

Chemistry sources

The number of science sites has grown dramatically

by Ibironke Lawal

Chemistry bears an essential tie with many diverse subject areas, from agriculture to zoology. It touches every human activity because it deals with the nature of materials, their composition, interaction with other materials, and the environment. It is of great interest whether the materials involved are precious metals used for fine jewelry, polymer used to coat electronic components, drugs used for healing diseases, or the pigments used by a Renaissance painter. Consequently, chemistry is called the "central science." The literature of chemistry is dynamic, complex, and enormous.

Over the past five years, Internet resources have grown dramatically. The Internet is now regarded as a stable medium of communication. However, Internet documents are not necessarily evaluated and do not need to comply with any standard. Therefore, the intellectual integrity of information posted there is not always guaranteed. More recently, the Internet serves as an effective means of disseminating information about products and services of publishers and online vendors, and of research, teaching, and learning activities of academic institutions and of government information.

This is a select list of useful Internet resources in chemistry and related disciplines worldwide.

Metasites

- **Links for chemists.** The University of Liverpool and its department of chemistry

designed and manage this site. It indexes more than 7,500 chemistry Web resources in more than 60 categories. It provides links to university chemistry departments, including those of international institutions. It also indexes sites for chemical jobs/careers, chemical companies/industry, chemical literature and publishing, chemical information, chemistry software, and organizations. *Access:* <http://www.liv.ac.uk/Chemistry/Links/links.html>.

- **MetaChem.** A searchable and browsable catalog of Internet chemistry resources. Provides access to electronic information resources of all kinds and links to document delivery and print information through library catalogs. Australian Defense Force Academy, the University of New South Wales, and collaborators maintain this site using metadata technology from the Distributed Systems Technology Center of the Australian Government. Users have the benefit of evaluated, classified, and indexed entries in this database. The Research Infrastructure Program from the Australian Research Council provides funds for the MetaChem project. *Access:* <http://metachem.ch.adfa.edu.au/index.html>.

Databases

- **Beilstein Abstracts.** Beilstein Abstracts is one of the world's most important sources of organic chemistry information. Users can access titles, abstracts, and citations from more

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than 140 top journals in organic and related chemistry published from 1980 to the present. There are currently 600,000 articles in the database. It is available free on the Web to ChemWeb members (registration is free). The abstracts database is also integrated in Beilstein Crossfire system (<http://www.beilstein.com>). Access: <http://www.chemweb.com/databases/bel/badisplay.exe?code=belabs>.

• **Analytical Abstracts.** Analytical Abstracts from the Royal Society of Chemistry is the premier specialist database for analytical chemistry information covering new techniques and applications. It contains more than 257,000 items from more than 250 journals and books. Updates are monthly with about 1,200 items. The database contains details of methods and results written from an analytical perspective covering relevant papers in more than 12 languages. It has a unique indexing system that facilitates easy retrieval of relevant analytical information. Access to full record is through a subscription. Access: <http://www.chemweb.com/databases#2>.

• **Chemical Abstracts.** Chemical Abstracts Service (CAS), a division of the American Chemical Society (ACS, <http://www.acs.org/>), produces the world's largest and most comprehensive databases of chemical information, chemical abstracts, and associated databases. Collectively, the CAS databases include more than 19 million abstracts of chemistry and chemistry-related literature and patents and more than 26 million substance records. It covers all areas of chemistry and related disciplines from 1907 to the present. CAS databases are offered on the Internet in two interfaces: a user-friendly Web interface (<http://www.cas.org>) and STN on the Web (<http://stnweb.cas.org>), a command-based Web interface. Access to any of the interfaces is through subscription.

• **PubScience.** PubScience provides users the capability to search across a large compendium of peer-reviewed journal literature with a focus on the physical sciences and



other disciplines of interest to the Department of Energy (DOE). Developed by DOE's Office of Scientific and Technical Information and made available to the public in partnership with the Government Printing

Office. More than 30 publishers are represented. This is one of the few free literature searching sites available on the Web. Access: <http://pubsci.osti.gov/>.

Service-oriented sites

• **ChemPort.** This site connects to full-text documents on the Web. Its features include direct links from databases like Medline, Embase, Biosis, and Inspec to the corresponding electronic full text at sites and patent of-



fices; single article sales of documents in portable document format (pdf) for some journals; customized links to in-house library Web-server application; convenient access to document delivery service; forward via e-mail the bibliographic information of the citation to the address of choice. More than 70 trade, society, and government publishers and patent offices worldwide participate in providing access to full-text information. Access: <http://www.chemport.org/>.

• **Chemweb.com.** This Web resource is regarded as the worldwide club for the chemical community. Access is through free membership. Its features include free structure searching, live 3-D molecules, full-text searching in many trade and society journals, conferences and meetings information, and browsable Web index. Full-text access to some journals is fee based. In the "people and news" section, users can attend virtual lectures, find a job, advertise for staff, and contact other members. This site also offers Beilstein abstracts free to its members. Access: <http://www.chemweb.com/>.



ChemWeb.com

Preprints

• **Chemistry Preprint.** Though it came a decade after its counterpart, the Los Alamos Physics Preprint, the Chemistry Preprint server represents a new initiative for the chemistry community. It is a permanent Web archive and distribution medium for research articles

in the field of chemistry and allied sciences. Modeled after the Los Alamos preprint server, it is recognized by Open Archive and delivered by chemweb.com. Access: <http://preprint.chemweb.com/>.



• **PrePRINT Network.** PrePRINT Network is a searchable gateway to preprint servers of the Department of Energy (DOE). It deals with scientific and technical disciplines of concern to DOE. Such disciplines include physics, materials, and chemistry, as well as portions of

biology, environmental sciences and nuclear medicine. Users can search one or a collection of existing preprint servers with a single query. Access:// <http://www.osti.gov/preprint>.

Technical reports

• **GrayLit Network: A science portal of technical reports.** This is the world's most comprehensive portal to federal gray literature. Federal agencies participating in this project are Department of Defense (DOD), Department of Energy (DOE), Environmental Protection Agency (EPA) and the National Aeronautics and Space Agency (NASA). Access: <http://www.osti.gov/graylit/>.

• **DOE Information Bridge.** Like PubScience and GrayLit, this is a product of the Office of Scientific and Technical Information of the Department of Energy (DOE). It is a research resource for scientists and students. It offers access to full text and bibliographic records of DOE research and development reports in chemistry, physics, biology, environmental sciences, engineering, and other subject areas. Free access to this resource is possible through the Government Printing Office. Access: <http://www.osti.gov/bridge>.

Patents

Patents are an integral part of chemical literature. In addition to the ones listed below, the metasites cover patents also.

• **Chemical Patents Plus.** A product of the American Chemical Society, Chemical Patents Plus gives full text of all classes of patents issued by the U.S. Patent and Trademark Office from 1975 to the present, with complete images from 1995 to the present. It is searchable by CAS Registry number or subject. Searching is free, although some fees apply to some displays. Access: <http://casweb.cas.org/chempatplus/>.

• **Intellectual Property Mall.** This is an internationally acclaimed resource providing information and links to the most valuable online resources in the world. It is the product of Franklin Pierce Law Center's John Cavicchi and Site Surfer Publishing's Bill Shaw. Access: <http://www.ipmall.fplc.edu/>.

Reference tools/data/spectra

Finding chemical data poses challenges of its own. Sometimes the task could be compared to looking for a needle in a haystack. The Internet does make it possible for specific information to be readily and easily accessible now more than ever before. The following are some of the reliable sources of data on the Internet.

• **Web Elements.** This is one of the most up-to-date and complete periodic tables on the Web. Mark Winter of the University of Sheffield manages this interactive table. A click on any element leads users to a comprehensive data information about that element. Winter promises a search option in the next version. Access: <http://www.webelements.com/webelements.html>.

• **ChemFinder.** This is a quick fact-finding database. It is searchable by chemical name, molecular formula, molecular weight, CAS registry number, and chemical structure. It offers free download for ChemDraw, a structure drawing software. There is a list of the sites indexed, a glossary of terms used, and answers to frequently asked questions. Access: <http://www.chemfinder.com/>.

• **NIST Webbook.** A gateway to the data collection of the National Institute of Stan-

More resources on the Web

For an expanded version of this article, visit *C&RL NewsNet* at <http://www.ala.org/acrl/c&rlnew2.html>.

dards and Technology (NIST), this site provides access to the data compiled and distributed by NIST under the Standard Reference Data program. It contains thermochemical data for more than 5,000 organic and small inorganic compounds, reaction thermochemistry data for more than 8,000 reactions, Infra Red spectra for more than 7,500 compounds, Mass spectra for more than 10,000 compounds, UV/Vis spectra for more than 400 compounds, electronic and vibrational spectra to more than 3,000 compounds, constants of diatomic molecules for more than 600 compounds, and ion energetics data for more than 14,000 compounds. *Access:* <http://webbook.nist.gov/>.

- **Thermodex.** Thermodex is an index of selected thermodynamic data handbooks. This site contains records for printed handbooks and compilations of thermodynamic and thermophysical data for chemical compounds. Type of compound and/or property could be used to search, and the database will return a list of handbooks that might contain the data. *Access:* <http://thermodex.lib.utexas.edu/>

Electronic journals

Each of the indexes and directories under the metasites category features online versions of print journals of trade and society publishers. The service-oriented sites, such as Chemport (www.chemport.org/) and ChemWeb (www.chemweb.com), also offer access to electronic journals. Downloading or viewing full text is free to the journal subscribers but fee based to nonsubscribers.

- **Online Only Journals.** This is a collection of approximately 50 online only journals that the Chemical Abstracts Service monitors. *Access:* <http://info.cas.org/EO/ejoum2.html>.

Associations, organizations, and societies

- **American Chemical Society (ACS).** ACS is a 161,000-member-strong professional body that seeks to promote the public's perception and understanding of chemistry and the chemical sciences and assist the federal government with advice on scientific and technological issues involving the chemical

sciences. Items on their homepage include career information, meetings, programs, and services. *Access:* <http://www.acs.org/>.

- **Royal Society of Chemistry (RSC).**

RSC is the counterpart of the American Chemical Society in the United Kingdom. With 46,000 members, it is a major publisher and provider of chemical information. Like its counterpart, it supports teaching of chemistry at all levels, organizes meetings, and is a leader in communicating science to the public. *Access:* <http://www.rsc.org/>.

- **ChemSoc.** This is an online directory of worldwide chemistry societies. It has a unique indexing feature that allows searching of individual sites without leaving ChemSoc. The directory lists the names, addresses, and contact details of all the major national chemistry societies, including Web address for those that have Web sites. *Access:* <http://www.chemsoc.com/>.



Chemical information resources and instructional materials

- **ChemInfo.** Gary Wiggins of Indiana University compiled and maintains this resource. Compilation started before the Internet came into existence. He expanded, updated, and adapted it for the Internet by 1997. There is a wealth of resources on this site, from databases to chemistry course materials to the archives of the chminf-l electronic list. *Access:* <http://www.indiana.edu/~cheminfo/>.

- **Teaching Chemical Information: Tips and Techniques.** This valuable resource is a product of the Chemical Information Division of the American Chemical Society (ACS). It is the resource guide for a workshop that members of the division develop and teach at the national meetings of the ACS. *Access:* <http://www-sul.stanford.edu/depts/swain/workshop/cont.html>.



News/newsletters/magazines

- **ChemNews.com.** This is a product

of CambridgeSoft.com. Chemnews.com is a prime Internet news publication serving more 250,000 chemists worldwide. It keeps the chemical community informed of the latest events in the Internet chemistry world and educates chemists on new and existing products. It is available in four languages—English, French, German, and Japanese. It has an e-mail edition, Chemists@Internet. Access: <http://www.chemnews.com/>.

- **Alchemist.** This is a ChemWeb.com Webzine for the latest chemistry news. Access: http://www.chemweb.com/alchem/2000/homepage/hp_current.html.

- **Chemistry.** Published by the American Chemical Society (ACS) for its members, student affiliates, and those interested in learning more about chemical sciences and the ACS. It is called the chemistry tabloid and is published quarterly with each issue packed with short and moderately long, informative articles. Access: <http://www.acs.org/chemistry>.

- **Chemical Information Sources Discussion List Chminf-l.** This virtual reference desk is staffed with some of the world's most knowledgeable people. It features frequent announcements of new chemistry reference products and services. There is an archive of all messages posted since 1991 on the cheminfo page at <http://listserv.indiana.edu/archives/>

chminf-l.html. Gary Wiggins of Indiana University is the moderator. *Subscribe:* chminf-l@listserv.indiana.edu.

Safety

- **Materials Safety Data Sheets (MSDS).** Contains approximately 250,000 Materials Safety Data Sheets (MSDS) files from the U.S. Government Department of Defense MSDS database, a mirror data from University of Vermont and the Cornell University. It has an efficient searching interface. Access: <http://msds.pdc.cornell.edu/msdssrch.asp>.

- **Vermont SIRI MSDS.** This is a searchable database of more than 100,000 Material Safety Data Sheets (MSDS). The objective of this site is to make safety information as easily and universally accessible as possible. It replaces thousands of paper MSDS indexes at individual worksites with a universal online archive. The archive is searchable by chemical name, chemical trade name, and Chemical Abstract Service registry number. There are mirror sites at the University of Florida <http://siri.org/> and the University of California at Davis <http://www.vetmed.ucdavis.edu/msds/>. Provides links to other Internet MSDS and hazardous chemical archives. Access: <http://hazard.com/msds/>. ■



American Theological Library Association

WARNING!!!!

Your Religious Studies faculty will return from their annual conference in Nashville asking you about ATLAS, ATLA's new digital collection of 50 leading theological and religious studies journals. They will have attended a demonstration of this new product November 18 at the American Academy of Religion and Society of Biblical Literature meeting, and once they see it they'll want you to order it.

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