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SciTech Book News Reviews

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SCITECH BOOK NEWS REVIEWS

Ellis Mount, Selector

The following is a selection of 100 entries from two issues of *SciTech Book News*, reprinted with the permission of Book News Inc. *SciTech Book News* is published eight times per year, each issue reviewing over 700 new titles in the physical and biological sciences, mathematics, medicine, engineering, computer science, technology, and agriculture.

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GEOGRAPHY

GB3 1-85739-111-x

World databases in geography and geology.

Title main entry. Ed. by C.J. Armstrong. (World database series) Bowker-Saur, c1995 1255 p. \$200.00

A new directory that provides evaluative and comparative information on electronic databases worldwide in the fields of geography and geology, covering online, CD-ROM, magnetic tape, and diskette formats. The volume is actually two separate directories with a single unifying set of indexes. The first part, Geography, covers all aspects of the topic, including geophysics, cartography, maps and navigation; regional and urban studies, and demographic information, as well as

databases dealing with property or real estate, surveying and planning. The second part includes all aspects of geology, including mineralogy, oceanography, and palaeontology as well as a separate section on mining and drilling. The records provide information on both the database itself and the data providers.

GB5001 95-10770 0-7923-3502-3

Geographical information systems in assessing natural hazards; proceedings.

International Workshop on Geographical Information Systems in Assessing Natural Hazards (1993: Perugia, Italy).

(Advances in natural and technological hazards research; v.5) Kluwer Academic Pubs., c1995 353 p. \$178.00

The 16 contributions describe GIS investigations into landslides, floods,

volcanic eruptions, earthquakes, and groundwater pollution hazards; discuss the current methods for predicting extreme events, emphasizing the intrinsic complexity and the requirement for many spatial data, long historical records, and sound models of the physical processes involved; and consider the potential and limits of such applications of GIS in terms of data acquisition, spatial data structures, and modelling for simulation of the causal phenomena. No index.

PRODUCTION, INDUSTRY, COMMERCE

HD62 95-23859 0-87389-339-5

Integrating reengineering with total quality.

Kelada, Joseph N. ASQC Quality Press, c1996 471 p. \$40.00

Unites TQM and reengineering into an integrated management approach in which reengineering is the means and total quality the objective. Discusses traditional management and TQM, the relation between TQM in services and in manufacturing, the human aspects of total quality, total quality assurance and standardization, and management practices. Appendices offer case studies of TQM implementation and a glossary.

NA2542 95-49568 0-471-14043-0

Environmental resource guide.

Title main entry. Ed. by Joseph A. Demkin. John Wiley & Sons, c1996 880 p. \$150.00

A practical reference for design professionals on the environmental aspects of building materials, produced by the American Institute of Architects and newly co-published with Wiley. With new

page layouts, new typography, and restructured sections, this expanded edition presents information in three formats as materials reports, application reports, and project reports. Materials reports provide detailed environmental life-cycle profiles for building materials. Application reports, a new feature, present narrative and graphic information comparing material performance and environmental concerns within product categories. Project reports profile environmentally responsive building projects. Appendixes include the current ERG methodology, updated reference sources, and a new glossary. Annual updates are available. Looseleaf with tabbed sections in a three-ring binder.

NA6230 94-47110 0-07-012540-6

Architecture of tall buildings.

Title main entry. Council on Tall Buildings and Urban Habitat. (Tall buildings and urban environment series) McGraw-Hill Book Co., c1995 750 p. \$75.00

A comprehensive, illustrated (b&w) guide to the architecture and evolution of the tall building, for architects, structural engineers, and developers. It proceeds through the entire process of designing a tall building, from initial planning and programming with the owner/client through the actual design and construction phase, examining the interactions of architects, engineers, construction managers, financiers, and developers. Includes a conversion table for units, a glossary of terms, and an appendix which identifies the lead professional firms: developer, architect, structural engineer, and services engineer.

SCIENCE (GENERAL)

Q130 95-2320 0-8018-4893-8

Women scientists in America; before affirmative action, 1940-1972.

Rossiter, Margaret W. Johns Hopkins U. Press, c1995 584 p. \$35.95

Rossiter (history of science, Cornell U.) chronicles the struggles and achievements of women in science and scientific academia between 1940 and 1972, showing how women scientists contributed to the war effort, and detailing the postwar period, in which women scientists were told to accept demotion cheerfully. Includes b&w photos.

MATH, COMPUTERS

QA76 0-471-12846-5

Cost-effective strategies for client/server systems.

Boar, Bernard H. John Wiley & Sons, c1996 232 p. \$44.95

Boar, an executive with AT&T (which holds the copyright on the book), ridicules recent writers who suggest that converting from a mainframe computer system to a client/server system may not always be the best move. Addressed to information technology managers who want to sell the change to their superiors, he details the technical and strategic advantages of the client/server approach and offers tips for the manager's presentation. He also provides advice on design, planning, and implementing a system.

QA76 95-30331 0-13-342676-9

Distributed software engineering.

Loftus, CW. et al. (BCS practitioner series) Prentice-Hall, Inc, c1995 260 p. \$44.00 (pa)

Presents suggestions and guidelines for collaborations between independent or partly independent organizations or teleworkers on a project. The emphasis is on the controlled sharing of project information that may be geographically distributed across diverse networks and computing environments. That six authors wrote the book without anyone losing an eye is an indication that they know about collaboration.

QA76 95-41165 0-13-127176-8

Managing client-server environments; tools and strategies for building solutions.

McConnell, John. Prentice-Hall, Inc, c1996 361 p. \$44.00

For designers, planners, administrators, developers, and students of computer networks, explains the latest technology and techniques of client-server environments. Focusing on practical matters of selection, implementation, and use, discusses such aspects as competing network management platforms, instrumenting a network, providing legacy support while also supporting growth and evolution, and using remote access and other tools to make network management more cost effective. No bibliography.

QA76.6 95-44040 0-13-554239-1

Managing a programming project; people and processes. 3d ed.

Metzger, Philip W. and John Boddie.
Prentice-Hall, Inc, c1996 372 p.
\$40.00

A popular guide for managers of software development projects emphasizing the importance of the people who do the actual programming. Updated from the 1981 second edition to account for increases in computer power, the availability of resources on networks, the use of new software development tools, and object- oriented environments.

QA76.64 95-9800 0-262-23186-7

Practical parallel programming.

Wilson, Gregory V. (Scientific and engineering computation) MIT Press,
c1995 564 p. \$50.00

A detailed critical introduction to parallel programming techniques for scientists, engineers, and graduate students in computer science. A review of the theoretical and architectural fundamentals is followed by descriptions of the four most popular models in use: data parallelism, shared variables, message passing, and Linda. Also covered in detail is how each model can be used to solve various scientific and numerical problems. Uses Fortran-K which is reportedly freely available from the MIT Press ftp site.

QA76.75 95-35296 0-7923-9631-6

A paradigm for decentralized process modeling.

Ben-Shaul, Israel and Gail Kaiser. (The Kluwer international series in engineering and computer science.) Kluwer

Academic Pubs., c1995 301 p. \$98.00

Offers a novel approach to implementing and managing a process modeling project that is dispersed geographically among individuals or teams with their own autonomous processes. Emphasizing a flexible control over the degree of collaboration versus autonomy, describes abstraction mechanisms by which pre-existing workflows can be encapsulated to retain the security of their internal artifacts and status data while agreeing with other processes on formal interfaces through which all their interactions are conducted with intentionally shared information. Primarily applicable to software engineering and development, but could also be used in electrical, mechanical, civil, and other areas of engineering. Suitable as a graduate text. Based on a 1992-94 doctoral dissertation for Columbia University.

QA76.76 0-13-242488-6

HTML for fun and profit.

Morris, Mary E.S. Prentice-Hall, Inc,
c1996 306 p. \$39.95 (pa)

A book/CD-ROM package with step-by-step tutorials for beginning and

advanced techniques in HTML, from setting up a server to creating HTML documents with hypertext links and using CGO scripting. Covers formatting basics, integrating multimedia into Web pages, layout, and publishing Web pages on the Internet. The section on servers includes instructions for setting up from CERN or NCSA for UNIX, and setting up Windows NT, Microsoft Windows, and Macintosh servers. The accompanying CD-ROM contains shareware and examples of Web pages and perl scripts.

QA76.76 0-13-172389-8

Programming with threads.

Kleiman, Steve et al. Prentice-Hall, Inc, c1996 534 p. \$38.00 (pa)

Covers how to use threads, how to deal with common problems, and how to use multithreading in existing programs and new applications, for both novice and experienced threads programmers. Topics include synchronization and threading strategies; using threads for graphical user interfaces; threads and UNIX; multiprocessors and parallel programming; and implementation and performance issues. Includes detailed working examples using the POSIX threads standard interfaces. Assumes familiarity with UNIX and C programming language.

QA76.76 95-36599 0-8186-7194-7

Software engineering risk management.

Karolak, Dale Walter. Computer Society Press, c1996 171 p. \$25.00

Explores software and risk management from both a technology and a business perspective, presenting strategies for implementing and planning software projects in a cost-effective and timely

manner. Discusses software risk issues pertaining to costs, schedules, and technical performance, and offers models for measuring and predicting risk and case studies. Includes numerous checklists, and a glossary. For software development managers.

QA76.8 95-17337 0-938661-76-0

MPW assembly language programming for the Macintosh; a structured approach.

Foulk, Clinton R. Franklin Beedle & Assoc, c1995 672 p. \$58.95 (pa)

A book/disk package emphasizing the use of structured control techniques in writing assembly language programs for the Macintosh, assuming a previous course in structured programming using high-level languages. Covers subprograms and macros, creating assembly language programs with toolbox routines, and using toolbox routines to work with points, lines, and rectangles. Includes exercises and selected answers. The accompanying disk contains Boston College Shell and every example program in the book.

QA76.9 95-24626 0-07-009631-7

Bulletproof documentation; creating quality through testing.

Cady, Dorothy L. McGraw-Hill Book Co., c1996 312 p. \$45.00

Any reader who has purchased a ready-to-assemble toy and found out that the required screws in the instructions didn't match the ones in the package will appreciate the importance of documentation testing. Cady, a former senior technical writer for Novell, Inc, introduces the function and benefits of testing; developing, preparing, and conducting

documentation testing; reporting test results; how to become a tester and how to implement a testing group in your company, as well as training and hiring a testing team. Well written, concise, and informative, this is a great text for anyone researching the field or for technical writers interested in widening their expertise.

QA76.9 95-40346 1-55851-434-1
The data compression book. 2d ed.
 Nelson, Mark and Jean-Loup Gailly.
 M&T Books, c1996 557 p. \$39.95 (pa)
 A book/disk guide to data compression techniques. Discusses the theory behind methods including Shannon-Fano and Huffman coding techniques, Lossy compressions, and the JPEG compression algorithm, and illustrates each technique with a C program. Includes appendices on statistics for various compression programs, test programs, and a glossary. This second edition is updated to include information on fractal compression techniques, and contains updated code. For intermediate to advanced programmers.

QA76.9 95-30723 0-07-057639-4
Network security; data and voice communications.
 Simonds, Fred. (McGraw-Hill series on computer communications) McGraw-Hill Book Co., c1996 395 p. \$60.00
 A guide for managers of local and wide-area computer networks to protecting data and voice communications from both internal and external security threats. Discusses such aspects as conducting security audits, security risks inherent in plugging in to the Internet, the latest viruses, government policies on encryption, passwords, authentication, and

firewalls to stave off the hackers. Paper edition (unseen), \$39.95.

ASTRONOMY

QB51 95-34050 0-7923-3659-3
Information and on-line data in astronomy.

Title main entry. Ed. by Daniel Egret and Miguel A. Albrecht. (Astrophysics and space science library; v.203) Kluwer Academic Pubs., c1995 291 p. \$154.00
 Describes a wide range of on-line databases, archives, data centers, and information systems that have been created to store, manage, and provide access to the huge quantity of data collected by astronomical observations. Also discusses general issues such as the evolution of information technology, putting information on the network, and bibliographic conventions. When the editors decided to update their 1991 work, they found themselves in a different information universe, and had to start from scratch. Among the resources listed is the on-line version of the book itself. For astronomers, librarians, data specialists, and computer and network engineers.

PHYSICS

QC61 95-24953 1-56396-143-1
The physics quick reference guide.
 Cohen, E. Richard. AIP Press, c1996 209 p. \$30.00 (pa)
 The formula for harmonic progression, the heat capacity at constant volume or pressure, and how many Joules equals a thermochemical calorie, are among the information at the fingertip. Special chapters cover engineering physics, the properties of matter, and probability and

statistics. Plastic comb binding to stay open while you copy out the equation.

QC174 95-14941 1-56081-513-2

Statistical mechanics of phases, interfaces, and thin films.

Davis, H. Ted. (Advances in interfacial engineering series) VCH Publishers, c1996 712 p. \$95.00

A textbook providing a unified theory of phases and their interfaces and of the molecular and supramolecular structure of fluids. Simple solids and magnetic systems are only briefly treated. Chapters one through six provide an introductory course in statistical mechanics and phase behavior, while chapters six through 14 can be used for a one-term course of the statistical mechanics of the behavior of phases, interfaces, thin films, and colloidal systems. Chapter 15 covers determination of microstructure by scattering methods. For scientists and advanced undergraduate and graduate students in chemistry, engineering, physics, and materials science.

QC176 95-30589 0-7503-0322-0

Semiconducting transparent thin films.

Hartnagel, H.L. et al. IOP Publishing, Inc, c1995 358 p. \$180.00

Explains fundamental aspects and applications of semiconducting transparent thin films and coatings, and identifies areas for future research. Details growth techniques such as CVD, spray pyrolysis, and evaporation and their limitations; discusses electrical and optical properties of thin films and the role of various factors including substrate temperature, oxygen partial pressure, and doping; introduces optical constants and details optical properties of oxide films in relation to

deposition conditions; and explores applications of thin films of commonly used materials such as tin oxide, indium oxide, indium tin oxide, cadmium stannate, and zinc oxide for uses such as wavelength selection, solar cells, and gas sensors. Contains b&w diagrams and charts. For researchers and students in electrical and electronic engineering and physics. Note: CiP shows the title as the main entry.

QC689 94-41871 0-521-46192-8

Compact sources of ultrashort pulses.

Title main entry. Ed. by Irl N. Duling. (Cambridge studies in modern optics) Cambridge U Pr., c1995 430 p. \$79.95
Surveys recent innovations in both the theoretical and experimental aspects of ultrashort laser pulses, and the operational principles and potential applications of compact, mode-locked laser systems now available. Among the types of laser systems described are passively mode-locked solid state, diode-pumping, fiber, external cavity semiconductor, surface emitting semiconductor, and monolithic colliding pulse diode. For researchers in high-speed communications or ultrafast phenomena.

QC718 95-34722 0-306-44938-2

Transport and optical properties of nonideal plasma.

Title main entry. Ed. by G.A. Kobzev et al. Plenum Press, c1995 318 p. \$79.50
Synthesizes information scattered throughout scientific literature on the properties of plasma in which the effects of inter-particle interactions are substantial, also called dense plasma because it is usually compressed very strongly. Systematically describes the thermodynamics such as ionization equilibrium

and particle composition; charge transport properties, especially electric conductivity; optical properties that produce peculiarities of continuous and discrete spectra; and the features and manifestation of collective modes. Considers theoretical models as well as experimental data. Of special interest to graduate students and newcomers in plasma physics. The book production is less than ideal, since several pages of the review copy are folded and cut wrong, and some are glued together.

QC793 1-57485-001-6

The physics of tachyons.

Wall, Ernst L. Hadronic Press, c1995
234 p. \$60.00 (pa)

Brings together previously published work by the author over the past four years, plus new work, on a radical new particle theory of tachyons, particles existing in subatomic structures that travel faster than the speed of light. Wall's tachyon model describes electrons, muons, mesons, and light nuclei, and includes detailed calculations of particle energy levels, dimensions, and magnetic characteristics. He compares the present model with other particle models, and comments on early tachyon theories. For scientists and engineers, and students in the physical sciences.

QC809 95-44212 0-7503-0052-3

Goelectromagnetic waves.

Guglielmi, A.V. and O.A. Pokhotelov.
IOP Publishing, Inc, c1996 382 p.
\$200.00

A comprehensive account of the electromagnetic oscillations and waves that arise naturally in the Earth's crust, the ocean, the atmosphere, the ionosphere, the

magnetosphere, and the interplanetary medium beyond. Presents a physical description of the waves emphasizing theoretical inferences that are easy to compare with observational data. The goal is to allow readers with a basic knowledge of electrodynamics and a general understanding of the Earth and her environments, to begin original research with a clear understanding of the unsolved problems and the trends in the field. In addition to the specific media of waves, considers modulation, instability, nonlinearity, fluctuational and critical phenomena, hydromagnetic diagnostics and geo-electric prospecting, and the relationship of geoelectromagnetic waves to humans. Translated from Russian, but no mention is made of a Russian edition.

QC981 95-36871 0-444-89322-9

Future climates of the world; a modelling perspective.

Title main entry. Ed. by A. Henderson-Sellers. (World survey of climatology; v.16) Elsevier Science, c1995 608 p.
\$353.25

Unlike its predecessors in the series, this volume is not a collection of climatic facts. Rather it is an overview of current understanding of climate and of the science of climatic prediction through the use of models, an understanding that is, to date, far from complete; future climates cannot yet be predicted, and the material presented here is necessarily ephemeral as the discipline shifts from accumulating data to creating experimentally based models. After an introductory chapter on why consideration of future climates is important, 14 chapters address various aspects of the geologic perspective, present-day observations as

they pertain to future climates, human factors, and planetary geophysics.

QD39 95-41349 0-471-10587-2
Computer software applications in chemistry. 2d ed.

Jurs, Peter C. John Wiley & Sons, c1996 291 p. \$49.95

New edition of a text showing readers how to use chemistry software to graphically depict chemical structures, write code to solve equations, and conduct spectroscopic library searches, among other tasks. Organization is in three sections: an introduction to computers and computing, which includes algorithm design, floating point number system, and error and statistics; numerical methods, curve fitting, numerical solutions to differential equations, and matrix methods; and non-numerical methods, chemical structure information handling, graph theory, artificial intelligence and expert systems, and structure elucidation.

QD79 0-85404-500-7

Packed column SFC

Berger, T.A. (RSC chromatography monographs) Royal Soc of Chemistry, c1995 251 p. \$70.00

A practical guide to packed column supercritical fluid chromatography (SFC), which has re-emerged recently as a major technique because of a switch to more polar solutes. Emphasizes understanding the underlying chemistry in order to preform rapid, systematic optimizations; offers many practical tips for new users; proposes a detailed scheme for method development, and provides lists of prioritized guidelines. For research

chemists in any field that uses chromatography.

QD96 0-85404-560-0

Inductively coupled and microwave induced plasma sources for mass spectrometry.

Evans, E. Hywel et al. (RSC analytical spectroscopy monographs). Royal Soc of Chemistry, c1995 107 p. \$52.00

An overview rather than comprehensive reference on the present status of plasma source mass spectrometry, emphasizing gases and gas mixtures besides argon, which has received most of the attention in the decade since the technique was first introduced on a commercial level.

Provides a tutorial on interfacing inductively coupled and microwave-induced plasma sources formed in a variety of gases with mass spectrometry. Addressed to researchers entering plasma-source mass spectrometry and atomic spectrometry in general, but also those seeking to combine chromatographic with other techniques using plasmas.

QD96 95-34049 0-471-57467-8
Photothermal spectroscopy methods for chemical analysis.

Bialkowski, Stephen E. (Chemical analysis; v.134) John Wiley & Sons, c1996 584 p. \$89.95

A comprehensive guide to all available photothermal spectroscopy techniques for chemical and material analysis, considering both the theory and application at a level accessible to practitioners and graduate students in analytical chemistry. Describes the various processes used to detect the thermal perturbation of a sample, ranging from optical excitation to

nonlinear processes; and covers all optical principles necessary to understand the technique. Also includes an original impulse-response approach to the hydrodynamic equations that govern energy transfer in the sample matrix.

QD481 95-16397 1-56081-689-9

Modern conformational analysis; elucidating novel exciting molecular structures.

Dodziuk, Helena. (Methods in stereochemical analysis) VCH Publishers, c1995 264 p. \$99.95

Provides a global view of organic molecules with unusual spatial structures, emphasizing the importance of molecule shape to organic chemistry and biological systems, the quantum foundations of molecular spatial structure, molecular symmetry, the differences between chirality and stereogenicity, and the physical methods for studying molecular geometry. Also explores the interrelation between the symmetry and the dynamics of conformationally non-rigid molecules, and introduces Computer Assisted Molecular Design as it is used in materials science and drug design. Includes six color plates showing computer-generated models of molecules. Addressed to organic and physical chemists who are acquainted with classical conformational analysis.

QD505 95-35574 0-444-89796-8

Catalysis by metals and alloys.

Ponec, Vladimir and Geoffrey C Bond. (Studies in surface science and catalysis; 95) Elsevier Science, c1995 734 p. \$297.00

The authors describe the theoretical basis of chemisorption and catalysis by metals

and alloys, and their use in a range of model and industrially significant catalyzed processes. Model, as well as industrially used reactions catalyzed by alloys, are reviewed. This review is introduced in two chapters which summarize the definition, their physical meaning, and the role of such factors as ligand, ensemble size, and ensemble composition effects; the physical techniques and evaluation of results required for assessment of the roles of these individual factors are also presented. Particular attention is paid to the connection between chemisorption and catalytic phenomena, and their dependence on the structure of the surface as revealed by current techniques of solid-state physics is highlighted.

QD549 95-40714 0-8247-9674-8

The preparation of dispersions in liquids.

Stein, H.N. (Surfactant science series; v. 58) Marcel Dekker, c1996 245 p. \$125.00

A summary of colloid chemistry detailing the preparation of dispersions in liquids, bridging the gap between chemists who are not applications oriented and chemical engineers who need to solve problems in the field based on theoretical models of dispersions of solids, liquids, and gases. After an introductory section reviewing basics such as interfaces between phases and thin liquid films, details dispersions of solids, liquids, gases, and foams, and illustrates methods for preparation of dispersions of a solid in a liquid and of liquid/liquid dispersions. Discusses dispersion by electric discharges, droplet behavior, and transportation of divided soils and highly viscous liquids. Includes

b&w diagrams and photos. For chemical, biochemical, and mining engineers, and upper-level undergraduate and graduate students.

QD921 3-527-29207-1

Active metals; preparation, characterization, applications.

Title main entry. Ed. by Alois Furstner. VCH Publishers, c1996 464 p. \$155.00
A volume containing practical information about the large repertoire of preparative methods and syntheses possible with active metals. Covers topics ranging from morphology of metal clusters and nanometallurgy to organo-metallic chemistry, catalysis, and the use of activated metals in natural product synthesis. Each chapter offers detailed experimental procedures, guidance on manipulation of active metals under inert atmosphere, important information for planning syntheses, extensive tables of typical conversions with yields, and selected references. Contributors hail from Germany, Spain, Austria, Chile, Japan, and the US. Includes b&w photographs and useful charts and diagrams.

GEOLOGY

QE43 95-12651 0-444-81767-0

Global optimization methods in geophysical inversion.

Sen, Mrinal K. and Paul L. Stoffa. (Advances in exploration geophysics; 4) Elsevier Science, c1995 281 p. \$170.50
Describes the application of several recently developed global optimization methods to geophysical problems. Emphasizes the practical aspects of the algorithms, but also explicates several

parts of the theory in sufficient detail for the reader to understand the fundamental principles on which they are based. Intended to provide students, researchers, and practitioners with enough information and insight to design algorithms to solve their own specific geophysical inversion problems. Assumes only a fundamental mathematical background that includes linear algebra and calculus. Suitable as a text for a one-semester graduate course in geophysical inversion.

BIOLOGY

QH87 95-440 0-309-05134-7

Wetlands; characteristics and boundaries.

Title main entry. National Research Council. National Academy Press, c1995 307 p. \$37.95
Prepared by a committee drawn from academia, government, and business, this volume explores how to define wetlands and presents a scientific basis for their definition. Also discusses the diverse hydrological and ecological functions of wetlands and makes recommendations concerning so-called controversial areas such as permafrost wetlands, riparian ecosystems, irregularly flooded sites, and agricultural wetlands.

QP517 95-22596 1-56081-669-4

Biomimetic materials chemistry.

Title main entry. Ed. by Stephen Mann. VCH Publishers, c1996 383 p. \$125.00
Surveys the current state of applying concepts, mechanisms, and products from biological systems to the synthesis, design, and processing of inorganic nanoparticles, thin patterned films, ceramics, organic-inorganic composites, and other

advanced materials. Among the topics are biomineralization, strategies, organized protein cages, template-directed nucleation, and ceramics processing with biogenic additives. Does not consider the synthesis of artificial muscles, joints, skin, and other soft materials.

MICROBIOLOGY

QR69 95-43354 0-935184-82-1
Automated microbial identification and quantification; technologies for the 2000s.

Title main entry. Ed. by Wayne P. Olson. Interpharm Press, c1996 397 p. \$189.00

Addressed primarily to two audiences that require rapid, reliable microbial assessment of samples: pharmaceutical manufacturers that produce parenteral drugs, and clinical microbiologic laboratories. Covers bacteria and yeasts, the technology of automation, the design and operation of equipment, the exactitude and reliability of methods, and validation issues. Chapters discuss gas chromatography, and substrate utilization, the Biolog MicroStation System, anaerobes, gram-positive organisms; probe technology and automation; cellular fatty acid analysis, optical and electrical zone-sensing particle counters, quantitative analysis of DNA in protein products and fermentation media, and other topics.

QR103 95-40328 0-8247-9541-5
Geomicrobiology. 3d ed.

Ehrlich, Henry Lutz. Marcel Dekker, c1996 719 p. \$195.00

A text/reference that explores the role which microbes play or have played in

specific geological processes. This revised and expanded edition integrates important advances in the field, in such areas as subsurface microbiology as it relates to groundwater, carbonate deposition, rock weathering, methyl-mercury formation, oxidation and reduction of iron and manganese, chromate reduction, oxidation and reduction of molybdenum, reduction of vanadate (V) and uranium (VI), oxidation and reduction of sulfur compounds, reduction of selenate and selenite, methanogenesis, microbial attack of coal, and degradation of hydrocarbons.

MEDICINE (GENERAL & PUBLIC ASPECTS)

R857 95-25000 0-935184-80-5
Electromagnetic compatibility in medical equipment; a guide for designers and installers.

Kimmel, William D. and Daryl D. Gerke. Interpharm Press, c1995 288 p. \$169.00

A practical guide to EMC issues for medical device designers and installers, co-published by Interpharm Press and IEEE Press (the IEEE ISBN is 0-7803-1160-4). It addresses electromagnetic interference, and covers the basics of EMC design, physics, and installation, minimizing theory and concentrating on the correct way to ground and shield. The 12 chapters are followed by a glossary and appendices of references for EMC publications, properties of common materials, and constant and conversion factors. The materials are an outgrowth of a series of articles written for Medical Device & Diagnostic Industry.

TECHNOLOGY (GENERAL)

T55 95-32461 0-309-05229-7

Prudent practices in the laboratory; handling and disposal of chemicals.

Title main entry. National Research Council. National Academy Press, c1995 427 p. \$54.95

Updates and combines two publications, Prudent Practices for Handling Hazardous Chemicals in Laboratories (1981) and Prudent Practices for Disposal of Chemicals from Laboratories (1983).

Explores the current culture of laboratory safety and provides an updated guide to federal regulations. Organized around a recommended workflow protocol for experiments, offers planning procedures and safe practices, with information on assessing hazards, managing chemicals, and disposing of wastes.

T55 92-11-39048-6

Recommendations on the transport of dangerous goods. 9th ed.

Title main entry.

((ST/SG/AC10/1/Rev.9)) United Nations Pub., c1995 549 p. \$95.00 (pa)

Recommendations developed by the UN Committee of Experts on the Transport of Dangerous Goods, covering principles of classification and definition of classes, listing of the principal dangerous goods, general packing requirements, testing procedures, marking, labeling, or placarding, and transport documents. The present 9th revised edition includes the recommendations adopted at the 18th session of the Committee held in Geneva from 28 November to 7 December 1994.

T55 92-11-39049-4

Recommendations on the transport of dangerous goods; manual of tests and criteria. 2d ed.

Title main entry. United Nations Pub., c1995 398 p. \$60.00 (pa)

A manual presenting the United Nations schemes for the classification of certain types of dangerous goods, including descriptions of the most useful test methods and procedures for properly classifying substances and articles for transport. Intended to be used in conjunction with the latest version of the Recommendations on the Transport of Dangerous Goods. Lacks an index and a bibliography, but includes several useful appendices.

T58 95-46405 0-471-58059-7

Information technology for management; improving quality and productivity.

Turban, Efraim et al. John Wiley & Sons, c1996 801 p. \$77.95

An introductory text that departs from conventional coverage and orientation. Many texts are geared towards yesterday's environment, emphasizing the technology, the construction of information systems, and the support of traditional business functional applications. The approach here is not to rehash the behavioral and organizational aspects of IT that are learned in introductory management courses, but rather to emphasize the innovative uses of information technology in finding and creating solutions to organizational problems and challenges.

T60 95-077580 0-88415-269-3
Computer control and human error.
 Kletz, Trevor et al. Gulf Pub. Co./Book
 Div., c1995 120 p. \$50.00
 For process plant engineers and those
 who design software for them, analyzes
 the role of human error in computer-
 controlled process plants, demonstrating
 how mistakes can occur and providing
 computer specialists with insight into the
 user's perspective. Presents detailed case
 studies of the causes and aftermath of
 disasters in state-of-the-art plants, and
 suggests how similar incidents can be
 avoided in the future. Also examines
 hazard and operability (Hazop) studies to
 detect risk. Nice cartoons.

ENGINEERING (GENERAL, CIVIL)

TA165 95-48912 0-89006-824-0
Understanding smart sensors.
 Frank, Randy. Artech House, c1996
 269 p. \$72.00
 Presents engineers with the broad
 spectrum of possible features and appli-
 cations of smart sensors based on the
 current research and development efforts
 of industry, universities, and national
 laboratories, considering both sensor
 technology and future products that will
 rely on it. Among the topics are the
 micromachining that is currently driving
 advances, the nature of sensor output,
 getting sensor information into the
 controller unit, communications, micro-
 electromechanical systems, packaging
 implications, and mechatronics.

TA168 95-22598 0-07-000748-9
**Data reverse engineering; slaying the
 legacy dragon.**
 Aiken, Peter H. McGraw-Hill Book Co.,
 c1996 394 p. \$40.00
 Explains data's fundamental role in
 reengineering and offers a guide to
 reverse engineering in four sections on
 project context, the analysis process,
 reverse engineering outputs, and invest-
 ments. Coverage includes tool support,
 project management, developing data
 architectures, and evaluating investment
 opportunities. The bulk of the book
 outlines a model process for developing a
 project team, and details specific
 functions for the reverse reengineering
 process.

TA177 95-21506 0-88173-216-8
**Engineering economic analysis
 guidebook.**
 Pansini, Anthony J. Fairmont Pr., c1996
 186 p. \$72.00
 A guide to making critical decisions
 regarding engineering and construction
 projects, covering aspects of engineering
 economic analysis including handling
 data; evaluating capital; assessing
 operating and maintenance expenditures;
 life-cycle cost analysis; and variable
 elements. Discusses the time value of
 money, the pros and cons of leasing
 versus purchasing equipment, estimation
 methods, and depreciation, and includes a
 glossary and appendices on the grid
 coordinate system and US and metric
 relationships.

TA403 95-35405 0-87170-283-5
Engineered materials handbook; desk edition.

Title main entry. ASM International Handbook Committee. ASM International, c1995 1317 p. \$154.00
 A comprehensive reference on the properties, selection, processing, and applications of the most widely used nonmetallic engineering materials. Section 1, General Information and Data, contains information applicable both to polymers and to ceramics and glasses. It includes an illustrated glossary, a collection of engineering tables and data, and a guide to materials selection. Sections 2 through 7 focus on polymeric materials, plastics, elastomers, polymer-matrix composites, adhesives, and sealants, with the information largely updated and expanded from the first three volumes of the Engineered Materials Handbook. Ceramics and glasses are covered in Sections 8 through 12, also with updated and expanded information.

TA409 95-2193 0-12-709120-3
Analytical fracture mechanics.

Unger, David J. Academic Press, c1995 300 p. \$99.95
 A supplement to existing graduate textbooks on fracture mechanics, presenting material related to the analytical solution of partial differential equations that pertain to the theory, focusing on the near crack-tip region, which is attracting most of the current research in the fields of elastoplastic and environmentally assisted fracture mechanics. After a general review of fracture mechanics, covers linear elastic fracture mechanics, plastic strip models, mode III elastoplastic solutions, failure criteria, slip line theory,

and finite element solutions of the mode I problem.

TA409 95-17501 0-471-12546-6
Stability problems in fracture mechanics.

Bolotin, V. V. (Wiley series in nonlinear science) John Wiley & Sons, c1996 188 p. \$64.95
 Provides new understanding of the fracture of load-bearing material in vehicles, bridges, pipelines, and other structures by approaching it from the perspective of stability. Bolotin, an internationally recognized authority on stability theory, argues that the approach will improve methods of evaluating structural safety and reliability parameters especially in the presence of the cracks and crack-like defects that are unavoidable in large structures. Assumes a knowledge of calculus and the mechanics of solids.

TA418 95-48914 0-89006-681-7
Smart structures and materials.

Culshaw, Brian. Artech House, c1996 207 p. \$65.00
 Some people figure that they have become intelligent enough to risk surrounding themselves with smart structures and be confident of not finding themselves in a horror movie. Culshaw, with a background in physics and electronics, explains the principles and concepts of smart materials and their integration to create aircraft, trains, domestic appliances, buildings, and perhaps even amusement arcades that can call the repair person when they are not well, react against the elements, adjust their heat and ventilation, and account for their wear and aging. He also doubts the

imminent emergence of smart materials, and explains what is left to learn before they could be developed. Accessible to nonspecialists with some scientific or technical background.

TA593 95-47824 0-7844-0143-8

Photogrammetric mapping.

Title main entry. (Technical engineering and design guides as adapted from the U.S. Army Corps of Engineers; no.14) Am. Soc Civil Engineers, c1996 332 p. \$52.00 (pa)

Presents guidelines, technical specifications, and quality control criteria for performing aerial photogrammetric mapping activities, focusing on the preparation of design drawings and other documents associated with detailed site planning. Topics include flight, camera, and film requirements; cost estimation; ground control requirements; fully analytical aerotriangulation methods; stereoplotter map compilation; and principles of photogrammetry. Includes b&w photos and illustrations, a glossary, and various standards and specifications.

TA660 95-20200 0-444-88718-0

Atlas of limit loads of metal plates, shells, and disks.

Save, Marcel A. Elsevier Science, c1995 588 p. \$234.50

This atlas results from studies commissioned to harmonize the methodologies, codes, standards, and regulations used in European Community member states for the design, material selection, fabrication, and inspection of Fast Breeder Reactor components. Although the present work stems from the nuclear reactor safety field, it has practical significance in a wide area of applications. The use of the

limit load as a basis for analysis is not limited to failure by plastic collapse alone; it is also applicable in situations where failure results from the interaction of several phenomena, e.g. when a cyclic thermal stress interacts with a mechanical loading and leads to ratchetting. Bound in a four-ring binder in anticipation of planned updates about every two years.

TA660 95-37207 0-7844-0014-8

Cable corrosion in bridges and other structures.

Stahl, Frank L. and Christopher P. Gagnon. (Causes and solutions) Am. Soc Civil Engineers, c1996 224 p. \$40.00 (pa)

Examines the corrosion of cable-supported bridges and methods used to rehabilitate or avoid corrosion damage. Chapters review causes of corrosion, materials, methods of fabrication and construction, and their potential for exposure to various forms of corrosive attack. Includes case histories of real bridges and b&w photos. Of interest to designers, builders, and operators of cable-supported structures.

TA684 95-37679 0-673-99786-3

Steel structures; design and behavior; emphasizing load and resistance factor design. 4th ed.

Salmon, Charles G. and John E. Johnson. HarperCollins, c1996 1024 p. \$84.50

This edition (first, 1971) presents the theoretical background needed for developing and explaining design requirements, particularly those of the 1993 LRFD Specification. Beginning with coverage of background material, including references to pertinent research, the development of specific formulas used

in the AISC Specifications is followed by design examples explaining in detail the process of selecting minimum weight members to satisfy given conditions.

TA710 95-6616 0-471-08658-4
Soil mechanics in engineering practice.
 3d ed.

Terzaghi, Karl et al. John Wiley & Sons, c1996 549 p. \$75.00
 Compiles the research findings on the properties of soil that are of interest to engineers, explains the theoretical goals for both initial estimates and detailed predictions of soil behavior under defined conditions, and suggests how to keep earthwork and foundation engineering cost effective. The third edition not only expands the soil information but also broadens it to include findings from a wide range of fields; describes the new whistles and bells that have been added to the theories and analytic methods; and preserves essentially unchanged the practical suggestions that have become classics since the 1948 first edition. The date of the second edition is not noted.

TA1632 95-32739 0-7923-9591-3
Image and video compression standards; algorithms and architectures.

Bhaskaran, Vasudev and Konstantinos Konstantinides. (Kluwer international series in engineering and computer science; 334) Kluwer Academic Pubs., c1995 369 p. \$96.00
 Introduces the algorithms and architecture that form the underpinnings of the primary image and video compression

standards, including JPEG (compressing still images), H.261 (video conferencing), and MPEG-1 and -2 (video storage and broadcasting). Also includes the MPEG and Dolby AC-3 audio coding standing and emerging techniques for image and video compression such as those based on wavelets and vector quantizations. Emphasizes the algorithms and architectures that have been found practical in software or hardware implementations. Assumes some background in high-level hardware design, but no prior knowledge of compression. Conceived as a reference or self-study tutorial, but may also be suitable as an auxiliary text in a graduate course.

TA1637 95-33316 0-7923-9626-X
Digital image compression; algorithms and standards.

Kou, Weidong. (The Kluwer international series in engineering and computer science) Kluwer Academic Pubs., c1995 192 p. \$85.00
 Explains to users of digital imaging technology, especially in a business context, the fundamentals of compressing image data to reduce storage space and transmission time, both of which are often factors limiting their use. Covers the principles of compression and the algorithms used for them, standards for such applications as facsimiles and digital video, and several approaches to coding including recognition-based, and fractal. Should suffice as a complete guide for managers to choosing and installing a compression system, and an introduction for technical readers.

TA1706 95-8165 0-12-222695-X

Tunable lasers handbook.

Duarte, F.J. (Optics and photonics series)
Academic Press, c1995 476 p. \$80.00

A current survey of the physics, technology, and performance of widely applicable sources of tunable coherent radiation, providing researchers and engineers with the practical information necessary to choose an appropriate tunable laser for a particular application. Topics include dispersive oscillators, excimer lasers, CO₂ lasers, dye lasers, tunable solid state lasers, optical parametric oscillators, tunable semiconductor lasers, and free electron lasers. Includes 182 figures and 68 tables.

HYDRAULIC ENGINEERING

TC555 95-41124 0-7844-0078-4

Hydraulic designs of spillways.

Title main entry. (Technical engineering and design guides as adapted from the US Army Corps of Engineers; no.12). Am. Soc Civil Engineers, c1995 120 p. \$40.00 (pa)

A guide for the hydraulic design of spillways for flood control and multi-purpose dams, with a brief review of hydraulic design theory and analysis of problems related to spillway design. Chapters on spillway crest and chute, specialized spillways, and energy dissipators contain numerous b&w charts, diagrams, and photos. Includes appendices on computations for designs of spillways, stilling basins, flip buckets, and roller buckets. For engineers.

ENVIRONMENTAL TECHNOLOGY

TD193 0-471-95911-1

Methods to assess the effects of chemicals on ecosystems.

Title main entry. Ed. by Rick A. Linthurst et al. (SCOPE 53; IPCS joint activity 23; SGOMSEC 10) John Wiley & Sons, c1995 416 p. \$105.00
Emerging from the title workshop, convened by the Scientific Group on Methodologies for the Safety Evaluation of Chemicals (SGOMSEC), this volume, a joint report summarizing findings and recommendations, followed by 14 contributed papers, presents approaches and methods to study the effects of chemical and physical agents on ecosystems in order to collect information which facilitates risk-based decision making. It includes an overview of available methods to study the effects of chemical stressors on different ecosystem types, including freshwater, brackish, estuary and near-coastal, wetlands, forest, arid and semi-arid, and tundras.

TD193 95-20634 3-527-28682-9

Quality assurance in environmental monitoring; instrumental methods.

Title main entry. Ed. by G. Subramanian. VCH Publishers, c1995 334 p. \$115.00
Presents an overview of selected instrumental developments and their application in environmental monitoring for graduate and postgraduate students and professional chemical and biochemical engineers, biologists, industrial scientists, researchers, and consultants in

the field of environmental control. The volume covers solid phase extraction in sample purification; superfluid critical extraction in environmental analysis; validation and environmental analysis by Atomic Absorption Spectrometry as applied to trace metals in the environment; the development of Inductively Coupled Plasma-Optical Emission Spectrometry in environmental analysis; Volatile Organic Chemical monitoring and the applications of GC-MS; CES in environmental monitoring; development, design, and application of Field Flow analysis; and the application of software in environmental auditing and quality control. B&w illustrations.

TD665 1-57504-031-X

Advances in modeling the management of stormwater impacts.

Title main entry. Ed. by William James. Ann Arbor Press, c1996 451 p. \$59.95 The fourth volume in the series of highly selective and rigorously reviewed articles that nevertheless provide contrasting perspectives on modeling stormwater impacts and their management, drawn from the annual Stormwater and Water Quality Management Modeling conferences in Toronto. The 18 papers cover models, data management, and water quality and best management practices. An extensive glossary without pronunciation, and an extensive listing of conference papers are included, but not the advertised diskette containing the data and software to search it.

TD883 95-37744 0-444-81642-9

Indoor air quality; a comprehensive reference book.

Title main entry. Ed. by Marco Maroni et al. (Air quality monographs; v.3) Elsevier Science, c1995 1049 p. \$338.25 Brings together contributions from specialists in the various disciplines concerned with indoor air quality—medical doctors, architects, engineers, chemists, biologists, physicists, and toxicologists—to provide comprehensive coverage of all aspects, including building design, health effects and medical diagnosis, toxicology of indoor air pollutants, and air sampling and analysis. Some chapters contain formative and educational messages for architects, engineers, and public health professionals; but the high cost of this reference may deter its use in educational settings. Extensive references for each section recommend it as a reference for those in the many allied fields.

ROADS, RAILROADS

TE145 95-20035 0-471-00315-8

Highway engineering. 6th ed.

Wright, Paul H. John Wiley & Sons, c1996 680 p. \$84.95 A text on highway engineering, covering highway administration, transportation planning, geometric design of highways, intersections, mass transit facilities, traffic engineering, materials, earthwork operations, and maintenance. Includes b&w photos and problems, and reference tables. This sixth edition incorporates

expanded and updated material on emerging technologies in traffic control, social and environmental impacts, computer applications, roadside design, and flexible pavement design.

BUILDING CONSTRUCTION

TH1000 95-69720 0-9607408-2-1

Automated builder; dictionary/encyclopedia of industrialized housing. 3d ed.

Carlson, Don O. CMN Associates, Inc, c1995 237 p. \$49.00 (pa)

An encyclopedia and dictionary of industrialized housing and automated building, profusely illustrated with b&w photos and diagrams. The encyclopedia reports on components, panels, modular and special unit manufacturers, and builders and dealers, and offers information on the housing market, award winners, engineering concerns, and equipment, and includes layout and building plans. The dictionary explains and illustrates industry terms. No index.

TH7225 95-24199 0-7506-2594-5

HVAC engineer's handbook. 10th ed.

Porges, F. Butterworth-Heinemann, c1995 278 p. \$89.95

First published in 1942 and most recently in 1991, a concise reference for the day-to-day work of the engineer or technician designing HVAC systems, domestic hot and cold water services, gas supply, and steam services. Changes in this edition include material on recently introduced air conditioning systems, a further increase in the range of U-values to cover modern wall construction and wall partitions, and more coverage of the

expansion of gases and replacement refrigerants for CFCs and HCFCs.

Briefly describes each type of system and provides the formulae, physical constants, and design parameters for it. Also lists British, European, and International standards.

TH9739 95-35183 0-07-065296-1

Security/fire-alarm systems; design, installation, maintenance. 2d ed.

Traister, John E. McGraw-Hill Book Co., c1996 317 p. \$45.00

A resource of information on designing, installing, maintaining, and troubleshooting modern security and fire alarm systems in residential, commercial, and industrial buildings. Includes review chapters on basic electrical theory, electrical calculation, and print reading, plus a glossary. This third edition contains material on the alarm provisions in the 1996 National Electrical Code, cost-estimating software, and unit pricing methods. For professionals in security/fire-alarm systems.

TH9745 95-34538 0-7506-9576-5

High-rise security and fire life safety.

Craighead, Geoff. Butterworth-Heinemann, c1996 457 p. \$59.95

Not intended to substitute for a training course for safety and security professionals or an effective security and fire-life safety program by building managers or company executives, but a comprehensive reference to the principles and procedures of safety in high-rise commercial office buildings. Reviews the history of the structures and safety concerns for them, the types of systems commonly found in them, emergency

situations that might occur, and the myriad laws and standards that they are exclusively subject to.

MECHANICAL ENGINEERING & MACHINERY

TJ163 95-32909 0-07-065099-3

Mechatronics engineering.

Tomkinson, Donald and James Horne. McGraw-Hill Book Co., c1996 201 p. \$49.00

Shows how to optimize product development by integrating mechanical, electrical, electronic, manufacturing, design, software, and quality control engineering functions, highlighting real-life examples to illustrate how mechatronics can be used to reduce time to market, improve quality, and decrease costs. Includes a glossary, a software vendor list, and an international directory of universities offering mechatronics programs.

TJ217 95-34058 0-13-005968-4

Adaptive inverse control.

Widrow, Bernard and Eugene Walach. (Prentice-Hall information and system sciences series) Prentice-Hall, Inc, c1996 508 p. \$75.00

For control and signal processing engineers, explains a control method that uses feedback to control the variable parameters of the controller itself, offering enhanced flexibility and precision in control of unknown or variable systems. Among the topics are Wiener and adaptive least-mean-square filters, adaptive and inverse plant modeling, plant disturbance canceling, and system integration.

TJ217 95-11906 0-08-042020-6

Advanced adaptive control.

Wang, H. et al. Pergamon Pr., c1995 262 p. \$96.00

Addresses major issues and methods in advanced adaptive control, neural networks, fuzzy logic, critical systems, and rule-based principles. Coverage includes methods of solving non-linear adaptive control problems; extending the current self-tuning control strategies to a priori unknown linear systems subject to general external disturbances; and the construction of adaptive control schemes for singular systems. Of interest to researchers and postgraduates in modeling and control, information systems, signal and neural processing, and applied mathematics.

TJ735 95-32945 0-07-005924-1

Practical guide to steam turbine technology.

Bloch, Heinz P. McGraw-Hill Book Co., c1996 348 p. \$62.50

A reference guide for mechanical and chemical engineers and plant operations personnel, explaining how to select, operate, and maintain mechanical drive steam turbines. Covers the latest design and manufacturing details of condensing, extraction, and back-pressure machines manufactured in the US and Europe, provides details on types of turbines for heavy process industries, and offers tips on selecting optimum configurations, controls, and components for particular needs. Contains b&w photos.

TJ990 95-22898 0-07-005937-3

Practical guide to compressor technology.

Bloch, Heinz P. McGraw-Hill Book Co., c1996 518 p. \$62.50

Advises mechanical engineers and plant operations personnel on selecting, operating, and maintaining compression equipment used in the processing of raw material into refined products. Compiling information from a wide range of equipment suppliers, discusses the design and manufacturing details incorporated in positive displacement and dynamic compressors made in the US and Europe; the types of compressors available for the heavy process industries; the arrangements, material composition, and basic laws governing compressor design; and configurations, controls, components and auxiliaries.

ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING

TK260 0-13-301789-3

Guide to the National Electrical Code. 1996 ed.

Harman, Thomas L. and Charles E. Allen. Prentice-Hall, Inc, c1996 387 p. \$50.00

Presents essentials of the National Electrical Code's major areas of concern and offers successful strategies for passing the Master Electrician's Examination, with chapter tests and two complete practice exams, plus worked answers. Reviews electrical theory, and provides rules and calculations for design and ratings of all types of electrical installations, with margin notes linking

each step in calculation to the appropriate section of the Code.

TK5102 95-22438 0-7863-0480-4

The Irwin handbook of telecommunications management, 2d ed.

Green, James H. Irwin Professional Pub., c1996 754 p. \$80.00

A comprehensive resource that recommends and explains processes and procedures that enable telecommunications managers in any industry to get the maximum value from their telecommunications systems. This revised and updated edition (first was 1989) addresses the ways that telecommunications managers can benefit in the marketplace from the changing character of competition in the telecommunications industry. It also discusses in detail the development of new technologies. New chapters are devoted to benchmarking, preventing toll fraud, voice processing, and the automatic call distributor (ACD). The details of how the equipment works are covered in a companion volume, The Business One Irwin Handbook of Telecommunications.

TK5102 95-25228 0-13-120999-X

Signal processing with fractals; a wavelet-based approach.

Wornell, Gregory. (Prentice-Hall signal processing series) Prentice-Hall, Inc, c1996 177 p. \$49.00

Develops a conceptual foundation for synthesizing, analyzing, and processing several broad classes of fractal signals based on wavelet theory; and presents a wide range of practical applications in communications, such as optimal estimation, detection, and classification. Assumes no previous knowledge of either

fractal geometry or wavelets, but does require a graduate-level familiarity with signals and systems in both continuous and discrete time, stochastic processes, detection and estimation theory, and the geometry of linear vector spaces and linear algebra.

TK5103 0-13-242421-5

High-speed networking technology; an introductory survey.

Dutton, Harry J.R. and Peter Lenhard.
Prentice-Hall, Inc, c1995 \$48.00
(pa)

Presents a broad overview of the emerging technology of very-high-speed communications, for computer professionals with some understanding of communications, including IBM systems engineers and technical planners in data communications and voice networking. Surveys the principles of high-speed networking, and details operating principles and methods of fiber optical technology and optical networks, local area networks, metropolitan area networks, high-speed packet switches, and ATM. Includes a glossary.

TK5105 95-31568 0-07-005355-3

Cable communications; building the information infrastructure.

Bartlett, Eugene R. McGraw-Hill Book Co., c1995 319 p. \$50.00

Explains the building blocks of the new information infrastructure and describes the technologies that make up the information superhighway, focusing on cable systems. Looks at types of wire and cable systems; transmission methods and controls; cable system signals and interconnections; construction and training concerns; and integrating the global

information highway. Half of the book consists of technical appendices. Of interest to communications engineers, technicians, and network managers.

TK5105 94-8069 0-07-020056-4

Electronic mail systems; a network manager's guide.

Fatah, Burhan. (McGraw-Hill series-computer communications) McGraw-Hill Book Co., c1994 380 p. \$40.00
Helps network managers, engineers, and technicians choose among the 100 most popular LAN, UNIX, mid-range, mainframe, and public e-mail carrier systems. Describes each system and appraises its features and functions, hardware and software requirements, and connectivity options, and provides information on selection criteria for specific environments. Other topics include basic e-mail technology, operating platforms, and evaluating and testing systems. An appendix classifies some 350 systems and products in tabular form. Includes a glossary.

TK5105 95-22599 0-07-065766-1

Network management systems essentials.

Udupa, Divakara K. (McGraw-Hill series on computer communications)
McGraw-Hill Book Co., c1996 557 p. \$50.00
Presents an overview of network management basics, internetworking options, and network management at the systems level in a quick-reference format, for computer and network professionals and users. Compares operational and implementation features of network architectures including OSI and LANs, and discusses management considerations such

as configuration, fault, performance, accounting, and security issues. Appendices offer information on standardization processes and standards publications, plus exercises.

TK7871 95-37557 0-7923-9630-8

Low power design methodologies.

Title main entry. Ed. by Jan M. Rabaey and Massoud Pedram. Kluwer Academic Pubs., c1996 367 p. \$105.00

The rapid development of powerful digital electronics technology that has brought us personal workstations, sophisticated computer graphics, and multi-media capability such as real-time speech recognition and video, has ignored the vast and growing hunger for power that has accompanied the advances. As a result, the limits of affordable packaging technologies is being reached and device reliability is being compromised.

Researchers from industry and academia here offer some design approaches for reducing the power requirements at the technology, circuit, logic, architecture, and system levels. Addressed to both designers and developers, and suitable as a textbook for an advanced graduate course.

TK7885 95-38222 0-7923-9632-4

High-level system modeling specification languages.

Title main entry. Ed. by Jean-Michel Bergé et al. (Current issues in electronic modeling; 3) Kluwer Academic Pubs., c1995 162 p. \$99.50

An update of the latest thought in hardware modeling for researchers, design engineers, and technical managers working in design automation and circuit design. Distinguishes between models that

represent the desires and constraints of the designer and those that imitate something that already exists and can end in simulation or documentation. Also warns against leaning too far either towards over-specification, which can perpetrate constraints that were only meaningful in previous versions, or towards under-specification, which might lead to unnecessary work or even starting from scratch if the deferred details simply will not fit into the holes left for them.

TK7895 0-7923-9613-8

Co-synthesis of hardware and software for digital embedded systems.

Gupta, Rajesh Kumar. (The Kluwer international series in engineering and computer science) Kluwer Academic Pubs., c1995 266 p. \$98.00

For CAD researchers and developers expanding into hardware/software co-design, or digital system designers interested in present and emerging CAD techniques, presents techniques for building complex embedded systems, which provide a competitive advantage over purely hardware or software implementations of time-constrained embedded systems. Taking advantage of recent advances in chip-level synthesis that allow the synthesis of application-specific circuits under strict timing constraints, explains how timing constraints can be used to determine what part of the system function must be delegated to dedicated application-specific hardware and what part delegated to software that runs on the processor. Also demonstrates how to perform detailed analyses of the timing performance in order to create better prototypes. Revised from a 1993 doctoral thesis for Stanford University.

MOTOR VEHICLES, AERONAUTICS, ASTRONAUTICS

TL574 95-30329 0-7923-3626-7

Numerical simulation of viscous shock layer flows.

Golovachov, Yuri P. (Fluid mechanics and its applications; v.33) Kluwer Academic Pubs., c1995 345 p. \$173.00
A comprehensive presentation of the modern approach to the numerical simulation of supersonic and hypersonic flows around bodies using the viscous gas dynamics equation throughout the computational domain. The approach makes it feasible to take into account the important effects of rarefaction, viscous-inviscid interaction, separation, chemical and thermal non-equilibria, and radiation. Includes several calculation examples to demonstrate the application to problems in gas dynamics. For students and researchers familiar with the fundamentals of gas dynamics, the physics of high-temperature gases, and finite-difference numerical methods.

TL709 94-36668 0-89464-049-6

Advanced airbreathing propulsion.

Timnat, Y. M. (Orbit) Krieger Publishing Co., c1995 178 p. \$50.00
Details modern air breathing propulsion and reviews various existing and emerging systems of engines without rotating parts. Outlines trends in the development of powerplants for both civil and military applications, highlighting measurement methods; combustion chambers; pollution and noise control; developments in materials and components; and maintenance and reliability of turbine engines. Contains chapter questions and b&w photos and diagrams.

MINING ENGINEERING

TN279 90-5410-222-5

Modeling the effects of blasting on rock breakage.

Borovikov, V.A. and I.F. Vanyagin. (Russian translations series; 114) A.A. Balkema, c1995 238 p. \$80.00
Presents fundamental theories of simulating blast effects in elastic and elastoplastic media, describing both classic and modern processes of rock breaking by blasting. Illustrates physical and mathematical models of the major phenomena associated with blasting in open-cast and underground mines, explains mathematical fundamentals of modeling blast effects, and details contemporary methods for recording processes at high speeds. No index.

CHEMICAL TECHNOLOGY

TP155 95-43504 0-12-666240-1

Intelligent systems in process engineering; paradigms from design and operations.

Title main entry. Ed. by George Stephanopoulos and Chonghun Han. Academic Press, c1996 625 p. \$69.95 (pa)
Presents ten prototypical paradigms that integrate ideas and methodologies from artificial intelligence with those from operations research, estimation, and control theory, and statistics, to solve a specific engineering problem in product or process design, process operations monitoring, planning, scheduling, or control. Among the paradigms are modeling languages, inductive and deductive reasoning, analogical learning, and reasoning in time. Together they indicate how computer can play an

expanded role in a broad range of engineering problems.

TP155 95-22624 0-07-012353-5

Process instrumentation applications manual.

Connell, Bob. McGraw-Hill Book Co., c1996 364 p. \$69.00

A guide to understanding, implementing, and operating process instrumentation systems, for chemical and plant engineers and technicians in the process industries. Shows how to select instruments and make measurements and how to apply all types of control systems; compares the merits of particular systems; and discusses installation, winterizing, alarms and shutdown systems, control valves, process computer control, and operation centers. Includes checklists and summaries.

TP184 95-9927 0-444-82097-3

Neural networks for chemical engineers.

Title main entry. Ed. by A.B. Bulsari. (Computer-aided chemical engineering; 6) Elsevier Science, c1995 680 p. \$285.25

A preliminary treatment of the application of neural networks to chemical engineering. Besides core chemical engineering, it includes applications in process engineering, biochemical engineering, and metallurgical engineering. The first six chapters cover theoretical issues, chapters 1 and 2 giving an overview of artificial neural networks and unsupervised learning. The remaining 21 chapters cover applications. Most of the applications work is on feed-forward neural networks, but recurrent networks and self-organizing maps are also represented. The section is well

distributed among fault diagnosis, process dynamics and control, theoretical issues illustrated through applications, and statistical methods.

MANUFACTURES

TS155 95-26000 0-201-63373-6

Manufacturing for survival; the how-to guide for practitioners and managers.

Williams, Blair R. Addison-Wesley, c1996 453 p. \$37.61 (pa)

Details techniques to improve manufacturing processes, de-emphasizing mathematics and theory and focusing on factory-level solutions for problems such as high inventory levels, unreliable sourcing, and excessive overtime. Sections on manufacturing infrastructure, planning, execution, and customer service discuss issues including ISO 9000, concurrent engineering, and statistical process control. Includes chapter appendices of checklists, tables, and sample plans, policies, and reports. For practicing manufacturing managers in small or larger companies.

TS156 95-37280 0-7863-0523-1

ISO 14000; a guide to the new environmental management standards.

Tibor, Tom and Ira Feldman. Irwin Professional Pub., c1996 237 p. \$35.00 (pa)

Details the series of environmental management standards that may, like the ISO 9000 quality standards, soon become required for any company expecting to do business on a global scale. Reviews the history and development of the series; describes the individual standards for management, auditing, labeling, performance evaluation, and life cycle

assessment; and suggests approaches to implementing them.

TS156 95-36232 1-55617-541-8
Measurement and control basics. 2d ed. Hughes, Thomas A. Instrument Soc of Amer., c1995 315 p. \$65.00

A comprehensive treatment of the basic principles of process control and instrumentation, for engineers, technicians, management, and sales personnel new to the subject. After a review of relevant mathematics, chapters cover electrical, electronic, and digital fundamentals, process control computers, final control elements, and methods and instruments for measuring factors such as pressure, level, and flow. Includes chapter introductions and exercises. Appendices offer standard graphics symbols and thermocouple tables. This second edition contains expanded material on logic design and measurement principles.

TS156 95-41877 0-87389-345-X
Statistical process control methods for long and short runs. 2d ed.

Griffith, Gary K. ASQC Quality Press, c1996 250 p. \$35.00 (pa)

A step-by-step guide to statistical problem solving, capability analysis, and control charts, focusing on application of statistical methods in process control rather than in-depth supporting statistics. Includes chapter introductions and review problems and answers, a glossary, and reference appendices of tables and sample plans. This second edition contains expanded information on short run charts, regression and correlation analysis, and testing variances. For engineers, machinists, inspectors, and quality managers.

TS157 95-4907 0-471-94059-3

Scheduling theory and its applications.

Title main entry. Ed. by Philippe Chretienne et al. John Wiley & Sons, c1995 365 p. \$69.95

The 17 chapters, comprising the contributions of international researchers and scholars from the fields of computer and economic sciences, applied mathematics, statistics, and business, address topics including deterministic scheduling, stochastic scheduling, and the probabilistic analysis of algorithms. For researchers and graduate students of computer science, applied mathematics, and operational research.

TS695 95-25231 0-306-44936-6

Theory and application of laser chemical vapor deposition.

Mazumder, Jyoti and Aravinda Kar. (Lasers, photonics, and electro-optics) Plenum Press, c1995 395 p. \$89.50
 Discusses principles of physicochemical phenomena and shows how they can be applied to develop theories about various types of laser chemical vapor deposition (LCVD) processes, and offers an understanding of the design and control of an LCVD system. Overviews safety issues, explains the basic theories of pyrolytic and photolytic processes, and details methods of pyrolytic and photolytic modeling. Chock full of equations, plus chapter notes on nomenclature and Greek symbols. Contains appendices on definitions of energy density, irradiance, and intensity; thermal stress analysis; and volumetric absorption rate.