Materials Sciences & Engineering

Selected Information Resources

(http://faculty.washington.edu/curie/matl.pdf)

Session Overview

- Information hunting process
- Types of info-primary sources, secondary sources, tertiary sources
- Electronic vs print = Both
- Basics of using online catalog to find resources (print and electronic)

Session Overview, cont.

- Handbooks and other data/property sources
- Indexes/abstracts
- Compendex , SciFinder Scholar, Inspec,
- Searching the net
  - Google
  - Links from library pages

Types of publications

- Primary-the original presentation of information
  - Journal articles
  - Patents
  - Technical reports
- Secondary
  - Indexes and abstracts
- Tertiary
  - Handbooks
  - Encyclopedias

Primary-Magazine vs Journal vs Review…

- Popular
  - People
  - Scientific American
- Journal –peer reviewed
  - Journal of Biomedical Materials Research
  - Materials Research Society Symposium Proceedings (Organic Optoelectronic Materials, Processing and Devices)
  - Advanced Materials
- Review

Secondary

- Indexes and Abstracts
  - Chemical Abstracts/SciFinder Scholar
  - Compendex/Engineering Village
  - Inspec
- Specialty
  - Metadex

Tertiary

- Dictionaries
  - McGraw-Hill Dictionary of Scientific & Technical Terms (7th. Ed 1994 latest)
- Encyclopedias
  - Kirk-Othmer Encyclopedia of Chemical Technology
- Handbooks
  - Smithells Metals Reference Book
- Other Data Sources
  - Web sites, etc.

Process

Searching for information is a process. There is no single source-print or online-which has all information. The information may not be in the form you want it (may need to extrapolate, change units, etc.)

Process

- Where you start and where you end depends on what your `question' is
  - Do you need a physical property?
  - Do you need to understand a new process?
  - Review `everything' known on a topic?

Not sure where to start?

Ask!

Really, that's what librarians are here for!

Print vs Electronic = Both

- Not everything is already electronic (and may never be)
- Focus on the best source for the answer and don't worry about format
- Print and Electronic each have their strengths and weaknesses
  - E.g. CRC Handbook of Chemistry and Physics

Beginning the Search

- UW Libraries Catalog can help identify resources
  - Print and electronic

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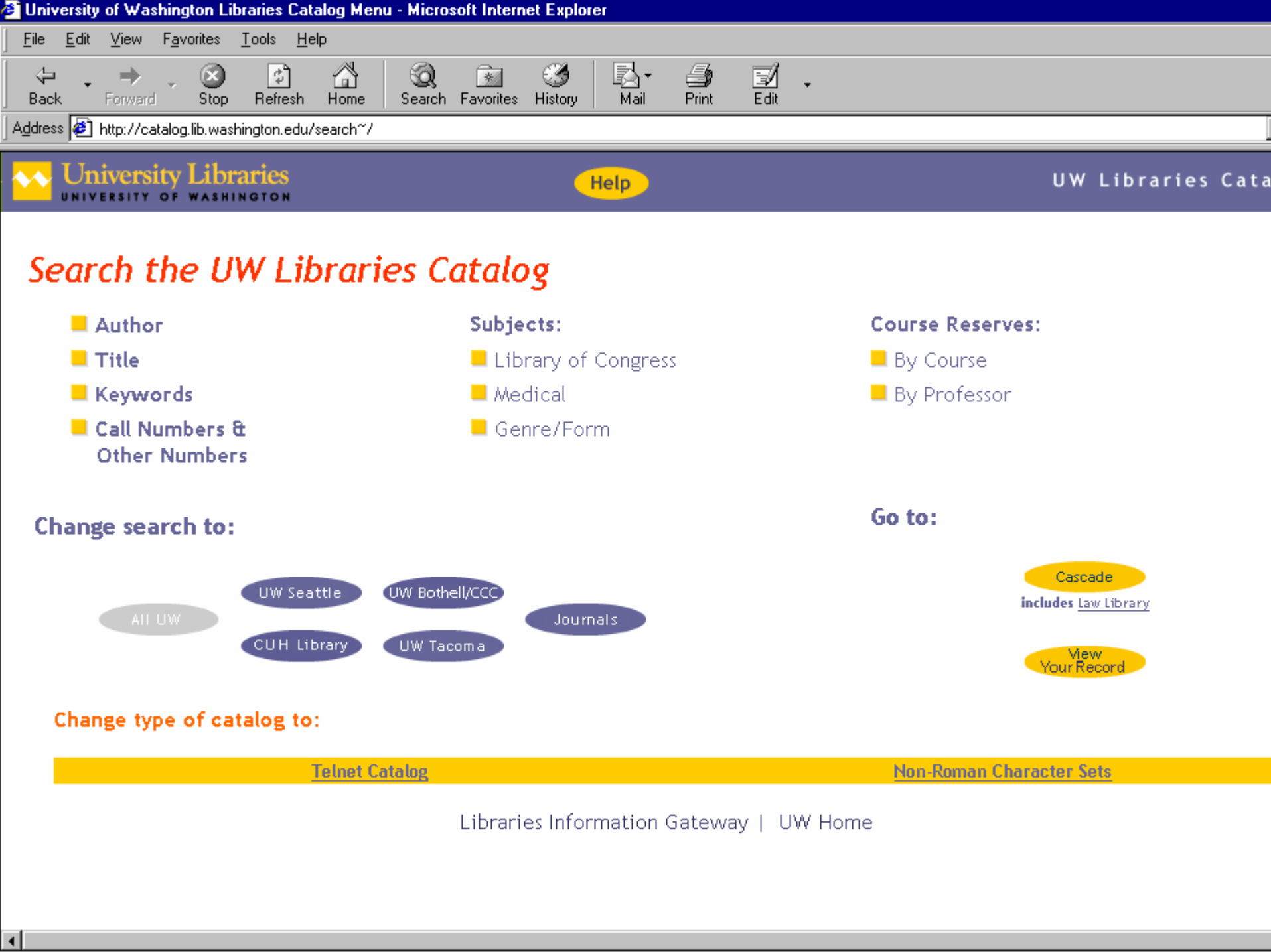
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brary of Congress Subject Heading Search

Type all or just the beginning of a **Library of Congress Subject Heading**; press **<Enter>** or click **Search**

Search

ds: Records with specific subject terms established by the Library of Congress.

mples:

- old growth forests northwest pacific (NOTE: not pacific northwest)
- washington state history to 1889
- chihuly dale
- university of washington

rch tips:

- Library of Congress Subject Headings are specific standardized terms which you must use if you are doing a Library of Congress Subject Heading search. To determine the appropriate term, you can:
  - Perform a Keywords search; look at the terms under LC SUBJECT in the resulting citations; click on the highlighted subject heading to perform a new search.
  - Consult printed editions of the *Library of Congress Subject Headings* in reference areas of the University of Washington Libraries.
- You may ignore punctuation and capitalization.

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2	☐	Phase Diagrams		52
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10	☐	Phase Diagrams Mathematical Models	2000	1
11	☐	Phase Diagrams Periodicals		5
12	☐	Phase Diagrams Software	1992	1

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ase Diagrams			
1	☐	Alloy Phase Equilibria / [By] A. Prince	1966
2	☐	Atlas Of Binary Alloys; A Periodic Index / [By] Karl P. Staudhammer And Lawrence E. Murr	1973
3	☐	Basalts And Phase Diagrams : An Introduction To The Quantitative Use Of Phase Diagrams In Igneous Pe / S. A. Morse	1980
4	☐	Binary Alloy Phase Diagrams / editor-In-Chief, Thaddeus B. Massalski ; Editors, Joanne L. Murray, Lawrence H. Bennett, Hugh Baker	1986
5	☐	Binary Alloy Phase Diagrams / editor-In-Chief, Thaddeus B. Massalski ; Editors, Hiroaki Okamoto, P.R. Subramanian, Linda Kacprzak	1990
6	☐	Binary Alloy Phase Diagrams Updating Service / [Editor, Hiroaki Okamoto]	1992
7	☐	Binary Phase Diagrams Of Transition Elements	1980
8	☐	Compendium Of Phase Diagram Data / [By] E. Rudy	1969
9	☐	Construction Of Pressure-Temperature Diagrams For Multicomponent Systems After The Method Of Schrein / E-An Zen	1966
10	☐	Dynamic Processes Of Material Transport And Transformation In The Earth's Interior / edited By Fumiyuki Marumo	1990
11	☐	Equilibrium Activity Diagrams : For Coexisting Minerals And Aqueous Solutions At Pressures And Tempe	1984
12	☐	Fázisdiagramok Anaglif ábrázolása. English	1970

Record 4 of 52

le **Binary alloy phase diagrams / editor-in-chief, Thaddeus B. Massalski ; editors, Joanne L. Murray, Lawrence H. Bennett, Hugh Baker**

b info Metals Park, Ohio : American Society for Metals, c1986

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gr Stacks-Floors 3&4	TN690 .B528 1986 v.1	DUE 12-19-02
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C SUBJECTS Alloys
Phase diagrams

her author Massalski, T. B
Murray, Joanne L
Bennett, L. H. (Lawrence Herman), 1930-
Baker, Hugh

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KEYWORD | phase diagrams | View Entire Collection | Search

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1	☐	Ternary phase diagrams in materials science	2002
2	☐	Model phase diagrams for an FCC alloy [microform] / R.J. Bra	2000
3	☐	Phase diagrams of binary hydrogen alloys / F.D. Manchester,	2000
4	☐	Fluctuating steps on crystal surfaces / Douglas Davidson	1999
5	☐	Phase diagrams and ceramic processes / Anna E. McHale	1998
6	☐	Phase equilibria, phase diagrams, and phase transformations	1998
7	☐	Phase diagrams for zirconium and zirconia systems / general	1998
8	☐	CALPHAD (calculation of phase diagrams) : a comprehensive gu	1998
9	☐	Phase diagram of HgTe-ZnTe pseudobinary and density, heat ca	1997
10	☐	Phase diagrams for high Tc superconductors II / general edit	1997
11	☐	Phase behavior of homopolymer/diblock blends / by Philipp K1	1997

le **CRC handbook of chemistry and physics**

b info Cleveland, Ohio : CRC Press, c1977-

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ocation Chem Reserve 540.2 H191

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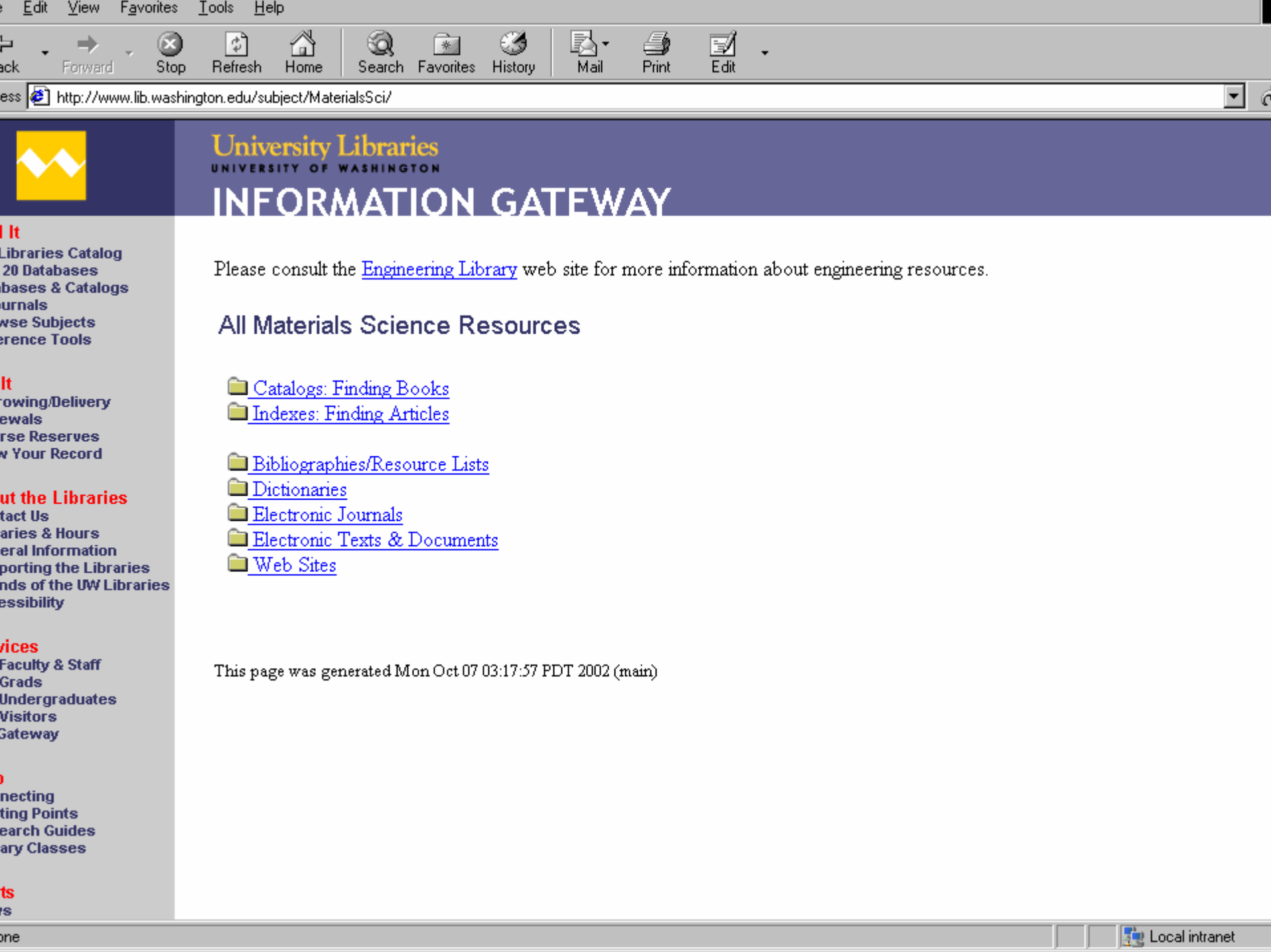
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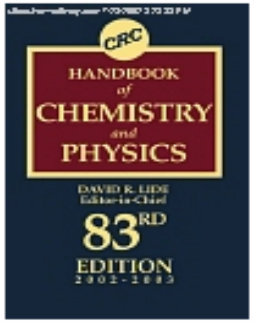

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Solid Density of Selected Elements
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Density of Wrought Stainless Steels
Density of Stainless Steels and Heat-Resistant Alloys
Density of Aluminum Alloys
Density of Copper and Copper Alloys
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Density of Tin and Tin Alloys
Density of Wrought Titanium Alloys
Density of Titanium and Titanium alloys
Density of Zinc and Zinc Alloys
Density of Permanent Magnet Materials
Density of Precious Metals
Density of Superalloys
Density of Selected Ceramics
Density of Glasses
Specific Gravity of Polymers

Table 67. HEAT OF FORMATION OF INORGANIC OXIDES

(SHEET 1 OF 16)

Reaction	Temperature range of validity	ΔH_0	2.303a	b	c	I
$2\,Ac(c) + 3/2\,O_2(g) = Ac_2O_3(c)$	298.16–1,000K	–446,090	–16.12	–	–	+109.89
$2\,Al(c) + 1/2\,O_2(g) = Al_2O(g)$	298.16–931.7K	–31,660	+14.97	–	–	–72.74
$2\,Al(l) + 1/2\,O_2(g) = Al_2O(g)$	931.7–2,000K	–38,670	+10.36	–	–	–51.53
$Al(c) + 1/2\,O_2(g) = AlO(g)$	298.16–931.7K	+10,740	+5.76	–	–	–37.61
$Al(l) + 1/2\,O_2(g) = AlO(g)$	931.7–2,000K	+8,170	+5.76	–	–	–34.85
$2\,Al(c) + 3/2\,O_2(g) = Al_2O_3$ (corundum)	298.16–931.7K	–404,080	–15.68	+2.18	+3.935	+123.64
$2\,Al(l) + 3/2\,O_2(g) = Al_2O_3$ (corundum)	931.7–2,000K	–407,950	–6.19	–0.78	+3.935	+102.37
$2\,Sb(c) + 3/2\,O_2(g) = Sb_2O_3$ (cubic)	298.16–842K	–169,450	+6.12	–6.01	–0.30	+52.21
$2\,Sb(c) + 3/2\,O_2(g) = Sb_2O_3$ (orthorhombic)	298.16–903K	–168,060	+6.12	–6.01	–0.30	+50.56
$2\,As(c) + 3/2\,O_2(g) = As_2O_3$ (orthorhombic)	298.16–542K	–154,870	+29.54	–21.33	–0.30	–8.83
$2\,As(c) + 3/2\,O_2(g) = As_2O_3$ (monoclinic)	298.16–586K	–150,760	+29.54	–21.33	–0.30	–16.95
$2\,As(c) + 5/2\,O_2(g) = As_2O_5(c)$	298.16–883K	–217,080	+12.32	–4.65	–0.50	+80.50

The ΔH_o values are given in gram calories per mole. The a, b, and *I* values listed here make it possible for one to calculate the ΔF and ΔS values by use of the following equations:

$$\Delta F_t = \Delta H_o + 2.303aT \log T + b \times 10^{-3} T^2 + c \times 10^5 T^{-1} + IT$$

$$\Delta S_t = -a - 2.303a \log T - 2b \times 10^{-3} T + c \times 10^5 T^{-2} - I$$

Source: data from *CRC Handbook of Materials Science, Vol I*, Charles T. Lynch, Ed., CRC Press, Cleveland, (1974).

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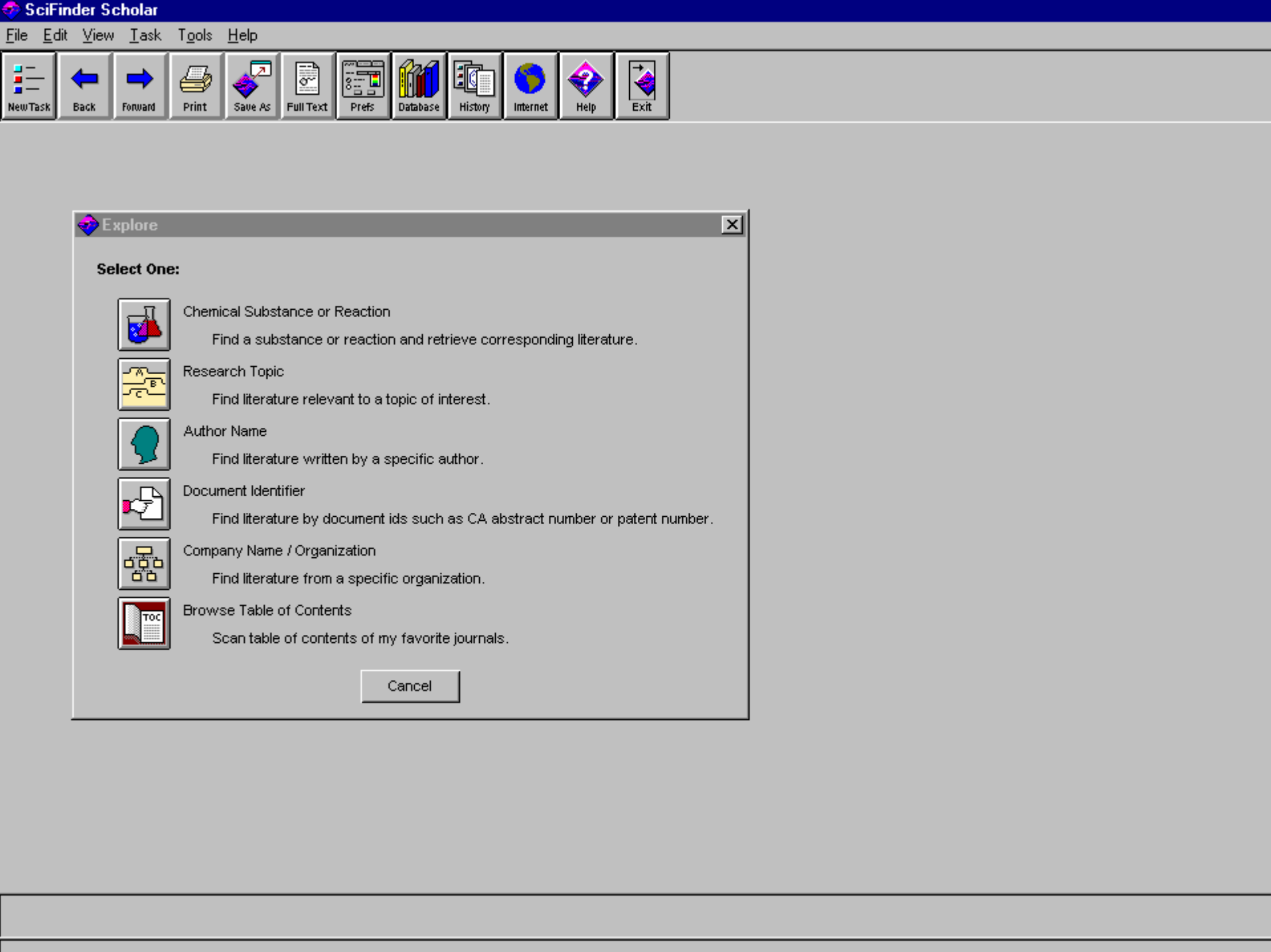
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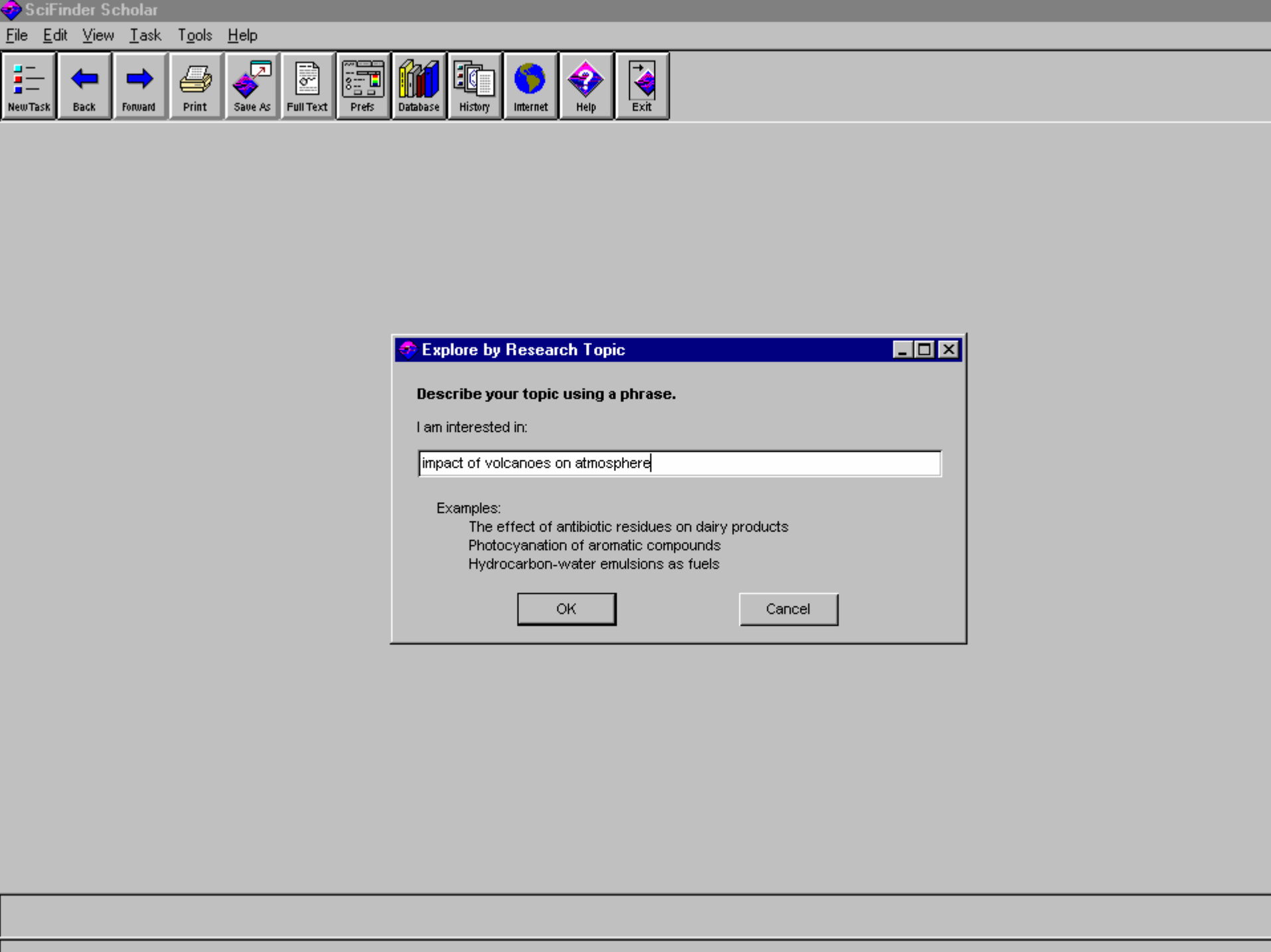
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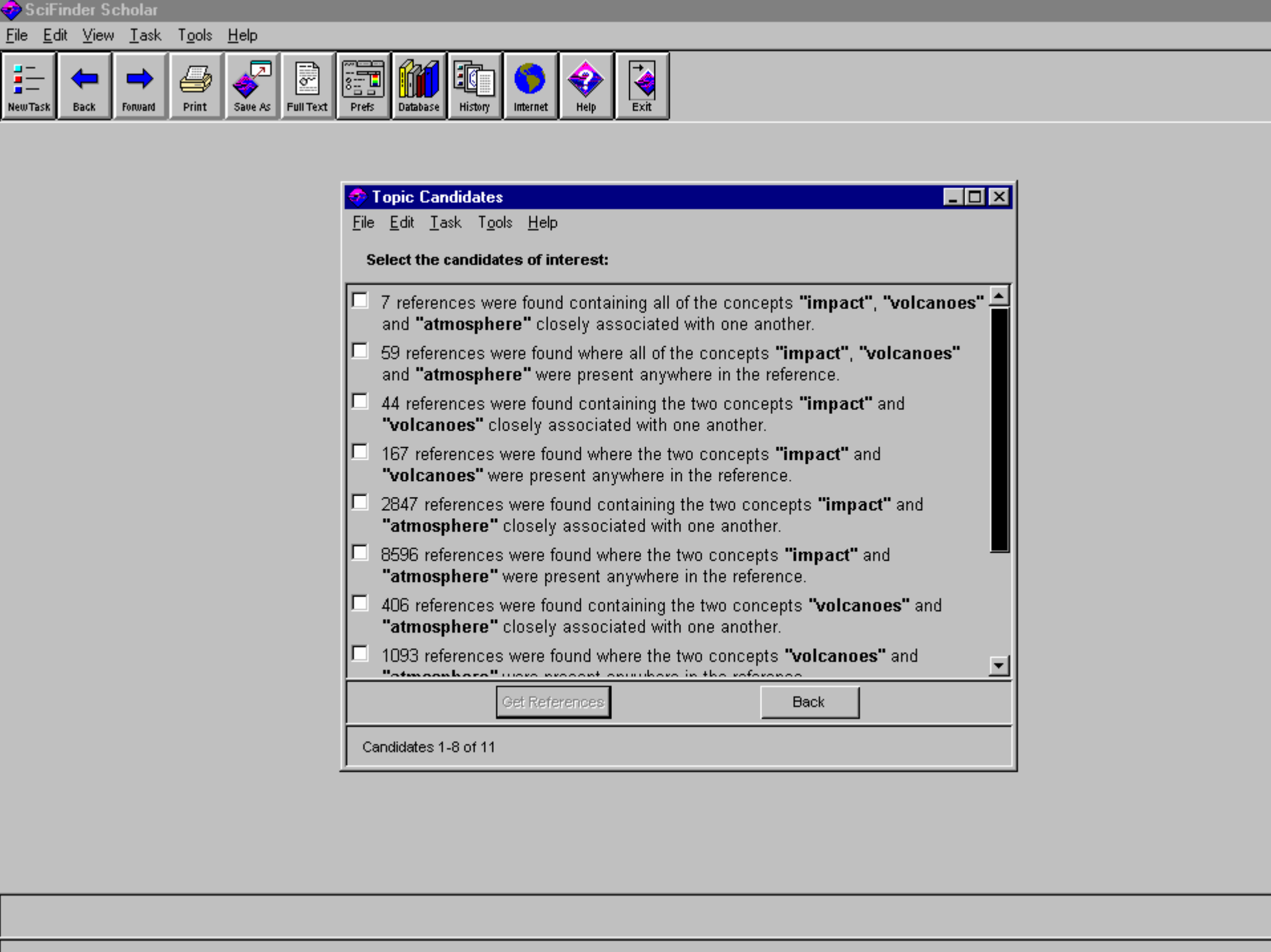
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- Realmuto, Vincent J.; Worden, Helen M. **Impact of atmospheric water vapor on the thermal infrared remote sensing of volcanic sulfur dioxide emissions: a case study from the Pu'u 'O'o vent of Kilauea Volcano, Hawaii.** Journal of Geophysical Research, [Solid Earth] (2000), 105(B9), 21497-21508. CODEN: JGEREE ISSN:0148-0227. CAN 134:24913 AN 2000:721901 CAPLUS
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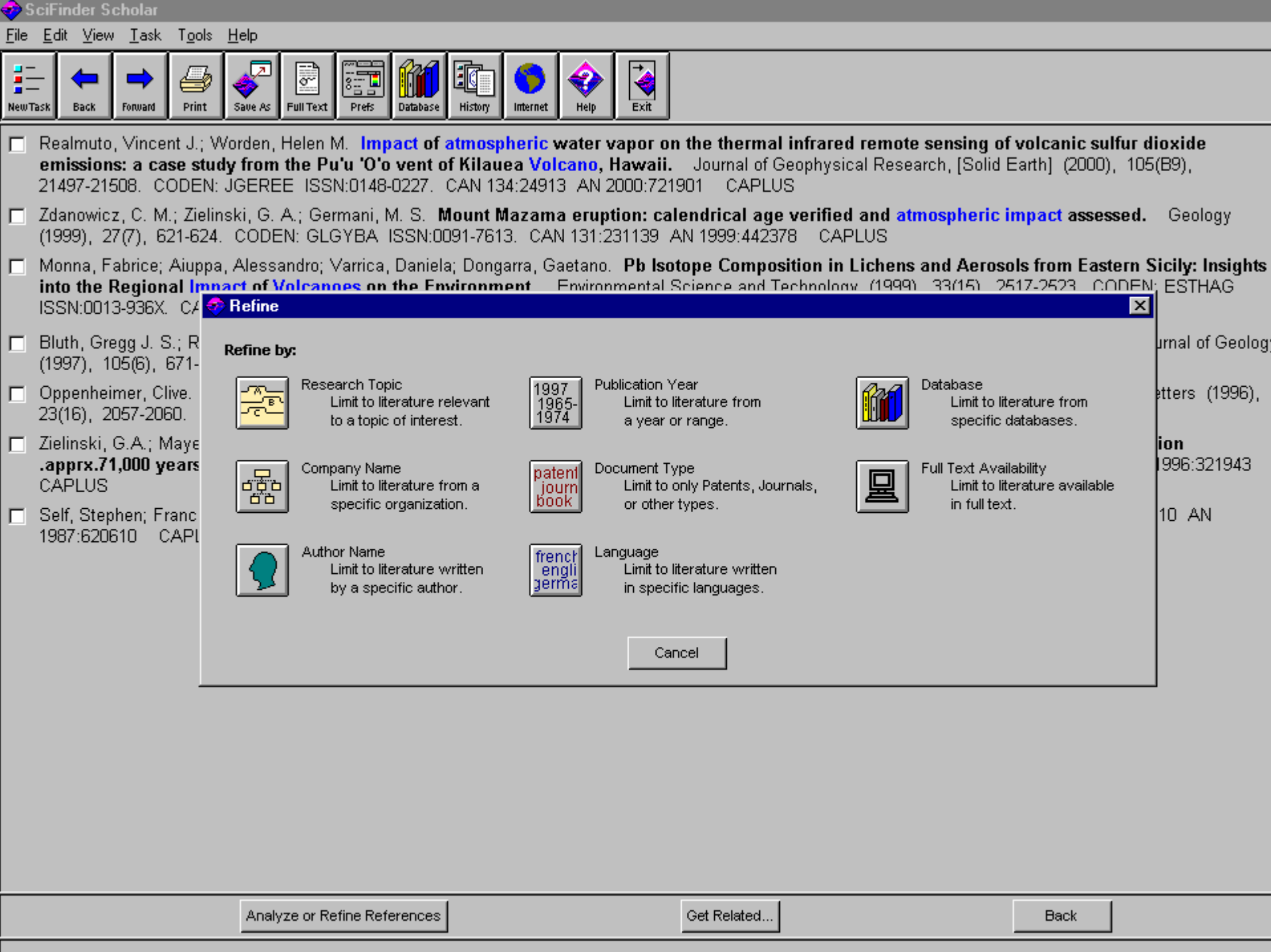
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Realmuto, Vincent J.; Worden, Helen M. Jet Propulsion Laboratory, Pasadena, CA, USA
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Abstract

The Dec. 18, 1999, launch of NASA's Terra satellite put two multispectral thermal IR imaging instruments into Earth orbit. Expts. with airborne instruments have demonstrated that the da from such instruments can be used to detect volcanic SO2 plumes and clouds. However, on the greatest challenges that will confront efforts to monitor volcanic SO2 emissions from spac the need to characterize the local atm. In this paper, we evaluate the sensitivity of the SO2 retrieval procedure to our knowledge of the local atm. conditions. We compare SO2 retrievals obtained with distant (radiosonde) and local [Fourier transform IR (FTIR) soundings] atm. measurements and find that the relative difference is typically ±25%. For ground temp. retriev the relative difference is ±1.5%. These results lead us to conclude that, while local measurer of atm. conditions are preferable, useful retrievals can be obtained using atm. measurements distant sites. In addn., we find very good agreement between SO2 and ground temp. retrieval obtained from thermal IR imagery and FTIR soundings.

Indexing -- Section 79-6 (Inorganic Analytical Chemistry)
Section cross-reference(s): 53, 59

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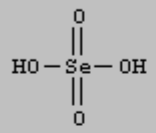

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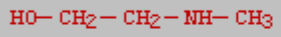

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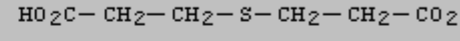

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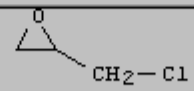

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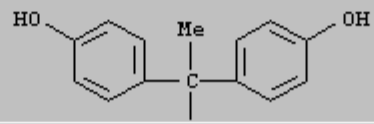

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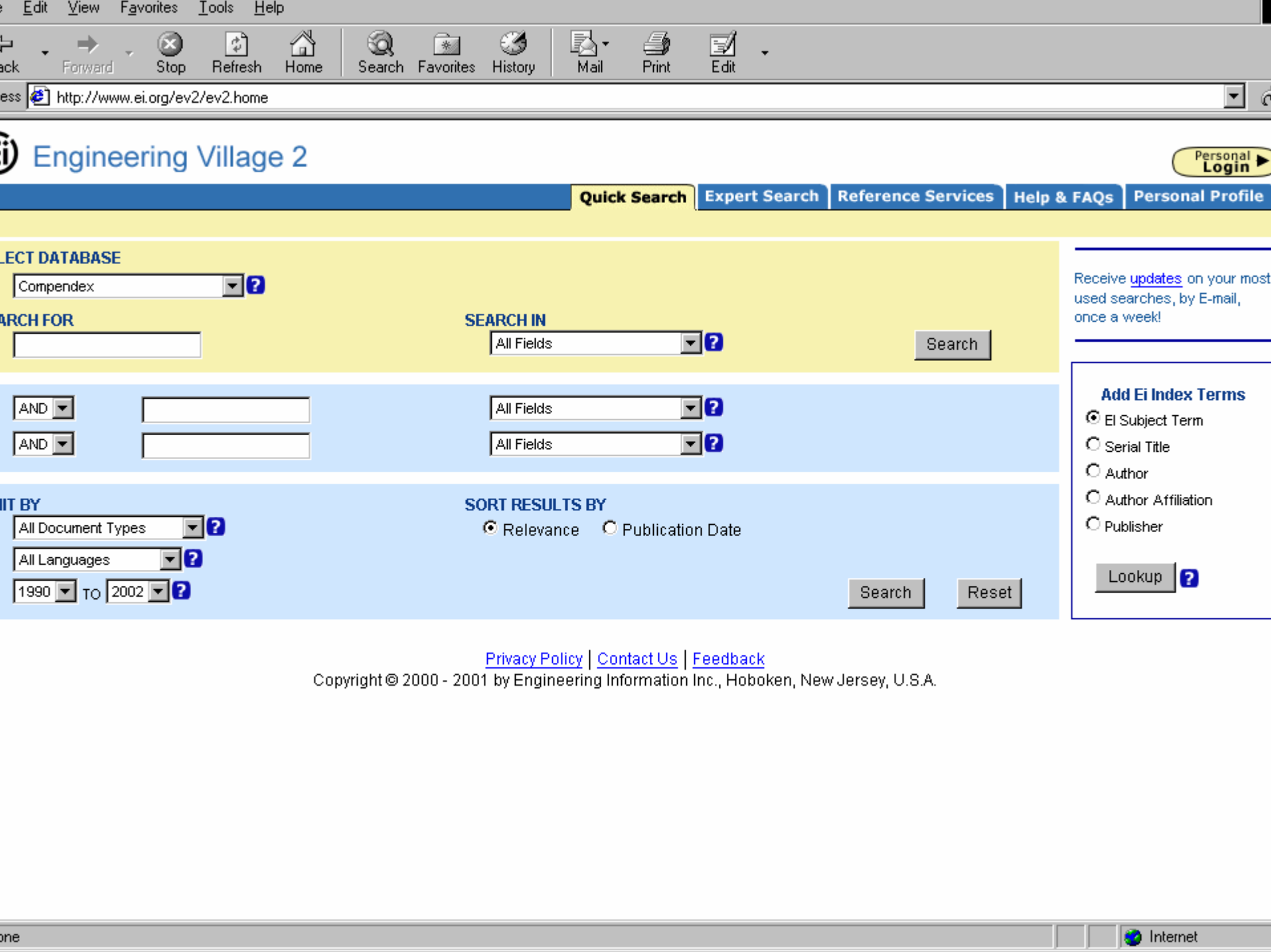
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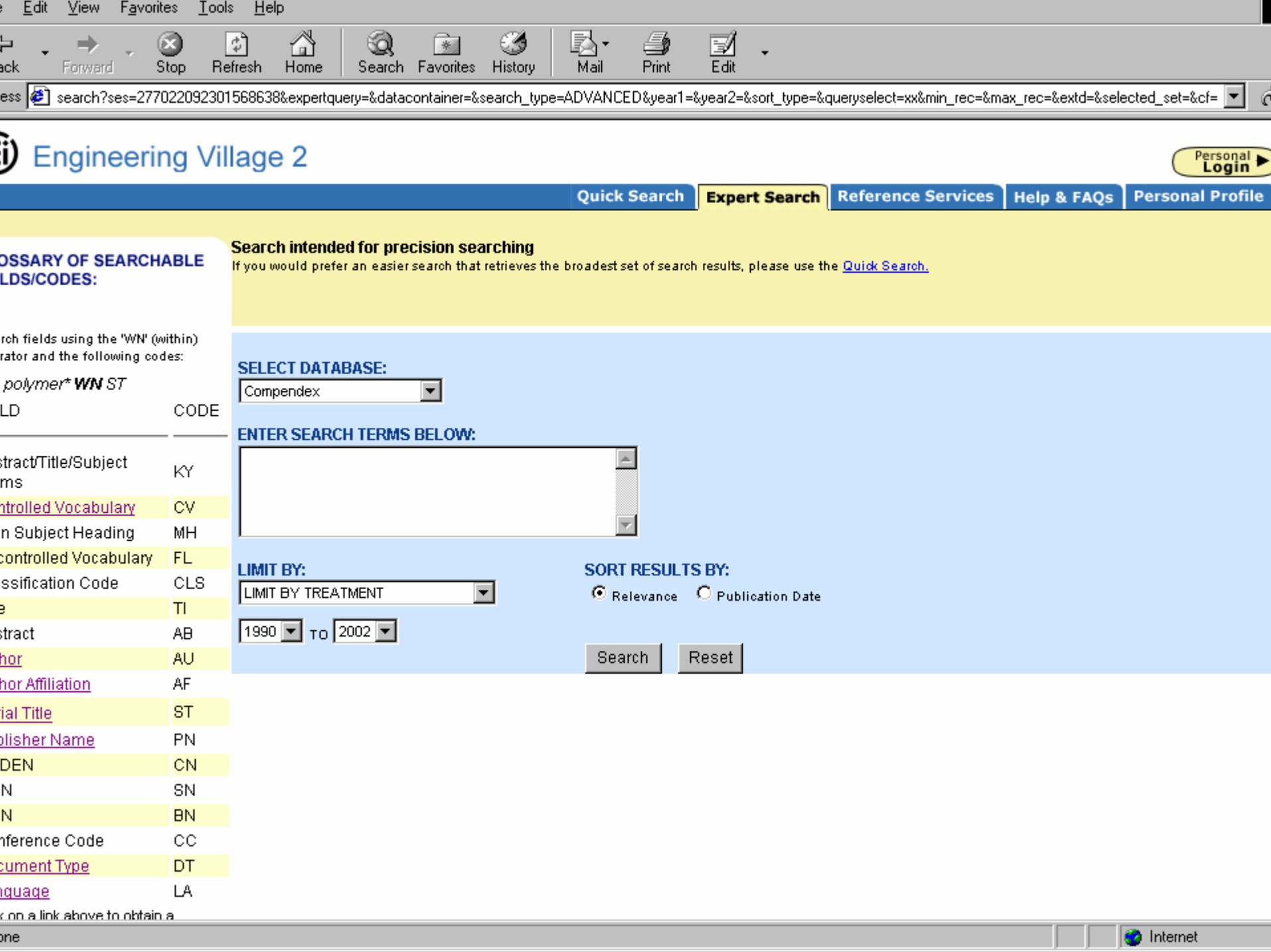
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Environmental Impact of Dihydrogen Monoxide

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