

Charles R. Lord

**GUIDE TO  
Information  
Sources in  
Engineering**



Guide to Information Sources  
in Engineering

# **Reference Sources in Science and Technology Series**

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Judith A. Matthews, Series Editor

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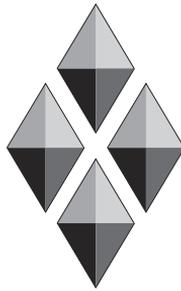
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# **Guide to Information Sources in Engineering**



**Charles R. Lord**

University of Washington Libraries

Series Editor

Judith A. Matthews

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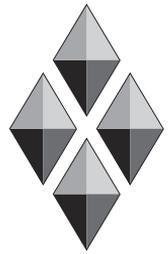
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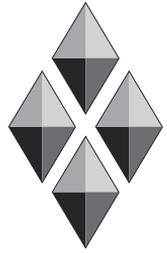
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# Foreword

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“Never underestimate the amount of information available on any subject.” That is the text of an overhead transparency that I display to the students in my introductory engineering design course. Now, I can replace it with a transparency that reads “Look at Charles Lord’s book.” It is an honor and a pleasure for me to offer a few introductory comments on what will surely become a standard, if not a classic, work in the science and engineering literature. The intended audience for this book is much broader than my own individual experience and perspective. I hope that my focus on a subcommunity of likely users is not interpreted as restrictive, but rather as one example of the value of this treatise.

The processes of identifying, locating, accessing, interpreting, and evaluating technical information are crucial to the science and engineering enterprises and to the engineering design process in particular. Many of the analytical and experimental activities of scientists and engineers are reductionist in nature and the boundaries of the relevant technical information are somewhat discernible. In contrast, the essential synthesis nature of design makes the information acquisition and assessment function much more difficult.

The textbook-oriented nature of the undergraduate engineering curriculum is not conducive to students developing the skills needed to be successful in this aspect of engineering. Most of the students in my third-year design course have never had to search for information that was not in either their lecture notes or textbooks. Encountering the need to do this in my course comes as a major shock and requires a paradigm shift on their behalf. They need all the help they can get to break old habits and develop new ones.

Now they have that help in Charles Lord’s book. The comprehensive nature of this work, and his use of cross-cutting themes as the organizational basis for each chapter, offers users multiple entry points. The multiple indexes provide another tool for users to launch their journeys.

During the years that Charles Lord was Engineering Librarian at the University of Washington in Seattle, I relied on him regularly to brief my design students on key information sources. Charles’s briefings included handouts that contained a small fraction of the information contained in this book. He distributed these during a one-hour walkthrough of the reference section of the Engineering Library. The dynamics of the information system are such that I found it important for me to participate in each of the briefings because of the new developments that had occurred since the previous briefing. In this book, Charles acknowledges the difficulty of keeping current in such a rapidly changing environment, and his approach to dealing with this dilemma is very robust.

When reading Charles's manuscript in preparation for writing this foreword, I found many, many gems that I had previously been unaware of (both print and electronic documents and organizations). This book reminded me that I had again violated the basic principle presented in the opening sentence on this page. At last I have a tool that will make it less likely for me to do so in the future. If I were to recommend to engineering students to keep one book on their desk-top when they go out into the professional design community, this would be it.

**Barry Hyman**

Professor of Mechanical Engineering  
University of Washington, Seattle

# Preface

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This book highlights basic perspectives, tools, and resources for successful information navigation in the engineering community. While the structure of the book follows a conventional scheme present in the development of engineering information, substantial emphasis is placed on digital resources.

The intended audience for this bibliography includes engineers, librarians, and information professionals working with engineering information. A framework is presented within which to understand some of the unique characteristics of this information and some of the tools used to locate and access this challenging information world.

The first chapter examines the differences between engineers and scientists and provides a few observations on the culture and generation of engineering information. The following chapters focus on the different types of information and the tools and resources to locate and access that information. These include directories, encyclopedias, yearbooks, dictionaries, current awareness, databases, indexes, libraries, bibliographies, journals, grey literature, handbooks, buyer's guides, databooks, catalogs, and Internet resources. There are chapters that describe regulations, standards and specifications, government resources, professional and trade associations, and education and career resources.

Print resources are generally easier to describe accurately in a bibliography. They are traditionally more stable and consistent than digital resources. Print resources still provide a fundamental core in engineering information. In addition to these print resources, the rapid migration of conventional information resources and the development of new information in the digital environment have established complementary and unique sources extremely critical to the information needs of the engineer.

The print and digital resources included in this bibliography are in English. An international bibliography on engineering information sources would certainly be appropriate and extremely helpful, but is beyond the scope and resources available for this project. Effort was made to include Canadian resources when available. Descriptions from databases, indexes, and Internet sites were used to complement the "hands-on" examination process for resources surveyed in this work. Materials listed were primarily published from 1996 to 1999. For Internet sites, I looked for evidence of current updating activity rather than relying on the copyright date.

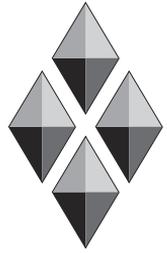
There are thousands of Internet sites relevant to the engineering profession. Increasingly, these sites include useful information tools in addition to directory information for organizations and companies. These dynamic sites capture the power of the Internet as a delivery tool for vital information, catalogs and indexes, and digital publications not found elsewhere. The Internet sites included in this bibliography generally offer more information value beyond basic directory information.

Even primary databases and other digital reference resources are subject to continuous changes. The steady flow of announcements describing the packaging and repackaging of products from vendors increases with each day. These information products are tailored to meet customer needs and fill a unique spot in the information marketplace. It is not unusual to have the same product licensed to several vendors and then customized to meet a particular profile or product line. The fluidity of digitized information and the delivery of information over the Internet provides the greatest challenges to the bibliographer.

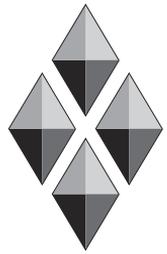
With this in mind, the reader will find that resources and Internet addresses listed here have changed. Obviously, the author's commitment is to minimize this predominant challenge of the digital world. The bibliography provides a road map to information resources, with descriptions current at a particular time. Even the outdated portions of such an information road map will continue to have historical value as a tool to chart the changes. Internet addresses change often. If an address appears to be no longer valid, it is worth the effort to do some additional searching, using the name of the site or the organization that sponsors it. Unless the organization has completely changed its name or gone out of business, the new site should surface.

# Acknowledgments

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I want to express my appreciation for the support provided by the University of Washington Libraries while I worked on this project, and to the Engineering Library staff who covered for me while I was thoroughly distracted. I want to especially thank my wife, Bev, for her loving patience and editorial assistance, and my daughter, Alison, who still wonders what her father does for a living.



# How Engineers Use Information

The information world of engineering is unique, complex, and increasingly fragmented. In the age of the Internet this information world is changing faster than engineers can even deliver new technology to society. The creation of new technical knowledge and the applications of information delivery systems far outpace most people's abilities to stay current. Just like continuous production lines, newly created information and repackaged old information tumble out of the information factories at lightning speed. Not only is this information coming out of universities and research labs at a very rapid pace, but the amount of information continues to increase. Observers who track scientific and technical information trends suggest that this information doubles about every 10 to 12 years. Given the nature of this information, it is critical to understand both the communities from which it comes and the environments in which it is used. This chapter provides a historical overview of engineering information, describes what engineers do, and how engineers differ from scientists in relationship to information. This discussion concludes with a review of the present challenges in this dynamic information environment.

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## 1.1 Historical Overview

The challenge of managing and providing information to the users of engineering information has been the source of many discussions, research projects, and conferences. Engineers, librarians, and information specialists appreciate the frustrations associated with this discipline, which is so information dependent. There has been little progress in developing responsive information systems capable of providing the kind of information engineers need. At this point, it is difficult to envision a time when this will happen, given the relationship between engineering information providers and engineering information. As this text shows, there are hundreds of organizations and commercial publishers involved in the creation and delivery of engineering information. The medical and health sciences professions, and to some extent the agricultural professions, have enjoyed well-developed and integrated information systems provided by national libraries and databases. To date, engineers must rely on the resources and tools created in a highly competitive and fragmented information world.

Over 50 years ago, Vannevar Bush, an engineer intrigued about the idea of devising a machine to manage and retrieve information, wrote, “The difficulty seems to be, not so much that we publish unduly in view of the extent and variety of present day interests, but rather that publication has been extended far beyond our present ability to make real use of the record. The summation of human experience is being expanded at a prodigious rate, and the means we use for threading through the consequent maze to the momentarily important item is the same as was used in the days of squared rigged ships” (Bush 1945, 102). Bush called his mechanical device a “memex.” This “memex” would assist the researcher in storing and arranging information by association. The information could be retrieved and tailored to an individual’s needs on demand. Ahead of his time and technology, Bush’s vision has been partially realized in the hypertext-based tools of today.

In 1969 the Office of Science and Technology sponsored the “National Engineering Information Conference” for the primary purpose of encouraging the development of information systems for engineers. This conference continued many of the discussions initiated in 1962 by a committee of representatives from the Engineers Joint Council (EJC), the United Engineering Trustees (UET), and the Engineering Index (EI) to identify more effective ways to ensure access to engineering information.

Discussions at the 1969 conference were among engineers who were forthright regarding the challenges they faced in getting the information they needed. Eric Walker, who was then president of the National Academy of Engineering, commented in his keynote address on how difficult it was for engineers to get reliable information. He also acknowledged that the challenge of devising a system to deliver needed information exactly when it was needed was a very difficult one (Walker 1969, 2). He reminded engineers of their responsibilities: “Our commitment as engineers to the processing of engineering information should increase daily. Unfortunately, I believe that most engineers view the handling of engineering information as separate and different from engineering itself. Individually, they are usually unwilling to spend much time on the task of managing the wealth of engineering information. This attitude must be changed. Engineers must accept their share of the responsibilities for controlling and disseminating what we know” (Walker 1969, 3). Unfortunately, some of the major stakeholders present at this conference were more interested in maintaining the current systems of providing engineering information than in embracing Walker’s challenge. Because of their influence, the conference resulted in little more than highlighting the challenge of creating better systems to provide engineers with reliable and timely information.

Over 20 years later, the Engineering Foundation and The Council on Library Resources provided another opportunity to discuss these issues by sponsoring “The Conference for Exploration of a National Engineering Information Service.” A broad range of people representing a full spectrum of concerns associated with engineering information attended this working conference. The following comments from the “Executive Summary” describe the focus:

It is estimated that approximately \$8.3 billion is spent annually in support of information access by engineers. In spite of this very sizable investment, the extremely complex nature of access to our store of engineering know how inhibits our ability to exploit it to maintain a competitive stance in the international industrial arena. The current problem with utilization of engineering information and data lies in the highly fragmented and dispersed nature of the sources and the lack of an efficient route of access to these various sources. This situation severely inhibits full exploitation of engineering information and data to the competitive benefit of our industries. Improvement of access to this valuable resource will yield a significant return on investment and, at the same time, improve our competitive stance" (Penniman, Liston, and Cummings 1992, 1).

There has been little progress in implementing the initiatives agreed to by the conference attendees, which were to address some of the systemic problems still associated with engineering information.

In addition to the numerous discussions and conferences held over the years, there has recently been substantial research examining the role of information in engineering environments. An excellent example of this research is that conducted by Thomas E. Pinelli, an instructional technology and distance learning officer in the Office of Education at the NASA Langley Research Center, and John M. Kennedy, a faculty member at Indiana University, Bloomington. During the 1990s this research team conducted an in-depth examination of how information is acquired, managed, and shared in the aerospace industry. The term they use to describe this process is "knowledge diffusion." The purpose of this research was to understand the critical role of the knowledge diffusion process in organizations that depend upon technological innovation for survival. Their research revealed that most of the new knowledge created in this industry comes from what they call "trial and error," not from basic research. Engineers are acknowledged for the role they perform in generating this new information. Pinelli's research documents how this information is diffused throughout aerospace engineering organizations and has been critical for the success of the technological developments common to this industry over the years (Pinelli et al. 1997).

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## **1.2 Engineers and Scientists: Different Approaches to the Research World**

Attempts to define the differences between scientists and engineers generally require a discussion of their respective methods. While scientists and engineers share many of the same goals, technical expertise, and knowledge, methods of doing their work and research are somewhat different. These methods are labeled the "engineering method" and the "scientific method." They help

to explain the differences between how scientists and engineers view the world, approach their work, communicate with their peers, and in the end, create and use information. The primary difference between the engineering method and the scientific method, simply stated, is one of approach and purpose. Scientists answer questions about nature which, in turn, generate more research questions and problems. Engineers design things to work, and in the process, attempt to reduce elements of uncertainty. Scientists are more likely to do basic research by themselves, while engineers do applied research in groups. While these differences appear subtle, one can argue that they play a major role in the development of science and engineering information.

Although their methods are different, both scientists and engineers follow the principles of scientific methodology. The traditional description of scientific methodology includes understanding the problem, stating the problem, collecting the data, analyzing the data, interpreting the data, and drawing conclusions. For scientists, scientific methodology provides an observational component of research that begins with theory and concludes with the application of statistics. Throughout this process scientists compare their observations and measurements with controlled experiments. For engineers, the majority of their work does not include the component of controlled experiments. One way to describe the engineering method is to focus on the activities of solving design problems. The spectrum of information needed to solve most design problems can be more diverse and multifaceted than in typical scientific experiments. Scientists are generally intent on isolating their research around particular phenomena. Engineers, as they design, must have a thorough understanding of materials, processes, standards and specifications, conditions of the application environment, safety, economics, competing products, impact of component design requirements on the overall design requirements, and proprietary concerns. It is difficult for engineers to successfully design without considering the intricacy of a practical world that thrives on tolerances, complex behaviors, and long-term consequences.

In an article on engineering skills, Charles Murray observed, “Once an engineer, always an engineer: it’s an often used phrase, usually applied to some former engineer who has just boldly and analytically dissected the complex problem. The message behind it is simple: in the way they approach obstacles engineers are, well, different” (Murray 1998, 37).

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## **1.3 Engineering: A Profession of Devices, Materials, Systems, and Structures**

Early definitions and descriptions of engineering, more often than not, include something to do with engines. For example, a popular dictionary like the Merriam-Websters Collegiate Dictionary (Tenth Edition) describes the activities of an engineer as “a designer or builder of engines.” Obviously, while some engineers work with engines, the scope of engineering extends far beyond this concept. A more helpful and comprehensive definition of engineering is used in

the Accreditation Board for Engineering and Technology's (ABET) document, EAC Criteria for 1999–2000, which states, “Engineering is that profession in which knowledge of the mathematical and natural sciences gained by study, experience, and practice is applied with judgment to develop ways to utilize, economically, the materials and forces of nature for the benefit of mankind” (ABET, 1998).

The historical roots of engineering lie in the activities of military engineers and civil engineers. Throughout the nineteenth century the field of engineering expanded into several new specialties that have continued to flourish to this day. These areas included agricultural, chemical, electrical, industrial, manufacturing, mechanical, and metallurgical specialties. More recent developments of engineering disciplines include aeronautics and aerospace, materials engineering, computer science and engineering, and bioengineering. The list continues to grow, with almost every industry, including petroleum, ceramics, nuclear energy, transportation, sanitation, and urban planning engineering, adding its respective engineers to the engineering world. A survey of organizations and Internet sites offers even more engineering possibilities: architectural, audio, automotive, biological, concurrent, consulting, control, design, electromechanical, environmental, facilities, forest, health care, illuminating, ocean, safety, sonar, systems, television, and welding.

The Occupational Outlook Handbook provides the following general description for engineers:

Engineers apply the theories and principles of science and mathematics to research and develop economical solutions to practical technical problems. Their work is the link between scientific discoveries and commercial applications. Engineers design products, the machinery to build those products, the factories in which those products are made, and the systems that ensure the quality of the product and efficiency of the workforce and manufacturing process. They design, plan, and supervise the construction of buildings, highways, and transit systems. They develop and implement improved ways to extract, process, and use raw materials, such as petroleum and natural gas. They develop new materials that both improve the performance of products, and make implementing advances in technology possible. They harness the power of the sun, the earth, atoms, and electricity for use in supplying the Nation's power needs, and create millions of products using power. Their knowledge is applied to improving many things, including the quality of health care, the safety of food products, and the efficient operation of financial systems (BLS 2000).

As engineering disciplines have become more specialized, one can usually trace their roots to these more traditional categories of engineering. For example, a college of engineering in a large university will probably include the following: bioengineering, chemical engineering, civil engineering, computer science

and engineering, electrical engineering, industrial engineering, materials science and engineering, and mechanical engineering. New fields of engineering build on these foundations by adding other disciplines. In some cases this development is with established departments or programs, including technical communication, forest engineering, and joint programs, with schools of business featuring curriculum in manufacturing management. These trends highlight the interdisciplinary world of the modern engineer. The Occupational Outlook Handbook is an excellent reference for helpful descriptions of different engineering specialties.

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## 1.4 Challenges

In recent years much attention has focused on the role of information in society, especially in business and industry. As industry has become less defined by the machine, it has become more defined by information. The acquisition, creation, and packaging of information is a major industry, supporting non-information producing businesses and industries. Modern business managers enthusiastically pursue goals to position their organizations and provide their employees with the right information at the time it is needed. At the same time, they make every effort to exclude competitive organizations from determining their patterns of information use and from obtaining their newly created information. Most engineering takes place in industrial settings that are very competitive. Establishing and maintaining the optimal proprietary controls creates closed environments. Similar to the business community, engineering requires information systems capable of providing critical information at the right time. Under these proprietary conditions, engineering-related industries extract more information from the broader community than they are able to return. This highly controlled, uneven flow of information characterizes the generation and application of engineering information.

The value of information to the engineering profession is well documented. Primary concerns have focused on efforts to develop information delivery tools that match the needs of engineering practice and systems. While Bush's vision for the "memex" could easily be updated with today's technology, there is little hope on the horizon that such a system or even a national engineering library will ever be developed that will be sufficiently robust and affordable to meet the information needs of engineers. Even with the multitude of organizations and publishers collaborating to provide more integrated information packages, engineering information remains fragmented and expensive for the user. Engineering information is also subject to the spiraling economic costs and rapidly changing environments associated with scientific publishing. These costs will continue to be aggravated by the current trend of fewer players in the publishing industry. The diversity of information needs, resources, and high-technology work environments will continue to challenge even the best proposals.

Engineers need very specialized and specific information. Because of time and economic constraints they will generally pursue the answers they need by beginning first with readily available colleagues and resources. Unlike scientists, engineers do not spend the majority of their time browsing the literature, databases, or even the Internet. As they move through their design and problem-solving activities, engineers are trained to first rely on their experience and knowledge. In most cases, engineering environments establish in-house specifications and procedures to guide the engineer. It is only when these primary sources cannot provide the needed information that the engineer will then move to familiar published sources, including handbooks, standards and specifications, catalogs, and databooks.

The amount of information and the diversity of information delivery systems continue to increase at a rate that requires engineers and information providers to work together to develop responsive information resource systems. Increasingly, engineers must also be knowledgeable about areas beyond their specializations. As engineers plan and design for international environments, local and international standards, law, business practice, and even cultural practices become critical components of the information needed to reduce uncertainty and ensure success. Until there are integrated systems to create, manage, and deliver engineering information, this world will remain fragmented and full of challenges. It is this author's intention that this book will assist both librarians and engineers in maximizing access to a much wider variety of information sources useful in responding to this challenge.

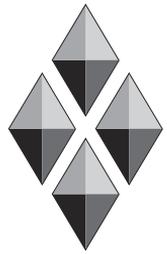
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U.S. Bureau of Labor Statistics (BLS). 2000. *2000–01 Occupational Outlook Handbook*. Available: <http://stats.bls.gov/ocohome.htm>. (Accessed April 2, 2000).

Walker, Eric A. 1969. “Keynote Address.” In *Proceedings of the National Engineering Information Conference*, edited by Frank Y. Speight (New York: Engineers Joint Council for the Tripartite Committee).



# General Reference Sources

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This chapter lists directories, encyclopedias, yearbooks, dictionaries, and glossaries. Although many of these resources are not considered primary for engineers, they are important information tools in engineering and technology. Directories are very useful in locating people, products, companies, statistics, specifications, and other types of discrete information. Encyclopedias and dictionaries provide both general and specific descriptions of concepts, events, and terminology.

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## 2.1 Directories

1. **1997/1998 Consultants Directory: Aerospace, Automotive, ISO 9000 Quality Systems/ Management.** Warrendale, PA: Society of Automotive Engineers, 1997. 450p. \$45.00. ISBN 0768000610.

This directory lists consultants in specialty areas such as aircraft modification, FAA regulations, space systems, patent litigation, ISO 9000, and benchmarking.

2. **Advanced Technology in the Pacific Northwest.** Boise, ID: QUANIX Data Services, 1999. 497p. \$139.00. Information available: <http://www.quanixdata.com>.

This comprehensive directory is organized by states and provinces. Each section is arranged by product design and manufacturer, components and materials manufacturing, starting products and services, and software developers. Also provided are a list of the deletions from the last directory, such as startup companies in the last three years, name changes, and companies with more than 100 employees. Regional directories for California, the Rocky Mountain states, the South Central states, and Texas are also available.

3. **AIChE Consultant and Expert Witness Electronic Directory (CEWED).** 1999. Available: <http://www.aiche.org/careerservices/employers/consult.htm>. (Accessed April 4, 2000). Paper format available.

Sponsored by the American Institute of Chemical Engineers, this directory provides information on specialty, location, and background information on engineering consultants and expert witnesses.

4. **ASTM Directory of Scientific and Technical Consultants and Expert Witnesses.** Philadelphia, PA: American Society for Testing and Materials, 1998. 160p. \$40.00. ISSN 10828389. Available: <http://www.astm.org/consultants>. (Accessed April 2, 2000).

This unique directory includes 250 categories of specialized consulting services and over 600 consultants and experts.

5. **ASTM International Directory of Testing Laboratories.** Philadelphia, PA: American Society for Testing and Materials, 1998. 360p. \$69.00. ISBN 0803118058. Available: <http://www.astm.org/labs>. (Accessed April 2, 2000).

This international directory features over 1,100 laboratories. Descriptions include capabilities, specialties, and contacts.

6. Ballast, David K. **Encyclopedia of Associations and Information Sources for Architects, Designers and Engineers.** Armonk, NY: M. E. Sharpe, 1998. 832p. Includes digital format. \$150.00. ISBN 0765600358.

This is a comprehensive reference source for design professionals. It lists over 5,000 industry associations and organizations, journals, newsletters, indexes and directories, federal agencies, databases, research centers, test labs, and Internet sites.

7. **Brassey's World Aircraft and Systems Directory.** McLean, VA: Brassey's, 1999. 672p. \$135.00.

This directory has a spaceflight section showing operational commercial launch vehicles and manned spacecraft; subject areas include electronic warfare, airport runway information, helicopters, buoyant aircraft (airships), airborne radar, and military and commercial airlines.

8. **Bulk-Online.** 2000. Available: <http://www.bulk-online.com>. (Accessed April 4, 2000).

Trans Tech Publications provides here a searchable database of the *1998/99 Yearbook and Directory of Powder and Bulk Solids Handling and Processing*. Over 1,500 equipment manufacturers, ports, research institutions, and consulting and engineering companies are also listed.

9. **Canadian Mines Handbook.** Toronto: Northern Miner Press. Annual. \$65.00. ISSN 00689289.

Published in August, this annual provides comprehensive coverage on over 2,000 Canadian mining companies. It also includes a list of producing mines, producers of metals, and minerals and mining area maps in Canada, Asia, Africa, and Latin America.

10. **Canadian Oil Industry Directory.** Tulsa, OK: PennWell, 1999. \$135.00. ISSN 0195590X.

This directory includes associations and government agencies, with an emphasis on drilling contractors, engineering and construction, exploration and production, petrochemicals, pipeline operators, service companies, suppliers, and manufacturers. It also includes a regional buyer's guide.

11. **Casting Source Directory.** Des Plaines, IL: American Foundrymen's Society, 1998. Annual. \$99.00. ISSN 15234363.

This comprehensive reference of casting suppliers in North America lists more than 2,700 North American foundries by state, types of metals cast at each foundry, and classification of foundries by molding and casting processes.

12. **Corporations of Interest to Electrical and Computer Engineers.** 1998. Available: <http://www.ee.umn.edu/corp>. (Accessed April 4, 2000).

This is a brief list of corporations maintained by the Department of Electrical and Computer Engineering at the University of Missouri—Rolla. A similar site for professional organizations and government labs is available at <http://www.ece.umn.edu/orgs>.

13. **Data Bookshelf.** 1999. Available: <http://chaos.crhc.uiuc.edu/databookshelf>. (Accessed October 25, 1999).

Rather than the typical listing of companies on the Internet, this is a directory of company datasheet links.

14. **Diesel and Gas Turbine Worldwide Catalog.** Brookfield, WI: Diesel and Gas Turbine Publications. Annual. \$110.00. ISSN 10704884.

This is a product and buyer's guide for diesel engines, gas turbines, and related systems. It provides directory information for specifications, manufacturers, and products.

15. **Directory of Japanese Technical Resources in the United States.** Washington, DC: Office of Business Development, Assistant Secretary for Technology Policy, Japan Technology Program 171p. (PB95142089) \$40.00. ISBN 0934213321. Available from National Technical Information Service.

This is a directory of commercial services, nonprofit organizations, professional and trade associations, government agencies, and libraries that collect, abstract, translate, or distribute Japanese technical information. It includes indexes of university-based programs on Japanese science and technology.

16. **Directory of State Government Renewable Energy Contacts.** Latham, NY: Interstate Renewable Energy Council, 1997. \$30.00.

The Interstate Renewable Energy Council (IREC) is a consortium of energy program directors in state government and affiliated organizations. The directory identifies contacts for technologies and programs in all 50 states.

17. **Electrical World Directory of Electric Power Producers and Distributors.** New York: McGraw-Hill, 1998. Annual. \$395.00. ISSN 10893407.

This directory lists utilities in the United States, U.S. territories, and Canada. Entries may include company classification, personnel, financial data, customer data, system design and performance, major interconnections, purchased power sources, plant information, and service area. There is also a list of key utility mergers and acquisitions from 1986 to the present.

18. **Electronic Engineers Master Catalog: eem.** Garden City, NY: Hearst Publications. 4v. \$99.00. ISSN 07329016. Available: <http://eemonline.com>. (Accessed April 2, 2000).

This catalog covers electronic components; electromechanical and electro-optical devices; interconnections, packaging, and hardware; and power sources, instrumentation, computer products, and equipment.

19. **The Electronics Source Book.** Irvine, CA: Electronics Source Book. Annual. \$32.95. Available: <http://www.the-esb.com>. (Accessed April 2, 2000).

This directory is published for the following areas: Canada, Northwest, northern California, southern California, mountain states, central states, Midwest, south Atlantic, mid-Atlantic, and New England. The directory sections list manufacturers, products, vendors, distributors, and manufacturer's representatives.

20. **ENR's Top Ranked Firms.** 2000. Available: <http://www.enr.com>. (Accessed April 4, 2000).

*Engineering News-Record (ENR)* regularly compiles lists of top-ranked firms. These lists include design firms, contractors, specialty contractors, international contractors, environmental firms, and design-build firms.

21. **Environmental Engineering Selection Guide.** Annapolis, MD: American Academy of Environmental Engineers. Annual. ISSN 08963827.

This is a directory of engineering and consulting firms and education institutions employing specialists certified by the American Academy of Environmental Engineers (AAEE). Entries are arranged geographically. This directory is helpful for employment, consulting, and education choices.

22. Eversole, B. S., and M. A. Rossetti. **Worldwide Transportation Directory: Statistical Contacts and Transportation Profiles by Continent and Country.** Washington, DC: Bureau of Transportation Statistics, 1997. 111p. (DOTVNTSCBTS971; PB97197826.). \$33.00. Available from National Technical Information Service.

The directory assists transportation data users in locating statistical contacts and transportation profiles for different countries. Arranged by continents, it lists contact points in 189 countries. In addition, there are transnational organizations that span the interests and responsibilities of several countries.

23. Frawley, Gerard. **International Directory of Military Aircraft.** Osceola, WI: Motorbooks International, 1999. 190p. \$17.95. ISBN 1875671420.

This is an illustrated directory of military aircraft in service or under development. Descriptions include specifications for each aircraft.

24. Genovesi, Robert. **The Wilson Guide to Experts in Science and Technology.** Bronx, NY: H. W. Wilson, 1998. 600p. \$55.00. ISBN 0824209494.

For researchers looking for experts in science and technology, this guide provides contact information, addresses, education, expertise, employment history, academic and professional affiliations, publications, awards and honors, current projects, and a photograph.

25. Grant, Sandra Kathryn. **ITS Market Resource Guide: A Reference Guide: Federal, State and Local Contacts in Intelligent Transportation Systems.** Washington, DC: ITS America, 1996. 240p. \$80.00.

This reference guide to federal, state, and local contacts in Intelligent Transportation Systems (ITS) provides deployment plans for ITS organizations.

26. Hussey, Bob, and Jo Wilson. **Advanced Technical Ceramics: Directory and Databook.** New York, NY: Chapman & Hall, 1998. 505p. \$239.00. ISBN 0412803100.

This directory and databook combination provides technical data on advanced technical ceramics (ATC) and directory information of materials sources worldwide. ATCs are highly engineered, high-performance, nonmetallic, ceramic materials. The directory includes a listing of the relevant standards.

27. Ikonomou, Charlene, and Diane Pacchione. **Environmental Key Contacts and Information Sources.** Rockville, MD: Government Institutes, 1998. 400p. \$59.00. ISBN 0865876398.

This reference supplies contact information for federal, state, and local environmental agencies and organizations. Subject areas include environmental protection, hazardous waste materials, clean water and air, environmental assessment and management, pesticides, pollution control, recycling, natural resources, and conservation. Also included is directory information.

28. **Industry Reference Handbooks: Computers and Software.** Detroit: Gale, 1999. 1071p. (Industry Reference Handbooks, vol. 1). \$99.00. ISBN 0787630020.

Computer and software industries are described in this book, including an industry overview, statistics and performance indicators, financial norms and ratios, key companies, mergers and acquisitions, associations, consultants, trade information sources, and trade shows and conferences. Another title in the Industry Reference Handbooks Series covers the telecommunications industry.

29. **Industry Search.** 1999. Available: <http://industrysearch.com>. (Accessed October 25, 1999).

This site provides a searchable manufacturer's/supplier's directory. It also includes links to other industrial sites.

30. **Industry.net.** 1999. Available: <http://www.industry.net>. (Accessed October 25, 1999).

This site provides information about manufacturing products, services, and ISO 9000. The searchable database includes products, manufacturers, and distributors.

31. **International Directory of Engineering Societies and Related Organizations.** Washington, DC: American Association of Engineering Societies, 1993-. Biennial. \$204.00. ISSN 10679014.

This directory lists domestic and international engineering organizations. Descriptions include engineering disciplines, geographical region, organization's objectives, staff, and other directory information.

32. **International Research Centers Directory**. Farmington Hills, MI: Gale, 1999. \$485.00. ISBN 078760853X.

This directory provides access to government, university, independent, nonprofit, and commercial research and development activities in nearly 125 countries worldwide. Entries include mail and electronic addresses, personal contacts, organizational affiliates, staff, descriptions of research programs, publications, and services.

33. **ISA Directory of Instrumentation**. Research Triangle Park, NC: Instrument Society of America, 1999. 607p. \$100.00. ISBN 1556176945. Available: <http://www.isadirectory.org>. (Accessed April 2, 2000).

This is a comprehensive directory to measurement and control products and services provided by the Instrument Society of America (ISA).

34. Lauzzana, Raymond, and Denise Penrose. **International Directory of Design: Architecture, Urban Planning and Landscape Design**. San Francisco, CA: Penrose Press, 1998. 200p. (International Directory of Design Series, vol. 2). \$54.95. ISBN 188522527X.

This supplement to the *International Directory of Design* is a comprehensive reference to international architecture, urban planning, and landscape design. It includes references for educational programs, professional organizations, and periodical publications. A searchable database is available at <http://www.penrose-press.com/IDD/search.html>.

35. Lauzzana, Raymond, and Denise Penrose. **International Directory of Design: Computer Graphics, Multimedia and Animation**. San Francisco, CA: Penrose Press, 1999. 149p. (International Directory of Design Series, vol. 7). \$54.95. ISBN 1885225326.

This supplement to the *International Directory of Design* is a reference resource for computer graphics multimedia and animation. Entries are international in scope and cover schools, publishers, professional societies, and research institutes. A searchable database is available at <http://www.penrose-press.com/IDD/search.html>.

36. Lauzzana, Raymond, and Denise Penrose. **International Directory of Design: Industrial and Product Design**. San Francisco, CA: Penrose Press, 1999. 200p. (International Directory of Design Series, vol. 10). \$54.95. ISBN 1885225350.

This supplement to the *International Directory of Design* is a reference resource for industrial and product design. Subjects include product design, industrial engineering, ergonomics, manufacturing, and process design. A searchable database is available at <http://www.penrose-press.com/IDD/search.html>.

37. Leonard, Barry. **Biomedical Technology Resources: A Research Resources Directory**. Upland, PA: DIANE, 1998. 92p. \$25.00. ISBN 0788141872.

This directory for biomedical technology resource centers is organized by biomedical computing, materials, engineering, non-invasive imaging and spectroscopy, and cellular and molecular structure and function. Each entry includes

the names of the principal investigators and a description of the research being conducted.

38. **Manufacturing Marketplace.** 1999. Available: <http://www.manufacturing.net>. (Accessed October 25, 1999).

This is a searchable database of manufacturers and service companies. It also includes a directory of new product listings and searchable databases of every major industry trade show and association in North America.

39. **Natural Gas Industry Directory.** Tulsa, OK: PennWell, 1999. \$165.00. ISSN 10513973.

This directory includes associations and organizations related to exploration and production, gas compression, gas processors, liquefied natural gas, regulatory agencies, suppliers, and manufacturers.

40. **Northwest High Tech on the Web.** Bellevue, WA: Resolution Business Press, 1999. Information available: <http://www.nwhtweb.com>.

This online directory profiles Pacific Northwest computer companies in Alberta, British Columbia, Idaho, Oregon, and Washington.

41. **The Online Directory of Expert Witnesses.** 2000. Available: <http://www.claims.com/online.html>. (Accessed April 4, 2000).

This online resource has expert listings in over 400 categories of technical, scientific, and medical expertise. It includes litigation support specialists, engineers, expert witnesses, scientific advisors, medical specialists, and technical consultants.

42. **Packaging Sourcebook (North American and International Editions).** Philadelphia, PA: North American, 1998. Annual. Single edition. \$375.00. Both editions. \$475.00. ISSN 10761659. Digital format available.

This sourcebook provides profiles of suppliers in the packaging marketplace. The North American edition generally includes a "State of the Industry" report. The International edition has reports on worldwide market trends and technical developments.

43. **PlasticsNet.Com.** 1999. Available: <http://www.plasticsnet.com>. (Accessed October 25, 1999).

This site includes a searchable directory of thousands of plastics products and hundreds of companies.

44. **Plunkett's Energy Industry Almanac.** Houston, TX: Plunkett Research, 1999. 680p. \$149.00. ISBN 0963826883.

This resource covers everything from major oil companies to electric and gas utilities. Subject areas include gas pipelines, refiners/retailers, oil field services, co-generation, engineering and alternative energy. It lists over 400 firms, including major oil companies, independent oil companies, pipeline firms, refiners, and energy services companies.

45. **Plunkett's InfoTech Industry Almanac.** Houston, TX: Plunkett Research, 1998. 704p. \$149.00. ISBN 1891775006.

This almanac provides an overview of the information technology industry, including telecommunications, software, hardware, online services, information management, systems integration, and outsourcing. It is organized products, services, geography, corporate rankings for sales, profits, and research budgets.

46. **Research Centers Directory.** Farmington Hills, MI: Gale, 1998. 2v. \$548.00. ISBN 0787621951.

*Research Centers Directory* describes programs, facilities, publications, educational efforts, and services of North American research institutes. Subject, geographic, personal name, and master indexes are included.

47. **TechExpo—The Exposition of High Technology Companies and Products on the WWW.** 1999. Available: <http://www.techexpo.com>. (Accessed October 25, 1999).

This directory describes over 2,000 companies. It includes buyer's guides; calendars; technical trade magazines; science and engineering data centers; science, engineering, technology and trade associations; educational institutions; and technical Internet sites.

48. **Telecommunications Directory 1999: An International Guide to Organizations, Systems, and Services Concerned with the Interactive Electronic Transmission of Voice, Image, and Data.** Detroit, MI: Gale, 1999. 1237p. \$400.00. ISBN 0787621358.

This source of information on organizations in the telecommunications field includes products and services related to interactive electronic communications. It also provides a directory of telephone companies, a glossary, standards, and government rulings.

49. **Test Equipment and Services Directory for the Plastics and Rubber Industries.** Shawbury, UK: Rapra Technology, 1998. Annual. \$99.00. Digital format available.

This directory includes plastics and rubber testing services and equipment companies listed under their products and services.

50. U.S. Department of Commerce. National Oceanic and Atmospheric Administration (NOAA). **NOAA Environmental Services Data Directory.** 1998. Available: <http://www.esdim.noaa.gov/NOAA-Catalog>. (Accessed April 4, 2000).

The NOAA Environmental Services Data Directory allows users to search for publicly available international environmental data. Data sources include descriptions related to climatology, meteorology, ecology, pollution, geology, oceanography, and remote sensing satellites.

51. U.S. Department of Commerce. Office of Technology Policy (OTP). Technology Administration. **Foreign Science and Technology Information Sources in the Federal Government and Select Private Sector Organizations.** 1996.

228p. (C 1.2:F 76/2). Available: <http://www.ta.doc.gov/Reports.htm>. (Accessed April 4, 2000).

This listing provides an overview of U.S. federal and private sector organizations that monitor, collect, disseminate, or conduct analysis of information involving foreign science and technology. Descriptions are based on program descriptions, brochures, congressional testimony, annual reports, mission statements, management instructions, and other resources.

52. U.S. Department of Energy (DOE). **Energy Information Directory**. Washington, DC: Department of Energy, Office of the National Energy Information System, 1997. 117p. (DOE/EIA0205(97)). (DE97009396). \$33.00. Available from National Technical Information Service.

This directory provides energy information and referral assistance.

53. **USA Oil Industry Directory**. Tulsa, OK: PennWell, 1998. \$165.00. ISSN 00828599.

This directory covers associations, drilling contractors, and government agencies associated with the oil industry.

54. **WebLinks to Databooks and Datasheets**. 1998. Available: <http://bhmac.eng.uc.edu/databooks>. (Accessed October 25, 1999).

This resource for databooks and datasheets is maintained by the Engineering Library at the University of Cincinnati.

55. White, V. R. **National Voluntary Laboratory Accreditation Program 1998 Directory**. Gaithersburg, MD: National Institute of Standards and Technology, 1998. 312p. (NIST/SP810ED1998. PB98149123). \$58.00. Available from National Technical Information Service.

This directory lists approximately 700 laboratories with the following information: name, address, contact person, telephone and fax numbers, e-mail and Internet addresses, accreditation renewal date, and scope of accreditation for each laboratory. The directory also contains a description of the National Voluntary Laboratory Accreditation Program (NVLAP).

56. **Who's Who in Science and Engineering 1998–1999**. New Providence, NJ: Marquis Who's Who, 1998. 1638p. ISBN 0837957567.

This resource can be used for research on significant people in science and engineering. It includes biographical facts on over 31,000 men and women. Each description provides personal data, achievements, discoveries, research findings, patents, and career histories.

57. **The World Wide Web Aerospace Business Development Center**. 1997. Available: [http://www.tenagra.com/aero\\_bd.html](http://www.tenagra.com/aero_bd.html). (Accessed October 25, 1999).

This site lists government aerospace procurement centers, Department of Defense sources, and other procurement-related information sources.

58. **Worldwide Automotive Supplier Directory.** Warrendale, PA: Society of Automotive Engineers, 1998. 700p. \$395.00. ISSN 10860711.

Organized by geographic region and major product groups, this directory lists automotive suppliers. It also provides a calendar of upcoming industry events and related industry Internet sites.

59. **Worldwide Pipelines and Contractors Directory.** Tulsa, OK: PennWell, 1999. \$145.00. ISSN 01463349.

This directory covers pipeline contractors, U.S. natural gas, U.S. crude oil, Canadian, and foreign pipelines.

60. Wright, Whitman. **Directory of Commercial Computer Software for Civil Engineering.** Montreal: Canadian Society for Civil Engineering, 1997. Available: <http://www.csce.ca/english/publications/directory/index.html>. (Accessed October 25, 1999).

This document provides an overview of the commercial software programs available in different disciplines within civil engineering.

61. **www.Polysort.com.** 1999. Available: <http://www.polysort.com>. (Accessed October 25, 1999).

This site provides plastics and rubber industry information resources such as company directories, an Internet site directory, discussion groups, and other industry information.

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## 2.2 Encyclopedias and Yearbooks

62. Allstetter, William. **Science and Technology Almanac.** Phoenix, AZ: Oryx, 1999. 490p. \$65.00. ISBN 0573562378.

Sections in this almanac include a discipline-by-discipline review; science, technology, and society perspectives; people, prizes, and places; science around the world; history of science and technology; and highlights of the upcoming year. Published on annual basis, this title is an excellent resource for current news, historical facts, and directory information.

63. Arpe, H. J. **Ullmann's Encyclopedia of Industrial Chemistry on CD-ROM.** New York: Wiley-VCH, 1998. \$14,300.00. ISBN 3527201599.

The original title of this encyclopedia was *Encyklopädie der technischen Chemie*. This digital version contains major articles, tables, figures, and extensive references to further sources of information. It includes a German-English dictionary of technical terms, and a full-text index, an author index, a CAS registry number index, and a keyword index.

64. **The Astronomical Almanac for the Year 2000: Data for Astronomy, Space Sciences, Geodesy, Surveying, Navigation and Other Applications.** Washington, DC: Government Printing Office. 556p. (SuDocs D 213.8). \$39.00. ISBN 0160498694. Available from Government Printing Office.

The *Astronomical Almanac* is prepared jointly by the Nautical Almanac Office of the United States Naval Observatory (<http://aa.usno.navy.mil/AA>) and Her Majesty's Nautical Almanac Office of the Royal Greenwich Observatory (<http://www.nao.rl.ac.uk>). Designed in consultation with other astronomers of many countries, this reference provides current, accurate astronomical data.

65. Baker, David. **Spaceflight and Rocketry: A Chronology**. New York: Facts on File, 1996. 528p. \$56.00. ISBN 0816018537.

The purpose of this reference is to provide a comprehensive history of rockets, missiles and space vehicles by providing a progression through the major events and technology. The timeline begins in 360 B.C.E. and is current through 1993. The book includes a glossary and detailed index.

66. Barton, David K., and Sergey A. Leonov. **Radar Technology Encyclopedia**. Boston: Artech House, 1997. 512p. \$99.00. ISBN 0890068633.

The *Radar Technology Encyclopedia* covers the field of radar fundamentals, design engineering, systems, subsystems, and major components. Entries include term definition, standard notation, evaluation formulas, block diagrams, performance summary, and related literature.

67. Bickford, Michalina. **Kirk-Othmer Encyclopedia of Chemical Technology**. New York: Wiley, 1999. 2196p. \$295.00. ISBN 0471296988. Digital format available.

This is the abridged version of the *Kirk-Othmer Encyclopedia of Chemical Technology*. As a reliable guide to chemical information, this title covers all the subjects in the unabridged version.

68. Bisio, Attilio, and Sharon Boots. **The Wiley Encyclopedia of Energy and the Environment**. New York: Wiley, 1997. 1562p. 2v. \$195.00. ISBN 047114827X.

This condensed version of *Encyclopedia of Energy, Technology and the Environment* provides general articles on energy production, use, and environmental impact. Each article includes references for additional research.

69. Brody, Aaron, and Kenneth S. March. **Encyclopedia of Packaging Technology**. New York: Wiley, 1997. 1037p. \$225.00. ISBN 0471063975.

This reference book covers all stages of the packaging process through the final product. Articles written by experts include tables, diagrams, photographs, and bibliographies.

70. Bruno, Leonard C., and Donna Olendorf. **Science and Technology Firsts**. Detroit: Gale, 1997. 636p. \$70.00. ISBN 0787602566.

Arranged in chronological and subject order, each historical topic is briefly described. The book is indexed for quick access.

71. Budavari, Susan. **The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals**. White Station, NJ: Merck, 1996. 2600p. \$45.00. ISBN 0911910123. Digital format available.

This reference describes significant chemicals, drugs, and biological substances. Each chemical description includes the title, *Chemical Abstracts* names, percentage composition, molecular weight and formula, trademarks, drug code number, patent and chemical information, structure, and literature references.

72. Cone, Robert J. (Revised and updated by Patricia Barnes-Svarney). **How the New Technology Works**. Phoenix, AZ: Oryx, 1998. 133p. \$28.50. ISBN 157356138X.

This reference discusses 17 major high-technology topics and 5 high-technology principles and concepts in depth, as well as several other topics with brief descriptions. The major topics are artificial intelligence, fiber optics, machine vision, micromachining, robots and superconductivity, digital signals, and the metric (SI) system. Brief descriptions are provided for such topics as CAD (computer-aided design), ceramics, CRT (cathode ray tube), LCD (liquid crystal display), microwave oven, radar, sensors, and transistors. The book is indexed, with some illustrations.

73. Crawford, Mark. **Toxic Waste Sites: An Encyclopedia of Endangered America**. Santa Barbara, CA: ABC-CLIO, 1997. 324p. \$65.00. ISBN 0874369347.

This encyclopedia provides an overview of the Superfund Program and directory information for the worst sites registered on the National Priorities List (NPL). Entries are grouped by each state. Most descriptions provide a historical overview and future plans.

74. Crocker, Malcolm J. **Encyclopedia of Acoustics**. New York: Wiley, 1997. 2096p. 4v. \$475.00. ISBN 0471804657.

Volume 1 of this comprehensive encyclopedia includes general linear acoustics, nonlinear acoustics and cavitation, aeroacoustics and atmospheric sound, and underwater sound. Volume 2 covers ultrasonics, quantum acoustics, and physical effects of sound; mechanical vibrations and shock; statistical methods in acoustics; and noise, its effects and control. Volume 3 includes architectural acoustics, acoustical signal processing, physiological acoustics, and psychological acoustics. Volume 4 includes speech communication, music and musical acoustics, bioacoustics, acoustical measurements and instrumentation, and transducers. Each chapter begins with a general introduction written with an applications approach.

75. Cunningham, William P., et al. **Environmental Encyclopedia**. Detroit: Gale, 1998. 1196p. \$208.00. ISBN 081039314X.

This work provides a multidisciplinary approach to topics including atmospheric pollutants, defoliation, dune erosion, ISO 14000, and the environmental effects of war. Enhancements include some bibliographies; an environmental legislation chronology; textual cross-references; and maps, charts, tables, and photographs.

76. Daubert, T. E., and R. P. Danner. **Physical and Thermodynamic Properties of Pure Chemicals: Core Edition and Supplements 1-8**. Philadelphia, PA: Taylor & Francis, 1998. 3460p. 5v. \$950.00. ISBN 1560327731.

This encyclopedic guide to pure chemical properties includes recommended physical, thermodynamic, and transport property data for compounds. It is sponsored by the American Institute of Chemical Engineers' Design Institute for Physical Property Data (DIPPR) and the National Standard Reference Data Service of the National Institute of Standards and Technology (NIST).

77. Flickinger, Michael C., and Stephen W. Drew. **The Encyclopedia of Bioprocess Technology: Fermentation, Biocatalysis, and Bioseparation**. New York: Wiley, 1999. 2756p. 5v. ISBN 0471138223.

This encyclopedia presents applications and theories in biotechnology. Articles focus on industrial applications of fermentation, biocatalysis, and bioseparation.

78. Francillon, Rene J. **The Naval Institute Guide to World Military Aviation**. Annapolis, MD: Naval Institute, 1997. 904p. \$150.00. ISBN 155750265X.

This guide covers operational military aircraft, including type, manufacturer, program history, weaponry, and equipment. The list is compiled from 170 nations and is illustrated with photographs and drawings.

79. Francis, Raymond L. **The Illustrated Almanac of Science, Technology, and Invention: Day by Day, Facts, Figures, and the Fanciful**. New York: Plenum, 1997. Various pagings. \$28.95. ISBN 0306456338.

This almanac includes people, facts, figures, inventions, and fun stories about science and technology. Arranged on a day-by-day basis covering several centuries of history, this reference is useful for identifying ideas for further research projects.

80. Friedman, Norman. **The Naval Institute Guide to World Naval Weapon Systems**. Annapolis, MD: Naval Institute, 1997. 808p. \$140.00. ISBN 1557502684.

This is a guide to the weapons currently in service in ships, submarines, and naval aircraft around the world. It describes shipboard and naval-related airborne systems in service and under development.

81. Gawdiak, I. Y., et al. **Astronautics and Aeronautics, 1986–1990: A Chronology**. Washington, DC: National Aeronautics and Space Administration, 1997. 380p. (NAS 1.21:4027; NASASP4027; N19970027406.). \$65.50. ISBN 0160491347. Available from National Technical Information Service.

This chronology of events in aeronautics, aviation, space science, and space exploration was prepared by the Federal Research Division of the Library of Congress for the History Division of the National Aeronautics and Space Administration (NASA). It covers the years 1986–1990.

82. Herschy, Reginald W., and Rhodes W. Fairbridge. **Encyclopedia of Hydrology and Water Resources**. Norwell, MA: Kluwer, 1998. 832p. (Encyclopedia of Earth Sciences Series). \$459.00. ISBN 0412740605.

This encyclopedia contains entries written by international contributors. Articles are enhanced with extensive cross-referencing, subject and citation indexes, listings of related journals, tables of units, symbols, and conversion factors. Topics include floods and droughts, desertification, flow measurement, groundwater, remote sensing, river pollution prevention, soil erosion, water treatment, and water use.

83. Hewitt, Geoffrey F., and G. L. Shires, I. V. Polezhaev. **International Encyclopedia of Heat and Mass Transfer**. Boca Raton, FL: CRC, 1997. 1312p. \$135.00. ISBN 0849393566.

This international resource provides information on heat and mass transfer, covering primary processes, thermodynamics, fluid physical properties, basic equations, methods of solution, and equipment. It includes scientific background and descriptions of engineering applications, as well as illustrations and tables.

84. **International Petroleum Encyclopedia**. Tulsa, OK: PennWell, 1998. 355p. \$150.00. ISBN 0878147446. Digital format available.

This in-depth encyclopedia contains news articles, statistics, current maps, tables, and charts on the oil and gas industry.

85. **Jane's Transport Library**. Alexandria, VA: Jane's Information, 1999. Updated quarterly. Digital format. \$8500.00. Individual titles in this collection are available separately.

This is an integrated library of several titles in the Jane's collection, including, among others, *Jane's Aero-Engines*, *Jane's Air Traffic Control*, *Jane's Airports and Handling Agents*, *Jane's Airports, Equipment and Services*, *Jane's All the World's Aircraft*, *Jane's Avionics*, *Jane's High Speed Marine Transportation*, *Jane's Merchant Ships*, *Jane's Urban Transport Systems*, *Jane's World Airlines*, and *Jane's World Railways*.

86. Kroschwitz, Jacqueline I., and Mary Howe-Grant. **Kirk-Othmer Encyclopedia of Chemical Technology**. New York: Wiley, 1998. 27v. \$7884.00. ISBN 0471527041. Digital format available.

This encyclopedia provides in-depth coverage of chemical technical technology, including agricultural chemicals, biotechnology, chemical information retrieval, environmental issues, fuels and energy, and composite materials. It includes CAS Registry Numbers and photos, charts, graphs, figures, and tables. Regulations, patents, and licensing are among the legal issues discussed.

87. **Landmarks in Mechanical Engineering**. West Lafayette, IN: Purdue University Press, 1997. 364p. \$49.95. ISBN 1557530939.

Sponsored by The History and Heritage Committee of the American Society of Mechanical Engineers, this history of technology describes 135 historic mechanical landmarks designated by ASME International between 1973 and 1989. Landmarks are organized around pumping; mechanical power production;

electrical power production; power transmission; minerals extraction and refining; manufacturing facilities and processes; food processing; materials handling; environmental control; water, rail, road, and air transportation; and communications.

88. **The Living Almanac of Disasters.** 1998. Available: <http://disasterium.com>. (Accessed April 4, 2000).

Arranged in a calendar format, at this site the user can select the following topics: fires, transportation, and earthquakes. The time frame covers the last several centuries. The site also includes some images.

89. Macaulay, David, and Neil Ardley. **The New Way Things Work: From Levers to Lasers, Windmills to Web Sites, A Visual Guide to the World of Machines.** Boston: Houghton Mifflin, 1998. 400p. \$35.00. ISBN 0395938473.

This illustrated guide is arranged by scientific and mechanical principles. Examples include telecommunications, hydraulic machines, steam power, batteries, and the microchip.

90. **Manufacturing Handbook and Buyer's Guide/Plastics Technology.** New York: Bill Communications. (Supplement to *Plastics Technology Magazine*). Annual. \$89.00.

This is a comprehensive tool for locating suppliers of machinery, materials (thermoplastics and thermosets), controls, chemicals, and specialized services. *The Plastics Technology* home page is available at <http://plasticstechnology.com>.

91. Martin, Donald H. **Communications Satellites, 1958–1995.** El Segundo, CA: Aerospace, 1996. 483p. \$35.00. ISBN 1884989020.

This work chronicles the evolution of commercial, military, national, and international communication satellites. It provides technical details about each satellite, with drawings, schematics, flowcharts, and maps. An extensive bibliography is included.

92. **McGraw-Hill 1999 Yearbook of Science and Technology.** New York: McGraw-Hill, 1998. 500p. \$125.00. ISBN 0070526257.

This yearbook updates the eighth edition of the *McGraw-Hill Encyclopedia of Science and Technology*, with articles on the year's most significant developments in science, technology, and engineering. The *1999 Yearbook* features articles written by scientists and engineers from industry, academia, and government. It explores new subjects, including aerodynamic decelerators, the aerospike engine, comet Hale-Bopp, computer security and privacy, crumpling, pressure-sensitive paint, and transcranial magnetic stimulation.

93. **McGraw-Hill Concise Encyclopedia of Science and Technology.** New York: McGraw-Hill, 1998. 2300p. \$150.00. ISBN 0070526591.

This abridged work draws key concepts from the *McGraw-Hill Encyclopedia of Science and Technology* in more than 75 major disciplines. This title is also packaged with the *McGraw-Hill Dictionary of Scientific and Technical Terms* in a digital product called the *Science Navigator* (\$225.00. ISBN 0079137628).

94. **McGraw-Hill Multimedia Encyclopedia of Science and Technology.** New York: McGraw-Hill, 1998. Digital format. \$995.00. ISBN 0078530741.

This resource includes the *McGraw-Hill Encyclopedia of Science and Technology* and the *McGraw-Hill Dictionary of Scientific and Technical Terms*. It includes over 7,100 articles; 122,000 terms; and 1,400 high-resolution color graphics, photos, maps, charts, and tables. Subjects are enhanced with animation sequences, audio narrations, hyperlinked cross-references, and study guides. A networked version is available.

95. Meyers, Robert A. **Encyclopedia of Environmental Analysis and Remediation (EEAR).** New York: Wiley, 1998. 5488p. 8v. (Encyclopedia Series in Environmental Science). \$2500.00. ISBN 0471117080.

This encyclopedia includes over 280 peer-reviewed articles by analytical and environmental experts. Topics include information on specific pollutants; techniques for analysis; sampling methods; hazardous waste remediation; pollution in the biosphere; health effects; risk assessments; and regulatory, legal, economic, and management issues. Extensive cross-references, bibliographies, reading lists, and index are included.

96. Meyers, Robert A. **The Wiley Encyclopedia of Environmental Pollution and Cleanup.** New York: Wiley, 1999. 1800p. 2v. \$295.00 ISBN 0471316121.

This condensed version of the *Encyclopedia of Environmental Analysis and Remediation* includes such topics as air pollution, environmental law and regulation, environmental sampling, hazardous waste cleanup, pollution in the biosphere, waste reclamation, and nuclear waste.

97. **Modern Plastics Encyclopedia '99 with Buyer's Guide.** New York: McGraw-Hill, 1998. (Published as a special issue of *Modern Plastics*). Annual subscription. \$41.75.

This encyclopedia contains review articles examining developments and trends in key market areas, resins, additives, processing machinery, molds, tooling, and injection molding. The buyer's guide covers products and suppliers. This is an excellent source for the latest information on the plastics industry.

98. Morgan, Christopher. **Wizards and Their Wonders: Portraits in Computing.** New York: ACM, 1997. 414p. \$49.95. ISBN 0897919602.

This book is the companion to the "Wizards and Their Wonders" exhibit shown in Washington, DC, and The Computer Museum in Boston in fall 1997. It features 200 specially commissioned color photographs (taken by Fabian Bachrach) of the inventors, entrepreneurs, communicators, and venture capitalists significant in the history of computing. It includes such people as Marc Andreessen, Vint Cerf, Ester Dyson, Nathan Myhrvold, and Sandy Robertson.

99. Muller, Nathan J. **The Desktop Encyclopedia of Telecommunications.** New York: McGraw-Hill, 1998. 550p. \$49.95. ISBN 0070444579.

This basic encyclopedia provides about 500 articles on the telecommunications field.

100. Murphy, Daryl E. **Aviation Fact Book**. New York: McGraw-Hill, 1998. 295p. \$24.95. ISBN 0070444552.

This basic reference provides facts about flying—historical, modern, recreational, military, and commercial. It also includes specifications, performance, sales statistics, makes, models, and world records.

101. **NASA Pocket Statistics**. Washington, DC: National Aeronautics and Space Administration, 1997. 214p. (NAS 1.15:112623; NASATM112623; N19980008309). \$47.00. Available from National Technical Information Service.

This pocket directory covers NASA's administrative and organizational information and major launch record.

102. Nass, Leonard I., and Charles A. Heiberger. **Encyclopedia of PVC. Vol. 1. Resin Manufacture and Properties**. 680p. \$226.00. **Vol. 2. Compound Design and Additives**. 675p. \$226.00. **Vol. 3. Compounding Processes, Product Design, and Specifications**. 608p. \$226.00. **Vol. 4. Conversion and Fabrication Processes**. 352p. \$226.00. New York: Marcel Dekker, 1986–1998. ISBN 0824774272.

This is a comprehensive encyclopedia on polyvinyl chloride (PVC) that has taken over 10 years to compile. It covers history, manufacturing, properties, processes, applications, testing, and environmental issues.

103. O'Brien, Robert L. **Jefferson's Welding Encyclopedia**. Miami, FL: American Welding Society, 1997. 758p. \$132.00. ISBN 0318351293.

Published on a regular basis, this title covers a broad range of welding topics, including some historical information. It also includes a buyer's guide.

104. **Oil and Gas Journal DataBook**. Tulsa, OK: PennWell, 1999. 420p. \$64.95.

This databook provides statistical year-in-review information plus selected articles that cover significant events in the past year. It includes other reports such as the Petrochemical Report, Worldwide Gas Processing Report; Pipeline Report; International Rig Count, and Worldwide Crude Oil and Gas Production Report.

105. Petska-Juliussen, Karen, and Egil Juliussen. **Annual Computer Industry Almanac**. Austin, TX: Hoovers, 1996. 788p. \$63.00. ISBN 094210708X. Information available: <http://www.i-i-a.com>.

This detailed directory provides an overview of the computer industry, company information, people, products and technologies, advertising, salaries, headlines and history, conferences and tradeshow, associations and organizations, and publications.

106. Pfafflin, James R., and Edward N. Ziegler. **Encyclopedia of Environmental Science and Engineering**. Newark, NJ: Gordon and Breach, 1998. 1408p. 2v. \$650.00. ISBN 9056996363.

All aspects of environmental science and engineering are described in this encyclopedia. Primary emphasis is placed on air, water, and soil pollution issues. Topics include the biological treatment of wastewater, hazardous wastes, and water and waste management systems in space.

107. Polmar, Norman. **The Naval Institute Guide to Ships and Aircraft of the U.S. Fleet.** Annapolis, MD: Naval Institute, 1997. 580p. \$99.95. ISBN 1557506868.

This guide contains technical data and commentary on the U.S. Navy's current ship, aircraft, missile, and electronic programs. It includes over 840 photographs and a glossary.

108. Ruthven, Douglas M. **Encyclopedia of Separation Technology. Vol. 1. Absorption to Extraction. Vol. 2. Filtration to Zone.** New York: Wiley, 1997. 2000p. 2v. \$395.00 ISBN 0471161241.

This substantial encyclopedia is geared for chemical engineers and research chemists. It covers scientific principles and practical applications. Entries are organized alphabetically and include cross-references. Topics cover separations of gases, liquids, and solids.

109. Salamone, Joseph C. **Concise Polymeric Materials Encyclopedia.** Boca Raton, FL: CRC, 1999. 1706p. \$175.00. ISBN 084932226X.

This concise encyclopedia abridges the *Polymeric Materials Encyclopedia*. Topics include engineering thermoplastics, membranes, biomaterials, intelligent materials, paints, gels, and ultrathin films.

110. Salamone, Joseph C. **Polymeric Materials Encyclopedia.** Boca Raton, FL: CRC, 1996. 9600p. 12v. \$3995.00. ISBN 0849326516. Digital format available.

This comprehensive encyclopedia contains over 1,165 articles on research and development of polymeric materials science. Topics includes biomaterials, biosensors, composites, dental polymers, membranes, new resins, polyesters, and recycling.

111. Schweitzer, Philip A. **Encyclopedia of Corrosion Technology.** New York: Marcel Dekker, 1998. 537p. \$195.00. ISBN 0824701372.

This is an alphabetical listing of materials capable of corroding and of terms associated with corrosion and metallurgy. References are provided. It is an excellent introduction to the key corrosion-related terms and concepts.

112. Smith, Martin A., David E. Wilt, and Judith B. Erickson. **Encyclopedia of Physical Sciences and Engineering Information Sources.** Detroit: Gale, 1997. 1472p. \$160.00. ISBN 0810369117.

This encyclopedia lists periodicals, online databases, and organizations, with coverage of over 600 topics, including chemistry, geology, physics, and civil engineering. Each subject includes a bibliography.

113. **Statistics Sourcebooks on CD-ROM.** Tulsa, OK: PennWell, 1998. Digital format. \$995.00

PennWell Publishers has bundled several of their sourcebooks for oil and gas industry statistics into this product. More than 26,000 vital industry statistics are provided. Data included are from the *Energy Statistics Sourcebook*, *International Energy Statistics Sourcebook*, *Pricing Statistics Sourcebook*, *Natural Gas Statistics Sourcebook*, and *Refining Statistics Sourcebook*.

114. **The Timetables of Technology**. New York: Simon & Schuster, 1997. Digital format. \$39.95. ISBN 0671574167.

This reference on the history of technology allows users to explore technological inventions in energy, communications, electronics and computers, food and shelter, materials, medical technology, tools and devices, and transportation.

115. U.S. Department of Energy (DOE). Energy Information Administration (EIA). **Annual Energy Review**. 2000. Available: <http://www.eia.doe.gov/emeu/aer/contents.html>. (Accessed April 4, 2000).

This source provides a brief history and survey of current energy trends in the United States. It includes statistics for energy, petroleum, natural gas, coal, and electricity flows.

116. U.S. Department of Energy (DOE). Energy Information Administration (EIA). **International Energy Annual**. 1999. Available: <http://www.eia.doe.gov/emeu/iea/contents.html>. (Accessed October 26, 1999).

This annual gives an overview of world energy consumption and production. It also covers geographical and organizational definitions, conversion factors and heat contents from 1986, and provides access to the World Energy Database.

117. U.S. Department of the Interior. Geological Survey (USGS). **Metal Industry Surveys (MIS)**. 1999. Available: <http://minerals.er.usgs.gov/minerals/pubs/commodity/mis.html>. (Accessed April 2, 2000).

Metal Industry Surveys (MIS) are statistical and economic publications designed to provide data on production, distribution, stocks, and consumption of significant mineral commodities. These publications are issued monthly, quarterly, or annually for commodities and annually for states and countries. Monthly and quarterly MIS publications for commodities are available.

118. U.S. Department of the Interior. Geological Survey (USGS). **Minerals Yearbook. Volume 1—Metals and Minerals. Volume II—Area Reports - Domestic. Volume III—Area Reports—International**. 1999. Available: <http://minerals.er.usgs.gov/minerals/pubs/myb.html>. (Accessed April 2, 2000).

The Minerals Yearbook is an annual publication that reviews the mineral and material industries of the United States and foreign countries. This reference contains statistical data on materials and minerals and information on economic and technical trends.

119. U.S. Department of the Interior. National Park Service (NPS). **Environmental Contaminants Encyclopedia**. Fort Collins, CO: National Park Service, 1998. Available: <http://www1.nature.nps.gov/toxic/index.html>. (Accessed April 2, 2000).

This resource contains information critical to the field of environmental toxicology. The site consists of a searchable encyclopedia of 118 environmental contaminants, from acenaphthene to zinc. With information on chemical elements, compounds, and products, the *EC Encyclopedia* also serves as a reference for determining the potential impact for specific substances.

120. **Ward's Automotive Yearbook**. Southfield, MI: Ward's, 1998. 450p. \$365.00.

This yearbook covers automotive information, statistics, and specifications and includes a directory of suppliers and product listing of over 1,500 major automotive suppliers.

121. Webster, John. **Encyclopedia of Electrical and Electronics Engineering**. New York: Wiley, 1999. 19,000p. 22v. \$7995.00. ISBN 0471139467. Digital format available.

This comprehensive reference includes peer-reviewed articles arranged by subject. Each article includes references to current literature and other related topics in the encyclopedia. The related site includes articles for future updates: <http://www.wiley.com/ee/engineering.htm>.

122. Weisstein, Eric W. **CRC Concise Encyclopedia of Mathematics**. Boca Raton, FL: CRC, 1999. 1969p. \$79.95. ISBN 0849396409.

This interdisciplinary encyclopedia includes definitions, formulas, illustrations, and bibliographic information.

123. Zaknic, Ivan, Matthew Smith, and Dolores B. Rice. **100 of the World's Tallest Buildings**. Corte Madera, CA: Gingko, 1998. 220p. \$59.95. ISBN 3927258601.

This international compendium lists the tallest skyscrapers, with photographs, drawings, plans, descriptions, and statistics.

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## 2.3 Dictionaries and Glossaries

124. **Abbreviation of Chemical Compounds (Abkürzungen Chemischer Verbindungen)**. 1999. Available: <http://www.chemie.fu-berlin.de/cgi-bin/abbscomp>. (Accessed April 2, 2000).

This site provides an English and German searchable database of chemical compound abbreviations.

125. **Acronym Finder**. 1999. Available: <http://www.acronymfinder.com>. (Accessed October 26, 1999).

This searchable database contains common acronyms and abbreviations about all subjects, including computers, technology, telecommunications, and the military.

126. American National Standards Institute. **American National Standard Dictionary for Technologies of Electromagnetic Compatibility (EMC), Electromagnetic Pulse (EMP), and Electrostatic Discharge (ESD)**. New York: Institute of Electrical and Electronics Engineers, 1998. 37p. (ANSI C63.14-1998). \$65.00. ISBN 0738102571.

This standard provides definitions of terms associated with electromagnetic compatibility (EMC), electromagnetic pulse (EMP), and electrostatic

discharge (ESD). Symbols and abbreviations are included. The book references other standards and related publications on this subject. IEEE standards are issued as dictionaries and glossaries to establish common terminology in technical fields.

127. Angelo, Joseph A. **The Dictionary of Space Technology**. New York: Facts on File, 1998. 487p. \$80.00. ISBN 0816030731.

This reference source provides detailed descriptions of technical space technology information. It includes illustrations.

128. Bakr, M. **Elsevier's Dictionary of the Environment**. New York: Elsevier, 1998. 476p. \$158.00. ISBN 0444829660.

This multilingual dictionary includes 4,312 terms in English, French, Spanish, and Arabic. The terms are commonly used and translatable across the four languages.

129. **Ballistic Missile Defense Glossary**. Washington, DC: Ballistic Missile Defense Organization, 1997. 319p. (ADA3385440). \$58.00. Available from National Technical Information Service.

This glossary provides terminology and acronyms related to ballistic missile defense. The purpose of the glossary is to establish a common ballistic missile defense language.

130. Beddoes, Vernon. **The Polymer Lexicon: Acronyms and Abbreviations Used in the Rubber and Plastics Industries**. Shawbury, UK: Rapra Technology, 1998. 202p. \$75.00. ISBN 1859571360.

This international lexicon includes over 5,000 entries. The acronyms and abbreviations listings include information about the organizations, company designations, units of measure, techniques, and physical and chemical terminology.

131. Bock, Rudolf K., and Krischer Werner. **The Data Analysis BriefBook**. 1998. New York: Springer-Verlag, 1998. 190p. (Accelerator Physics). ISBN 354064119X. Digital format available: <http://www.cern.ch/Physics/DataAnalysis/BriefBook>. (Accessed April 4, 2000).

This is a condensed handbook written in the format of an extended glossary. Subject areas include statistics, computing, analysis, and related fields.

132. Brown, Colin D. **Dictionary of Metallurgy**. New York: Wiley, 1998. 308p. \$125.00. ISBN 0471961558.

Written from a British perspective, this dictionary covers fundamental terms in engineering metallurgy. It includes tables with information about the properties of metals, alloys, and nonmetallic materials and conversion charts for strength and hardness.

133. Budig, Peter Klaus. **Routledge Langenscheidt German Dictionary of Electrical Engineering and Electronics**. New York: Routledge, 1998. Vol. 1. 702p. \$110.00. ISBN 0415171326. Vol. 2. 744p. \$110.00. ISBN 0415171318.

This dictionary is designed to assist users with terms on electrical and electronics technology. The compiler actively combed current literature to identify new terms and terminology.

134. Callaham, Ludmilla I., Patricia E. Newman, and John R. Callaham. **Callaham's Russian-English Dictionary of Science and Technology**. New York: Wiley, 1996. 814p. \$154.00. ISBN 0471611395.

This dictionary contains over 120,000 Russian terms in the physical, life science, and engineering disciplines. Entries are organized around common roots. It is an excellent resource for translating Russian scientific and technical materials.

135. Chambers, Ann, and Susan D. Kerr. **Power Industry Dictionary**. Tulsa, OK: PennWell, 1996. 425p. \$69.95. ISBN 0878146059.

This dictionary offers industry terms and phrases used in the generation, transmission, and distribution of power. It includes major governmental and industry regulations, environmental terms and phrases, conversion tables, chemical elements and their associated symbols and weights, and a contact list of industry organizations.

136. Clason, W. E. **Elsevier's Dictionary of Computers, Automatic Control and Data Processing**. New York: Elsevier, 1997. Digital format. \$276.00. ISBN 0444826882.

This dictionary has 3,996 terms in English, French, Spanish, Italian, Dutch, and German.

137. Clason, W. E. **Elsevier's Dictionary of Metallurgy and Metal Working**. New York: Elsevier, 1997. Digital format. \$310.00. ISBN 0444826920.

This dictionary defines 8,406 English, French, Spanish, Italian, Dutch, and German terms.

138. Clason, W. E. **Elsevier's Dictionary of Nuclear Science and Technology**. New York: Elsevier, 1997. Digital format. \$327.50. ISBN 0444826904.

This dictionary has 7,806 terms in English, French, Spanish, Italian, Dutch, and German.

139. Collin, P. H. **Dictionary of Ecology and the Environment**. Chicago: Fitzroy Dearborn, 1998. 288p. \$35.00. ISBN 1579580750.

This reference covers ecology and environmental topics, including pollution, climatology, endangered species, waste disposal, and environmental protection. It also includes tables of endangered species and disasters.

140. Collin, S. M. H. **Dictionary of Personal Computing and the Internet**. Dearborn, IL: Fitzroy Dearborn, 1997. 205p. \$35.00. ISBN 1579580165.

This is an excellent dictionary for general computing terms.

141. Day, Lance, and Ian McNeil. **Biographical Dictionary of the History of Technology**. New York: Routledge, 1998. 844p. \$65.00. ISBN 0415193990.

This dictionary includes over 1,300 entries on men and women who have been significant in the history of technology. Each description includes the person's background, significance in the history of technology, principal honors, publications, and additional references to related readings as appropriate.

142. **Dictionary of Building and Civil Engineering: English German. Vol. 1**. New York: Routledge, 1998. 450p. (Routledge Bilingual Specialist Dictionaries Series). \$125.00. ISBN 3861170752.

This bilingual dictionary includes terms related to the environment, budgeting, finance, specifications, contract documentation, geological and soil mechanics, acoustics, communications, and buildings and their rehabilitation. Appendices include a unique list of terms that appear the same in the other language but have very different meanings.

143. **A Dictionary of Units**. 1999. Available: <http://www.ex.ac.uk/cimt/dictunit/dictunit.htm>. (Accessed October 25, 1999).

This reference provides units of measurement with conversion factors to SI units. There is also a description of the metric system, including both the UK (Imperial) system and the U.S. system.

144. Dillon, Patrick M., and David C. Leonard. **MULTIMEDIA and the WEB from A to Z**. Phoenix, AZ: Oryx, 1998. 320p. \$39.95. ISBN 1573561320.

This comprehensive dictionary contains 1,500 entries from instructional technology, computer and information design, graphics development, and software engineering. It also includes an annotated bibliography and a list of acronyms.

145. Dorian, A. F. **Elsevier's Dictionary of Mining and Mineralogy**. New York: Elsevier, 1997. Digital format. \$227.00. ISBN 0444826998.

This dictionary describes 3,585 terms in English, French, German, and Italian, with English definitions.

146. Downing, Douglas, Michael A. Covington, and Melody M. Covington. **Dictionary of Computer and Internet Terms**. Hauppauge, NY: Barron's, 1998. 530p. \$9.95. ISBN 0764100947.

This dictionary covers a broad range of terms related to computers. It includes explanations of electronic circuit diagram symbols, algorithms, transistors, and computer command codes.

147. **English-Spanish Glossary of the Electric Power Industry**. Tulsa, OK: PennWell, 1998. 151p. \$54.95. ISBN 0878146059.

This glossary lists nearly 4,000 terms used in generation, transmission, and distribution of power. It also covers terms relating to business trends and technologies such as distribution automation, SCADA systems, and demand-side management.

148. **ENVOC: Multilingual Thesaurus of Environmental Terms.** New York: United Nations Environment Programme, 1997. 248p. \$30.00. ISBN 9280712608.

This thesaurus provides a categorized listing and an alphabetical listing of subjects.

149. Farace, Joe. **The Digital Imaging Dictionary: A Desktop Reference for Photographers, Graphic Designers, Prepress Houses, Service Bureaus, Printers, Publishers, Art Directors, and All Communications Professionals.** New York: Allworth, 1996. 223p. \$19.95. ISBN 1880559463.

This reference title assists the reader in understanding concepts, terminology, and technology. It is a readable guide to digital imaging technology.

150. Flack, Heinz K., and Georg Mollerke. **Illustrated Engineering Dictionary: German-English, English-German.** New York: Springer-Verlag, 1997. 486p. \$81.00. ISBN 3540624414.

This dictionary includes numerous diagrams and illustrations of tools, engineering environments, and scientific and engineering concepts.

151. **FOLDOC—Free Online Dictionary of Computing.** 2000. Available: <http://nightflight.com/foldoc>. (Accessed April 4, 2000).

FOLDOC is a searchable dictionary of acronyms, jargon, programming languages, tools, architecture, operating systems, networking, theory, conventions, standards, mathematics, telecommunications, electronics, institutions, companies, projects, products, and history.

152. Gaither, Carl C., and Alma E. Cavazos-Gaither. **Practically Speaking: A Dictionary of Quotations on Engineering, Technology, and Architecture.** Philadelphia, PA: Institute of Physics, 1998. 367p. \$40.00. ISBN 07503055940.

This compendium of quotes, sayings, and poems illustrates over 100 topical areas such as bridge, chaos, common sense, creativity, design, ethics, inventions, perceptions, and thermodynamics. It has an extensive bibliography and indexes by both author and subject.

153. Gilpin, Alan. **Dictionary of Environmental and Sustainable Development.** New York: Wiley, 1996. 247p. \$65.95. ISBN 0471962198.

This dictionary includes over 2,000 terms and concepts related to environmental planning, management, conservation, and sustainable development.

154. **Glossary of Microscopy and Microanalytical Terms.** 1999. Available: <http://www.mwrn.com/feature/glossary.htm>. (Accessed April 4, 2000).

This glossary contains introductory information on techniques and instruments, applications, and facilities.

155. Grandchamp, Tupula M. **Vocabulary of Geology—Giology Metallogeny.** Ontario: Translation Bureau, 1996. 492p. (SSCS5222281996; Environment Series; Terminology Bulletin no. 228; MIC9704076). ISBN 0660596083.

This bilingual vocabulary includes over 2,300 terms with definitions or explanatory notes.

156. Gross, M., and R. N. Feldman. **Transportation Acronym Guide (TAG)**. Cambridge, MA: John A. Volpe National Transportation Systems Center, 1996. 55p. (DOTVNTSCBTS96;. PB97150031). \$27.00. Available from National Technical Information Service.

This report compiles transportation-related acronyms throughout the Department of Transportation and other related U.S. government agencies. The acronyms are organized in alphabetical order, followed by a definition and the source citation.

157. Gutierrez, M. F. **Elsevier's Dictionary of Civil Engineering**. New York: Elsevier, 1991. 402p. \$174.00. ISBN 0444889876. Digital format available.

This dictionary covers over 5,560 civil engineering terms in English, German, Spanish, and French.

158. Gutierrez, M. F. **Elsevier's Dictionary of Machine Tools and Elements**. New York: Elsevier, 1997. Digital format. \$218.50. ISBN 0444827064.

This dictionary describes 5,566 terms in English, German, and Spanish.

159. Headworth, Howard. **Dictionary of Environmental Science and Engineering : English-Spanish/Spanish-English = Diccionario de Ciencia e Ingeniería Ambiental : Ingles-Español/Español-Ingles**. New York: Wiley, 1998. 310p. \$39.95. ISBN 0471962732.

This bilingual dictionary covers a wide range of specialties in environmental science and engineering, including chemistry, biology, ecology, geology, hydrogeology, water and waste engineering, and pollution control.

160. Held, Gilbert. **Dictionary of Communication Technology: Terms, Definitions and Abbreviations**. New York: Wiley, 1998. 720p. \$160.00. ISBN 0471975168.

This is a comprehensive dictionary that has been updated to reflect changes in technology. It covers standards and abbreviations.

161. **IEEE Standard Dictionary of Electrical and Electronics Terms**. Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1997. 1300p. \$113.00. ISBN 1559378336.

This IEEE Std 100-1996 contains over 15,000 standardized terms and definitions from every field of electrical engineering. It also contains detailed abstracts of IEEE standards.

162. **Industrial Engineering Terminology**. Norcross, GA: Industrial Engineering and Management Press, 1999. \$99.95. ISBN 0898062055.

This is a revision of ANSI Standard Z94.1989, which lists more than 7,000 technical terms, diagrams, and calculations. This standard represents the best usage of industrial engineering terminology.

163. Kaplan, Steven M. **Wiley's English-Spanish Spanish-English Electrical and Computer Engineering Dictionary**. New York: Wiley, 1996. 792p. \$367.95. ISBN 0471010375.

This dictionary describes over 95,000 entries and lists some unique terms not found in other dictionaries.

164. Kennedy, Felicitas. **The Wiley Dictionary of Civil Engineering and Construction: English-Spanish/Spanish-English**. New York: Wiley, 1996. 568p. \$59.95. ISBN 0471122467.

This dictionary covers over 50,000 terms in the subject areas of construction, forestry, surface mining, and public works.

165. Krar, Steve F. **Illustrated Dictionary of Metalworking and Manufacturing Technology**. New York: McGraw-Hill, 1999. 325p. \$114.95. ISBN 0070383022.

This dictionary covers metalworking and manufacturing technical terms for topics such as computers and the Internet, machine tools, cutting tools, hand tools, manufacturing processes, measurement, metalworking fluids, plastics, and lasers and robotics.

166. Laplante, Philip. **Dictionary of Electrical Engineering**. Boca Raton, FL: CRC, 1998. Digital format. \$89.95. ISBN 0849397650. Paper format available.

This comprehensive dictionary covers the fields of electrical engineering, microwave engineering, control engineering, power engineering, and digital systems engineering. The author used the IEEE interest areas to map the primary subject areas for the dictionary. Most software engineering terms have not been included.

167. Lee, C. C. **Dictionary of Environmental Legal Terms**. New York: McGraw-Hill, 1997. 818p. \$89.00. ISBN 0070381135.

This dictionary contains over 10,000 statutory definitions from major environmental laws, regulatory definitions from 40 C.F.R. (*Code of Federal Regulations*) from Part 1 to Part 1517; health-related definitions from 29 C.F.R., common EPA definitions, and about 3,500 acronyms.

168. Lee, C. C. **Environmental Engineering Dictionary**. Rockville, MD: Government Institutes, 1998. 682p. \$89.00. ISBN 0865876207.

This dictionary contains more than 14,000 environmental terms. This reference resource includes exact and official EPA definitions for statute-related, regulation-related, environmental engineering and environmentally related science terms. Descriptions also include source references such as the *Code of Federal Regulations* (C.F.R.), the Environmental Protection Agency (EPA), and the U.S. Department of Energy (DOE).

169. Lewis, Richard J. **Hawley's Condensed Chemical Dictionary**. New York: Van Nostrand Reinhold, 1997. 1229p. \$95.00. ISBN 0471292052. Digital format available.

This popular dictionary covers industrial chemicals, raw materials, manufacturing processes, equipment, and reactions. Descriptions include the toxicity evaluation, reactivity, and flammability.

170. Lewis, Robert Alan. **Lewis' Dictionary of Toxicology**. Boca Raton, FL: CRC, 1998. 1120p. \$79.95. ISBN 0614299594.

This dictionary covers terms used in toxicology and related fields. Definitions include the chemical names and pathogenic terms, official abbreviations, related environmental topics, and biological definitions. The terms have been taken from more than 600 journals, 15,000 scientific papers, and other reference sources.

171. McKenna, Ted, and Ray Oliverson. **Glossary of Reliability and Maintenance Terms**. Houston, TX: Gulf, 1997. 141p. \$30.00. ISBN 0884153606.

This glossary includes over 1,000 terms and definitions related to maintenance and reliability in office and industrial environments.

172. **Microsoft Computer Dictionary**. Redmond, WA: Microsoft Press, 1999. Digital format. \$34.99. ISBN 0735606153.

With more than 8,000 entries and definitions, this dictionary includes definitions for computer terms, concepts, and acronyms. Quarterly updates are available at: <http://mspress.microsoft.com/mspress/products/1031/4><sup>th</sup>. (Accessed April 4, 2000).

173. Nagy, P., and G. Tarjan. **Elsevier's Dictionary of Microelectronics**. New York: Elsevier, 1997. Digital format. \$313.00. ISBN 0444827153.

This dictionary describes 8,521 microelectronic terms in English, German, French, Spanish, and Japanese.

174. National Telecommunications and Information Administration. **Telecommunications: Glossary of Telecommunications Terms**. Rockville, MD: Government Institutes, 1997. 480p. \$69.00. ISBN 0865875804.

This glossary contains over 5,000 terms and definitions standardized by the Federal Standard (FED-STD-1037C) for use by international and U.S. government telecommunications specialists. It also includes terms from the International Telecommunication Union (ITU), International Organization for Standardization (ISO), the Telecommunications Industry Association (TIA), and American National Standards Institute (ANSI).

175. Nayler, Gordon. **Dictionary of Mechanical Engineering**. Warrendale, PA: Society of Automotive Engineers, 1996. 454p. \$45.00. ISBN 1560917547.

This mechanical engineering dictionary includes over 4,500 terms. Some definitions include illustrations.

176. Nentwig, K. **Elsevier's Dictionary of Opto-electronics and Electro-optics**. New York: Elsevier, 1997. Digital format. \$258.50. ISBN 044482717X.

This dictionary describes 4,300 English, German, French, and Spanish terms.

177. Nentwig, K. **Elsevier's Dictionary of Solar Technology**. New York: Elsevier, 1997. Digital format. \$221.50. ISBN 0444827161.

This dictionary includes about 1,933 terms in the area of solar technology.

178. Newton, Harry. **Newton's Telecom Dictionary: The Official Dictionary of Telecommunications**. New York: Flatiron, 1998. 840p. \$29.95. ISBN 1578200237.

This regularly updated dictionary reflects the rapid changes in the industry. A section of the dictionary lists definitions for numbers and words beginning with numbers. It is a very useful dictionary for most collections.

179. Nill, Kimball, R. **Glossary of Biotechnology Terms**. Lancaster, PA: Technomic, 1998. 264p. \$49.95. ISBN 156676580.

This glossary covers over 2,000 definitions and metric and international symbols. It also provides a detailed history of the field of biotechnology. This reference uses a sequential "reference chain" that allows the reader to navigate different levels of explanation.

180. **NRC Collection of Abbreviations**. Washington, DC: Nuclear Regulatory Commission, Information Management Division, 1998. 156p. (NUREG-0544-REV3.). \$41.00. Available from National Technical Information Service.

This collection of common abbreviations used in the nuclear industry and regulatory community was compiled from Nuclear Regulatory Commission (NRC) and nuclear industry sources. It was published to assist in identifying abbreviations for the numerous organizational, scientific, and engineering terms that appear in NRC printed and digital information.

181. Pankratz, Thomas M. **Concise Dictionary of Environmental Engineering**. Boca Raton, FL: CRC, 1996. 406p. \$24.95. ISBN 1566702127.

This reference includes technical terms, abbreviations, product/process trademarks, and brand names. The subject areas include water treatment, air pollution, solid waste disposal, and hazardous waste remediation.

182. Parker, Sybil P. **McGraw-Hill Dictionary of Engineering**. New York: McGraw-Hill, 1997. 582p. \$17.95. ISBN 0070524351.

This dictionary includes over 16,000 entries covering all fields of engineering, including chemical, civil, design, industrial, mechanical, systems, and building construction. The text of this dictionary was published previously in the *McGraw-Hill Dictionary of Scientific and Technical Terms* (5th ed., 1993).

183. Peeva, K., and B. Delijska. **Elsevier's Dictionary of Computer Science and Mathematics**. New York: Elsevier, 1997. Digital format. \$258.00. ISBN 0444827188.

This dictionary lists more than 9,590 terms in English, German, French, and Russian.

184. Petersen, Julie K. **Data and Telecommunications Dictionary**. Boca Raton, FL: CRC, 1999. 768p. (Advanced and Emerging Communications Technologies Series. A Desk Reference). \$49.95. ISBN 0849395917.

This dictionary compiles more than 14,000 terms and concepts, hundreds of illustrations, timelines and charts, descriptions of emerging communications fields, a list of acronyms, and abbreviations and their expanded meanings.

185. Pfafflin, J. R., P. Baham, and F. Gill. **Dictionary of Environmental Science and Engineering**. Newark, NJ: Gordon and Breach, 1997. 192p. ISBN 9056990039.

The terms of this dictionary have been arranged with a particular emphasis on U.S. usage. It also includes acronyms.

186. Philippsborn, H. E. **Elsevier's Dictionary of Industrial Technology**. New York: Elsevier, 1997. Digital format. \$362.00. ISBN 0444827196.

This digital reference lists more than 14,540 terms in English, German, and Portuguese.

187. Proubasta, Delores. **Glossary of the Petroleum Industry: English/Spanish, Spanish/English**. Tulsa, OK: PennWell, 1996. 421p. \$59.95. ISBN 0878146164.

This glossary contains more than 20,000 terms used in the generation, transmission, and distribution of petroleum. Specific topics include exploration, drilling, production, transportation, refining, gas processing, and marketing. It also includes environmental terms.

188. Raynor, William. **International Dictionary of Artificial Intelligence**. Chicago: Fitzroy Dearborn, 1998. 250p. \$45.00. ISBN 1884964680.

This title defines and illustrates more than 2,500 terms, with detailed explanations of major concepts as well as topics in related disciplines. It also contains an annotated bibliography and a list of related Internet sites.

189. **Routledge French Dictionary of Telecommunications: French-English/English French = Dictionnaire anglais des telecommunications: français-anglais/anglais-français**. New York: Routledge, 1997. 440p. \$130.00. ISBN 0415133483.

This technical dictionary covers over 30,000 terms in each language used in the telecommunications industry. Terms are drawn from television and video, telephony and telegraphy, signaling, control technology, power systems, electrical engineering, and computer science.

190. **Routledge German Technical Dictionary/Universal-Wörterbuch der Technik Englisch**. New York: Routledge, 1996. Digital format. \$330.00. ISBN 0415133602.

This dictionary includes over 100,000 German-English and English-German packaging technical terms.

191. Saigh, Robert A. **International Dictionary of Data Communications**. Chicago: Fitzroy Dearborn, 1998. 250p. \$45.00. ISBN 1884964753.

This reference lists over 3,500 entries covering a broad range of topics in data communications. It also includes a company directory information, a list of meetings and conventions worldwide; and an extensive bibliography.

192. Schellings, A. **Elsevier's Dictionary of Automotive Engineering in English, German, French, Dutch and Polish**. New York: Elsevier, 1998. 466p. ISBN 0444821597.

This automotive dictionary defines about 6,500 terms.

193. Shnier, Mitchell. **Dictionary of PC Hardware and Data Communications Terms**. Cambridge, MA: O'Reilly. Digital format. ISBN 1565921585.

Available: <http://www.oreilly.com/reference/dictionary>. (Accessed April 4, 2000).

This resourceful dictionary includes Internet sites when appropriate.

194. Soroka, Walter G., and Paul J. Zepf. **The IoPP Glossary of Packaging Terminology**. Herndon, VA: Institute of Packaging Professionals, 1998. 380p. (Includes digital data). \$95.00.

This comprehensive reference covers more than 8,000 terms used in the packaging industry. It also includes acronyms and abbreviations. The appendices list information on weights and measures, container dimensions and tests, package component terminology, plastics, and wooden pallets and pallet bins. A digital copy of the glossary is included.

195. **Standard Microscopy Terminology**. 1998. Available: <http://charfacnu.cie.umn.edu/glossary/FrameGloss.html>. (Accessed April 4, 2000).

This compilation of glossaries includes *Glossary of Microscopical Terms and Definitions*, by the New York Microscopical Society, *ASTM E175-82*, and *Video Microscopy*, by Shinya Inoue.

196. Sullivan, Thomas F. P. **Official Telecommunications Dictionary: Legal and Regulatory Definitions**. Rockville, MD: Government Institutes, 1997. 313p. \$49.00. ISBN 0865875642.

This reference provides the official U.S. government legal definitions for more than 1,000 terms, abbreviations and acronyms. It was compiled directly from the Telecommunications Act of 1996 and the *Code of Federal Regulations*. Descriptions include the citation of the source of definition.

197. Tomsic, Joan L., and Charles N. Eastlake. **SAE Dictionary of Aerospace Engineering**. Warrendale, PA: Society of Automotive Engineers, 1998. 748p. \$79.00. ISBN 0768002451.

This dictionary includes over 20,000 terms, with definitions from the following sources: SAE Aerospace Standards and the *NASA Thesaurus*. It includes extensive coverage of technical terms related to aerospace technology.

198. U.S. Department of Defense (DOD). **DOD Dictionary of Military Terms**. 1998. Available: <http://www.dtic.mil/doctrine/jel/doddict>. (Accessed April 4, 2000).

This online resource is managed by the DOD Joint Doctrine Division. It includes acronyms, abbreviations, and NATO terms.

199. U.S. Department of Energy (DOE). **Energy InfoDisc**. Quarterly. Digital format. \$100.00. Information available: <http://www.eia.doe.gov/infodisc.html>.

The *Energy InfoDisc* provides more than 200 data, analysis, and forecasting reports and directories published by Energy Information Administration (EIA) over the previous 12 months, including the *Monthly Energy Review*, *Short-Term Energy Outlook*, *International Energy Outlook*, *Natural Gas: Issues and Trends*, *Electric Power*, and *Renewable Energy Annuals*.

200. U.S. Environmental Protection Agency (EPA). **Terms of Environment**. 1997. Available: <http://www.epa.gov/docs/OCEPAterms/intro.htm>. (Accessed April 4, 2000).

Terms of Environment defines commonly used environmental terms appearing in EPA publications, news releases, and other agency documents. These definitions do not constitute the agency's official use of terms and phrases for regulatory purposes.

201. van der Tuin, J. D. **Elsevier's Dictionary of Hydrology and Water Quality Management**. New York: Elsevier, 1997. Digital format. \$258.50. ISBN 0444827242.

This dictionary includes 5,928 terms in English, French, Spanish, Dutch, and German.

202. van der Tuin, J. D. **Elsevier's Dictionary of Soil Mechanics and Geotechnical Engineering**. New York: Elsevier, 1997. Digital format. \$284.50. ISBN 0444827269.

This dictionary covers more than 5,800 terms in English, French, Spanish, Dutch, and German.

203. van der Tuin, J. D. **Elsevier's Dictionary of Water and Hydraulic Engineering**. New York: Elsevier, 1997. Digital format. \$296.00. ISBN 0444827250.

This dictionary describes over 5,115 terms in English, French, Spanish, Dutch, and German.

204. **Visionary—A Dictionary for the Study of Vision**. 1999. Available: <http://cns-web.bu.edu/pub/laliden/WWW/Visionary/Visionary.html>. (Accessed April 4, 2000).

This dictionary lists terminology used in the study of human and animal vision. It includes terms from the areas of biological and machine vision, visual psychophysics, visual neuroscience, and other related fields.

205. Vlietstra, J. **Dictionary of Acronyms and Technical Abbreviations for IT, Industrial, and Scientific Applications**. New York: Springer-Verlag, 1997. 692p. \$49.95. ISBN 3540761527.

This dictionary provides a comprehensive list of over 32,000 acronyms, abbreviations, symbolic names, identifiers, and initials for a wide range of engineering topics. It also includes organizations, conferences, and symposia.

206. Ward, J. LeRoy. **Project Management Terms: A Working Glossary**. Arlington, VA: ESI International, 1997. 181p. \$29.95. ISBN 18903667044.

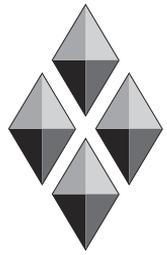
This glossary lists over 1,600 terms, phrases, and acronyms pertaining to project management. The descriptions are arranged alphabetically and are cross-referenced.

207. Webster, Len F. **The Wiley Dictionary of Civil Engineering and Construction**. New York: Wiley, 1997. 666p. \$49.95. ISBN 0471181153.

This dictionary covers 30,000 terms applicable to architecture, engineering, surveying, building, construction, forestry, mining, and public works.

208. Zarrow, Phil, and Debra Kopp. **Surface Mount Technology Terms and Concepts**. Boston, MA: Newnes, 1997. 134p. \$24.95. ISBN 0750698756.

This compact dictionary includes over 1,000 terms and concepts associated with surface mount technology (SMT). It also includes some illustrations and abbreviations.



# Information Access Tools

Current awareness services, databases, indexes, libraries, and bibliographies are information tools that assist with accessing and organizing information. This chapter includes selective examples of these resources. It is important to note that numerous databases are not listed in this chapter. These types of resources are more thoroughly covered in other bibliographies or catalogs from database providers. The current practice of segmenting and repackaging these files makes it more difficult to list all of the possible options. This list is meant to suggest some of the primary files and alert the user to the fact that there are databases for almost every aspect of engineering. These information tools illustrate the fragmentation of engineering and technology information by both assisting with the identification of materials and exhibiting the vulnerability of technical information to be marketed primarily to relatively narrow groups of users.

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### 3.1 Current Awareness, Databases, Indexes, and Libraries

209. **ACM Collected Algorithms.** 1999. Available: <http://www.netlib.org/toms/index.html>. (Accessed April 2, 2000).

The Collected Algorithms (CALGO) is produced by the Association for Computing Machinery (ACM). Background software associated with papers published in the *Transactions on Mathematical Software* as well as other ACM journals is incorporated in CALGO. This software is refereed.

210. **ACM Digital Library.** Regularly updated. Information available: <http://www.acm.org/dl>. (Accessed April 2, 2000).

Online access is provided to 31,000 full-text articles from the Association for Computing Machinery's (ACM) journals, magazines, and proceedings dating back to 1991. Bibliographic information is available dating back to 1985. the product is available by subscription.

211. **ACM Guide to Computing Literature.** New York: Association for Computing Machinery. Annual. \$230.00. ISSN 01491199. Digital format available.

This is a comprehensive index and guide to the computing literature. It is available in digital format as *ACM Electronic Guide to Computing Literature (ACM E-Guide)*.

212. **Aerospace Database.** American Institute of Aeronautics and Astronautics (AIAA). Monthly. Digital format. Information available: <http://www.aiaa.org/publications/database/aerospacedatabase.html>. (Accessed April 2, 2000).

This database indexes over 4,000 AIAA meeting papers annually on such topics as aeronautical, electrical, electronic, mechanical, and control engineering. Coverage goes back to 1962. The *Aerospace Database* is the digital form of the *International Aerospace Abstracts (IAA)* and *Scientific and Technical Reports (STAR) Index*, which indexes from technical reports from NASA, other U.S. government agencies, international institutions, universities, and other organizations.

213. Agency for Toxic Substances and Disease Registry (ATSDR). **HazDat.** Regularly updated. Available: <http://atsdr1.atsdr.cdc.gov:8080/hazdat.html>. (Accessed April 2, 2000).

HazDat is the Agency for Toxic Substances and Disease Registry's Hazardous Substance Release/Health Effects Database. This resource provides information on the release of hazardous substances from Superfund sites and other emergency events and on the effects of hazardous substances on the health of human populations.

214. **Air University Library's Index to Military Periodicals (AULIMP).** Quarterly. Available: <http://www.au.af.mil/au/aul/muir1/aulimp1.htm>. (Accessed April 2, 2000).

AULIMP contains citations to articles in English-language military journals. Air University Library (AUL) has been producing AULIMP since 1949 and distributes paper copies to libraries and military units around the world.

215. **Aluminum Industry Abstracts (AIA).** Bethesda, MD: Cambridge Scientific Abstracts. Monthly. Digital format. Information available: <http://www.csa.com/detailsV3/aia.html>. (Accessed April 2, 2000).

*Aluminum Industry Abstracts (AIA)*, formerly *World Aluminum Abstracts (WAA)*, provides comprehensive coverage of the world's technical literature on aluminum, production processes, products, applications, and business developments. This database includes information from approximately 2,300 scientific and technical journals, government reports, conference proceedings, dissertations, books, and patents.

216. American Chemical Society. **Patent Information from Chemical Abstracts Service: Coverage and Content.** Columbus, OH: Chemical Abstracts Service, 1998. 80p. Available: <http://www.cas.org/ONLINE/UG/patentmanual.pdf>. (Accessed April 2, 2000).

This guide provides information on the coverage and content of patent citations in the CAS (Chemical Abstracts Service) database. Over 700,000 citations are added to *Chemical Abstracts* each year. About 18 percent of these citations are patents. This document does not include searching instructions for either *Chemical Abstracts* or the CAS online database.

217. American Meteorological Society (AMS). **Meteorological and Geostrophysical Abstracts (MGA)**. Updated regularly. Available: <http://www.mganet.org>. (Accessed April 2, 2000).

Meteorological and Geostrophysical Abstracts (MGA) is the only abstract service devoted to covering the world's literature on meteorology, climatology, atmospheric chemistry and physics, physical oceanography, hydrology, glaciology, and related environmental sciences. The database is searchable for materials from 1974.

218. American Society for Engineering Education (ASEE). **Engineering Libraries**. 1999. Available: <http://www.enlib.cornell.edu/eld/libraries.html>. (Accessed April 2, 2000).

This is a list of over 100 science, technology, and engineering libraries in North America, Asia, Europe, and Australia and New Zealand.

219. American Society of Civil Engineers (ASCE). **Civil Engineering Database (CEBD)**. Updated regularly. Available: <http://www.pubs.asce.org/cedbsrch.html>. (Accessed April 2, 2000).

This index service provides access to over 80,000 bibliographic and abstracted records published by the American Society of Civil Engineers from January 1973 to date. CEBD is searchable by individual words, titles, authors, keywords, and date range. Subject areas include aerospace engineering, cold regions, construction, environmental engineering, forensic engineering, materials engineering, transportation, and urban planning.

220. **Applied Mechanics Reviews**. New York: American Society of Mechanical Engineers, 1948–. Monthly. \$663.00/yr. ISSN 00036900.

This abstracting and indexing journal covers 475 international journals. Review articles, book reviews, and over 1,500 subject-classified abstracts are included in each issue. Abstracts are arranged by a subject classification scheme. The subject classification scheme is available at <http://www.asme.org/pubs/amr/class.html>. A separate annual index lists all abstracts and book reviews by subject, author, and keyword.

221. Ash, Michael, and Irene Ash. **The Index of Flame Retardants: An International Guide to More than 1000 Products by Trade Name, Chemical, Application, and Manufacture**. Brookfield, VT: Gower, 1997. 305p. \$175.00. ISBN 0566078856.

This is a comprehensive source for commercially available flame retardants as noted in information from more than 600 worldwide manufacturers, distributors, trade magazines, reference books, and chemical databases. It includes a list of abbreviations and directory of manufacturers.

222. **Beilstein Information**. 1999. Available: <http://www.beilstein.com>. (Accessed April 2, 2000).

Beilstein Informationssysteme GmbH, based in Frankfurt, Germany, and Beilstein Information Systems in San Leandro, California, are the developers of the CrossFire System, a resource for organic chemical information, and NetFire,

a Web-based graphical interface for the search and display of abstracts of the chemical literature. In 1998, Beilstein Informationssysteme GmbH (BIS) was acquired by Elsevier Science.

223. Bogaerts, W. F., et al. **Active Library on Corrosion**. New York: Elsevier, 1996. Digital format. \$1400.00. ISBN 0444824561. Information available: <http://www.elsevier.com/homepage/saa/alc/menu1.htm>.

This library of technical resources on corrosion was published in conjunction with NACE (National Association of Corrosion Engineers). International coverage includes over 6,000 documents, 2,000 images, and 600 formatted tables.

224. **The British Library**. 1999. Available: <http://www.bl.uk>. (Accessed April 2, 2000).

The British Library is known for its extensive collection of international patent specifications, conference proceedings, reports, and theses. This site provides searchable access to the library catalog and other information services.

225. **CA QuickSearch**. Farmington Hills, MI: American Concrete Institute. Bimonthly. \$550.00. Information available: <http://www.aci-int.net/booktemp/main.htm>.

This is the digital version of American Concrete Institute's (ACI) *Concrete Abstracts*. Subject areas include structural, research, construction, design, materials, and production.

226. **Canada Institute for Scientific and Technical Information (CISTI)—National Research Council of Canada (CNRC)**. 1999. Available: <http://www.nrc.ca/cisti>. (Accessed April 2, 2000).

CISTI provides comprehensive library catalog and document delivery services. It is an excellent library for science, engineering and technology journals, books, conferences, and other technical literature.

227. **CAS Databases**. Columbus, OH: Chemical Abstracts Service. Biweekly. Information available: <http://info.cas.org/casdb.html>.

CA is the world's largest and most current collection of chemical information, with more than 15 million abstracts of journal articles, patents, and more. International sources for CA include more than 8,000 journals, patents, technical reports, books, conference proceedings, and dissertations.

228. Centers for Disease Control and Prevention (CDC). National Institute for Occupational Safety and Health (NIOSH). 1999. **NIOSH Databases**. Available: <http://www.cdc.gov/niosh/database.html>. (Accessed April 2, 2000).

There are several NIOSH databases either described or available at this site. One is Certified Equipment List, from the National Institute for Occupational Safety and Health, under the authorization of the Federal Mine Safety and Health Act of 1977 and the Occupational Safety and Health Act of 1970; it provides a testing approval and certification program assuring commercial availability of safe personal protective devices and reliable industrial hazard

measuring instruments. Another is Common Information Service System (CISS); through this service the user can obtain information about U.S. Bureau of Mines (USBM) publications. Bibliographic descriptions are provided for publications dated prior to March 1995. After this date publications are stored full-text in the database. International Chemical Safety Cards (ICSCs)—An International Programme on Chemical Safety Project is a joint activity of three cooperating international organizations: the United Nations Environment Programme (UNEP), the International Labour Office (ILO) and the World Health Organization (WHO). NIOSH Manual of Analytical Methods (NMAM) is a collection of methods for sampling and analysis of contaminants in workplace air and in the blood and urine of workers who are occupationally exposed. NIOSHTIC is the National Institute for Occupational Safety and Health's (NIOSH) electronic, bibliographic database of literature in the field of occupational safety and health. It includes retrospective information, some of which dates back to the nineteenth century. NIOSHTIC is updated quarterly and is available from several vendors. Occupational Health Guidelines for Chemical Hazards are occupational safety and health guidelines that provide technical information about chemical hazards to workers, employers, and health professionals. Guidelines include data on the chemical names and synonyms, chemical and physical properties, exposure limits, and signs and symptoms of exposure, and recommendations for medical monitoring, personal protective equipment, and control procedures. NIOSH Pocket Guide to Chemical Hazards (NPG) is intended as a source of general industrial hygiene information on several hundred chemicals/classes for workers, employers, and occupational health professionals. The NPG presents key information and data in abbreviated or tabular form for chemicals or substance groupings (e.g., cyanides, fluorides, manganese compounds) that are found in the work environment. Registry of Toxic Effects of Chemical Substances (RTECS) is a database of toxicological information compiled, maintained, and updated by NIOSH. RTECS is a congressionally mandated activity established by Section 20(a)(6) of the Occupational Safety and Health Act of 1970 (PL 91-596). The original edition, known as the "Toxic Substances List," was published on June 28, 1971, and included toxicological data for approximately 5,000 chemicals. RTECS now contains over 130,000 chemicals. The NIOSH databases are available through various vendors.

229. Centers for Disease Control and Prevention (CDC). National Institute for Occupational Safety and Health (NIOSH). **NIOSH Pocket Guide to Chemical Hazards Database**. Cincinnati, OH: National Institute for Occupational Safety and Health, 1998. Digital format. (PB99500449). \$112.00. Available from National Technical Information Service.

This guide presents key information and data for 677 chemicals or substance groupings (e.g., manganese compounds, tellurium compounds, inorganic tin compounds). The list of chemicals and substances includes all substances for which the National Institute for Occupational Safety and Health (NIOSH) has recommended exposure limits (RELs) and those with permissible exposure limits (PELs) as found in the Occupational Safety and Health Administration (OSHA) General Industry Air Contaminants Standards (29 C.F.R. 1910.1000).

230. **Ceramic Abstracts/World Ceramic Abstracts**. Staffordshire, UK: CERAM. Monthly. Information available: <http://www.csa2.com/detailsV3/worldcer.html>. (Accessed April 2, 2000).

This comprehensive database for the ceramics industry provides international coverage on the manufacture, processing, applications, properties, and testing of traditional and advanced ceramics. Source materials include over 300 journals, conference proceedings, books, patents, standards, and company product literature. All abstracts are in English. Information about CERAM is available at <http://www.ceram.co.uk>.

231. **Chemical Abstracts Service Source Index (CASSI): 1907–1999 Cumulative**. Columbus, OH: Chemical Abstracts Service. Annual with semi-annual updates. Digital format. Information available: <http://www.cas.org/ONLINE/CD/CASSI/cassicd.html>.

CASSI includes holdings information from more than 350 major international libraries. Entries provide information about variant titles, histories of publications, English translations of foreign titles, a directory of publishers and sales agencies, and a guide to the depositories of unpublished works.

232. **Chemical Engineering and Biotechnology Abstracts (CEABA)**. Monthly. Information available: <http://www.rsc.org/is/database/ceabhome.htm>.

Chemical Engineering and Biotechnology Abstracts (CEABA) provides comprehensive coverage of process and chemical engineering and biotechnology literature from theoretical studies to industrial applications. The Royal Society of Chemistry database contains over 420,000 items and has coverage dating from 1971.

233. Clevinger, Mary A., and Christina L. Cedeno. **Phase Equilibria Diagrams Cumulative Index**. Westerville, OH: American Ceramic Society, 1998. 285p. \$20.00 ISBN 1574980874. Information available: <http://www.acers.org/pubs/books/phase/phase1998.asp>.

This comprehensive index covers all the phase diagrams published in the *Phase Equilibria Diagrams* series: *Volumes I–XII*, *Annals '91-'93*, *Phase Diagrams for High-T<sub>c</sub> Superconductors I and II*, and *Phase Diagrams for Zirconium and Zirconia Systems*.

234. **Community of Science (COS)**. 2000. Available: <http://www.cos.com>. (Accessed April 2, 2000).

The Community of Science (COS) provides scientific research and development information products and services. This site contains a searchable global registry of experts in the sciences searchable by name, institution, state, education, expertise, or by using keywords. It includes access to publications of the U.S. Geological Survey Database and other related databases. COS also provides a searchable bibliographic database containing all of the approximately 1.7 million U.S. patents issued since 1975. All important fields in the database are fully indexed and can be searched, including the patent number, dates, assignee,

inventor, title, abstract, exemplary claims for recent years, and U.S. and international classifications. In addition, the database tracks the “citation lineage” associated with each patent. Access to this resource is available by subscription or by membership as a contributing entity.

**235. Computer and Control Abstracts.** London, UK: Institution of Electrical Engineers. Monthly. ISSN 00368113. Information available: [http://www.iee.org.uk/publish/inspec/printed/abstract.html#Computer\\_and\\_Control\\_Abstracts](http://www.iee.org.uk/publish/inspec/printed/abstract.html#Computer_and_Control_Abstracts).

This index provides information on all aspects of computer installations, applications, hardware, peripherals, software, and theory as well as control engineering, robotics, systems theory, and artificial intelligence. *Computer and Control Abstracts* contains some 100,000 items in 12 monthly issues. Each issue has a subject guide and indexes. *Computer and Control Abstracts* is part of the INSPEC database.

**236. Computing Reviews (CR).** New York: Association for Computing Machinery. Monthly. ISSN 00104884. Information available: <http://www.acm.org/reviews>. (Accessed April 2, 2000).

*Computing Reviews* publishes monthly reviews of books, articles, and other publications. *CR* publishes about 1,000 reviews each year. Reviewers provide the computing community with critical perspectives on published literature.

**237. Conference Papers Index (CPI).** Bethesda, MD: Cambridge Scientific Abstracts. Bimonthly. Information available: <http://www.csa.com/detailsV3/cpilong.html>. (Accessed April 2, 2000).

This conference literature index covers sciences and engineering. Descriptions are taken from the final program or abstracts publication of conferences. The index covers about 150 meetings each year and may include references to both papers presented and not yet published and to papers presented with no plans to be published. It is available by subscription.

**238. Corrosion Abstracts Database.** Houston, TX: National Association of Corrosion Engineers. Updated regularly. Information available: <http://www.nace.org/naceframes/Pubs/pubsindex.htm>. (Accessed April 2, 2000).

Corrosion Abstracts provides a source of bibliographic information in the area of corrosion science and engineering. Subject areas include general corrosion, testing, corrosion characteristics, preventive measures, materials construction and performance, and equipment.

**239. Cunningham, D. Databases Available in the National Institute of Standards and Technology Research Library.** Gaithersburg, MD: National Institute of Standards and Technology, 1998. 162p. (NISTSP927; PB98153281). \$41.00. Available from National Technical Information Service.

Databases available online in the Research Library of the National Institute of Standards and Technology (NIST) are listed both by acronym and title. In addition, descriptions of the databases, dates covered, hard copy counterpart, principal sources, and vendors are listed.

240. **Current Contents: Engineering, Computing and Technology (CC/EC&T)**. Philadelphia, PA: Institute for Scientific Information. Weekly. Various formats available. ISSN 10791450. Information available: <http://www.isinet.com/products/cc/cc.html>. (Accessed October 26, 1999).

This part of *Current Contents* displays the tables of contents from 1,030 journals in subject categories such as aerospace engineering, artificial intelligence, civil engineering, engineering mathematics, information technology, metallurgy, and optics. Other sections of *Current Contents* cover agriculture, biology, and environmental sciences and physical, chemical, and earth sciences.

241. **Defense Library on Disc**. Washington, DC: Pentagon Library, 1998. Digital format. (SUB5264). \$200.00. Available from National Technical Information Service.

This resource lists three major Department of Defense libraries: the Pentagon Library Catalog, the National Defense University (NDU) Library Catalog, and the Staff College Automated Military Periodicals Index (SCAMPI). The Pentagon and NDU catalogs contain more than 210,000 records and cover a wide range of subjects, including international affairs, political science, military affairs, management, logistics, mobilization, computer science, and U.S. law.

242. deGroot, John W. **Polymer Blends, Alloys, and Interpenetrating Polymer Networks**. Lancaster, PA: Technomic. Monthly. \$425.00. ISSN 08938884.

Each monthly issue presents a synopsis of original articles providing an overview of developments in polymers. The publication includes patent literature and summaries of technical, market, business, fire safety, and regulatory developments.

243. Dickert, J. H. **Defense Technical Information Center (DTIC) Thesaurus**. Alexandria, VA: Defense Technical Information Center, 1996. 607p. (DTICTR9702; ADA3210382). Consult NTIS for price. Available from National Technical Information Service.

This *DTIC Thesaurus* provides a basic multidisciplinary subject term vocabulary used by the Defense Technical Institute Center to index and retrieve scientific and technical information.

244. **Earthquakes and the Built Environment Index**. Baltimore, MD: National Information Services Corporation. Semi-annual. Digital format. Information available: [http://www.nisc.com/Frame/NISC\\_products-f.htm](http://www.nisc.com/Frame/NISC_products-f.htm). (Accessed April 2, 2000). Available by subscription.

This index is a combination of three bibliographic databases on earthquakes, earthquake engineering, and related topics. *Earthquakes and the Built Environment Index* provides over 114,000 records. QUAKELINE provides 30,900 abstracts and citations covering the literature of earthquake engineering and natural hazards mitigation from 1987 to the present. The Multidisciplinary Center for Earthquake Engineering Research (MCEER) Information Service at SUNY/Buffalo produces the database and is funded by the National Science Foundation, the Federal Emergency Management Agency, and the N.Y. State

Science and Technology Foundation. Earthquake Engineering Abstracts provides 76,000 abstracts and citations on earthquake engineering and earthquake hazards mitigation from 1971 to the present. The National Information Service for Earthquake Engineering (NISEE), a project sponsored by the National Science Foundation, maintains the database at the Earthquake Engineering Research Center (EERC), University of California at Berkeley. It also includes citations from the EERC Library. Coverage of the 1989 Loma Prieta, California, earthquake is particularly strong. Newcastle Earthquake Database is from the Newcastle Region Public Library of Australia and provides 3,200 abstracts and citations specifically on the 1989 Newcastle, Australia, earthquake.

245. **Ei Compendex.** Weekly. Information available: [http://www.ei.org/eivillage/village.serve\\_page?p=3811](http://www.ei.org/eivillage/village.serve_page?p=3811). (Accessed April 2, 2000).

Ei Compendex is a comprehensive, interdisciplinary engineering database that builds on the tradition of the *Engineering Index*. It includes abstracts of over 2,600 international journals, conference papers, and technical reports. The DIALOG Corporation also produces subsets of Compendex with the titles Ei ChemDisc, Ei EEDisc, Ei Energy and Environment, Ei MechDisc, and Ei CivilDisc. EiCompendex is available by subscription and in various formats.

246. **Ei Paper Village.** Weekly. Available: [http://hood2.ei.org/eivillage/village.serve\\_page?p=8776](http://hood2.ei.org/eivillage/village.serve_page?p=8776). (Accessed April 2, 2000).

The Institute of Paper Science and Technology, established in 1929, provides research on the manufacture and uses of pulp, paper, paperboard, and other forest products and byproducts. For over 50 years, IPST has produced and distributed PAPERCHEM, the world's largest and most comprehensive database on pulp and paper. Engineering Information currently produces the PAPERCHEM database. It is available by subscription.

247. **Electrical and Electronics Abstracts (EEA).** London, UK: Institution of Electrical Engineers. Monthly. ISSN 00368105. Information available: [http://www.iee.org.uk/publish/inspec/printed/abstract.html#Electrical\\_and\\_Electronics\\_Abstacts](http://www.iee.org.uk/publish/inspec/printed/abstract.html#Electrical_and_Electronics_Abstacts).

This service indexes all areas of electronics, radio, telecommunications, optoelectronics, and electrical power. *Electrical and Electronics Abstracts* contains up to 105,000 abstracts in 12 monthly issues. Each issue contains indexes plus a subject guide. Cumulated indexes are published twice a year. *Electrical and Electronics Abstracts* is part of the INSPEC database.

248. **Elsevier Enviroinfo Research Service.** 2000. Available: <http://eco-web.com/register/00988.html>. (Accessed April 2, 2000).

This is a research service that provides environmental compliance professionals with information on air pollution, hazardous waste, and water quality issues. Resources searched include federal regulations and statutes, compliance manuals and handbooks, and Elsevier journals.

249. **Engineering Conference and Reports.** Palo Alto, CA: Dialog. Annual. Digital format. \$1,850.

The coverage for this resource is from 1990 to the present. It combines the following three files: *Ei Conferences*, which includes abstracts from conference papers, proceedings, and technical reports from Ei Compendex and Ei PageOne; CONF file, an extract from the Scientific and Technical Information Network (STN) index of science and technology conferences and meetings; and SIGLE, the System for Information on Grey Literature in Europe, which covers European non-conventional literature in pure and applied science and technology.

250. **Environmental RouteNet.** Bethesda, MD: Cambridge Scientific Abstracts. Updated daily. Information available: [http://moe.csa.com/new\\_ern/guestinfo/aboutern.html](http://moe.csa.com/new_ern/guestinfo/aboutern.html). (Accessed April 2, 2000).

Subscription to Environmental Route Net provides access to specialized environmental Internet sites for news, regulations and legislation, U.S. and international patents, and other reference information. There are three primary sections to this service: bibliographic information, research and development programs, and data sets.

251. **Environmental Sciences and Pollution Management.** Bethesda, MD: Cambridge Scientific Abstracts. Monthly. Information available: <http://www.csa.com/detailsV3/envclust.html>. (Accessed April 2, 2000).

This multidisciplinary database provides comprehensive coverage of the environmental sciences. Abstracts and citations are drawn from scientific journals and other sources, including conference proceedings, reports, monographs, books, and government publications. Subject coverage includes air quality, energy resources, environmental engineering, hazardous waste, and water pollution.

252. **FIZ-Karlsruhe.** 2000. Available: <http://www.fiz-karlsruhe.de>. (Accessed April 2, 2000).

Fachinformationszentrum (FIZ) Karlsruhe is a nonprofit organization that provides information and information services for academic and industrial research. FIZ Karlsruhe is providing the host for STN International, which is operated cooperatively by FIZ, Chemical Abstracts Service (CAS) of the American Chemical Society (ACS), and The Japan Science and Technology Corporation (JST), Information Center for Science and Technology (JICST). STN International offers information on a broad range of scientific fields, including chemistry, engineering, life sciences, biotechnology, regulatory compliance, patents, and business. The site provides database guides such as STNGUIDE and NUMERIGUIDE to assist the user in identifying appropriate databases.

253. **Geo Index.** 1999. Available: <http://www.geoindex.com/geoindex>. (Accessed April 2, 2000).

Geo Index is a search engine geared towards geo-environmental professionals. Specific database topics include geotechnical, environmental, hydrogeology, geology, mining, and petroleum. Searches can be limited by companies, associations, education, and government.

254. **Global Mobility Database (GMD)**. Warrendale, PA: Society of Automotive Engineers. Monthly. Information available: <http://www.sae.org/products/webcd/gmd/index.htm>. (Accessed April 2, 2000).

This comprehensive source of vehicle technology information contains over 99,000 document summaries. Coverage includes publications from the United States, Japan, Germany, Italy, the United Kingdom, France, Korea, Brazil, and Canada. The scope of the database includes automobiles, trucks, aircraft, spacecraft, electric vehicles, helicopters, and race cars.

255. **GOV.Research\_Center (GRC)**. 2000. Available: <http://grc.ntis.gov>. (Accessed April 2, 2000).

The GOV.Research\_Center is a partnership between the National Technical Information Service and the National Information Services Corporation to provide a single access point to government information. The GOV.Research\_Center provides subscriptions to the following databases. Energy Science and Technology Database (EBD), a multidisciplinary file containing worldwide references to basic and applied scientific and technical research literature. The information is collected for use by government managers, researchers at the national laboratories, and other research efforts sponsored by the U.S. Department of Energy. It is updated monthly and contains 3 million records since 1976. Federal Research in Progress Database (FEDRIP) offers access to current government-sponsored research projects in the fields of the physical sciences, engineering, life sciences, and more. It is updated monthly and contains 150,000 records from the current two years. NIOSHTIC® Database is a bibliographic database of literature in the field of occupational safety and health. About 160 current, English-language technical journals provide approximately 35 percent of the additions to NIOSHTIC® annually. It is updated quarterly and contains 200,000 records since the nineteenth century. NTIS Database offers bibliographic coverage of U.S. government and worldwide government-sponsored research and studies. It covers a wide range of topics, including technology, science, engineering, environment, health, and business. It is updated bi-weekly and contains 400,000 records since 1990.

256. **History of Science and Technology (HST)**. Annual. Research Libraries Group (RLG). Information available: <http://www.rlg.org/cit-hst.html>. (Accessed April 2, 2000).

History of Science and Technology database indexes journal articles, conference proceedings, books, book reviews, and dissertations in the history of science and technology and allied historical fields. The file comprises three bibliographies: the *Isis Current Bibliography of the History of Science (HSS)*, the *Current Bibliography in the History of Technology (Technology and Culture)*, and the *Bibliografia Italiana di Storia della Scienza*. It is updated annually. HST covers 1975 to the present with more than 128,000 records.

257. **IEEE/IEE Electronic Library (IEL)**. Monthly. Institute of Electrical and Electronics Engineers (IEEE) and Institution of Electrical Engineers (IEE). Information available: <http://www.ieee.org/products/online/iel>. (Accessed April 2, 2000).

This digital service provides a single source to current electrical engineering and computer science literature in publications from IEEE and IEE. It contains full-text articles, with archives going back to 1988.

258. **INSPEC**. The Institution of Electrical Engineers. Weekly. Information available: <http://www.iee.org.uk/publish/inspec>. (Accessed April 2, 2000).

Produced by the Institution of Electrical Engineers, INSPEC is a bibliographic information service providing access to the world's scientific and technical literature in physics, electrical engineering, electronics, communications, control engineering, computers and computing, and information technology. The abstracts from *Physics Abstracts*, *Electrical and Electronics Abstracts*, and *Computer and Control Abstracts* provide a primary foundation for the INSPEC database. The contents of over 4,000 journals and some 2,000 published conference proceedings, as well as numerous books, reports, and dissertations are regularly scanned each year. The following INSPEC user aids are designed to assist searchers: *INSPEC Classification*, *INSPEC Thesaurus*, and *List of Journals*. The history of *Science Abstracts* is available at <http://www.iee.org.uk/publish/inspec/100yrs>. The service is available by subscription.

259. **International Chemical Information Database (ICID)**. Princeton, NJ: Perceptrix, 1998. Digital format. (SUB5443). \$500.00. Available from National Technical Information Service.

The International Chemical Information Database (ICID) provides a comprehensive approach to general chemical industrial hygiene and safety information. It has over 150,000 chemical entries from over 24 U.S. federal, state, and international sources. It is updated quarterly.

260. **International Civil Engineering Abstracts Database**. Bradford, West Yorkshire, UK: Anabar Electronic Intelligence, 1999. Annual subscription. \$2,299.00. Information available: <http://www.anbar.com.uk/products/icea.htm>.

This international civil engineering database indexes articles from 1972 to the present.

261. Jason, N. H. **FIREDOC Vocabulary List**. Gaithersburg, MD: National Institute of Standards and Technology, Fire Safety Engineering Division, 1997. 124p. (NISTIR6033; PB97196869). \$33.00. Available from National Technical Information Service.

This vocabulary contains 5,000 keywords representing the subject matter of the documents included in the FIREDOC bibliographic database. The list was developed in 1975 as a tool to be used for searching a fire safety database developed for NASA/ASRDI (National Aeronautics and Space Administration/Aerospace Safety Research and Data Institute).

262. **Linda Hall Library.** 2000. Available: <http://www.lhl.lib.mo.us>. (Accessed April 2, 2000).

Linda Hall Library is an independent research library of science, engineering, and technology. Collections include scientific journals; research monographs; conference and symposium proceedings; engineering standards and specifications; patent specifications and trademarks; unclassified NASA, DOE, and government contractor reports; and geological maps. Holdings also include the former library collection of the American Academy of Arts and Sciences, acquired in 1947, and most of the collection from the former Engineering Societies Library, transferred in 1995. The service provides online access to the library catalog and other science and technology research guides.

263. **Materials Science Citation Index (MSCI).** Bimonthly. Information available: <http://www.isinet.com/products/citation/citmsci.html>. (Accessed April 2, 2000).

Coverage begins with 1991, with more than 630,000 source items. The MSCI contains extensive bibliographic information: author, title, source publication, author-supplied abstract, and cited references from over 1,700 journals, books, and conference proceedings related to materials science. The subject areas include ceramics, semiconductors, superconductors, metals and metallurgy, thin films, plastics and polymers, composites, adhesives, minerals, fabrics, and fibers. The index is available by subscription.

264. **MathSciNet.** Daily. Available: <http://www.ams.org/mathscinet>. (Accessed April 2, 2000).

MathSciNet is sponsored by the American Mathematical Society and includes almost 60 years of citations from *Mathematical Reviews (MR)* and *Current Mathematical Publications (CMP)*. This resource has information on mathematics and applications in other mathematical sciences, including statistics, engineering, operations research, and computer science. It includes hyper-text links and is available by subscription.

265. **MatWeb: The Online Materials Information Resources.** 2000. Available: <http://www.matweb.com>. (Accessed April 2, 2000).

This searchable database covers properties of over 18,000 materials. Categories include thermoplastics, thermosets, ferrous metals, nonferrous metals, and ceramics.

266. **METADEX.** Bethesda, MD: Cambridge Scientific Abstracts. Monthly. Information available: <http://www.csa.com/detailsV3/metadex.html>. (Accessed April 2, 2000).

METADEX is a comprehensive source for information on metals and alloys. It covers properties, manufacturing, applications, and development. The information comes from journals, patents, dissertations, government reports, conference proceedings, and books. Begun in 1966, METADEX contains over 950,000 references and is the database equivalent of *Metals Abstracts*, *Metals Abstracts Index*, and *Alloys Index*.

267. National Aeronautics and Space Administration (NASA). **NASA Thesaurus**. 1998 with 2000 Supplement. Available: <http://www.sti.nasa.gov/thesfrm1.htm>. (Accessed April 2, 2000).

The NASA Thesaurus contains the authorized subject terms by which the documents in the NASA STI databases are indexed and retrieved. The paper *NASA Thesaurus* comprises two volumes: Volume 1—*Hierarchical Listing with Definitions*, and Volume 2—*Rotated Term Display*. The two-volume set can be ordered from NASA for \$90.00.

268. National Aeronautics and Space Administration (NASA). **Natural Disaster Reference Database (NDRD)**. 2000. Available: <http://ltpwww.gsfc.nasa.gov/ndrd>. (Accessed April 2, 2000).

The Natural Disaster Reference Database (NDRD) is a bibliographic database on the use of satellite remote sensing for disaster mitigation. The NDRD is compiled from articles published since 1981. This database was jointly developed by NASA Goddard Space Flight Center and National Research Institute for Earth Sciences and Disaster Prevention (NIED) as part of the Japan-United States Science and Technology Agreement (JUST).

269. National Aeronautics and Space Administration (NASA). NASA Center for AeroSpace Information (CASI). **Scientific and Technical Aerospace Reports (STAR)**. Irregular. Available: <http://www.sti.nasa.gov/Pubs/star/Star.html>. (Accessed April 2, 2000).

This site provides access to the *Scientific and Technical Aerospace Reports (STAR)* beginning with volume 34, January 1, 1996. This index covers the following NASA publications: *Technical Publications (TP)*, *Technical Memorandums (TM)*, *Contractor Reports (CR)*, *Conference Publications (CP)*, *Special Publications (SP)*, and *Technical Translations (TT)*.

270. National Council for Science and the Environment. **National Library for the Environment (NLE)**. 1999. Available: <http://www.cnie.org/nle>. (Accessed April 2, 2000).

The National Library for the Environment is a resource for environmental information. The library contains reports, databases, educational resources, daily environmental and congressional news, conference information, career listings and counseling, and a comprehensive database of Congressional Research Service reports.

271. **NIST 98—NIST/EPA/NIH Mass Spectral Library**. Ringoes, NJ: Scientific Instrument Services, 1999. \$2000.00. Information available: <http://www.sisweb.com/software/ms/nist98.htm>. (Accessed October 26, 1999).

*NIST 98* is a collection of electron ionization (EI) mass spectra. The main library contains over 100,000 compounds described with chemical structures, synonyms, and other relevant information. The purpose of this product is to provide a reference library for compound identification by mass spectral library searching.

272. **Northern Light**. 2000. Available: <http://www.northernlight.com>. (Accessed April 2, 2000).

This service provides searchable access to 5,000 text resources covering almost every industry, including automotive, biotechnology, chemicals and plastics, computing, energy and petroleum, manufacturing and engineering, and transportation. Document delivery for full-text is available.

273. Northwestern University. **Transportation Library**. 1999. Available: <http://www.library.nwu.edu/transportation>. (Accessed April 2, 2000).

One of the largest transportation libraries in the world, the Transportation Library at Northwestern includes information on law enforcement, police management and environmental impact assessment. The environmental impact statement collection includes most of the Environmental Impact Statements prepared under the National Environmental Policy Act of 1969.

274. **Oil and Gas Journal (OGJ) Energy Database**. Daily. Information available: <http://www.ogjonline.com/infomall/edhome.html>. (Accessed April 2, 2000). Available by subscription.

This database provides access to over 150,000 data series and is updated daily with weekly, monthly, quarterly, and annual data.

275. **Phase Equilibria Diagrams CD-ROM Database**. Westerville, OH: The American Ceramic Society, 1998. Digital format. \$1500.00. ISBN 0944904939.

This comprehensive database contains more than 13,000 diagrams for ceramic materials, including high- $T_c$  superconductors. It is searchable by author, system components, language, year, *Phase Equilibria Diagrams* series volume number, and full bibliographic reference of the paper. Volumes included are *Volume I. Oxides and Salts*; *Volume II. Oxides and Salts*; *Volume III. Oxides and Salts*; *Volume IV. Salts*; *Volume VI. Oxides*; *Volume VII. Salts*; *Volume VIII. High-Pressure Systems*; *Volume IX. Semiconductors and Chalcogenides*; *Volume X. Borides, Carbides, and Nitrides*; *Annual 1991*; *Annual 1992*; and *Annual 1993*. A network license is available.

276. **PTDL—Patent and Trademark Depository Library Program**. 1999. Available: [http://www.uspto.gov/go/ptdl/ptdlib\\_1.html](http://www.uspto.gov/go/ptdl/ptdlib_1.html). (Accessed April 2, 2000).

This site includes the complete list of the libraries and other institutions designated as Patent and Trademark Depository Libraries (PTDL).

277. **Rapra Abstracts Database**. Charlotte, NC: Rapra Technology. Twice monthly. Information available: <http://www.rapra.net>. (Accessed April 2, 2000).

The database comprises indexed summaries of published literature covering technical, academic, commercial, and marketing aspects of the rubber and plastic industries from 1972 to the present. The complete list of journal titles held in the Rapra library can be accessed from this site. International source materials include over 500 journals, together with conference papers, patents, specifications and standards, books, reports, press releases, company literature, datasheets, and directories. Subscriptions are available through various vendors.

278. **Recent Advances in Manufacturing (RAM)**. Monthly. Available: <http://www.eevl.ac.uk/ram>. (Accessed April 2, 2000).

RAM is a database of bibliographic information for manufacturing and related areas, available through the Edinburgh Engineering Virtual Library (EEVL). Sources for the 25,000-record database include over 500 journals and magazines, books, videos, and conference proceedings from 1990 to date.

279. **REFIN-COR 4.0**. 1998. Information available: <http://www.nace.org/naceframes/Store/storeindex.htm>. (Accessed April 2, 2000).

This database of experiences, problems, and solutions encountered by refining industry corrosion engineers includes minutes of meetings of NACE Committee T-8 on Refining Industry Corrosion from 1957 through 1998. REFIN-COR 4.0 also includes indexes for acronyms, alloys, technical papers, trademarks, and naphthenic acid corrosion literature survey. It is available by subscription.

280. **SAE Automotive Electronics Database**. Monthly. Information available: <http://www.sae.org/products/webcd/electron.htm>. (Accessed April 2, 2000).

This database contains over 18,000 listings on such topics as control systems, sensors and actuators, multiplexing, electric vehicles, safety devices, ITS, and communications. Each description includes complete bibliographic citations. It is updated monthly and is available by subscription.

281. **SAE Automotive Engines Database**. Monthly. Information available: <http://www.sae.org/products/webcd/engine.htm>. (Accessed April 2, 2000).

This resource includes over 35,000 document summaries on engine technology. Subject areas cover all types of engines: two-stroke, rotary, spark-ignition, diesel, and alternative power sources, and the associated parts and systems for most ground vehicles.

282. **SAE Automotive Materials Database**. Monthly. Information available: <http://www.sae.org/products/webcd/matdata.htm>. (Accessed April 2, 2000).

This reference contains detailed summaries of technical literature, standards, and regulations. The Materials Database is available by subscription either via the Internet (updated monthly) or digital format (updated annually).

283. **The Scout Report for Science and Engineering**. 2000. Available: <http://scout.cs.wisc.edu/report/sci-eng/metapage/index.html>. (Accessed April 2, 2000).

This source includes numerous resources for maintaining current awareness in science and engineering. These include tables of contents, abstracts, working papers, technical reports, preprints, new books, data, and conferences.

284. **SOLV-DB**. 2000. Available: <http://solvdb.ncms.org>. (Accessed April 2, 2000).

Supported by the National Center for Manufacturing Sciences (NCMS), SOLV-DB is a database for solvents data. It is searchable by solvent name, Chemical Abstracts number, Sax number, chemical formula, chemical category, property range, and solvent synonym.

285. **STN International**. 2000. Available: <http://www.fiz-karlsruhe.de>. (Accessed April 2, 2000).

STN International is an online service offering information on a broad range of scientific fields, including patents. This network is operated cooperatively by Fachinformationszentrum (FIZ) Karlsruhe, Chemical Abstracts Service (CAS) of the American Chemical Society (ACS), and The Japan Science and Technology Corporation (JST) Information Center for Science and Technology (JICST).

286. **Technical Information Service (TIS)**. 2000. Available: <http://www.lib.purdue.edu/tis>. (Accessed April 2, 2000).

TIS is a fee-based information service. Established in 1987 at Purdue University, TIS provides scientific, technical, and management information.

287. Transportation Research Board (TRB). **TRIS Online**. Updated regularly. Information available: <http://www.nas.edu/trb/about/trisfram.html>. (Accessed April 2, 2000).

TRIS Online contains worldwide transportation research abstracts describing the published literature of highway research: rural, urban, and intercity transit research; highway safety research; railroad research; maritime research; and air transport research. The site includes a chart that compares a variety of transportation database products. Descriptions of the Research in Progress projects are available at <http://www3.nas.edu/rips>.

288. U.S. Department of Agriculture (USDA). Agricultural Research Service. (ARS). **The ARS Pesticide Properties Database**. 1999. Available: <http://wizard.arsusda.gov/rsml/ppdb.html>. (Accessed April 2, 2000).

The ARS collaborated with the Natural Resources Conservation Service (formerly the Soil Conservation Service) to establish this authoritative source of data for calculating pesticide movement in soils. Each pesticide file includes such properties as the CASRN, molecular formula, molecular state, physical state, boiling point, vapor pressure, water solubility, and soil sorption for various soils. There are records for 324 pesticides.

289. U.S. Department of Commerce. National Technical Information Service (NTIS). **Federal Computer Products Center**. 2000. Available: <http://www.ntis.gov/fcpc>. (Accessed April 2, 2000).

The Federal Computer Products Center was established at National Technical Information Service (NTIS) to provide access to information in digital formats. The current inventory of computer products includes more than 1,200 titles since 1990.

290. U. S. Department of Commerce. **NTIS Database**. Biweekly. Information available: <http://grc.ntis.gov/ntisdb.htm>. (Accessed April 2, 2000).

The NTIS (National Technical Information Service) Database provides bibliographic coverage of U.S. government and worldwide government-sponsored research. Subject areas include biotechnology, communication, energy, engineering, the environment, health and safety, science, space, technology, and transportation. Available by subscription.

291. U.S. Department of Education. **AskERIC**. Monthly. Available: <http://www.askeric.org>. (Accessed April 2, 2000).

This site provides access to the ERIC database, the world's largest source of education information, which contains more than 950,000 abstracts of documents and journal articles on education research and practice. This is an excellent source for educational resources on teaching engineering and technology. The database is updated monthly.

292. U. S. Department of Energy (DOE). **Photovoltaic Energy: Electricity from Sunlight**. Bimonthly. Available: <http://www.doe.gov/phv/phvhome.html>. (Accessed April 2, 2000).

The U.S. Department of Energy developed this collection of bibliographic citations on photovoltaic amorphous technology, polycrystalline thin films, gallium arsenide, crystalline silicon, concentrator technology, and systems research. It is updated on a bimonthly basis.

293. U.S. Department of the Interior. Geological Survey (USGS). **National Water-Quality Assessment (NAWQA) Publications**. 2000. Available: <http://www.rvares.er.usgs.gov/nawqa/pubsmain.html>. (Accessed April 2, 2000).

The NAWQA Program is designed to describe the status and trends in the quality of groundwater and surface water resources.

294. U.S. Department of Transportation (DOT). **Intelligent Transportation Systems (ITS) Electronic Document Library (EDL)**. Updated regularly. Available: <http://www.its.dot.gov/welcome.htm>. (Accessed April 2, 2000).

The ITS-EDL is a repository of documents on intelligent transportation system topics published by the U.S. Department of Transportation.

295. U.S. Department of Transportation (DOT). **National Transportation Library (NTL)**. 2000. Available: <http://ntl.bts.gov>. (Accessed April 2, 2000).

The NTL is administered by the Bureau of Transportation Statistics (BTS) in cooperation with the Transportation Administrative Services Center (TASC) and the Office of the Secretary of the U.S. Department of Transportation (DOT). The National Transportation Library contains documents and databases provided from throughout the transportation community, including over 500,000 records from the Transportation Research Information Service (TRIS) database.

296. U.S. Environmental Protection Agency (EPA). **Catalog of Publications: Office of Science and Technology**. Washington, DC: Environmental Protection Agency, Office of Water, 1998. 110p. (EPA820B98001; PB99101230). \$33.00. Available from National Technical Information Service.

This catalog lists documents produced by the Office of Science and Technology that are available from the Water Resource Center and the National Technical Information Service.

297. U.S. Government Printing Office (GPO). **Catalog of U. S. Government Publications**. 1999. Available: [http://www.access.gpo.gov/su\\_docs/dpos/adpos400.html](http://www.access.gpo.gov/su_docs/dpos/adpos400.html). (Accessed April 2, 2000).

This online catalog consists of bibliographic records published in the *Monthly Catalog of U. S. Government Publications* since January 1994. These records describe government information products available through the Federal Depository Library Program (FDLP). Once an information product is identified, a link is available to locate depository libraries that receive that product.

298. U.S. Government Printing Office (GPO). **Federal Depository Library Directory**. Washington, DC: Government Printing Office, Library Services Program, 1998. 104p. (PB99101776). \$33.00. Available from National Technical Information Service.

The Government Printing Office (GPO) provides government information to Federal Depository Libraries. The collections include information on careers, business opportunities, legal and regulatory information, and demographics. Federal depository libraries are located in nearly every congressional district throughout the United States and its territories.

299. **Web of Science**. Weekly. Information available: <http://www.isinet.com/products/citation/wos.html>. (Accessed April 2, 2000).

The Web of Science is the Web interface providing access to the Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, and the new Web of Science Corporate Editions: BioSciences Citation Index, Chem Sciences Citation Index, and Clinical Medicine Citation Index. The ISI Citation Databases collectively index more than 8,400 journals cover-to-cover, providing complete bibliographic data, author abstracts, and cited references. Web of Science is available by subscription.

300. **WebDEX**. Warrendale, PA: Society of Automotive Engineers. 2000. Information available: <http://www.sae.org/products/webcd/webdex.htm>. (Accessed April 2, 2000).

This is a Web-based index of the current and past publications of SAE. It covers more than 90 years of technical literature. Listings include complete bibliographic information and powerful search software that allows searching by subject, keyword, document number, author name/organization, and more. It includes more than 63,000 citations covering: technical papers, technical standards, books from 1965, and magazine articles from 1990 published by SAE. It is updated monthly.

301. **Weldasearch Online**. Cambridge, UK: The Welding Institute. Monthly. Information available: <http://www.twi.co.uk/infserv/online.html>. (Accessed April 2, 2000).

Weldasearch contains over 155,000 bibliographic references, with abstracts and keywords, to journal articles, research reports, books, standards, patents, theses, and special publications in the areas of joining metals and plastics, metals spraying, thermal cutting, brazing, soldering, and microjoining.

## 3.2 Bibliographies

302. Briuer, F. L., and C. Mathers. **Trends and Patterns in Cultural Resource Significance: An Historical Perspective and Annotated Bibliography**. Vicksburg, MS: Army Engineer Waterways Experiment Station, 1997. 196p. (ADA353535). \$44.00. Available from National Technical Information Service.

This publication offers review literature concerned with evaluating cultural resource significance. There are two sections: an annotated bibliography of peer-reviewed literature and literature on the historical trends in archaeological method and theory.

303. Carpenter, D. C. **Bibliography on Finite Element and Related Methods Analysis in Reactor Physics Computations (1971–1997)**. West Mifflin, PA: Bettis Atomic Power Laboratory, 1998. 75p. (WAPDTM1635; DE98003127). \$27.00. Available from National Technical Information Service.

This bibliography provides a list of references on finite element and related methods analysis in reactor physics computations. It covers international literature from scientific journals, conference proceedings, technical reports, thesis/dissertations, and chapters from reference books.

304. **Cold Regions Bibliography**. 1999. Available: <http://lcweb.loc.gov/rr/scitech/coldregions/welcome.html>. (Accessed April 4, 2000).

This project of the Science and Technology Division of the Library of Congress is sponsored by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) and the Office of Polar Programs of the National Science Foundation (NSF). The purpose is to disseminate information on Antarctica and cold regions science and technology.

305. De Petro, Thomas G., and Ted E. Naylor. **Selective Guide to Literature on Aerospace Engineering**. Washington, DC: American Society for Engineering Education, 1997. 21p. (Engineering Literature Guides, no. 24). \$17.00. ISBN 0878231617.

The authors define the term “aerospace” by suggesting that it covers all aspects of flight, for example, aviation, aeronautics, and astronautics. This guide can be used to identify primary aerospace information sources, including Internet resources, encyclopedias, handbooks, specifications, government documents, and statistical resources.

306. Drancsak, M. **Transit Planning and Research Reports: Annotated Bibliography**. Washington, DC: Federal Transit Administration, Office of Research, Demonstration and Innovation, 1997. 162p. (FTATRI309702; PB97205983). \$41.00. Available from National Technical Information Service.

This bibliography references available planning and research publications sponsored by the Federal Transit Administration (FTA) of the United States Department of Transportation for the time period September 1995 through December 1996. The purpose of this publication is to inform the transit community and

the general public of the published material available to assist state and local agencies in improving transit services and reducing the cost of public transit.

307. Eagle, Selwyn, and Judith Deschamps. **Information Sources in Environmental Protection**. New Providence, NJ: Bowker-Saur, 1997. 280p. (Guides to Information Sources). \$75.00. ISBN 1857390628.

This guide provides an introduction to the primary sources of information on environmental protection. The authors provide historical information, organizational culture, and relationships to other sources of information.

308. **European Sources of Scientific and Technical Information**. New York: Stockton Press, 1996. 420p. (Reference on Research). \$375.00. ISBN 1860672388.

This is a directory of scientific and technical information centers, institutions, and libraries. Subject areas include patents, standards, energy, engineering, materials testing, metallurgy, and transportation.

309. Goldblatt, W., C. Minkus, and O. K. Radford. **Bibliography on Cold Regions Science and Technology**. Champaign, IL: U.S. Army. Construction Engineering Research Laboratory, 1997. Part 1. 320p. (ADA3463148). \$58.00. Part 2. 524p. (ADA3463130). \$79.00. Available from National Technical Information Service.

This bibliography combines both the *Bibliography on Cold Regions Science and Technology* and the *Antarctic Bibliography*. Author and subject headings are provided in Part 2.

310. **GRAPHBIB: Bibliography Computer Graphics Database**. 1999. Available: <http://www.siggraph.org/publications/bibliography>. (Accessed April 2, 2000).

This extensive bibliography contains references to over 17,000 publications in the computer graphics literature.

311. Hanel, Najwa L. Nabti. **Selective Guide to Literature on Statistical Information for Engineers**. Washington, DC: American Society for Engineering Education, 1997. 28p. (Engineering Literature Guides, no. 22). \$17.00. ISBN 0878231552.

This selective guide provides descriptions of bibliographies, printed and electronic indexes, encyclopedias, reference handbooks, and conference proceedings.

312. **HCI Bibliography: Human-Computer Interaction Resources**. 2000. Available: <http://www.hcibib.org>. (Accessed April 4, 2000).

This bibliography contains over 19,600 entries on human-computer interaction (HCI). It covers a broad range of recommended readings, conferences, and journals.

313. Hurt, Charlie D. **Information Sources in Science and Technology**. 3d ed. Englewood, CO: Libraries Unlimited, 1998. 346p. \$55.00. ISBN 1563085283.

This annotated guide includes over 1,500 multidisciplinary sources of information in the biological sciences, physical sciences, mathematics, engineering, and health and veterinary sciences. Sections highlight resources such as abstracts and indexes, encyclopedias, dictionaries, handbooks, directories, and

websites. There is an excellent introduction to science and technology resources and a tool for evaluating such a collection.

314. **The Hypertext Bibliography Project (HBP)**. 1998. Available: <http://theory.lcs.mit.edu/~dmjones/hbp>. (Accessed April 4, 2000).

The Hypertext Bibliography Project explores the use of the World Wide Web as a forum for publishing enhanced, technical bibliographies. Several titles with bibliographies are linked to this page. Included are such titles as *IEEE Symposium on Foundations of Computer Science*, *Information Processing Letters*, and *SIAM Journal on Computing*.

315. **Induced Earthquake Bibliography**. 1997. Available: <http://www.nyx.net/~dcypser/induceq/induceq.bib.html>. (Accessed April 4, 2000).

This bibliography contains references to publications concerning earthquakes and other seismicity induced by human activity.

316. **Information and Computation Bibliography**. 1999. Available: <http://theory.lcs.mit.edu/~iandc/bibliography.html>. (Accessed October 26, 1999).

The Information and Computation Bibliography contains all papers published in *Information and Computation (I&C)* (formerly *Information and Control*) since it began publication in 1957. In addition to full tables of contents, the bibliography contains abstracts of recent and forthcoming papers and selected references and lists of papers that cite *I&C* papers.

317. Knott, B. A., et al. **Cognitive Framework for Information Visualization: Annotated Bibliography**. Washington, DC: Catholic University of America, 1998. 114p. (NISTGCR98739; PB98153562). \$33.00. Available from National Technical Information Service.

This bibliography consists of selected readings for the design and evaluation of information visualization. The document has five sections: perception and cognition, interface and visualization, design guidelines bibliography, human-computer interface (HCI) design guidelines, and examples of visualization.

318. Larson, D. E. **Hanford High-Level Waste Vitrification Program at the Pacific Northwest National Laboratory: Technology Development. Annotated Bibliography**. Richland, WA: Pacific Northwest National Laboratory, 1996. 160p. (PNNL10955; DE96050592). \$41.00. Available from National Technical Information Service.

This is a series of annotated bibliographies for 1983–1995 documents produced by the Hanford High-Level Waste Vitrification Program. Subject areas include high-level waste, glass formulation, glass properties testing, liquid-fed ceramic melter, and vitrification waste treatment.

319. Ley, Michael. **Computer Science Bibliography**. 1999. Available: <http://www.acm.org/sigmod/dblp/db/index.html>. (Accessed October 26, 1999).

This resource provides bibliographic information on major computer science journals and proceedings. It indexes more than 133,000 articles and contains links to home pages of computer scientists.

320. Lyons, R. M. **Metrology for Radio-Frequency Technology: A Bibliography of NIST Publications**. Boulder, CO: National Institute of Standards and Technology. Radio Frequency Technology Division, 1998. 152p. (NISTIR5075; PB99110272). \$41.00. Available from National Technical Information Service.

The Radio-Frequency Technology Division was established in 1998 to focus on programs that include metrology for the fundamental microwave quantities such as power, noise, impedance, and scattering parameters; standards and metrology for wireless systems; gain, pattern, and polarization measurements for antennas; electromagnetic properties of materials; measurements for high-speed microelectronics; electromagnetic field characterization; and electromagnetic compatibility.

321. Masters, Robert. **Ground Water Litigation Bibliography**. Westerville, OH: National Ground Water Association, 1997. \$69.00.

This is an extensive listing of references on litigation over groundwater rights and contamination from federal and state cases. It includes legal decisions and civil disputes over contaminated groundwater from gas stations, landfills, quarries, and hazardous waste sites.

322. Meeks, K. W., and S. Sarkani. **Curing of High Performance Concrete: Annotated Bibliography**. Washington, DC: George Washington University, 1997. 164p. (NISTGCR97715; PB98104128). \$41.00. Available from National Technical Information Service.

This is an annotated bibliography on the curing of high performance concrete (HPC), a subject on which it is difficult to find literature.

323. Mildren, Ken W., and Peter J. Hicks. **Information Sources in Engineering**. New Providence, NJ: Bowker-Saur, 1996. 772p. (Guides to Information Sources). \$110.00. ISBN 1857390571.

The first part of this reference includes reports, standards, patents, product information, electronic sources, and other reference sources. The remaining section addresses information needs and resources for subject areas including stress analysis, thermodynamics, energy, fluid mechanics, design, manufacturing, structural engineering, and concurrent engineering. There is an extensive index.

324. Mullay, Marilyn, and Priscilla Schlicke. **Walford's Guide to Reference Material: Science and Technology**. London, UK: Bernan, 1996. 967p. (Vol. 1). \$249.00. ISBN 1856041654.

This annotated bibliography lists almost 7,500 titles representing a broad range of information resources. The entries are organized according to the Universal Decimal Classification (UDC) system.

325. National Aeronautics and Space Administration (NASA). **NASA Patent Abstracts Bibliography**. 2000. Washington, DC: National Aeronautics and Space Administration, Scientific and Technical Information Office. (NASA SP-7039). Available: <http://www.sti.nasa.gov/Pubs/Patents/Patents.html>. (Accessed April 4, 2000).

This publication contains abstracts of NASA-owned inventions covered by U.S. patents and applications for patents. It is published for individuals looking for licensable products for the commercial market.

326. Phelps, Charles. **Selective Guide to Literature on Computer Graphics**. Washington, DC: American Society for Engineering Education, 1997. 17p. (Engineering Literature Guides, no. 25). \$17.00. ISBN 0878231625.

“Computer graphics” is defined as the display, representation, manipulation, alteration, and storage of objects in digital form. This selective guide was compiled for people interested in the technical aspects of computer graphics.

327. Poland, Jean A., and Godlind Johnson. **Selective Guide to Literature on Applied Optics**. Washington, DC: American Society for Engineering Education, 1997. 20p. (Engineering Literature Guides, no. 23). \$17.00. ISBN 0878231609.

The emphasis of this compilation is on applied optics. The authors define “applied optics” as “any process that involves the application of the science of light.” Resources include printed and electronic indexes, Internet resources, dictionaries, handbooks, directories, and standards.

328. Preston, Larry D., and Yanming Xu. **The Electronic Highway Safety Library**. 1999. Available: <http://www.albany.edu/sph/injr%5F012.html>. (Accessed April 4, 2000).

Topics covered in this database include bicycles and helmets, hazardous materials, highway safety statistics, safety, traffic engineering, and vehicle design.

329. Smallidge, Elisabeth R. **Bibliography on Northern Pipelines in the Former Soviet Union**. Hanover, NH: U.S. Army Corps of Engineers. Cold Regions Research and Engineering Laboratory, 1997. 31p. (Special Report. U.S. Army Cold Regions Research and Engineering Laboratory: 97-17; D103.33/2:97-17). Available: [http://www.crrel.usace.army.mil/valliere/CRREL\\_Reports\\_web/reports/SR97\\_17.pdf](http://www.crrel.usace.army.mil/valliere/CRREL_Reports_web/reports/SR97_17.pdf). (Accessed October 26, 1999).

A project that started in 1993, the bibliography is a review of technology and techniques for building, operating, and maintaining arctic natural gas and liquid petroleum pipelines in the former Soviet Union.

330. U.S. Department of Energy (DOE). **Bibliography of Yucca Mountain Project (YMP) Publications at Lawrence Livermore National Laboratory, September 1977 through March 1998**. Livermore, CA: Lawrence Livermore National Laboratory, 1998. 82p. (LLNL98005322; DE98005322). \$29.50. Available from National Technical Information Service.

This resource contains 685 citations published from September 1977 through March 1998, describing site characterization activities and research projects related to the radioactive waste disposal facilities being planned for Yucca Mountain, Nevada.

331. U.S. Department of Energy (DOE). **Municipal Solid Waste Management: A Bibliography of U.S. Department of Energy Contractor Reports through 1995**. Golden, CO: National Renewable Energy Laboratory, 1997. 258p. (NRELBK43023478; DE97008820). \$54.00. Available from National Technical Information Service.

This bibliography is an updated version of *Municipal Solid Waste Management: A Bibliography of U.S. Department of Energy Contractor Reports Through 1994* (NREL/TP-430-7886). Reports focus on municipal waste technologies and energy conservation in wastewater treatment. The bibliography contains author, subject, and title indexes.

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# Scholarly Journals, Trade Journals, and Newsletters

Journals are a critical component of the scholarly communication process. For engineers, both scholarly journals and trade journals are extremely important in furthering the communication of engineering research and practical knowledge. Associations and organizations use newsletters for membership and other business activities. Increasingly, newsletters are available through organizations' Internet sites.

This chapter provides a highly selective list of journals primarily published by engineering societies and organizations. Although assembling a complete list of journals and newsletters is beyond the scope of this reference, there are numerous resources that provide excellent descriptions of this literature. The following entries include a variety of journal-related resources covering such topics as scholarly communication, subject lists, and directories:

332. Bailey, Charles W., Jr. **Scholarly Electronic Publishing Bibliography**. 2000. Available: <http://info.lib.uh.edu/sepb/sepb.html>. (Accessed April 4, 2000).

This bibliography presents selected articles, books, electronic documents, and other sources that are useful in understanding scholarly electronic publishing efforts on the Internet. Most sources have been published since 1990. Links are provided to other sources.

333. **ChemConnect**. 2000. Available: <http://www.chemconnect.com/library/journals.shtml>. (Accessed April 4, 2000).

This comprehensive list contains over 600 links to various chemistry magazines and journals.

334. **The Directory of Computing Science Journals**. 1999.

Available: <http://fas.sfu.ca/1/projects/ElectronicLibrary/Collections/CMPT/cs-journals>. (Accessed November 20, 1999).

Part of the Internet Electronic Library Project, this directory covers over 500 journal titles with descriptions that include the publishers' title pages, tables of contents, abstracts directories, home pages, bibliographies, full-text archives and online journals, and other related information.

335. **Engineering E-journal Search Engine.** 1999. Available: <http://www.ee.vl.ac.uk/eese/index.html>. (Accessed November 20, 1999).

This search service is provided through the Edinburgh Engineering Virtual Library (EEVL). Access to over 150 full-text, free electronic journals is provided.

336. Garfield, Eugene. **The Impact Factor.** 1994. Available: <http://www.isinet.com/hot/essays/7.html>. (Accessed April 4, 2000).

The “impact factor” is a measure of the frequency with which the “average article” in a journal has been cited in a particular year or period. This tool is frequently used in tenure evaluations and cost-effectiveness studies for journals.

337. Hawkins, Donald T., and Mary B. Glose. **Full Sources Online.** Medford, NJ: Information Today. Semi-annual. \$119.50. ISSN 10408258. Information available: <http://www.infotoday.com/fso/default.htm>.

This directory proves online full-text information for over 11,000 newspapers, journals, magazines, newsletters, and newswires. It also includes aggregators such as Gale, LEXIS-NEXIS, STN International, and OCLC. A subscription includes an Internet updating service.

338. **PubList.com.** 1999. Available: <http://www.publist.com>. (Accessed November 20, 1999).

This resource provides lists of magazines, journals, newsletters, and other periodicals. Subject categories include computers and technology, sciences and mathematics, and reference.

339. **PubSCIENCE.** 2000. Available: <http://pubsci.osti.gov>. (Accessed April 4, 2000).

This source provides bibliographic information, including titles, authors, and abstracts, for all articles in Society for Industrial and Applied Mathematics’s (SIAM) 11 electronic journals. The focus of PubSCIENCE is on journals where DOE researchers report their scientific discoveries. Approximately 500 scientific and technical journals from over 20 publishers are included in the initial phase, with future expansion planned.

340. **SPARC—The Scholarly Publishing and Academic Resources Coalition.** 2000. Available: <http://www.arl.org/sparc>. (Accessed April 4, 2000).

SPARC is an alliance of libraries fostering discussion and projects to develop alternatives to expand competition in scholarly communication. Publishing partners include the American Chemical Society and the Royal Society of Chemistry.

341. Tuttle, Marcia. **Newsletter on Serials Pricing Issues.** Irregular. ISSN 10463410. Available: <http://www.lib.unc.edu/prices>. (Accessed April 4, 2000).

This newsletter is an excellent way to stay current on the issues related to serials, including pricing, publishers, impact on libraries, and services.

342. University of California, Berkeley. **Electronic Journals**. 2000. Available: <http://www.lib.berkeley.edu/ENGI/ejrnls.html>. (Accessed April 4, 2000).

This site provides access to the California Digital Library's collection of electronic journals, including the engineering and computer science subject areas.

343. **Will Science Publishing Perish? The Paradox of Contemporary Science Journals**. 1999. Available: <http://pubs.acs.org/journals/wspp/cover.html>. (Accessed November 20, 1999).

This publication summarizes the effect of publishing changes on the publishers of scientific and technical information.

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## 4.1 Aerospace and Aeronautical Engineering

344. **Aerospace America**. New York: American Institute of Aeronautics and Astronautics, 1984–. Monthly. \$130.00/yr. ISSN 0740722X. Information available: <http://www.aiaa.org/publications/journals.html>.

This journal provides coverage of aviation, space, and defense technologies and their implications for both industry and government professionals.

345. **AIAA Journal**. New York: American Institute of Aeronautics and Astronautics, 1963–. Monthly. \$765.00/yr. ISSN 00011452. Information available: <http://www.aiaa.org/publications/journals.html>.

*AIAA Journal* focuses on the science and technology of astronautics and aeronautics. Topics include aeroacoustics, aerodynamics, combustion, propulsion, fluid mechanics, hydrodynamics, lasers and associated phenomena, plasmas, research instrumentation and facilities, and structural mechanics and materials.

346. **Journal of Aerospace Engineering**. New York: American Society of Civil Engineers, Aerospace Division, 1988–. Quarterly. \$205.00/yr. ISSN 08931321. Digital format available. Information available: <http://www.pubs.asce.org/journals/as.html>.

This journal encourages the discussion of technology in space between civil engineers and those in related disciplines. Topics include lunar soil mechanics, environmental factors for the design of inhabited space facilities, advanced energy systems, extraterrestrial construction, computational fluid dynamics, and robotics.

347. **Journal of Aircraft**. New York: American Institute of Aeronautics and Astronautics, 1964–. Bimonthly. \$415.00/yr. ISSN 00218669. Information available: <http://www.aiaa.org/publications/journals.html>.

This journal covers applied science and technology of airborne flight, including advances in aircraft, the operation of aircraft, and applications of aircraft technology to other fields. Major areas of discussion are aircraft systems, flight mechanics, flight and ground testing, applied computational fluid dynamics, flight safety, hypersonic flight, human factors, airport design, and airline operations.

348. **Journal of Guidance, Control and Dynamics.** New York: American Institute of Aeronautics and Astronautics, 1982– . Bimonthly. \$430.00/yr. ISSN 07315090. Information available: <http://www.aiaa.org/publications/journals.html>.

This journal is devoted to the advancement of the science and technology of guidance, control, and dynamics through discussions of technical knowledge, exploratory developments, design criteria, and applications in aeronautics, astronautics, celestial mechanics, and related fields.

349. **Journal of Propulsion and Power.** New York: American Institute of Aeronautics and Astronautics, 1985– . Bimonthly. \$430.00/yr. ISSN 07484658. Information available: <http://www.aiaa.org/publications/journals.html>.

This journal publishes papers on airbreathing, electric, and advanced propulsion; solid and liquid rockets; fuels and propellants; power generation and conversion for aerospace vehicles; and the application of aerospace science and technology to terrestrial energy devices and systems.

350. **Journal of Spacecraft and Rockets.** New York: American Institute of Aeronautics and Astronautics, 1964– . Bimonthly. \$395.00/yr. ISSN 00224650. Information available: <http://www.aiaa.org/publications/journals.html>.

Articles in this journal have discussed spacecraft and missile configurations, re-entry devices, transatmospheric vehicles, applied and computational fluid dynamics, applied aerothermodynamics, development of materials and structures for spacecraft and missile applications, space instrumentation, and applications of space technologies to other fields.

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## 4.2 Architectural Engineering

351. **Journal of Architectural Engineering.** New York: American Society of Civil Engineers, 1995– . Quarterly. \$165.00/yr. ISSN 10760431. Digital format available. Information available: <http://ojps.aip.org/aeo>.

This journal provides a multidisciplinary forum for information on the engineering and technical issues concerned with building design, including planning and financing, analysis and design, construction and maintenance, codes applications and interpretations, conversion and renovation, and preservation.

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## 4.3 Bioengineering

352. **IEEE Transactions on Biomedical Engineering.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1964– . Monthly. \$490.00/yr. ISSN 00189294. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/bme\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/bme_toc.html).

Biomedical engineering is the application of the concepts and methods of the physical and engineering sciences in biology and medicine. This journal includes basic and applied papers on biomedical engineering and applied biophysics.

353. **Journal of Biomechanics.** New York: Pergamon, 1968– . Monthly. \$2037.00/yr. ISSN 00219290. Information available: <http://www.elsevier.nl/inca/publications/store/3/2/1>.

The following organizations are affiliated with this journal: American Society of Biomechanics, the European Society of Biomechanics, and the International Society of Biomechanics.

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## 4.4 Chemical Engineering

354. **Aerosol Science and Technology.** London, UK: Taylor and Francis, 1982– . Monthly. \$913.00/yr. ISSN 02786826. Digital format available. Information available: <http://www.taylorandfrancis.com/JNLS/ast.htm>.

*Aerosol Science and Technology* is the official journal of the American Association for Aerosol Science. It publishes the results of theoretical and experimental investigations into aerosol phenomena and closely related material.

355. **AIChE Journal.** New York: American Institute of Chemical Engineers, 1955– . Monthly. \$765.00/yr. ISSN 00011541. Digital format available. Information available: <http://www.aiche.org/aichejournal>.

Research findings in chemical engineering and related fields are reported in this journal. Subject areas include fluid mechanics and transport phenomena, particle technology and fluidization, separations, and process systems engineering.

356. **Biotechnology Progress.** Washington, DC: American Chemical Society, 1996– . Bimonthly. \$715.00/yr. ISSN 87567938. Digital format available. Information available: <http://pubs.acs.org/journals/bipret/about.html>.

This is a joint publication of the American Chemical Society and the American Institute of Chemical Engineers; it features research reports, reviews, and descriptions of new processes, products, and devices for the biotechnology and bioprocess industries.

357. **Chemical and Engineering News.** Washington, DC: American Chemical Society, 1942– . Weekly. \$167.00/yr. ISSN 01956744. Digital format available. Information available: <http://pubs.acs.org/cen/index.html>.

This publication covers the scientific, technical, educational, business, and governmental aspects of chemistry and includes reports on chemistry as a profession and on the interactions between chemistry and society at large.

358. **Energy and Fuels.** Washington, DC: American Chemical Society, 1987– . Bimonthly. \$760.00/yr. ISSN 08870624. Digital format available. Information available: <http://pubs.acs.org/journals/enfuem/index.html>.

This interdisciplinary journal reports what's new in the chemistry of non-nuclear energy sources: petroleum, coal, shale oil, tar sands, biomass, synfuels, organic geochemistry, applied catalysis, and combustion.

359. **Industrial and Engineering Chemistry Research.** Washington, DC: American Chemical Society, 1996– . Monthly. \$1399.00/yr. ISSN 08885885. Digital format available. Information available: <http://pubs.acs.org/journals/ienced/index.html>.

For chemical engineers, this title is a source of new fundamental research, design methods, process design and development, and product research and development.

360. **Journal of Chemical and Engineering Data.** Washington, DC: American Chemical Society, 1996– . Bimonthly. \$746.00/yr. ISSN 00219568 Digital format available. Information available: <http://pubs.acs.org/journals/jceaax/about.html>.

This journal covers experimental data on the physical, thermodynamic, and transport properties of organic and inorganic compounds; reviews; evaluations; and experimental techniques. The journal is an authoritative source of the latest international standards on symbols, terminology, and units of measurement.

361. **Journal of Physical and Chemical Reference Data.** Washington, DC: American Chemical Society; American Institute of Physics for the National Institute of Standards and Technology, 1989– . Bimonthly. \$728.00/yr. ISSN 10630651. Digital format available. Information available: <http://pubs.acs.org/journals/jpcrred/about.html>.

This title provides critically evaluated reviews of standard reference data in physics and chemistry. The journal also publishes monographs containing major studies too long for publication as articles in the journal; including the JANAF Thermochemical Tables and the NBS Tables of Atomic Transition Probabilities.

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## 4.5 Civil Engineering

362. **ACI Materials Journal.** Detroit: American Concrete Institute, 1987– . Bimonthly. \$48.00/yr. ISSN 0889325X.

Topics in this journal include properties of materials used in concrete; research on materials and concrete; properties, use, and handling of concrete; and related ACI standards and committee reports. Abstracts are searchable at: <http://www.aci-int.net/journals/oljsearch.asp>.

363. **ACI Structural Journal.** Detroit: American Concrete Institute, 1987– . Bimonthly. \$48.00/yr. ISSN 08893241.

Topics included in this journal are structural design and analysis of concrete elements and structures; research related to concrete elements and structures, design and analysis theory, and related ACI standards and committee reports. Abstracts are searchable at: <http://www.aci-int.net/journals/oljsearch.asp>.

364. **Bulletin of the Seismological Society.** Oakland, CA: Seismological Society, 1911– . Bimonthly. \$310.00/yr. ISSN 00371106. Information available: <http://www.seismosoc.org/publications/bssa.html>.

This journal publishes scientific papers on the various aspects of seismology, including investigation of specific earthquakes, seismometry, earthquake hazard and risk estimation, seismotectonics, and earthquake engineering.

**365. Canadian Journal of Civil Engineering.** Ottawa: National Research Council of Canada, 1974–. Bimonthly. \$137.00 (Can.). ISSN 03151468. Digital format available. Information available: <http://www.csce.ca/english/index.html>.

Published for the Canadian Society for Civil Engineering, this journal contains articles on practical engineering topics in the fields of structures, construction, materials, transportation, hydrotechnical engineering, computer applications, environmental and sanitary engineering, and engineering mechanics.

**366. IEEE Transactions on Geoscience and Remote Sensing.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1980–. Bimonthly. \$350.00/yr. ISSN 01962892. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/grs\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/grs_toc.html).

This title publishes research in sensing instruments and techniques used for the acquisition of geoscientific information, as well as techniques for processing, enhancing, and interpreting information derived from remote sensing instruments.

**367. ITE Journal.** Washington, DC: Institute of Transportation Engineers, 1978–. Monthly. \$60.00/yr. ISSN 01488178. Digital format available. Information available: <http://www.ite.org/index.html>.

*ITE Journal* includes peer-reviewed technical articles, news of ITE activities, new product information, legislative updates, professional services directory, positions wanted/available listing, and product advertisements.

**368. Journal of Bridge Engineering.** New York: American Society of Civil Engineers, 1996–. Quarterly. \$185.00/yr. ISSN 10840702. Digital format available. Information available: <http://ojps.aip.org/bo>.

This journal reports on both the theory and the practice of the structural design, inspection, construction, and performance of bridges relating to design, fabrication, and erection problems.

**369. Journal of Cold Regions Engineering.** New York: American Society of Civil Engineers, 1987–. Quarterly. \$140.00/yr. ISSN 0887381X. Digital format available. Information available: <http://ojps.aip.org/cro>.

Papers in this journal cover topics such as ice engineering, ice forces, construction on permafrost and seasonal frost, cold weather construction, environmental quality and engineering in cold regions, snow and ice control, cold regions materials, and surveying and planning in cold regions.

**370. Journal of Composites for Construction.** New York: American Society of Civil Engineers, 1997–. Quarterly. \$165.00/yr. ISSN 10900268. Digital format available. Information available: <http://ojps.aip.org/cc>.

The journal includes papers about the composite materials used in conjunction with traditional construction materials such as steel, concrete, and timber.

371. **Journal of Computing in Civil Engineering.** New York: American Society of Civil Engineers, 1987– . Quarterly. \$195.00/yr. ISSN 08873801. Digital format available. Information available: <http://ojps.aip.org/cpo>.

This multidisciplinary journal publishes technical papers and technical notes as well as brief discussions that review software, hardware, and strategic issues involved in civil engineering computing. Topics include new programming languages; database management systems; hardware for robotics, bar coding, remote sensing, and data acquisition; and the management of computing resources.

372. **Journal of Engineering Mechanics.** New York: American Society of Civil Engineers, 1983– . Monthly. \$540.00/yr. ISSN 07339399. Digital format available. Information available: <http://ojps.aip.org/emo>.

This journal covers the basics of civil engineering, including new concepts, methods, results, and interpretations of solid, structural, or fluid mechanics.

373. **Journal of Geotechnical and Geoenvironmental Engineering.** New York: American Society of Civil Engineers, 1997– . Monthly. \$385.00/yr. ISSN 07339410. Digital format available. Information available: <http://ojps.aip.org/gto>.

Topics included in this journal are soil dynamics, engineering behavior of soil and rock, slope stability, dams, rock engineering, environmental geotechnics, geosynthetics, and groundwater monitoring and restoration.

374. **Journal of Hydraulic Engineering.** New York: American Society of Civil Engineers, 1983– . Monthly. \$455.00/yr. ISSN 07339429. Digital format available. Information available: <http://ojps.aip.org/hyo>.

Articles in this journal describe the analyses and solutions of problems in hydraulic engineering, hydrology, and water resources.

375. **Journal of Infrastructure Systems.** New York: American Society of Civil Engineers, 1995– . Quarterly. \$165.00/yr. ISSN 10760342. Digital format available. Information available: <http://ojps.aip.org/iso>.

This journal documents important advances in infrastructure engineering methodologies and technologies.

376. **Journal of Management in Engineering.** New York: American Society of Civil Engineers, 1985– . Bimonthly. \$215.00/yr. ISSN 0742597X. Digital format available. Information available: <http://ojps.aip.org/meo>.

This journal provides the latest concepts and current practices of management in the engineering marketplace.

377. **Journal of Materials in Civil Engineering.** New York: American Society of Civil Engineers, 1989– . Quarterly. \$225.00/yr. ISSN 08991561. Digital format available. Information available: <http://ojps.aip.org/mta>.

Articles in this journal cover the development of new civil engineering materials, the processing and field production of the materials, the evaluation of construction materials, properties, and the application and performance of civil engineering materials.

378. **Journal of Professional Issues in Engineering Education and Practice.** New York: American Society of Civil Engineers, 1991– . Quarterly. \$165.00/yr. ISSN 10523928. Digital format available. Information available: <http://ojps.aip.org/epo>.

This journal examines topics of broad professional interest, views of engineering management, professional activities, and technical problems. The journal investigates the relationships between civil engineering and other disciplines.

379. **Journal of Structural Engineering.** New York: American Society of Civil Engineers, 1983– . Monthly. \$540.00/yr. ISSN 07339445. Digital format available. Information available: <http://ojps.aip.org/sto>.

Subjects in this journal include the design, erection, and safety of structures ranging from bridges to transmission towers and tall buildings; technical information on outstanding, innovative, and unique projects; and the impact of natural disasters and recommendations for damage mitigation.

380. **Journal of Transportation Engineering.** New York: American Society of Civil Engineers, 1983– . Bimonthly. \$248.00/yr. ISSN 0733947X. Digital format available. Information available: <http://ojps.aip.org/teo>.

Papers in this journal survey the planning, design, construction, maintenance, and operation of air, highway, and urban transportation, as well as the pipeline facilities for water, oil, and gas.

381. **Journal of Urban Planning and Development.** New York: American Society of Civil Engineers, 1983– . Quarterly. \$140.00/yr. ISSN 07339488. Digital format available. Information available: <http://ojps.aip.org/upo>.

This journal includes the application of civil engineering to urban planning aspects such as area-wide transportation, the coordination of planning and programming of public works and utilities, and the development and redevelopment of urban areas.

382. **Journal of Waterway, Port, Coastal, and Ocean Engineering.** New York: American Society of Civil Engineers, 1983– . Bimonthly. \$195.00/yr. ISSN 0733950X. Digital format available. Information available: <http://ojps.aip.org/wwc>.

This journal presents papers in engineering research and practice concerned with dredging, floods, ice, pollution, sediment transport, and tidal wave action that affect shorelines, waterways, and harbors.

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## 4.6 Computer Science Engineering

383. **ACM Computing Surveys.** New York: Association for Computing Machinery, 1971– . Quarterly. \$145.00/yr. ISSN 03600300. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/surveys>.

This journal provides tutorials and survey papers that cover such topics as image understanding, software reusability, and object and relational database topics.

384. **ACM Transactions on Computer-Human Interaction.** New York: Association for Computing Machinery, 1994– . Quarterly. \$125.00/yr. ISSN 10730516. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/tochi>.

Through discussions on hardware and software architectures, interactive techniques, user interface design processes, and users and groups of users, this journal highlights the software, hardware, and human aspects of interaction with computers.

385. **ACM Transactions on Database Systems.** New York: Association for Computing Machinery, 1976– . Quarterly. \$154.00/yr. ISSN 03625915. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/tods>.

This title covers data abstraction, data modeling, and designing data management systems.

386. **ACM Transactions on Design Automation of Electronic Systems.** New York: Association for Computing Machinery, 1996– . Quarterly. \$175.00/yr. ISSN 10844309. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/todaes>.

This journal approaches design technology from a computer science and engineering perspective.

387. **ACM Transactions on Graphics.** New York: Association for Computing Machinery, 1982– . Quarterly. \$155.00/yr. ISSN 07300301. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/tog>.

Computer-aided design, synthetic image generation, rendering, and solid modeling are among the topics discussed in this title.

388. **ACM Transactions on Information Systems.** New York: Association for Computing Machinery, 1985– . Quarterly. \$155.00/yr. ISSN 10468188. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/tois>.

This title includes issues in information retrieval and filtering, information interfaces, and information systems design.

389. **ACM Transactions on Modeling and Computer Simulation.** New York: Association for Computing Machinery, 1991– . Quarterly. \$145.00/yr. ISSN 10493301. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/tomacs>.

This publication focuses on systems modeling and computer simulation by covering such topics as combined, distributed, and hybrid simulation; simulation and computer graphics; process generators; and random number generation.

390. **ACM Transactions on Software Engineering and Methodology.** New York: Association for Computing Machinery, 1992– . Quarterly. \$135.00/yr. ISSN 1049331X. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/tosem>.

This journal includes software tools and methodologies, languages, data structures, and algorithms.

391. **AI Magazine.** La Canada, CA: American Association for Artificial Intelligence, 1980– . Quarterly. \$50.00/yr. ISSN 07384602. Digital format available. Information available: <http://www.aaai.org/Magazine/magazine.html>.

This title provides research and literature in the artificial intelligence field. Tables of contents are available from 1980.

392. **Communications of the ACM.** New York: Association for Computing Machinery. Monthly. \$159.00/yr. ISSN 00010782. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/cacm>.

This journal covers a broad range of topics in the computing field.

393. **IEEE Transactions on Computers.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, IEEE Computer Society, 1968– . Monthly. \$910.00/yr. ISSN 00189340. Digital format available. Information available: <http://computer.org/tc>.

Research topics in this journal include computer organizations and architectures; operating systems, software systems, and communication protocols; real-time systems and embedded systems; and digital devices, computer components, and interconnection networks.

394. **IEEE Transactions on Knowledge and Data Engineering.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, IEEE Computer Society, 1989– . Bimonthly. \$635.00/yr. ISSN 10414347. Digital format available. Information available: <http://computer.org/tkde>.

The scope of this journal covers state-of-the-art and state-of-the-practice activities in the knowledge and data engineering area.

395. **IEEE Transactions on Software Engineering.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, IEEE Computer Society, 1975– . Monthly. \$835.00/yr. ISSN 00985589. Digital format available. Information available: <http://computer.org/tse>.

This publication includes theoretical results and empirical studies that have potential impact on the construction, analysis, or management of software.

396. **IEEE Transactions on Visualization and Computer Graphics.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, IEEE Computer Society, 1995– . Quarterly. \$435.00/yr. ISSN 10772626. Digital format available. Information available: <http://computer.org/tvcg>.

This journal includes articles covering visualization and computer graphics techniques, systems, software, hardware, and user interface issues. Research topics include visualization techniques, visualization systems and software; information visualization; graphics systems, and virtual reality.

397. **Journal of Technology Computer Aided Design.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, IEEE Electron Devices Society, 1997– . Irregular. ISSN 10972102. Available: <http://www.ieee.org/products/online/journal/tcad>. Background information available: <http://tcad.stanford.edu/pubpage>.

This electronic journal provides rapid access to the newest developments in technology computer-aided design (TCAD).

398. **Journal of the ACM.** New York: Association for Computing Machinery, 1993– . Bimonthly. \$205.00. ISSN 00045411. Digital format available. Information available: <http://www.acm.org/pubs/contents/journals/jacm>.

Research topics included in this journal are the complexity of algorithms, computer architecture, system modeling, AI, data structures, database theory, and graph theory.

399. **SIAM Journal on Computing.** Philadelphia: Society for Industrial and Applied Mathematics, 1972– . Bimonthly. \$360.00/yr. ISSN 00975397. Digital format available. Information available: <http://www.siam.org/journals/sicomp/sicomp.htm>.

This journal contains articles on the mathematical and formal aspects of computer science and non-numerical computing.

400. **SIAM Journal on Control and Optimization.** Philadelphia: Society for Industrial and Applied Mathematics, 1976– . Bimonthly. \$432.00/yr. ISSN 03630129. Digital format available. Information available: <http://www.siam.org/journals/sicon.htm>.

Research articles in this journal discuss the mathematics and applications of control theory and certain parts of optimization theory.

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## 4.7 Electrical Engineering

401. **Applied Optics.** New York: Optical Society of America, 1962– . Semi-monthly. \$1910.00/yr. ISSN 00036395. Digital format available. Information available: [http://www.osa.org/pub\\_svc](http://www.osa.org/pub_svc).

This journal contains reports on experimental and applied research, including electro-optics and lasers;, optical engineering;, and quantum electronics, optical probing, and remote sensing.

402. **IEEE Communications Letters.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1999– . Monthly. \$132.00/yr. ISSN 10897798. Digital format available. Information available: <http://www.comsoc.org/pubs/jrnal/commlet.html>.

This publication provides researchers with a timely mechanism to exchange current results and developments in communications technology.

403. **IEEE Journal of Solid-State Circuits.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1966– . Monthly. \$380.00/yr. ISSN 00189200. Digital format available. Information available: <http://www.sscs.org/jssc>.

This journal includes topics on the analysis, design, and performance of solid-state circuits that may contain combinations of transistors, diodes, bulk-effect devices, and magnetic devices.

404. **IEEE Transactions on Advanced Packaging.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1999– . Quarterly. \$375.00/yr. ISSN 15213323. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/advp\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/advp_toc.html).

This title focuses on the modeling, design, and analysis of advanced electronic and photonic packaging.

405. **IEEE Transactions on Broadcasting.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1963– . Quarterly. \$75.00. ISSN 00189316. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/bc\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/bc_toc.html).

This publication covers devices, equipment, techniques, and systems related to broadcast technology, including the production, distribution, transmission, and propagation aspects.

406. **IEEE Transactions on Control Systems Technology.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1993– . Bimonthly. \$195.00/yr. ISSN 10636536. Digital format available. Information available: <http://robot0.ge.uiuc.edu/~spong/tcst>.

This journal includes papers on technological advances in the design, realization, and operation of control systems.

407. **IEEE Transactions on Energy Conversion.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1986– . Quarterly. \$315.00/yr. ISSN 08858969. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/ec\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/ec_toc.html).

Topics of interest in this journal include the research, development, design of equipment, structures, materials, and systems for electric energy.

408. **IEEE Transactions on Industry Applications.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1972– . Bimonthly. \$295.00/yr. ISSN 00969994. Digital format available.

Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/ia\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/ia_toc.html).

Topics included in this journal are the development, design, manufacture, and application of electrical systems, apparatus, devices, and controls for the processes and equipment of industry and commerce.

409. **IEEE Transactions on Multimedia.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1999– . Quarterly. \$300.00/yr. ISSN 15209210. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/mm\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/mm_toc.html).

Topics in this journal include signal processing for integration of media, enabling technologies, human-machine interface and perception, multimedia databases and file systems, visual and audio effects, multimedia communication and networking, applications, and standards.

410. **IEEE Transactions on Robotics and Automation.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1989– . Bimonthly. \$350.00/yr. ISSN 1042296X. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/ra\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/ra_toc.html).

This title publishes robotics and automation papers on such topics as kinematics, dynamics, control, and simulation of robots and intelligent machines and systems and design of robotic mechanisms.

411. **IEEE Transactions on Vehicular Technology.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1967– . Bimonthly. \$350.00/yr. ISSN 00189545. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/vt\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/vt_toc.html).

Included in this journal are such topics as land, airborne, and maritime mobile services; communications services; vehicular electrotechnology, equipment, and systems of the automotive industry; traction power, and signals, communications, and control systems for mass transit and railroads.

412. **Journal of the Acoustical Society of America.** New York: American Institute of Physics for the Acoustical Society of America, 1929– . Monthly. \$1080.00/yr. ISSN 00014966. Digital format available. Information available: <http://asa.aip.org/jasa.html>.

This journal publishes theoretical and experimental research in the broad interdisciplinary subject of sound. Subject coverage includes linear and nonlinear acoustics, aeroacoustics, underwater sound, ultrasonics, architectural and structural acoustics and vibration, and engineering acoustics.

413. **Journal of the Audio Engineering Society.** New York: Audio Engineering Society, 1953– . Monthly, bimonthly. \$140.00/yr. ISSN 00047554. Information available: <http://www.aes.org/journal>.

This journal is devoted exclusively to audio technology.

414. **Journal of the Optical Society of America A: Optics, Image Science and Vision.** Washington, DC: Optical Society of America, 1993– . Monthly. \$1075.00. ISSN 10847529. Digital format available. Information available: [http://www.osa.org/pub\\_svc](http://www.osa.org/pub_svc).

This journal provides research articles on classical optics, image science, and all aspects of vision.

415. **Journal of the Optical Society of America B: Optical Physics.** Washington, DC: Optical Society of America, 1984–. Monthly. \$1075.00. ISSN 07403224. Digital format available. Information available: [http://www.osa.org/pub\\_svc](http://www.osa.org/pub_svc).

This publication provides research findings on topics such as lasers; fiber optics; nonlinear optics; optical coherent transients; multiphoton processes; effects of laser radiation; spectroscopy; and advances in nonlinear-optical materials, science, and technology.

416. **SMPTE Journal.** Scarsdale, NY: Society of Motion Picture and Television Engineers, 1976–. Monthly. \$125.00/yr. ISSN 00361682.

This journal covers the field of motion imaging technology, including television and motion pictures.

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## 4.8 Environmental Engineering

417. **Environmental Science and Technology.** Washington, DC: American Chemical Society, 1995–. Monthly. Subscription varies. ISSN 0013936X. Digital format available. Information available: <http://pubs.acs.org/journals/esthag/index.html>.

This journal features research and news reports on environmental science, technology, and policy analysis.

418. **Journal of the Air and Waste Management Association.** Pittsburgh, PA: Air and Waste Management Association, 1995–. Monthly. \$240.00/yr. ISSN 10473289. Digital format available. Information available: <http://www.awma.org/awma/pubs/aboutjour.htm>.

This title serves professionals who are responsible for specification, installation, maintenance, and design of instrumentation and equipment to monitor, analyze, collect, control, and dispose of air pollutants and wastes.

419. **Journal of Environmental Engineering.** New York: American Society of Civil Engineers, 1983–. Monthly. \$385.00/yr. ISSN 07339372. Digital format available. Information available: <http://ojps.aip.org/eo>.

Papers included in this journal cover broad interdisciplinary information on the practice and status of research in environmental engineering science, systems engineering, and sanitation.

420. **Water Environment and Technology.** Alexandria, VA: Water Environment Federation, 1989–. Monthly. \$404.00. ISSN 10449493. Information available: <http://www.wef.org/Periodicals/WaterEnvTech/index.htm>.

This publication provides information on the design and engineering of municipal wastewater treatment plants, as well as general water quality issues.

421. **Water Environment Research.** Alexandria, VA: Water Environment Federation, 1992–. Bimonthly. \$404.00. ISSN 10614303. Information available: <http://www.wef.org/Periodicals/WatEnvResearch/index.htm>.

Subjects covered by this journal range from the degradation of water resources and basic concerns of groundwater quality and pollution control to new methods for solving complex hazardous and toxic waste problems.

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## 4.9 General Engineering

422. **Ergonomics in Design: The Magazine of Human Factors Applications.** Santa Monica, CA: Human Factors and Ergonomics Society, 1993– . Quarterly. \$37.00/yr. ISSN 10648046. More information: <http://hfes.org/Publications/EID.html>.

Topics covered in this journal include the application of ergonomic principles to improve the usability of products, systems, and environments.

423. **Experimental Mechanics.** Westport, CT: Society for Experimental Mechanics, 1961– . Quarterly. \$275.00/yr. ISSN 00144851. Information available: <http://ca28.sagepub.com/EXM.htm>.

Papers in this journal cover education in, research on, and application of experimental mechanics.

424. **Human Factors.** Santa Monica, CA: Human Factors and Ergonomics Society, 1993– . Quarterly. \$151.00/yr. ISSN 00187208. Information available: <http://hfes.org/Publications/HFJournal.html>.

This journal publishes research examining how humans relate to machines, systems, and environments.

425. **International Journal of Engineering Science.** New York: Pergamon, 1963– . 18 issues., \$2731.00/yr. ISSN 00207225. Information available: <http://www.elsevier.nl/inca/publications/store/2/7/8>.

This Society of Engineering Science journal publishes research demonstrating the application of the physical, chemical, and mathematical sciences to engineering.

426. **Technical Communication.** Washington, DC: Society for Technical Communication, 1971– . Quarterly. ISSN 00493155. Information available: <http://www.stc-va.org/fstcperiodicals.htm>.

This journal publishes articles about the practical application of technical communication theory.

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## 4.10 Industrial Engineering

427. **IIE Solutions.** Norcross, GA: Institute of Industrial Engineers, 1995– . Monthly. \$60.00/yr. ISSN 10851259. Digital format available. Information available: <http://www.iienet.org>.

This journal presents applications in material handling, quality control, production and inventory control, simulation, MRP, automatic identification,

worker motivation, management strategies, ergonomics, worker safety, work measurement, and automation.

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## 4.11 Materials Engineering

428. **American Ceramic Society Bulletin.** Columbus, OH: American Ceramic Society, 1946– . Monthly. \$50.00/yr. ISSN 00027812. Information available: <http://www.ceramicbulletin.org>.

This publication covers technology issues related to ceramic manufacturing.

429. **Iron and Steelmaker.** Warrendale, PA: Iron and Steel Society, 1980– . Monthly. \$75.00. ISSN 02758687. Information available: <http://www.iss.org/magazine/magazine.htm>.

This title provides information on technological breakthroughs and trends in operating practices in the international iron and steelmaking industry.

430. **JOM.** Warrendale, PA: Minerals, Metals, and Materials Society, 1989– . Monthly. \$167.00/yr. ISSN 10474838. Digital format available. Information available: <http://www.tms.org/pubs/journals/JOM/jom.html>.

*JOM* covers all aspects of materials science and engineering in areas of processing, fabrication, design, and application of metals and other materials.

431. **Journal of Coatings Technology.** Philadelphia, PA: Federation of Societies for Coatings Technology, 1976– . Monthly. \$120.00/yr. ISSN 03610773. Information available: <http://www.coatingstech.org/products/journal.html>.

This journal covers the technical aspects of formulation, production, and testing of coatings products, including fundamental and practical research data.

432. **Journal of Electronic Materials.** Warrendale, PA: The Minerals, Metals and Materials Society, 1972– . Monthly. \$352.00/yr. Digital format available. Information available: <http://www.tms.org/pubs/journals/JEM/jem.html>.

This journal is published by The Minerals, Metals and Materials Society and the Electronic Devices Society of the IEEE. It reports on the science and technology of electronic materials and examines their applications.

433. **Journal of Materials Engineering and Performance.** Materials Park, OH: ASM International, 1992– . Bimonthly. \$760.00/yr. ISSN 10599495. Information available: <http://www.asm-intl.org/journals/JMEP/Jmep.htm>.

The contents of this journal include materials selection, design, processing, characterization, and evaluation.

434. **Journal of Materials Research.** Pittsburgh, PA: Published for the Materials Research Society by the American Institute of Physics, 1986– . Monthly. \$720.00/yr. ISSN 08842914. Digital format available. Information available: <http://www.mrs.org/publications/jmr>.

This journal covers materials research by encompassing the synthesis, processing, characterization, properties, and theoretical description of materials.

435. **MRS Bulletin**. Pittsburgh, PA: Materials Research Society, 1975– . Monthly. \$160.00. ISSN 08837694. Information available: <http://www.mrs.org/publications/bulletin>.

*MRS Bulletin* publishes articles covering advanced materials research.

436. **Plastics Engineering**. Brookfield, CT: Society of Plastics Engineers, 1973– . \$160.00/yr. ISSN 00919578. Digital format available. Information available: <http://www.4spe.org/pe1.html>.

This title promotes the science and technology of plastics engineering and plastics business.

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## 4.12 Mechanical Engineering

437. **ASHRAE Journal**. New York: American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1959– . Monthly. \$59.00. ISSN 00012491. Digital format available. Information available: <http://www.ashraejournal.org>.

This title covers heating, ventilation, air conditioning, and heating news and practical topics.

438. **Combustion and Flame**. New York: Elsevier, 1963– . 16 issues. \$1269.00/yr. ISSN 00102180. Information available: <http://www.elsevier.com/inca/publications/store/5/0/5/7/3/6>.

This journal is published for the Combustion Institute and covers such topics as atmospheric pollution from combustion, combustion in practical systems, detonation waves, electrical aspects of flames, experimental techniques, fire phenomena, and flame ignition.

439. **Journal of Fire Protection Engineering**. Boston: Society of Fire Protection Engineers, 1989– . Quarterly. \$200.00/yr. ISSN 10423915. Information available: <http://www.sfpe.org/publications/journal.html>.

This journal covers research and practical information on fire protection engineering.

440. **Transactions of the ASME. Journal of Applied Mechanics**. New York: American Society of Mechanical Engineers, 1935– . Quarterly. \$250.00/yr. ISSN 00218936. Information available: <http://www.asme.org/pubs/journals/appmech/appmech.html>.

Topics included in this journal are aerodynamics, aeroelasticity, boundary layers, heat transfer, mechanical properties of materials, and micromechanics.

441. **Transactions of the ASME. Journal of Dynamics Systems, Measurement, and Control**. New York: American Society of Mechanical Engineers, 1971– . Quarterly. \$215.00/yr. ISSN 00220434. Information available: <http://www.asme.org/pubs/journals/dynsys/dynsys.html>.

This journal includes articles on adaptive and optimal control, aerospace systems, transportation, robotics, expert systems, and artificial intelligence.

442. **Transactions of the ASME. Journal of Energy Resources Technology.** New York: American Society of Mechanical Engineers, 1979– . Quarterly. \$195.00/yr. ISSN 01950738. Information available: <http://www.asme.org/pubs/journals/engres/engres.html>.

This journal includes articles on offshore mechanics and technology, rock and material mechanics for energy resources, and energy resource recovery from biomass and solid wastes.

443. **Transactions of the ASME. Journal of Engineering for Gas Turbines and Power.** New York: American Society of Mechanical Engineers, 1984– . Quarterly. \$195.00/yr. ISSN 07424795. Information available: <http://www.asme.org/pubs/journals/gasturb/gasturb.html>.

Research articles in this journal feature gas turbine technology, fossil and nuclear power generation, internal combustion engines, and aeronautical and aerospace propulsion systems.

444. **Transactions of the ASME. Journal of Engineering Materials and Technology.** New York: American Society of Mechanical Engineers, 1973– . Quarterly. \$205.00/yr. ISSN 00944289. Information available: <http://www.asme.org/pubs/journals/mattech/mattech.html>.

Topics covered in this journal include polymers, metal forming, composite material, machining, and materials processing.

445. **Transactions of the ASME. Journal of Fluids Engineering.** New York: American Society of Mechanical Engineers, 1973– . Quarterly. \$215.00/yr. ISSN 00982202. Digital format available. Information available: <http://www.asme.org/pubs/journals/fluideng/fluideng.html>.

Fluids engineering includes subjects on boundary layer flows, bubbly flows, cavitation, flow meters, naval hydrodynamics, and pumps.

446. **Transactions of the ASME. Journal of Manufacturing Science and Engineering.** New York: American Society of Mechanical Engineers, 1996– . Quarterly. \$205.00/yr. ISSN 10871357. Information available: <http://www.asme.org/pubs/journals/manuscie/manuscie.html>.

This journal covers computer-integrated manufacturing, expert systems, automation, design for manufacturing, sensors, robotics, and rail transportation.

447. **Transactions of the ASME. Journal of Mechanical Design.** New York: American Society of Mechanical Engineers, 1978– . Quarterly. \$215.00/yr. ISSN 10500472. Information available: <http://www.asme.org/pubs/journals/mechdes/mechdes.html>.

Articles in this journal discuss robotic system design, gear design, cam design, stress in design, and design technology.

448. **Transactions of the ASME. Journal of Pressure Vessel Technology.** New York: American Society of Mechanical Engineers, 1974– . Quarterly. \$205.00/yr. ISSN 00949930. Information available: <http://www.asme.org/pubs/journals/pressves/pressves.htm>.

Pressure vessel technology involves piping, codes and standards, fabrication, high-pressure engineering, safety, and earthquake engineering.

449. **Transactions of the ASME. Journal of Tribology.** New York: American Society of Mechanical Engineers, 1984– . Quarterly. \$215.00/yr. ISSN 07424787. Information available: <http://www.asme.org/pubs/journals/tribolog/tribolog.htm>.

Topics in tribology include fluid film lubrication, human joints, bearing design, gears, metalworking, and friction.

450. **Transactions on Mechatronics.** New York: American Society of Mechanical Engineers, 1996– . Quarterly. \$275.00/yr. ISSN 10834485. Information available: <http://www.asme.org/pubs/mechatronics.html>.

Published as a cooperative effort between IEEE and ASME, this journal covers the integration of technical engineering with electronic and intelligent computer control in the design and manufacture of industrial products and processes.

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## 4.13 Mining Engineering

451. **JPT: Journal of Petroleum Technology.** Dallas, TX: Society of Petroleum Engineers, 1969– . Monthly. \$45.00. ISSN 01492136. Information available: <http://www.spe.org/store/period.html>.

*JPT* covers topics of interest to the petroleum industry, including coverage of the SPE programs, events, and other activities.

452. **Mining Engineering.** Littleton, CO: Society for Mining, Metallurgy, and Exploration, 1949–, . Monthly. \$125.00/yr. ISSN 00265187. Information available: <http://www.smenet.org/publications/index.html>.

This journal covers the issues, developments, and technologies that affect mining (underground, surface, and solution), exploration, operations, the processing of metals, health and safety, and the environment.

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## 4.14 Nuclear Engineering

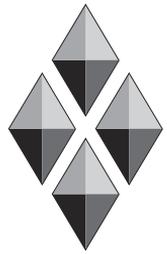
453. **IEEE Transactions on Nuclear Science.** Piscataway, NJ: Institute of Electrical and Electronics Engineers, 1963– . Bimonthly. \$525.00/yr. ISSN 00189499. Digital format available. Information available: [http://www.ieee.org/organizations/pubs/pub\\_preview/ns\\_toc.html](http://www.ieee.org/organizations/pubs/pub_preview/ns_toc.html).

Nuclear science and engineering topics included in this journal are the instrumentation for research, biomedical applications, radiation monitoring and safety equipment, particle accelerators, instrumentation development for reactor systems, effects of radiation on materials, and applications of radiation and nuclear energy to other than utility power generation.

454. **Nuclear Science and Engineering**. New York: Academic Press, 1956-. 9 issues. \$602.00/yr. ISSN 00295639.

This journal of the American Nuclear Society publishes research in scientific areas related to the peaceful use of nuclear energy and radiation.

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# Grey Literature: Conference Literature, Research and Technical Reports

This chapter covers a very important source of information to engineers, grey literature. This category of information includes conference literature, research, and technical reports. Grey literature encompasses almost half of all science, engineering, and technology publications. Some definitions categorize grey literature as literature that is not directly accessible through the traditional methods of organizing and presenting information. The Internet has reduced some of the access difficulties associated with this literature. Access to technical and other research reports, government information, and patent information, all examples of grey literature, has greatly improved during the last few years. Other types of grey literature include engineering projects, catalogs, guides, and bibliographies.

455. **All-in-One Search Page. Technical Reports.** 1999. Available: <http://www.allonesearch.com/all1rpts.html#TechRpts>. (Accessed October 26, 1999).

This site provides several options to search for technical reports, including the AT&T Network Library, Bell Laboratories, Computer Science Bibliographies, and the Harvest Technical Report Broker.

456. American National Standards Institute (ANSI). **Scientific and Technical Reports—Elements, Organization, and Design (ANSI/NISO Z39.18-1995).** 38p. (National Information Standards Series). \$55.00. ISBN 1880124246.

The elements, organization, and design of scientific and technical reports are described in this standard. This resource provides guidance in organizing the required and optional elements of the three major sections: frontmatter, text, and backmatter. It also provides guidelines for the presentation of visual and tabular matter, formatting, and pagination.

457. American National Standards Institute (ANSI). **Standard Technical Report Number Format and Creation (ANSI/NISO Z39.23-1997)**. 12p. (National Information Standards Series). \$39.00. ISBN 1880124300.

This standard specifies the format for a Standard Technical Report Number (STRN).

458. American Physical Society (APS). **The APS E-print Server**. 1999. Available: <http://publish.aps.org/eprint>. (Accessed October 26, 1999).

This server provides multiple field searching, a listing of the 10 most recent e-prints, and a listing of articles from the previous month. The name “e-prints” derives from the original meaning: a preprint (pre-published article) in electronic form. The concept includes any electronic work circulated by the author outside of the traditional publishing environment.

459. Auger, Charles P. **Information Sources in Grey Literature**. New Providence, NJ: Bowker-Saur, 1998. 177p. \$72.95. ISBN 1857391942.

This book defines grey literature by exploring such issues as acquisition, bibliographical control, cataloging, indexing, and distribution. Although it is written from a British perspective, the author includes U.S. sources.

460. **The Bayesian Analysis E-Print Archive**. 1999 Available: <http://omega.albany.edu:8008/ISBA/ForLanl.html>. (Accessed October 26, 1999).

This is a digital archive and distribution server for papers on the theory and applications of Bayesian statistics.

461. Carnegie Mellon University. School of Computer Science. **SCS Technical Report Collection**. 1999. Available: <http://reports-archive.adm.cs.cmu.edu/index.html>. (Accessed October 26, 1999).

The following technical reports are available in this collection: Computer Science Technical Reports, Robotics Institute Technical Reports, Center for Automated Learning and Discovery Reports, Language Technologies Institute Technical Reports, and Human-Computer Interaction Institute and Information Technology Center. It also includes reports from these collections: Mach Publications, Real-Time Mach Publications, and Fox publications. Some collections date back to 1980.

462. **Chemical Physics Preprint Database**. 1999. Available: <http://www.chem.brown.edu/chem-ph.html>. (Accessed October 26, 1999).

The Chemical Physics Preprint Database is a digital archive and distribution server for the international theoretical chemistry community.

463. **Directory of Engineering Document Sources: A Consolidated Cross-Index of Document Initialisms Assigned by Government and Industry Organizations which Defines Sources for Technical/Management Specifications, Standards, Reports and Related Publications**. Englewood, CO: Global Engineering Documents, 1997. 890p. \$99.00. ISBN 157053053X. Digital format available.

This directory provides a quick way to identify a document number, initials, or acronym; identify the developing organization; and find alternate sources for government, military, or industry specifications, standards, or documents.

464. Georgia Institute of Technology. **Graphics, Visualization and Usability Center (GVU)**. 1999. Available: <http://www.cc.gatech.edu/gvu>. (Accessed October 26, 1999).

The GVU Center conducts research in four major areas: visual computing, interaction and collaboration, communication and education, and future technologies. GVU research is available from the technical reports archive, which begins with 1991.

465. Hewlett Packard Laboratories. **HP Labs Technical Reports**. 1999. Available: <http://www.hpl.hp.com/techreports>. (Accessed October 26, 1999).

This site provides access to the abstracts of *HP Labs Technical Reports* back to 1990. Some reports are available full-text.

466. **Index to Scientific and Technical Proceedings (ISTP)**. Philadelphia: Institute for Scientific Information. Information available: <http://www.isinet.com/cp/istp>.

This Institute for Scientific Information (ISI) database covers international scientific and technical conference proceedings. The digital version indexes approximately 960,000 papers since 1995 from 28,000 conference proceedings.

467. Indiana University. Indiana University Computer Science Department. **Technical Report Index**. 1999. Available: <http://www.cs.indiana.edu/ftp/techreports/index.html>. (Accessed October 26, 1999).

This site contains the technical reports from Indiana University Computer Science Department that are currently available electronically.

468. **InterDok Directory of Published Proceedings. Series SEMT: Science, Engineering, Medicine, Technology**. Harrison, NY: InterDok, 1965– . 10 issues. ISSN 00123293.

This series is published from September to June each year. Subject areas include algebraic geometry, composite materials, electrical engineering, molecular physics, transportation systems, and VLSI signal processing.

469. International Business Machines (IBM). **IBM Research**. 1999. Available: <http://domino.watson.ibm.com/library/CyberDig.nsf/Home>. (Accessed October 26, 1999).

IBM's site provides access to technical reports written by members of the IBM Research community. Some reports are available full-text. Once a technical report is published in either a journal or conference proceedings, the technical report is replaced with a reference to the external source.

470. International Conference of High Performance Computing and Communication. **SC Conference Series**. 1999. Available: <http://www.supercomp.org>. (Accessed October 26, 1999).

This conference series is sponsored by ACM SIGARCH and IEEE Computer Society. Conference proceedings are available online from 1994. The site also includes a history of the *SC Conferences*.

471. The Johns Hopkins University (JHU). **Chemical Propulsion Information Agency (CPIA)**. 1999. Available: <http://www.jhu.edu/~cpia>. (Accessed October 26, 1999).

CPIA serves as a national clearinghouse for information, data, and analyses on chemical, electrical, and nuclear propulsion for missile, space, and gun propulsion systems. The Internet version of the CPIA unlimited-distribution Propulsion Information Retrieval System (PIRS) contains 16,000 citations of DOD, military services, NASA, technical reports, and JANNAF conference papers covering 25 years of propulsion technology.

472. Massachusetts Institute of Technology (MIT). **The Artificial Intelligence Laboratory**. 1999. Available: <http://www.ai.mit.edu>. (Accessed October 26, 1999).

The MIT Artificial Intelligence Laboratory conducts research in many aspects of intelligence. The AI Lab's publication bibliography database contains citations, abstracts, and links to online publications.

473. Massachusetts Institute of Technology (MIT). **MIT Laboratory for Computer Science**. 1999. Available: <http://www.lcs.mit.edu>. (Accessed October 26, 1999).

The MIT Laboratory for Computer Science (LCS) has been responsible for some of the most significant technological achievements, including the development of the World Wide Web, the ARPAnet, the Internet, the Ethernet, time-shared computers, UNIX, massively parallel computers, RSA encryption, the X Windows system, and the NuBus. Archives of technical reports and memorandums, as well as the research seminar series, are available.

474. Massachusetts Institute of Technology (MIT). **Networked Computer Science Technical Reference Library (NCSTRL)**. 1999. Available: <http://ncstrl.mit.edu>. (Accessed October 26, 1999).

Networked Computer Science Technical Reference Library (NSCTRL) is an international collection of computer science technical reports from computer science departments and industrial and government research laboratories.

475. The MITRE Corporation. **Center for Advanced Aviation System Development (CAASD)**. 1999. Available: <http://www.caasd.org>. (Accessed October 26, 1999).

The CAASD is a Federally Funded Research and Development Center (FFRDC), sponsored by the Federal Aviation Administration. The site contains several full-text air traffic control technical papers, a searchable technical reports database, and an acronym dictionary.

476. Musser, Linda R., and James A. Ruffner. **Union List of Technical Reports, Standards, and Patents in Engineering Libraries**. Washington, DC: American Society for Engineering Education, 1996. 43p. (Engineering Literature Guides, no. 21). \$17.00. ISBN 0878231412.

Because grey literature can be difficult to locate, this union list assists information specialists in locating potential collections for documents. It is organized

into nongovernmental technical reports, government technical reports, U.S. industry standards, government and international standards, patents, and other materials.

477. National Academy of Sciences (NAS). **Proceedings of the National Academy of Sciences (PNAS)**. 1999. Available: <http://www.pnas.org>. (Accessed October 26, 1999).

The *Proceedings of the National Academy of Sciences (PNAS)*, established in 1915, publishes research reports, commentaries, reviews, colloquium papers, and actions of the Academy. PNAS is a multidisciplinary journal that covers the biological, physical, and social sciences. Some full-text is available.

478. National Aeronautics and Space Administration (NASA). Center for Aerospace Information (CASI). **NASA Scientific and Technical Information Program**. 1999. Available: <http://www.sti.nasa.gov>. (Accessed October 26, 1999).

The NASA Scientific and Technical Information (STI) Program provides access to over 3 million aerospace and related citations. The CASI Technical Reports Server (RECONselect) is a database that contains NASA technical reports and aerospace-related open literature from 1970 through the present, selected from the NASA RECON databases. The NASA Image eXchange (NIX) allows the user to search distributed photo databases at NASA Centers. The NASA Thesaurus is also accessible.

479. National Aeronautics and Space Administration (NASA). **National Advisory Committee for Aeronautics (NACA)**. 1999. Available: <http://naca.larc.nasa.gov>. (Accessed October 26, 1999).

The National Advisory Committee for Aeronautics (NACA) operated from 1917 to 1958 and was the predecessor to NASA. In 1958 the National Aeronautics and Space Act created NASA. This site provides bibliographic citations to all NACA reports from 1921 to 1958.

480. **National Information Service for Earthquake Engineering (NISEE)**. 1999. Available: <http://nisee.ce.berkeley.edu>. (Accessed October 26, 1999).

Established in 1971 at the University of California, Berkeley, the NISEE provides access to technical research and development information in earthquake engineering and related fields of structural dynamics, geotechnical engineering, engineering seismology, and earthquake hazard mitigation policy. NISEE is located at the Pacific Earthquake Engineering Research (PEER) Center. Earthquake Engineering Abstracts is a database that contains over 75,000 searchable abstracts for engineering reports from Pacific Earthquake Engineering Research Center (PEER); Earthquake Engineering Research Center, UC Berkeley (EERC); Earthquake Engineering Research Laboratory, Caltech (EERL); and Civil Engineering, UC Berkeley (SEMM). There are several full-text papers, such as "Collapsed Water Tower, Imperial Valley, 1979"; "General Lessons in Earthquake Engineering"; "Kobe Japan Earthquake January 17, 1995"; "Historical Depictions of the 1755 Lisbon Earthquake"; and "Northridge California Earthquake January 17, 1994."

481. Pinelli, Thomas E., et al. **Knowledge Diffusion in the U.S. Aerospace Industry: Managing Knowledge for Competitive Advantage**. Greenwich, CT: Ablex, 1997. 1052p. 2v. (Contemporary Studies in Information Management, Policy, and Services). \$157.00. ISBN 1567502253.

This work provides the results of research conducted for the NASA/DOD Aerospace Knowledge Diffusion Research Project. This research project examines the multiple aspects of knowledge diffusion—knowledge production, transfer, and use—within the large commercial aircraft sector of the U.S. aerospace industry. The Boeing Company's 777 provides a primary case study from which the absorption, assimilation, and integration of various kinds of knowledge are discussed.

482. **RAND**. 1999. Available: <http://www.rand.org>. (Accessed October 26, 1999).

RAND is a research institution that focuses on national defense, education and training, health care, criminal and civil justice, labor and population, science and technology, community development, international relations, and regional studies. The database to search abstracts of all RAND documents is available for unrestricted distribution; the site also includes several full-text titles.

483. Society of Automotive Engineers (SAE). **Stapp Car Crash Conference Proceedings on CD-ROM**. Warrendale, PA: Society of Automotive Engineers, 1999. \$275.00. Information available: <http://www.sae.org/products/webcd/stapp.htm>.

This collection provides complete, full-text images of every paper presented at all Stapp Conferences since 1966, plus papers from the 1993 and 1997 Child Occupant Protection Symposiums. Coverage includes head/neck injury, side impact, pelvic injury, child passenger protection, restraint system performance, and crash dummy development and performance.

484. SRI International. **Artificial Intelligence Center (AIC)**. 1999. Available: <http://www.ai.sri.com>. (Accessed October 26, 1999).

SRI International's Artificial Intelligence Center (AIC) is a major research center in artificial intelligence. The database contains technical notes and papers.

485. Stanford University. Stanford Linear Accelerator Center (SLAC). **HEP Database**. Updated regularly. Available: <http://www-spires.slac.stanford.edu/find/hep>. (Accessed April 2, 2000).

The High Energy Database (HEP) covers more than 415,000 high-energy physics related articles, including journal papers, preprints, e-prints, technical reports, conference papers, and theses, received by the Stanford Linear Accelerator Center (SLAC) and the Deutsches Elektronen-Synchrotron (DESY) Libraries since 1974.

486. **Unified Computer Science TR Index (UCSTRI)**. 1998. Available: <http://www.cs.indiana.edu:800/cstr>. (Accessed October 26, 1999).

The entire index currently consists of over 14,000 reports from 185 international sites, including Georgia Tech, Harvard, Keio University, Oxford University, and Sony.

487. University of Illinois at Urbana-Champaign. **National Computational Science Alliance/National Center for Supercomputing Applications (NCSA)**. 1999. Available: <http://www.ncsa.uiuc.edu>. (Accessed October 26, 1999).

The National Computational Science Alliance is a partnership among more than 50 U.S. universities and research institutions. Full-text NCSA Preprints and Technical Reports Series are available.

488. University of Oregon. **Computational Intelligence Research Laboratory (CIRL)**. 1999. Available: <http://cirl.uoregon.edu>. (Accessed October 26, 1999).

The Computational Intelligence Research Laboratory supports research in artificial intelligence, including search, knowledge representation, and reasoning. CIRL technical summaries, technical papers, and a list of public artificial intelligence systems are available. The papers and other experimental data from the First International Joint Workshop on Artificial Intelligence and Operations Research are accessible online.

489. University of Pennsylvania. **Institute for Research in Cognitive Science (IRCS)**. 1998. Available: <http://www.cis.upenn.edu/~ircs>. (Accessed October 26, 1999).

The Institute for Research in Cognitive Science performs research in linguistics, mathematical logic, philosophy, psychology, computer science, and neuroscience. IRCS technical reports are available for searching from 1991.

490. University of Washington. Department of Computer Science and Engineering. **Technical Reports**. 1999. Available: <http://www.cs.washington.edu/research/tr/techreports.html>. (Accessed October 26, 1999).

This is a searchable index with full-text reports available dating back to 1985.

491. U.S. Department of Commerce. **National Technical Information Service (NTIS)**. 1999. Available: <http://www.ntis.gov>. (Accessed October 26, 1999).

The NTIS is the official resource for government-sponsored U.S. and worldwide scientific, technical, engineering, and business-related information. Searchable files are available for standards and unclassified/unlimited technical reports, including those titles added to the NTIS database in the previous 90 days.

492. U.S. Department of Defense (DOD). **Defense Technical Information Center (DTIC)**. 1999. Available: <http://www.dtic.mil>. (Accessed October 26, 1999).

DTIC provides access to defense-related scientific and technical information. Because of the nature of the information that DTIC handles, users must qualify for service from DTIC. A significant portion of DTIC-held information is available to the general public from the National Technical Information Service (NTIS). DTIC holdings include technical reports, management summaries at the technical effort and management system level, independent research and development summaries, and special collections such as captured German and Japanese documents from World War II. The Public STINET (Scientific and

Technical Information Network) includes access to unclassified, unlimited citations added to DTIC's Technical Report (TR) Database since 1985, a variety of links to databases and other sites containing DOD information, and a selection of full-text documents. DTIC's electronic version of *Air University Library's Index to Military Periodicals* is available. The DTIC Subject Category Coverage is available at: <http://www.dtic.mil/dtic/subcatguide>.

493. U.S. Department of Defense (DOD). **Directory of Organizational Technical Report Acronym Codes (DOTRAC)**. 600p. (DTICTR9401; ADA281509). Consult NTIS for price. Available from National Technical Information Service.

This compilation is a guide to acronyms assigned by the Defense Technical Information Center (DTIC). Agencies include Department of Defense and other federal government organizations and foreign military and nongovernmental organizations.

494. U.S. Department of Defense (DOD). **How to Get It: A Guide to Defense Related Information Resources**. 1999. Available: <http://www.dtic.mil/stinet/htgi>. (Accessed October 26, 1999).

The How To Get It (HTGI) Directory lists references about government-published or sponsored information, including documents, maps, patents, specifications and standards, DOD directives and instructions, specialized scientific and technical information sources, and other resources. A searchable edition and listing of recent additions to the directory is available at this site. (Paper copy available from DTIC, ADA346513.)

495. U. S. Department of Defense (DOD). U.S. Air Force (USAF). **Air University Research Database**. 1999. Available: <http://www.au.af.mil/au/database/research.html>. (Accessed October 26, 1999).

This searchable database contains information on all research being conducted at Air University.

496. U.S. Department of Energy (DOE). **DOE Information Bridge**. 1998. Available: <http://www.doe.gov/bridge>. (Accessed October 26, 1999).

The DOE Information Bridge is a component of DOE's EnergyFiles. This service provides access to full-text DOE research and development reports in physics, chemistry, materials, biology, environmental sciences, energy technologies, engineering, computer and information science, renewable energy, and other topics. The current collection includes reports received and processed since January 1996.

497. U.S. Department of Energy (DOE). **DOE Reports Bibliographic Database**. 1999. Available: <http://www.osti.gov/html/dra/dra.html>. (Accessed October 26, 1999).

The DOE Reports Bibliographic Database contains citations for DOE-sponsored scientific and technical reports from 1994 to the present. Current citations are added weekly.

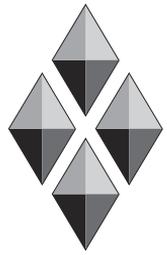
498. U.S. Department of Energy (DOE). Los Alamos National Laboratory (LANL). **arXiv.org e-Print archive**. 1999. Available: <http://xxx.lanl.gov>. (Accessed October 26, 1999).

This site includes e-prints for physics, mathematics, nonlinear sciences, and computers and computing. Preprints are available from 1991 to the present.

499. U.S. Department of Energy (DOE). Oak Ridge National Laboratory (ORNL). **Technical Publications**. 1999. Available: [http://www.ornl.gov/reports/ORNL\\_reports.html](http://www.ornl.gov/reports/ORNL_reports.html). (Accessed October 26, 1999).

ORNL is managed for the DOE by Lockheed Martin Energy Research Corporation to conduct basic and applied research and development in key areas of science, energy, environment, and national security.

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# Handbooks, Manuals, and Tables

Handbooks, manuals, and tables are among the primary information resources used by engineers. They can provide detailed information on specific topics to expand the engineer's expertise or provide background information in areas less familiar. These reference resources generally provide the reader with diagrams, statistics, charts, tables, and references to additional reading. As this chapter demonstrates, there are handbooks and manuals for every aspect of engineering and technology activities. They are arranged by the following engineering disciplines: aerospace and aeronautical, agricultural, architectural, chemical, civil, computer science, electrical, environmental, general, industrial, materials, and mechanical.

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## 6.1 Aerospace and Aeronautical Engineering

500. **Aeronautical Information Manual: Official Guide to Basic Flight Information and ATC Procedures (AIMBF)**. Washington, DC: U.S. Department of Transportation (DOT). Federal Aviation Administration, 1998. Various pagings. (TD 4.12/3 0431-C-05). \$72.00. Available from Superintendent of Documents.

This manual provides the aviation community with basic flight information and air traffic control (ATC) procedures for use in the National Airspace System (NAS). It is updated on a regular basis.

501. **AIAA Aerospace Design Engineers Guide**. Reston, VA: American Institute of Aeronautics and Astronautics, 1998. Various pagings. \$49.95. ISBN 156347283X.

This classic guide has been revised to include a collection of commonly used engineering reference data used for aerospace design. It includes material on helicopter design and radar cross design.

502. Lucas, Michael J., et al. **Handbook of the Acoustic Characteristics of Turbomachinery Cavities**. New York: ASME, 1997. 276p. \$68.00. ISBN 0791800547.

This handbook is divided into two parts, acoustic resonator modeling and flow-induced excitation modeling. It presents the engineering formulae needed to calculate the acoustic resonant modes for ducts and cavities.

503. Merry, John A. **200 Best Aviation Web Sites: And 100 More Worth Bookmarking: Unbiased Reviews of the Industry's Finest Internet Offerings**. New York: McGraw-Hill, 1998. 237p. \$16.95. ISBN 0070016461.

The primary sections of this Internet directory include aviation directories, organizations and associations, weather, pilot resources, museums, online magazines and news, parts and supplies, entertainment, and employment. The author applies a rating scheme based on content, layout and design, functionality, and overall audience. Updates are available at <http://www.200bestaviation.com/updates>.

504. U.S. Department of Transportation (DOT). Federal Aviation Administration. **FAA Statistical Handbook of Aviation**. 1999. Available: <http://www.api.faa.gov/handbook96/toc96.htm>. (Accessed April 2, 2000).

The FAA Statistical Handbook of Aviation is published annually and provides historical data and statistics on such topics as airports, general aviation aircraft, and aircraft accidents.

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## 6.2 Agricultural Engineering

505. **CIGR Handbook of Agricultural Engineering**. St. Joseph, MI: American Society of Agricultural Engineers, 1999. 2505p. 5v. \$185.00. ISBN 1892769018 (Vol. 1); 0929355989 (Vol. 2); 1892769026 (Vol. 3); 1892769034 (Vol. 4); 0929355970 (Vol. 5). Digital format available.

This comprehensive handbook covers land and water engineering; animal production and aquacultural engineering; plant production engineering; agro processing engineering; and energy and biomass engineering. Written by more than 100 authors, the articles cover basic reference information as well as emerging technologies.

506. Montgomery, John H. **Agrochemicals Desk Reference**. Boca Raton, FL: Lewis, 1997. 656p. \$104.95. ISBN 1566701678.

Agrochemicals include pesticides, herbicides, and fungicides. This reference book is based on more than 1,200 references pertaining to the fate and transport of agrochemicals in the subsurface environment. Descriptions include designations, physical and chemical properties, fire hazards, and health hazard data.

507. Waxman, Michael F. **The Agrochemicals and Pesticides Handbook**. Boca Raton, FL: Lewis, 1998. 616p. \$89.95. ISBN 1566702968.

The hazards of pesticides and chemicals are the focus of this practical resource, which provides information on more than 500 pesticides and 100 agricultural chemicals. There is information on response procedures for fires, spills, and other incidents involving these chemicals.

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## 6.3 Architectural Engineering

508. American Institute of Architects (AIA). **The Environmental Resource Guide**. New York: Wiley, 1999. Digital format. \$125.00. ISBN 0471346187.

The purpose of this guide is to assist design professional to achieve environmentally responsible architecture by making informed choices when they select and specify building materials. This reference is arranged in three major sections: project reports, application reports, and material reports. The supplemental information includes methodology, publications, organizations, and a glossary.

509. Breyer, Donald, Kenneth J. Fridley, and Kelly E. Cobeen. **Design of Wood Structures, ASD**. New York: McGraw-Hill, 1998. Various pagings. \$65.00. ISBN 0070077169.

The purpose of this handbook is to introduce engineers and architects to the design of wood structures. The authors rely on publications from the American Forest and Paper Association, the International Conference of Building Officials, APA—The Engineered Wood Association, and the American Institute of Timber Construction. Topics covered include wood buildings, design loads, properties of wood and lumber grades, beam design, shearwalls, and wood connections.

510. Butler, Robert B. **Standard Handbook of Architectural Engineering: A Practical Manual for Architects, Engineers, Contractors and Related Professions and Occupations**. New York: McGraw-Hill, 1998. 1071p. Includes digital data. \$125.00. ISBN 0079136923.

The combination of the handbook and accompanying digital data can be used to design almost every functional component in buildings. Over 96 design tools are provided under design, structure, climate, plumbing, electrical, illumination, and acoustics sections. The book is well illustrated and indexed.

511. Gerhart, James. **Everyday Math for the Building Trades**. New York: McGraw-Hill, 1997. 247p. \$24.95. ISBN 0070242666.

This is a practical field guide on how to apply mathematics to the various trades of the construction industry. Some of the areas covered are measuring tools, basic math for estimating, grading and excavating math, roofing math, and math for heating and cooling. An appendix provides metric conversions as applied to construction.

512. Goodowens, James B. **A User's Guide to Federal Architect-Engineer Contracts**. New York: American Society of Civil Engineers, 1996. 494p. \$120.00. ISBN 0784401454.

This guide is useful for anyone who performs design services for the government and needs to understand architect-engineer contracts. This book walks through the process beginning with the announcements in the *Commerce Business Daily*, the negotiation process, selection process, proposal preparation, and contract modification. This entire process is regulated by the *Federal Acquisition Regulations* (FAR).

513. Johnson, Alford, and Darren Szrom. **Designing with Structural Steel: A Guide for Architects**. Chicago: American Institute of Steel Construction, 1998. 300p. \$49.95. ISBN 1564240487.

This desk reference on structural steel for architects and engineers provides reference information on a wide range of topics, including design ideas, structural systems, tolerances, coating systems, fire protection, thermal movement, exposed structures, bending and shaping of steel, welding, and design tables and representative dimensional information for beams and columns.

514. **Means Building Construction Cost Data**. Kingston, MA: RS Means, 1998. 685p. \$84.95. ISBN 0876295014.

This book contains materials and installation unit prices for over 23,000 detailed line items. The City Cost Indexes cover 930 areas.

515. **Means Concrete and Masonry Cost Data**. Kingston, MA: RS Means, 1998. 525p. \$77.95. ISBN 0876295154

This source includes extensive reference cost data on concrete and masonry materials products, techniques, and installation methods.

516. **Means Costworks**. Kingston, MA: RS Means, 1999. Digital format. Information available: <http://www.rsmeans.com/cworks>.

This digital product contains 14 Means construction cost books. The subscriber can profile the subscription to titles wanted.

517. **Means Mechanical Cost Data**. Kingston, MA: RS Means, 1998. 590p. \$87.95. ISBN 0876295030.

This source provides unit costs for HVAC/controls components; localization factors for cost zones in the United States and Canada. Information provided includes over pipe and fittings, plumbing fixtures and appliances, heating components, and air conditioning and ventilation listings.

518. **The NRCA Roofing and Waterproofing Manual**. Rosemont, IL: National Roofing Contractors Association, 1996. **Vol. 1. Low-Slope Roofing Text. Vol. 2. Steep Roofing. Metal Roofing. Sprayed Polyurethane Foam Roofing**. 1858p. \$295.00. Digital format available. Information available: <http://nrca.net>.

This manual provides technical information concerning the design and installation of quality roof assemblies. It includes specification plates, isometric and section views, and quality illustrations. Sections include low-slope and

steep-slope roof systems, low-slope specifications, construction details, metal roof systems, spray-applied polyurethane foam roof systems, waterproofing and dampproofing, energy, and a glossary.

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## 6.4 Chemical Engineering

519. Archer, Wesley L. **Industrial Solvents Handbook**. New York: Marcel Dekker, 1996. 316p. Includes digital data. \$145.00. ISBN 0824797183.

This is a comprehensive reference book on the physical and chemical properties, uses, and toxicity of organic solvents as used in chemical industries. The definition of a solvent is a substance in which another substance is dissolved, forming a solution. Environmental laws, recommended safe handling procedures, and chemical reactivity are covered.

520. Basmadjian, Diran. **The Little Adsorption Book: A Practical Guide for Engineers and Scientists**. Boca Raton, FL: CRC, 1997. 138p. \$34.95. ISBN 0849326923.

This guide outlines the basic knowledge of the adsorption process not generally covered in textbooks or reference handbooks. It is illustrated with graphs, charts, and formulas.

521. Branan, Carl. **Rules of Thumb for Chemical Engineers**. Houston, TX: Gulf, 1998. 418p. \$79.00. ISBN 0884157881.

This tool helps to solve field engineering problems; it includes information on the latest developments in geographic information systems, process safety management, and pipeline toughness.

522. Caruthers, J. M., et al. **Handbook of Diffusion and Thermal Properties of Polymers and Polymer Solutions**. New York: Design Institute for Physical Property Data: American Institute of Chemical Engineers, 1998. 192p. Includes digital data. \$175.00. ISBN 0816907625.

This handbook provides accurate evaluated physical and thermodynamic data for polymers and polymer solutions. Accompanying software enables the user to electronically access the data compiled in the handbook. This book provides additional references and abbreviations for polymers and solvents.

523. Chase, Malcolm V. **NIST-JANAF Thermochemical Tables. Parts I and II**. Washington, DC; New York: American Chemical Society; American Institute of Physics for the National Institute of Standards and Technology, 1998. 1952p. 2v. **Part 1. Al-Co. Part 2. Cr-Zn.** (*Journal of Physical and Chemical Reference Data*, Monograph no. 9. 1998). \$195.00. ISBN 1563968312.

This source provides revised key temperature-dependent thermochemical properties, including heat capacity, enthalpy, entropy, Gibb's energy formation, fusion data, vaporization data, sublimation data, and the logarithm of the equilibrium constant of formation for over 47 elements and their compounds.

524. Cheremisinoff, Nicholas P. **Pressure Safety Design Practices for Refinery and Chemical Operations**. Westwood, NJ: Noyes, 1998. 384p. \$72.00. ISBN 081551414X.

This is a reference guide for pressure relieving operations in petroleum refineries and chemical plants. The design practices are compiled from the American Society for Testing Materials (ASTM), the American Petroleum Institute (API), the American National Standards Institute (ANSI), and other professional resources. The range of topics includes an introduction to petroleum refinery operations, fluid solids operations, light ends processing operations, and design of disposal systems.

525. Cheryan, Munir. **Ultrafiltration and Microfiltration**. Lancaster, PA: Technomic, 1998. 539p. \$95.00. ISBN 1566765986.

This resource provides a comprehensive presentation of ultrafiltration science and technology. Topics covered include the use of membrane method for clarification, sterilization slurry dewatering, and waste treatment. Applications examined include food and beverages, water and wastewater, chemical processing, pulp and paper, textiles, and biotechnology.

526. Davletshina, Tatyana A., and Nicholas P. Cheremisinoff. **Fire and Explosion Hazards Handbook of Industrial Chemicals**. Westwood, NJ: Noyes, 1998. 484p. \$86.00. ISBN 0815514298.

This handbook provides information on fire and chemical reactivity of commonly used chemicals. The basic definition of a “hazardous materials incident” is a situation that may potentially lead to a catastrophic fire or explosion. More than 1,000 chemicals are covered. Descriptions include chemical names and synonyms.

527. Dickenson, T. C. **Filters and Filtration Handbook**. New York: Elsevier, 1997. 1094p. \$243.00. ISBN 1856173224.

This source covers the basic principles, filter media, types of filters, types of separators, liquids and solids, air filtration, oils, and filter selection. Filtration and/or separation basically fall into categories: solids-gas separation, solids-liquids separation, liquids-liquids separation, and solids-solids separation. Accompanying tables, photographs, illustrations, and company/product directory enhance the usefulness of this reference resource.

528. Flick, Ernest W. **Industrial Solvents Handbook**. Westwood, NJ: Noyes, 1998. 963p. \$145.00. ISBN 0815514131.

This reference volume is used for chemical and other process industries with over 1,200 tables containing basic data on the physical properties of most solvents. It includes hydrocarbon solvents, halogenated hydrocarbons, nitroparaffins, organic sulfur compound, phenols, ethers, ketones, acids, and esters. It provides comparative data for various solvents.

529. **Genium's Handbook of Safety, Health, and Environmental Data for Common Hazardous Substances.** New York: McGraw-Hill, 1998. 4000p. 3v. Includes digital data. \$425.00. ISBN 0079136141.

This comprehensive compendium of information covers physical data, toxicity and health hazards, and environmental considerations for over 4,700 chemicals. It focuses primarily on materials regulated by the Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA), with physical data, toxicity data, fire data, exposure data, environmental data, regulations, environmental fate data, and analytical methods.

530. **Handbook of Environmental Fate and Exposure Data for Organic Chemicals.** Boca Raton, FL: Lewis. **Vol. 1. Large Production and Priority Pollutants.** 1989. 574p. \$99.95. ISBN 0873711513. **Vol. 2 Solvents.** 1990. 576p. \$99.95. ISBN 0873714048. **Vol. 3. Pesticides.** 1991. 684p. \$99.95. ISBN 0873713281. **Vol. 4. Solvents 2.** 1993. 578p. \$99.95. ISBN 087371413X. **Vol. 5. Solvents 3.** 1997. 491p. \$94.95. ISBN 087371976X.

This series of reference books outlines in detail how individual chemicals are released, transported, and degraded in the environment. Also covered is how they are exposed to humans and environmental organisms. Descriptions include substance identification, chemical and physical properties, environmental fate and exposure potential, and literature references.

531. Hocking, Martin B. **Handbook of Chemical Technology and Pollution Control.** San Diego, CA: Academic, 1998. 777p. \$125.00. ISBN 012350810X.

This handbook can be used as a general source of information on process chemistry and air and water pollution chemistry. Topics covered include air quality measurement, air pollution control, quality measurement, raw water processing, ore enrichment, production of iron and steel, production of pulp and paper, fermentation, and petrochemicals. References and a detailed index are included.

532. Keith, Lawrence H. **Environmental Endocrine Disrupters: A Handbook of Property Data.** New York: Wiley, 1997. 1232p. \$125.00. ISBN 0471191264. Digital format available.

The purpose of this publication is to provide information on chemical, physical, and toxicology properties of environmental endocrine disrupters. This handbook provides information for about 67 environmental endocrine disrupters (EEDs). Descriptions include identifying information; endocrine disrupter information; chemical and physical information; hazardous properties; medical symptoms of exposure; and production, use, and pesticide labeling.

533. Kline, Andrew A., et al. **Environmental, Safety, and Health Data Compilation. Volume 1.** New York: American Institute of Chemical Engineers, 1998. 500p. \$225.00. ISBN 0816907536.

This is the first volume of a series that will be issued on an annual basis, providing environmental, safety, and health data on regulated and nonregulated chemicals selected from the following sources: the 1990 Clean Air Act amendment, the Occupational Safety and Health Administration Process Safety Management list,

and the Environmental Protection Agency Risk Management Plan. Properties are organized into these categories: oxygen demand parameters; partitioning parameters, general physical properties, vapor-liquid equilibria; fire and explosion parameters; and aquatic toxicity for fish.

534. Knarr, Orvis M. **Industrial Gaseous Leak Detection Manual**. New York: McGraw-Hill, 1998. 240p. \$69.95. ISBN 0070351805.

Leak detection is critical in the manufacturing process. This handbook explains the science, equipment, and procedures of this important field. The author includes a historic overview, gas behavior, test parts and systems, equipment, standards, and a glossary.

535. Lewis, Richard J. **Hazardous Chemicals Desk Reference**. New York: Van Nostrand Reinhold, 1997. 1644p. \$125.00. ISBN 0442023227.

This reference covers over 5,000 compounds commonly used in industry, manufacturing, and laboratories. It provides essential data profiles for each chemical, assessing their hazard potential as poisons, irritants, corrosives, explosives, and carcinogens. Descriptions include synonyms such as chemical names, common, or generic names; foreign names; codes; and use as part of trademarks. The book includes the CAS number cross-index, a synonym cross-index, and a DOT guide number cross-index.

536. Lewis, Richard J. **Sax's Dangerous Properties of Industrial Materials**. New York: Van Nostrand Reinhold, 1996. 3435p. \$500.00. ISBN 047128694X. Digital format available.

Critical information on chemical substances, including health and safety data, regulatory standards, toxicity, and physical properties is included in this book

537. Lide, David R. **Handbook of Chemistry and Physics CRCnetBASE 1999**. Boca Raton, FL: CRC, 1998. Digital format. \$195.00. ISBN 0849397200.

All the text and figures found in the 79th edition of *Handbook of Chemistry and Physics* are available on this digital product. It contains frequently used data in science, including the periodic table of the elements, basic constants and units, and geophysical data.

538. Mackay, Donald, Wan Ying Shiu, and Kuo-Ching Ma. **Illustrated Handbook of Physical-Chemical Properties and Environmental Fate for Organic Chemicals**. Boca Raton, FL: Lewis. 1992–1997. **Vol. 1. Monoaromatic Hydrocarbons, Chlorobenzenes, and PCB's**. 916p. 1992. ISBN 0873715136. **Vol. 2 Polynuclear Aromatic Hydrocarbons, Polychlorinated Dioxins, and Dibenzofurans**. 597p. 1992. ISBN 0873715837. **Vol. 3. Volatile Organic Chemicals**. 916p. 1993. ISBN 0873719735. **Vol. 4. Oxygen, Nitrogen, and Sulfur Containing Compounds**. 962p. 1995. ISBN 1566700353. **Vol. 5. Pesticide Chemicals**. 1997. 1566702550. Digital format available.

This series provides comprehensive reference handbooks that focus on environmental fate prediction. Descriptions list the CAS number; structure, molecular mass; melting and boiling points; and estimated half-lives in air, water, soil, and sediments.

539. Montgomery, John H. **Groundwater Chemicals Desk Reference**. Boca Raton, FL: Lewis, 1996. 1345p. \$149.95. ISBN 1566701651.

This source covers hundreds of chemicals and chemical compounds, providing information on environmental fates based on more than 1,400 references.

540. Ney, Ronald E. **Fate and Transport of Organic Chemicals in the Environment: A Practical Guide**. Rockville, MD: Government Institutes, 1998. 370p. \$59.00. ISBN 0865876266.

This guide provides equations and other information needed to predict the fate and transport of chemicals in air, water, soil, flora, and fauna. It lists 22 mathematical calculations for predicting the fate and transport of non-pesticide organic compounds, includes data for commonly encountered chemical substances; and explains hazard prediction based on chemical structure.

541. **NFPA Haz-Mat Quick Guide**. Quincy, MA: National Fire Protection Association, 1997. 1077p. (NFPA No. HAZGD97). \$65.00. ISBN 0877654263. Digital format available.

This guide includes summaries of over 2,000 common chemicals listed in the NFPA 49, NFPA 325, NFPA 491, and the *North American Emergency Response Guide (NAERG)*.

542. Patnaik, Pradyot. **Handbook of Environmental Analysis: Chemical Pollutants in Air, Water, Soil and Solid Wastes**. Boca Raton, FL: Lewis, 1997. 584p. \$89.95. ISBN 0873719891.

This handbook provides a discussion on the analytical techniques and the methods of determination of chemical pollutants in aqueous, solid, and air samples. Appendices include information on formulas and statistics, characteristics of organic pollutants not listed in this reference, volatility of some organic substances, and a list of NIOSH methods for air analysis.

543. Perry, Robert H., and Don W. Green. **Perry's Chemical Engineers' Handbook**. New York: McGraw-Hill, 1997. 2200p. \$129.50. ISBN 0070498415.

This classic reference book covers all aspects of chemical engineering, including chemical and physical property data and fundamentals of chemical engineering. The major section of the book deals with processes divided into heat transfer operations, distillation, kinetics, liquid-liquid, and liquid-solid.

544. Pohanish, Richard P., and Stanley A. Greene. **Hazardous Chemical Safety Guide for the Machining and Metalworking Industries**. New York: McGraw-Hill, 1999. 833p. \$79.95. ISBN 0070504997.

This easy-to-use guide describes the hazardous materials used in metal finishing, surface preparation, and plating industries. Each chemical record is presented in a uniform structure that includes such data as chemical names, trade names, physical properties, and the relevant safety and environmental compliance data.

545. Pohanish, Richard P., and Stanley A. Greene. **Hazardous Materials Handbook**. New York: Van Nostrand Reinhold, 1996. 1792p. \$159.95. ISBN 0442022123. Digital format available.

This reference provides critical data on methods to reduce chemical accidents. Information covers commonly used industrial materials, including storage, handling, and transportation of hazardous and toxic chemicals. A directory lists more than 1,350 hazardous materials.

546. Pohanish, Richard P., and Stanley A. Greene. **Hazardous Substances Resource Guide**. Farmington Hills, MI: Gale, 1997. 800p. \$205.00. ISBN 0810390620.

This guide provides information on approximately 1,500 chemical hazardous materials found in a variety of environments. Descriptions include definitions, effects, laws, handling, and resources for additional research.

547. Prager, Jan C. **Environmental Contaminant Reference Databook**. New York: Wiley, 1997. \$395.00. ISBN 0471314595. Digital format available.

This reference is a compendium of physical, chemical, and biological effects of environmental contaminants. It identifies regulated chemicals and chemicals of special interest to environmental and safety professionals. Descriptions include CAS numbers, SAX numbers, sampling, detection limits, molecular formula, common uses, manufacturers, and standards.

548. Purchas, Derek B. **Handbook of Filter Media**. Oxford, UK: Elsevier, 1996. 577p. \$154.00. ISBN 1856172783.

This detailed handbook covers all types of filter media, including textiles, filter papers, air and gas filters, screens and meshes, porous sheets, membranes, loose powders, and testing filter media. Product and company information reflects the European perspective of the author.

549. Rafson, Harold J. **Odor and VOC Handbook**. New York: McGraw-Hill, 1998. 800p. \$99.95. ISBN 0070525234.

This handbook is a compilation of reference articles by over 50 experts. Emphasis is on treating odors and volatile organic compounds (VOC) generated by industrial sources. Topics covered include analytical methods, modeling, air pollution prevention, foul air collection, emission control technology, regulations, and social and business issues. There are numerous illustrations, tables, and references.

550. Reinhard, Martin, and Axel Drefahl. **Toolkit for Estimating Physicochemical Properties of Organic Compounds**. New York: Wiley, 1999. Digital format. \$365.00. ISBN 0471194921.

This is a comprehensive survey of published property estimation methods and a Windows-based program for property estimating capabilities used in chemical synthesis and manufacturing. It is used to estimate the 15 key properties for organic compounds according to algorithms from literature sources.

551. Urben, P. G. **Bretherick's Handbook of Reactive Chemical Hazards**. Woburn, MA: Butterworth-Heinemann, 1996. 2100p. 2v. \$235.00. ISBN 0816915575. Digital format available.

This resource covers over 4,800 elements or compounds; there are 5,000 additional secondary entries involving two or more chemicals. Specific chemicals, elements, and compounds are arranged in formula order. Other information includes tabulated fire-related data, a glossary of abbreviations and technical terms, an index of CAS registry numbers, chemical names, and synonyms.

552. Varela, Joe. **Hazardous Materials Handbook for Emergency Responders**. New York: Van Nostrand Reinhold, 1996. 535p. \$79.95. ISBN 0442021046.

Information is provided for the following nine classes of hazardous materials emergencies: explosive, gas, flammable and combustible liquid, flammable solid, oxidizer, poison, radioactive, corrosive, and miscellaneous. Appendices include a glossary of common haz-mat terms, Material Safety Data Sheets (MSDS), hazardous materials information resources, and hazardous materials classification.

553. Verschuere, Karel. **Environmental Data on Organic Chemicals**. New York: Wiley, 1996. 2064p. \$215.00. ISBN 0471286591. Digital format available.

This source provides comprehensive coverage of dangerous compounds and control methods designed to reduce destructive impact on the environment.

554. Weisend, J. G. **Handbook of Cryogenic Engineering**. Philadelphia, PA: Taylor & Francis, 1998. 604p. \$125.00. ISBN 1560323329.

Topics covered here include properties of cryogenic fluids, properties of cryogenic materials, composite materials, magnetic materials for cryogenic refrigeration, cryogenic properties of polymers, cryogenic instrumentation, refrigerants for normal refrigeration, superconducting magnet technology, and safety.

555. Wypych, G. **Handbook of Fillers: The Definitive User's Guide and Databook of Properties, Effects and Uses**. Toronto: ChemTech, 1999. 910p. \$285.00. ISBN 1895198194.

This reference is based on over 1,400 research papers and technical data from over 160 manufacturers. It includes descriptions of chemical composition, physical properties, optical, electrical, manufacturers, and applications.

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## 6.5 Civil Engineering

556. **Aluminum Design System (ADS)**. Washington, DC: The Aluminum Association, 1998. Digital format. \$695.00.

This version of *The Aluminum Design Manual* is a comprehensive manual on aluminum design. It includes allowable stress design specifications, building load and resistance design (LRFD) specifications, materials, materials properties and section properties, and design aids. It is an excellent reference source for working with aluminum design information.

557. Amrhein, James E. **Reinforced Masonry Engineering Handbook Clay and Concrete Masonry**. Los Angeles, CA: Masonry Institute of America; Boca Raton, FL: CRC, 1998. 469p. \$89.95. ISBN 0849375517.

This handbook on reinforced masonry engineering design covers coefficients, tables, charts, and design data. It also incorporates relevant portions of the *Uniform Building Code (UBC)* and other relevant standards such as those from the American Concrete Institute (ACI). Lists of symbols, notations, and references are included.

558. Brockenbrough, Roger L., and Kenneth J. Boedecker. **Highway Engineering Handbook: Building and Rehabilitating the Infrastructure**. New York: McGraw-Hill, 1996. Various pagings. \$110.00. ISBN 0070087776.

Subject areas covered include environmental issues; highway location, design, and traffic; pavement design and rehabilitation; bridge engineering, culverts, and drainage; safety systems; signing; roadway lighting; and retaining walls, noise walls, and value engineering. The book includes detailed diagrams, charts, tables, and photographs.

559. Chen, Wai-Fah. **Structural Engineering Handbook CRCnetBASE**. Boca Raton, FL: CRC, 1998. \$129.00. Digital format. ISBN 0849397596. Paper format available.

This handbook is marketed as a database because it is updated on an annual basis. Subject areas covered include fundamentals and special structures, and special topics include shock and seismic loading, underground pipes, fatigue and fracture, and computer-aided analysis and design.

560. Chen, Wai-Fah, and Lian Duan. **Bridge Engineering Handbook**. Boca Raton, FL: CRC, 1998. 1600p. \$135.00. ISBN 0849374340.

This handbook covers every major area of bridge engineering, design, construction, and maintenance, with special examination of rehabilitation, retrofit, and maintenance. Topics covered include structural theory, bridge aesthetics, steel box girder bridges, seismic design of concrete and steel bridges, fatigue and fracture, and international design practices.

561. Delleur, Jacques W. **The Handbook of Groundwater Engineering**. Boca Raton, FL: CRC, 1999. 1280p. Includes digital data. \$99.95. ISBN 0849326982.

This handbook covers groundwater from an engineering perspective, providing treatment descriptions of the flow of groundwater, transport of substances, construction of wells and well fields, site characterization, and remediation of groundwater pollution.

562. Dobrowolski, Joseph A. **Concrete Construction Handbook**. New York: McGraw-Hill, 1998. Various pagings. (McGraw-Hill Handbooks). \$94.95. ISBN 007017198X.

This edition incorporates environmental requirements, new materials, equipment, standards, and methods. Chapters cover materials for concrete, properties, proportioning mixes, formwork, finishing and curing, precast and

prestressed concrete, architectural concrete, and repair of concrete. Documentation includes photographs, charts, illustrations, references, and tables.

563. Faherty, Keith F., and Thomas G. Williamson. **Wood Engineering and Construction Handbook**. New York: McGraw-Hill, 1998. Various pagings. \$128.95. ISBN 0070220700.

This reference provides information and procedures to design wood structures or structural wood components. It includes design equations, design procedures, and design data. Basic information covers the physical and mechanical properties of wood, commercial lumber and other wood product standards, preservatives, and fire-resistive designs. The book is illustrated with tables, charts, photographs, and formulas.

564. Galambos, Theodore V. **Guide to Stability Design Criteria for Metal Structures**. New York: Wiley, 1998. 911p. \$95.00. ISBN 0471127426.

This guide, sponsored by the Structural Stability Research Council (SSRC), covers the behavior of compressive components of metal structures and structural systems. Topics covered include columns, plates, beams, girders, circular tubes, bracing, arches, and stability under seismic loading. Appendices include references and SSRC Technical Memorandums.

565. Gaylord, Edwin H., Charles N. Gaylord, and James E. Stallmeyer. **Structural Engineering Handbook**. New York: McGraw-Hill, 1997. Various pagings. \$115.00. ISBN 0070237247.

This reference book covers a wide variety of engineering structures, including industrial buildings, tall buildings, bridges, thin-shell structures, arches, suspension roofs, tanks for liquid storage, bins and silos, transmission towers, chimneys, and buried conduits.

566. Geddes, Spence, and John Williams. **Estimating for Building and Civil Engineering Works**. Woburn, MA: Butterworth-Heinemann, 1996. 313p. \$59.95. ISBN 0750627972.

Written from a British perspective, this resource is used in estimating the cost for building and construction projects. Topics covered include contract forms, demolitions, piling, groundwork, quarry work, drainage, and weight of materials.

567. Helbig, Klaus, and Sven Treitel. **Seismic Exploration on CD-ROM**. New York: Elsevier, 1997. Digital format. \$245.50. ISBN 0080424422.

This is an authoritative digital reference library, with 15 of the most frequently read volumes from the *Handbook of Geophysical Exploration Series* and *Advances in Exploration Geophysics Series*. It includes over 5,500 fully searchable pages and 3,500 relevant abstracts.

568. **Highway Capacity Manual.** Washington, DC: Transportation Research Board, National Research Council, 1994. 570p. (Special Report 209). \$80.00. ISBN 0309055164. (1997 Updates. \$90.00. Includes digital data.)

This manual provides a collection of techniques for conducting highway capacity analyses. It covers principles of capacity, freeways, rural and suburban highways, and urban streets. Appendices include a glossary and a list of symbols. Information is available at <http://www4.nationalacademies.org/trb/homepage.nsf>.

569. Hoffman, Edward S., et al. **Structural Design Guide to the AISC (LRFD) Specification for Buildings.** New York: Chapman & Hall, 1996. 306p. \$64.95. ISBN 0412068710

This handbook is designed to identify more profitable routine designs using the *AISC Load and Resistance Factor Design Specification (LRFD)* for structural steel buildings. Topics covered include structural materials and economics, structural analysis and *LRFD* design, beams and girders, trusses, connections, and columns.

570. Hunt, T. and N. Vaughn. **Hydraulic Handbook.** New York: Elsevier, 1996. 742p. \$175.00. ISBN 1856172503.

This handbook covers the basics of hydraulic engineering. Topics covered include the properties of fluids, hydraulic pumps, valves, pipework, seals, fluids maintenance, and circuits. The last sections address a variety of applications including mechanical handling, industrial robots, injection molding machines, aerospace hydraulics, and hydraulics in medicine.

571. Kavazanjian, E., et al. **Design Guidance: Geotechnical Earthquake Engineering for Highways.** Washington, DC: Federal Highway Administration, 1997. 2v. (Geotechnical Engineering Circular 3; FHWA-SA-97-076). **Vol. 1. Design Principles.** (PB98111560). **Vol. 2. Design Examples.** (PB98111578). Available from National Technical Information Service.

This document presents a series of five design examples illustrating the principles and methods of geotechnical earthquake engineering and seismic design for highway facilities.

572. Kett, Irving. **Asphalt Materials and Mix Design Manual.** Westwood, NJ: Noyes, 1998. 249p. \$58.00. ISBN 0815514255.

This manual describes several forms of asphalt: asphalt cement, cutback asphalt, and asphalt emulsions. The procedures outlined are derived from ASTM designations and practice as recommended by the Asphalt Institute. There is an overview of asphalt technology, including sources, historical development, and classifications of asphalt products.

573. Lamm, Ruediger, Basil Psarianos, and Theodor Mailaender. **Highway Design and Traffic Engineering Handbook.** New York: McGraw-Hill, 1998. Various pagings. \$115.00. ISBN 0070382956.

This handbook examines the interrelationships among highway design, driving behavior, driving dynamics, and traffic safety. Reference information includes classification of roads, human factors, and international road safety.

574. Levy, Sidney M. **Construction Databook**. New York: McGraw-Hill, 1999. 692p. \$79.95. ISBN 0070383650.

This reference book contains information on common construction materials and components. It includes product specifications and installation and maintenance data. Specific topics covered include concrete; roofing; fireproofing; acoustics; elevators; and heating, ventilating, and air conditioning.

575. Lund, John W. **Geothermal Direct Use Engineering and Design Guidebook**. Klamath Falls, OR: Geo-Heat Center, Oregon Institute of Technology, 1998. 454p.

This technical handbook, prepared under the sponsorship of the U.S. Department of Energy (DOE), includes comprehensive information on geothermal resources. It covers development, utilization, economics, financing, and regulation.

576. McAllister, E. W. **Pipe Line Rules of Thumb Handbook: A Manual of Quick, Accurate Solutions to Everyday Pipe Line Engineering Problems**. Houston, TX: Gulf, 1998. 602p. \$79.00. ISBN 0884156710.

This handbook provides quick solutions, shortcuts, and calculations for construction, pipe design, electrical design, hydrostatic testing, pipe line drying, control valves, corrosion, measurement, and maintenance problems. Each section poses problems and solutions that incorporate standards and other technical information.

577. **McGraw-Hill Electronic Structural Detail Library**. New York: McGraw-Hill, 1998. Digital format.

This digital resource contains the contents of the *McGraw-Hill Standard Handbook of Structural Details for Building Construction*, by Morton Newman. It includes the most frequently encountered drawings of structural detail assemblies and shapes and parts for all classifications of construction and materials.

578. Minsk, L. David. **Snow and Ice Control Manual for Transportation Facilities**. New York: McGraw-Hill, 1998. 289p. (Construction Series). \$87.95. ISBN 0070428093.

The author covers the fundamentals of snow and ice control. Topics covered include the properties of snow, equipment, and unique situations for trains and airports. Almost one-third of this book is devoted to reference materials, chemicals and their properties, a bibliography, and a glossary of terms.

579. Nawy, Edward G. **Concrete Construction Engineering Handbook**. Boca Raton, FL: CRC, 1998. 1232p. \$105.00. ISBN 0849326664.

This reference tool covers the latest advances in engineered concrete materials, reinforced concrete construction, specialized construction techniques, and design recommendations.

580. Ryerson, Robert A. **Manual of Remote Sensing**. New York: Wiley, 1998. 3v. ISBN 0471294063.

Volume 1 is on earth observing platforms and sensors. Volume 2 discusses principles and applications of imaging radar. Volume 3 covers remote sensing for the earth sciences.

581. **Traffic Signing Handbook.** Washington DC: Institute of Transportation Engineers, 1997. 347p. (Publication Number IR-092). \$50.00. Information available: <http://www.ite.org>.

This handbook contains information on signs, standards, planning and engineering studies, sign design, materials, fabrication, installation, maintenance, vandalism control, unique urban considerations, sign shop organization, inspection, and inventory systems. Other topics under discussion include how to determine when a sign is needed, human factors, and political and citizen requests. Appendices contain both the English and metric editions of the *Standard Alphabets for Highway Signs and Pavement Markings*, reprinted from the U.S. Department of Transportation's Federal Highway Administration.

582. **Trip Generation.** Washington, DC: Institute of Transportation Engineers, 1997. 1700p. 3v. \$250.00. ISBN 0935403094.

This version has data from more than 750 new studies, which resulted in the addition of new land uses (e.g., light rail transit station with parking and multipurpose recreational facility). Volumes 1 and 2 cover land use descriptions and data plots. Volume 3 is a user's guide. Trip generation studies estimate the number of trips that may be generated by particular building or land use. The existing database now has a combined total of more than 3,750 individual trip generation studies.

583. U.S. Department of Agriculture. Bureau of Reclamation. **Water Measurement Manual.** 1997. Available: <http://www.usbr.gov/wrr/fmt/wmm/index.htm>. (Accessed April 2, 2000).

The entire contents of the *Water Measurement Manual*, provided by the U.S. Bureau of Reclamation in collaboration with the U.S. Department of Agriculture, is available at this site. This version is based on the third edition, released in 1997. It covers topics ranging from the basics of flowing water to selection of water measuring devices to submerged orifices.

584. U.S. Department of Defense (DOD). Office of the Under Secretary of Defense for Acquisition and Technology. **DOD Contractors' Safety Manual for Ammunition and Explosives.** Washington, DC: U.S. Department of Defense, Under Secretary of Defense for Acquisition and Technology, 1997. (DOD 4145.26M). Available from National Technical Information Service.

This manual provides safety standards common to DOD and private industry ammunition and explosives operations and facilities. The DOD 6055.9-STD, *DOD Ammunition and Explosives Safety Standards* (October 1992), establishes these safety standards and serves as the primary source document from which this unclassified manual is derived.

585. U.S. Department of the Interior. **Engineering Geology Field Manual.** Washington, DC: U.S. Department of the Interior, Bureau of Reclamation, 1998. 2v. (127.19/2:EN3/2/998/V.1-0660-B). Available from Government Printing Office.

This manual provides reference and terminology material used for classification and descriptions of soil, surficial deposits, and rocks. Guidelines for geologic mapping, discontinuity surveys, sampling, testing, and instructions for core logging are also available.

586. U.S. Department of Transportation (DOT). Federal Highway Administration (FHWA). **Highway Statistics**. 1997. Available: <http://www.bts.gov/ntda/fhwa/prod.html>. (Accessed October 28, 1999).

The publication *Highway Statistics* can be searched here beginning with 1994. FHWA's Office of Highway Information Management also publishes a summary volume every ten years, *Highway Statistics Summary to 1995*, which is also available at this site.

587. Wallingford, H. R., and D. I. H. Barr. **Tables for the Hydraulic Design of Pipes, Sewers and Channels**. London, UK: Thomas Telford, 1998. 2v. \$120.00. ISBN 0727726390.

This standard reference has been updated to include assessments of roughness sizes for design when installing relatively smooth pipes and additional losses at bends. It includes detailed tables and diagrams.

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## 6.6 Computer Science Engineering

588. Atallah, Mikhail J. **Algorithms and Theory of Computation Handbook**. Boca Raton, FL: CRC, 1998. 1200p. \$89.95. ISBN 0849326494.

This compendium of algorithms and data structures includes discussions of specific algorithms, such as those for drawing graphs, for robotics, and for forming a VLSI chip.

589. Liebowitz, Jay. **The Handbook of Applied Expert Systems**. Boca Raton, FL: CRC, 1998. 744p. \$89.95. ISBN 0849331064.

This handbook examines the latest technologies, applications, methodologies, and practices of expert systems. Topics covered include fuzzy systems, genetic algorithm development, machine learning, and knowledge representation.

590. Menezes, Alfred, Paul C. van Oorschot, and Scott A. Vanstone. **Handbook of Applied Cryptography**. Boca Raton, FL: CRC, 1996. 780p. \$94.95. ISBN 0849385237.

The authors draw upon their own experience with applications of cryptographic knowledge in industrial settings. Each section includes notes and further references for additional research. The book includes algorithms, patents, standards, and an extensive bibliography.

591. Salomon, David **Data Compression: The Complete Reference**. New York: Springer, 1998. 427p. \$39.95. ISBN 0387982809.

Data compression is the process of converting input data into another data stream that has a smaller size. This book provides information on the three primary categories: run length encoding (RLE), statistical methods, and dictionary-based methods.

592. Salus, Peter H. **Handbook of Programming Languages (HPL)**. Indianapolis, IN: Macmillan, 1998. **Vol. 1. Object-Oriented Programming Languages**. 976p. \$49.99. ISBN 1578700086. **Vol. 2. Imperative Programming Languages**. 464p. \$49.00. ISBN 1578700094. **Vol. 3. Little Languages and Tools**. 720p. \$49.99. ISBN 1578700108. **Vol. 4. Functional and Logic Programming Languages**. 272p. \$49.99. ISBN 1578700116.

Volume 1 includes information on Smalltalk, C++, Eiffel, Ada95, Modula-3, and Java. The second volume continues with Fortran, Pascal, Icon, and C. Volume 3 has information on little languages and domain-specific languages such as troff, awk, sed, Perl, Tcl and Tk, Python, and SQL. The last volume covers functional programming languages such as Lisp, Scheme, Guile, and Emacs Lisp and logic programming languages like Prolog.

593. Skiena, Steven S. **The Algorithm Design Manual**. New York: Springer-Verlag, 1998. 486p. Includes digital data. \$59.95. ISBN 0387948600.

This manual includes a catalog of important algorithmic problems. A complementary site, The Stony Brook Algorithm Repository is available at <http://www.cs.sunysb.edu/~algorithm>. This is a unique resource for general computer algorithms.

594. Tucker, Allen B. **The Computer Science and Engineering Handbook**. Boca Raton, FL: CRC, 1997. 2611p. \$139.95. ISBN 0849329094.

More than 110 chapters describe fundamental principles and “best practices.” The book includes glossaries, references; algorithms, data structures, artificial intelligence, database and information retrieval, human/computer interaction, programming languages, and software engineering.

595. Zamir, Saba. **Handbook of Object Technology**. Boca Raton, FL: CRC, 1998. 1248p. \$99.95. ISBN 0849331358.

This handbook covers every aspect of object technology. It evaluates methodologies, languages, standards, frameworks, databases, metrics, and development environments.

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## 6.7 Electrical Engineering

596. Ahmad, Anees. **Handbook of Optomechanical Engineering**. Boca Raton, FL: CRC, 1997. 416p. \$129.95. ISBN 0849301335. Digital format available.

This handbook covers the field of optomechanical engineering, including conceptual design, fabrication, and integration of complex optical systems. It

includes practical information for designing, developing, and integrating modern optical systems for commercial, space, and military applications.

597. Ballou, Glen. **Handbook for Sound Engineers: The New Audio Encyclopedia**. Boston, MA: Focal, 1998. 1506p. \$115.00. ISBN 0240803310.

This substantial handbook discusses sound in the following sections: acoustics, electronic components, electroacoustic devices, electronic circuits and equipment, recording and playback, design application, and measurements. This edition includes new technology such as MIDI, fiber optics, integrated circuits, and speech intelligibility.

598. Bass, Michael. **Handbook of Optics CD-ROM**. New York: McGraw-Hill, 1996. Digital format. ISBN 007852993X.

This is a comprehensive optics reference that covers such topics as geometric optics, physical optics, imaging detectors, vision, optical fabrication, optical and physical properties of materials, and nonlinear and photorefractive optics.

599. Bates, Regis J., and Donald W. Gregory. **Voice and Data Communications Handbook**. New York: McGraw-Hill, 1998. 902p. (McGraw-Hill Series on Computer Communications). \$65.00. ISBN 0070063966.

This handbook is written for readers with both general and technical interests. It covers the basics of voice characteristics and processing, telephone equipment, analog versus digital transmission, service carriers, and traffic engineering.

600. Beaty, H. Wayne, and James L. Kirtley, Jr. **Electric Motor Handbook**. New York: McGraw-Hill, 1998. 404p. (McGraw-Hill Handbooks). \$100.95. ISBN 0070359717.

This book is directed to anyone interested in both the theory and applied aspects of electric motors. Chapters include basic information on electric motors, terminology and definitions, fundamentals of electromagnetic forces and loss mechanisms, induction motors, synchronous motors, permanent magnet-synchronous motors, direct current motors, and other types of electric motors.

601. Besenhard, J. O. **Handbook of Battery Materials**. New York: Wiley-VCH, 1999. 648p. \$398.00. ISBN 3527294694.

In this handbook international experts from the United States, Japan, and Europe have provided a thorough survey of the applications, principles, processing, and future developments of the various materials used in the manufacturing of batteries.

602. Bunke, Horst, and Patrick S. Wang. **Handbook of Character Recognition and Document Image Analysis**. River Edge, NJ: World Scientific, 1997. 833p. \$124.00. ISBN 981022270X.

This technical reference discusses basic methodology for image analysis, character recognition, oriental character recognition, analysis of structure documents, special applications, and databases. Each section contains references and illustrations.

603. Cavanaugh, James. **Multimedia Networking Handbook**. Boca Raton, FL: CRC, 1998. 600p. \$180.00. ISBN 0841399491.

This handbook provides clear definitions of complex concepts, schematic drawings, diagrams, charts, and tables demonstrating how to make multimedia compatible with both LANs and WANs.

604. Christiansen, Donald. **Electronics Engineers' Handbook**. New York: McGraw-Hill, 1997. Various pagings. \$110.50. ISBN 0070210772.

This reference book is among the more popular handbooks for electronics engineering. It provides a general overview in principles and techniques, materials and hardware, circuits and functions, and systems and applications. The chapters on standards, definitions, units symbols, constants, and resources are excellent sources for quick, basic information. The text contains over 1,600 illustrations.

605. Christoffer, V. P. **Handbook of Electrical Tables and Design Criteria**. New York: McGraw-Hill, 1998. 512p. Includes digital data. \$64.95. ISBN 0079137229.

This comprehensive collection of tables and calculation procedures enables electrical engineers to design electrical systems in industrial and commercial buildings and facilities. It includes relevant standards and specifications.

606. Crocker, Malcolm J. **Handbook of Acoustics**. New York: Wiley, 1998. 1461p. \$195.00. ISBN 047125293X.

This handbook focuses on the fundamentals of acoustics and vibration, covering aerodynamics, jet noise, interaction of fluid motion and sound, infrasound, ultrasound, and quantum acoustics.

607. Crompton, Thomas R. **Battery Reference Book**. Warrendale, PA: SAE International, 1996. Various pagings. \$89.00. ISBN 1560918055.

This reference covers all types of commercially produced batteries, including lead-acid, nickel, silver, alkaline manganese, mercury, lithium, metal-air cells, and water-activated primary batteries. A glossary, bibliography, and discussion on battery standards are included.

608. Davis, William S., and David C. Yen. **The Information System Consultant's Handbook: System Analysis and Design**. Boca Raton, FL: CRC, 1999. 765p. \$99.95. ISBN 0849370019.

Topics covered here include principles; information gathering and problem definition, project planning and project management, systems analysis, identifying alternatives, component design, testing and implementation, and operation and maintenance. Chapters are enhanced with illustrations and additional references. A detailed glossary is included.

609. DeCusatis, Casimer, et al. **Handbook of Fiber Optic Data Communication**. San Diego, CA: Academic, 1998. 854p. \$95.00. ISBN 0124371620.

This handbook covers the use of optoelectronics for fiber optic data communication systems. Topics covered include an overview of the technology, the

requirements, planning and testing for the links, applications, manufacturing technology, and future applications. Appendices cover the physical constants, index of professional organizations, and network standards and documents.

610. Dorf, Richard C. **Electrical Engineering Handbook**. Boca Raton, FL: CRC, 1997. 2719p. Digital format. \$115.00. ISBN 0849385741.

This handbook contains helpful tables, formulas, definitions, and extensive cross-referencing and indexing. Software applications are listed in each section. Topics covered include circuits, signal processing, electromagnetic fields, digital devices, computer engineering, and biomedical engineering. This digital format has several enhanced features, such as hotlinked key terms and Boolean and proximity searching.

611. Eargle, John. **Handbook of Recording Engineering**. New York: Van Nostrand Reinhold, 1996. 518p. \$89.90. ISBN 0412097419.

This book provides basic recording, broadcasting, and video information for the practicing engineer. The topics covered include acoustical foundations, microphones, recordings systems, recording medium, signal processing, post production techniques, and the commercial and operational aspects of recording.

612. Fetters, John L. **The Handbook of Lighting Surveys and Audits**. Boca Raton, FL: CRC, 1998. 176p. \$69.95. ISBN 080198873X.

This resource provides a step-by-step guide, outlining the information necessary for conducting lighting surveys and audits in a commercial or industrial facility. It includes sample audits, fact sheets, and checklist forms.

613. Fraden, Jacob. **Handbook of Modern Sensors: Physics, Designs, and Applications**. Woodbury, NY: AIP Press, 1997. 556p. \$75.00. ISBN 1563965380.

This is a quick guide to the basic principles and design specifications of sensors and detectors. The author discusses sensor characteristics, the physical principle of sensing, interface electronic circuits, and a variety of specific types of sensors and detectors. The appendix contains numerous tables of related materials data.

614. Freeman, Roger L. **Reference Manual for Telecommunications Engineering 1996 Update**. New York: Wiley, 1997. 293p. \$82.95. ISBN 0471047562.

This is the author's second update to his primary text, *Reference Manual for Telecommunications Engineering* (1993). The majority of the material in this update emphasizes digital network applications. Numerous tables, figures, and examples accompany the text.

615. Freeman, Roger L. **Telecommunications Transmission Handbook**. New York: Wiley, 1998. 1204p. \$150.00. (Wiley Series in Telecommunications and Signal Processing). ISBN 0471240184.

This handbook covers such topics as cellular and wireless communication systems, digital networks, high-frequency radio, video transmission, facsimile communication, cable television, and low Earth orbiting satellites. References accompany each section.

616. Furht, Borivoje. **Handbook of Internet and Multimedia Systems and Applications**. Boca Raton, FL: CRC, 1998. 702p. \$89.95. ISBN 0849318580.

This is the companion to the author's *Handbook of Multimedia Computing* and includes the following topics: interactive TV, video-on-demand, Internet applications, mobile multimedia systems, and digital libraries.

617. Furht, Borivoje. **Handbook of Multimedia Computing**. Boca Raton, FL: CRC, 1998. 832p. \$99.95. ISBN 0849318254.

Topics covered here include digital libraries, Java language and development, multimedia databases and servers, wireless applications, and the Internet.

618. Garrou, Philip E., and Iwona Turlik. **Multichip Module Technology Handbook**. New York: McGraw-Hill, 1998. Various pagings. (Electronic Packaging and Interconnection Series). \$141.95. ISBN 0070228949.

Multichip modules are used to increase the capability of integrated circuits (IC). This handbook introduces the reader to the technical drivers for this technology, materials, packaging, design, assembly, connections, performance, and thermal management. Helpful diagrams and figures accompany the text.

619. Gibson, Jerry D. **The Communications Handbook**. Boca Raton, FL: CRC, 1997. 1598p. (Electrical Engineering Handbook Series). \$150.00. ISBN 0849383498. Digital format available.

This handbook discusses the major topics in communications, providing background information, technical details, and international telecommunications standards. Topics covered include telephony, satellite communications, communications networks, optical communications, wireless communications, and data recording.

620. Gibson, Jerry D. **The Mobile Communications Handbook**. Boca Raton, FL: CRC, 1999. Various pagings. \$95.00. ISBN 0849385970. Digital format available.

This handbook covers the entire field of mobile communications, from analog and digital communications to cordless telephones, digital cellular mobile radio, and wireless LANs. It also discusses international technology standards.

621. Gopel, W. **Sensors: A Comprehensive Survey**. New York: Wiley, 1998. 8v. \$2120.00. ISBN 3527265384.

This is a comprehensive overview of all aspects of research, design, and application of sensor technologies. It compares various types of sensors with applications and provides extensive bibliographies, thorough indexing, and thorough cross-referencing.

622. Gupta, Mool C. **Handbook of Photonics**. Boca Raton, FL: CRC, 1996. 812p. \$129.00. ISBN 0849389097.

There are sections in this book on photonic materials, photonic devices, and optics photonic systems. Photonics are associated with several information environments, including optical communication, information storage, electronic display, signal processing, and electronic imaging.

623. Irwin, J. David. **The Industrial Electronics Handbook**. Boca Raton, FL: CRC, 1997. 1728p. \$134.95. ISBN 0849383439.

Appropriate for engineers working with applications of electronic and electrical systems, circuits and devices, process control, and industry equipment, this handbook covers the fundamental aspects of electronics and signal processing.

624. Jurgen, Ronald. **Automotive Electronics Handbook**. New York: McGraw-Hill, 1999. \$99.95. ISBN 0070344531.

Electronics systems play a primary role in the performance of modern automobile technology (e.g., engine, brakes, transmission, suspension, steering, and lighting). Sensors and actuators are explained in depth in this handbook.

625. Kovacs, Gregory T. A. **Micromachined Transducers Sourcebook**. Boston: McGraw-Hill, 1998. 911p. (McGraw-Hill Series in Electrical and Computer Engineering). 911p. \$93.50. ISBN 0072907223.

The author provides a thorough review of micromachined transducers and MEMS (microelectromechanical systems) technology in this book. It contains a detailed discussion of micromachining techniques, mechanical transducers, optical transducers, ionizing radiation transducers, thermal transducers, magnetic and electromagnetic transducers, chemical and biological transducers, and microfluidic devices.

626. Kreith, Frank, and Ronald E. West. **CRC Handbook of Energy Efficiency**. Boca Raton, FL: CRC, 1996. 1336p. \$129.00. ISBN 0849325145.

This handbook includes chapters on energy technologies, economics, utility restructuring, integrated resource planning, building design, co-generation, industrial conservation, and fossil fuel cost projections.

627. Kwan, B. W., and L. J. Tung. **Electronic Handbook on Communications for Traffic Control and ITS Applications. PC-Based Visual and Interactive Handbook for ITS (IVHS) Communications Functions**. Tallahassee, FL: Florida State University, College of Engineering, 1998. 258p. (PB99111619). \$54.00. Available from National Technical Information Service.

This comprehensive reference handbook covers communications topics relevant to traffic control operations, freeway management, and intelligent transportation systems (ITS) development. Subjects covered include basic communication principles, the requirements of communication systems for traffic control, communications technologies for traffic control systems, and the selection of communications architectures and technologies.

628. Lee, Jhong S., and Leonard E. Miller. **CDMA System Engineering Handbook**. Boston: Artech House, 1998. 1228p. (Mobile Communications Series; Artech House Mobile Communications Library). \$119.00. ISBN 0890069905.

In 1993, the CDMA (code-division multiple-access) technology became a digital cellular standard, IS-95. This handbook describes the technical basis of the design and operational principles of IS-95.

629. Levine, William S. **The Control Handbook**. Boca Raton, FL: CRC, 1996. 1568p. \$150.00. ISBN 0849385709.

The three major sections of this handbook cover fundamental methods of control, advanced methods of control, and applications of control. The articles are cross-referenced and indexed and there are hundreds of tables, figures, diagrams, and equations for control device and system selection, implementation, and application. There is a special section on digital controls for computers, aerospace controls, and robot controls.

630. Madisetti, Vijay K., and Douglas B. Williams. **The Digital Signal Processing Handbook**. Boca Raton, FL: CRC, 1998. Various pagings. Includes digital data. \$129.95. ISBN 0849385725.

Digital signal processing (DSP) is the representation of information-bearing signals in digital form. This handbook provides information on standards and software. Topics covered include discussions of specialized aspects of information-bearing signals in seismic data analysis, remote sensing, multimedia applications, and medical technology. The presentation covers theory, practice, and application areas.

631. Meeldijk, Victor. **Electronic Components: Selection and Application Guidelines**. New York: Wiley, 1996. 864p. \$95.00. ISBN 047102287X.

These guidelines help designers streamline electronic component selection process. The detailed information lists the advantages and disadvantages of each type, with data compiled from catalogs, reference books, textbooks, trade papers, and journals. The guidelines explain where to find suppliers of parts, including obsolete devices for older systems.

632. Moore, George F. **Electric Cables Handbook**. Oxford, UK: Blackwell, 1997. 1098p. \$175.00. ISBN 0632040750.

This handbook covers all types of energy cables, from general use to submarine cables. It also includes information on materials, design principles, installation, and standards. An extensive bibliography provides useful references for further research.

633. Mroczkowski, Robert S. **Electronic Connector Handbook: Theory and Applications**. New York: McGraw-Hill, 1998. (Electronic Packaging and Interconnection Series). \$89.50. ISBN 0070414017.

Connector requirements involve both connector materials and design issues. Topics covered in this handbook include a connector overview, contact finishes, engineering thermoplastics for connectors, printed wiring boards, and connector types.

634. Nikogosyan, David. N. **Properties of Optical and Laser-Related Materials: A Handbook**. New York: Wiley, 1997. 594p. \$64.95. ISBN 047197384X.

This unique handbook is a compilation of the most widely used optical materials, including laser materials, nonlinear optical crystals, main optical materials, alkali and alkaline earth halides, oxides, sulfides, selenides, tellurides, crystalline materials, glasses, polymers, and liquids. Each entry contains a full description of the optical and other relevant properties.

635. Orloff, Jon. **Handbook of Charged Particle Optics**. Boca Raton, FL: CRC, 1997. 528p. \$129.00. ISBN 0849325137.

This handbook covers the understanding, designing, and use of high resolution instrumentation, transmission electron microscopes (TEMs), scanning electronic microscopes (SEMs), scanning transmission electronic microscopes (STEMs), and focused ion beam (FIB) systems. It explains the construction and function of magnetic and electrostatic lenses.

636. Poularikas, Alexander D. **The Handbook of Formulas and Tables for Signal Processing**. Boca Raton, FL: CRC, 1998. 576p. (The Electrical Engineering Handbook Series). \$74.95. ISBN 0849385792.

This handbook provides the most useful tables and formulas in signal processing. Topics covered include filtering, coding, transmitting, estimating, detecting, analyzing, recognizing, synthesizing, recording, and reproducing signals.

637. Poularikas, Alexander D. **The Transforms and Applications Handbook**. Boca Raton, FL: CRC, 1999. (Electrical Engineering Handbook Series). \$125.00. ISBN 0849385954.

This source lists the most important mathematical transforms used by scientists and engineers, such as Fourier transforms, Hankel transforms, Laplace transforms, and mixed time-frequency signal transformations. It includes applied examples.

638. Redl, Siegmund M., Matthias K. Weber, and Malcolm W. Oliphant. **GSM and Personal Communications Handbook**. Norwood, MA: Artech House, 1998. 526p. \$89.00. ISBN 0890069573.

The global system for mobile communications (GSM), the most widely deployed digital cellular standard, continues to be implemented throughout the world. This handbook provides a technical overview of GSM, illustrated with numerous figures and charts. Each chapter has references for further reading.

639. Richardson, Doug. **An Illustrated Guide to the Techniques and Equipment of Electronic Warfare**. Upland, PA: DIANE, 1998. 151p. \$15.00. ISBN 0788153323.

Topics included here range from electronic intelligence to counter-countermeasures. Chapters cover the electromagnetic spectrum, radar, millimeter waves, infrared, electro-optical systems, sonar, stealth technology, warning receivers, and ESM systems.

640. Ritter, Gerhard X., and Joseph N. Wilson. **Handbook of Computer Vision Algorithms in Image Algebra**. Boca Raton, FL: CRC, 1996. 360p. \$89.95. ISBN 0849326362.

This handbook provides the basic concepts of image algebra and its use in computer vision algorithms. The techniques and algorithms are arranged by level of abstractness. The text is illustrated with examples, formulas, and examples. An appendix includes the Image Algebra C++ Library. Information is available at <http://www.cis.ufl.edu/~jnw/IACC>.

641. Russ, John C. **The Image Processing Handbook**. Boca Raton, FL: CRC, 1998. 771p. Includes digital data. \$99.95. ISBN 0849325323.

This handbook covers developments in graphic information and high-end imaging software. Topics covered include surface imaging, high resolution imaging, digital cameras, printing, databases for images, digital movies, computer graphics, image math, and surface composition imaging. Extensive lists of references are provided.

642. Sergeant, Jerry E., and Al Krum. **Thermal Management Handbook For Electronic Assemblies**. New York: McGraw-Hill, 1998. (Electronic Packaging and Interconnection Series). \$89.50. ISBN 0070266999.

As microelectronic circuits become faster and the packaging becomes smaller, the issue of thermal management becomes more critical. This handbook is directed to designers who are concerned with such issues as heating within an electronics circuit, calculating circuit temperatures, and removing heat from circuits. Each chapter has extensive references.

643. Smeaton, Robert W., and William H. Ubert. **Switchgear and Control Handbook**. New York: McGraw-Hill, 1998. Various pagings. \$99.95. ISBN 0070584516.

This handbook has four sections, covering general switchgear and control considerations, standards, and equipment; specific switchgear and control equipment; motor and industrial controls and controllers; and current solid-state and microprocessor-based control equipment and techniques. Switchgear devices include circuit breakers, switches, metering, and instrumentation, which are used for electrical power and transmission.

644. Strauss, Rudolf. **SMT Soldering Handbook**. Boston: Newnes, 1998. 371p. \$75.00. ISBN 0750635894.

This handbook on surface mount technology (SMT) covers all aspects of the soldering process associated with surface-mounted devices (SMDs).

645. Talbot-Smith, Michael. **Audio Engineer's Reference Book**. Boston: Focal, 1999. Various pagings. \$155.00. ISBN 0240515285.

This reference book covers all aspects of audio engineering and technology. Topics covered include basic principles, acoustics, recording and reproduction, digital equipment, studios, and distribution of audio signals. There is also a section on international standards for sound systems and equipment.

646. Taylor, Ed. **The McGraw-Hill Internetworking Handbook**. New York: McGraw-Hill, 1998. 876p. (Taylor Networking Series). \$89.95. ISBN 0070633347.

This is a definitive reference covering such topics as networking fundamentals, lower-layer protocols (e.g., asynchronous transfer mode, ETHERNET, fiber distributed data interface), upper-layer protocols (e.g., systems network architecture, transmission control protocol/Internet protocol), and network devices (e.g., bridges, routers, repeaters, servers). Other reference materials include a glossary and lists of acronyms and abbreviations, a RFC (Request for Comments) listing, trademarks, and a bibliography.

647. Taylor, John, and Qiuting Huang. **CRC Handbook of Electrical Filters**. Boca Raton, FL: CRC, 1997. 427p. \$89.95. ISBN 0849389518.

This is a practical guide for electronic and electrical engineers who need the general theory and information about different types of electrical filters. The types of filters under discussion include LCR, continuous-time active RC, digital, switched-capacitor, and electromechanical.

648. Thumann, Albert. **Handbook of Energy Engineering**. Lilburn, GA: Fairmont, 1997. 478p. \$79.00. ISBN 0881732605.

This comprehensive reference guide applies principles of energy engineering and management to design of electrical, HVAC, utility process, and building systems. Topics covered include electrical system optimization, state-of-the-art lighting, thermal storage, co-generation, and HVAC system optimization.

649. Traister, John E. **Handbook of Electrical Design Details**. New York: McGraw-Hill, 1997. 800p. \$79.95. ISBN 0070653305.

The handbook is designed to assist electrical engineers and designers in preparing working electrical design drawings. Design topics covered include general provisions, basic materials and methods, power generation, service and distribution, lighting, and communications. The electrical design details used for illustration are all taken from working projects.

650. Tummala, Rao R., Eugene J. Rymaszewski, and Alan G. Klopfenstein. **Microelectronics Packaging Handbook on CD-ROM**. Boston: Kluwer Academic, 1998. \$256.65. ISBN 0412085615. Paper format available.

Microelectronic packaging is the designs and interconnection technologies to support semiconductor devices, better known as integrated circuits (IC). This research tool provides an overview of the technology, wiring and terminals, electrical design, heat transfer, reliability, chip-to-package interconnections, and packaging.

651. Turner, Wayne C. **Energy Management Handbook**. Lilburn, GA: Fairmont, 1997. 702p. \$119.00. ISBN 0881732281.

This resource covers the basic principles of energy management as well as the advanced energy technologies. Topics covered include energy auditing, economic analysis, boilers and fired systems, cogeneration, HVAC systems, lighting, codes and legislation, and energy security. Appendices provide a thermal sciences review, conversion factors and property tables, and a review of electrical science.

652. U.S. Department of Defense (DOD). Naval Air Warfare Center. Electronic Warfare Division. **Electronic Warfare and Radar Systems Engineering Handbook**. Point Mugu, CA: Electronic Warfare Division, 1997. 603p. (NAWCWPNS TP8347; ADA3277738). Contact NTIS for price. Available from National Technical Information Service.

This handbook is designed to aid electronic warfare and radar systems engineers in making general estimations regarding capabilities of systems. It is not intended as a detailed designer's guide, due to space limitations. Portions of the handbook and future changes will be posted on the Internet.

653. Vacca, John R. **The Cabling Handbook**. Upper Saddle River, NJ: Prentice-Hall, 1999. 684p. \$34.99. ISBN 0130805319.

The primary audience for this book is people who have responsibility for cabling decisions, project implementation, network cabling installations, cost justifications and investments, and standards. Appendices include a listing of TV-based high speed cable Internet services, cable installation companies, fiber optic cable companies, wireless LAN products and sites, and CCITT/ISO standards. There is an extensive glossary.

654. Van Valkenburg, Mac E. **Reference Data for Engineers Radio, Electronics, Computer and Communications**. Woburn, MA: Butterworth-Heinemann, 1998. 1500p. \$110.00. ISBN 0750670649.

This is a classic presentation of detailed reference information on a range of topics, including circuits, transistors, communications, radar, antennas, and lasers.

655. Weber, Marvin J. **Handbook of Laser Wavelengths**. Boca Raton, FL: CRC, 1999. 767p. (The CRC Press Laser and Optical Science and Technology Series). \$99.95. ISBN 0849335086.

This handbook provides tabulations of wavelengths for all types of lasers, including glass lasers, color center lasers, semiconductor lasers, polymer lasers, rare earth liquid lasers, free electron lasers, and nuclear-pumped lasers. The data in this handbook are derived from data evaluated and compiled by the contributors to the CRC Handbook Series of Laser Science and Technology.

656. Webster, John G. **The Measurement Instrumentation and Sensors Handbook**. Boca Raton, FL: CRC, 1999. 1500p. \$129.95. (The Electrical Engineering Handbook Series). ISBN 0849383471.

This source covers an extensive range of topics related to measurement, instrumentation, and sensors. It also describes the use of instruments and techniques in engineering, physics, chemistry, and the life sciences. The text is arranged by measurement problems such as spatial variables measurement, time and frequency measurement, mechanical variables measurement, electromagnetic variables measurement, radiation measurement, biomedical variables measurement, signal processing, displays, and controls. Provided is an appendix with units and conversions information.

657. Whitaker, Jerry. **AC Power Systems Handbook**. Boca Raton, FL: CRC, 1998. 450p. \$69.95. ISBN 0849374146.

This handbook focuses on the design, maintenance, and operation of an alternating current (AC) power supply; topics covered include elements of the AC power system, MOSFET devices, transformers, electric shock, and OSHA safety standards.

658. Whitaker, Jerry. **The Electronics Handbook**. Boca Raton, FL: CRC, 1996. 2575p. (Electrical Engineering Handbook Series). \$115.00. ISBN 0849383455.

This source provides theory and principles governing electronic devices and systems. Discussions include wireless communications systems, optical fiber technology, computer technologies, and semiconductor applications. Topics

covered include electron vacuum devices, semiconductor devices, packaging electronic systems, wired communications systems, engineering management, standardization, and regulation, conversion factors, and standards.

659. Whitaker, Jerry. **The Resource Handbook of Electronics**. Boca Raton, FL: CRC, 1998. 600p. \$69.95. ISBN 0849383536.

This handbook functions as a reference of tabular data for electronics and electrical engineers, providing tables, charts, formulas, definitions, and equations. It complements the following CRC-published reference books: *The Electronics Handbook*, *The Electrical Engineering Handbook*, *The Communications Handbook*, *The Mobile Communications Handbook*, *The Industrial Electronics Handbook*, and *The Digital Processing Handbook*.

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## 6.8 Environmental Engineering

660. Alley, E. Roberts, Lem B. Stevens, and William L. Cleland. **Air Quality Control Handbook**. New York: McGraw-Hill, 1998. 1008p. \$142.95. ISBN 0070014116.

This handbook allows for quick reference to understanding air pollution control. Topics covered include theory, pollutant characterization, atmospheric assimilation, environmental regulations, management, and implementation. Appendices include acronyms, definitions, EPA Regional Air Division Directors, hazardous air pollutants, accident-release prevention provisions, and thermal stability rankings.

661. Beim, Howard J., Jennifer Spero, and Louis Theodore. **Rapid Guide to Hazardous Air Pollutants**. New York: Van Nostrand Reinhold, 1998. 582p. \$29.95. ISBN 0442025157.

The 1990 amendments to the Clean Air Act created a list of 189 hazardous air pollutants (HAPs). This guide provides easy access to these pollutants, listing chemical data, uses, physical properties, health risk, hazardous risk, exposure routes, regulatory status, and additional information. Each entry also includes additional references for further reading.

662. Bitton, Gabriel. **Formula Handbook for Environmental Engineers and Scientists**. New York: Wiley, 1998. 290p. (Environmental Science and Technology). \$49.95. ISBN 047113905X.

Environmental engineering relies on a broad range of interdisciplinary formulas and equations, including many that have been developed outside the circles of traditional engineering. This handbook includes useful formulas covering biological and biochemical processes. This easy-to-use listing complements the traditional information found in the *Handbook of Physics and Chemistry*.

663. Boulding, J. Russell. **Use of Airborne, Surface, and Borehole Geophysical Techniques at Contaminated Site: A Reference Guide**. Upland, PA: DIANE, 1998. 380p. \$50.00. ISBN 0788147579.

This guide describes geophysical methods in relatively nontechnical terms and provides guidance in finding detailed information on specific methods, information on designing and evaluating a geophysical program, and summary case study information on the use of surface and borehole methods.

664. Bregman, Jacob I. **Environmental Impact Statements**. Boca Raton, FL: Lewis, 1999. 248p. \$89.95. ISBN 1566703697.

This is an excellent reference for understanding the development, role, and legal basis of environmental impact statements (ESI). In 1969, the U.S. Congress enacted the National Environmental Policy Act (NEPA), which requires that environmental impacts be considered in the preliminary stages of project development. Discussion includes overviews of natural and people-created environments.

665. Brownell, F. William. **Clean Air Handbook**. Rockville, MD: Government Institutes, 1998. 324p. \$95.00. ISBN 0865876169.

The Clean Air Act is constantly evolving, with new rules being created and EPA continuing to supplement existing rules with guidance documents and policy statements. This handbook covers the 1990 amendments, air quality regulations, the acid deposition control program, hazardous air pollutants, stratospheric ozone protection, and current regulatory and legislative trends.

666. Cooper, Andre R. **Properties of Hazardous Industrial Materials CRCnetBASE**. Boca Raton, FL: Lewis, 1998. \$399.00. Digital format. ISBN 1566702364.

This resource lists more than 25,000 hazardous materials. Each chemical is fully described with at least 15 different fields of data. Searching capability includes CAS number, DOT number, synonyms, exposure limits, and flash chemical points. The source includes a chemical dictionary and spell checker with more than 10,000 terms.

667. Corbitt, Robert A. **Standard Handbook of Environmental Engineering**. New York: McGraw-Hill, 1998. 1532p. (McGraw-Hill Handbooks). \$179.95. ISBN 0070131600.

In the preface of this reference handbook, the editor states that the term “environmental engineer” has “evolved to more appropriately describe the engineer’s increased emphasis on the biological, chemical, and physical reactions in the air, land, and water environments.” There is a very useful introduction to environmental engineering that covers state and territorial environmental protection agencies, U.S. Environmental Protection Agency offices, national and international environmental associations, and boards of engineering registration.

668. De Zuane, John. **Handbook of Drinking Water Quality**. New York: Van Nostrand Reinhold, 1997. 575p. \$78.95. ISBN 0442023448.

This handbook can be used for quick reference and technical support for anyone dealing with issues of drinking water quality. It includes a discussion of potable water, different parameters, carcinogens, water analyses, public health regulations, water treatment, and federal regulations. Appendices include World Health Organization Guidelines and European Drinking Water Directives.

669. **Fire Protection Guide to Hazardous Materials.** Quincy, MA: National Fire Protection Association, 1997. 550p. \$89.00. ISBN 0877654271.

This guide covers the dangerous properties of hazardous materials, including storage and handling guidelines. It includes the following codes: *NFPA 491: Guide for Hazardous Chemical Reactions* (1997); *NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response* (1996); *NFPA 49: Hazardous Chemicals Data* (1994); and *NFPA 325: Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids* (1994).

670. Freeman, Harry. **Standard Handbook of Hazardous Waste Treatment and Disposal.** New York: McGraw-Hill, 1998. Various pagings. \$125.00. ISBN 0070220441.

This detailed handbook provides a summary of relevant laws and regulations, an overview of the hazardous waste problem, institutional options to respond to this issue, acceptable disposal options, and other waste issues and processes associated with remedial responses. It also provides details on state-of-the-art alternative treatment and disposal processes. The last chapter outlines electronic resources for hazardous waste management.

671. Gallagher, Lynn M., and Leonard A. Miller. **Clean Water Handbook.** Rockville, MD: Government Institutes, 1996. 439p. \$89.00. ISBN 0865587512X.

This handbook provides a comprehensive roadmap to requirements, legal thinking, and critical issues of water pollution control law. It includes a wide range of programs and requirements that have developed over the years through statutory changes, regulatory enactments, and court decisions. This discussion covers the National Pollutant Discharge Elimination (NPDES) Permit program, effluent limitations, stormwater and nonpoint source discharges, and the complete text of the Clean Water Act and related amendments.

672. **Geophysical Exploration for Engineering and Environmental Investigations.** Reston, VA: ASCE, 1998. 204p. (Technical Engineering and Design Guides as Adapted from the U.S. Army Corps of Engineers, no. 23). \$66.00. ISBN 0784402981.

This guide provides an introduction to geophysical exploration for engineering, geological, and environmental investigations. It is adapted from the *Engineering Manual, EM 1110-1-1802, Geophysical Exploration for Engineers and Environmental Investigations*.

673. Goheen, Steven. **DOE Methods for Evaluating Environmental and Waste Management Samples.** Richland, WA: Pacific Northwest Laboratory, 1997. 1000p. (DEAC0676RLO 1830). \$297.00. ISBN 1574770217.

*DOE Methods* describes methods for collecting representative samples and for determining the radioisotope activity and organic and inorganic composition of a sample. This guide outlines sampling and analytical activities for the evaluation of environmental and waste management samples.

674. Hess, Kathleen. **Environmental Site Assessment, Phase I: A Basic Guide**. Boca Raton, FL: Lewis, 1998. 334p. \$84.95. ISBN 1566702712.

Environmental site assessments are performed to determine the possibilities of hazardous substance contamination on or in the vicinity of particular locations. This guide is written to enable the individuals involved with the performance of site assessments to understand the process. Appendices include regulatory definitions of “pollutant,” a summary of important environmental regulations, a report format for Phase I environmental site assessments, a checklist, sources of aerial photographs, federal sources of information, and HUD standard practices for collecting paint samples.

675. Hornsby, Arthur G., R. Don Wauchope, and Albert E. Herner. **Pesticide Properties in the Environment**. New York: Springer-Verlag, 1996. 227p. Includes digital data. \$59.95. ISBN 0387943536.

The basis for this handbook is the ARS Pesticide Properties Database, available at <http://wizard.arsusda.gov/rsml/ppdb.html>. The authors have also included data for pesticide products that have been discontinued in the United States but are used in other countries.

676. Karnofsky, Brian. **Hazardous Waste Management Compliance Handbook**. New York: Van Nostrand Reinhold, 1997. 531p. \$84.95. ISBN 0442023979.

This handbook assists the reader in understanding hazardous waste management regulations. The author has included forms, keys, and checklists that are useful in the development of a hazardous waste management program. The book includes the full-text of several federal regulations.

677. Keith, Lawrence H. **Compilation of EPA’s Sampling and Analysis Methods**. Boca Raton, FL: CRC, 1996. 1696p. \$199.95. ISBN 1566701708. Digital format available.

This compilation contains over 1,200 analyte method summaries for sampling and analyzing chemical hazards and other pollutants. Each description contains a brief summary of each method, required instrumentation, sampling containers, preservation techniques, detection levels, quality control requirements, and EPA reference. Information about software programs that can be used with this reference is available at <http://www.instantref.com/inst-ref.htm>.

678. Keys, W. Scott. **A Practical Guide to Borehole Geophysics in Environmental Investigations**. Boca Raton, FL: Lewis, 1997. 192p. \$65.00. ISBN 1566702321.

This guide explains tools and techniques used in borehole logging projects; provides guidance on planning, executing, and analyzing borehole geophysics projects; describes computer analysis methods for interpreting data; and includes case histories of several environmental sites.

679. King, R. Barry, Gilbert M. Long, and John K. Sheldon. **Practical Environmental Bioremediation: The Field Guide**. Boca Raton, FL: Lewis, 1998. 184p. \$79.95. ISBN 1566702089.

Bioremediation commonly uses microorganisms as a biological activity to reduce the effects of a pollutant in the environment. This book examines remediation in a variety of environments. It is illustrated with numerous case studies, instructive illustrations, diagrams, and charts. This book is appropriate for a broad range of students and professionals working in the environmental sciences.

680. Kreske, Diori L. **Environmental Impact Statements: A Practical Guide for Agencies, Citizens, and Consultants**. New York: Wiley, 1996. 480p. \$65.95. ISBN 0471137413.

The author approaches environmental impact statements from the role of individuals, agencies, and consultants in the EIS process. The EIS process includes the elements of the entire environmental review process required by the National Environmental Policy Act (NEPA) or comparable state environmental policy acts (SEPA). This is an excellent complement to other legal discussions of the EIS process. It includes a bibliography and appendices, with the text of the NEPA, other regulations, federal data sources, and organizational charts of selected federal agencies with NEPA responsibilities.

681. Kuo, Jeff. **Practical Design Calculations for Groundwater and Soil Remediation**. Boca Raton, FL: Lewis, 1998. \$69.95. ISBN 1566702380.

This reference provides illustrations of design calculations for soil and groundwater remediation technologies. Both SI and U.S. units are given. Topics covered include site assessment and remedial investigation, groundwater movement and plume migration, vadose zone soil remediation, groundwater remediation; and VOC-laden air treatment. References, formulas, and diagrams are generously provided. This is a useful tool for environmental engineers, scientists, and legal experts.

682. Liu, David H. F., and Bela G. Liptak. **Environmental Engineers' Handbook**. Boca Raton, FL: Lewis, 1997. 1431p. \$129.00. ISBN 0849399718.

This comprehensive handbook covers air pollution, noise pollution, wastewater treatment, ground and surfacewater pollution, solid waste, and hazardous waste disposal. It also discusses environmental laws and legislation, environmental impact assessments, and standards.

683. Maslansky, Steven P., and Carol J. Maslansky. **Health and Safety at Hazardous Waste Sites: An Investigator's and Remediator's Guide to HAZWOPER**. New York: Van Nostrand Reinhold, 1997. 612p. \$69.95. ISBN 0442023987.

This manual covers hazard recognition, properties of hazardous materials, toxicology and chemical exposure, sources of information, respiratory protection, air monitoring instrumentation, protective equipment, site control, decontamination, and organizational health and safety programs. Regulations for Hazardous Waste Operations (HAZWOPER) come from 29 C.F.R. 1910.120. The guide is illustrated with reference material, photographs, examples, and other technical data.

684. Miller, E. Willard, and Ruby M. Miller. **Indoor Pollution: A Reference Handbook**. Santa Barbara, CA: ABC-CLIO, 1998. 330p. (Contemporary World Issues). \$39.95. ISBN 0874368952.

Topics covered here include indoor pollution, indoor air quality, standards for indoor air quality, sources of indoor pollutants, and laws and regulations. The book also includes a directory of organizations and other reference sources. There is an extensive list of journal articles and a list of annotated reference sources.

685. Mudroch, Alena, Jose M. Azcue, and Paul Mudroch. **Manual of Bioassessment of Aquatic Sediment Quality**. Boca Raton, FL: Lewis, 1999. 236p. \$79.95. ISBN 1566703433.

The objective of this manual is to provide information on techniques for bioassessment of sediment quality. It describes recently developed methods, including field and laboratory methods.

686. Murphy, Toni, and Carol Briggs-Erickson. **Environmental Guide to the Internet**. Rockville, MD: Government Institutes, 1998. 556p. (Government Institute Internet Series). \$59.00. ISBN 0865876436.

This guide contains the top 12,000 environmental Internet resources, including discussion groups and mailing lists, newsgroups, electronic journals, and newsletters. Each listing includes summary, e-mail address, and URL.

687. Pohanish, Richard P., and Stanley A. Greene. **Electronic and Computer Industry Guide to Chemical Safety and Environmental Compliance**. New York: Wiley, 1998. 624p. \$79.95. ISBN 0471292850.

This industry-specific reference provides data about 332 hazardous chemicals used in the computer and electronics industry, including the manufacture of semiconductors. Entries include safety and environmental compliance data.

688. Rizzo, Joyce A. **Underground Storage Tank Management: A Practical Guide**. Rockville, MD: Government Institutes, 1998. 420p. \$89.00. ISBN 086587607X.

The Environmental Protection Agency (EPA) required that all underground storage tank owners and operators comply with new federal requirements by December 22, 1998. This guide includes all updates and requirements and technology, including soil sampling and analytical guidelines, evolution of tank testing strategies, *National Fire Protection Pamphlet 329*, and state-of-the-art technology.

689. Shindelcker, Chris. **Handbook of Environmental Contaminants: A Guide for Site Assessment**. Boca Raton, FL: Lewis, 1998. 416p. \$104.95. ISBN 0873717325.

This handbook is a helpful resource to assist with site assessment activity. Whereas most handbooks provide chemical and physical data about potentially hazardous materials, this resource links specific contaminants that may be associated with the historical uses of a particular property.

690. Stephenson, Ralph L., and James W. Blackburn. **The Industrial Wastewater Systems Handbook**. Boca Raton, FL: CRC, 1998. 544p. \$75.00. ISBN 1566702097.

Topics covered here include U.S. laws and regulations, international treaties, laws and regulations. wastewater system planning; wastewater collection systems, physical separation processes, chemical treatment processes; biological treatment processes, and sludge and solid wastes management.

691. Strong, Debra L. **Recycling in America: A Reference Handbook**. Santa Barbara, CA: ABC-CLIO, 1997. 330p. \$39.50. ISBN 0874368898.

This handbook includes an overview of recycling issues, policies, facts, and data. It also provides general descriptions of state laws and regulations and directory information for state, federal, and private recycling organizations. It is an excellent reference book on this topic.

692. Sullivan, Thomas F. P. **Environmental Law Handbook**. Rockville, MD: Government Institutes, 1999. 700p. \$89.00. ISBN 0865876507.

This edition provides users with practical compliance information, incorporating all the latest changes to the 14 major environmental, health, and safety laws. It includes such laws as the Clean Air Act, Clean Water Act, Oil Pollution Act, Resource Conservation and Recovery Act, National Environmental Policy Act, and Pollution Prevention Act. It is extensively indexed.

693. U.S. Environmental Protection Agency (EPA). **The Municipal Solid Waste Factbook**. 1997. Available: <http://www.epa.gov/epaoswer/non-hw/muncpl/factbook>. (Accessed October 30, 1999).

The Municipal Solid Waste Factbook is an electronic reference manual containing information about household waste management practices. Tables, charts, and maps display useful facts and figures about source reduction, recycling, land disposal, and combustion of MSW. Other information includes the complete text of EPA's regulations for municipal solid waste landfills; inventories of incinerators, composting facilities, and large landfills; lists of periodicals; publications available from the National Technical Information Service (NTIS); and names and addresses of trade and environmental associations.

694. U.S. Environmental Protection Agency (EPA). **RCRA Orientation Manual**. Washington, DC: U.S. Environmental Protection Agency, Solid Waste and Emergency Response, 1998. (EPA530R98004). Available: <http://www.epa.gov/epaoswer/general/orientat/index.htm>. (Accessed October 30, 1999).

This site provides introductory information on solid and hazardous waste management programs under the Resource Conservation and Recovery Act (RCRA). It addresses the basic framework of the RCRA regulatory program.

695. Viguri, A. **Comparative Environmental Laws**. Southampton, MA: WIT Press, 1999. 200p. (Advances in Ecological Sciences). \$108.00. ISBN 1853125776.

This source compares European environmental protection laws with those in the United States and Latin America, examining the civil, administrative,

criminal, and constitutional aspects. It is an important resource for companies involved in international projects.

696. Von Fahnestock, F. Michael, et al. **Biopile Design, Operation, and Maintenance Handbook for Treating Hydrocarbon-Contaminated Soils**. Columbus, OH: Battelle, 1998. 157p. Includes digital data. \$54.95. ISBN 1574770357.

Biopile technology involves putting petroleum-contaminated soils into piles and assisting the aerobic microbial activity through aeration. The focus of this handbook is limited to non-chlorinated petroleum hydrocarbons. It covers sampling and analysis procedures, regulatory requirements, and health and safety requirements. The appendices provide a glossary of terms, design calculations, physical and chemical properties of petroleum hydrocarbons, regulations, and a list of state environmental regulatory agencies.

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## 6.9 General Engineering

697. Andrews, Gordon C., and John D. Kemper. **Canadian Professional Engineering Practice and Ethics**. Toronto: Harcourt Brace, 1999. 492p. \$69.00. ISBN 0774735015.

This comprehensive source provides readers with the structure, practice, and ethics for the engineering practice. Although written from a Canadian perspective, it does include some commentary on U.S. practice. Topics covered include an introduction to the engineering profession, regulations, employment, management, and private practice. Ethical discussions include codes of ethics, principles, problems, and case studies. There is a chapter on writing professional practice and ethics.

698. Banks, Jerry. **Handbook of Simulation: Principles, Methodology, Advances, Applications, and Practice**. New York: Wiley, 1998. 849p. ISBN 0471134031.

Chapters in this handbook include principles of simulation, random number design, experimental design, output data analysis, manufacturing and material handling systems, automobile industry, transportation, and logistics systems.

699. Beer, David F., and David A. McMurrey. **A Guide to Writing as an Engineer**. New York: Wiley, 1997. 253p. \$33.95. ISBN 0471117153.

This professional engineering communication book deals with the content, organization, format, and style of specific kinds of engineering writing, such as reports, business letters, office memoranda, and e-mail. It also covers oral presentations and details how to find engineering information, both using traditional tools and on the Internet.

700. Bickford, John H., and Sayed Nassas. **The Handbook of Bolts and Bolted Joints**. New York: Marcel Dekker, 1998. 911p. \$195.00. ISBN 0824799771.

Each chapter in this handbook includes both theory and practical applications for each issue. Subjects covered are material properties and selection, processing of fasteners, threaded fasteners, design and analysis of bolted joints, and testing and inspection.

701. Bunch, Bryan H. **Handbook of Current Science and Technology**. Detroit, MI: Gale, 1996. 834p. \$54.95. ISBN 0810395525.

This handbook provides an overview of principal events and trends in science and technology, with articles on astronomy, space, chemistry, earth sciences, physics, and technology. It includes tables, charts, data summaries, and notable prizes and awards in the field.

702. Cardarelli, Francois. **Scientific Unit Conversion: A Practical Guide to Metrication**. New York: Springer-Verlag, 1998. 488p. ISBN 1852330430.

This resource provides metric equivalents and conversion factors for more than 10,000 scientific units. It includes U.S., British, conventional metric, historic systems, and SI.

703. Cloud, Phillip A. **Engineering Procedures Handbook**. Westwood, NJ: Noyes, 1997. 419p. \$78.00. ISBN 0815514107.

This unique reference provides a systematic approach to product engineering documentation, including specially designed forms and engineering procedures. The outline of the handbook follows the logical order of product engineering documentation systems: product design and development, product and document identification, documentation requirements, customer documentation, vendor documentation, documentation change control, and document control. Appropriate product engineering documentation is a critical component of ISO 9000 registration audits.

704. Dhillon, B. S. **Advanced Design Concepts for Engineers**. Lancaster, PA: Technomic, 1998. 237p. \$69.95. ISBN 1566766265.

This volume of advanced engineering design concepts focuses on the structure and concepts of design. The author includes some historical overview of each design concept. Topics covered include design mathematics, concurrent engineering, reliability engineering, design reliability, reverse engineering, TQM, life cycle costing, and re-engineering.

705. Dodd, Janet S. **The ACS Style Guide: A Manual for Authors and Editors**. Washington, DC: American Chemical Society, 1997. 460p. \$27.00. ISBN 0841234612.

This very helpful reference provides guidelines for writing and editing scientific papers. Topics covered include format, grammar, preparation of illustrations, chemical structures, tables, and copyright issues.

706. Dorf, Richard C. **The Engineering Handbook**. Boca Raton, FL: CRC, 1998. Digital format. \$99.95. ISBN 0849385768.

This digital version of *The Engineering Handbook*, which was originally published in 1995, is appropriate for all types of engineering. Topics range from aerospace engineering, circuits, and environmental systems to coastal engineering. The source includes more than 1,500 definitions of engineering terms and more than 1,000 illustrations. It also provides coverage of mathematics, materials property data, numerical methods, computer graphics visualization, chaos, and fractals.

707. Dorf, Richard C. **The Technology Management Handbook**. Boca Raton, FL: CRC, 1998. (The Electrical Engineering Handbook Series). Digital format. \$129.00. ISBN 0849397545.

This handbook includes articles from over 150 experts on the fundamentals of running a technology-related business, covering economics, finance, accounting, project management, marketing, and manufacturing.

708. Elias, Stephen. **Patent, Copyright & Trademark**. Berkeley, CA: Nolo, 1999. 451p. \$24.95. ISBN 0873375084.

Written by an intellectual property attorney, this guide provides concise overviews of patent, copyright, trademark, and trade secret law. There is information on the effect the Internet on intellectual property. Key statutes and sample forms are included along with intellectual property resources and Internet sites. Information is available at [http://www.nolo.com/chapter/PCTM/PCTM\\_toc.html](http://www.nolo.com/chapter/PCTM/PCTM_toc.html).

709. Gieck, Kurt. **Engineering Formulas**. New York: McGraw-Hill, 1997. Various pagings. (Translation of *Technische Formelsammlung*. English translation by J. Walters). \$29.95. ISBN 007024572X.

This pocket-sized guide provides a collection of technical and mathematical formulae. The pages were printed only on one side to allow blank pages for notes as needed. It includes an index.

710. Harris, John W., and Horst Stocker. **Handbook of Mathematics and Computational Science**. New York: Springer-Verlag, 1998. 1028p. \$29.95. ISBN 0387947469.

This is a standard mathematical reference with equations, formulas, and tables.

711. He, Jimin. **Internet Resources for Engineers: A Practical Handbook for Engineers and Students**. Woburn, MA: Butterworth-Heinemann, 1998. 298p. \$29.95. ISBN 0750689498.

This handbook provides an excellent overview of a broad range of Internet resources for the engineering professional. It contains subject-oriented guides, library resources, and electronic publications. It includes helpful descriptions for most of the listed resources. It also provides a good introduction to the Internet as a tool for creating, managing, and accessing information.

712. Heisler, Sanford I. **The Wiley Engineer's Desk Reference: A Concise Guide for the Professional Engineer**. New York: Wiley, 1998. 690p. \$75.00. ISBN 0471168270.

This reference covers every area of engineering, including composite materials; semiconductors; computer applications; and general topics such as mathematics, mechanics, structures, fluids, thermodynamics, design, and operations. This latest edition reflects the impact that computing technology has had on every aspect of engineering. It also includes over 60 commonly used general engineering tables.

713. Hyman, Barry I. **Fundamentals of Engineering Design**. Upper Saddle River, NJ: Prentice-Hall, 1998. 499p. \$84.00. ISBN: 0135313856.

Although the primary focus of this text is on problem formulation and concept generation, there are chapters on engineering economics, project planning, professional and social context of design, information acquisition, and communication skills. Each chapter includes references for additional reading. There is also a section on design projects for teaching.

714. Kliment, Stephen A. **Writing for Design Professionals: A Guide to Writing Successful Proposals, Letters, Brochures, Portfolios, Reports, Presentations, and Job Applications for Architects, Engineers, and Interior Designers**. New York: Norton, 1998. 232p. \$36.50. ISBN 0393730263.

This resource opens with eight principles of good writing. Other topics covered include proposals, project writing, job prospects, writing by the product manufacturer, international style, and how to measure impact. The book includes a list of related resources.

715. Lindeburg, Michael R. **Engineering Unit Conversions**. Belmont, CA: Professional Publications, 1999. 160p. \$28.95. ISBN 1888577339.

This is an easy-to-use, basic conversion reference. Each page is arranged by columns that provide alphabetical lists of the units, multiplying converting factor, and the new unit. The author has also provided a list of the unofficial, humorous, and odd units and abbreviations.

716. Lo, Jack, and David Pressman. **How To Make Patent Drawings Yourself**. Berkeley, CA: Nolo, 1999. Various pagings. \$29.95. ISBN 0873374916.

Patent drawings are a critical component of the patent documentation. The U.S. Patent Office requires that these formal drawings follow strict rules. This reference assists the inventor in understanding Patent Office drawing standards; making formal drawings using a pen and ruler, computer or camera; and responding to Patent Office examinations.

717. **Manual of Patent Examining Procedure (MPEP)**. Washington, DC: Government Printing Office. Annual. (C21.15.998). \$216.00. ISBN 0160164591. Available: <http://www.uspto.gov/web/offices/pac/mpep/index.html>. (Accessed April 2, 2000).

This reference work outlines the practices and procedures for the examination and processing of patent applications. It is used by patent examiners, patent applicants, and patent legal representatives and attorneys. It is updated on a regular basis.

718. **Manual of U.S. Patent Classification**. 1999. Available: <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/moc/index.htm>. (Accessed April 2, 2000).

This manual lists the numbers and descriptive titles of the patent classes and subclasses for over 430 classes and 140,000 subclasses of the U.S. Patent Classification (USPC) system.

719. Matthews, Clifford. **Engineers' Data Book**. London: Professional Engineering, 1998. 177p. \$15.95. ISBN 1860581757.

This reference book is published by the Institution of Mechanical Engineers. It includes basic engineering reference information on regulations, units, design, motion, material failure, pressure vessels, fluid equipment, and materials.

720. Nagle, Joan G. **Handbook for Preparing Engineering Documents: From Concept to Completion**. New York: IEEE, 1996. 372p. \$49.95. ISBN 0780311655.

This handbook is an overview of useful principles in engineering documentation; a guide to the process of preparing, producing, and distributing engineering documents; and a reference for problem solving. The author begins with an overview of the requirements of analysis, design, components and assembly, controls, packaging, testing, and production. Reference resources include a bibliography and a series of quick reference guides on the mechanics of documentation.

721. Paradis, James G., and Muriel L. Zimmerman. **The MIT Guide to Science and Engineering Communication**. Cambridge, MA: MIT, 1997. 290p. \$30.00. ISBN 0262161427.

The approach the authors use for this text is to emphasize specific processes and forms used by individuals and collaborative teams. Subject areas covered include defining the audience, developing graphics, conducting meetings, writing proposals and reports, job search documents, and strategies for searching the literature.

722. Pilkey, Walter D. **Peterson's Stress Concentration Factors**. New York: Wiley, 1997. 508p. \$110.00. ISBN 0471538493.

Graphical keys to the stress concentration charts are provided to make it easier to find the appropriate chart. Program files to accompany this title are available at <http://cinderella.mech.virginia.edu/SCFmessage.html>.

723. **Pipe Characteristics Handbook**. Tulsa, OK: PennWell, 1996. 229p. \$99.95. ISBN 0878146113.

This handbook was prepared by the Williams Natural Gas Company. Its purpose is to enable the design engineer to select the proper pipe characteristics for specific pipeline applications. It provides detailed data charts on maximum allowable working pressures and properties of pipe.

724. Polyanin, Andrei D., and Alexander V. Manzhirov. **Handbook of Integral Equations**. Boca Raton, FL: CRC, 1998. 816p. \$109.95. ISBN 0849328764.

Integral equations are used in several fields of science and in numerous applications, including elasticity, plasticity, heat and mass transfer, fluid dynamics, biomechanics, game theory, and electrical engineering. This handbook contains more than 2,100 integral equations and their solutions and includes Laplace and Mellin tables.

725. Pressman, David. **Patent It Yourself**. Berkeley, CA: Nolo, 1998. Various pagings. \$44.95. ISBN 087337469X.

Every collection and technical information center should include a copy of this popular title. It is updated on a regular basis, and the author walks the inventor through the entire patenting process with clear and helpful explanations. Reference staff will find this book an excellent source of information. Topics covered include an introduction to patents and other intellectual property, the inventing process, documentation, research, and specifications and drawings.

726. Riley, K. F., M. P. Hobson, and S. J. Bence. **Mathematical Methods for Physics and Engineering: A Comprehensive Guide**. New York: Cambridge University Press, 1997. 1008p. \$49.95. ISBN 0521555299.

This comprehensive handbook is appropriate for both the student and professional. The physical relevance of the mathematics is reinforced throughout the work. Topics covered include calculus, series and limitations, multiple integrals, vector algebra, Fourier series, integral transforms, group theory, and probability.

727. **Science and Technology Desk Reference**. Detroit: Gale, 1996. 795p. \$50.00. ISBN 0810391767.

This reference resource provides detailed answers to about 1,700 questions from subject areas such as biology, astronomy, chemistry, and environment. Each entry includes the question and answer, with up to three source citations and full bibliographic information. A comprehensive subject index is provided.

728. **Science Navigator**. New York: McGraw-Hill, 1997. Digital format. \$156.50. ISBN 0078531101.

This digital resource provides full-text of all articles (over 7,900) from the *McGraw-Hill Concise Encyclopedia of Science and Technology*. It also provides definitions for over 105,000 terms from the *McGraw-Hill Dictionary of Scientific and Technical Terms*. There are hypertext links to related materials.

729. Sims, Frank. **Engineering Formulas Interactive: Conversions, Definitions, and Tables**. New York: Industrial Press, 1999. 402p. Includes digital format. \$44.95. ISBN 0831130873.

This comprehensive reference contains over 450 units conversions, 180 definitions, and an alphabetical arrangement for the most significant engineering formulas.

730. **Source Selection Procedures: A Compilation of Federal Agency Regulations, Handbooks, and Manuals**. Washington, DC: George Washington University, Government Contracts Program, 1998. Various pagings. \$65.00.

This reference compiles source selection procedures from several federal agencies. It includes the U.S. Air Force's numerical and adjectival rating scheme and the U.S. Department of Commerce's rating scheme that all scoring be supported by detailed narrative. It is used by both government personnel and contractors. Information is available at <http://www.gwprofdev.com/gcp>.

731. Tepper, Ronald. **Model Letters and Memos: A Handbook for Scientists and Engineers**. New York: Wiley, 1996. 236p. Includes digital data. \$59.95. ISBN 0471139173.

This practical handbook assists scientists and engineers to produce effective correspondence. The accompanying digital data include dozens of boilerplate memos, letters, invitations, and responses to government.

732. Thomas, Brian J. **The World Wide Web for Scientists and Engineers. A Complete Reference for Navigating, Researching and Publishing Online**. Bellingham, WA: SPIE Press, 1998. 357p. \$34.95. ISBN 0780334523.

This book is divided between discussions of basic Internet publishing and navigation tools and listings of engineering and scientific sites. It includes a search engine comparison appendix and a glossary. Site listings are not annotated.

733. Tuma, Jan J., and Ronald A. Walsh. **Engineering Mathematics Handbook**. New York: McGraw-Hill, 1998. 566p. \$114.95. ISBN 0070655294.

This handbook covers algebra, geometry, trigonometry, analytic geometry, calculus, series, vectors, Fourier, and statistics. This edition includes extensive conversion to SI units. Appendices include numerical tables, a glossary of symbols and mathematics, units of measurement and conversion, references, and a bibliography.

734. U.S. Department of Commerce. National Institute of Standards and Technology (NIST). **The NIST Reference on Constants, Units and Uncertainty**. 1999. Available: <http://physics.nist.gov/cuu>. (Accessed October 30, 1999).

This reference is compiled by the Physics Laboratory of the National Institute of Standards and Technology. Information resources cover fundamental physical constants, international systems of units (SI), and uncertainty of measurement units.

735. U.S. Department of Commerce. National Technical Information Service (NTIS). **Army Manuals and Publications**. 1999. Available: <http://www.ntis.gov/databases/armypub.htm>. (Accessed October 30, 1999).

The National Technical Information Service distributes Army technical manuals (TMs), field manuals (FMs), Army regulations (ARs), technical bulletins (TBs), and other similar publications under arrangement with the U.S. Army Publishing Agency. Over 14,000 Army publications are searchable by title or publication numbers.

736. Wadsworth, Harrison M. **Handbook of Statistical Methods for Engineers and Scientists**. New York: McGraw-Hill, 1998. Various pagings. \$94.95. ISBN 007067678X.

Statistics have increasingly become more integral to the work and training of engineers and scientists, due in part to new technologies and accreditation recommendations from the Accreditation Board for Engineers and Technology (ABET). This handbook is arranged from the basics to advanced statistical methods. The appendix contains several statistical tables.

737. Zayed, Ahmed I. **Handbook of Function and Generalized Function Transformations**. Boca Raton, FL: CRC, 1996. 643p. (Mathematical Sciences Reference Series). \$89.95. ISBN 0849378516.

This handbook provides detailed descriptions and illustrations of transforms such as the Laplace, Borel, Stieltjes, Lambert, Mellin, Boris, Hardy, Zak, and Fourier. Function transforms are used to solve problems in engineering, mathematical physics, and applied mathematics.

738. Zwillinger, Daniel. **CRC Standard Mathematical Tables and Formulae**. Boca Raton, FL: CRC, 1996. 812p. \$44.95. ISBN 0849324793.

This handbook covers analysis, algebra, discrete mathematics, geometry, continuous mathematics, special functions, scientific computing, financial analysis, numerical methods, probability, and statistics. A detailed list of notations is included.

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## 6.10 Industrial Engineering

739. Bralla, James G. **Design for Manufacturability Handbook**. New York: McGraw-Hill, 1999. 1344p. (McGraw-Hill Handbooks). \$125.00. ISBN 007007139X.

This handbook covers a broad range of manufacturing processes, illustrated with descriptive information of the typical parts produced by each process. General topics covered include design principles, history of design for manufacturability (DFM), economical use of raw materials, formed metal components, machined components, castings, nonmetallic parts, assemblies, and finishes.

740. Hanlon, Joseph F., Robert J. Kelsey, and Hallie E. Forcinio. **Handbook of Package Engineering**. Lancaster, PA: Technomic, 1998. 556p. \$85.00. ISBN 1566763061.

This handbook provides clear explanations of the physical and chemical properties of most-used packaging materials. Topics covered include machinery design and selection, labels and labeling, coatings and laminations, aerosols, closures, fasteners, and adhesives.

741. Ichida, Takashi. **Product Design Review: A Method for Error-Free Product Development**. Portland, OR: Productivity Press, 1996. 274p. \$65.00. ISBN 1563270412.

Design review (DR) is a method to reduce errors in the product design process and, at the same time, monitor cost and timely delivery factors. This reference provides a systematic methodology and case studies to illustrate the design review process. It includes numerous charts, figures, and tables.

742. Jones, William. **The Handbook of Modern Manufacturing Techniques**. Dublin, Ireland: Oak Tree, 1998. 338p. \$63.95. ISBN 1860760708.

This volume explains in detail the concepts and capabilities of the tools and processes available to advanced manufacturing companies. Topics covered

include total quality management, quality systems, total productive maintenance, just-in-time production, process reengineering, automation technologies, and project management.

743. Juran, Joseph M., and A. Blanton Godfrey. **Juran's Quality Handbook**. New York: McGraw-Hill, 1998. Various pagings. \$150.00. ISBN 007034003X.

This classic reference book covers the principles of quality planning, quality control, and quality results.

744. Karwowski, Waldemar, and William S. Marras. **Industrial Ergonomics Handbook**. Boca Raton, FL: CRC, 1999. 1508p. \$99.95. ISBN 0849326419.

With contributions from more than 125 international leaders, this is a comprehensive guide to industrial ergonomics and safety. It suggests engineering design measures aimed at reducing or eliminating job-risk factors and optimizing manufacturing processes.

745. Kimber, Raymond J., Robert W. Grenier, and John Jourdan Heldt. **Quality Management Handbook**. New York: Marcel Dekker, 1997. 823p. (Quality and Reliability, no. 53). \$145.00. ISBN 0824793560.

Arranged in three major sections, this handbook covers the major subject areas of management, techniques, and tools. Specific topics covered include the Malcolm Baldrige National Quality Award, electronic product design, process control, and hardness testing. The handbook includes the text of the military standard, *Sampling Procedures and Tables for Inspection by Attributes (MIL-STD-105D)*.

746. Martin, James N. **Systems Engineering Guidebook: A Process for Developing Systems and Products**. Boca Raton, FL: CRC, 1997. 281p. (Systems Engineering Series). \$59.95. ISBN 0849378370.

The author describes a process framework for implementing systems engineering based on the system at the AT&T Bell Labs. He covers such topics as the integration of disciplines, integration of system elements, technical progress monitoring, design-to-cost control, and documentation control. The book includes an extensive glossary and bibliography. Appendices cover a definition of systems engineering, the DOD acquisition life cycle, and technical reviews and audits.

747. Mathieu, Richard G. **Manufacturing and the Internet: An Information Guide for Professionals in Manufacturing Organizations**. Norcross, GA: Engineering and Management Press, 1996. 451p. \$34.95. ISBN 0898061644.

This book describes Internet sites on computer-integrated manufacturing (CIM), agile manufacturing, TQM, statistical quality control, robotics, flexible scheduling, CAD, concurrent engineering, and business process engineering.

748. Oberg, Erik, et al. **Machinery's Handbook: A Reference Book for the Mechanical Engineer, Designer, Manufacturing Engineer, Draftsman, Toolmaker, and Machinist**. New York: Industrial Press, 1996. 2547p. \$80.00. ISBN 0831125756.

For over 80 years, this title has been one of the primary sources for the mechanical industry. It contains comprehensive data for the manufacturing plant,

machine shop, and drafting environment. Topics covered include manufacturing processes, basic mathematics, mechanics, materials, measuring, machining, fasteners, and engineering standards. A brief history of *Machinery's Handbook* is available at <http://www.industrialpress.com/history.htm>.

749. Parr, E. Andrew. **Industrial Control Handbook**. Woburn, MA: Butterworth-Heinemann, 1998. 896p. \$155.00. ISBN 0750639342.

To control or monitor the operation of an industrial process, accurate measurements of flow, pressure, or temperature are necessary. These measurements are managed with the use of sensors, transducers, and transmitters. This handbook provides an encyclopedic discussion of specific equipment and technology used in industrial control.

750. Salvendy, Gavriel. **Handbook of Human Factors and Ergonomics**. New York: Wiley, 1997. 2137p. \$195.00. ISBN 0471116904.

This handbook contains articles from more than 100 experts covering a broad range of topics, from practical aspects to technical applications. The study of human factors examines the role of humans in complex systems, the design of equipment and facilities, and creating comfortable and safe environments. Topics covered in this handbook include equipment, workplace, job design, design for health and safety, evaluation methodologies, and human-computer interaction. It includes references, an author index, and a subject index.

751. Schlager, Neil. **How Products Are Made: An Illustrated Guide to Product Manufacturing**. Detroit: Gale. **Vol. 1**. 1994. \$90.00. ISBN 0810389907X. **Vol. 2**. 1996. \$90.00. ISBN 0810389525. **Vol. 3**. 1998. \$90.00. ISBN 0787615471. **Vol. 4**. 1998. \$90.00. ISBN 0787624438.

This guide explains how basic tools, machines, materials, and foods are made. Products include things like aluminum foil, baseball gloves, carbon paper, chewing gum, helicopters, light bulbs, and zippers. Each entry provides background, materials, manufacturing process, illustrations, and additional references.

752. Shishko, Robert. **NASA Systems Engineering Handbook**. Upland, PA: DIANE, 1998. 154p. \$40.00. ISBN 0788132954.

This handbook covers the fundamentals of systems engineering (SE) as implemented throughout project cycles for major NASA systems. Topics covered include scheduling, work breakdown structure, risk management, configuration management, and systems analysis and modeling issues. The book also provides a list of acronyms, systems engineering templates and examples, instructions on using the metric system, and a bibliography.

753. Stuart, Ralph B., and Christopher Moore. **Safety and Health on the Internet**. Rockville, MD: Government Institutes, 1998. 328p. \$49.00. ISBN 0865876134.

This guide includes over 200 safety and health sites, including newsletters, discussion groups, regulations, *Federal Register* notices, and MSDS sheets.

754. **System Safety Analysis Handbook.** Albuquerque, NM: System Safety Society, 1998. Various pagings. \$100.00. Digital format available.

This handbook contains a compilation of analysis techniques and methodologies related to system safety analysis. It includes techniques, system safety software, and applications of fuzzy and hybrid mathematics to safety analysis. A glossary is included.

755. **The Tool and Manufacturing Engineers Handbook (TMEH) Knowledge Base.** Dearborn, MI: Society of Manufacturing Engineers, 1998. Digital format. \$495.00.

This is a searchable compilation of the nine volumes of the *TMEH Handbook*. It includes manufacturing information, illustrations, tables, and equations. A variety of search options are offered, ranging from approaching the data by specific volumes to searching the entire set of volumes as a database. A master index to the complete series is available at <http://www.sme.org/gmn/book/tmehindx.pdf>.

756. Westney, Richard E. **The Engineer's Cost Handbook: Tools for Managing Project Costs.** New York: Marcel Dekker, 1997. 749p. \$125.00. ISBN 0824797965.

Cost is a major component of all projects. This handbook provides engineers with the tools to understand and apply appropriate cost engineering. The editor addresses three major areas: estimating project costs, evaluating risk and return, and controlling project costs. Practical illustrations and figures accompany the text.

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## 6.11 Materials Engineering

757. Amelinckx, S., et al. **Handbook of Microscopy: Applications in Materials Science, Solid-State Physics and Chemistry.** New York: Wiley-VCH, 1996. 1101p. 3v. \$825.00. ISBN 3527294449.

This handbook details the physico-chemical basis and capabilities of various microscopy techniques used in materials science.

758. **ASM Handbook. Metals Properties and Performance Collection.** Materials Park, OH: ASM International, 1998. Digital format. \$492.00. ISBN 1892140004.

This digital product provides easy access to the following ASM Handbooks: *Volume 1, Properties and Selection of Irons, Steels and High Performance Alloys*; *Volume 2, Properties and Selection of Nonferrous Alloys and Special-Purpose Materials*; *Volume 13, Corrosion*; and *Volume 18, Friction, Lubrication and Wear Technology*.

759. **ASM Ready Reference: Properties and Units for Engineering Alloys.** Materials Park, OH: ASM International, 1997. 168p. \$68.00. ISBN 0871705850.

This reference has definitions, synonyms, abbreviations, and conversion factors for both mechanical and physical properties of more than 200 alloys. It includes indexes for foreign abbreviations, names of properties, and complete conversion factors; mechanical properties (bearing, bending, compressive, creep, damping, deformation, elastic, fatigue, fracture, hardness, shear, tensile); and physical properties.

760. Bezigan, Thomas. **Extrusion Coating Manual**. Atlanta, GA: TAPPI, 1999. 308p. \$110.00. ISBN 0898520673.

This title details all aspects of extrusion coating. Topics covered include an explanation of extrusion coating, extrusion dies, machinery, safety, and materials.

761. Bhushan, Bharat. **Handbook of Micro/Nanotribology**. Boca Raton, FL: CRC, 1999. 600p. (The Mechanics and Materials Science Series). \$139.95. ISBN 0849384028.

This handbook covers the characterization of solid surfaces, measurement techniques and applications, and theoretical modeling of interfaces. It includes more than 500 illustrations and tables.

762. Brady, George S., Henry R. Clauser, and John A. Vaccari. **Materials Handbook: An Encyclopedia for Managers, Technical Professionals, Purchasing and Production Managers, Technicians, and Supervisors**. New York: McGraw-Hill, 1997. 1136p. \$127.95. ISBN 0070070849.

The first section of this reference book covers the properties and uses of minerals, chemicals, engineering and industrial materials, and plant and animal substances. The second section gives the structure and properties of materials, with definitions, reference charts, and tables. Entries are arranged in an easy-to-use format.

763. Brandes, Eric A., and G. B. Brook. **Smithells Light Metals Handbook**. Woburn, MA: Butterworth-Heinemann, 1998. 194p. \$85.95. ISBN 0750636254.

The industrial metals included in this volume are aluminum, magnesium, and titanium. Topics covered include specifications, physical properties, mechanical properties, equilibrium diagrams, metallography, heat treatment, and finishing. For research and design purposes, references to source materials may be located in *Smithells Metals Reference Book* (see entry 767).

764. Brandrup, Johannes, E. H. Immergut, and E. Grulk. **Polymer Handbook**. New York: Wiley, 1999. 1920p. \$295.00. ISBN 0471166286.

This handbook provides validated property data on polymeric material needed in theoretical and experimental polymer research.

765. Bringas, John E., and Michael L. Wayman. **The Metals Black Book. Ferrous Metals**. Edmonton, Alberta, Canada: CASTI, 1998. 750p. (Metals Data Book Series, vol. 1). \$75.00. ISBN 1894038088. Digital format available.

This is a metals data reference book for steels, alloy steels, tool steels, cast irons, and stainless steels. It also covers boiler and pressure vessel steels. Detailed cross-references to U.S. and international standards are provided. The book includes a glossary with terms in four languages: English, French, Spanish, and German.

766. Bringas, John E., and Michael L. Wayman. **The Metals Red Book. Non-ferrous Metals.** Edmonton, Alberta, Canada: CASTI, 1998. 550p. (Metals Data Book Series, vol. 2). \$75.00. ISBN 1894038096. Digital format available.

This reference book provides metals data for aluminum, nickel, titanium, cemented carbides, lead, tin, zinc, copper, and precious metals. Appendices cover hardness conversion tables, metric conversions, Imperial units, pipe dimensions, tradenames and trademarks, and discontinued ASTM specifications.

767. Burstein, G. T., et al. **Smithells Metals Reference Book.** Woburn, MA: Butterworth-Heinemann, 1998. 1792p. (Engineering Materials Selector Series). \$375.00. ISBN 0750639687.

This substantial reference book covers the general physical and chemical constants, X-ray analysis, crystallography, crystal chemistry, thermochemical data, physical properties of molten salts, metallography, equilibrium diagrams, electrical properties, and mechanical testing. Other topics covered include lubricants, fuels, ceramics, corrosion, welding, and metal-matrix composites. There is an index.

768. Chanda, Manas, and Salil K. Roy. **Plastics Technology Handbook.** New York: Marcel Dekker, 1998. 1195p. (Plastics Engineering, 47). \$250.00. ISBN 082470066X.

Topics covered include the characteristics of polymers, fabrication processes, plastics properties and testing, industrial polymers, and polymers I special uses. A new chapter on recycling of polymers has been added to this edition. Appendices cover tradenames; abbreviations for industrial polymers; formulations; commercial polymer blends and alloys; and properties of polymers, rubber compounds, and textile fibers.

769. Chandler, Harry. **Heat Treater's Guide: Practices and Procedures for Nonferrous Alloys.** Materials Park, OH: ASM International, 1996. 669p \$215.00. ISBN 0871705656.

This reference guide provides quick access to more than 450 datasheets on superalloys, nickels, aluminum, copper, magnesium, titanium, and zinc. An introduction to heat treating, cross-references, and a glossary are included.

770. **Composite Materials Handbook.** 1998. Working draft available: <http://mil-17.udel.edu>. (Accessed April 2, 2000).

The Composite Materials Handbook (Mil-Handbook-17) is an authoritative source for data on current and emerging polymer matrix, metal matrix, and ceramic matrix composite materials.

771. Davis, Joseph R. **Carbon and Alloy Steels.** Materials Park, OH: ASM International, 1996. 731p. (ASM Specialty Handbook). \$182.00. ISBN 0871705575.

The emphasis in this reference title is on the relationship between microstructure and properties and the influence of modern steel making practices. There is a general introduction to carbon and alloy steels, followed by information on processing and service characteristics, corrosion behavior, and material

requirements for specific applications (e.g. steels for automotive applications, ships, and offshore structures).

772. Davis, Joseph R. **Cast Irons**. Materials Park, OH: ASM International, 1996. 494p. (ASM Specialty Handbook). \$182.00. ISBN 0871705648.

This title covers a variety of topics related to cast irons, including metallurgy, solidification characteristics, foundry practices, heating treating, welding and brazing, machining and grinding, temperature and physical properties, and corrosion behavior.

773. Davis, Joseph R. **Concise Metals Engineering Data Book**. Materials Park, OH: ASM International, 1997. 245p. \$75.00. ISBN 0871706067.

This book lists essential metals engineering data for hundreds of metals and alloys, with descriptions of physical properties, phase diagrams, chemical compositions, mechanical properties, and corrosion data. It also includes a metric practice guide and a glossary of abbreviations, acronyms, and symbols.

774. Davis, Joseph R. **Heat-Resistant Materials**. Materials Park, OH: ASM International, 1997. 591p. (ASM Specialty Handbook). \$182.00. ISBN 0871705966.

This is a comprehensive reference source on engineering metallic and non-metallic heat-resistant materials, from carbon and alloy steels to refractory metals and ceramics to carbon-carbon composites. The volume covers heat-resistant materials, including high-temperature characteristics, effects of processing and microstructure on high-temperature properties, materials-selection guidelines for industrial applications, and life-assessment methods.

775. Davis, Joseph R. **Metals Handbook**. Materials Park, OH: ASM International, 1998. 1521p. (Desk Edition). \$185.00. ISBN 0871706547.

This edition is based on the ASM Handbooks series published from 1985 to the present. It includes information on design considerations, materials selection process, property data, phase diagrams, statistical analysis, quality control, and recycling.

776. Edenbaum, Jesse. **Plastics Additives and Modifiers Handbook**. New York: Chapman, 1996. 1113p. \$151.00. ISBN 0412741202.

This handbook covers a wide range of modifiers and additives. It is divided into sections on materials, properties, processing, and marketing.

777. Gaur, Siddhartha, and Thomas B. Reed. **Thermal Data for Natural and Synthetic Fuels**. New York: Marcel Dekker, 1998. 259p. \$150.00. ISBN 0824700708.

Engineers and scientists use thermal analysis to obtain information on reaction mechanism, kinetic parameters, thermal stability, phase transformation, and heat of reaction. This reference title covers over 100 samples from these fuel sources: natural biomass, processed biomass, municipal solid wastes, high-carbon fuels, and liquid fuels. Appendices include information on sources of samples and a list of references.

778. Glocker, David A., and S. Ismat Shah. **Handbook of Thin Film Process Technology**. Philadelphia, PA: Institute of Physics, 1997. Digital format. \$399.00. ISBN 075930409X. Paper format available.

This practical handbook covers thin film deposition techniques and thin film process. Contents include physical deposition techniques, thermal evaporation, thermal spray coatings, electronic materials, optical materials, ferroelectric materials, and superconducting materials.

779. Gotoh, Keishi, Hiroaki Masuda, and Ko Higashitani. **Powder Technology Handbook**. New York, NY: Marcel Dekker, 1997. 944p. \$225.00. ISBN 0824700155.

Topics covered include particle characterization and measurement, fundamental properties of particles, fundamental properties of powder beds, preparation of powder, powder-handling operation, process instrumentation, and working atmospheres and hazards.

780. Habashi, Fathi. **Handbook of Extractive Metallurgy**. New York: Wiley-VCH, 1997. 2000p. 4v. \$1398.95. ISBN 3527287922.

This handbook provides a wealth of data on metals, extraction, and alloys. It combines basic knowledge and discussions of metal extraction processes with information on how particular metals are extracted from raw materials.

781. Hilado, Carlos J. **Flammability Handbook for Plastics**. Lancaster, PA: Technomic, 1998. 320p. \$149.95. ISBN 1566766516.

This is a reference guide to basic information on the fire properties of plastics, with sections on thermoplastic elastomers, chlorofluorocarbons, conductive polymers, and recycling of plastics. Other chapters cover materials for the plastic industry, decomposition, combustion and propagation, fire response characteristics, flammability tests, market acceptance criteria, flammability and product liability, and flammability and environmental concerns.

782. Lee, Norman C. **Blow Molding Design Guide**. Cincinnati, OH: Hanser Gardner, 1998. 212p. \$68.00. ISBN 1569902275.

The plastic blow molding process is used to make hollow component parts from thermoplastic type resins. There are chapters in this guide on the basics of blow molding, design process, understanding the mold, polymers and plastics, and cost estimating.

783. Levin, Ernest M., et al. **Phase Diagrams for Ceramists**. Columbus, OH: American Ceramic Society, 1964-. 12v.

The American Ceramic Society has been compiling and organizing phase equilibria diagrams since 1933. The focus of this effort is to provide qualified, evaluated data on chemical systems related to ceramic materials research. Volumes cover oxides, salts, high-pressure systems, semiconductors, chalcogenides, borides, carbides, and nitrides.

784. Licari, James J. **Hybrid Microcircuit Technology Handbook: Materials, Processes, Design, Testing and Production**. Westwood, NJ: Noyes, 1998. 579p. (Materials Science and Process Technology Series). ISBN 0815514239.

This handbook covers the basic technologies and guidelines for the design, fabrication, assembly, and testing of hybrid circuits.

785. Mallick, P. K. **Composites Engineering Handbook**. New York: Marcel Dekker, 1997. 1249p. (Materials Engineering, 11). \$250.00. ISBN 0824793048.

This handbook brings together a broad range of topical discussions, technical information, and procedures on fiber-reinforced composites. Topics covered include constituents, mechanics, processing, properties and performance, testing, and engineering applications. The book is illustrated with formulas, photographs, figures, and tables.

786. Mark, James E. **Physical Properties of Polymers Handbook**. Woodbury, NY: American Institute of Physics, 1996. 723p. Includes digital data. (AP Series in Polymers and Complex Materials). \$120.00. ISBN 1563965992.

This handbook provides concise information on polymeric materials, especially those important in physical chemistry and chemical physics. It emphasizes the polymerization process.

787. Nayar, Alok. **The Metals Databook**. New York: McGraw-Hill, 1997. Various pagings. \$128.95. ISBN 0070460884.

This databook provides extensive metallurgical information on cast irons, steels, aluminum and its alloys, copper and its alloys, zinc and its alloys, and sintered materials. It provides chemical composition, mechanical and physical properties, applications, heat treatment temperatures, and selected international standards.

788. Olabisi, Olagoke. **Handbook of Thermoplastics**. New York: Marcel Dekker, 1997. 1053p. (Plastics Engineering, 41). \$225.00. ISBN 0824797973.

This handbook provides comprehensive, current information for each thermoplastic, describing the history, formation mechanisms, structural and phase characteristics, commercial relevance, performance properties, and applications. Each section has detailed references, tables, and figures.

789. Pecht, Michael G., et al. **Electronic Packaging Materials and Their Properties**. Boca Raton, FL: CRC, 1998. 160p. \$69.95. ISBN 0849396255.

This source examines packaging architecture and classification of materials and their use. Topics covered include reliability, design, and cost; heat dissipation problems; and signal delay. The book reviews key electrical, thermal, mechanical, and chemical properties.

790. Pfaender, Heinz G. **Schott Guide to Glass**. London: Chapman & Hall, 1996. 224p. \$55.00. ISBN 041262060X.

This reference spans the history of glass, raw materials, and the manufacturing process. Topics covered include glassmelt, flat glass, special glasses, and environmental protection in the glass melting process.

791. **Plastics Design Library Handbook Series.** Norwich, NY: Plastics Design Library, 1990–9999. 12v. \$2399.00. (PDL Handbook Series). **Chemical Resistance. Vol. 1, Thermoplastics.** 1903p. \$285.00. ISBN 188420712X. **Chemical Resistance. Vol. 2, Thermoplastic Elastomers Thermosets and Rubbers.** 977p. \$285.00. ISBN 1884207138. **The Effect of Sterilization Methods on Plastics and Elastomers.** 470p. \$285.00. ISBN 1884207103. **Handbook of Plastics Joining.** 587p. \$285.00. ISBN 1884207170. **Permeability and Other Film Properties of Plastics and Elastomers.** 706p. \$285.00. ISBN 1884207146. **The Effect of UV Light and Weather on Plastics and Elastomers.** 481p. \$285.00. ISBN 1884207111. **Fatigue and Tribological Properties of Plastics and Elastomers.** 524p. \$285.00. ISBN 1884207154. **Polypropylene: the Definitive User's Guide and Databook.** 432p. \$285.00. ISBN 1884207588. **Dynamic Mechanical Analysis for Plastics Engineering.** 189p. \$285.00. ISBN 1884207642. Some volumes available in digital format.

This is a comprehensive handbook series, providing data on all types of plastics compiled from plastics journals, conference proceedings, test labs, government documents, and patents. Data include sample preparation, test methods, test conditions, and test results.

792. **Powder Metallurgy Design Manual.** Princeton, NJ: Metal Powder Industries Federation, 1998. 192p. \$89.00. ISBN 1878954679.

Powder metallurgy uses metal powders to fabricate parts that require fine finishes and bearing properties. This manual discusses the five basic manufacturing processes: conventional powder metallurgy (P/M), metal injection molding (MIM), powder forging (P/F), hot isostatic pressing (HIP), and cold isostatic pressing (CIP). It includes case studies and a glossary.

793. Prasad, Y. V. R. K., and S. Sasidhara. **Hot Working Guide: A Compendium of Processing Maps.** Materials Park, OH: ASM International, 1997. 545p. \$225.00. ISBN 0871705982.

This work provides data used to design and optimize bulk metal-working processes, such as rolling, forging, and extrusion.

794. Prelas, Mark A., Galina Popovici, and Louis K. Bigelow. **Handbook of Industrial Diamonds and Diamond Films.** New York: Marcel Dekker, 1998. 1214p. \$235.00. ISBN 0824799941.

This handbook provides a comprehensive presentation of the diamond as an engineering material. Because diamonds were used as an abrasive for several thousand years, they have the reputation of being one of the oldest engineering materials. The text offers information on properties and applications for both mined diamonds and synthetic diamonds. The detailed index is very useful.

795. Pritchard, Geoffrey. **Plastics Additives: An A-Z Reference.** New York: Chapman & Hall, 1998. 633p. \$180.00. ISBN 041272720X.

This reference covers novel additives such as scorch inhibitors and surface-modifies particulates and established varieties such as antioxidants, biocides, fillers, fibers, and plasticizers. It includes discussions of environmental concerns, interactions between additives, and legislative changes.

796. Pruett, Kenneth M. **Chemical Resistance Guide for Plastics: A Guide to Chemical Resistance of Engineering Thermoplastics, Fluoroplastics, Fibers, and Thermoset Resins**. La Jolla, CA: Compass, 1998. 490p. \$130.00. ISBN 1889712035.

This guide contains data for 29,000 combinations of corrodents versus metals, metal alloys, and carbon; liquid or dry chemicals, gases, lubricants, household fluids, foods, atmospheres, and other environmental factors are covered. Other information includes chemical trade names; synonyms of covered chemicals and gases; and mechanical, physical, and electrical properties data for each metal.

797. Roberts, George, George Krauss, and Richard Kennedy. **Tool Steels**. Materials Park, OH: ASM International, 1998. 364p. \$190.00. ISBN 0871705990.

The format of this resource includes both encyclopedic explanations and tables of reference information. This volume updates information in the ASM Handbook series and follows the AISI/SAE classification of tool steels exclusively.

798. Rosato, Dominick V. **Plastics Processing Data Handbook**. New York: Chapman & Hall, 1997. 669p. \$139.95. ISBN 0412801906.

This handbook covers manufacturing techniques for plastics, such as injection molding, extrusion, blow molding, foam molding, and rotational molding. Reference sections cover metric conversion charts, mathematical symbols and abbreviations, and properties of water.

799. Saunders, N., and A. P. Miodownik. **CALPHAD (Calculation of Phase Diagrams): A Comprehensive Guide**. New York: Pergamon, 1998. 479p. (Pergamon Materials Series, vol. 1). \$169.00. ISBN 0080421296.

The CALPHAD (CALculation of PHase Diagrams) method makes it possible to predict the phase behavior of complex, multi-component materials. Topics covered here include the history of the CALPHAD approach, basic thermodynamics, thermodynamic models for solution and compound phases, phase stabilities, ordering models, computational methods, and application of the CALPHAD methods.

800. Schweitzer, Philip A. **Corrosion Engineering Handbook**. New York: Marcel Dekker, 1996. 736p. \$150.00. ISBN 0824797094.

This handbook includes all types of information on corrosion, corrosion theory, and materials used to reduce corrosion; provides analyses of corrosion testing methods; and describes mechanisms of corrosion.

801. Seeber, Bernd. **Handbook of Applied Superconductivity: Vol. 1—Fundamental Theory, Basic Hardware and Low-Temperature Science and Technology. Vol. 2—Applications**. Philadelphia, PA: Institute of Physics, 1998. 1912p. \$545.00. ISBN 0750303778.

This set covers all aspects of applied superconductivity and supporting low temperature technologies. It includes an introduction to the theoretical background and examples of current and future applications, as well as a glossary.

802. Shackelford, James F., and William Alexander. **The CRC Materials Science and Engineering Handbook**. Boca Raton, FL: CRC, 1999. 1000p. \$125.00. ISBN 0849326966.

This handbook covers key areas of materials science, including metal alloys; polymers; ceramics and glasses; and electrical, chemical, and optical properties.

803. Shah, Vishu. **Handbook of Plastics Testing Technology**. New York: Wiley, 1998. 527p. \$89.95. ISBN 0471182028.

This volume provides a compilation of tests used in plastics research. Descriptions cover mechanical, thermal, electrical, weathering, optical, and chemical properties. Appendices include an index of test equipment manufacturers, abbreviations for polymeric materials, a glossary, tradenames, standards organizations, trade publications, independent testing laboratories, specifications, numerous charts and tables, and academic programs.

804. Shionoya, Shigeo. **Phosphor Handbook**. Boca Raton, FL: CRC, 1998. 608p. \$135.00. ISBN 0849375606.

This handbook covers basic principles of luminescence to innovative technical applications. Topics covered include applications fluorescent lamps, CRT, EL, plasma display, and field emission display. These are contributions from prominent Japanese scientists and engineers.

805. Tamboli, Akbar R. **Steel Design Handbook: LRFD Method**. New York: McGraw-Hill, 1997. Various pagings. Includes digital data. \$127.95. ISBN 0070614008.

In 1986 the American Institute of Steel Construction (AISC) allowed the *Load and Resistance Factor Design (LRFD)* to be used in the United States for steel constructed buildings. This handbook covers history, design concepts, and material behavior. Appendices include information about steel desk design, special welding issues for seismically resistant structures, a load factor design selection table, a SI metric conversion table, and nomenclature.

806. Vanderah, Terrell A., R. S. Roth, and H. F. McMurdie. **Phase Diagrams for High Tc Superconductors II**. Westerville, OH: American Ceramic Society, 1997. 278p. \$63.00. ISBN 1574980408.

This is the second volume in the *Phase Equilibria Diagrams* series, which contain diagrams specific to superconducting oxides. These diagrams were collected and reviewed by the Phase Equilibria Diagrams Data center, located in the Materials Science and Engineering Laboratory of the National Institute of Standards and Technology. Information is available at <http://www.mscl.nist.gov/phaseequilibria.html>.

807. Verschueren, Karel. **Material Environmental Data Sheets**. New York: Van Nostrand Reinhold, 1996. Various pagings. \$149.00. ISBN 0442019157.

*Material Safety Data Sheets (MSDS)* were developed about 50 years ago to assist with the handling of potentially hazardous materials. One of the primary components missing from MSDS is environmental information. This looseleaf reference provides comparable environmental data for a select group of chemicals.

808. Vetter, Gerhard. **The Dosing Handbook**. New York: Elsevier, 1998. 777p. \$157.00. ISBN 1856173429.

Dosing in the production process involves quantitative volume dispensing of such things as liquids or other bulk materials. This handbook covers the basics of dosing, dosing methods, and design and application considerations.

809. Videla, Hector A. **Manual of Biocorrosion**. Boca Raton, FL: Lewis, 1996. 273p. \$75.00. ISBN 0873717260.

This manual explains the microbiology, electrochemistry, and surface phenomena involved in biocorrosion and biofouling processes. Biocorrosion takes places when organisms in aqueous environments influence the development of corrosion. Topics covered include detection, laboratory methods, and formulations. Each chapter is well documented with additional references. Numerous charts, photographs, and a glossary are included.

810. Villars, Pierre. **Handbook of Ternary Alloy Phase Diagrams**. Materials Park, OH: ASM International, 1997. Digital format. \$4500.00. ISBN 0871706016 (PC); 0871706024 (Macintosh). Paper format available.

This is a crystallographic database of intermetallic compounds and ternary phases, searchable by: compound formula, structure type, Pearson symbol, space group symbol or number; unit cell dimension or angle, density, and melting point.

811. Villars, Pierre. **Pearson's Handbook: Desk Edition: Crystallographic Data for Intermetallic Phases**. Materials Park, OH: ASM International, 1997. 2886p. 2v. \$775.00. ISBN 0871706032.

This comprehensive handbook contains 27,686 entries on crystal data described by structure type. Over 50 percent of the entries also include the coordinate of the atoms. This reference set is a direct descendent of the *Handbook of Lattice Spacings and Structures of Metals and Alloys*. Entries include citations from international materials literature.

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## 6.12 Mechanical Engineering

812. **ASHRAE Handbook**. Atlanta, GA: American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1995–1998. **1995 ASHRAE Handbook: HVAC Applications**. \$124.00. **1996 ASHRAE Handbook: HVAC Systems and Equipment**. \$124.00. **1997 ASHRAE Handbook: Fundamentals Handbook**. \$124.00. **1998 ASHRAE Handbook: Refrigeration Handbook**. \$124.00. Available in either I-P or SI editions. Digital format available.

This is the standard source for heating, ventilation, air conditioning, and refrigeration information for building construction, maintenance, and retrofit and in the design and operation of industrial processes.

813. Avallone, E. A., and Theodore Baumeister. **Marks' Standard Handbook for Mechanical Engineers**. New York: McGraw-Hill, 1996. 2080p. \$125.00. ISBN 0070049971. Digital format available.

This classic reference covers every aspect of mechanical engineering: mathematics, mechanics, thermodynamics, power generation and transmission, materials of construction, machine elements, and materials handling.

814. Barber, Antony. **Pneumatic Handbook**. New York: Elsevier, 1997. 659p. \$190.00. ISBN 185617249X.

This handbook describes the design of compressors, tools, machinery, actuators, sensors, and valves. Standards, codes of practice, and technical directives are also listed.

815. Bauer, H., Arne Cypra, and Anton Beer. **Automotive Handbook**. Stuttgart, Germany: Robert Bosch, 1996. 892p. \$35.00. ISBN 1560919183.

This is a technical automotive technology reference with descriptions, illustrations, graphs, and sectional drawings. Topics covered include machine elements, tribology, engine cooling, fuel management, drivetrain, braking systems, communications and information systems, and safety systems. This is one of the best concise automobile technology reference books available.

816. Bechtold, Richard L. **Alternative Fuels Guidebook: Properties, Storage, Dispensing, and Vehicle Modifications**. Warrendale, PA: SAE International, 1998. 214p. \$39.00. ISBN 0768000521.

Topics covered here include alternative fuels and their origins, properties and specifications, storage and dispensing, and refueling facilities. Also covered are methanol, ethanol, natural gas (CNG and LNG), LP gas, vegetable oils, and hydrogen.

817. Bleier, Frank P. **Fan Handbook: Selection, Application, and Design**. New York: McGraw-Hill, 1998. Various pagings. \$114.95. ISBN 0070059330.

This is a comprehensive handbook on the basics of moving air, types of fans, laws, applications, standards, and performance. The text is illustrated with tables, figures, and formulas.

818. Booser, E. Richard. **Tribology Data Handbook: An Excellent Friction, Lubrication and Wear Resource**. Boca Raton, FL: CRC, 1998. 1120p. \$150.00. ISBN 0849339049.

This databook was developed in cooperation with the Society of Tribologists and Lubrication Engineers. It describes properties of materials, lubricant viscosities, design, friction, and wear formulae in military, industrial, automotive, and aircraft applications. It includes hundreds of tables, equations, and figures.

819. Brater, Ernest F., et al. **Handbook of Hydraulics for the Solution of Hydraulic Engineering Problems**. New York: McGraw-Hill, 1996. Various pagings. \$100.95. ISBN 0070072477.

This handbook presents the fundamentals needed to solve hydraulic problems, such as those associated with orifices, gates, tubes, weirs, pipes, and open channels. It includes a chapter on computer programs in hydraulics.

820. Caines, Arthur J., and Roger F. Haycock. **Automotive Lubricants Reference Book**. Warrendale, PA: SAE International, 1996. 706p. \$125.00. ISBN 1560915250.

This reference provides an introduction to lubricant fundamentals. Topics covered include engine lubricants, gear oil, gas turbine oils, railroad oils, hydraulic oils, and air conditioner lubricants; there is a glossary, and the full-text *SAE Ground Vehicle Standards* is included.

821. Chironis, Nicholas P., and Neil Sclater. **Mechanisms and Mechanical Devices Sourcebook**. New York: McGraw-Hill, 1996. 463p. \$114.95. ISBN 0070113564.

This handbook provides essential information for machine and mechanical design, product design, manufacturing, and plant engineering professionals. Chapters cover parts-handling mechanisms; reciprocating and general purpose mechanisms; spring, bellow, flexure, screw, and ball devices; cam, toggle, chain, and belt mechanisms; geared systems; pneumatic and hydraulic machines; and mechanism control.

822. **Electronic Stress Tables**. Fairfield, NJ: American Society of Mechanical Engineers, 1998. Digital format. \$265.00.

The *Electronic Stress Tables* is a digital product based on the *ASME Boiler and Pressure Vessel Code Section II, Part D (Materials Properties)*.

823. Elliott, Thomas C., Kao Chen, and Robert C. Swanekamp. **Standard Handbook of Powerplant Engineering**. New York: McGraw-Hill, 1998. 1226p. \$115.00. ISBN 0070194351.

This handbook discusses several types of energy technology, including coal, natural gas, hydroelectric, and waste fuels. Emerging technologies in the areas of windpower, solar energy, biomass, geothermal, and fuel cells are also covered. Detailed illustrations and references accompany each chapter.

824. Fenton, John. **Handbook of Automotive Body and Systems Design**. London: Professional Engineering, 1998. 430p. \$125.00. ISBN 186058076X.

This handbook provides vehicle body designers and engineers with a survey of current practice and references to related literature. Topics covered include ergonomics, aerodynamics, volume road cars, specialist cars, trucks, and other commercial vehicles.

825. Fenton, John. **Handbook of Automotive Body Construction and Design Analysis**. London: Professional Engineering, 1998. 455p. \$125.00. ISBN 1860580734.

The focus of this handbook is on the construction and design considerations of automotive bodies that include fabrication, cutting, finishing, polymer systems, metallic materials, structure design, and safety. The text is well illustrated with examples.

826. Fenton, John. **Handbook of Automotive Powertrain and Chassis Design**. London: Professional Engineering, 1998. 421p. \$125.00. ISBN 1860580750.

This title includes chapters on the power unit, electric propulsion, vehicle suspension, steering, wheel, brake and trailer design, drive axles, transmission gearbox design, and off-road propulsion. Detailed diagrams, examples, and figures accompany the text.

827. **Fire Protection Handbook**. Quincy, MA: National Fire Protection Association, 1997. 2300p. (FPH 18997). \$122.75. ISBN 0877653771. Digital format available.

This handbook includes the complete list of NFPA codes. Other information provided is tables and charts, SI units and conversion tables, and organizations and fire protection interests. Topics covered include sprinkler technology, fire modeling, disaster planning, and extinguishing agents.

828. Grist, Edward. **Cavitation and the Centrifugal Pump: A Guide for Pump Users**. Philadelphia, PA: Taylor & Francis, 1999. 324p. \$79.95. ISBN 1560325917.

“Cavitation” is when air cavities develop in liquid. When cavitation occurs in centrifugal pumps, it affects performance and causes problems. This technical guide assists the user with understanding pump performance characteristics, hydraulic performance, cavitation tests, and future pump technology. Appendices include the description of the first centrifugal pump, by Denis Papin, in the *Philosophical Transactions of the Royal Society of London* (1705).

829. Haines, Roger W., and C. Lewis Wilson. **HVAC Systems Design Handbook**. New York: McGraw-Hill, 1998. 517p. \$69.95. ISBN 0070259631.

This reference is directed to the HVAC designer. Frequent references are made to the *ASHRAE Handbooks* (American Society of Heating, Refrigerating, and Air Conditioning Engineers) and *Industrial Ventilation: A Manual of Recommended Practice*. Topics covered include HVAC engineering fundamentals, design procedures, equipment, design documentation, technical report writing, and basic engineering fundamentals (fluid mechanics, thermodynamics, heat transfer, psychrometrics, sound and vibration).

830. Harris, Cyril M., and Charles E. Crede. **Shock and Vibration Handbook**. New York: McGraw-Hill, 1996. Various pagings. \$125.00. ISBN 0070269203.

This handbook brings together a survey of classical vibration theory and modern applications of the theory to engineering practice. Topics covered include types of vibrations, measurements, standards, testing machines, analysis, shock isolation, packaging engineering, and effects of shock and vibration on humans.

831. Hewitt, Geoffrey. F., et al. **Heat Exchanger Design Handbook (HEDH)**. New York: Begell House, 1998. 3424p. 3v. \$265.50. ISBN 1567000983.

This is a major reference on the thermal and mechanical design of heat exchangers with associated heat transfer phenomena and physical property data. Heat exchangers transfer heat between two or more streams of fluid flowing in device or structure.

832. Hoffman, Dorothy M., Bawa Singh, and John H. Thomas III. **Handbook of Vacuum Science and Technology**. San Diego, CA: Academic, 1998. 835p. \$150.00. ISBN 0123520657.

This practical approach to vacuum science provides complete information on the vacuums, vacuum measurements, system maintenance and operation, and vacuum applications. Each section includes references and illustrations.

833. Jackson, Charles N., Charles N. Sherlock, and Patrick O. Moore. **Nondestructive Testing Handbook Volume 1. Leak Testing**. Columbus, OH: American Society for Nondestructive Testing, 1998. 637p. \$149.00. ISBN 1571170715.

This handbook provides technical information and practical guidance on techniques for ensuring the reliability of engineering systems subject to leakage. Subjects covered include calibrated reference standards, safety, vacuum systems, halogen tracer gases, and residual gas indications. A glossary and bibliography are included. More information about this classic handbook and future plans is available at <http://www.asnt.org/publications/handbook/handbook.htm>.

834. Johnson, Richard W. **The Handbook of Fluid Dynamics**. Boca Raton, FL: CRC, 1998. 1600p. \$129.95. ISBN 0849325099.

This is a comprehensive guide and reference book for the field of fluid dynamics. It explains experimental methods like laser-Doppler velocimetry, particle image velocimetry, and phase Doppler particle analyzer. It also covers a range of applications, including turbomachinery, nozzles, diffusers, pumps, and lubrication. Appendices cover mathematics of fluid mechanics and tables of dimensionless numbers.

835. Kreith, Frank. **Mechanical Engineering Handbook**. Boca Raton, FL: CRC, 1998. 2624p. \$125.00. ISBN 084939418X. Digital format available.

This handbook covers the traditional areas of thermodynamics, solid and fluid mechanics, heat and mass transfer, systems controls materials, and energy conversion. Other relevant topics include robotics, patent law, and bioengineering. The book includes figures, equations, and tables. The digital format provides word and text searching, Boolean searching, and proximity searching.

836. Kutz, Myer. **Mechanical Engineers' Handbook**. New York: Wiley, 1998. 2352p. \$250.00. ISBN 0471130079.

This mechanical engineering handbook covers a broad range of topics, including materials and mechanical design; systems and controls; manufacturing engineering; energy power and pollution control technology; and management, finance, quality, law, and research. There are chapters on electronic information resources and sources of mechanical information.

837. Lewis, Bernard T. **Facility Manager's Operation and Maintenance Handbook**. New York: McGraw-Hill, 1999. Various pagings. \$89.95. ISBN 0070400482.

This handbook is a comprehensive reference source on equipment and facilities operations and maintenance requirements. A glossary is provided.

838. Miller, Richard W. **Flow Measurement Engineering Handbook**. New York: McGraw-Hill, 1996. Various pagings. \$115.50. ISBN 0070423660.

This handbook provides detailed selection criteria, installation practices, and exact computation equations for flowmeters. Appendices include discussions and proofs, pipe data, fluid properties, viscosities of liquids, and viscosities of gases.

839. Moss, Dennis R. **Pressure Vessel Design Manual: Illustrated Procedures for Solving Major Pressure Vessel Design Problems**. Houston, TX: Gulf, 1997. 288p. \$115.00. ISBN 0884156478.

This manual presents solutions to pressure vessel design problems. Procedures are arranged by general designs, vessel supports, special designs, and local loads. Additional reference materials are available in the appendices.

840. Mull, Thomas E. **HVAC Principles and Applications Manual**. New York: McGraw-Hill, 1998. Various pagings. \$69.95. ISBN 007044451X.

The author covers the basics of the HVAC system, scientific principles, climatic conditions, building heat transmission surfaces, infiltration and ventilation, heating loads, codes, duct system design, and electrical systems. The text is enhanced with illustrations, graphs, and tables.

841. Nelik, Lev. **Centrifugal and Rotary Pumps: Fundamentals with Applications**. Boca Raton, FL: CRC, 1999. 137p. \$89.95. ISBN 0849307015.

This reference provides a clear and simple overview of pump types as defined by the Hydraulic Institute (HI). There are helpful diagrams describing the classification of pumps. Chapters cover centrifugal pumps, gear pumps, multiple-screw pumps, progressing cavity pumps, and metering pumps.

842. Ness, Stanley, et al. **Nondestructive Testing Handbook Volume 10. Nondestructive Testing Overview**. Columbus, OH: American Society for Nondestructive Testing, 1996. 581p. \$97.00. ISBN 1571170189.

This is the final volume to the second edition of the *Nondestructive Testing Handbook*, a series that began publication in 1982. Topics covered include leak testing, liquid penetrant, radiation principles, magnetic particle testing, ultrasonic testing, and visual testing. The handbook includes an extensive glossary on nondestructive testing.

843. Ottaviano, John L. **National Mechanical Estimator**. Lilburn, GA: Fairmont, 1996. 950p. \$98.50. ISBN 0881732354.

This resource is used for estimating techniques for mechanical contracting activities. It includes reference tables for calculations, information on industrial and commercial ductwork, and computer estimating.

844. Parmley, Robert O. **Standard Handbook of Fastening and Joining**. New York: McGraw-Hill, 1997. Various pagings. \$110.00. ISBN 0070485895.

This handbook covers practical information on the application of major fastening and joining methods; topics covered include welding, riveting, threaded fasteners, adhesive bonding, aerospace fastening, standard pins, expansion joints, and rope splicing and tying. Helpful, detailed illustrations and charts accompany the text.

845. Parr, E. Andrew. **Hydraulics and Pneumatics: A Technician's and Engineer's Guide**. Woburn, MA: Butterworth-Heinemann, 1998. 244p. \$66.95. ISBN 0750639377.

This is written as a guide to the operation of hydraulic and pneumatic systems. The author states that it is not a design manual because it does not include such things as the sizing of pipes and valves. It covers fundamental principles, air compressors, control valves, and actuators.

846. Pope, J. Edward. **Rules of Thumb for Mechanical Engineers: A Manual of Quick, Accurate Solutions to Everyday Mechanical Engineering Problems**. Houston, TX: Gulf, 1997. 405p. \$79.00. ISBN 0884157903.

The editor has assembled shortcuts, calculations, practical methods, and background reviews on fluids, heat transfer, thermodynamics, seals, and compressors. Solutions are generally illustrated with helpful figures, tables, and formulas.

847. Rishel, James B. **HVAC Pump Handbook**. New York: McGraw-Hill, 1996. 529p. \$64.95. ISBN 0070530335.

This handbook provides detailed information on the application of pumps to heating, ventilating, and air conditioning systems (HVAC). Extensive cross-referencing, tables, figures, and equations enhance the reference value of this title. It includes a list of abbreviations, terms and nomenclature, a glossary of equations, and tables for conversion of English units to SI.

848. Schetz, Joseph A., and Allen E. Fuhs. **Handbook of Fluid Dynamics and Fluid Machinery**. New York: Wiley, 1996. **Vol. 1. Fundamentals of Fluid Dynamics. Vol. 2. Experimental and Computational Fluid Dynamics. Vol. 3. Applications of Fluid Dynamics.** 2628p. \$400.00. ISBN 0471873527.

This handbook was written to answer the practical fluid dynamics and fluid machinery information needs in mechanical, civil, chemical, environmental, materials, and nuclear engineering. Each volume contains detailed illustrations and indexes.

849. Sher, Eran. **Handbook of Air Pollution from Internal Combustion Engines: Pollutant Formation and Control**. Boston: Academic, 1998. 663p. \$120.00. ISBN 0126398550.

Topics covered in this handbook include motor vehicle emissions control, fuels, environment and health aspects of air pollution, and economic and planning aspects of transportation emission. Detailed information is provided for spark-ignition engines, compression-ignition engines, and two-stroke engines. Reference information on fuels, such as international fuel specifications, is particularly useful.

850. Shigley, Joseph E., and Charles R. Mischke. **Standard Handbook of Machine Design**. New York: McGraw-Hill, 1996. Various pagings. \$179.95. ISBN 0070569584.

Machine design covers a broad range of topics, including wear, usability, safety, corrosion, stress, noise, vibration, and strength. Discussions on seals,

flywheels, power screws, fasteners, drives, gaskets, and robots are also in this reference. One chapter of interest is the thesaurus of mechanisms, which provides an illustrated approach to several devices and operations.

851. Sixsmith, Thomas, and Reinhard Hanselka. **Handbook of Thermoplastic Piping System Design**. New York: Marcel Dekker, 1997. 686p. (Mechanical Engineering: A Series of Textbooks and Reference Books, no. 114). \$185.00. ISBN 0824798465.

This handbook answers most application questions about thermoplastic piping systems. Thermoplastic piping is widely used for piping systems. Topics covered here include designs, selection, installation, codes, standards, cost factors, and applications. Covered also are chemical resistance data graphing types of chemicals, thermoplastic materials, and temperature.

852. Skousen, Philip L. **Valve Handbook**. New York: McGraw-Hill, 1998. 726p. \$99.95. ISBN 0070579210.

This handbook focuses on the basics of valve designs and principles. It covers valve selection criteria and different types of valves, such as manual, check, pressure relief, control, smart; valve sizing, and common valve problems. It also includes a bibliography, common conversion factors, and a glossary.

853. Soroka, Walter G. **Fundamentals of Packaging Technology**. Herndon, VA: Institute of Packaging Professionals, 1998. 590p. \$195.00.

This resource covers such topics as packaging functions, graphic design, packing printing, paper and paperboard, paperboard packaging, metal cans and containers, glass containers, plastics, adhesives, machinery, and the packaging development process. It is used as a preparatory text for the Certified Packaging Professional (CPP) exam. It includes a glossary.

854. Stoecker, W. F. **Industrial Refrigeration Handbook**. New York: McGraw-Hill, 1998. 782p. \$99.95. ISBN 007061623X.

The *Industrial Refrigeration Handbook* is a combination and update of previous volumes (1988 and 1995) published by Business News Publishing Company. It discusses the field of industrial refrigeration; properties, cycles, and units; compressors; refrigerants; safety; and refrigerated structures. Appendices provide conversions between SI and Inch-Pound Units and properties of several refrigerants (e.g., R-22, R-23, R-125, R-134a).

855. Suchy, Ivana. **Handbook of Die Design**. New York: McGraw-Hill, 1998. Various pagings. \$89.95. ISBN 0070666717.

This handbook is a complete guide to metal stamping die design and operations, the most commonly used method for producing precision parts.

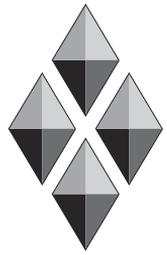
856. Walsh, Ronald A. **McGraw-Hill Machining and Metalworking Handbook**. New York: McGraw-Hill, 1999. 1683p. \$79.95. ISBN 0070680590.

This handbook covers the practice, technical data, and standards prevalent in current machining and metalworking environments.

857. Zappe, R. W. **Valve Selection Handbook**. Houston, TX: Gulf, 1998. 324p. \$70.00. ISBN 0884158861.

This is a definitive guide to the engineering fundamentals of valve selection. Topics covered include manual valves, check valves, pressure relief valves, and rupture disks. Reference material includes the *ASME Code Safety Valve Rules*, properties of fluids, standards pertaining to valves, and International System of Units (SI).

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# Buyer's Guides, Databooks, and Catalogs

Buyer's guides, databooks, and catalogs are critical to the engineer. These resources provide information about specifications, systems, materials, parts, and other components used in the development and design of engineering projects. Increasingly, more manufacturers and distributors are making these types of resources available over the Internet.

858. **American Machine and Tool Company Business Center (AMT)**. 1999. Available: <http://www.industry.net/c/mn/082PG>. (Accessed October 30, 1999).

With free registration, users of this source are able to access the AMT Directory and other information resources.

859. **American Metalcasting Consortium (AMC)**. 1999. Available: <http://amc.scr.a.org>. (Accessed October 30, 1999).

The American Metalcasting Consortium (AMC) is a coalition of organizations from the metalcasting industry, including The American Foundrymen's Society (AFS), Non-Ferrous Founders' Society (NFFS), North American Die Casting Association (NADCA), Steel Founders' Society of America (SFSA), and The Ferroalloys Association (TFA). The metalcasting industry is one of the largest recyclers of materials (about 85 percent of finished metalcast products come from recycled materials). The site includes research information and related photographs.

860. **Broadcast Engineering. Buyers Guide**. 1999. Available: <http://www.broadcastengineering.com/buyersguide/toc.htm>. (Accessed October 30, 1999).

This buyer's guide information is associated with the journal *Broadcast Engineering*. The guide includes a product index, Internet addresses, manufacturer/dealer addresses, and systems integrator addresses.

861. **Ceramics and Industrial Minerals**. 1998. Available: <http://www.ceramics.com>. (Accessed October 30, 1999).

This is a list of resources in ceramics, industrial minerals, and related topics. It includes a searchable list of companies and related industry sites.

862. **Chemical Online.** 1999. Available: <http://www.chemicalonline.com>. (Accessed October 30, 1999).

This site supports professionals and vendors in the chemical industry. It provides a buyer's guide for products and suppliers, chemical industry news, manufacturers, regulatory updates, announcements, employment opportunities, and discussion forums.

863. **Chip Directory.** 1999. Available: <http://www.hitex.com/chipdir/chipdir.html>. (Accessed October 30, 1999).

This site contains searchable files for numerically and functionally ordered chip lists, chip pinouts and chip manufacturers, tool manufacturers, electronics books, electronic resources, magazines, and additional Internet resources.

864. **D.A.T.A. Digest Discrete Semiconductors Library.** Englewood, CO: D.A.T.A., 1998. 5 parts.

There are several titles available in this collection. More than 410,200 current devices produced by 670 manufacturers worldwide are included. Titles include technical sections providing up to 20 of the most important electrical parameters on each device, along with package outline drawings, pinouts, suggested replacements, and manufacturer contact information. There are several components to the library: *Diodes* (Annual. \$205.00. ISSN 10400249.); *Optoelectronics* (Annual. \$205.00. ISSN 10400907.); *Power Semiconductors* (Annual. \$205.00. ISSN 10400214.); *Thyristors* (Annual. \$205.00. ISSN 10400222.); and *Transistors* (Annual. \$205.00. ISSN 10400230.)

865. **D.A.T.A. Digest Integrated Circuits Library.** Englewood, CO: D.A.T.A., 1998. 5 parts.

More than 291,100 current devices produced by 674 manufacturers worldwide are included in this comprehensive library. All titles in the ICs Library include technical sections providing up to 20 of the most important electrical parameters on each device, along with package outline drawings, pinouts, suggested replacements, and manufacturer contact information. There are several components to the library: *Digital* (Annual. \$205.00. ISSN 10574530.); *Interface* (Annual. \$205.00. ISSN 10574522.); *Linear* (Annual. \$205.00. 10593128.); *Memory* (Annual. \$205.00. ISSN 10482598.); and *Microprocessors* (Annual. \$205.00. 10492445.)

866. **D.A.T.A. Digest Specialty References Library.** Englewood, CO: D.A.T.A., 1998. 3v.

This library provides a broad range of indexes with information not included in the hardcopy versions of the D.A.T.A. Volumes include *Application Notes* (Annual. \$95.00. ISSN 10593772.); *High Reliability Military Electronic Components* (Annual. \$225.00. ISSN 10818049.); and *Master Type Locator* (Annual. \$150.00. ISSN 1080983X.)

867. **E and MJ Buyers Guide.** 1998. Available: <http://www.e-mj.com>. (Accessed October 30, 1999).

This is a list of companies from the *Engineering and Mining Journal (E&MJ)*.

868. **Fisher Scientific International.** 1999. Available: <http://www.fisher-sci.com>. (Accessed October 30, 1999).

Fisher Scientific International provides teaching aids for science education, instruments, equipment, supplies, workstations, and research chemicals. The site offers access to the following catalogs: *Argos Organics Catalog of Fine Chemicals*, *Fisher Catalog*, *Safety Products Reference Manual*, *Fisher Chemical Catalog*, and *Fisher Health Care Catalog*.

869. **IC Manufacturers.** 1999. Available: <http://www.asic-success.com>. (Accessed April 2, 2000).

This is a directory of over 660 integrated circuit (IC) manufacturers' sites.

870. **International Plastics Selector (IPS).** Englewood, CO; D.A.T.A. Business Publishing. Frequency varies. Information available: <http://data.ihs.com>. (Accessed April 2, 2000).

International Plastics Selector is a comprehensive group of products relating to the plastics industry. These products provide key property data for the selection of plastics and adhesives materials. Volumes are *Adhesives /D/I/G/E/S/T/* (Biennial. \$95.00. ISSN 10412050.) and *Plastics /D/I/G/E/S/T/* (Annual. \$245.00. ISSN 10450769.) Paper and digital formats are both available.

871. **Manufacturing Engineering—Buyers Guide.** 1999. Available: <http://www.sme.org>. (Accessed October 30, 1999).

This is the buyer's guide that comes with the journal *Manufacturing Engineering*. It has 280 product categories and is published by the Society of Manufacturing Engineers. To locate the buyer's guides on this site, first select "magazines." From this page you can select a journal title to find the buyer's guides.

872. **Manufacturing.net.** 1999. Available: <http://www.manufacturing.net>. (Accessed October 30, 1999).

Directed to engineering, design, purchasing, logistics, and distribution professionals, this site provides news, product directories, and employment information from Cahners magazines. Access is free with registration.

873. **Metalforming OnLine.** 1999. Available: <http://www.metalform.com>. (Accessed October 30, 1999).

This site is supported by Precision Metalforming Association (PMA). The metalforming industry creates precision metal products by using stamping and fabricating processes. It provides searchable access to Sources Buyer's Guide and Suppliers Buyer's Guide. A reference glossary is also provided.

874. **The Mineral Gallery.** 1999. Available: <http://www.galleries.com/default.htm>. (Accessed October 30, 1999).

The Mineral Gallery is a collection of mineral descriptions, images, and specimens. The descriptions include searchable mineralogical data.

875. **National Tooling and Machining Association (NTMA)**. 1999. Available: <http://www.ntma.org>. (Accessed October 30, 1999).

Established in 1943, the National Tooling and Machining Association is a trade organization representing the precision custom manufacturing industry throughout the United States. It provides searchable access to NTMA Online Buyer's Guide.

876. **Recycler's World**. 1999. Available: <http://www.recycle.net>. (Accessed October 30, 1999).

Recycler's World provides information related to secondary or recyclable commodities, byproducts, and used and surplus items or materials. Commodity recycling sections include automobile, battery, iron, paper, glass, liquids, and food waste.

877. **Scientific Instruments Services (SIS)**. 1998. Available: <http://www.sisweb.com>. (Accessed October 30, 1999).

SIS provides services and product line for mass spectrometers, gas chromatographs, and related equipment. Access is provided to SIS Catalog Online.

878. **SIGMA-ALDRICH**. 1999. Available: <http://www.sigma-aldrich.com>. (Accessed October 30, 1999).

SIGMA-ALDRICH is a global company responsible for Sigma, Aldrich, Fluka, Supelco, and Riedel-de Haën brand products. Several searchable catalogs are available for over 200,000 chemicals and laboratory research supplies.

879. **SoluSource**. 1999. Information available: <http://www.solusource.com>. (Accessed October 30, 1999).

This is an index of product information searchable by word, functionality, locality, or product attribute. Its publisher, Thomas Publishing, advertises that this unique resource has been "designed for engineers by engineers." It is available by subscription.

880. **Steel Manufacturers Association (SMA)**. 1999. Available: <http://www.steelnet.org>. (Accessed October 30, 1999).

This site, sponsored by the Steel Manufacturers Association (SMA), offers an extensive list of links to steel producers and organizations. It also lists press releases, societies, publications, and bulletin boards concerned with the steel industry.

881. **Sweet's Catalog Files**. New York: Sweet's Division, McGraw-Hill. Annual. Includes digital data. ISSN 07477198.

In 1906 the first edition of the *Sweet's Catalog Files* provided product information from 435 manufacturers. Today, the *Catalog Files* provide product catalogs from 2,000 manufacturers. The *Sweet's Catalog Files* are prefilled, classified, and indexed according to the industry-accepted, 16-division format. *Catalog Files* cover the following areas: general building and renovation, industrial construction and renovation, light source, accessible building products,

contract interiors, electrical contracting, mechanical contracting, civil and structural contracting, and Canadian construction. Sweet's System Online: Building Product Information is available at: <http://www.sweets.com>.

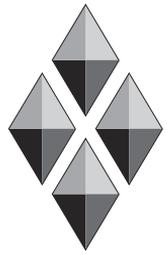
882. **Thomas Register of American Manufacturers.** 1999. Available: <http://www.thomasregister.com>. (Accessed October 30, 1999).

This directory lists over 156,000 manufacturers of industrial products and services. The Thomas Publishing Company also publishes several digital products that are available for free to qualified users. *PartSpec* is a catalog of hundreds of thousands of parts from leading U.S. mechanical parts manufacturers. This parts library allows the user to find parts drawings and insert them into AutoCAD drawings. *PlantSpec* brings product information for multiple plant-component manufacturers together. *CADBlocks* is a source for standard format dimensioned drawings and technical data for thousands of building products from leading manufacturers.

883. **World Catalog of International Chemical Equipment (WOICE).** Frankfurt, Germany:ACHEMA, 1999. Digital data. Information available: <http://www.woice.de/deutsch/pages/woice.htm>.

This is a comprehensive, international multimedia catalog of equipment in chemical engineering, environmental protection, and biotechnology. It provides information on more than 4,600 companies from around the world. The primary language is English, but users can also access the information in German, French, or Spanish.

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# Internet Resources

This chapter covers a broad range of Internet resources arranged by the following engineering disciplines: aerospace and aeronautical, architectural, chemical, civil, computer science, electrical, general, industrial, materials, mechanical, mining, and nuclear engineering. Two major considerations associated with the activity of listing digital resources are worth mentioning. The first is that organizations change Internet addresses often. If an address appears to be no longer valid, it is worth the effort to do some additional searching. Unless the organization has completely changed its name or gone out of business, the new site should surface. The other consideration is that many of the sites can be categorized as “grey sites.” Just like grey literature, there is useful information available from “less-traditional” sites. As with all information resources and tools, the user is encouraged to evaluate the information through critical analysis and verification.

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### 8.1 Aerospace and Aeronautical Engineering

884. **Aerofiles.** 1999. Available: <http://aerofiles.com>. (Accessed April 4, 2000).

Aerofiles lists more than 11,000 types of U.S. aircraft with their specifications, photographs, and other data. The site also includes information about Approved Type Certificates, power plants by manufacturer, codes, and abbreviations.

885. **Aerospace—World Wide Web Virtual Library.** 1999. Available: [http://macwww.db.erau.edu/www\\_virtual\\_lib/aeronautics.html](http://macwww.db.erau.edu/www_virtual_lib/aeronautics.html). (Accessed April 23, 1999).

Hosted at the Embry-Riddle Aeronautical University, this resource covers such categories as conferences, European Space Agency (ESA), images, manufacturers, museums, NASA Space Centers, government, university publications, software engineering, and rocketry resources.

886. **Airship: The Homepage for Lighter-Than-Air Craft.** 1999. Available: <http://spot.colorado.edu/~dziadeck/airship.html>. (Accessed October 30, 1999).

This is a well-developed educational site covering every aspect of lighter-than-air craft information. It includes additional Internet sites, media, books, and international information.

887. **Aviation Museum Locator**. 2000. Available: <http://www.brooklyn.cuny.edu/rec/air/museums/museums.html>. (Accessed April 4, 2000).

Over 200 museums are identified by state.

888. **Aviation—Virtual Library**. 1999. Available: [http://macwww.db.erau.edu/www\\_virtual\\_lib/aviation.html](http://macwww.db.erau.edu/www_virtual_lib/aviation.html). (Accessed April 23, 1999).

This site covers a broad range of topics, including aircraft, airlines, airships and balloons, airshows, aviation pioneers, conferences, helicopters, ultralights, software, and skydiving.

889. **Moderate Resolution Imaging Spectrometer (MODIS)**. 1999. Available: <http://modarch.gsfc.nasa.gov>. (Accessed October 30, 1999).

MODIS plays a vital role in the development of validated, global, interactive Earth system models. The site also includes an extensive list of publications back to 1978.

890. **UIUC Applied Aerodynamics Group**. 2000. Available: <http://amber.ae.uiuc.edu/~m-selig>. (Accessed April 4, 2000).

Produced by the Department of Aeronautical and Astronautical Engineering, University of Illinois, Urbana-Champaign, this resource covers a wide range of information on low-speed airfoil tests and airfoil data.

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## 8.2 Architectural Engineering

891. **AEC (Architecture Engineering Construction) InfoCenter**. 1999. Available: <http://www.aecinfo.com>. (Accessed October 30, 1999).

AEC InfoCenter serves the architectural, engineering, construction, and home building industry by providing valuable resource material online. It includes building products, support services, software, hardware, and heavy equipment. The site also includes the SpecCenter, which provides free specifications from contributing manufacturers.

892. **Architectural Engineering—Virtual Library**. 1998. Available: <http://energy.arce.ukans.edu/wwwvl/wwwarce.htm>. (Accessed October 30, 1999).

Architectural engineering is the application of engineering principles to the design, construction, and operation of technical systems for buildings. This site covers general information; professional organizations; education; and major areas of specialization like lighting, heating, acoustics, plumbing, and fire protection.

893. **BuildNET**. 1998. Available: <http://www.abuildnet.com>. (Accessed April 23, 1999).

BuildNET provides a comprehensive database of building industry and home improvement resources, companies, and opportunities.

894. **Built in America: Historic American Buildings Survey/Historic American Engineering Record. 1933–Present.** Washington, DC: Library of Congress, 1998. (American Memory). Available: <http://memory.loc.gov/ammem/hhhtml/hhhome.html>. (Accessed April 4, 2000).

The Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) are among the largest collections in the Prints and Photographs Division of the Library of Congress. The online collections document achievements in architecture, engineering, and design in the United States and its territories through a comprehensive range of building types and engineering technologies, including windmills, one-room school houses, the Golden Gate Bridge, and buildings designed by Frank Lloyd Wright.

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## 8.3 Chemical Engineering

895. **CCL.NET—Computational Chemistry List.** 1999. Available: <http://www.ccl.net/chemistry>. (Accessed October 30, 1999).

This list covers topics of interest to computational chemists.

896. **Chemical Education Resource Shelf.** 2000. Available: <http://www.umsl.edu/divisions/artscience/chemistry/books/welcome.html>. (October April 4, 2000).

This resource archive is produced under the auspices of the *Journal of Chemical Education Online*. The Resource Shelf contains links to virtually all of the publishers who maintain Internet sites and many links to pages devoted to individual titles; additionally, the online version includes citations and links to reviews. Categories include models in introductory chemistry, organic chemistry, inorganic chemistry, crystallography, materials science, forensic chemistry, and statistics in analytical chemistry.

897. **Chemical Engineering—Virtual Library.** 1998. Available: <http://www.che.ufl.edu/WWW-CHE>. (Accessed October 30, 1999).

This subject catalog lists information resources relevant to chemical and process engineering. Topics covered include biomedical, ceramics, electrochemical, engineering and construction, fluid mechanics, process design, safety and hazards, standards, and water technology.

898. **Chemical Heritage Foundation (CHF).** 2000. Available: <http://www.chemheritage.org>. (Accessed April 4, 2000).

The Chemical Heritage Foundation (CHF) was established by the American Chemical Society (ACS) and the American Institute of Chemical Engineers (AIChE) in 1982. CHF promotes the understanding of the chemical sciences and technologies. The site includes an informal history of the field of polymer chemistry, “Polymers and People.”

899. **CHEMINFO: Chemical Information Sources.** 1999. Available: <http://www.indiana.edu/~cheminfo>. (Accessed October 30, 1999).

This site, hosted at Indiana University, provides a comprehensive site for chemical information sources.

900. **Chemistry—Virtual Library.** 1998. Available: <http://www.chem.ucla.edu/chempointers.html>. (Accessed October 30, 1999).

Chemistry sites include academic institutions, nonprofit organizations, commercial organizations, chemistry software ads, and chemical industry consultants.

901. **ChemSoc—The Chemistry Societies Network.** 2000. Available: <http://www.chemsoc.org>. (Accessed April 4, 2000).

This international site is sponsored by the Royal Society of Chemistry. It provides access to the Chemical Hazards Communication Society, education information, a list of sites, and societies. Chembytes provides access to a variety of news, recent findings and discoveries, and business updates.

902. **CS ChemFinder.** 1998. Available: <http://chemfinder.camsoft.com>. (Accessed October 30, 1999).

The ChemFinder WebServer is a chemical database that provides information that a general purpose WWW index cannot, including physical property data and 2D chemical structures. The query form of the ChemFinder WebServer is designed to locate common types of chemical information. Searchable fields include chemical names, formulae, molecular weights, and CAS Registry Numbers.

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## 8.4 Civil Engineering

903. **ANON: Another Node On the interNet.** 1999. Available: <http://www.uh.edu/~jbutler/anon/anon.html>. (Accessed April 4, 2000).

This site provides Internet resources for geosciences, mathematics, and computing. The resources will be of particular interest to the readers of *Computers and Geoscience: An International Journal*.

904. **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.** 2000. Available: <http://www.unep.ch/basel>. (Accessed April 5, 2000).

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was adopted in 1989 and became effective on May 5, 1992. The Convention is the response of the international community to the problems caused by the annual worldwide production of 400 million tons of hazardous wastes. This global environmental treaty strictly regulates the transboundary movements of hazardous waste. The site includes the text of the Basel Convention and the official documents for the Fourth Meeting of the Conference of the Parties to the Basel Convention in Malaysia (1998).

905. **Canadian and International Green Links.** 1999. Available: <http://www.raysweb.net/greenlinks>. (Accessed April 5, 2000).

This is a listing of Canadian and international environmental organizations, Canadian wildlife and wilderness organizations, Canadian provincial and regional environmental groups, and environmental education and teaching resources.

906. **Civil Engineering—Virtual Library.** 1998. Available: <http://www.ce.gatech.edu/WWW-CE/home.html>. (Accessed October 30, 1999).

This site covers international, industry, and government civil engineering sites.

907. **Cross-Connection Control/Backflow Prevention—Virtual Library.** 1999. Available: <http://www.usc.edu/dept/fccchr/ccvlib>. (Accessed October 30, 1999).

The site covers education and research facilities, public health, water quality, commercial servers, and other water systems links.

908. **The Disaster Research Center (DRC).** 1999. Available: <http://www.udel.edu/DRC/homepage.htm>. (Accessed October 30, 1999).

This social science research center, located at the University of Delaware, is devoted to the study of disasters. The center conducts field and survey research on group, organizational, and community preparation for, response to, and recovery from natural and technological disasters and other community-wide crises. Researchers have carried out systematic studies on a broad range of disaster types, including hurricanes, floods, earthquakes, tornadoes, hazardous chemical incidents, and plane crashes. This site includes a substantial publications list.

909. **Earth Science—The Virtual Library.** 1999. Available: <http://www.ugems.psu.edu/~owens/VL/EarthScience.html>. (Accessed October 30, 1999).

Subject categories at this site include cartography, environment, forestry, geophysics, geosystems and petroleum engineering, geotechnical engineering, oceanography, and remote sensing.

910. **Earthquake Information: Reducing Hazards.** 1999. Available: <http://quake.wr.usgs.gov>. (Accessed October 30, 1999).

This site includes the latest quake information, maps and lists of recent earthquakes, earthquakes FAQ, and other related resources.

911. **EASY—Earthquake Engineering Slide Show Information System.** 1997. Available: <http://www.ikpir.fgg.uni-lj.si/EASY/ang/INDEX.HTM>. (Accessed April 5, 2000).

The EASY information system includes 500 slides documenting earthquake damage after four major earthquakes: Montenegro (1979), Mexico (1985), Northridge (1979), and Kobe (1995). Slides are described in detail, classified, and labeled with keywords. Detailed commentaries of typical structural failures and standard earthquake-related categories and topics are added.

912. **EnviroLink—The Online Environmental Community.** 1999. Available: <http://envirolink.org>. (Accessed October 30, 1999).

EnviroLink is an online community that unites hundreds of organizations and volunteers around the world. EnviroLink provides comprehensive, current environmental resources.

913. **Environmental Health and Safety Related WWW Sites.** 1999. Available: <http://www.ehs.washington.edu/otherlinks.htm>. (Accessed October 30, 1999).

Maintained by the Environmental Health and Safety Department at the University of Washington, this site includes local and government resources, education, and other related links.

914. **Environmental Law Information Resources.** 1999. Available: <http://envinfo.com>. (Accessed October 30, 1999).

This site includes numerous environmental law resources, including access to the *Environment Deskbook*, which includes documents important in the environmental regulatory framework.

915. **Fly Ash Resource Center.** 1999. Available: <http://www.geocities.com/CapeCanaveral/Launchpad/2095/flyash.html>. (Accessed April 5, 2000).

The Fly Ash Resource Center provides information on coal combustion by-products, including materials research, environmental, standards/quality assurance, fly ash images, newsgroups, and a bibliography.

916. **Geology and the Environment—An Internet-Based Resource Guide.** 1999. Available: <http://www.hic.net/hicpersonal/j/jbutler/update/cit.htm>. (Accessed October 30, 1999).

This guide contains all the links cited in the print version of the same name, a companion text for *Geology and the Environment*. This site contains text, graphics, and in some cases, slide shows, covering such topics as environmental geology, water, and remote sensing.

917. **Geotechnical Engineering—Virtual Library.** 1998. Available: <http://geotech.civen.okstate.edu/wwwVL/index.html>. (Accessed October 30, 1999).

This site covers university geotechnical engineering servers, geotechnical goods and services, and other related Internet resources. It also provides full-text access to *EJGE*, the *Electronic Journal of Geotechnical Engineering*, and *iGEM*, the *Internet Geotechnical Engineering Magazine*.

918. **GPS (Global Positioning System) Overview.** 1999. Available: [http://www.utexas.edu/depts/grg/gcraft/notes/gps/gps\\_ftoc.html](http://www.utexas.edu/depts/grg/gcraft/notes/gps/gps_ftoc.html). (Accessed April 5, 2000).

This site provides an overview of GPS, including map projections, geodetic data, and coordinate systems. GPS is a Satellite Navigation System funded by and controlled by the U.S. Department of Defense (DOD).

919. **Hazardous Waste Clean-Up Information (CLU-IN) Web Site.** 1999. Available: <http://www.clu-in.org>. (Accessed October 30, 1999).

The Hazardous Waste Clean-Up Information (CLU-IN) Web Site provides information about innovative treatment technology to the hazardous waste

remediation community. It describes programs, organizations, publications, and other tools. This site was developed by the EPA.

920. **Hazards and Risks—Virtual Library.** 1998. Available: <http://life.csu.edu.au/hazards/#library>. (Accessed October 30, 1999).

Topics covered at this site include civil disturbances, fires, emergency management, geological events, and technological hazards.

921. **Innovative Transportation Technologies.** 2000. Available: <http://faculty.washington.edu/~jbs/itrans>. (Accessed April 5, 2000).

This site provides information about unconventional transportation technologies. The passenger systems are referred to as Automated People Movers (APM); the freight systems are referred to as Automated Freight Systems (AFS). Numerous resources are included for each technology.

922. **Internet Resources for Highway Engineering.** 1996. Available: <http://www.library.ucsb.edu/istl/96-fall/choinski.html>. (Accessed April 5, 2000).

This article on highway engineering Internet resources was published in *Issues in Science and Technology Librarianship*.

923. **Internet Software Guide for Engineers.** 1999. Available: <http://www.geocities.com/CapeCanaveral/Launchpad/9631/software.html>. (Accessed October 30, 1999).

This resource helps water resources engineers find useful water-related software for such areas as hydraulics, hydrology, water resources, and the environment.

924. **The IRIS Consortium Website.** 1999. Available: <http://www.iris.washington.edu>. (Accessed November 7, 1999).

The Incorporated Research Institutions for Seismology (IRIS) is a consortium of universities that have research programs in seismology. The purpose of IRIS is to provide the acquisition and distribution of high-quality seismic data. The site covers numerous resources, including recent earthquakes and seismic stations.

925. **ITS Cooperative Deployment Network.** 1999. Available: <http://www.nawgits.com/icdn.html>. (Accessed October 30, 1999).

This site is sponsored by the National Associations Working Group for ITS (NAWG). It includes a newsletter, calendars, and discussion forums; ITS (Intelligent Transportation Systems) information repositories; federal/state/local resources; tutorials; training materials; and links to other sites.

926. **Land Surveying and Geomatics.** 1999. Available: <http://homepage.interaccess.com/~maynard>. (Accessed October 30, 1999).

Links at this site include news, definitions, National Information Centers for the United States and other countries, state information, GIS, photogrammetry and remote sensing, and FAQs.

927. **Land Surveying Info.** 1999. Available: <http://www.sonic.net/~trollhei>. (Accessed October 30, 1999).

The site is organized at the local, state, national, and international levels. It also includes other surveyors' sites, commercial sites, and newsgroups.

928. **Land Surveyors Online.** 1999. Available: <http://www.landsurveyors.com>. (Accessed October 30, 1999).

This site provides online resources for the professional land surveyor, including an association directory, a college and university directory, a professional directory, and surveying terms and definitions.

929. **Multidisciplinary Center for Earthquake Engineering Research (MCEER).** 1999. Available: <http://nceer.eng.buffalo.edu/index.html>. (Accessed October 30, 1999).

Access is provided here to the SAC Lit Database, which provides coverage of literature relevant to damage of steel moment frame buildings that was discovered as a result of the Northridge, California, earthquake of January 17, 1994, and QUAKELINE, a bibliographic database covering earthquakes, earth engineering, natural hazard mitigation, and related topics. QUAKELINE currently has over 32,000 citations. Several bibliographies, literature, and research guides are listed.

930. **National Pollution Prevention Roundtable (NPPR).** 2000. Available: <http://www.p2.org/index.html>. (Accessed April 5, 2000).

The mission of the Roundtable is to provide a national forum for promoting the development, implementation, and evaluation of efforts to avoid, eliminate, or reduce pollution at the source. Numerous resources on energy and pollution prevention are covered.

931. **Partners for Advanced Transit and Highways (PATH).** 1999. Available: <http://www.ucei.berkeley.edu/PATH/WWW/index.html>. (Accessed October 30, 1999).

Included at this site are a list of Intelligent Transportation Systems (ITS) Internet research sites, information resources, organizations, and government agencies.

932. **Pollution Online.** 1999. Available: <http://www.pollutiononline.com>. (Accessed October 30, 1999).

Pollution Online is a source for the pollution prevention and control industry. This site is designed to serve the needs of professionals involved in the control and prevention of pollution from industrial and commercial sources in governmental, industrial, and commercial environments.

933. **Public Works Online.** 1999. Available: <http://publicworks.com>. (Accessed October 30, 1999).

This site includes a buyer's guide, employment information, books, software, news, and other public works-related information.

934. **Recycler's World.** 1999. Available: <http://www.recycle.net>. (Accessed October 30, 1999).

Recycler's World was established as an international site for information related to secondary or recyclable commodities, byproducts, and used and surplus items or materials. It includes recycling associations and publications.

935. **Remote Sensing—WWW Virtual Library.** 1999. Available: <http://www.vtt.fi/aut/rs/virtual>. (Accessed October 30, 1999).

This site lists international organizations and other remote sensing information such as satellite data, conferences, societies, journals, newsgroups, GIS, and related fields in virtual reality.

936. **Scorecard.** 2000. Available: <http://www.scorecard.org>. (Accessed April 5, 2000).

An information service provided by the Environmental Defense Fund, The Chemical Scorecard provides access to the U.S. Environmental Protection Agency's (EPA) Toxic Release Inventory (TRI). The TRI is a compilation of all self-reported releases of toxic substances into the environment. Reports are available for states, counties, cities, and companies. In addition to the reports, the Scorecard contains rankings of toxic releases by state, county, zip code, and facility. This site also provides information on over 5,000 chemicals included in the TRI, their health effects, and a glossary of commonly used terminology

937. **Soil Liquefaction Web Site.** 1999. Available: <http://www.ce.washington.edu/~liquefaction/html/main.html>. (Accessed October 30, 1999).

This site provides technical information on soil liquefaction. Liquefaction occurs in soils in which the space between individual particles is completely filled with water. Damage from earthquakes is substantially increased due to liquefaction. The site includes links to other research and information sources.

938. **Southern California Earthquake Center (SCEC) Webservice.** 2000. Available: <http://www.scec.org>. (Accessed April 5, 2000).

The Southern California Earthquake Center (SCEC) coordinates research on earthquake hazards at nine institutions and communicates earthquake information to the public. SCEC is a National Science Foundation (NSF) Science and Technology Center and is co-funded by the U.S. Geological Survey (USGS). Research reports, databases, and progress reports are available.

939. **Stratospheric Ozone and Human Health.** 1998. Available: <http://sedac.ciesin.org/ozone>. (Accessed October 30, 1999).

This is the Socioeconomic Data and Applications Center's (SEDAC) site for ozone resources. The purpose of this site is to provide data and resources in the areas of ultraviolet (UV) radiation, ozone, and human health impacts of UV exposure.

940. **Surfing the Internet for Earthquake Data.** 1999. Available: <http://www.geophys.washington.edu/seismosurfing.html>. (Accessed October 30, 1999).

This site provides links to seismic data, seismic research information, and indexes to related fields.

941. **Tools. National Center for Environmental Decision-Making Research (NCEDR).** 2000. Available: <http://www.ncedr.org/tools>. (Accessed April 5, 2000).

The National Center for Environmental Decision-Making Research works to improve environmental decision making at the regional, state, and local levels. Administered by the Joint Institute for Energy and Environment in Knoxville, Tennessee, NCEDR provides information on market assessments, ecological relationships, ISO 14001, and other topics.

942. **Transportation—Yahoo.** 1999. Available: [http://dir.yahoo.com/business\\_and\\_economy/transportation](http://dir.yahoo.com/business_and_economy/transportation). (Accessed October 30, 1999).

Subject areas covered at this site include buses, canals, government agencies, highways and roads, intelligent transportation systems, maritime, mass transit, transportation engineering, and trucking.

943. **U.S. Global Change Research Information Office (GCRIO).** 1999. Available: <http://gcrio.ciesin.org>. (Accessed October 30, 1999).

The U.S. Global Change Research Information Office (GCRIO) provides access to data and information on global change research, adaptation/mitigation strategies and technologies, and global change-related educational resources on behalf of the U.S. Global Change Research Program (USGCRP). GCRIO is maintained by The Center for International Earth Science Information Network (CIESIN) at Columbia University.

944. **Virtual Earthquake.** 1999. Available: <http://vcourseware2.calstatela.edu/VirtualEarthquake/VQuakeIntro.html>. (Accessed October 30, 1999).

Virtual Earthquake is an interactive computer program designed to demonstrate the concepts of how an earthquake epicenter is located and how the Richter magnitude of an earthquake is determined. The Virtual Earthquake computer program is running on a server at California State University at Los Angeles and is part of the Electronic Desktop Project.

945. Washington State Department of Transportation (WSDOT). **Other Transportation Links.** 1999. Available: <http://www.wsdot.wa.gov/othertransportation.htm>. (Accessed April 5, 2000).

This site lists State DOT, regional, federal, and miscellaneous transportation sites. A copy of the Galloping Gertie (The Tacoma Narrows Bridge) movie is available on the main page: <http://www.wsdot.wa.gov>.

946. **The Water Librarians' Home Page.** 1999. Available: <http://www.wco.com/~rteeter/waterlib.html>. (Accessed April 5, 2000).

This site lists resources related to water, such as water agencies, water reference databases, comprehensive water pages, earth sciences, engineering, environmental science and law, and government agencies.

947. **Websurfers Biweekly Earth Science Review (WBESR).** 1999. Available: <http://home.rmi.net/~michaelg>. (Accessed October 30, 1999).

Every two weeks new earth science sites are posted here. Over 2,000 resources and other related information have been assembled at this site.

948. **WWWVL Cartography Resources.** 1999. Available: <http://geog.gmu.edu/projects/maps/cartogrefs.html>. (Accessed October 30, 1999).

This site includes noncommercial resources for education, geography, map libraries, Desktop Mapping (DTM), and Geographic Information Systems (GIS).

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## 8.5 Computer Science Engineering

949. **A. M. Turing Award.** 1999. Available: <http://www.acm.org/awards/taward.html>. (Accessed October 30, 1999).

The A. M. Turing Award is the Association for Computing Machinery's (ACM) most prestigious technical award. Included here is a list of the award recipients from 1966 to the present.

950. **Artificial Intelligence Resources.** 1999. Available: [http://ai.iit.nrc.ca/ai\\_top.html](http://ai.iit.nrc.ca/ai_top.html). (Accessed October 30, 1999).

This site is maintained by the Institute for Information Technology of the National Research Council of Canada and includes a broad range of resources on artificial intelligence, including bibliographies, books, companies, conferences, FAQs, newsgroups, societies, software repositories, and Canadian AI companies.

951. **Computers and Internet—Yahoo.** 1999. Available: <http://www.yahoo.com/Computers>. (Accessed October 30, 1999).

This site covers a broad range of topics related to computers.

952. **Computing—Virtual Library.** 1998. Available: <http://vlib.org/Computing.html>. (Accessed October 30, 1999).

Subject areas covered at this site include artificial intelligence, electronic commerce, human-computer interaction, logic programming, programming languages, and safety-critical systems.

953. **Internet FAQ Archives.** 1999. Available: <http://www.faqs.org/faqs>. (Accessed October 30, 1999).

This Frequently Asked Questions (FAQs) Archives is searchable by full-text, newsgroups, category, and author. This site also provides a link to the Internet RFC/STD/FYI/BCP archives.

954. **Internet2.** 1999. Available: <http://www.internet2.edu>. (Accessed October 30, 1999).

This is a comprehensive overview of the Internet2 effort. It lists mission, activities, participants, presentations, FAQs, and technical information.

955. **Logic Programming—Virtual Library.** 1999. Available: <http://www.comlab.ox.ac.uk/archive/logic-prog.html>. (Accessed October 30, 1999).

Topical areas covered here include general repositories, Prolog, Window system interfaces, other logic programming systems, and meetings.

956. **Machine Learning Resources.** 1999. Available: <http://www.aic.nrl.navy.mil/~aha/research/machine-learning.html>. (Accessed October 30, 1999).

This site lists machine resources such as applications, bibliographies, books, conference announcements, data repositories, employment information, research groups, special interest groups, and tutorials.

957. **Mobile and Wireless Computing Index—WWW Virtual Library.** 1999. Available: <http://gunpowder.stanford.edu/mobile>. (Accessed October 30, 1999).

This site lists conferences, journals, research, organizations, books, and products of interest to those working in the areas of mobile and wireless computing.

958. **Netlib Repository at UTK and ORNL.** 1999. Available: <http://www.netlib.org>. (Accessed October 30, 1999).

Netlib is a collection of mathematical software, papers, conferences, and databases. It also includes StatCodes with links to source codes implementing statistical methods that are available on the Internet and BenchWeb, which is a starting point for finding information about computer system performance benchmarks, benchmark results, and benchmark codes.

959. **Parascope.** 1999. Available: <http://computer.org/parascope>. (Accessed October 30, 1999).

Sponsored by the IEEE Computer Society, the focus of this site is on parallel computing sites.

960. **Pattern Recognition Information.** 1999. Available: <http://www.ph.tn.tudelft.nl/PRInfo.html>. (Accessed October 30, 1999).

This resource includes several sites and bibliographies from the pattern recognition research area.

961. **The Semiconductor Subway.** 2000. Available: <http://www-mtl.mit.edu/semisubway.html>. (Accessed April 5, 2000).

The Semiconductor Subway provides links to semiconductor- and microsystems-related information, including fabrication facilities, research activities, and standards development.

962. **Software Engineering—WWW Virtual Library.** 1999. Available: <http://rbse.jsc.nasa.gov/virt-lib/soft-eng.html>. (Accessed October 30, 1999).

Subject areas covered at this site include languages and notation, CASE (Computer-Aided Software Engineering), process, government and government-related organizations in software engineering, industrial organizations in software engineering, safety-critical systems, and systems engineering.

963. **Software Patent Institute (SPI).** 1999. Available: <http://www.spi.org>. (Accessed April 5, 2000).

The Software Patent Institute (SPI) provides educational and training programs and access to information and retrieval resources concerning software prior art. The Software Patent Institute Database of Software Technologies consists of descriptions of software technologies. Each record in the database is all or a portion of a source document that is generally not readily available online or

elsewhere. The database highlights the “folklore” of the computing industry by including computer manuals, older textbooks and journal articles, conference proceedings, and computer science theses.

964. **UCI Machine Learning Repository.** 1998. Available: <http://www.ics.uci.edu/~mlearn/MLRepository.html>. (Accessed April 5, 2000).

This is a repository of databases, domain theories, and data generators that are used by the machine learning community for the empirical analysis of machine learning algorithms. It is hosted by the University of California, Irvine.

965. **The VRML Repository.** 1999. Available: <http://www.web3d.org/vrml/vrml.htm>. (Accessed October 30, 1999).

The Virtual Reality Modeling Language (VRML) is a standard language for describing interactive 3D objects and worlds delivered across the Internet. The VRML Repository is a comprehensive resource for the dissemination of information relating to VRML. The site is maintained by the Web3D Consortium.

966. **World Wide Web Consortium (W3C).** 1999. Available: <http://www.w3.org>. (Accessed October 30, 1999).

This site supports the full development of the Internet in areas of user interface, technology and society, architecture, and accessibility programs. The director of the Web3 Consortium is Tim Berners-Lee, inventor of the Web.

967. **WWW Development—Virtual Library.** 1999. Available: <http://wdvl.internet.com/Vlib>. (Accessed October 30, 1999).

This is a comprehensive, illustrated encyclopedia of Web technology covering tutorials and development tools such as HTML, CGI, Java, JavaScript, graphics, VRML, multimedia, and animation.

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## 8.6 Electrical Engineering

968. **Acoustics and Vibrations—Virtual Library.** 1999. Available: <http://www.ecgcorp.com/velav>. (Accessed October 30, 1999).

This resource lists sites for papers, laboratories, organizations, vendors, and software covering acoustics and vibrations.

969. **Audio—Virtual Library.** 1999. Available: <http://www.comlab.ox.ac.uk/archive/audio.html>. (Accessed October 30, 1999).

This site covers audio repositories, newsgroups, online radios, software, and other information.

970. **Control Engineering—Virtual Library.** 1999. Available: [http://www.cds.caltech.edu/extras/Virtual\\_Library/Control\\_VL.html](http://www.cds.caltech.edu/extras/Virtual_Library/Control_VL.html). (Accessed October 30, 1999).

This library includes information on control conferences, professional societies, journals, control information services, and commercial organizations.

971. **EE Circuits Archive (EECA)**. 1999. Available: <http://www.ee.washington.edu/eeca>. (Accessed October 30, 1999).

This site includes links to circuits, data sheets, models, microprocessors, software, resistor codes, and digital design resources.

972. **Electrical Engineering—Virtual Library**. 1999. Available: <http://webdiee.cem.itesm.mx/wwwvlee>. (Accessed October 30, 1999).

The contents of this site cover information resources, standards, products and services, and academic and research institutions.

973. **Sonar**. 1997. Available: <http://www.dai.ed.ac.uk/students/ashley/Sonar/sonar.html>. (Accessed April 5, 2000).

This directory covers sites developing artificial SONAR/ultrasonic imaging systems, sites investigating Biological SONAR, images, movies, societies, publications, and tools for generating, recording and analyzing sound.

974. **Systems and Control Archive at Dallas (SCAD)**. 1999. Available: <http://scad.utdallas.edu>. (Accessed October 30, 1999).

SCAD is a database of information for engineers and mathematicians whose interests are in control theory, systems, and signal processing.

975. **Telecommunications. Internet Tools of the Profession**. 1998. Available: <http://www.sla.org/pubs/itotp/c14.htm>. (Accessed April 5, 2000).

This is a list of Internet resources on telecommunication, including organizations, government commissions, glossary, calendar, history, and journals.

976. **Telecoms—Virtual Library**. 1999. Available: <http://www.analysys.com/vlib>. (Accessed October 30, 1999).

The subject index of this site covers associations, broadcasting, e-commerce, economic and legal issues, multimedia, operators, policy and industry information, service providers, software services, standards, and videoconferencing.

977. **The WWW Virtual Library for Optical Science and Engineering**. 1999. Available: [http://www.spie.org/wwwvl\\_optics.html](http://www.spie.org/wwwvl_optics.html). (Accessed October 30, 1999).

In 1995 SPIE assumed administration of the WWW Virtual Library for Optical Science and Engineering, part of the W3 Consortium and CERN WWW Virtual Library. The site includes extensive lists of links to various resources that may be useful to people working in the optics industry. These links include university and national research labs, archives of documents, and images. Also available are industry listings in the OPTICS.ORG Photonics Marketplace.

978. **ZT Links**. 1999. Available: <http://www.zts.com/ztlinks>. (Accessed October 30, 1999).

This site is sponsored by Office of Naval Research, DARPA, and International Thermoelectric Society. Thermoelectric-related links include businesses, universities, institutes and national laboratories, conferences, societies, and commercial products.

## 8.7 General Engineering

979. **Applied Ethics in Professional Practice: Case of the Month Club.** 2000. Available: <http://www.engr.washington.edu/~uw-epp/Pepl/Ethics>. (Accessed April 5, 2000).

This site is provided by the Professional Engineering Practice Liaison Program (PEPL), located at the University of Washington. On a regular basis a new ethics case is taken from actual professional practice experience and is presented in narrative format.

980. **The Argus Clearinghouse—Engineering.** 1999. Available: <http://www.clearinghouse.net/eng.html>. (Accessed October 30, 1999).

The Argus Clearinghouse provides a central access point for guides that identify, describe, and evaluate Internet-based information resources. It also includes other subject guides on communication, computers and information technology, environment, science, and mathematics.

981. **AstroWeb: Astronomy/Astrophysics on the Internet.** 1999. Available: <http://www.cv.nrao.edu/fits/www/astronomy.html>. (Accessed October 30, 1999).

AstroWeb is a collection of astronomy-related information available on the Internet. It is maintained by the AstroWeb Consortium.

982. **Edinburgh Engineering Virtual Library (EEVL).** 2000. Available: <http://www.eevl.ac.uk>. (Accessed April 5, 2000).

EEVL maintains a searchable catalog of reviews and links to engineering sites and provides targeted engineering search engines, indexes to print literature, and other specialist information services. It includes indexes to print literature and the Recent Advances in Manufacturing (RAM) database, the Liquid Crystal Database, the Offshore Engineering Information Service, and the Jet Impingement Database.

983. **Engineering—Business and Economy—Yahoo.** 1999. Available: [http://dir.yahoo.com/business\\_and\\_economy/companies/engineering](http://dir.yahoo.com/business_and_economy/companies/engineering). (Accessed October 30, 1999).

This listing of engineering-related businesses, companies, and related information covers such subject areas as acoustics, aerospace, civil engineering, electric power engineering, drafting and illustration, environmental, failure analysis, geologic and petroleum engineering, marine, materials, mechanical engineering, naval, reliability, software, structural engineering, and systems engineering.

984. **Engineering and Technology Management—Virtual Library.** 1999. Available: <http://www.fit.edu/AcadRes/engmgt/em.html>. (Accessed October 30, 1999).

Information resources list university programs, conferences and announcements, societies and interest groups, and the Engineering WWW Virtual Library.

985. **Engineering—Yahoo**. 1999. Available: <http://dir.yahoo.com/science/engineering>. (Accessed October 30, 1999).

Subject areas covered at this site include aerospace, automotive, biomedical, civil, industrial, naval, optical, petroleum, reliability, software, and systems engineering.

986. **EurekAlert!**. 1999. Available: <http://www.eurekalert.org>. (Accessed October 30, 1999).

This comprehensive site features the latest research advances in science, medicine, health, and technology. It is produced by the American Association for the Advancement of Science (AAAS).

987. **European Patent Office (EPO)**. 1999. Available: <http://ep.espacenet.com>. (Accessed October 30, 1999).

The European Patent Office (EPO) provides a database, esp@cenet, which includes European Patents (EP), Patent Cooperation Treaty (WO), worldwide patents, and Japanese patents (PAJ). English, French, and German languages are supported. Guides, fees, forms, and European patent attorneys are among the many resources available.

988. **Exactly How Is Math Used in Technology?**. 1997. Available: <http://www.scas.bcit.bc.ca/scas/math/examples/table.htm>. (Accessed October 30, 1999).

This is a guide to how different types of math are used in technology, such as biomedical engineering, electronics, mechanical engineering, petroleum technology, and robotics.

989. **Galaxy: Engineering and Technology**. 1999. Available: <http://galaxy.tradewave.com/galaxy/Engineering-and-Technology.html>. (Accessed October 30, 1999).

This directory of engineering and technology sites covers agricultural, bio-engineering, chemical, civil and construction, electrical, and mechanical engineering. Subject areas include design methodologies, human factors and human ecology, non-destructive testing, technical reports, and technology transfer.

990. **IBM Intellectual Property Network**. 2000. Available: <http://www.patents.ibm.com>. (Accessed April 5, 2000).

This site's patent resources include searchable files for U.S. Patents, European patents and applications, and International Patent applications covered by the International Patent Cooperation Treaty. For U.S. patents the coverage is from 1971 to the present, and retrieval includes bibliographic information about the patent, claims, reference, and abstract information. Patent images are available from 1974.

991. **ICE—Internet Connections for Engineering**. 1999. Available: <http://www.english.cornell.edu/ice>. (Accessed April 5, 2000).

This is a comprehensive listing of Internet resources related to chemistry, engineering, math, physics, and other physical sciences.

992. **The Internet Pilot to Physics.** 1999. Available: <http://www.physicsweb.org/TIPTOP>. (Accessed October 30, 1999).

This Pilot is the result of an international effort to improve the use of information technology and the WWW in physics research and education. The site provides access to the Physics Around the World (PAW) database, which is useful for finding physics resources on the Internet.

993. **Internet Resources for Science and Technology.** 1999. Available: <http://www.lhl.lib.mo.us/scitech/resourc.htm>. (Accessed October 30, 1999).

This site is maintained by the Linda Hall Library and includes resources for engineering, environment, geosciences, physics, and government resources.

994. **Inventure Place—The National Inventors Hall of Fame.** 1999. Available: <http://www.invent.org/inventure.html>. (Accessed October 30, 1999).

This site includes a list of Internet educational resources related to the world of invention, the National Inventors Hall of Fame, and information about the BF Goodrich Collegiate Inventors Program.

995. **Japan Information Access Project.** 1999. Available: <http://www.nmjc.org/jiap>. (Accessed October 30, 1999).

The Japan Information Access Project is a research center whose goal is to strengthen international understanding of Japanese science, technology, industry, security, and policy.

996. **Japanese Patent Office (JPO).** 1999. Available: <http://www.jpo-miti.go.jp>. (Accessed October 30, 1999).

The Japanese Patent Office (JPO) provides information and guides about patent-related issues in Japan. The site includes a searchable database for Japanese patents and trademarks.

997. **Mathematics WWWVirtual Library.** 1999. Available: <http://euclid.math.fsu.edu/Science/math.html>. (Accessed October 30, 1999).

This site covers bibliographies, department sites, education, electronic journals, general resources, newsgroups, preprints, software, and TeX archives.

998. **megaConverter.** 1997. Available: [http://www.megaConverter.com/Cv\\_start.htm](http://www.megaConverter.com/Cv_start.htm). (Accessed October 30, 1999).

megaConverter is a set of weights, measures, and units conversion/calculation modules that allows users to discover things like how many seconds old they are, the difference between a gallon in the United States and a gallon in the United Kingdom, how many nanometers there are in an inch, and how many quarts there are in a chaldron. It includes conversion factors for units commonly used in science and engineering, trivial units, and ancient or historical weights and measures.

999. **National Inventors Hall of Fame.** 1999. Available: <http://www.invent.org/book/index.html>. (Accessed April 5, 2000).

The National Inventors Hall of Fame celebrates the creative and entrepreneurial spirit of great inventors. The creative genius of invention is showcased through exhibits and presentations.

1000. **National Science and Technology Medals Foundation (NSTMF)**. 1999. Available: <http://www.asee.org/nstmf>. (Accessed October 30, 1999).

The National Science and Technology Medals Foundation was established in 1991 to support the National Medal of Technology. The Foundation coordinates its activities with the White House Office of Science and Technology Policy (OSTP).

1001. **Online Ethics Center for Engineering and Science**. 1999. Available: <http://onlineethics.org>. (Accessed October 30, 1999).

The Online Ethics Center for Engineering and Science provides resources useful for understanding and addressing ethically significant problems. The site includes research ethics, cases, moral leaders, full-text essays on ethics, and ethical codes.

1002. **Online Particle Physics Information**. 1998. Available: <http://www.slac.stanford.edu/library/pdg>. (Accessed April 5, 2000).

This guide organizes catalogs, databases, directories, and Internet sites of interest to the particle physics community. This resource is maintained by the Stanford Linear Accelerator Center (SLAC), a national laboratory operated by Stanford University for the Department of Energy (DOE). SLAC was the home of the first U.S. Internet site. This history is described in *First in the Web, But Where Are the Pieces*, by Jean Marie Deken (SLAC-PUB-763), available at <http://www.slac.stanford.edu/pubs/slacpubs/7000/slac-pub-7636.html>.

1003. **Physics—Virtual Library**. 1999. Available: <http://www.ugems.psu.edu/~owens/VL/Physics.html>. (Accessed October 30, 1999).

Topics covered at this site include aeronomy, solar-terrestrial physics and chemistry, astronomy and astrophysics, beam physics, energy, geophysics, high energy physics, horology, and nuclear physics.

1004. **PhysicsWeb**. 1999. Available: <http://physicsweb.org>. (Accessed October 30, 1999).

The Institute of Physics (IOP) supports this comprehensive site for physics news, commentary, patents, book reviews, Internet resources, events, and jobs. Selected articles from *Physics World* magazine are also available. Registration is required for some services.

1005. **Scholarly Societies Project**. 1999. Available: <http://www.lib.uwaterloo.ca/society/overview.html>. (Accessed October 30, 1999).

The University of Waterloo's Electronic Library provides access to information about scholarly societies across the world. It covers chemistry and chemical engineering, civil engineering, computer science, earth sciences, electrical and computer engineering, environmental sciences, mathematics, mechanical engineering, physics, and vision science.