

SCIENTIFIC NOTATIONS

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Items of interest from the Science Libraries at Emory University

Volume 1, Issue 3
January 2005

The Chemistry Library's Newest Database

Science of Synthesis

By Donna Hudson, Chemistry Librarian

Science of Synthesis:
Houben-Weyl Methods of Molecular Transformations®



Science of Synthesis, Houben-Weyl Methods of Molecular Transformations, is the electronic version of a major reference work in synthetic chemistry. Its predecessor is the esteemed reference work, Houben-Weyl Methods of Organic Chemistry, which was published in four editions and a multi-volume, supplementary series. Commonly known as Houben-Weyl, the original reference work was named after the German chemist Theodor Weyl and his predecessor Heinrich J. Houben. The editions of this work have served chemists dating back to the early 1800s.

Like so many other authoritative, long standing treatises, i.e. Beilstein, Gmelin, and Landoldt-Bornstein, the early volumes were published in German. In recent years, these works appear in English (Houben-Weyl, 1990).

For almost 200 years collaborative efforts by world renowned chemists in industry

and academia have made Houben-Weyl a cornerstone providing chemists with the most reliable methods to solve their synthesis problems. Today's chemists in major academic research institutions and R & D industrial laboratories face great demands on their time, and a wealth of information to investigate when developing and making new compounds. In no other industry is this noted more significantly than in the pharmaceutical industry, where cutting-edge, chemistry-intensive research is focused on new drug discovery.

The electronic database, Science of Synthesis was launched in 2000. It is an entirely new 5th edition of Houben-Weyl. The complete database makes available the earlier 2nd, 3rd, and 4th editions in addition to all current and future volumes of the 5th edition. Forty-eight volumes of the 5th edition are anticipated with the last volumes expected in 2008.

As with the printed work, the electronic version presents information in a logical hierarchy that is ordered according to the functional group and product class to be synthesized.

The publisher notes that "Within each category of products, background information such as history, nomenclature, structure, stability, reactivity, properties, safety, and environmental aspects are discussed along with a detailed selection of reliable methods. Each method and variation is accompanied by reaction schemes, tables of examples, experimental procedures, and a background discussion of mechanistic rationale, stereochemistry, scope of the reaction described and its limitations, and functional group compatibility."

The Science of Synthesis software provides a powerful and user-friendly retrieval system allowing for text, substructure, exact structure, and reaction searches.

In terms of ease of use, the Science of Synthesis interface compares favorably with other chemistry databases such as SciFinder Scholar and Beilstein CrossFire Commander. Because of the differences in these databases, it is not possible to make direct comparisons. As an academic institution supporting active research in organic and organometallic synthesis, Emory users welcome Science of Synthesis as an addition to these very useful databases.



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What's Next for Google

By Charles H. Ferguson

*The following article is condensed from the original, published in Technology Review, Jan 2005
For the full article, see <http://www.technologyreview.com/articles/05/01/issue/ferguson0105.asp?>*

For Eric Schmidt, Google's CEO, 2004 was a very good year. His firm led the search industry, the fastest-growing major sector in technology; it went public, raising \$1.67 billion; its stock price soared; and its revenues more than doubled, to \$3 billion. But as the search market ripens into something worthy of Microsoft's attention, those familiar with the software business have been wondering whether Google, apparently triumphant, is in fact headed off the cliff.

Google, whose headquarters in Mountain View, CA—familiarily called the Googleplex—needn't perish, but it could. Despite everything Google has—the swelling revenues, the cash from its initial public offering, the 300 million users, the brand recognition, the superbly elegant engineering—its position is in fact quite fragile. Google's site is still the best Web search service, and Gmail, its new Web-based e-mail service, Google Desktop, its desktop search tool, and Google Deskbar, its toolbar, are very cool. But that's all they are. As yet, nothing prevents the world from switching (painlessly, instantly) to Microsoft search services and software, particularly if they are integrated with the Microsoft products that people already use.

Google and Microsoft will be fighting to control the organization, search, and retrieval of all digital information, on all

types of digital devices. Collectively, these markets are much larger than the existing market for search services. Over the next several decades, in the view of search industry insiders I've spoken with, they could generate perhaps half a trillion dollars in cumulative revenue.

Microsoft is starting late but has extraordinary resources and powers of persistence—and it joined the browser wars late, too. In contrast, Google is youthful, adventurous, and innovative, and it does some things extremely well. The contest could end in a Cold War standoff, a decisive victory for either side, or even mutual destruction, if the competition frightens away customers and investors.

Peaceful coexistence, however, seems unlikely.

[Google co-founder] Larry Page recently said, "Only a fraction of the world's information is indexed on our computers." And [co-founder] Sergey Brin once told Technology Review's editor in chief, "The perfect search engine would be like the mind of God."

The search industry is the next place in which a vast

architectural empire could be built. Some portions of the emerging search space are now occupied by Google, others by Microsoft, most by nobody. But in the end, there will probably be room for just one architecture. Google's idyllic childhood must therefore give way to a contest much like those Microsoft has fought and won against companies ranging from IBM to Novell to Apple to Netscape. But for several reasons, this architecture war may end differently.

First, many of the companies defeated by Microsoft over the past 20 years suffered as much from self-inflicted wounds as from Microsoft's predation. In Eric Schmidt, Google may have a CEO with the technological depth and painfully acquired experience essential to surviving Bill Gates.

Second, Google's principal services run on a platform that Microsoft doesn't control—the Web.

Third, in some cases (like its fight against Linux, for example), Microsoft's software is now the high-cost incumbent.

Fourth, some analysts believe that Microsoft has lost its edge, that its size and age have bred complacency.

Commenting on the collision between Google and

Microsoft, Internet industry observer John Battelle recently wrote, "Microsoft is indeed a fearsome competitor, with extraordinary resources (and I don't mean the \$50 billion in cash; I mean the ability to leverage Windows). But it's a middle-aged company that moves far more slowly than it did ten years ago, when it first recognized the Web threat."

Fifth, Microsoft hasn't always won: Adobe and Intuit are doing just fine, MSN hasn't killed AOL or Yahoo, and the Xbox hasn't defeated the Japanese game industry (not yet, anyway). And finally, Microsoft's recent entry in the search wars—the beta version of MSN's search tool—is decidedly unimpressive. (Then again, Windows 1.0 was pretty bad, too.)

So Google's defeat is not a foregone conclusion. Indeed, if it does everything right, it could become an enormously powerful and profitable company, representing the most serious challenge Microsoft has faced since the Apple Macintosh. But if Microsoft gets serious about search—and there is every reason to believe that it will—Google will need brilliant strategy and flawless execution simply to survive.

Arming Secretly

Does Google understand the gravity of the challenges that may confront it? Does it have a strategy for winning an

"The perfect search engine would be like the mind of God"

architectural war? The evidence is equivocal.

Google is a great place to work. My friends there absolutely love the place, and in part for that reason, they work very hard. Google allows pets and provides employees with laundry service, drinks, meals, massages, car washes, and (soon) child care. Its corporate motto is "Don't be evil." But long ago, a professor of mine, noting my youthful idealism, remarked that the only successful neutral nations are those, like Switzerland, that are permanently armed to the teeth. And for Google, neutrality is not an option.

But what specifically should Google do? How is Microsoft likely to attack, what will the contest look like, and what will decide its outcome? Let's begin with the current state of search.

The State of Search

For a long time, search engines were expensive luxuries for those who operated them; but as the Internet and the Web grew, searchable digital content began to supplant conventional media, and efforts to improve the quality of search results intensified.

Early search engines ranked results largely according to crude criteria such as the number of times a page mentioned the user's chosen keywords. But in a research collaboration that began in 1995, when they were still graduate students, Brin and Page applied a practice called citation ranking to the Web, and it turned out to be a much more reliable way to find relevant information.

For many years, reference publications like the Science

Citation Index have ranked scientific papers' "impact" by counting the number of times they were cited in other papers. Brin and Page's insight was that if hyperlinks were viewed as citations, the same thing could be done for

"[Google's] corporate motto is 'Don't be evil.'"

the Web. That insight led to the first truly superior search engine. Stanford applied for a patent on Brin and Page's "PageRank" technique in 1998 (it was granted in 2001)

Just what services could be built upon a fully open Google architecture? They could take many forms, but some of the most obvious would make indexing and searching processes on the desktop, on Web servers, and on Google's own website work together better. A single search could then span not just Google's index of the public Web but whatever other sources might be appropriate: a newspaper archive, a medical database, an antique-car parts catalogue, or your own hard drive. Google, or others building upon its APIs, would unify the results, explain any access restrictions on particular sources, and facilitate purchases of information. At the same time, independent firms could create services that call on Google's search and indexing functions to retrieve information, but present that information in new and creative ways.

While Google provides an excellent service for searching the public Web and has made a good start on PCs with Google Desktop (the hard-drive search tool) and Google Deskbar (which performs searches without launching a

browser), the search universe as a whole remains a mess, full of unexplored territories and mutually exclusive zones that a common architecture would unify. Given the size and growth rate of the markets involved, the dominant search provider a decade from now could easily have revenues of \$20 or \$30 billion/year.

Big Questions

Whether Google or Microsoft wins, the implications of a single firm's controlling an enormous, unified search industry are troubling. First, this firm would have access to an unparalleled quantity of personal information, which could represent a major erosion of privacy. Already, one can learn a surprising amount about people simply by "googling" them. A decade from now, search providers and users (not to mention those armed with subpoenas) will be able to gather far more personal information than even financial institutions and intelligence agencies can collect today.

If the firm dominating the search industry turned out to be Microsoft, the implications might be more disturbing still. The company that supplies a substantial fraction of the world's software would then become the same company that sorts and filters most of the world's news and information, including the news about software, antitrust policy, and intellectual property. Moreover, Microsoft could reach a stage at which its grip on the market remains strong, but its productivity falls prey to complacency and internal politics. Dominant firms sometimes do more damage through incompetence than through predation.

Indeed, as so many have noted, much of Microsoft's software is just plain bad. In contrast, Google's work is often beautiful. One of the best reasons to hope that Google survives is simply that quality improves more reliably when markets are competitive. If Google dominated the search industry, Microsoft would still be a disciplining presence; whereas if Microsoft dominated everything, there would be fewer checks upon its mediocrity.

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Woodruff Library Building Update

Construction on the new Sodexo Library coffee shop is scheduled to begin the first week of February. In preparation for construction, the microform collection on the ground floor will be reorganized this January. We hope to have a grand opening of the coffee shop on March 21. Although construction will occur during the semester, the Woodruff Library is working with the facilities staff to minimize construction disturbances to its patrons.

Also note that during the semester break cool new furniture was installed in the Technology Centers (the Beck Center, ECIT, and the Data Center) and after spring break ECIT will be opening a new collaborative viewing/ multi-media practice room with a 61" plasma screen.

--Liz Cooper, Anthropology Librarian



USA PATRIOT Act

The following is an excerpt from:

<http://www.ala.org/ala/oif/ifissues/usapatriotactlibrary.htm>

Analysis of the USA Patriot Act related to Libraries

Background

The Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001 (“USA Patriot Act”) became law on October 26, 2001. The legislation originated with Attorney General John Ashcroft, who asked Congress for additional powers that he claimed were needed to fight terrorism in the wake of the events of September 11, 2001. Few amendments were made to Ashcroft’s initial proposal to Congress, and the bill became law without any hearings or markup by a Congressional committee.

The Patriot Act amended over 15 federal statutes, including the laws governing criminal procedure, computer fraud and abuse, foreign intelligence, wiretapping, immigration, and the laws governing the privacy of student records. These amendments expanded the authority of the Federal

Bureau of Investigation and law enforcement to gain access to business records, medical records, educational records and library records, including stored electronic data and communications. It also expanded the laws governing wiretaps and “trap and trace” phone devices to Internet and electronic communications. These enhanced surveillance procedures pose the greatest challenge to privacy and confidentiality in the library.

Enhanced Surveillance Provisions Affecting Library Confidentiality

Section 215: Access to Records Under Foreign Intelligence Security Act (FISA)

Allows an FBI agent to obtain a search warrant for “any tangible thing,” which can include books, records, papers, floppy disks, data tapes, and computers with hard drives.

Permits the FBI to compel production of library circulation records, Internet use

records, and registration information stored in any medium.

Does not require the agent to demonstrate “probable cause,” the existence of specific facts to support the belief that a crime has been committed or that the items sought are evidence of a crime. Instead, the agent only needs to claim that he believes that the records he wants may be related to an ongoing investigation related to terrorism or intelligence activities, a very low legal standard.

Libraries or librarians served with a search warrant issued under FISA rules may not disclose, under penalty of law, the existence of the warrant or the fact that records were produced as a result of the warrant. A patron cannot be told that his or her records were given to the FBI or that he or she is the subject of an FBI investigation. ▲

The Emory University General Libraries are in the process of developing policies to address this legislation and to standardize our response should we be asked to provide information to the FBI. –ed.

*“The literature,
The chemical
literature,--
When in doubt
look it up in the
literature.
Every question
man can raise,
every phrase of
every phase of
that question
Is on record in the
literature;
Thrashed out
threadbare pro
and con
In the literature.
Did the universe at
large once carry a
positive charge?
Why aren't holes in
macaroni square?
From Avogadro's
number to the
analysis of
cucumber, if you're
interested
You'll find it,
for it's there
In the literature.
In Journal this or
zeitschrift that,
Comptes rendus or
Zentralblatt,
In the literature.”
--P.G.Horton*

Using “Google Scholar”

<http://web.library.emory.edu/services/ressvcs/howguides/googlescholar.html>

Reserves Direct at Emory



Set up your Spring 2005 class reserves in ReservesDirect right now. You don't need to be on campus to get started—set up your classes anytime or anywhere!

With ReservesDirect, you may reactivate materials from previous semesters, fax in or upload documents, or add URLs with immediate access to the materials.

Let us know if you need assistance.
Chris Baldassari cbaldas@emory.edu
Andy Ditzler aditzle@emory.edu

New this fall – ReservesDirect Version 2.1:
<http://web.library.emory.edu/services/circulation/reserves/reservesindex.html>

On Monday, November 22nd, the University released the new version of ReservesDirect. It looks different, but has the same features including the ability to create a new class, reactivate an old class, fax and upload documents, add websites, and sort and annotate class lists. We've added new features too. For example, instructors may now add proxies to help manage their classes and add other instructors who have the ability to add materials to a shared class list.

ReservesDirect 2.1 is more streamlined, easier to use, and its stable infrastructure will allow for the addition of new features in the future.

If you are teaching for the first time during the Spring 2005 semester, contact the Reserves Desk at genrsrv@libcat1.cc.emory.edu OR (contact Chris Baldassari at X76867/cbaldas@emory.edu or Andy Ditzler at X72230/aditzle@emory.edu) to get your instructor ID set up.

If you have already used the current version of ReservesDirect and need any assistance learning the new system, use the ReservesDirect tutorials:

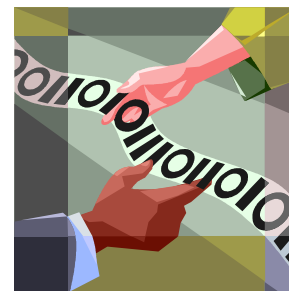
<http://web.library.emory.edu/services/circulation/reserves/tutorials.html>

or contact Chris or Andy. These video tutorials will lead you step-by-step through the basic skills for using ReservesDirect and EUCLID for managing your reserves.

Beginning Fall 2004, Reserves Direct offers video streaming! Place video excerpts online as part of your course reserves. For more information contact Andy Ditzler at 404-727-2230 or aditzle@emory.edu.

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*"The trouble with facts is that there are so many of them."
—Samuel McChord Crothers*

Submission Requirements

- Send article in Word or Email format to: chemlib-l@listserv.cc.emory.edu
- FAX a copy to 404-727-0054

Computer Society Digital Library is here

By Laura Kane McElfresh, Mathematics & Computer Science Librarian



Upon returning from the winter break, Emory's faculty, staff, & students will have access to the IEEE Computer Society Digital Library.
<<http://www.computer.org/publications/dlib/>>

The Computer Society Digital Library, an online publications package from the IEEE Computer Society, provides full-text access to 13 technical magazines and 9 research journals. While many of these were already available through IEEE Xplore, the Computer Society Digital Library provides full archives—an increase of 10 years in content, in some cases—for all 22 magazines and journals.

However, perhaps the most needed part of the Computer Society Digital Library is the conference proceedings collection. Over 150 annual conferences are covered, with backfile coverage from 1995, for a total of more than 1500 conference publications in all. Conference proceedings available in the Computer Society Digital Library include:

- FOCS – Foundations of Computer Science
- HPDC – High Performance Distributed Computing
- ICCCN – International Conference on Computer Communications and Networks
- ICNP – International Conference on Network Protocols
- INFOCOM – Joint Conf. of the IEEE Computer and Communications Societies
- IPDPS – International Parallel and Distributed Processing Symposium

The Computer Society Digital Library's main page allows the reader to browse technical magazines and research

journals either alphabetically by title or by subject. While conference proceedings are not organized by subject—browsing is available only by title within a multi-part alphabetical list—the articles within these proceedings, as well as those in the magazines and journals, are fully searchable. Four search screens (plus one for searching the Computer Society Store) are available: Simple Search, Author Search, and Proceedings Search.

The Simple Search screen supports keyword searching in the title, author, or full text of an article. Boolean operators and quotation marks are not used. The Advanced Search, however, allows the reader to combine an enhanced Simple Search with additional terms in an "Optional Fields" box, using AND, OR, or NOT. Here, one can also search by ISBN/ISSN, restrict search results by date and/or journal title, and sort by relevance, date, or publication title. "Conference Proceedings" is listed among the Site Area search options on the Advanced Search screen, as is the ACM Digital Library; however, individual conference titles are not listed here, but rather in Proceedings Search.

The Proceedings Search (picture at right) allows searching by a variety of search terms, including author, conference title, paper title, and keywords in the full text. Here, once again, searches may be limited

by date and search results may be sorted.

Finally, using the Author Search, the reader can search for an author's name, and then find all articles published under that name. This feature could be improved—unlike MathSciNet, the Computer Society does not collocate variations of an individual's name, meaning that "Tapia, R." and "Tapia, Richard" are listed separately and bring up separate searches—but it is still a useful capability.

As mentioned above, the Computer Society Digital Library is linked to the ACM Digital Library. When using the Advanced Search feature, readers may check the box for "Partner Site Content: ACM Digital Library", thereby obtaining search results from both IEEE Computer Society publications and ACM publications. The reverse is also true: when searching the ACM

Digital Library, one can request results from both ACM and IEEE Computer Society. It should be noted that the Computer Society Digital Library is not accessible through IEEE Xplore; instead, the reader must use the separate Computer Society Digital Library interface. However, the Computer Society Library Subscription Plan provided an opportunity to gain access to a subject-specific set of computer science literature, without having to subscribe to (and pay for) a multitude of extra titles. Hopefully, any inconvenience caused by the separation in interfaces will be outweighed by the great increase in available full-text material. The journals and conference proceedings contained in the Computer Society Digital Library should prove to be a valuable resource for Emory's Mathematics and Computer Science faculty and students.

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