field, this textbook includes step-by-step instructions on how to approach technical writing, and how to implement graphics and data seamlessly into the presentation. From designing proper layouts to researching technical subjects and analyzing pertinent data, Heather Graves and Roger Graves have created a perfect example of what they teach, providing a comprehensive, concise and easy-to-read book that catches the eye and delivers useful information on every page. The two authors have written extensively about teaching writing, and Roger is affiliated with the the department of writing and technical and professional communication at the U. of Western Ontario, Canada.

T36 2008-006300 978-0-7844-0920-6
Becoming leaders; a practical handbook for women in engineering, science, and technology.
Williams, F. Mary. and Carolyn J. Emerson.
Am. Society of Civil Engineers, ©2008 199 p. $29.00 (pa)
Williams, the Director of Canada's Institute for Ocean Technology, and distinguished consultant Emerson go far beyond the usual heap of tips about getting along with the boys and concentrate instead on developing communication and leadership skills women can take with them on their way up. They cover strategies for undergraduate and graduate students, job hunting, career development, personal networks and mentors, work-life balance, family support, time management, media appearances, tenure strategies, public service, sexual harassment, organizations, commonly asked questions and sample answers, and promotion of women's participation. Their strategies could also work well of women academics and professionals not in engineering, science or technology.

T56 978-0-9802858-6-4
The principles of project management.
Williams, Meri.
SitePoint, ©2008 204 p. $39.95 (pa)
Williams, a manager, offers a simple and easy to understand guide to project management that explains what it is, its stages, planning, communication, and finishing the project. She uses many examples from the technology industry, but the book is meant for managers in any field.

T58 2007-036858 978-1-59904-567-2
Information systems engineering; from data analysis to process networks.
Title main entry. Ed. by Paul Johannesson and Eva Söderström.
IGI Publishing, ©2008 369 p. $99.95
This work bridges the gap between research and practice by providing a reference point on the design of software systems that evolve seamlessly to adapt to rapidly changing business and organizational practices. It explores the foundation, history, and theory of enterprise modeling and information systems engineering, and presents recent research results and experiences from applications in industry. Intention-driven conceptual modeling, modeling early requirements, interconnecting e-business model components, and translating schemas between data modeling languages are some areas addressed. The audience for the book includes scholars, researchers, and practitioners. Johannesson is affiliated with the Royal Institute

of Technology, Sweden. Söderström is affiliated with the University of Skövde, Sweden.

T385   978-1-934356-03-6
Augmented reality; a practical guide.
Cawood, Stephen and Mark Fiala. (Pragmatic programmers)
Pragmatic Bookshelf, ©2007   311 p. $34.95 (pa)
Technical writer and speaker Cawood, and computer vision researcher and industrial engineer Fiala, both Canadian, describe techniques to create a kind of twilight world that incorporates elements of physical reality and virtual reality to make virtual objects seem present in the real world. The approach commonly involves augmenting objects of two or three dimensions to a real-time digital video image. The code they present will run on Windows, MacOS or Linux. Distributed in the US by O'Reilly Media.

T385   2008-008486   978-0-470-26058-6
AutoCAD 2009 and autoCAD LT 2009; no experience required.
McFarland, Jon.
Sybex, Inc., ©2008   818 p. $34.99 (pa)
This introduction to AutoCAD software applications is designed to serve both novices and experts, allowing the reader to jump in at any point and take advantage of the drawing files by using the companion website. McFarland, who teaches AutoCAD, VIZ and 3ds Max courses at the university level, uses plenty of practical, step-by-step tutorials that employ plenty of graphics and sample screens, as opposed to technically-oriented text. This volume has been recently updated to reflect changes in the new AutoCAD 2009 and AutoCAD LT 2009 software packages.

T385   2007-027112   978-1-56881-306-6
Data visualization; principles and practice.
Telea, Alexandru.
AK Peters Ltd., ©2008   502 p. $64.00
For advanced undergraduate or early graduate students of computer science, mathematics, and engineering sciences, Telea introduces the principles of data visualization as it is practiced in such realms as signal theory, imaging, computer graphics, and statistics. They emphasize techniques and methods with broad applications, figuring users will discover specialized ones as needed. Color is used throughout.

ENGINEERING (GENERAL, CIVIL)

TA166   978-0-470-16570-6
Decision making in systems engineering and management.
Title main entry. Ed. by Gregory S. Parnell et al. (Wiley series in systems engineering and management)
Wiley-Interscience, ©2008   438 p. $115.00
To fill a perceived gap in undergraduate texts for systems engineering courses, Parnell and fellow systems engineers at the United States Military Academy at West Point present a multidisciplinary framework for solving complex problems, for example, which next-generation radar system to choose. After introducing systems thinking, life cycle models, modeling and analysis, and life cycle costing, chapters treat systems engineering practices; a System Decision Process entailing the phases of problem definition, solution design, decision-making, and solution implementation; and the roles of systems engineers in current and future operating environments. Chapters include worked examples and exercises. The text may also be used as a supplement for graduate courses and reference for professionals in related fields.

TA168   2007-034222   978-1-4200-5491-0
Systems thinking; coping with 21st century problems.
Boardman, John and Brian Sauser. (Industrial innovation; 4)
CRC / Taylor & Francis, ©2008   185 p. $89.95
Linear thinking has gotten us pretty far, but it limits our ability to deal with large and complex data sets, such as those associated with multinational development of the creation of advanced technologies. Boardman and Sauser (both Stevens Institute of Technology) apply their diverse educational and industrial experiences from such parts as Texas and Liverpool to explain the systems approach to thinking, sure in the knowledge that it is the next big thing. They explain why the systems approach works in the case of large concepts as well as those that are relatively small, give readers a strong foundation in basic concepts, and address applying engineering concepts to the art of cognition, understanding the dynamics of the systems approach, applying "soft" skills, building a method and a team approach, using essential characteristics wisely, coping with paradox, and celebrating complexity. The result is rigorous yet eminently accessible.

TA345 2007-061804 978-0-89871-638-2
Linear feedback control; analysis and design with MATLAB.
Xue, Dingyü et al. (Advances in design and control)
SIAM, ©2007 354 p. $99.00 (pa)
Designed as a professional resource but also suitable for classroom use and self-study, this text reduces the mathematics to working examples that bridge the gap between theory and applications. Xue (control engineering, Northeastern U., Shenyang, China) and his academic colleagues describe analysis and design techniques for linear feedback control systems entirely within the context of the math software, starting by introducing feedback control methods and giving mathematical models of feedback control systems. With examples and exercises they describe how to analyze linear control systems and perform simulation analyses of nonlinear systems, show how to accomplish model-based controller design and proportional integral derivative controller design, develop robust control systems design and begin on projects with fractional-order controllers. In an appendix they present a feedback control system and analysis tool.

TA355 2007-026360 978-1-4200-5178-0
Friction-induced vibrations and sound; principles and applications.
Sheng, Gang.
CRC / Taylor & Francis, ©2008 408 p. $149.95
For many engineers and industrial designers, friction-induced vibration is much more than annoyance; it can cause significant problems with the reliability and quality of mechanical components. Here practitioner and researcher Sheng provides recent advances from a range of industries in an imminently applicable and unified theological framework that he focuses on real-world engineering situations. He starts with the basics of vibrations and sound, including linear and nonlinear vibrations, random vibrations and the fundamentals of sound. He then introduces the concepts behind contact and friction, including that on the nano and molecular scales, and thoroughly covers the effects of friction-induced vibration and sound, including that found in social life and nature. He applies these concepts to specific applications in hard disk drive systems, power transmission belts, and vehicle brake systems. The result is a very handy professional reference as well as a student text.

TA403 2007-033398 978-0-471-74004-9
Inorganic materials synthesis and fabrication.
Title main entry. Ed. by John N. Lalena et al.
Wiley-Interscience, ©2008 303 p. $100.00
Incorporating both background and information on advanced technologies, Lalena (chemistry, University of Maryland University College-Europe) covers the most important techniques in solid-state synthesis and materials fabrication in this reference on the preparation of single-phase inorganic materials. Offering an interdisciplinary approach, the book explains basic principles of crystallography, thermodynamics, and kinetics, explores crystallographic and microstructural considerations, and discusses the chemical energetics and atomistics of reactions and transformations in solids. Other areas covered include nanomaterials synthesis, and aspects of materials fabrication such as texture control, forming processes, and consolidation methods. The book also presents biographical sketches of distinguished materials scientists of the 20th century. It will be useful as a text and reference for students and professionals in materials science, engineering, chemistry, and physics.

TA409 2007-038845 978-0-8493-8432-5
Fundamentals of fracture mechanics.
Kundu, Tribikram.
CRC / Taylor & Francis, ©2008 286 p. $89.95
Engineering students will find this a comprehensive and progressive study of the elementary principles of fracture mechanics, beginning with a review of the fundamentals of continuum mechanics and the theory of elasticity as it applies to fracture mechanics. With a wealth of references to practical applications, Kundu (civil engineering and engineering mechanics, U. of Arizona) explains the elastic crack model, energy balance, the effect of plasticity, the J-integral, fatigue crack growth, stress intensity factors for some practical crack geometries, numerical analysis, the Westergaard stress function and advanced topics such as stress irregularities at crack corners, fracture toughness and the strength of brittle matrix composites, and dynamic effects. Kundu includes references and exercises with each chapter. The result is useful for personal reference and self-study as well as classroom use.

TA418 2007-029214 978-1-60021-824-8
Fullerene research advances.
Title main entry. Ed. by Carl N. Kramer.
Nova Science Publishers, ©2007   305 p.
$129.00
This work presents research on carbon 60, the fullerene molecule. Subjects include photodynamic therapy with fullerenes, mass spectrometric research of polymer-fullerene composites, and identification features for the free radical adducts of organometallic fullerene derivatives. Other subjects examined include dumbbell-shaped bisfullerene and conjugated oligomer hybrids, superelastic materials for tribological applications, ultraviolet light-filtering properties of fullerene materials, polymerization in the presence of carbonaceous nanoparticles, and fullerenes under pressure, adsorption, selective adsorption, and engineered adsorption.

TA418 2007-031507 978-0-8031-4269-5
Guide to friction, wear and erosion testing.
Budinski, Kenneth G. (ASTM stock number; MNL56)
ASTM International, ©2007   132 p. $77.00 (pa)
Budinski, chairman of ASTM Subcommittee G02.50 on Friction, reviews current friction, wear, erosion, and lubrication fundamentals, and describes the bench tests that are most often used to study and solve tribology problems. Tests are compared and critiqued. Information is presented to help the reader select a test that he or she might use to address a tribology concern. The scope of the book includes tests that are used to study engineering materials, tests used to solve tribology problems, and limited product tribotesting. The tests described are predominantly standard tests developed by consensus through ASTM International. The intended readership includes students, designers, maintenance personnel, researchers, and academicians. Veteran tribologists will find the guide useful as a reference for ASTM test numbers and test details. B&w photos are included.

TA418 2007-019886 978-0-470-06740-6
The physics and chemistry of nanosolids.
Owens, Frank J. and Charles P. Poole.
Wiley-Interscience, ©2008   539 p. $85.00
Owens (physics, Hunter College, City U. of New York) and Poole (physics and astronomy emeritus, U. of South Carolina) have revamped their *Introduction to Nanotechnology* of 2003 to update their material and make it more accessible to advanced undergraduate and graduate students. They assume readers have only an introductory understanding of the physics and chemistry of macroscopic solids and models developed to explain properties, starting with the basics on the physics of bulk solids. They carefully explain methods of measuring properties of nanostructures, including spectroscopy, properties of individual nanoparticles, the chemistry of nanostructures, characteristics of polymer and biological nanostructures, cohesive energy, vibration and electronic properties, quantum wells (as well as wires and dots), carbon nanostructures, bulk nanostructured materials, mechanical properties, magnetism, nanoelectronics, spintronics, molecular electronics and photonics. Their attention to proper pedagogy throughout pays off in their range of excellent exercises.

TA418   978-3-527-31836-0
Organic nanostructures.
Title main entry. Ed. by Jerry L. Atwood and Jonathan W. Steed.
Wiley-VCH, ©2008   352 p. $200.00
"One of the great opening frontiers in molecular sciences," declare Atwood (chemistry, U. of Missouri at Columbia, US) and Steed (inorganic chemistry, Durham U., UK), "is the upward synthesis, understanding of structure and application of molecules and molecular concepts into the nanoscale." They present 14 papers from contributors judged to be leading experts working on the cutting edge of this revolution on the nanoscale, each of which is intended a self-contained illustration of the way the nanoscale is influencing current theory and research across the molecular sciences. Specific topics include artificial photochemical devices and machines, rotaxanes as ligands for molecular machines and metal-organic frameworks, strategic anion templation for the assembly of interlocked structures, synthetic nanotubes from calixarenes, supramolecular architecture based on organometallic half-sandwich complexes, endochemistry of self-assembled hollow spherical cages, polynuclear coordination stages, from structure to function for polyoxometalate nanocapsules, nanocapsules assembled by the hydrophobic effect, opportunities in nanotechnology via organic solid-state reactivity, and organic nanocapsules.

TA658 2007-035134 978-0-8493-8532-2
Smart structures; innovative systems for seismic response control.
Cheng, Franklin Y. et al.
CRC Press, ©2008 652 p. $129.95
This book consolidates results from a number of research projects carried out at the University of Missouri-Rolla, providing researchers, engineers, and advanced students with a self-study reference on designing more resilient structures. The book concentrates on structural formulations, mechanisms of control systems, and numerical algorithms. It also provides step-by-step numerical examples to illustrate mathematical formulations and interpret physical representations. After a chapter on basic concepts of smart structure systems, chapters cover base isolation systems, damping systems, smart seismic structures using active, semi-active, and hybrid control systems, sensing and data acquisition systems, optimal device placement for smart seismic structures, and active and hybrid control on shallow and embedded foundations. Appendices cover MATLAB, Green's function, and element stiffness and mass coefficients. Cheng is affiliated with the University of Missouri-Rolla.

TA710 2007-532012 978-0-7277-3486-0
Risk and variability in geotechnical engineering.
Title main entry. Ed. by M.A. Hicks.
Am. Society of Civil Engineers, ©2007 225 p. $125.00
This work presents techniques for characterizing, quantifying, and modeling geomaterial variability, and describes methods for quantifying the influence of this variability on the performance of geotechnical structures. It includes refereed journal papers by leading international researchers along with written and informal discussions on a selection of key submissions that were presented at a May 2005 symposium held at the Institute of Civil Engineers. There is also an additional paper that was published in the journal *Géotechnique* in August 2005. The papers consist of both theoretical and practical guidance, and include case histories and discussion of applications in foundations, retaining structures, slopes, and soil-structure interaction. Hicks is head of geotechnical engineering at the University of Manchester.

TA1520 978-0-8493-3762-8
Photonic signal processing; techniques and applications.
Binh, Le Nguyen. (Optical science and engineering; v.130)
CRC / Taylor & Francis, ©2008 359 p. $119.95
According to the author (director, Center for Telecommunications and Information Engineering, Monash U., Australia), photonic signal processing has the potential to overcome the electronic limits for processing ultra-wideband signals and also provides signal conditioning that can be integrated in-line with fiber optic systems. He wrote this book to address the emerging techniques of processing and manipulating of signals propagating in an optical domain. Over the course of six chapters he provides an introduction to the photonic components essential for photonic processing systems, discusses the representation of photonic circuits using signal-flow graph techniques, describes photonic signal processors such as differentiators and integrators, examines applications in the generation of solitons and in optically amplified fiber transmission systems, illustrates the compensation of dispersion using photonic processors, and explains the design of optical filters using photonic processing techniques.

TA1540 2007-022429 978-0-470-06806-9
Holographic imaging.
Benton, Stephen A. and V. Michael Bove.
Wiley-Interscience, ©2008 261 p. $100.00
The late Benton (MIT) discusses the principals of holographic imaging in numerous applications including rainbow holography, off-axis reflection holography, video, and computer-generated stereogram holography. The concise, thoughtful chapters are supported by simple illustrations and text is appropriate for advanced undergraduates in engineering and above.

TA1815 2007-049892 978-1-4200-5365-4
Fiber optic sensors, 2d ed.
Title main entry. Ed. by Shizhuo Yin et al. (Optical science and engineering)
CRC / Taylor & Francis, ©2008 477 p. $159.95
The second edition of this textbook on the latest technology in fiber optic sensors has been expanded to include new research, such as the application of photonic crystal fibers to fiber optic gyroscopes and the use of fiber optic sensors in minimally invasive medical procedures. Yin and Yu (Pennsylvania State U.) have co-edited this collection of fiber optic sensor development with Ruffin, who works with the United States Army in engineering research and

development. Together they present contributions from all over the world which present highly technical applications for the aerospace, defense, oil and medical industry, as well as instruction for advanced engineering students.

ENVIRONMENTAL TECHNOLOGY

TD246   978-1-84339-137-1
Risk management for water and wastewater utilities.
Pollard, Simon J.T. (water and wastewater process technologies series)
IWA Publishing, ©2007 159 p. $140.00 (pa)
This volume, which is meant for individual study, details a risk- based chemical engineering approach to water utility management that uses an understanding of processes as a starting point. The focus is on techniques for risk-based decision making within a modern operational and regulatory context. Pollard (sustainable systems, Cranfield U., UK) covers first environmental then organizational aspects, with sections on basic probability and statistics, process risk and those beyond the unit process boundary, reliability analysis, regulation, business risk management, and managing opportunities, reputation, and emergencies. There is no index. US distribution by BookMasters.

BUILDING CONSTRUCTION

TH453 2007-039329 978-0-470-13062-9
Sustainable design; the science of sustainability and green engineering.
Vallero, Daniel and Chris Brasier.
John Wiley & Sons, ©2008 332 p. $80.00
Vallero and Braiser (Duke U.) examine green engineering concepts by focusing on the scientific principles that facilitate the need for sustainable design in architecture, civil engineering and other applications. The authors supply case studies based upon their own experiences in the field, as well as the Duke University Smart House Program that provided the motivation for this book. This is a useful textbook for any civil engineering or architectural student interested in green engineering.

MECHANICAL ENGINEERING & MACHINERY

TJ163 2007-026041 978-0-19-920996-5
Energy...beyond oil.
Title main entry. Ed. by Fraser Armstrong et al.
Oxford U. Press, ©2007 229 p. $49.50
Armstrong (chemistry, Oxford U., UK) and Blundell (physics, Oxford U.) present a non-technical survey of the technological options for addressing the world's looming energy crisis, which combines declining oil resources and increasing global temperatures. Primarily penned by scientists in the respective fields covered, the volume offers chapters on geothermal energy, wave and tidal power, wind energy, nuclear fission, fusion energy, photovoltaic and photoelectrochemical conversion of solar energy, biological solar energy, sustainable hydrogen energy, fuel cells, and energy efficiency in the design of buildings. Also included is a chapter on the politics and governance of energy transition.

TJ265 2006-004477 1-60021-034-1
Thermodynamics and heat powered cycles; a cognitive engineering approach.
Wu, Chih.
Nova Science Publishers, ©2007   659 p. $89.00
Covering both theory and practice of thermodynamics, this text is designed for an engineering course integrating the software CyclePad (developed by Kenneth Forbus of Northwestern University), which allows systems to be analyzed and designed in a simulated, interactive, computer-aided design environment. The software reminds students of essential principles and design steps as they go through the design process, explains results, and provides case studies of how engineers have resolved similar problems in real-life situations. Emphasis throughout is on applications of theory to actual processes and power cycles. Chapter summaries, worked examples, and homework problems are included, using both SI and English units. The book can be used for undergraduate degree courses in all types of engineering, as well as in engineering science and courses in combined studies in which thermodynamics and related topics are covered. Wu is affiliated with the US Naval Academy and Johns Hopkins University.

TJ265 2007-282018 978-0-521-86811-2
Computational thermodynamics; the Calphad method.
Lukas, Hans Leo, et al.
Cambridge U. Pr., ©2007 313 p. $85.00
Lukas (U. Stuttgart emeritus) and co-authors Sundman (Paul Sabatier U.) and independent scientist Fries provide the first introductory guide to this method of computation that combines data from thermodynamics, phase diagrams, and atomistic properties such as magnetism into a unified and consistent model. They introduce the science and art of computational thermodynamics

and the past and present of the Calphad technique, the scientific basis of the technique (including thermodynamics, crystallography, equilibrium calculations and optimization methods), first principles and thermodynamic properties, experimental data needed for optimization, models for the Gibbs energy element, assessment methodology, optimization tools, and thermodynamic databases. They also offer a series of case studies, including a complete assessment of the Cu-Mg system and a complete binary system (Ca-Ng) and provide a list of websites along with comprehensive references.

TJ808 2007-039832 978-1-55591-626-8
Power of the people; America's new electricity choices.
Tombari, Carol Sue. (Speaker's corner books)
Fulcrum Publishing, ©2008 195 p. $14.95
The electricity infrastructure of the US is aging and based far too much on generating electricity with nonrenewable resources, according to Tombari (National Renewable Energy Laboratory, US Department of Energy), but the good news is that alternative technologies that are both more efficient and better for the environment are already here. In this work she puts forth an argument for why we should be concerned with the situation and provides a general audience with a tour of the technologies to which we should transition: energy efficiency, solar, wind, geothermal, biomass, and (eventually) hydrogen fuel cells.

TJ1075 2007-034662 978-0-19-852678-0
Tribology on the small scale; a bottom up approach to friction, lubrication, and wear.
Mate, C. Mathew. (Mesoscopic physics and nanotechnology; no.6)
Oxford U. Press, ©2008 333 p. $110.00
This book explains how tribological phenomena—friction, lubrication, and wear—originate from atomistic and microscale physical phenomena, and shows how this understanding can be used to solve macroscale tribology problems. Chapters cover the microscopic origins of the macroscopic concepts commonly used to describe tribological phenomena (such as roughness, elasticity, plasticity, friction coefficients, and wear coefficients). There are also chapters on topics not usually covered in tribology texts but which become important at the small scale, such as capillary condensation, disjoining pressure, contact electrification, and molecular slippage at interfaces. The book is intended to serve both as a textbook for

advanced undergraduate and graduate courses in tribology in engineering programs, and as an introduction to the field for scientists and engineers working with technologies where a good grasp of tribology is essential. Mate is affiliated with the Hitachi San Jose Research Center.

ELECTRICAL ENGINEERING, ELECTRONICS

TK454 2008-006387 978-0-470-05536-6
Electromagnetic shielding.
Celozzi, Salvatore et al. (Wiley series in microwave and optical engineering)
Wiley-Interscience, ©2008 358 p. $85.00
Scientists specializing in electromagnetism Celozzi, Rudolfo Araneo, and Gimpiero Lovat (all: U. of Rome La Sapienza) offer engineers and other researchers a brief introduction to the full range of considerations in shielding an electromagnetic field to keep it from interfering with devices and functions close by. The aspects they discuss include shielding materials, numerical methods for shielding analysis, enclosures, frequency selective surfaces, and uncommon ways of shielding. One of the appendices sets out the standard standards and measuring methods for them.

TK1001   978-1-60021-921-4
Techniques of scientific computing for energy and the environment.
Title main entry. Ed. by Frédéric Magoulés and Riad Benelmir.
Nova Science Publishers, ©2007   102 p. $79.00
Computational scientists in civil engineering and other fields describe five techniques by which researchers can investigate problems of energy and the environment without leaving their computer terminal. They include using flow velocity to analyze the stability of an abnormal multiplication of plankton, large-scale data visualization using multi-language programming to address environmental problems, and analyzing flow around a propeller using fictitious domain finite element method. Color illustrations are abundant.

TK2921   978-0-87849-477-4
Lithium iron phosphate; a promising cathode-active material for lithium secondary batteries.
Cheruvally, Gouri.
Trans Tech Publications, ©2008 126 p. $97.00 (pa)
Nickel-cadmium and nickel-metalhydride batteries have largely become obsolete,

especially in portable electronic devices. Taking their place are lighter, more efficient lithium batteries, which are still in development to improve their performance and safety at lower cost. Here Cheruvally (chemistry, Vikram Sarabhai Space Center, India) reviews research on developing lithium iron phosphates as positive electrode materials that have the potential to replace transition metal oxides. She gives basic information on batteries as electrochemical energy sources, then describes lithium iron phosphate as a cathode material and presents nearly a dozen different methods of synthesizing it for experimentation or production. She describes the influence of synthesis parameters on the properties of lithium iron phosphates, the synthesis and properties of metal ion-doped lithium iron phosphate, the influence of different parameters (including cell components and operating temperature) on the cathode, safety and storage issues, theoretical and modeling studies, and phosphate olivines as cathode-active materials.

TK5101 2007-018943 978-0-470-82245-6
Communications engineering; essentials for computer scientists and electrical engineers.
Title main entry. Ed. by R.C.T. Lee et al.
John Wiley & Sons, ©2007 260 p. $80.00
Computer scientist Lee (National Chi Nan U., Taiwan) and electrical engineers Mao-Chung Chiu (National Chung Cheng U., Taiwan) and Jung-Shan Lin (National Chi Nan U.) offer advanced undergraduate students in the two fields a textbook introducing the fundamental and critical concepts of communications technologies. Though discussing digital technologies, they return attention to analog signals, reminding students that digital signals are also analog. Topics include Fourier representations of signals, multiple-access communications, and source coding and channel coding.

TK5102 2007-029554 978-1-4200-5474-3
Continuous signals and systems with MATLAB, 2d ed.
Title main entry. Ed. by Taan S. ElAli and Mohammad A. Karim.
CRC / Taylor & Francis, ©2008 504 p. $99.95
ElAli (electrical engineering, Benedict College) and Karim (Old Dominion University) present broad yet detailed coverage of continuous linear systems, based on basic mathematical principles, in this text for a one-semester course for undergraduate junior and senior

electrical, mechanical, aeronautical, and aerospace engineering students. The book concentrates on explaining the subject matter with easy-to-follow mathematical development and numerous solved examples from various engineering disciplines, with most of the worked examples first solved analytically and then solved using three different forms of numerical solutions with MATLAB. It covers traditional topics and includes chapters on analog filter design, state-space representation, block diagrams, and linearization of nonlinear systems. While no previous experience with MATLAB is assumed, familiarity with calculus, differential equations, and basic dynamics is desirable.

TK5105 978-1-59059-874-0
Accelerated VB 2008.
Fouché, Guy and Trey Nash.
Apress, ©2008 441 p. $39.99 (pa)
Intended for experienced object-oriented developers, this guide explains the differences between Visual Basic 2008, C# 3.0, and Visual Basic 6.0, and dives into VB 2008 syntax for declaring classes, methods, types, variables, arrays, interfaces, delegates, and generics. The final two chapters suggest best design practices for defining new types, and introduce the new language-integrated query (LINQ) for standardizing data manipulation across different data sources.

TK6575 978-1-59693-242-5
Modern radar systems, 2d ed.
Meikle, Hamish. (Artech House radar library)
Artech House, ©2008 701 p. $159.00
This is the new edition of a 2001 text introducing the theory and components of radar systems, particularly radar on the ground that detects moving aircraft. Extensively revised and updated, coverage includes description of the function of transmitters, antennae, receivers, matched filters, and signal processors. In addition to amplitude and phase graphs, three-dimensional space curves are shown, which emphasize the vector relationships involved. The author notes the importance of low attenuation and reflection between main radio frequency blocks, including the use of oversized waveguides for long runs. The closing chapters review the relevant mathematics of statistics and transforms. An appendix provides tapering functions.

TK7868 2007-032778 0-88173-540-X
Electronic digital system fundamentals.
Patrick, Dale R. et al.
Fairmont Press, ©2008 340 p. $98.00
Designed as a self-study guide suitable for professionals but also useful to students and hobbyists, this covers applications as well as theory. The authors (all engineering, Eastern Kentucky U.) make good use of examples as they give step-by-step procedures explaining the workings of both theories and a range of electronic devices. They cover digital logic gates, Boolean algebra and logic gates, combinational logic gates, number systems, conversions, codes, binary addition and subtraction, digital timing and signals, sequential logic gates, counters and shift registers, data conversion, and advanced digital concepts. They include a review guide of the key points for each chapter, material on electrical and electronic safety, data sheets and advice on constructing digital circuits. Distributed by Taylor & Francis.

TK7871 2007-030347 978-1-4200-6694-4
Circuits and applications using silicon heterostructure devices.
Title main entry. Ed. by John D. Cressler.
CRC / Taylor & Francis, ©2008 -- p. $69.95
Cressler (electrical and computer engineering, Georgia Tech) examines SiGe circuit applications in emerging communications systems. A novel aspect of the book is that it also contains snapshot views of the industrial state of the art, both for devices and circuits, designed to provide the reader with a useful basis of comparison for the current status and future course of the global Si heterostructure industry. The book is intended as a reference for practicing engineers and scientists working on various aspects of Si heterostructure integrated circuit technology, and as a research resource for graduate students in electrical and computer engineering, physics, or materials science who require information on integrated circuit technologies. It can also be used as a graduate-level text, and as a reference for technical managers and even technical support and technical sales personnel in the semiconductor industry. It is assumed that the reader has some background in semiconductor physics and semiconductor devices at the advanced undergraduate level.

TK7871 2007-030748 978-1-4200-6690-6
Silicon heterostructure devices.
Title main entry. Ed. by John D. Cressler.
CRC / Taylor & Francis, ©2008 -- p. $89.95
The emergence of transistors that combine silicon-germanium with pure silicon has lit the fuse of the miraculous communications explosion of the 21st century, according to electrical and computer engineer Cressler. With help from colleagues, he presents a graduate textbook that can also serve as an introduction and reference for practicing engineers and scientists and for technical managers, sales personnel, and others in the semiconductor industry.

TK7872 978-0-87849-479-8
Maxwell stresses and dielectric materials.
Kloos, Gerhard. (Material sciences foundation; v.39)
Trans Tech Publications, ©2008 105 p. $97.00 (pa)
Kloos, a physicist working in industry, takes a close look at specific electronic stresses while considering materials science, continuum mechanics and electrical engineering points of view. Although he limits coverage of the treatment of electrostatic Maxwell stresses to a macroscopic description, he also provides sufficient information so readers can deal with cases of low material symmetry as well as with the influence of viscoelasticity on the material response. He begins by describing Taylor expansion and interaction diagrams, electrostatic Maxwell stresses and quadratic electrostriction, then turns to derivation of the stress tensor from the force law, Maxwell stress tensors, Maxwell stress tensors at the boundary of a dielectric medium with another dielectric medium or with air, applications, including a viscoelastic case study in application to polymers, closing with an analogous phenomenon, magnetostatic Maxwell stresses.

TK7874 2008-003602 978-0-8493-3133-6
Introduction to spintronics.
Bandyopadhyay, Supriyo and Marc Cahay.
CRC / Taylor & Francis, ©2008 515 p. $89.95
Spin can be used to replace or augment the role of charge in signal processing, computing, and circuits. This book presents the quantum mechanical concept of spin, covering the principles and equations underlying the physics, transport, and dynamics of spin in solid state systems. It explains the use of spin for encoding qubits in quantum logic processors as the basis for certain spin-based devices such as spintronic

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field effect transistors. The book also discusses the effects of magnetic fields on spin-based device performance, highlighting effects such as giant magnetoresistance. A final chapter introduces emerging areas such as spin-based reversible logic gates. Chapter examples and problems are included. Readers are assumed to have background in basic device physics and quantum mechanics. Bandyopadhyay is affiliated with Virginia Commonwealth University. Cahay is affiliated with the University of Cincinnati.

TK7874 2007-023227 978-0-470-10528-3
Multiscale simulation methods for nanomaterials.
Title main entry. Ed. by Richard B. Ross and Sanat S. Mohanty.
Wiley-Interscience, ©2008 275 p. $125.00
Large Scale Molecular Dynamics, Nanoscale, and Mesoscale Modeling and Simulation: Bridging the Gap was the name of a National American Chemical Society symposium held in the fall of 2005 in Washington DC. Of the 40 presentations, 14 were selected as a broad representation of scaling methods, and have been expanded into the articles here. Chemists and related scientists discuss such matters as optimizing the electronic properties of carbon nanotubes using amphoteric doping, mesoscale simulations of surface-modified nanospheres in solvents, and modeling the thermal decomposition of large molecules and nanostructures.

TK7875 2007-037324 978-0-470-01699-2
Scaling issues and design of MEMS.
Baglio, Salvatore et al.
John Wiley & Sons, ©2007 229 p. $130.00
In this text for graduate students and professionals in electrical engineering, Baglio and coauthors (all: U. of Catania, Italy) explain methodology for the scaling and design of autonomous microelectromechanical systems (MEMS). Examples are abundant in discussion of: temperature microsensors based on an integrated CMOS thermocouple, mechanical sensors, inductive microsensors for the detection of magnetic particles, scaling of energy sources, technologies and architectures for autonomous MEMS robots, and issues in moving towards the nanoscale, among other topics.

TK7882 2007-278601 978-1-59031-749-5
The practitioner's guide to biometrics.
Title main entry. Ed. by William Sloan Coats et al.
American Bar Association, ©2007 224 p. $99.95 (pa)
In theory, biometrics is the measurement of any characteristic of an organism that can be

quantified, but since the inauguration of The Global War On Terror, it usually refers to a system of identifying people using fingerprints or eye scans. Lawyers and other contributors explore some of the legal implications of its increasing use. Their topics include rethinking data protection regimes to enable global tracking and prosecution of terrorists, national identification cards, theft of biometric data, trends and case studies in the private sector, and unintended consequences.

AERONAUTICS, ASTRONAUTICS

TL782 978-1-56347-929-8
Advanced propulsion systems and technologies, today to 2020.
Title main entry. Ed. by Claudio Bruno and Antonio G. Accettura. (Progress in astronautics and aeronautics)
Amer. Inst. of Aeronautics & Astronautics, ©2008 489 p. $109.95
Editors Bruno (aerospace engineering, U. of Rome) and Accettura (business operations manager, Arianespace) and their roughly 20 co-contributors detail the state of propulsion technologies as they are expected to be by 2020. Commissioned by the European Space Agency, the book proceeds through the concept, associated technologies, and development status of each technology—with market and feasibility discussions when appropriate. The chapters are organized in a logical fashion and discuss existing work done on liquid rocket engines and then delve into future technologies and systems, such as superconductivity applied to electric propulsion, ion engines, solar sails, laser propulsion, and nuclear propulsion. Numerous graphs and illustrations support the text. The book will interest any professionals affiliated with the field of propulsion. While it contains a considerable amount of technical information and discussion, the text is clearly-written enough to interest general audience readers with an interest in aerospace technology.

TL1499 2007-024163 978-1-884989-18-6
Spacecraft collision probability.
Chan, F. Kenneth.
Aerospace Press, ©2008 325 p. $79.95
Earth is surrounded by an orbiting junkyard. Keenly aware that it is getting crowded up there, researchers have tried to finesse various models for the short-term and long-term management of the relative trajectories of a variety of debris, but aerospace practitioner Chan carefully explains why such models do not, in essence, work. He describes how spacecraft are most likely to encounter each other, the characteristics of the encounter region, the particulars of

Rician distribution and the isotropic problem, analytic expressions as they should be done for short-term and long-term encounters, the probability of collisions with the International Space Station, maneuvers that may reduce risk of collisions, "formation flying," maximum probabilities of collisions, close encounters with multiple satellites, instantaneous probabilities of collision, spherical error probability computation, and available computer programs to study collisions and build better models that can be used in managing space junk.

CHEMICAL TECHNOLOGY

TP159 2007-047532 978-0-8155-1544-9
Microdrops and digital microfluidics.
Berthier, Jean. (Micro & nano technologies)
William Andrew Publishing, ©2008 441 p. $160.00
In this still-emerging science, microscopic liquid volumes are handled as microdrops. Researcher Berthier (also mathematical physics, U. of Grenoble) systematically describes how microdrops behave in complex geometries of modern miniaturized systems and interact with microfabricated, textured and other substrates. He begins by explaining how digital microfluidics fit within the discipline of microfluidics, basic theories of wetting, including surface tension and Laplace's Law, the physics of droplets, including their shape and performance moving in capillaries and on surfaces, electrowetting theory, including the three basic approaches and working range of related devices, microsystems using electrowetting theory, including biological and chemical applications, acoustic methods for manipulating droplets, droplet microfluidics and multiphase microflows. This is designed primarily as a professional resource but also works well as a course text.

TP184 2008-000605 978-1-934015-09-4
Programming for chemical engineers using C, C++, and MATLAB. (CD-ROM included)
Kapuno, Raul Raymond A.
Infinity Science Press, ©2008 449 p. $69.95
With a wide range of examples direct from industry and complete program listings that can be run immediately by copying into a text editors, this emphasizes the practical but also gives readers a solid foundations in underlying theoretical concepts. Kapuno (chemical engineering and computer programming, Cebu Institute of Technology, the Philippines) carefully guides readers through numerical methods, testing the

algorithm through manual calculation, writing and debugging the algorithm, and validating the result through statistical analysis. He begins by reviewing C programming and numerical computation using C, physical properties in prediction and approximation, and applications using C, then provides an overview of C++ and MATLAB, moving on to MATLAB's functions for numerical computation and application, closing with information on interfacing MATLAB with C. This is designed for chemical engineering courses and also as a professional reference.

TP248 2007-032658 978-1-934015-16-2
Introduction to biotechnology and genetic engineering. (CD-ROM included)
Nair, A.J.
Infinity Science Press, ©2008 798 p. $69.95
This book/CD-ROM text explains fundamental concepts and techniques of biotechnology in an a manner accessible to those with no background in biology. In addition to coverage of standards topics such as cell growth, genetic principles, and protein structures, the book discusses modern topics such as medical advances, quality control, stem cell technology, genetic manipulation, and bioethics. There is also a brief review of mathematics. Chapter review questions are included. The CD-ROM contains application software, demos, simulations, color figures from the text, and links to web sites. The book is appropriate for novices in biotechnology and genetics, and for engineering and biology students. Nair is an experienced researcher and teacher.

TP248 978-981-277-604-4
Introduction to biopolymer physics.
Van der Maarel, Johan R.C.
World Scientific, ©2008 247 p. $38.00 (pa)
Van der Maarel (biophysics, National University of Singapore) introduces the physics of biopolymers. The book covers the structure, dynamics, and properties of biopolymers subjected to various forms of confinement, with special attention paid to the effect of change and electrostatic screening. By focusing on the development of physical intuition rather than mathematical rigor, the book prepares readers to address complicated, real issues in the life sciences or related fields, such as material or food sciences. B&w and a few color illustrations are included. The book is designed to serve as a bridge between undergraduate textbooks in physical (bio)chemistry and the professional literature, and is especially suitable for advanced students and professionals who

have already acquired basic knowledge of physics, thermodynamics, and molecular biology.

UG447 2007-060561 978-0-8412-3964-7
Antiterrorism and homeland defense; polymers and materials.
Title main entry. Ed. by John G. Reynolds et al. (ACS symposium series; 980)
American Chemical Society, ©2007   273 p. $145.00
The editors (of Lawrence Livermore National Laboratory and the Naval Surface Warfare Center) present 14 papers describing research efforts in developing new polymers and materials that can be used for detectors and decontaminators of chemical, biological, radiological, nuclear, and explosive threats. Following the overview, seven papers address chemical detection, including synthesis and spectroscopic characterization of molecularly imprinted polymer phosphonate sensors, development of an enzyme-based photoluminescent porous silicon detector for chemical warfare agents, and optical enzyme-based sensors for reagentless detection of chemical analytes, among other topics. Biological detection is addressed in a pair of papers, which discuss a comparison of insulator-based dielectrophoretic devices for the monitoring and separation of waterborne pathogens, and design and synthesis of dendritic tethers for the immobilization of antibodies for the detection of class A bioterror pathogens. Finally, decontamination and protection are considered in papers on such topics as amphiphilic polymers with potent antibacterial activity, and catalysts for aerobic decontamination of chemical warfare agents under ambient conditions.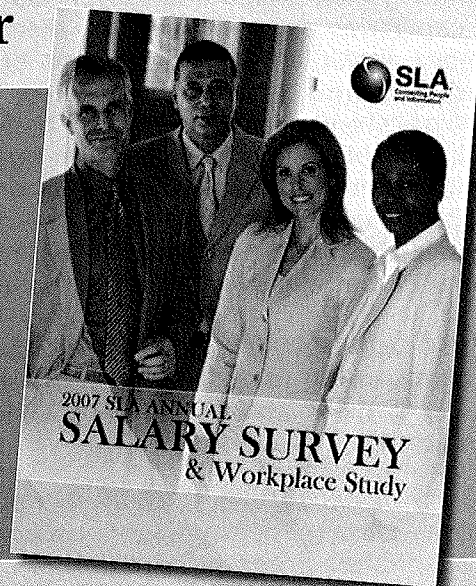 Distributed in the US by Oxford U. Press. ❖