

# RESEARCH GUIDE

## Chemistry

### George Mason University Libraries

How is printed information in the field of **CHEMISTRY** organized? Chemists publish their theories, their practices, and the results of their research in journals, reports, books, and patents. Indexes and abstracts list these sources, and provide the information needed to locate them. Encyclopedias, dictionaries and books of tables contain easy-to-access information on a wide variety of topics.

Consult the following resources (and similar books shelved near them) to become acquainted with effective research methods in chemical literature.

Locations: Fenwick Library (Fen) and Johnson Center Library (JCL). Also, some of these sources are on Permanent Reserve (Perm Res) at the Johnson Center Library. (Ask at the JCL Circulation Desk for items on Perm Res)

#### **GUIDES TO THE LITERATURE**

Start here to find out how chemical literature is organized and to get further details on important and frequently used information resources in chemistry and related disciplines.

**How to Find Chemical Information.** 1998.

Fen Ref QD 8.5 .M34

**Information Sources in Chemistry.** 1993.

Fen Ref QD 8.5 .I47

**Information Sources in Science & Technology.**

Fen Ref Desk (1998) & JCL Ref (1994) Q 158.5 .H87

#### **GENERAL DICTIONARIES AND ENCYCLOPEDIAS**

Start here to find definitions of unfamiliar terms or to get basic information on general concepts and theories in chemistry and related disciplines.

**Concise Encyclopedia Chemistry.** 1993.

Fen Ref & JCL Ref QD 4 .A2313

**Facts on File Dictionary of Chemistry.** 1999.

Fen Ref QD 5 .F33

**Macmillan Encyclopedia of Chemistry.** 1997.

Fen Ref QD 4 .M33 (4 vols)

**McGraw-Hill Dictionary of Chemistry.** 1997.

JCL Ref QD 5 .M357

**McGraw-Hill Encyclopedia of Science & Technology.** 1997.

Fen Ref Q 121 .M3 (20 vols)

**Oxford Dictionary of Chemistry.** 2000.

Fen Ref QD 5 .D4985

**Van Nostrand's Scientific Encyclopedia.** 1995.

Fen Ref Q 121 .V3 (2 vols)

*...Other chemistry related dictionaries & encyclopedias can be found in the QD 4 & QD 5 areas.*

## MULTILINGUAL DICTIONARIES

**Elsevier's Dictionary of Chemistry.** (English, French, Spanish, Italian, and German) 1983.  
Fen Ref QD 5 .D67

**Elsevier's Dictionary of Chemistry.** (Russian-English) 1993.  
Fen Ref QD 5 .M262

## SPECIALIZED ENCYCLOPEDIAS

**The "COMPREHENSIVE" Series:** Multi-volume sets containing review articles on a particular subject. Articles present "state of the art" of a particular field, giving comprehensive overviews of major concepts and theories while also presenting a detailed bibliography for further reading.

<b>Comp. Composite Materials.</b> 2000.	Fen Ref TA 418.9 .C6C6344	(6 vols)
<b>Comp. Coordination Chemistry.</b> 1987.	Fen Stacks QD 474 .C65	(7 vols)
<b>Comp. Heterocyclic Chemistry.</b> 1984.	Fen Stacks QD 400 .C65	(8 vols)
<b>Comp. Heterocyclic Chemistry II.</b> 1996.	Fen Stacks QD 400 .C65	(11 vols)
<b>Comp. Inorganic Chemistry.</b> 1973.	Fen Stacks QD 151.2 .C6	(5 vols)
<b>Comp. Natural Products Chemistry.</b> 1999.	Fen Ref QD 415 .C63	(9 vols)
<b>Comp. Organic Chemistry.</b> 1979.	Fen Ref QD 245 .C65	(6 vols)
<b>Comp. Organic Functional Group Transformations.</b> 1995.	Fen Stacks QD 262 .C534	(7 vols)
<b>Comp. Organic Synthesis.</b> 1991.	Fen Stacks QD 262 .C535	(9 vols)
<b>Comp. Organometallic Chemistry.</b> 1982.	Fen Stacks QD 411 .C65	(9 vols)
<b>Comp. Organometallic Chemistry II.</b> 1995.	Fen Stacks QD 411 .C652	(14 vols)
<b>Comp. Supramolecular Chemistry.</b> 1996.	Fen Stacks QD 411 .C66	(11 vols)
<b>Comp. Toxicology.</b> 1997.	Fen Stacks RA 1199 .C648	(13 vols)
<b>Comp. Water Analysis.</b> 1992.	Fen Stacks TD 380 .C765	(2 vols)

### Other Specialized Encyclopedias

**Catalysis from A to Z.** 2000.  
Fen Ref QD 505 .C383

**Encyclopedia of Analytical Science.** 1995. (10 vols)  
Fen Ref QD 71.5 .E53

**Encyclopedia of Chromatography.** 2001.  
Fen Ref QD 79.C4 E63

**Encyclopedia of Computational Chemistry.** 1998. (5 vols)  
Fen Ref QD 39.3 .E46 E53

**Encyclopedia of Inorganic Chemistry.** 1994. (8 vols)  
Fen Ref QD 148 .E53

**Kirk-Othmer Encyclopedia of Chemical Technology.** 1992. (25 vols, supp. and index)  
Fen Ref TP 9 .E685

## **INDEXES AND ABSTRACTS**

Each year chemists publish massive amounts of information in scholarly and professional journals and reports. You can use the following indexes to identify articles, reports or patents on specific subjects. Paper indexes are shelved on the west side of the Fenwick Library Reference Room and their call numbers begin with "Index." For a comprehensive list of the library's electronic indexes, see <http://library.gmu.edu/resources/databases.html>. Here is a listing of a few major print and electronic indexes related to chemistry.

**American Chemical Society (ACS) Publications.** Web access, coverage varies.

Includes the full-text from all 34 American Chemical Society publications, from broad coverage journals such as the *Journal of the American Chemical Society* to specialist journals such as *Environmental Science and Technology* and *Energy and Fuels*.

**Beilstein CrossFire plus Reactions.** Stand-alone workstation, Fen Ref Room.

CrossFire contains chemical structures and data on preparation, reactions, and physical properties (such as boiling point, melting point, spectral identification, etc.) for over 6 million compounds. Citations to the literature go back to 1771. The print version, **Handbuch der Organischen Chemie (Beilstein)**, is in German and can be located at Fen Ref QD 251 .B4. (Please note: GMU does not own a complete set of print volumes.)

**Chemical Abstracts.** Fen Ref Index QD 1 .C5 (1997-2001) or Stand-alone, 1907-present.

The most comprehensive scientific abstracting service in English for American and international chemical literature. Cumulated volume indexes offer access by CA chemical name, general subject, formula, author, and patent number. The online version, **SciFinder Scholar**, is available on a stand-alone station in the Fenwick Reference Room and in the Prince William Campus Library.

**Science Citation Index.** Fen Ref Index Q 1 .S3 (1961-1986) or Web Access, 1980-present.

An index to research papers from worldwide scientific journals. Unique in that it allows searching by institutional affiliation of authors and by the works cited in current papers. Author index and Keyword (from title) index. The online version is called **Science Citation Index Expanded** and is part of the **Web of Science** suite of databases.

## **HANDBOOKS, TABLES, COMPENDIA, AND OTHER SPECIALIZED REFERENCE SOURCES**

**The "DICTIONARY OF COMPOUNDS" Series:** Each contains an alphabetical listing of compounds, with each entry providing basic property data along with references to other sources containing information on the compound such as: synthesis, NMR and IR spectra, derivatives and use. Compounds are indexed by name, synonym, molecular formula, and CAS Registry Number.

**Dictionary of Analytical Reagents.** 1993.

Fen Ref QD 77 .D498

**Dictionary of Inorganic Compounds.** 1992. (5 vols and 3 supplements)

Fen Ref QD 148 .D53 (Supplements are Fen Ref QD 148 .D532)

**Dictionary of Natural Products.** 1994. (7 vols)

Fen Ref QD 415 .A25 D53

**Dictionary of Organic Compounds.** 1996. (9 vols)  
Fen Ref QD 246 .D5

**Dictionary of Organometallic Compounds.** 1984. (3 vols and supplement)  
Fen Ref QD 411 .D53

### **Other Commonly Used Resources**

**Quick look-ups:** Go here to find brief property information or chemical structures.

**Aldrich Catalog / Handbook of Fine Chemicals.** 2000/01.  
Fen Ref and JCL Perm Res TP 202 .A54

**Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals.**  
Fen Ref Desk (1996) & JCL Perm Res (1996) RS 51 .M4

**More comprehensive resources:** Go here for additional property data, chemical structures, or other data related to chemistry and related disciplines.

**CRC Handbook of Chemistry and Physics.**  
Latest: Fen Ref Desk; Older editions: Fen Ref, JCL Ref or JCL Perm Res QD 65 .H3

**Handbook of Data on Common Organic Compounds.** 1995. (3 vols)  
Fen Ref QD 257.7 .H35

**Handbook of Tables for Organic Compound Identification.** 1967.  
Fen Ref QD 291 .R3 H3

**Lange's Handbook of Chemistry.**  
Fen Ref (1999) and JCL Ref (1992) TP 151 .H25

**Perry's Chemical Engineers' Handbook.** 1997.  
Fen Ref TP 151 .P45

### **Finding reagents for organic synthesis:**

**Encyclopedia of Reagents for Organic Synthesis.** 1995. (8 vols)  
Fen Ref QD 77 .E53

**Fieser and Fieser's Reagents for Organic Synthesis.** 1967-1980. (20 vols and index)  
Fen Ref QD 262 .R33

### **Chemical safety information:**

**Handbook of Laboratory Safety.** 2000.  
Fen Ref QD 51. C73

**Sax's Dangerous Properties of Industrial Materials.** 2000. (3 vols)  
Fen Ref T 55.3 .H3 L494

## SPECTRA SOURCES

Please see the separate research guide, "**Spectra Sources**," for more in-depth information.

**Aldrich Library of FT-IR Spectra.** 1997. JCL Perm Res QC 457 .P87 (3 vols)  
**Aldrich Library of Infrared Spectra.** 1981. JCL Perm Res QD 96 .I5 P67  
**Aldrich Library of NMR Spectra.** 1983. JCL Perm Res QD 96 .N8 P68 (2 vols)  
**Sadtler Handbook of Infrared Spectra.** 1978. Fen Ref & JCL Perm Res QC 453 .S73

**Sadtler Standard Spectra.** (found in the large, green binders in Fen Ref)

Infrared (IR) Grating Spectra. Fen Ref QC 453 .S312 (26 vols)  
Inorganics. Fen Ref QC 457 .S3 I6 (4 vols)  
NMR Spectra. Fen Ref QC 453 .S315 (26 vols)  
Ultra Violet. Fen Ref QC 459 .S34 (20 vols)

**Sadtler Standard Spectra Indexes.** (found in the large, green binders in Fen Ref)

Standard Total Spectra Alphabetical Index. Fen Ref QC 453 .S19  
Standard Total Spectra Chemical Class Index. Fen Ref QC 453 .S191  
Standard Total Spectra Molecular Formula Index. Fen Ref QC 453 .S192  
Standard Grating Spectra Numerical Index. Fen Ref QC 453 .S3121  
Standard Grating Spec-Finder. Fen Ref QC 453 .S3122

## LIBRARY OF CONGRESS CALL NUMBERS—CHEMISTRY

<b>Chemistry</b>	<b>QD 1—999</b>
Analytical Chemistry	QD 71—142
Inorganic Chemistry	QD 146—197
Organic Chemistry	QD 241—441
Physical and Theoretical Chemistry	QD 450—731
Crystallography	QD 901—999

<b>Chemical Technology</b>	<b>TP 1—1185</b>
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## INDIVIDUAL RESEARCH CONSULTATION SERVICE

Reference Liaison Librarians offer individualized research consultation by appointment. To schedule an appointment regarding library research in Chemistry, contact:

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Science Reference/Liaison Librarian  
Phone: (703) 993-4175  
E-mail: jgarrita@gmu.edu

Revised: J. Garritano, 2/02