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## Sci-Tech Book News Reviews

Ellis Mount

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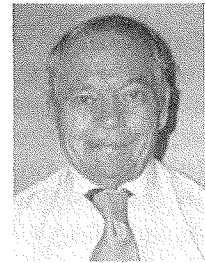
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## Sci-Tech Book News Reviews

Ellis Mount, 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. Ph: (503)281-9230; Fx: (503)287-4485; E-mail: booknews@booknews.com.

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**MATH, COMPUTERS**


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**QA5 2005-048762 0-8160-5651-X**  
**The Facts on File dictionary of mathematics, 4th ed.**

Title main entry. Ed. by John Daintith and John Clark.

*Facts On File, Inc.*, ©2005 262 p.

\$45.00

Presented in a compact format, this dictionary includes over 2,000 cross-referenced entries that cover a wide range of the most commonly-used terms in mathematics. Accessible to the general reader, the entries range from simple arithmetic terms to higher math, and many are illustrated. New entries for this edition include topics such as anti-derivatives, complexity theory, echelon matrix, global positioning system and zero function. Appendices include information on symbols and notation, integrals, derivatives, expansions, conversion factors, power and roots.

**QA76.57 2004-114448 1-58883-037-3**  
**Intelligent multimedia computing science; business interfaces, wireless computing, databases, and data mining.**

Nourani, Cyrus F.

*American Scientific Publishers*, ©2005

190 p.

\$200.00

Combining the arts, science, artificial intelligence, computer science, and the humanities, intelligent multimedia computing has the potential to create significant advances in information technologies. In this upper-division or graduate text, Nourani (U. of California, Los Angeles) defines the notion of intelligent media and then covers creative multimedia techniques in virtual reality, basic morphs, motion pictures, animation techniques and flash MX, artificial intelligence and intelligent multimedia media object paradigms, basic intelligent multimedia techniques, agent computing, mathematical foundations, intelligent visual databases and data mines. He then integrates the technology

with applications, including those in business and e-commerce, spatial heterogeneous visual computing, knowledge representation and predictive diagram models, business intelligence and content exploration, interfaces, heterogeneous computing, agent-based structures and implementations, abstract planning, models and virtual trees. Nourani closes with a chapter on intelligent cyberspace interfaces and wireless access protocol generic computing.

**QA76.76 2005-043626 0-8493-2650-8**  
**Flexible software design; systems development for changing requirements.**

Title main entry. Ed. by Bruce Johnson et al.

*CRC Press*, ©2005

440 p.

\$79.95

We all agree. Flexibility is good, particularly in a very competitive business and a rapidly-changing technology. However, we still build for inflexibility, and so we pay for re-design, re-tooling, re-building, and re-reddened faces. The authors, who have decades of up-close experience with flexible design, present their case largely by showing how to do it, keeping in mind the reality of imperfect knowledge, the emphasis on outcome, not methodology, and a constant realignment of roles. They describe what is required to achieve flexibility (such as stable identifiers and artificial limits) and how to design it through planning, requirements determination, design with flexibility in mind, and implementation of those stable identifiers. They advocate using UniverSIS throughout.

QA76.76 2005-925123 0-7695-2294-7  
**Software engineering, artificial intelligence, networking and parallel/distributed computing and self-assembling wireless networks; proceedings.**

Int'l Conf. on Software Engineering, Artificial Intell... (6th) ACIS Int'l Workshop on Self-Assembling Wireless... (1st: 2005: Towson, MD)  
*Computer Society Press, ©2005*  
 492 p. \$215.00 (pa)

A May 2005 conference brought together researchers and practitioners from industry, academia, and government to advance the state of the art in software engineering, artificial intelligence, networking, parallel/distributed computing, and self-assembling wireless networks. Some themes include image, speech, and signal processing, operating systems and compilers, data mining and knowledge discovery, algorithms, machine learning and neural networks, and software architecture. Some other topics are Web and multimedia, voice over IP, cryptography and network security, wireless networks, parallel and distributed computing, and ad hoc networks and routing protocols. There is no subject index.

QA76.88 0-7695-2343-9  
**High performance computing systems and applications; proceedings.**

International Symposium on High Performance Computing Systems and Applications (19th: 2005: Guelph, Ontario)  
*IEEE Press, ©2005* 362 p.  
 \$140.00 (pa)

This collection consists of 42 papers from the May 2005 conference on the expansion of high performance computing (HPC) infrastructure and influence in many different research disciplines and nine papers from the open source cluster application resources (OSCAR) symposium. The HPC contributions discuss computer science tools, grid computing, mathematical modeling, and applications in physics and the life sciences. Topics include distributed artificial neural network architectures, a replacement policy to save energy for data cache, data agnostic resource scheduling in the grid, simulation of electrical conduction in cardiac tissue, and parallel computing for sheet metal strain analysis. No subject index is provided.

QA76.9 0-7695-2404-4  
**Database engineering and applications; proceedings.**

International Database Engineering & Application Symposium (9th: 2005: Montreal, Canada) Ed. by Bipin C. Desai and Gottfried Vossen.  
*Computer Society Press, ©2005*  
 456 p. \$211.00 (pa)

The proceedings of the July 2005 symposium consists of 30 long and 12 short papers presenting recent research on database workflow and query languages, large databases and XML, query processing, caching, data streams, and peer-to-peer systems. Two invited papers examine incremental methods for simple problems in time series, and the effect of agent technology on database technology. Other topics include self-learning histograms for changing workloads, a logic language for NP search and optimization queries, an integrated commit protocol for mobile network databases, and extracting information from multilingual HTML documents. No subject index is provided.

QA76.9 2004-061916 0-8493-1853-X  
**Logical database design principles.**

Garmany, John et al. (Foundations of database design series)  
*CRC Press, ©2005* 180 p.  
 \$79.95

Garmany and fellow consultants in the information industry Jeff Walker and Terry Clark describe database design in an era when modern database management systems have added powerful features that have caused a movement away from truly normalized relational database design. They begin by setting out the traditional logical design principles, normalizing, and modeling the data. Then they discuss designing for specific purposes such as object-oriented, online transaction processing, and data warehouses. As they move away from relational design, they also move away from the purely logical into some of the physical design, because of how many of the features of modern databases are implemented.

QA76.9 2005-004018 1-58450-330-0  
**Mathematics and physics for programmers. (CD-ROM included)**

Kodicek, Danny.  
*Charles River Media, ©2005* 608 p.  
 \$49.95 (pa)

After reviewing the basic concepts of numbers, algebra, and geometry, this book explains the physics of motion, how to simulate ballistics and collisions on a computer for game play, and the

representation of 3D space on a 2D screen. The final section looks at some techniques for optimization and simplification of physics calculations. The CD-ROM provides code samples and simulations of the mathematical and physical principles discussed.

QA79.9 0-7695-2281-5

**Parallel and distributed systems; proceedings; 2v.**

Int'l Conference on Parallel and Distributed Systems (11th: 2005: Fukuoka, Japan) Ed. by Leonard Barolli et al.

*Computer Society Press, ©2005*

1530 p. \$358.00 (pa)

This two-volume set contains 118 papers plus the three keynote addresses from the July 2005 International Conference on Parallel and Distributed Systems, as well as 140 papers from ten associated workshops. The first volume, edited by Barolli (Fukuoka Institute of Technology, Japan), contains the conference proceedings organized by sessions and covering topics such as multi-casting and multi-streaming, grid and cluster computing, secure protocols and screens, fault tolerant systems, multimedia communication protocols, scheduling and allocation, location management, Web-based applications, distributed data management, distance learning and games, data distribution and replication, mobile networking, peer-to-peer networks and computing systems, security and attacking. Ma (Hosei U., Japan) and Yang (St. Francis Xavier U., Canada) are responsible for the second volume, which contains papers from the associated workshops. Topics include parallel and distributed embedded systems; system and networking for smart objects; performance modeling in wired, wireless, mobile networking and computing; network-based virtual reality and tele-existence; security in networks and distributed systems; and high performance computing in medicine and biology.

August 2002, participants describe their work in all fields of study in this diverse discipline. The result, rather than being a collection of papers, is an organized text with a logical order of topics, including accretion discs, discs with magnetohydrodynamic (MHD) turbulence and their response to orbiting planets, mixing at the surface of white dwarf stars, pulsar magnetospheres, magnetic fields in galaxies, self-consistent mean field electrodynamics in two and three dimensions, magnetoconversion, Alfvén waves within the earth's core, turbulence models and plane layer dynamos, planetary and stellar dynamos, convection in rotating spherical fluid shells and its dynamic states, laboratory experiments on liquid metal dynamos and liquid metal MHD turbulence and formation and stability in the solar system.

QB721 2004-024020 0-8165-2450-5

**Comets II.**

Title main entry. Ed. by Michael C. Festou et al. (University of Arizona space science series)

*U. of Arizona Press, ©2004 745 p.*

\$85.00

Written both for students and beginning researchers as well as scientists in the field, this volume presents 37 substantial chapters on the origins, state of research, and diverse aspects of comets by a group of more than 100 contributors who are with universities and astronomical research facilities worldwide. The chapters are grouped into seven sections: an overview of cometary science, aspects of comets from the interstellar medium to the solar nebula, nature and evolution of cometary orbits, the nucleus, the gas coma, dust and plasma, and interrelations. The latter section includes chapters on surface characteristics of transneptunian objects and centaurs from photometry and spectroscopy, interplanetary dust complex and comets, and laboratory experiments. An extensive glossary is included.

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**ASTRONOMY**

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QB466 2004-057907 0-8493-3355-5

**Fluid dynamics and dynamos in astrophysics and geophysics.**

Title main entry. Ed. by Andrew M. Soward et al. (Fluid mechanics of astrophysics and geophysics; v.12)

*CRC Press, ©2005*

442 p.

\$109.95

Drawing from results of the Durham Symposium on Astrophysical Fluid Mechanics in July and

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**PHYSICS**

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QC16 2004-009048 0-8018-8021-1

**The Einstein almanac.**

Calaprice, Alice.

*Johns Hopkins U. Press, ©2005*

174 p.

\$24.95

The author of *The Quotable Einstein* and *Dear Prof. Einstein* presents a concise year-by-year review of Einstein's life and achievements in historical context. After a chronology of his early years (1879-1900), Calaprice covers his

publications that revolutionized physics and his personal, scientific, and humanitarian activities from 1901-1955. She includes archival photos.

QC21 2004-112116 0-534-41781-7

**Modern physics for scientists and engineers, 3d ed.**

Thornton, Stephen T. and Andrew Rex.

Brooks/Cole Publishing, ©2006

658 p. \$123.95

Thornton (University of Virginia) and Rex (University of Puget Sound) provide a sound theoretical foundation in quantum theory for physics majors while at the same time emphasizing applications needed for engineering students. The text contains 250 questions and about 800 problems, 15% of which are new to this third edition. Many of this edition's 40 new examples give students practice with conceptual reasoning. Examples now feature a new Strategy step to help students identify the essential steps in problem-solving. Expanded material on nanotechnology and cosmology is new to this edition.

QC480 0-8247-5906-0

**Organic electroluminescence.**

Kafafi, Zaykya. (Optical engineering; 94)

CRC Press, ©2005 514 p.

\$139.95

Organic light-emitting diode (OLED) technology has proven popular in commercial applications, especially when low-voltage and inexpensive displays are needed. This collection of 11 articles describes ongoing research on electroluminescence in small molecules, emission mechanics in OLEDs, physical properties in OLEDs in space charge-limited conduction situations, amorphous molecular materials for carrier injection and support, the chemistry of electroluminescent conjugated polymers, organic electrophosphorescence, patterning of OLED device materials, display pixel electronics, past, present and future devices for OLEDs, organic electroluminescent devices for solid state lighting and new directions in photoexcited lasers.

QC611 1-55899-794-6

**Organic and nanocomposite optical materials; proceedings.**

Symposium on Organic and Nanocomposite Optical Materials (2004: Boston, MA) Ed. by Alexander Cartwright et al. (MRS symposium proceedings; v.846)

Materials Research Society, ©2005

344 p. \$102.00

The 48 papers, including the full texts of poster papers, report findings in the areas of non-linear optical materials, organometallic optical materials, plasmonics, electro-optic and electronic materials, organic and hybrid light-emitting devices, nanocomposite optical materials, linear and non-linear optical properties of organic and composite materials, electrical and optical properties of organic and hybrid light-emitting devices, and organic photonic bandgap structures. The invited papers cover spectral profiles of two-photon absorption, the theory of open-shell non-linear optical systems, functionalized guanidines for electro-optic materials, and the size-dependence of the linear and non-linear optical properties of GaN nanoclusters.

QC611 2005-927643 0-7354-0257-4

**Physics of semiconductors 2004; proceedings; 2v.**

Int'l conference on the Physics of Semiconductors (27th: 2004: Flagstaff, Arizona) Ed. by José Menéndez and Chris G. Van de Walle. (AIP conference proceedings; v.772)

American Institute of Physics, ©2005

1640 p. \$375.00

Representing research by contributors from 47 countries, (with the US, Japan, Germany, and the UK contributing the highest number) this massive 2v. proceedings contains 160 oral papers, 920 poster papers, 9 plenary, and 36 invited talks that were presented at the 27th International Conference on the Physics of Semiconductors held in July 2004 at Northern Arizona U. in Flagstaff. A special symposium on the 50th anniversary of cyclotron resonance features four talks. Among the topics of the plenary talks are semiconducting carbon nanotubes, by M. Dresselhaus (Massachusetts Institute of Technology); silicon quantum computer, by K.M. Itoh (Keio U., Japan); and spintronics and ferromagnetism in wide-band-gap semiconductors, by T. Dietl (Polish Academy of Sciences). The remaining papers are grouped into eight major topics: bulk semiconductors; heterostructures, surfaces, and interfaces; nanostructures; microcavities; electronic and

interband transitions; transport; quantum information; and devices. Menéndez is at Arizona State U. in Tempe; Van de Walle is with U. of California in Santa Barbara. Author index only.

QC718 2005-920500 1-58883-036-5

**Electronic excitations in liquefied rare glass.**

Title main entry. Ed. by Werner F. Schmidt and Eugen Illenberger.

*American Scientific Publishers, ©2005*

472 p. \$299.00

For physicists, chemists, electrical engineers, and materials scientists, 15 review chapters offer wide-ranging, in-depth treatment of the field as it has developed over the past 50 years. Berlin-based editors Schmidt (formerly at Hahn-Meitner-Institut) and Illenberger (Freie Universität) have brought together an international roster of contributors to create this handbook. Liquefied rare gases are non-polar; but the focus here is on the processes of their electronic excitation, which have applications in detectors for high-energy physics, and in light sources for the extreme ultraviolet, among others. Coverage begins with explication of ground state properties of rare gas fluids and their microscopic foundations. A sampling of topics of subsequent chapters: high pressure effects, band structure parameters, high-energy radiation, solutes, superfluid helium II, electric discharges, principles of production and ultra purification, helium droplets, and electron and ion mobility.

QC760 2005-045273 1-58053-832-0

**Computational electrodynamics; the finite-difference time-domain method, 3d ed.**

Taflove, Allen and Susan C. Hagness. (Artech House antennas and propagation library)

*Artech House, ©2005* 1006 p.

\$139.00

In this comprehensive reference, Taflove (Northwestern U.), Hagness (U. of Wisconsin-Madison) and contributors explain this critical method for solving Maxwell equations, including the one-dimensional scalar wave equation, numerical dispersion and stability, incident wave source conditions, analytical absorbing boundary conditions, near-to-far field transformations, dispersive, nonlinear and gain materials, grids, bodies of revolution, periodic structures, antennas, photonics, advances in techniques and advances in hardware acceleration for FDTD.

QC793 2005-927493 0-7354-0260-4

**Hadronic physics; proceedings.**

Joint Meeting Heidelberg-Liège-Paris-Rostock for Hadronic Physics (2004: Spa, Belgium) Ed. by Jean-Philippe Lansberg et al. (AIP conference proceedings; v.775)

*American Institute of Physics, ©2005*

274 p. \$136.00

A December 2004 meeting focused on current theoretical problems at the junction of particle and nuclear physics. Papers from the meeting, presented here, discuss the spectroscopy of quark bound states, including the newly observed 5-quark system, and calculation of the effects of high temperature and/or density on strong interactions (with applications to astrophysics and cosmology). They also cover progress in the description of electron-proton scattering at short distances and in elastic and quasi-elastic scattering. Fundamental questions such as the non-observation of colored states and the generation of mass are also explored. There is no subject index.

QC861 2004-057382 0-521-54865-9

**Fundamentals of atmospheric modeling, 2d ed.**

Jacobson, Mark Z.

*Cambridge U. Pr., ©2005* 813 p.

\$85.00 (pa)

Jacobson (civil and environmental engineering, Stanford U.) provides a physical understanding of dynamical metrology, surface processed, radiation, gas chemistry, aerosol microphysics and cloud processes along with the numerical methods and calculation techniques necessary to simulate these processes and a catalogue of steps required to construct, apply and test a numerical model. In 21 chapters in this advanced undergraduate or graduate text, he explains atmospheric structure, composition and thermodynamics, the momentum equation in Cartesian and spherical coordinates, numerical solutions to partial differential equations, and other background information necessary to understand the elements and functions associated with metrology and the means of creating viable models. He includes a collection of essential tables.

**CHEMISTRY**

QD5 2005-043785 0-8160-5649-8

**The Facts on File dictionary of chemistry, 4th ed.**

Title main entry. Ed. by John Daintith.

*Facts On File, Inc.*, ©2005 310 p.

\$45.00

In this update of the 1999 edition, Daintith (formerly a research chemist at the U. of London) compiles some 3,000 entries explaining frequently used terms in modern chemistry. The about ten percent new entries reflect advances in the field, e.g., in such areas as bioinorganic chemistry (apparently not an oxymoron) and nanotechnology. A pronunciation key is a useful new feature. Cross-referenced entries offer clear explanations and where appropriate, line drawings. Appendices include amino acid charts, the Periodic Table of Elements, and Web resources. Not indexed. Suitable for high school age and up.

QD79 0-8247-2785-1

**Encyclopedia of chromatography, 2d ed.; 2v.**

Title main entry. Ed. by Jack Cazes.

*Taylor & Francis*, ©2005 1833 p.

\$506.00

From "absorbance detection in capillary electrophoresis" to "zone dispersion in field-flow fractionation," Cazes (Florida Atlantic U.) presents some 400 cross-referenced articles (80 new to this edition) from an international group of authors covering the fundamentals of separation problem solving and materials identification in chromatography, a set of techniques for the separation of complex mixtures that rely on the differential affinities of substances for a gas or liquid mobile medium and for a stationary adsorbing medium through which they pass. It also covers real-world applications and instrumentation. Further examples of topics presented include separation of alkaloids by countercurrent chromatography, application of capillary electrochromatography to biopolymers and pharmaceuticals, concentration of dilute colloidal samples by field-flow fractionation, laser-induced fluorescence detection for capillary electrophoresis, mass transfer between phases, molecularly imprinted polymers for affinity chromatography, metal-ion enrichment by countercurrent chromatography, photodiode-array detection, rotation locular countercurrent chromatography, quantitation by external and internal standards, systematic

selection of solvent systems for high speed countercurrent chromatography, and cold wall effects in thermal field-flow fractionation. A continually updated version of the two-volume set is also published online.

QD251 0-471-68028-1

**The vocabulary and concepts of organic chemistry; 2d ed.**

Orchin, Milton et al.

*Wiley-Interscience*, ©2005 894 p.

\$125.00

This reference for students and professionals describes the subtleties behind the way the language supporting organic chemistry is used. The reference is sorted topically for easy use with an index for cross-reference. Entries include descriptions and historical backgrounds and examples, many illustrated, and include new sections on the four common spectroscopies and photochemistry. Each entry, from classes of hydrocarbons to synthetic polymers, has been updated, as well as sections on separation techniques and physical properties and types of organic reaction mechanisms.

QD461 2004-559000 981-238-709-9

**Recent advances in relativistic molecular theory.**

Title main entry. Ed. by Kimihiko Hirao and Yasuyuki Ishikawa. (Recent advances in computational chemistry; v.5)

*World Scientific*, ©2004 327 p.

\$88.00

The increasing number of applications of relativistic quantum chemistry suggests that relativistic many-electron calculations of molecular properties will grow in importance in the coming years, according to Hirao (applied chemistry, U. of Tokyo) and Ishikawa (chemistry, U. of Puerto Rico). They present nine contributions that treat recent advances in theory and methods, discussing such topics as the energy-consistent pseudopotential variant of the relativistic effective core potential method; the determination of effective core potential parameters and valence basis sets; computational methods for carrying out configuration interaction calculations in which spin-orbit and other relativistic effects are included in the Hamiltonian by means of effective core potentials; a generalized UHF theory in the context of two-component quasi-relativistic molecular orbital theory; and four component Dirac-Hartree-Fock and Dirac-Kohn-Sham methods for heavy-atom-containing polyatomics that employ highly efficient computational schemes utilizing

generally contracted spherical harmonic Gaussian spinors for rapid integral evaluation.

QD708 2004-058222 0-8247-5345-3

**Computational methods in photochemistry.**

Title main entry. Ed. by Andrei G. Kutateladze. (Molecular and supramolecular photochemistry; 13)

*CRC Press, ©2005* 517 p.

\$189.95

Kutateladze (chemistry and biochemistry, University of Denver) addresses critical aspects of computational modeling in photochemistry in this book for researchers and practitioners who use computational methods to predict the reactivity of excited molecules. He provides practical guidelines and examples for the modeling of excited states and describes some of the latest approaches in the computational modeling of photochemistry in solutions and constrained media. The book features a summary of SOC computations for various organic diradicals and triplet species with listings of all actual computed values, plus a large data set of experimental and computational results pertaining to nitrenes. There is a review of the Natural Bond Orbital analysis by its creator, and a chapter on the use of semi-empirical methods for the prediction of photochemical reactivity.

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**BIOLOGY**

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QH96 2004-025884 0-19-851613-4

**The biology of lakes and ponds, 2d ed.**

Brönmark, Christer and Lars-Anders Hansson. (Biology of habitats)

*Oxford U. Press, ©2005* 285 p.

\$44.50 (pa)

Freshwater biology takes on a different edge when that freshwater is standing rather than running through an ecosystem. The authors (both ecology, U. of Lund) combine traditional limnology with current ecological and evolutionary theory, describing the abiotic frame and adaptations to cope with abiotic constraints and the organisms as actors within the abiotic frame. They turn to the biotic element, describing competition, herbivory, predation, parasitism and symbiosis, food web interactions in freshwater ecosystems, biodiversity and environmental threats. Generously illustrated, this could serve as an undergraduate text or references.

QH159 0-19-852708-X

**Respiration in aquatic ecosystems.**

Title main entry. Ed. by Paul A. del Giorgio and Peter J. le B. Williams.

*Oxford U. Press, ©2005* 315 p.

\$74.50 (pa)

Contributors from the biological and environmental sciences in Europe, North America, Australia, and Japan discuss aspects of the process by which all organisms obtain vital energy from a variety of reduced compounds. Because respiration represents the largest sink of organic matter in the biosphere, the lack of information about it hampers the scientific understanding of the global carbon cycle. They focus mostly on respiration in the water column of aquatic systems, saying that sediment metabolism is well covered elsewhere. Among the topics are the history and background of the scientific study, the ecophysiology, various types of organisms including photolithotrophs and zooplankton, various ecosystems such as lakes and surface marine waters, incorporating plankton respiration in models of aquatic ecosystem function, and the global significance at scales from single cells to the biosphere.

QH445 3-527-31348-6

**Handbook of genome research; 2v.**

Title main entry. Ed. by Christoph W. Sensen.

*Wiley-VCH, ©2005* 618 p.

\$355.00

Editor Sensen (bioinformatics, U. of Calgary, Canada) has gathered detailed technical contributions from an international roster of researchers involved with a field that has garnered enormous financial and social investment. The hope, of course, is for big payoffs financially, and in benefits to humanity; but Sensen suggests in his preface that the time frame may be longer than hyperbole has led the public to believe. This two-volume reference is intended as a comprehensive survey. It begins with a section introducing applications such as sequencing and the comparative sequence analysis of model organisms, the investigation of genetically influenced diseases, the development of new substances for medicine, and agri- food and environmental genetics. Subsequent chapters address topics central to the technologies, including DNA sequencing, proteomics, metabolomics, and bioinformatics. Concluding chapters are devoted to ethical, legal, and social issues, including genome research and banking, biobanks and commercialization, beginning-of-life issues, and the future of large-scale life science research.



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**TECHNOLOGY (GENERAL)**


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T50 2004-026218 0-470-02143-8

**Handbook of measuring system design; v.3.**

Title main entry. Ed. by Peter H. Sydenham and Richard Thorn.

*John Wiley & Sons, ©2005 1506 p.*

\$1,075.00

This reference and its associated website are based around a systematic structure generated from consideration of a user's needs at five stages of a measuring system's life cycle: understanding the measurement needed, concept and requirements generation, designing, implementing, and assessing effectiveness. This third volume in the three-volume set contains detailed information on data acquisition and processing systems, intelligent measuring systems, MEMS, communication in measuring systems, signals and noise, and test and evaluation. A section on common measurements covers measurements of flow, displacement, angle, temperature, time and frequency, electrical quantities, velocity and acceleration, and chemical properties. A list of abbreviations and acronyms is included. Sydenham works in the private sector. Thorn is affiliated with the University of Derby.

T58 0-7656-1133-3

**Information quality.**

Title main entry. Ed. by Richard Y. Wang et al. (Advances in management information systems)

*M.E. Sharpe, Inc., ©2005 265 p.*

\$129.95

This is the opening volume in a series whose goal is to codify the field of management information systems (MIS) as a discipline of research and practice. Thirty-four contributors based in the US, Europe, and Australia consider various facets of information quality, both absolute and relative. Several chapters provide case studies that analyze the relationship between the quality of business processes and information quality. Others cover topics such as measuring data quality; modeling and developing information processes for information quality; organizational issues in information quality; and education and capability building in information quality.

T58 2005-920422 0-7695-2315-3

**Information technology; coding and computing; proceedings; 2v.**

International Conference on Information Technology; Coding and Computing (2005: Las Vegas, NV) Ed. by Henry Selvaraj et al.

*Computer Society Press, ©2005*

- p.

\$389.00 (pa)

This two-volume set contains the proceedings of the April 2005 International Conference on Information Technology, dedicated to the theme of coding and computing. The first volume, containing 136 papers, deals with bioinformatics, data coding and compression, data mining, database technology, distributed and grid systems, e-commerce, education, e-gaming, embedded cryptographic systems, information and assurance and security, and informational retrieval. With 122 papers and 32 posters, the second volume covers mobile processing, new trends in image processing, next generation web and grid systems, pervasive computing, software engineering, web search technologies, and wireless ad hoc/sensor networks and network security. The selected papers include contributions from Asia, Australia, North America, and Europe.

T174 2004-023729 0-470-85400-6

**Nanotechnology; global strategies, industry trends and applications.**

Title main entry. Ed. by Jurgen Schulte.

*John Wiley & Sons, ©2005 182 p.*

\$89.95

With the hundred of millions the US government has budgeted for research and development in mind, other nations expect nanotechnology to be a significant player in creating technology, generating market growth, and making advances in national security. In this collection, articles describe the research and applications being developed in China (including private development), Korea (including research into carbon nanotubes), Europe (including a listing of funding policies by nation) and the US (including preparation of a diverse nanotechnology workforce). Other articles cover such topics as methods of investing in nanotechnology, and new technologies and applications, such as polymeric nanofibers, textiles, and measurement standards.

**ENGINEERING (GENERAL, CIVIL)**

TA169 2004-063441 0-8493-3598-1

**Reliability engineering; probability models and maintenance methods.**

Nachlas, Joel A. (Mechanical engineering; 189)

*Taylor & Francis, ©2005 381 p.*

\$99.95

Presenting an integrated approach to reliability evaluation and maintenance planning, Nachlas (industrial and systems engineering, Virginia Tech) explains fundamental concepts of reliability theory, basic models, and various methods of analysis. Both parametric and nonparametric methods are presented. All models are placed in context, and the author demonstrates the mathematical principles and trade-offs between accuracy and expedience. Chapter examples, problems, and exercises are included, as well as appendices on numerical computation. The book is intended to support an introductory course or a sequence of courses in reliability theory and preventive maintenance planning.

TA347 2004-064968 0-8493-3563-9

**What every engineer should know about computational techniques of finite element analysis.**

Komzsis, Louis. (What every engineer should know; 37)

*Taylor & Francis, ©2005 265 p.*

\$89.96

Komzsis, who works as a numerical analyst on NASTRAN software development, introduces methods for generating a finite element model, reducing the model to a computationally more efficient form, and computing the engineering solution. He explains how to approximate the real life geometry of a physical phenomenon by geometric modeling, discretize the computational geometry model into a finite element model, and construct static condensation and dynamic reduction transformation matrices. Some chapters contain a simple mathematical example to demonstrate the details of the computation while others describe an industrial application or an actual case study.

TA405 2004-058288 0-8247-4047-5

**Selection of engineering materials and adhesives.**

Fisher, Lawrence W. (Mechanical engineering; 155)

*Taylor & Francis, ©2005 581 p.*

\$99.95

A textbook for graduate or advanced undergraduate students in mechanical engineering or materials science, and a reference for practitioners whose education did not include much in the way of material and adhesive selection as an integral part of product design. Introductory chapters look at the fundamentals of material selection the structure of materials, and material properties and behaviors. Subsequent chapters cover ferrous and non-ferrous metals, plastics, and adhesives.

TA409 2005-041839 0-8247-2757-6

**Damage mechanics.**

Voyiadjis, George Z. and Peter I. Kattan. (Mechanical engineering, 194)

*CRC Press, ©2005 257 p.*

\$119.95

Voyiadjis and Kattan (both civil engineering, Louisiana State U.) present the principles of continuous damage mechanics, including their latest research in the field, focusing on the theoretical through descriptions of models and formulations. They start with the necessary mathematical preliminaries, including a Maple tutorial, then describe their work in elasticity theory, isotropic damage mechanics, the kinematic description of damage, anisotropic damage mechanics, plasticity theory, coupled damage plasticity, and close with a description of the kinematics of damage for finite-strain elasto-plastic solids.

TA417 2004-061911 0-8247-5920-6

**Process imaging for automatic control.**

Title main entry. Ed. by David M. Scott and Hugh McCann.

*Taylor & Francis, ©2005 439 p.*

\$139.95

As industrial processes and their control models increase in complexity, the data provided by traditional point sensors is no longer adequate to ensure product quality and cost-effective implementation. Scott (DuPont r&d) and McCann (U. of Manchester) show how in-process imaging technologies surpass the limitations of traditional monitoring systems by providing real-time multidimensional measurement and control data for a variety of industrial processes. The intended audience includes engineers and academics in

process control, manufacturing, industrial, electrical, and control engineering as well as tomography, clinical imaging, plant design, signal and image processing, process modeling, and instrumentation; process control system developers; and instrumentation developers.

TA418 2005-005496 0-8155-1500-6  
**Handbook of environmental degradation of materials.**

Title main entry. Ed. by Myer Kutz.  
*William Andrew Pub.*, ©2005 598 p.  
 \$275.00

Kutz, a publishing and information services consultant, presents information on measuring, analyzing, and preventing environmental degradation for a range of industrial materials. Experts from around the world share how different industries cope with the degradation of metals, polymers, reinforced concrete, clothing, and wood under adverse environmental conditions such as weather, seawater, and fire. Case studies show how organizations from small consulting firms to corporate giants design and manufacture products that are more resistant to environmental effects. The handbook will be useful for engineers, designers, materials scientists, and advanced students.

TA418 1-55899-791-1  
**Surface engineering 2004; proceedings.**

Symposium on Surface Engineering 2004 fundamentals and applications (Boston, Massachusetts) Ed. by Soumendra Basu et al. (Materials Research Society symposium proceedings; v.843)

*Materials Research Society*, ©2005  
 362 p. \$102.00

In these proceedings of the symposium of November and December 2004, contributors describe their research and work in hard and protective coatings, including the structure and properties of nanocomposite TiC/a-C coatings, tribological and wear resistant surfaces and coatings, including a study of near-frictionless carbon fiber, surface indentation and phase transformations, synthesis and characterization of engineered surfaces and coatings, mechanical processes of surfaces, interfaces and thin films and modification of surfaces by ion beam, laser and plasma.

TA658 1-84564-018-7  
**Earthquake resistant engineering structures V.**

Title main entry. Ed. by C. A. Brebbia et al. (WIT transactions on the built environment)  
*WIT Press*, ©2005 819 p.  
 \$470.00

Brebbia (Wessex Institute of Technology, UK), Beskos (U. of Patras, Greece), Manolis (Aristotle U. of Thessaloniki, Greece), and Spyarakos (National Technical U. of Athens, Greece) present the proceedings of the fifth international conference aiming to project state-of-the-art engineering information on the analysis and design cycle of structures subjected to earthquakes. The 73 papers are organized into sections devoted to site effects and geotechnical aspects; earthquake resistant design, seismic behavior and vulnerability, structural dynamics, monitoring and testing, bridges, heritage buildings and masonry construction, retrofitting, passive protection devices and seismic isolation, lifeline systems, and design codes and response spectra. The papers, which include recent theoretical research as well as specific case histories, deal with such specific topics as accelerograms for building design for hard soil in Mexico City, critical evaluation of near-field seismic records in Greece, effects of configuration of shear walls on system behavior under seismic load, analysis of earthquake wave propagation in buildings, cyclic load behavior of reinforced concrete beam-column subassemblages of modern structures, and innovative materials for bridge seismic design. The US office of WIT Press is Computational Mechanics.

TA1632 2005-923600 0-7695-2255-6  
**Computer architecture for machine perception; proceedings.**

International Workshop on Computer Architecture for Machine Perception (7th: 2005: Palermo, Italy)  
*Computer Society Press*, ©2005  
 340 p. \$186.00 (pa)

Material from a July 2005 workshop provides a snapshot of the state of the art in perception architectures and algorithms. Several papers present working practical systems that have been designed for real applications and scientific investigation in physics, biomedicine, and biology. Themes of the workshop include architectures for vision, smart sensors, embedded systems, features extraction, data analysis, video systems, coprocessors and instruction sets, distributed image analysis, and distributed video servers. Individual papers detail work in areas

such as a bit-level compiler for massively parallel vision chips, and face localization in color images with complex background. There is no subject index.

TA1660 2004-061862 0-8247-2441-0

**Handbook of optical interconnects.**

Title main entry. Ed. by Shigeru Kawai. (Optical engineering; v.100)

Marcel Dekker, ©2005 466 p.  
\$139.95

It seems we are approaching the transmission limits of traditional materials, so those seeking to increase the speed of optics networks are turning to optical interconnects to provide accurate transmission to the next generation of devices, systems and products. In this collection of 12 papers, experts describe their work in vertical cavity surface emitting lasers, the microlens, GRIN lenses, the development of diffractive optics and its future challenges, planar optics, optical buys technology, fiber optics, plastic optical fibers, optical fiber Jisso technology, optical connectors, parallel optical links and optical interconnections in broadband networks.

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**HYDRAULIC ENGINEERING**

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TC203 1-84564-009-8

**Coastal engineering; modelling, measurements, engineering and management of seas and coastal regions; proceedings.**

International Conference on Computer Modelling of Seas and Coastal Regions (7th: 2005: Algarve, Portugal) Ed. by C. A. Brebbia et al.

WIT Press, ©2005 352 p.  
\$224.00

The 31 papers, edited from their conference presentations, examine computational and experimental tools currently being used to manage coastal areas. They cover shallow water studies, pollutant transport and dispersion, water quality issues, oil spills, estuarine problems, coastal ecosystems and their sustainability, coastal erosion and sedimentation, sea defense and protection systems, coastal geomorphology, and case studies. Among specific topics are the further improvement of drift forecast at sea based on operational oceanographic systems, a numerical simulation of an oil spill in Istanbul strait, project planning and implementation in coastal and shoreline structures, and the experimental study of salty wind damage. There

is no subject index. Distributed in North American by Computational Mechanics, Inc.

TC203 2005-046984 0-7844-0774-6

**Solutions to coastal disasters 2005; proceedings.**

Solutions to Coastal Disasters Conference (2005: Charleston, S.C.).

Am. Society of Civil Engineers, ©2005  
817 p. \$175.00 (pa)

In these proceedings from the May 2005 conference, contributors of 80 papers describe their work conducted through November 2004, with a major focus on the coastline of the US on the Atlantic Ocean and Gulf of Mexico but including studies from the Pacific coastline as well as that of the North Sea, the Indian Ocean and Lake Ontario. General topics include reports from ocean observing systems, studies of storm surges and hurricanes, including 2004's Hurricane Isabel, reports from coastal storms programs and about flood hazard mapping, rip currents, erosion, shoreline monitoring and surveying, beach and dune nourishment, wetlands and wind. Topics also include coastal buildings and marine structures, ports, seismic effects and tsunamis, climate, hazard mitigation planning, and evacuation and loss.

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**ENVIRONMENTAL TECHNOLOGY**

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TD145 0-471-73687-2

**Water encyclopedia; domestic, municipal, and industrial water supply and waste disposal.**

Title main entry. Ed. by Jay Lehr and Jack Keeley.

Wiley-Interscience, ©2005 952 p.

\$350.00

This is one of five volumes in a set created with the ambitious aim of addressing every facet of water of interest to scientists involved with wastewater, drinking water, and groundwater including chemists, hydrologists, geologists, oceanographers, chemical and process engineers, and meteorologists, among others—as well as to non-scientists, including lawyers, planners, environmentalists, and even those involved with the history, art, and culture of water. The international roster of contributors reflects this wide range of interests. Some 250 entries in this volume are arranged in sections on domestic water supply, municipal water supply, industrial water, and waste water treatment. Each entry is signed and includes cross references and a bibliography. A small sampling of topics gives some idea of scope:

the arsenic drinking water crisis in Bangladesh, bottled water, corrosion control in drinking water systems, virus transport in the subsurface, windmills, evaluation of microbial components of biofouling, fluoridation, giardiasis, membrane filtration, leak detection, sugarcane industry wastewaters treatment, EPA's national pretreatment program, constructed wetlands, and how to control sewerage odors.

TD192 2004-028933 1-55581-239-2

**Bioremediation; applied microbial solutions for real-world environmental cleanup.**

Title main entry. Ed. by Ronald M. Atlas and Jim Philp.

*ASM Press, ©2005* 366 p.  
\$109.95

Scientists and engineers in chemistry and environmental sciences from Britain, the US, and Australia describe the environmental applications of microorganisms to remediate contaminated soils and waters. Writing for both academics and practitioners, they cover the role of bioremediation in environmental pollution and restoration, characterizing contaminated land, legal and regulatory frameworks, modeling the bioremediation of contaminated groundwater, contaminated soils and aquifers, monitoring, marine oil spills, metals and radionuclides, and applying biotechnology to industrial products and processes for pre-emptive bioremediation.

TD222 2003-278280 1-84339-843-5

**Impacts of cross-connections in North American water supplies.**

Title main entry. Ed. by J.J. Lee et al.

*IWA Publishing, ©2003* 209 p.  
\$205.00 (pa)

This report draws conclusions from a study of cross-connections in 700 water utilities and gives specific recommendations for the creation and maintenance of cross-connection control programs. For the study, a survey with an extensive relational database was created, and computer simulations were conducted for water distribution systems of three different sizes. Several scenarios were simulated to study the transient effects of rapid changes in demand. Surveys and summary tables of results are included. The editors are affiliated with the University of Southern California. IWA in the UK now publishes many reports formerly published by AWWA Research Foundation in Denver.

TD224 2004-276161 1-84339-878-8

**Profiling water quality parameters; from source water to the household tap.**

Title main entry. Ed. by Mark W. LeChevallier et al.

*American Water Works Assn., ©2003*  
206 p. \$205.00 (pa)

This project tests the microbial risks, water quality indicators, and physicochemical parameters of raw water, treatment plant, distribution, and household tap water samples collected from the public water system in Davenport, Iowa. Some household participants drank water filtered through home water treatment devices and recorded health diaries for one year. Pressure within the distribution system was also monitored and analyzed. The report concludes that, despite the presence of fecal pathogens in the Mississippi River source water, the drinking water met all measures of water quality. Appendices reprint example data collection sheets, daily turbidity plots, and the database design. No index is provided.

TD345 1-84339-013-2

**Water and wastewater management in the tropics.**

Title main entry. Ed. by Jens Lonholdt.

*IWA Publishing, ©2005* 375 p.  
\$140.00

As nations in tropical regions have continued to develop and their populations have continued to grow as a result, their engineers and environmental are facing significant challenges even beyond those inherent in tropical environments. Many of the nations are on their way to developing comprehensive systems, but most literature is written for developed nations by engineers from developed nations. In contrast, this text was developed entirely for tropical conditions in developing nations, and covers project management through project identification and formulation, costing and financing, project selection, and implementation, as well as specific information on rural, urban, and industrial water supply and sanitation projects. Specific topics include stakeholder analysis, technical systems, best practices, financially and socio-economically appropriate approaches, demand-responsive approaches, developmental resources and case studies.

TD365 2004-297232 1-84339-866-4

**Impacts of major point and non-point sources on raw water treatability. (reprint, 2003)**Title main entry. Ed. by Grantley W. Pyke et al.  
*IWA Publishing, ©2004 114 p.*

\$205.00 (pa)

This report describes the results of research on the effects of watershed activities on raw water quality and water treatment costs. The project described here evaluated the effects of major point and nonpoint pollutant sources on raw water quality, treatability, and treatment costs, evaluated the potential of agricultural and urban BMPs to mitigate these effects, and compared the efficacy and cost of BMPs in the watershed with increased treatment at the WTP. Pyke is affiliated with a private consultancy. IWA in the UK now publishes many reports formerly published by AWWA Research Foundation in Denver.

TD365 2005-274560 1-84339-902-4

**Water quality management; how to structure it within a utility.**

Means, Edward G.

*American Water Works Assn., ©2004*

81 p.

\$205.00 (pa)

With their primary aims being to identify the key elements of successful management of water quality function in a water utility and to identify steps water utilities can take to improve their quality management performance, researchers conducted literature research, developed a web-based survey, developed case studies and conducted an expert workshop. From the information they gathered they developed a list of twelve key functions (such as complying with regulations, setting goals, analyzing, treating, communicating with the communicating and preparing for emergencies) and means of facilitating these functions, such as engaging the board, document management support, provide timely information, and develop an advocate.

TD367 2005-041711 0-8493-3356-3

**Satellite monitoring of inland and coastal water quality; retrospection, introspection, future direction.**

Bukata, R. P.

*CRC Press, ©2005*

246 p.

\$129.95

Bukata, with the Canadian National Water Research Institute in Ontario, writes out of frustration that many end-users of water quality products do not share his passion for the space monitoring of optically complex natural waters.

He probes the reasons for the uneasiness that seems to shroud the acceptance of remote sensing of inland and coastal water quality as a genuine, respected, and valued component of environmental monitoring. He does not lay sole blame at science and technology for not making their case well, with politicians who have failed to back up the science, or with the public that has failed to be convinced. He begins with navel-gazing about what has gone wrong, moves through basic science and case studies to crystal-gazing about the future, and ends with a word about truth in advertising about remote sensing products.

TD427 2004-303755 1-84339-922-9

**Treatability of perchlorate in groundwater using ion exchange technology; phase 2.**

Title main entry. Ed. by Lee Aldridge et al.

*American Water Works Assn., ©2004*

110 p.

\$205.00 (pa)

Percolates were detected in California groundwater in 1997. Since that time researchers have evaluated ways to remove it, with biological treatment and ion exchange systems investigated most often. The biological treatment option has been met with some apprehension by the public, so it appears that ion exchange is the most likely technique, with good public acceptance and availability of technology. In this second-phase report researchers find that both polyacrylic and polystyrene resins were effective at removing percolate for extended bed volume run lengths. They also describe results for various types of brine treatment.

TD459 2004-298298 1-84339-875-3

**Impact of water quality on the inactivation of bacterial and viral pathogens. (reprint, 2003)**

Title main entry. Ed. by prepared by Chandra Mysore et al.

*American Water Works Assn., ©2004*

164 p.

\$205.00 (pa)

This report documents the impacts of water quality parameters, such as pH, temperature, turbidity, and dissolved organic carbon, on the efficacy of various disinfectants (chlorine, chloramines, chlorine dioxide, and ozone) in inactivating microorganisms such as *Bacillus subtilis*, *Mycobacterium avium*, and MS2 phage. It also provides insight into the mechanistic influences on the modeling of disinfection data. Supported by bench and pilot-scale studies under a variety of operating conditions and source waters, the report provides information and recommendations to optimize disinfection

performance in drinking water treatment. Mysore is affiliated with Vivendi Water North American Technology Center.

TD460 2003-283863 1-84339-840-0

**Disinfection efficiency and dose measurement of polychromatic UV light. (reprint, 2003)**

Title main entry. Ed. by Karl G. Linden and Alexander A. Mofidi.

*American Water Works Assn.*, ©2004

117 p. \$205.00 (pa)

Recently, utility companies have been expressing interest in using polychromatic pulsed ultraviolet (UV) lamps and medium-pressure UV lamps as disinfectants for drinking water. This report compares three UV lamps, showing the methodologies necessary to measure the effective germicidal UV doses from polychromatic UV sources and the ability of the different lamps to inactivate heterotropic plate count bacteria, MS-2 coliphage, and *Cryptosporidium parvum*. The report describes materials needed to set up and conduct experiments and interpret the resulting data, and includes sample photographs and step-by-step testing methods.

TD462 2005-272550 1-84339-906-7

**Development of a novel method for the analysis of haloacetic acids in drinking water.**

Zhang, Li and Raymond M. Hozalski.

*IWA Publishing*, ©2004 79 p.

\$205.00 (pa)

To provide an alternative to the three methods approved by the US Environmental Protection Agency, Zhang and Nozalski (both civil engineering, U. of Minnesota) set out to develop a new approach for analyzing haloacetic acids in drinking water that was accurate, reproducible, sufficiently sensitive, and relatively safe and simple to perform. The method uses capillary electrophoresis (CE) ion analyzer, which separates charged solutes in aqueous solutions, to separate and detect the acids. They report their findings, and recommend when and how the approach can be used and what further development is needed. IWA in Britain now publishes many reports formerly published by AWWA Research Foundation in Denver. No index is provided.

TD481 1-58321-356-2

**Water distribution system assessment workbook.**

Title main entry. Ed. by Charlotte D. Smith.

*American Water Works Assn.*, ©2005

76 p. \$65.00 (pa)

Designed for professional use on and off the site, this collection of self-assessment guides addresses questions operators, operations managers, and independent consultants should ask themselves and one another. The sections for research include questions of water quality (including metals concentrations, color and staining, disinfectant issues, pH stability, and taste and odor), operation and maintenance programs (including backflow prevention, leak detection and valve work), facility operations and maintenance (including meters, disinfection and storage), and management (including energy management and safety programs).

TD482 0-7844-0765-7

**Artificial neural networks in water supply engineering.**

Title main entry. Ed. by Srubuvasa Lingireddy and Gail M. Brion.

*Am. Society of Civil Engineers*, ©2005

173 p. \$89.00 (pa)

The practicing and academic engineers from the US, Australia, India, and France on the task committee compile their experiences and those of colleagues who have successfully applied artificial neural networks for water supply engineering problems. The approach is widely used in other areas of civil engineering, but engineers working in water supply seem to be highly skeptical of what they see as a black-box model, and the goal here is to dispel that skepticism by reporting findings that go beyond the reach of traditional statistical and mathematical modeling tools. In addition to explaining the philosophy and methods and reporting case studies, they show how the networks can forecast cyanobacteria, model pH, forecast salinity, and predict gastroenteritis rates and detect waterborne outbreaks.

TD491 2004-297486 1-84339-870-2

**Establishing site-specific flushing velocities. (reprint, 2003)**

Title main entry. Ed. by prepared by Melinda J. Friedman et al.

*American Water Works Assn.*, ©2004

205 p. \$205.00 (pa)

This report details the results of a study on the flushing velocities required for lifting and removal of different types of contaminants. A second



objective of the study was to compare the lifting velocities derived from experimental testing to those derived from CFD modeling. The study demonstrated that the factors that govern flushing effectiveness are intricately related to pipe type, water quality, level of treatment, routine hydraulics, and previous pipe-cleaning practices.

TD745 1-900222-83-3

**Instrumentation, control and automation in wastewater systems.**

Olsson, Gustaf et al. (Scientific and technical report; no.15)

*IWA Publishing, ©2005 246 p.*

*\$130.00 (pa)*

Olsson (industrial electrical engineering and automation, Lund University, Sweden) summarizes the state of the art of instrumentation, control, and automation (ICA) and its application in wastewater treatment systems. The economic benefits of different control and operation possibilities are quantified, and qualitative benefits, such as more challenging work for operators, are also described. Several full-scale examples of how ICA has improved economic efficiency, the ease of operation, and plant robustness are presented. The book emphasizes both unit process control and plant-wide operation. Readership for the book includes process engineers and designers, researchers, and students.

TD796 0-7918-3756-4

**North American waste to energy; proceedings.**

North American Waste to Energy Conference (13th: 2005: Orlando, Florida)

*ASME, ©2005 211 p.*

*\$100.00 (pa)*

Papers from a May 2005 conference report on the latest work in research and technology for waste-to-energy (WTE), WTE facility projects and innovations, and environmentally sound alternatives. Some specific subjects detailed are gasification and cogeneration using municipal solid waste (MSW) residuals and biomass, plasma recovery technology, improving semi-dry scrubber performance through gas flow modeling, and pulse-jet baghouse optimization in WTE. Other subjects are evaluating waste incineration from an environmental point of view, and the chemistry of ash fractions from MSW incineration. There is no subject index.

TD878 0-8493-1616-2

**Soils and environmental quality, 3d ed.**

Pierzynski, Gary M. et al.

*CRC Press, ©2005 569 p.*

*\$79.95*

Updated with an increased emphasis on management and attention to current topics and problems, this is the new edition of textbook that examines environmental quality from the perspective of soil science. Authors Pierzynski (Kansas State U.), Sims (U. of Delaware), and Vance (U. of Wyoming) first provide an overview of basic soil science; hydrology; atmospheric chemistry; the classification of pollutants; and the fundamentals of soil, plant, and water analyses. They then discuss the role of nitrogen, phosphorous, sulfur, and other nutrients in environmental quality and explain nutrient management planning. Inorganic and organic contaminants are explored in chapters dealing with trace elements, organic chemical, and global climate change and acidic deposition. Finally, they present chapters on contaminant assessment and remediation.

TD879 2005-006928 0-87590-321-5

**Soil and groundwater contamination; nonaqueous phase liquids, principles and observations. (CD-ROM included)**

Mayer, Alex and S. Majid Hassanizadeh. (Water resources monograph; 17)

*American Geophysical Union, ©2005*

*216 p.*

*\$50.00 (pa)*

Collaborating with a number of scientists who have experience in teaching and solving groundwater contamination problems in the laboratory and in the field, Mayer (geological and mining engineering and sciences, Michigan Technical U.) and Hassanizadeh (earth sciences, Utrecht U.) address the problem of immiscible organic liquids such as petroleum hydrocarbons and chlorinated solvents that, because of their low solubility, remain in soil when standard remediation efforts have been completed. They overview recent findings within a broader reference on the principles of the migration and distribution of the liquids for consultants, researchers, and students.

TD897 2004-018368 0-86587-980-X

**Environmental technologies handbook.**

Title main entry. Ed. by Nicholas P. Cheremisinoff.

*Government Institutes Inc., ©2005*

*309 p.*

*\$95.00*

For a readership of environmental, health, and safety professionals, Cheremisinoff (director of clean technologies/pollution prevention programs



at Princeton Energy Resources International, LLC) presents a reference guide to new and emerging pollution prevention and control technologies. Written by experts from the respective fields, the seven contributions describe technologies designed for use in human health risk assessment, air quality monitoring, air pollution control, thermal waste treatment, wastewater treatment, and cost accounting. While the focus is on newer technologies, conventional technologies do receive brief attention.

TD1040 2004-063105 0-8412-3906-1  
**Subsurface contamination remediation; accomplishments of the Environmental Management Science Program.**

Title main entry. Ed. by Edgar Berkey and Tiffany Zachry. (ACS symposium series; 904)

*American Chemical Society, ©2005*

396 p. \$144.50

Since 1989, the US Department of Energy has been responsible for managing the environmental cleanup of sites and facilities involved in the government's program for developing and producing nuclear weapons. In 1996, it began sponsoring the Environmental Management Science Program, which in turn has funded hundred of scientific research projects intended to address and support the longer-term needs of the cleanup program. A symposium at the Society's March 2003 meeting in New Orleans heard reports on the efforts of the Program to develop techniques to remediate subsurface contamination in soil and groundwater. Of the 20 papers delivered, 16 are presented here, covering the science and technology; the characterization, fate, and transport of subsurface contamination; and environmental sensing and monitoring. Distributed in the US by Oxford University Press.

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**BUILDING CONSTRUCTION**

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TH443 2004-059798 0-566-08670-0  
**Health and safety in construction design.**

Thorpe, Brian. (The leading construction series)

*Gower Publishing, ©2005 94 p.*

\$49.95

Consultant, author, and former quality manager Thorpe describes the research, development, specification and planning necessary to reduce risk to life and property in construction design. He describes the regulatory requirements designers in the UK must understand and follow and discusses the design process, establishing

a database, integrating regulations into the design and management systems, communicating with others, and applying concepts in daily practice. Thorpe spells out the hazards and risks of not following regulations, and proposes an integrated management system approach to maintaining standards of health and safety. Distributed by Ashgate.

TH443 2004-001226 0-419-26210-5  
**Occupational health and safety in construction project management.**

Lingard, Helen and Steve Rowlinson.

*Spon Press, ©2005 440 p.*

\$104.95

Lingard (construction management, Queensland University of Technology, Australia) and Rowlinson (construction project management, University of Hong Kong) provide construction professionals and students of construction project management with an understanding of theory pertaining to occupational health and safety (OHS), and introduce a range of tools and techniques representing best practice in the management of OHS. Corporate OHS issues are also addressed. The book adopts a total project management approach, in which construction project parties work together in OHS management. The book is for students and professionals in construction project management.

TH2025 2005-041943 1-59126-032-9  
**Interior construction & detailing for designers and architects, 3d ed.**

Ballast, David Kent.

*Professional Pub. Inc., ©2005*

482 p. \$98.00

Updating the information for this edition based on the 2003 edition of the International Building Code and the 2004 revisions to the Americans with Disabilities Act Accessibility Guidelines, Ballast (owner, Architectural Research Consulting) covers the required knowledge needed for good interior construction design and detailing, including materials, finishes, construction assemblies, mechanical and electrical systems, building codes, and planning standards. Generally organizing the subject matter according to the way interiors are constructed, he presents 20 chapters discussing partitions, ceilings, doors, hardware, glazing, architectural woodwork, decorative metals, flooring construction, applied floor finishes, wall finishes, acoustics, stair design and construction, signage systems, security systems, audiovisual systems, mechanical and

electrical systems coordination, structural coordination, barrier-free design, building codes and regulations, and means of egress.

TH6124 2004-022366 1-56158-698-6

**Remodel plumbing.**

Cauldwell, Rex. (For pros, by pros)

*Taunton Press, ©2005 182 p.*

*\$24.95 (pa)*

After demystifying the workings of the water supply system, a master plumber provides step-by-step instructions for kitchen, bathroom, and utility room plumbing jobs for the do-it-yourselfer. With commonsense tips, detailed drawings, and color photos, Cauldwell explains such projects as installing a dishwasher and converting a tub-only faucet to a tub/shower. An overview of tools appears last rather than in the introduction.

TH7121 2004-062059 0-8493-3405-5

**Industrial heating; principles, techniques, materials, applications, and design.**

Deshmukh, Yeshvant V. (Mechanical engineering; 191)

*CRC Press, ©2005*

*767 p.*

*\$149.95*

Deshmukh, a retired mechanical engineering professor and consultant, presents design information for both traditional and modern heating processes and auxiliary techniques, focusing on small and medium-sized applications. The book opens with a review of fundamental topics in steady state and transient heat transfer, fluid mechanics, and aerodynamics. A discussion of fuels, their combustion, and combustion devices follows, along with material on waste incineration. The author then examines techniques related to heating, such as vacuum technology, pyrometry, and heat exchangers, as well as the advantages and disadvantage of different types of materials. Examples and solved problems are included. The series was originated by Dekker.

TH9119 2004-023562 0-7637-2247-2

**Fire officer; principles and practice.**

Title main entry.

*Jones & Bartlett, ©2005 414 p.*

*\$42.95 (pa)*

This book is an integrated teaching and learning guide for the fire officer I and II levels, and is produced by the National Fire Protection Association and the International Association of Fire Chiefs. It combines current content with features and interactive technology to support instructors and help prepare fire officers. The text covers the NFPA 1021, Standard Fire Officer

Professional Qualification, 2003 edition. Topics include preparing for promotion, training and coaching, working in the community, creating a budget, organized labor and the fire officer, crew resource management, and communication and presentation skills. Case studies, field tips, test taking tips, and advice from veteran fire officers are also integrated into the text.

TH9146 2003-112680 0-87765-595-2

**Fundamentals of fire protection.**

Title main entry. Ed. by Arthur E. Cote.

*Natl. Fire Protection Assn., ©2004*

*470 p.*

*\$88.00*

Changes in fire protection and in training for careers in the field since the 1988 second edition of Principles of Fire Protection are incorporated in this successor to that textbook. Researchers and practitioners set out a course for students and for others seeking a broad-based introduction to the principles of fire protection. Among the topics are fire in history and contemporary life, fire behavior, building design and construction, fire department facilities and equipment, controlling fire loss through active fire protection systems, fire investigation, public and private support organizations, and careers in fire protection. Answers are provided for the review questions.

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**MECHANICAL ENGINEERING & MACHINERY**

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TJ163 2004-540253 1-84339-857-5

**Implementing a prototype energy and water quality management system. (reprint, 2003)**

Title main entry. Ed. by prepared by Lawrence A. Jentgen et al.

*IWA Publishing, ©2004*

*168 p.*

*\$205.00 (pa)*

This report defines the experience of Colorado Springs Utilities (CSU) in the implementation of an Energy and Water Quality Management System (EWQMS), to serve as a prototype for other water utilities. The report explains how CSU justified an EWQMS from an energy and water quality/supply perspective, and describes the approach used to define the changes necessary to enable an EWQMS. EWQMS software specifications are included, along with a description of the methods used to procure, develop, and install the software. The report will be of interest to water utilities contemplating an EWQMS. IWA in the UK now publishes many reports formerly published by AWWA Research Foundation in Denver.

TJ223 2005-047951 0-07-145142-0

**123 PIC microcontroller experiments for the evil genius.**

Predko, Myke. (Evil genius series)

*McGraw-Hill*, ©2005 339 p.

\$24.95 (pa)

Actually none of these experiments are inherently evil, so obviously the reader will be responsible for the dark side of, say, library functions. However, test architect Predko supplies enough experiments to keep you busy, including those that reveal what lies behind the covers, what lurks behind introductory C programming, simple applications and features, and what is likely to jump out of the microcontroller's built-in functions. Predko unearths interfacing projects, C microcontroller applications and MCU assembly language programming. In the really potentially evil sections he gives experiments in sensors, motor control, and robot-related software.

TJ288 2005-010930 1-55617-907-3

**Boiler control systems engineering.**

Gilman, G. F. Jerry.

*ISA*, ©2005 144 p.

\$59.00 (pa)

This reference/overview will be useful for anyone who works with boilers, including utilities managers, power plant managers, control system engineers, and maintenance technicians or operators. It deals primarily with water tube boilers with induced draft and forced draft fans or boilers containing only forced draft fans. Information can also apply to any fuel fired steam generator. Coverage encompasses engineering details on control systems and the setup of the various control functions, with specific examples of boiler control. A glossary is included, but there is no subject index. Gilman is a consultant to utility and industrial plants.

TJ900 2004-061864 0-8247-2755-X

**Pump characteristics and applications, 2d ed. (CD-ROM included)**

Volk, Michael. (Mechanical engineering; v.189)

*Taylor & Francis*, ©2005 533 p.

\$89.95

In this second edition of a book/CD-ROM reference for engineers, maintenance technicians, and plant operators, Volk, a consultant in pump systems, adds material on recent innovations, and expands material on components that were covered only briefly in the first edition. There is new material on software for the design and analysis of pump piping systems, along with a new CD-ROM

demonstrating one such software tool. Other new and expanded topics covered include positive displacement pumps, NPSH analysis for closed systems, electric motors, metallic corrosion, and prevention of low flow damage in pumps.

**ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING**

TK153 2005-045269 1-58053-779-0

**Mathematical handbook for electrical engineers.**

Leonov, Sergey A. and Alexander I. Leonov. (Artech House technology management and professional development library)

*Artech House*, ©2005 495 p.

\$139.00

Written by engineers for engineers, this resource provides the mathematics engineers use on the job daily, offers examples from a variety of disciplines, and gives quick access to major formulas and equations, including stochastic simulation algorithms. Initial topics include elementary mathematics; sequences, series and limits; differential and integral calculus; complex numbers and functions; Fourier series; matrix algebra; probability theory, random functions, and applied statistics; and computer-aided computations. The next sections cover mathematical algorithms to solve common problems in electrical engineering, such as electrical circuits and devices, antennas and propagation, waveforms and signal processing, stochastic radio engineering and reference data.

TK1020 2005-040624 0-8493-3908-1

**Emergency and backup power sources; preparing for blackouts and brownouts.**

Hordeski, Michael F.

*CRC Press*, ©2005 313 p.

\$109.95

Electrical engineer Hordeski sees the US power distribution system continuing to decline in reliability, and reviews the state of emergency power mostly relevant to institutions such as hospitals and government agencies but also to individuals. He explains power disturbances and interruptions, surge suppression, voltage regulation, backup power sources, micro turbines, fuel cells, diesel engines, load management, and power quality issues. He also discusses in some detail blackout planning, emergency procedures, and general energy preparedness; and protecting and recovering computer data. His treatment is specifically for

non-technical consumers, and so is free of equations more complicated than found on an electric bill. Co-published with Fairmont Press.

TK5103 0-471-46964-9

**Digital transmission engineering, 2d ed.**

Anderson, John B. (IEEE Press series on digital and mobile communication)

Wiley-IEEE Press, ©2005 446 p.  
\$99.95

This treatment of digital data transmission engineering combines discussion of concepts, theory, and engineering practice. The bulk of the text's material comes from a first-year graduate introduction to digital communication taught by Anderson (Lund U., Sweden) and covers pulse and carrier modulation; interference and distortion; synchronization up to the network level; and the engineering details of channels, antennas, and propagation. Also included are two chapters dealing with error correction coding and such advanced topics as discrete-time channel models, equalizers, modulations over the fading channel, noncoherent demodulation, and spread spectrum. This second edition contains greater treatment of mobile radio and fiber transmission. Each chapter concludes with exercise problems (twice as many as in the last edition) and a list of further references.

TK5103 0-7695-2397-8

**Information visualisation; proceedings.**

International Conference on Information Visualization (9th: 2005: London, UK) Ed. by Ebad Banissi et al.

Computer Society Press, ©2005  
1011 p. \$291.00 (pa)

These proceedings of the July 2005 conference include papers by researchers describing their work in both research into the nature and function of visualization and a wide range of applications. General topics include sonification, haptics/touch and multimodal interfaces, knowledge visualization in organizations, cognitive information visualization, knowledge domain visualization, the interreg IIIB NEW Special European Project, knowledge visualization applications, calligraphy applications, graph theory, AVR, image recognition techniques, web visualization and VSW, animation, visual data mining, geometric modeling, DART, knowledge domain visualization. Also covered in the conference were such topics as non-visual communication as a means of enhancing the experience or allowing accessibility. In general, keynote speakers have provided abstracts.

TK5105 0-596-00794-9

**Network security tools.**

Dhanjani, Nitesh and Justin Clarke.

O'Reilly & Associates Inc, ©2005  
324 p. \$34.95 (pa)

Assuming familiarity with C, Perl, and the use of assessment tools, this guide introduces techniques for modifying open source assessment tools and testing security vulnerabilities in networks and web applications. The authors, who are managers at Ernst & Young's advanced security center, discuss Nessus, Ettercap, Hydra, Nikto, the Metasploit framework, the PMD tool, Linux kernel modules, network sniffers, and packet injectors.

TK5105 2005-925949 0-7695-2408-7

**Services computing; proceedings; 2v.**

Conference on Services Computing (2005: Orlando, Florida)

Computer Society Press, ©2005  
653 p. \$286.00 (pa)

Volume one of the two volume set from the July 2005 conference consists of 34 full papers and 12 short papers that address service oriented architectures, business process integration, service-oriented grid computing, compliance and access control, and service discovery. Topics include contractual and regulatory compliance challenges, a benchmark for web service frameworks, and a multi-page data extraction service for bio-computing applications. The second volume collects 27 industry papers and 15 posters that illustrate an advanced accounting system for AIX systems, the application of utility computing and web services to inventory optimization, and an XML based description language and execution environment for orchestrating grid jobs. No subject index is provided.

TK5105 2005-042539 0-89871-581-4

**Understanding search engines; mathematical modeling and text retrieval, 2d ed.**

Berry, Michael W. and Murray Browne. (Software, environments, and tools)

SIAM, ©2005 117 p.  
\$35.00 (pa)

Written for advanced computer science or applied mathematics undergrads and for graduate students in the information sciences who specialize in retrieval systems, this slim volume describes the applied mathematics used in information management as these come together in search engines. Chapters on vector space

modeling and link-structure algorithms (the latter is new to this edition) are among the computational methods described. The bibliography has been expanded for this edition. Berry and Browne (both are with the Computer Science department at the U. of Tennessee) developed this text from a successful undergraduate course there.

TK5105 2005-25948 0-7695-2409-5  
**Web services; proceedings; 2v.**  
 IEEE International Conference on Web Services (2005: Orlando, Florida)

*Computer Society Press, ©2005*  
 856 p. \$255.00 (pa)

The proceedings of the July 2005 conference reports advances in network-based application components with a services-oriented architecture that use standard interface description languages and uniform communication protocols. The first volume contains 43 research papers on service selection and discovery, verification and testing, quality of service, optimization of SOAP messaging, provisioning, and service management. Volume two consists of 44 industry papers and 28 posters on business communication applications, process modeling, web services policy, secure transactions, middleware, and business integration. No subject index is provided.

TK7825 2005-047880 0-07-138421-9  
**Standard handbook of electronic engineering, 5th ed.**

Title main entry. Ed. by Donald Christiansen et al.

*McGraw-Hill, ©2005* - p.  
 \$150.00

Christiansen (Institute of Electrical and Electronics Engineers) updates this fifth edition of a handbook/CD-ROM package for electronics professionals to reflect significant advances in electronics hardware, circuits and functions, and applications. New chapters have been added on instrumentation and test systems, software reliability, systems engineering and management, and automotive electronics. Chapters are in sections on principles and techniques, components, circuits and functions, and systems and applications. The CD-ROM contains additional reference and archival material.

TK7867 0-7695-2406-0  
**On-line testing symposium (IOLTS 2005); proceedings.**

International On-Line Testing Symposium (11th: 2005: Saint Raphael, France)

*Computer Society Press, ©2005*  
 326 p. \$173.00 (pa)

In these proceedings from the July 2005 conference, participants face the challenges of new nanotechnologies and their associated field failures, new questions about data and installation security, and the ever-shrinking time to market. General topics include transient fault modeling and analysis, hardening techniques for transient faults, SUE effects in FPGAs, robust design techniques for soft errors, simulation and mitigation of single event effects, self-calibrating design, on-line testing for secure and asynchronous chips, self-checking strategies, process variations, leakage, power supply noise detection and tolerance, testing issues, self-testing and fault tolerance, multiple bit upset evaluation and correction. Issues of timing, yield and reliability and mitigating soft errors to prevent a hard threat. These proceedings include the poster session.

TK7871 2004-059098 0-471-45776-0  
**Modern antenna design, 2d ed.**

Milligan, Thomas A.  
*Wiley-Interscience, ©2005* 614 p.  
 \$145.00

Milligan, a wireless communications consultant, distills essential theory of antenna design without becoming buried in mathematics. He demonstrates real-world applications across a variety of fields, including telecommunications, remote sensing, and broadcasting. He begins with a basic discussion of properties of antennas, then moves on to specific design topics, including radiation structures and numerical methods, aperture distributions, Gaussian beam analysis and waveguide horns, traveling wave antennas, and phased arrays. This second edition reflects developments in antenna design. The book is for antenna designers in all fields of industry and communications.

TK7871 2005-045580 0-07-144559-5  
**Semiconductor manufacturing handbook.**

Title main entry. Ed. by Hwaiyu Geng.

*McGraw-Hill, ©2005* - p.  
 \$150.00

The goal of this guide to semiconductor wafer manufacturing edited by Geng (a project manager at Hewlett-Packard Company) is to cover the essential knowledge necessary for

working in chip fabrication facilities. In general, each of the 43 chapters presented cover principals and fundamentals of a technology and its application, operational considerations, and references and further reading. They are organized into six sections devoted to semiconductor fundamentals and basic materials; wafer processing; final manufacturing; nanotechnology, micro-electro-mechanical systems, and flat-panel display technology; gases and chemicals; and "fab yield," operations, and facilities.

TK7871 1-84564-012-8

**Simulation of electrochemical processes; proceedings.**

International Simulation of Electrochemical Processes (1st: 2005: Cadiz, Spain) Ed. by C. A. Brebbia et al. (WIT Transactions on Engineering Sciences; v.48)

*WIT Press, ©2005* 245 p.  
\$147.00

The 23 studies represent most of the presentations at the conference, which was called to gather researchers who have made significant contributions over recent years in modelling electrochemical processes used by engineers to protect structures against corrosion, to apply coatings and paints, and as a manufacturing process. They cover cathodic protection systems, modelling methodologies, electro-deposition and electro-forming, modelling coatings, and modelling stress corrosion cracking and corrosion fatigue. Among the topics are experimental versus computational system analysis, the time-dependent simulation of electrochemical machining under non-ideal conditions, and stress-corrosion in cold drawn pre-stressing steels. There is no subject index. The US office of WIT Press is Computational Mechanics.

TK7881 2004-059348 0-8247-2245-0

**Power-switching converters, 2d ed.**

Ang, Simon S. and Alejandro Oliva. (Electrical and computer engineering)

*Taylor & Francis, ©2005* 540 p.  
\$89.96

Ang (University of Arkansas) and Oliva (Universidad Nacional del Sur) introduce basic switching converter topologies and control techniques, the dynamic analysis of switching converters, and both PSpice and Matlab simulations. The material and problems are appropriate for a senior level electrical engineering course. The second edition adds

chapters on interleaved converters and switched capacitor converters.

TK7888 2004-115810 0-7695-2284-X

**Engineering of complex computer systems; proceedings.**

IEEE International Conference on Engineering of Complex Computer Systems (10th: 2005: Shanghai, China)

*Computer Society Press, ©2005*  
612 p. \$234.00 (pa)

The 59 papers in this volume from the June 2005 conference investigate theories, methods, and tools for tackling the complexity of computer systems. The researchers address analysis and verification, formal methods, networks, testing, program slicing, component-based technologies, wireless communication, and web systems. Topics include a comparison of fault proneness estimation models, detecting malicious JavaScript code in Mozilla, rapid prototyping of complex interactive simulation systems, regression testing of classes based on TCOZ specification, and coping with legacy system migration complexity. No subject index is provided.

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**MOTOR VEHICLES, AERONAUTICS,  
ASTRONAUTICS**

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TL272 2004-063490 0-8247-2361-9

**Handbook of automotive power electronics and motor drives.**

Title main entry. Ed. by Ali Emadi. (Electrical engineering and electronics; 125)

*CRC Press, ©2005* 704 p.  
\$139.95

Covering applications in conventional, hybrid, and electric cars, the 31 chapters presented by Emadi (Illinois Institute of Technology) offer an overview of the automotive electrical systems, both established and emerging. The chapters are divided into five parts, covering automotive power systems and drivetrains; semiconductor devices, components, and sensors; power electric converters (including discussion of rectifiers and inverters); motor drives; and miscellaneous applications such as an integrated starter alternator, fault tolerant adjustable speed motor drives, steering systems, power electronic applications in safety, drive and control systems, and battery technology.

TL553 2005-008921 0-7546-4549-5

**Contemporary issues in human factors and aviation safety.**

Title main entry. Ed. by Don Harris and Helen C. Muir.

*Ashgate Publishing Co., ©2005*

324 p. \$94.95

In the first days of aviation, the primary human factors were reaction time, the capacity to think in three dimensions, and the ability to control stark terror. This collection of papers from the first four years from the journal *Human Factors and Aerospace Safety* shows we are far more technologically advanced and far less foolhardy, and that no longer can components be considered separately in flight safety. Articles address integrated safety systems in jet transport, data and theory in visual displays, cockpit alerting systems, test pilots, passenger safety in very large aircraft, the effects of human factors training, methods of pilot assessment, teamwork, new accident models, drinking and flying, controller workload and airspace capacity in future systems, human-informed automation, and transforming flight progress strips.

TL681 2004-030374 0-7546-1751-3

**Cockpit engineering.**

Jarrett, D. N.

*Ashgate Publishing Co., ©2005*

140 p. \$124.95

Jarrett, an electrical engineering professional, provides an introduction to cockpit systems and a reference to current concepts and research. After an overview of the evolution of the modern cockpit, the expected abilities of the aircrew, and the hazards of the airborne environment, chapters review relevant component systems and technologies, with material on equipment for external vision, instruments, display technology, controls, emergency escape, and clothing and headgear. The book is for engineers and scientists in aerospace research and manufacture, for civil and military aircrew, and for students in aerospace, mechanical, and electronic engineering.

TL712 2005-923367 0-7546-4287-9

**Flight simulation; virtual environments in aviation.**

Lee, Alfred T.

*Ashgate Publishing Co., ©2005*

137 p. \$89.95

Formerly a research psychologist at the US National Aeronautics and Space Administration Ames Research Center, Lee now runs a business conducting human factors research supporting

the design and evaluation of aerospace, medical, and computer technologies. Here he describes the key component technologies of flight simulators and how they support the pilot's experience of flight and performance of specific tasks. He also discusses the capacity and limitations of the pilot in areas that are directly relevant to the design of flight simulation devices, how flight simulation technology is applied in aviation, and studies of the effectiveness of the technology.

TL781 0-87703-519-9

**History of rocketry and astronautics; proceedings.**

History Symposium of the International Academy of Astronautics (31st: 1997: Turin, Italy) Ed. by Donald C. Elder and George S. James. (AAS history series; v.26. IAA history symposia; v.17)

*Univelt Inc., ©2005* 412 p.

\$70.00 (pa)

The proceedings volume of the 31st History of Astronautics Symposium (held in October 1998) contains 25 papers on subjects ranging in time from the late 19th century through the Cold War years. Topics addressed by the French, Japanese, Romanian, Russian, Syrian, Ukrainian, British, and American authors include the influence of Russian engineers Konstantin Tsiolkovski and Jury Vasiljevich Knodratjuk on the evolution of space technology and space flight theory; the development by Yves Le Prieur of wartime applications for black powder rockets in World War I; World War II liquid rocket developments in Japan, ramjet and A4 propulsion research in the United States and Europe; British parliamentary debate over space policy in the late 1950s; the first Syrian cosmonaut and his experiments on the Mir Space Station; the history of US Space and Rocketry Center; and the research funding history of space lasers, floating rocket launch programs, and other space-related technology.

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**MINING ENGINEERING**

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TN880 2004-062949 0-8493-2785-7

**Gas pipeline hydraulics.**

Menon, E. Shashi.

*CRC Press, ©2005* 404 p.

\$129.95

Conceived as a practical handbook of fluid dynamics for engineers, technicians, and others involved in the design and operation of pipelines transporting natural gas and other compressible fluids, this work presents the fundamental



formulas, codes, and standards used in the industry. Avoiding overly complex equations and theorems, Menon (SYSTEK Technologies Inc., US) presents ten chapters dealing with basic properties of compressible fluids, methods of calculating the pressure drop in a gas pipeline, determination of the total pressure required for transport in pipelines under various configuration, calculation of optimal numbers and locations of compressor stations, installation of pipe loops to increase throughput, mechanical strength of the pipeline, thermal hydraulic analysis, transient pressure analysis, valves and flow measurement, and various economic aspects of gas pipeline systems.

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### CHEMICAL TECHNOLOGY

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TP155 3-527-30985-3

**Green separation processes; fundamentals and applications.**

Title main entry. Ed. by Carlos A.M. Afonso and J.G. Crespo.

*Wiley-VCH*, ©2005 363 p.  
\$180.00

Good news for the environment: built-in green thinking development with a consciousness of the need for sustainability is also desirable from an economic point of view for increased control over production costs, improved materials, reduced waste and emissions, increased energy efficiency, and diminished impact of chemicals manufacturing on the environment. Providing a timely review and a convenient collection of material otherwise scattered in the literature, this volume comprises contributions from Europe, Asia, and the US under the editorial leadership of Afonso (Technical U. of Lisbon) and Crespo (New U. of Lisbon). Coverage includes identification of general principles and regulations that support the need for environmentally friendly chemistry as well as both synthetic methods and separation processes that reflect those principles.

TP807 0-87849-959-8

**High-performance ceramics; proceedings; 2v.**

International Conference on High-Performance Ceramics (3d: 2004: Shenzhen, China) Ed. by Wie Pan et al.

*Trans Tech Publications*, ©2005  
1952 p. \$447.00 (pa)

The papers of this proceedings volume were first presented at the 3rd International Conference on High Performance Ceramics and the First

International Workshop on Layered and Graded Materials, held May 2004 in Shenzhen, China. Over 300 papers present research and applications by scientists mainly in China, though 80 papers are by scientists in other countries. Basic subject categories of the papers are structural ceramics, functional ceramics, ceramic processing, and ceramic characterization (though the papers are not grouped by subject). A small sample of individual paper topics are sintering and dielectric properties of Nano-BaTiO<sub>3</sub> powder synthesized by high-gravity reactive precipitation, effect of lead excess on the formation and dielectric properties of silver dispersed lead titanate film, study of graphite/bakelite/BaTiO<sub>3</sub>-based PTC ceramics composite, and fabricating metal patterned ceramic substance by tape casting. Volume Two contains both keyword and name indexes. Distributed in the US by Enfield.

TP1142 2004-015411 0-470-85062-0

**Additives in polymers; industrial analysis and applications.**

Bart, Jan C.J.

*John Wiley & Sons*, ©2005 819 p.  
\$335.00

Bart (industrial chemistry, University of Messina) examines the latest instrumental methods for monitoring, reformulation, and troubleshooting in industrial analysis and applications of additives in polymers. Current analytical strategy and best practices in the field are outlined and illustrated with industrial applications and case studies. Coverage encompasses areas including sample preparation, separation, identification, hyphenation and quantification techniques, microstructural analysis, additive dynamics, and in-process analysis. The book is for analytical chemists, polymer and material scientists, advanced students, lab technicians, and other practitioners working for industry, academia, government, and regulatory agencies concerned with plastic products.

TP1180 2004-062718 0-8412-3887-1

**Advances in polycarbonates.**

Title main entry. Ed. by Daniel J. Brunelle and Michael R. Korn. (ACS symposium series; 898)

*American Chemical Society*, ©2005  
281 p. \$134.50

Polycarbonate's properties of optical-quality transparency, high glass transition temperature, and exceptional impact strength at room temperature and below, make it a desirable engineering material, and it has been used in optical recording media, sporting equipment,



unbreakable glazing materials, and automotive exteriors and interiors. The 18 studies here, from a symposium at the March 2003 meeting of the Society, discuss theory and modeling, the synthesis of new polycarbonates, the development of enhanced properties such as conductivity and weatherability, recycling, and new methods of producing aliphatic polycarbonates using carbon-dioxide insertion chemistry. Distributed in the US by Oxford University Press.

TP1180 1-85957-493-9

**Practical guide to polyethylene.**

Vasile, Cornelia and Mihaela Pascu.

*Rapra Technology*, ©2005 176 p.  
\$90.00 (pa)

This publication overviews the current market price and commercial manufacturers of polyethylene (PE), classifies the basic types of polyethylene grades, and summarizes their thermal, mechanical, optical, surface, and molecular properties. The Romanian authors then discuss the choice of a suitable additive for preserving or modifying each property for a special purpose, the flow properties of molten polyethylene for forming or extrusion, and how the different processing operations work. Numerous tables and references are provided.

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**MANUFACTURES**

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TS1892 2004-064945 0-8493-1527-1

**Rubber recycling.**

Title main entry. Ed. by Sadhan K. De et al.

*CRC Press*, ©2005 514 p.  
\$149.95

Mountains of used tires mar the landscape or burn in clouds of fetid black smoke. Chemically crosslinked rubber is one of the most difficult materials to recycle, and crumb rubber has yet to find its golden market. All seems hopeless until we read the 12 papers in this collection that prove the technology is available for effective recycling and reuse of rubber. Topics include the development of crumb rubber from whole tires, quality performance factors for tire-derived materials, treated and untreated rubber powder, electromechanical and high-temperature sintering methods of tire recycling, rubber recycling by blending with plastics, ultrasonic and thermomechanical vulcanization, conversion of tires to oil and new markets for scrap tires and recycled rubber.

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**NAVAL SCIENCE**

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V25 2005-926518 0-86587-971-0

**Maritime security handbook; implementing the new U.S. initiatives and regulations.**

Waldron, Jonathan and Andrew W. Dyer, Jr.

*Government Institutes Inc.*, ©2005  
401 p. \$79.00 (pa)

Waldron and Dyer, maritime attorneys based in Washington, DC, provide an overview and analysis of federal security regulations passed since Sept. 11, 2001, to protect US ports from terrorist activities. The guide walks vessel owners and operators through each requirement, including its purpose and applicability, and offers recommendations for compliance. It includes reference to additional relevant sources, such as Coast Guard Navigation and Vessel Inspection Circulars, as applicable.

VA40 1-59114-934-7

**The Naval Institute guide to combat fleets of the world 2005-2006; their ships, aircraft, and systems.**

Title main entry. Compiled by Eric Wertheim.

*Naval Institute Press*, ©2005  
1104 p. \$225.00

This comprehensive bi-annual guide to Naval fleets compiles information from unclassified open-source publications as well as from official sources. The book begins with a list of terms and abbreviations, and is organized alphabetically by name of country. It lists information about each country's naval defense forces beginning with personnel and bases, and then continuing with classes of ships, numbers of units in inventory in 2004, numbers under construction, and further units planned. Ship type designations are also included, as well as information on dimensions, electronics, range, fuel, endurance, and crew. The remarks section contain information such as individual differences between units of a class, and further details on hull systems and various capabilities. Many entries are illustrated with a black & white photograph. The book concludes with an index of ships.