

Using CAS Databases on STN[®]



Student Manual

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Preface

These materials were designed originally as an aid for teaching students in academic institutions, but they have been and may be used as training materials in other organizations or contexts. The content of the materials assumes that students have had no prior experience searching online.

Sequential lessons on specific topics are included in the materials. Each lesson lists its objectives followed by descriptive text.

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Introduction

Before immersing ourselves in the techniques for finding chemical information online, let's ask the question of why should we learn these techniques. What are the benefits of searching for information online? Here are some possible answers:

Speed

Online searching is fast. You can search thousands of documents and have answers to your questions in a matter of minutes.

Convenience

Online searching is convenient. You can login at your desk using a personal computer or a terminal and obtain important information whenever you need it.

Flexibility

Online searching gives you flexibility. You have access to more information than you can ever imagine. You can be as selective as you need to be or as inclusive as you'd like to be. You control how much information you obtain.

Efficiency

You can ask very simple questions. Or you can ask very complex, multifaceted questions that would be difficult or impossible to answer by consulting printed resources.

Objectives

The key to deriving these benefits is learning the specialized techniques that go along with online searching. The following materials have as their goal a presentation of the basics of online searching on STN. In addition, the fundamental techniques for finding references to chemical literature in the CAS databases on STN are included. Model approaches to answering various kinds of online searching questions are offered.

By the end of this program, you will be able to search online for some typical *kinds* of questions in the CAS database such as these:

- what are some recent reviews in English on a particular topic?
- what papers have been published by a particular author?
- are there any patents on a particular topic?
- what are some references on methods of preparation of a particular substance?

Here is an overview of the lesson objectives:

Lesson 1. The Basics of Online Searching

Objective: To learn the basic instructions and tools for online searching.
To become familiar with the content of the CA File on STN

Lesson 2. Search Strategy

Objective: To learn a strategy for formulating a search question and translating the question into a search statement

Lesson 3. Text Searching I: Strategies to Increase Number of Answers

Objective: To learn strategies for increasing number of answers when searching text

Lesson 4: Text Searching II: Strategies to Decrease Number of Answers

Objective: To learn text-searching techniques for decreasing number of answers and obtaining more precise results

Lesson 5: Searching Author Names

Objective: To learn how to search author names in the CA file

Lesson 6: Refining Searches

Objective: To learn how to refine search results by searching publication year, language of the original document or types of publications

Lesson 7: Substance Searching

Objective: To learn how to obtain references on specific compounds

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Lesson 1 Online Searching Basics

Objectives: At the end of this lesson the student will:

- know the basic instructions and tools of online searching.
- be familiar with the content and online organization of records in the CA and LCA Files on STN.

Topics: Connecting to STN
Main commands (FILE, SEARCH, DISPLAY, LOGOFF)
Truncation
Boolean operators
Content of records in CA and LCA Files
Search indexes
Verifying search terms with EXPAND

References: STN International Login Card
STN Pocket Guide
Database Summary sheets for CA and LCA
Guide to Commands

Connecting to STN

To communicate with STN, you need a microcomputer or terminal, a telephone line and access to a telecommunication network through a modem, a telecommunication software, or your organization's network. You can gain access to STN on Internet, CompuServe, SprintNet, and BT Tymnet or other local networks outside of the United States. See the step-by-step directions on the STN Login Card. You also need a login ID and password.

When you connect with STN, you are prompted for your port ID, STN login ID, and your password. After you have entered your password, the characters will be replaced with pound signs. This is for security to protect your account. The final prompt is for your terminal type. For most searches, select 3 as your terminal type. Select type 2 if you wish to display graphic structure diagrams and you have software that emulates Plot 10 graphics.

If you have completed your login process, you will see the "welcome message," the titles of current online news messages, and a message that you have entered the default logon file for your account. The HOME file is usually the default logon file.

Main commands

Your next step is to enter instructions for STN to execute. There are four main commands that you need to enter your instructions:

Command	Function
FILE	To enter a file
SEARCH	To conduct a search
DISPLAY	To view answers online
LOGOFF	To end an online session

To use a command, enter the command at a system prompt which is an arrow. Enter carriage return to send your instructions to the STN computer.

File

The FILE command is used to enter a database. Each database is identified by a file name, for example, CA is the file name for all the documents published in printed Chemical Abstracts since 1967. LCA is the file name for a subset of the CA File consisting of about 65,000 records taken from eight issues of Chemical Abstracts (two from 1969, two from 1974, two from 1979, and two from 1984).

```
=> FILE LCA
```

Search

The SEARCH command, abbreviated S, is used to enter terms that you want to search in the specified file. The system assigns an L-number to the answer set created. L-numbers are assigned consecutively. The L-number for the answer set is displayed on the left. The next column shows the number of references which match your search requirements.

```
=> S ANTACID  
L1      8 ANTACID
```

Display

The DISPLAY command, which may be abbreviated D, is used to view answers online. The command is followed by three pieces of information that you may enter in any order: the L-number of the answer set you wish to display, the number(s) of answers, and the format in which to display answers. In the example below display of answers 1,2,3 from answer set L1 in BIB format (all bibliographic information) is requested. You can display a single answer (e.g., 5), a range of answers (e.g., 1-5), or a group of answers (e.g., 1,6,10-15). Answers in an answer set are arranged in order, from most recent to oldest. Thus, answer 1 is the record most recently added to the file. The display formats you can use in a file are listed on the file's summary sheet. You can also obtain this information online by entering HELP FORMAT at an arrow prompt in the file.

```
=> D L1 1-3 BIB
```

If you are not sure how to use a command, enter its full name at an arrow prompt. The system will send you prompts for all the information that you need to execute this command. You may enter ? at any prompt to obtain additional information online. The items included in parentheses are the defaults. The default is the option you are most likely to take. To take the default, type a period and press the carriage return key.

```
=> DISPLAY  
ENTER (L1), L# OR ?:  
ENTER ANSWER NUMBER OR RANGE (1):1-3  
ENTER DISPLAY FORMAT (BIB):BIB
```

Logoff

The LOGOFF command is used to disconnect from STN. All the L-numbers are deleted when you logoff from STN.

If you would like to logoff for a short period, less than 60 minutes, and have your L-numbers saved, you may use LOGOFF HOLD. This will save all of your L-numbers for 60 minutes.

Basic Search Tools

Truncation

To obtain variations in word ending, that is, to search on the root of a word, place a question mark (?) at the end of the root. The question mark means any number of characters, including zero. For example, if you search on ACID?, you would retrieve any of the following: ACID, ACIDS, ACIDIC, ACIDIFICATION etc.

In addition, for searching the Basic Index of the CA and LCA files, you can use the question mark at the beginning of a search term. For example, if you search on ?ACID?, you retrieve not only ACID, ACIDS, ACIDIFICATION but also terms such as DIACID or ANTACID.

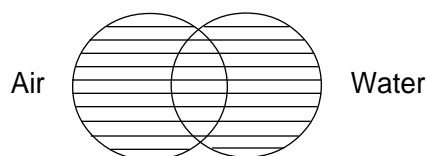
The pound sign (#) allows only one additional character following the word stem. The pound sign is especially useful for searching singular or plural terms.

The exclamation point (!) is used like a wild card for character masking in the middle of a word. For example, SULF!NYL will retrieve SULFINYL or SULFONYL.

Boolean Operators

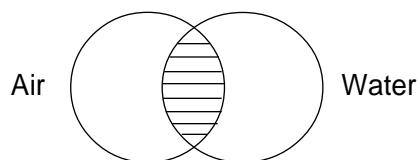
The Boolean search operators are used to specify logical relationship among the terms being searched. They are used in the SEARCH command to combine terms.

Combining a set of terms with the OR operator requires that at least one term be present in a record in order to retrieve that answer. For example, the search for AIR OR WATER retrieves all records containing one or both of those terms. Using the OR operator usually increases the number of answers that are retrieved. This can be illustrated with a Venn diagram and a sample search.



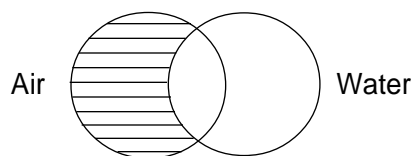
=> S AIR OR WATER	
	16289 AIR
	42576 WATER
L1	56154 AIR OR WATER

Combining two or more terms with the AND operator requires that all of the terms occur in the same record. For example, if you search for AIR AND WATER, you retrieve only those records containing both of these words. Use of the AND operator usually decreases the number of answers that are retrieved.



=> S AIR AND WATER	
	16289 AIR
	42576 WATER
L2	2711 AIR AND WATER

A search expression such as A NOT B requires that a record contain the term A but not the term B. The NOT operator should be used cautiously. A document may contain information on both A and B, but NOT B would eliminate it from the answer set.



=> S AIR NOT WATER	
	16289 AIR
	42576 WATER
L3	13578 AIR NOT WATER

Records in CA and LCA

The database of Chemical Abstracts Service (CAS) is available on STN in files. The CA File contains information published in printed Chemical Abstracts since 1967. Each record is identified by the CA Abstract Number (AN) and contains bibliographic information, abstract, keywords, and indexing terms.

The LCA (Learning CA) File is a subset of the CA File containing about 65,000 records from eight issues of *Chemical Abstracts* (two each from the following years: 1969, 1974, 1979, and 1984). The content of records in LCA is the same as the content of the corresponding records in the CA File.

The information in each record is displayed in fields. For example, the title is displayed in the TI (TITLE) field. Author names are displayed in the AU (AUTHOR(S)) field.

Bibliographic information

AN 101:89898 LCA
TI Synthesis of .alpha.-hydroxycarbonyl compounds (acyloins): direct oxidation of enolates using 2-sulfonyloxaziridines
AU Davis, Franklin A.; Vishwakarma, Lal C.; Billmers, Joanne G.; Finn, John
CS Dep. Chem., Drexel Univ. , Philadelphia, PA, 19104, USA
SO J. Org. Chem. (1984), 49(17), 3241-3
CODEN: JOCEAH; ISSN: 0022-3263
DT Journal
LA English

Each record is identified by the CA Abstract Number in the AN (Accession Number) field. This is the same abstract number that you would use to locate the abstract in printed *Chemical Abstracts*.

Bibliographic information for non-patent documents includes:

AN - Accession Number (CA reference number)
TI - Title of the original citation that has been abstracted
AU - Author names
CS - Corporate Source,
(the name and location of the organization of the first author)
SO - Source (publication information)
DT - Document type
LA - Language of the original document

Abstract

AB Direct oxidn. of ketone and ester enolates with oxaziridine I affords .alpha.-hydroxycarbonyl compds. in higher yield, with fewer side reactions, and with superior stereoselectivity than similar oxidns. using Mo peroxide-pyridine-(Me₂N)₃PO or O₂. Competitive addn. of enolates to sulfonimide PhSO₂:CHPh is unimportant.

This is the same abstract that appears in printed *Chemical Abstracts*.

Supplementary Terms (CA Keywords)

ST stereochem oxidn enolate sulfonyloxaziridine; oxaziridine sulfonyl oxidn enolate; acyloin; hydroxy carbonyl compd

Supplementary Terms (CA keyword phrases separated by a semicolon ;) are indexing words that are used to prepare quick indexes at the back of each issue of printed *Chemical Abstracts*. Keywords are not included in CA volume indexes.

Index Terms for Subjects

IT Oxidation
(of enolates with (phenylsulfonyl)phenyloxaziridine)

In the IT (Index Terms) field there are a number of in-depth indexing terms produced for the General Subject and Chemical Substance volume indexes to printed CA. Each year two volumes of indexes are produced.

This is an example of an entry for the General Subject Index. Oxidation is the index heading. Index headings are “controlled vocabulary.” There is a limited number of subject index headings that are used for indexing of main concepts.

The phrase in parentheses provides more information about the content of the document in relation to the heading. This is the same phrase that accompanies the entry in the General Subject Index.

Index Terms for Substances

IT 63160-13-4
(oxidn. by, of enolates)

This entry shows one index entry for a specific substance. The CAS Registry Number is used to index specific substances. CAS Registry Numbers are unique identifiers for specific substances.

Entries for chemical substances in the printed Chemical Substance Index have CA Index names rather than the CAS Registry Numbers. So if you were searching for documents on chemical compounds in printed CA, you'd have to know how a compound is named by Chemical Abstracts Service. For searching online, CAS Registry Numbers are the keys to finding citations for specific compounds.

Search Indexes

The content of each field in a record is placed into one or more search indexes. Each file has the Basic Index and additional indexes.

The Basic Index

The Basic Index is a list of terms drawn from those fields that typically reflect the subject content of the document. In the CA or LCA file, the Basic Index contains terms from the title, supplementary terms, indexing terms, and abstracts.

Additional Indexes

In addition to the Basic Index, you can conduct a search in other fields. Searching in those additional indexes requires use of specific field codes. The search term is followed by a slash and the field code. For example, the format for searching an author's name is NAME/AU. In searching the Basic Index, the field code (/BI) is optional. Some examples of searching in various indexes of the CA and LCA files are:

Field	Field Code	Example
Basic Index	/BI (or none)	S ?STEREO?
Publication Year	/PY	S 1993/PY
Language	/LA	S ENGLISH/LA
Document Type	/DT	S REVIEW/DT

For a complete list of search fields in the CA or LCA files, please refer the database summary sheet for the file, or enter HELP SFIELDS at an arrow prompt (=>) for a list of search field codes available in the file. Searching in the main indexes of the CA and LCA Files will be discussed in later sections.

EXPAND command

Terms in the Basic Index or any of the additional indexes of a file may be examined with the EXPAND command. The EXPAND command is useful for picking search terms, to help you decide how to truncate a term, and to examine what types of search terms are found in an index.

Enter EXPAND or E at an arrow prompt within a file followed by a term of interest. If you do not follow a term by a field code, the system shows you search terms in the Basic Index of that file.

EXPAND shows you an alphanumeric listing of the terms that appear around the term you entered. Each term is assigned an E-number. The system also shows how many records in the file contain each term. The term you enter is always assigned E3. If your term is not in the file, the listing shows 0 postings.

If you need to see more than 12 terms, type E at the arrow prompt.

```

=> E PHOTOGRAPHY
E1    6073    PHOTOGRAPHS/BI
E2     1     PHOTOGRAPHSS/BI
E3   23585  -> PHOTOGRAPHY/BI
E4     1     PHOTOGRAPHYCALLY/BI
E5     4     PHOTOGRAPHYING/BI
E6     5     PHOTOGRAPHYS/BI
E7     1     PHOTOGRAPHYU/BI
E8     10    PHOTOGRAPIC/BI
E9     1     PHOTOGRAPICALLY/BI
E10    1     PHOTOGRAPING/BI
E11    1     PHOTOGRAPJIC/BI
E12    1     PHOTOGRAPLIC/BI

```

To view terms in another index, follow your term by a slash and a field code. For example, to view terms in the Title index, follow a term by the field code /TI.

=> E PHOTOGRAPHY/TI		
E1	1	PHOTOGRAPHIUC/TI
E2	372	PHOTOGRAPHS/TI
E3	1448 →	PHOTOGRAPHY/TI
E4	1	PHOTOGRAPHYING/TI
E5	6	PHOTOGRAPIC/TI
E6	1	PHOTOGRAPJIC/TI
E7	1	PHOTOGRAPHOIC/TI
E8	1	PHOTOGRAPPHIC/TI
E9	1	PHOTOGRAPYHIC/TI
E10	2	PHOTOGRAVITATIONAL/TI
E11	42	PHOTOGRAVURE/TI
E12	1	PHOTOGREENING/TI

To search a term from an EXPAND list, enter in the SEARCH command the E-number corresponding to the search term. You may search one or more terms selected from an EXPAND list, E.G., S E4-E6.

In the Basic Index of the CA or LCA File, you may also use the command EXPAND LEFT (or E LEFT) to view terms with any number of characters preceding the term you enter. EXPAND LEFT is useful if you want to find out what terms the system searches when you use left truncation.

=> FILE LCA		
=> E LEFT ASSAY/BI		
E1	1	ASSAULT/BI
E2	12	CASSAVA/BI
E3	541 →	ASSAY/BI
E4	1	BIASSAY/BI
E5	85	BIOASSAY/BI
E6	3	ELECTROIMMUNOASSAY/BI
E7	59	IMMUNOASSAY/BI
E8	21	INTERASSAY/BI
E9	4	INTRAASSAY/BI
E10	4	MICROASSAY/BI
E11	3	MICROBIOASSAY/BI
E12	1	PREASSAY/BI
=> E		
E13	32	RADIOASSAY/BI
E14	2	RADIOIMMUNASSAY/BI
E15	167	RADIOIMMUNOASSAY/BI
E16	1	RADIORECEPTORASSAY/BI
E17	1	RADIOIMMUNOOASSAY/BI
E18	1	ASSAYABLE/BI
E19	2	BIOASSAYABLE/BI
E20	111	ASSAYED/BI
E21	3	BIOASSAYED/BI
E22	13	ASSAYING/BI
E23	1	RADIOIMMUNOASSAYO/BI
E24	146	ASSAYS/BI
=>S ?ASSAY?		
L1	981	?ASSAY?

Lesson 2 Search Strategy

- Objectives:** At the end of this lesson the student will:
- know a strategy for formulating a search question.
 - be able to translate a search question into a search statement consisting of words and Boolean operators.
- Topics:** Preparing for an online search
Online steps for conducting a search
DISPLAY SCAN for evaluating answers
- References:** Database summary sheets for CA and LCA

When using the computer to help you search for information, you use many of the same skills that you use when looking for information in a book or other printed publication. Since you are familiar with the use of some printed tools, you may be no longer consciously aware of the many steps involved in that process. When learning to use online systems to help you find information, it may be useful to explicitly identify the steps involved in preparing for and conducting online searches. We'll apply and illustrate this process in one search.

Preparing for an Online Search

To search effectively in online files, here are the suggested steps to complete *before* you connect to the online search service. Preparation of these steps is especially important if you want to keep your online searching costs as low as possible.

1. Formulate your search question and its scope

What is the topic? What is the purpose of your search?
Are you looking for a "few good references on..."?
Do you want to be comprehensive?

Let's apply and illustrate this process in one search.

Search question: Find some documents reporting on stereospecific or stereoselective reactions of ketones.

This search deals with a class of substances, ketones, and a type of reaction, stereospecific or stereoselective. The scope is not well defined, in that we do not know if any individual ketones must be searched. We decide that we'll search for ketones as a class.

2. Identify the important components of your search question

What are the main ideas in your search topic?
Pick out the main ideas in the search topic which must be represented in some way in the search statement.

The important components in this search are:

- ketones
- stereospecific or stereoselective reactions

3. Prepare initial search profile

In what file do you need to search for the information? What search terms express the main ideas of your topic? In what indexes of the file do you need to search? Is this a word search that you can conduct in the Basic Index of the file? Are you also looking for some types of terms that are searchable only in additional indexes of that file or files? What Boolean operator is needed to express the relationship between main ideas in the search topic? Can you use truncation? Would it be useful to check out your search terms using the EXPAND command? Can you think of synonyms for the words you're planning to use?

In this example, the search terms we select must cover the "ketone" and "stereo" concepts in the search. There are many different terms that could be used for "reactions" and we are not going to try and specify them. We may be able to use answers to find additional search terms.

We plan to conduct this search in the Basic Index of the CA File or, for practice, in the LCA File. The Basic Index of either CA or LCA contains terms from the titles, supplementary terms, indexing terms, and abstracts.

To begin we can use the stem "ketone," truncated on the left to allow for terms such as diketone and on the right to allow for the plural form. "Stereo" is also truncated on the left and right to allow for such words as diastereo, stereospecific, or stereoselective.

We combine these terms by the AND operator since we want to find references in which both of the terms are found.

So the initial search statement that we come up with is:

```
?KETONE? AND ?STEREO?
```

Online Steps

1. Select the file

Login and use the FILE command to select the file containing the information you need.

File LCA is picked for practice.

```
=> FILE LCA
```

2. Conduct the search

Instruct the system to perform the search in the file you have selected. The search terms are entered in the SEARCH (or S) command using appropriate truncation and Boolean operator.

```
=> S ?KETONE? AND ?STEREO?  
      553 ?KETONE?  
      566 ?STEREO?  
L1    51 ?KETONE? AND ?STEREO?
```

3. Review the results

Look at some of the answers in order to determine whether or not your search profile is retrieving the information that you desired. Ahead of time, check the summary sheet of the file if there are free or inexpensive options for browsing of answers. For example, the CAS files on STN have the DISPLAY SCAN option that lets you see answers in random order. There are no separate display charges for display of answers (other than telecommunication costs) when you use DISPLAY SCAN. With DISPLAY SCAN in the CA and LCA files you can obtain titles and indexing data that allow you to evaluate the answers.

The D SCAN option is tried. To use D SCAN, enter D SCAN and an L-number at an arrow prompt. The system automatically displays one of the answers (selected randomly) in the answer set in the default SCAN format. In the CA or LCA file with D SCAN you get the Section Code (CC), the Title (TI), Supplementary Terms (ST), and all the Index Terms (IT). The display may be lengthy. The hit terms (terms that caused the retrieval) are highlighted by asterisks. If you want to display more answers, enter the number of answers to display. For example, if you enter 3 after the prompt, three more answers from the answer set will be displayed, in random order. Notice that with D SCAN option, answers are not numbered.

```

=> D SCAN L1
L1  51 ANSWERS  LCA  COPYRIGHT 1994 ACS
CC  28-2 (Heterocyclic Compounds (More Than One Hetero Atom))
TI  Facile access to masked isobenzofurans: high exo-
    ***stereoselectivity*** in the Diels-Alder reactions of
    4,7-dihydro-4,7-ethanoisobenzofuran
ST  Diels Alder isobenzofuran ***stereochem*** ;
    oxatetracyclotridecene; tetracyclotridecene oxa;
    benzoxabicycloheptane; oxazapentacyclohexadecadiene
IT  ***Stereochemistry***
    (of Diels-Alder reactions of isobenzofurans)
IT  Diels-Alder reaction
    ( ***stereoselective*** , of isobenzofurans)
IT  106-99-0, 1,3-Butadiene, reactions 513-81-5 592-57-4,
    1,3-Cyclohexadiene
    (Diels-Alder reaction of, with acetylenedicarbaldehyde acetal)
IT  78-94-4, Methyl vinyl ***ketone*** , reactions 108-31-6,
    reactions 624-48-6, Dimethyl maleate 624-49-7 762-42-5,
    Dimethyl acetylenedicarboxylate 941-69-5
    (Diels-Alder reaction of, with isobenzofurans)
    .
    .
    .
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0
  
```

D SCAN allows you to display selected fields that are included in this option. For example, you can display only titles in random order by entering D SCAN L1 TI.

=> D SCAN L1 TI

L1 51 ANSWERS LCA COPYRIGHT 1994 ACS

TI The ***stereoselective*** synthesis of acyclic and exocyclic trisubstituted olefins via a hydroxyl-directed Wittig reaction

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):1

L1 51 ANSWERS LCA COPYRIGHT 1994 ACS

TI I. Rearrangement of .beta.,gamma.-epoxysilanes to .beta.-silyl aldehydes and ***ketones*** . II. ***Stereospecific*** synthesis of enamides from .alpha.,beta.-epoxysilanes. III. Synthesis of bis(trimethylsilyl) and tris(trimethylsilyl)ethylene oxides and their reactions with Lewis acids and organometallic reagents

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

4. Revise search profile, if needed

Modify the search terms and/or revise the search profile as necessary. On the basis of your review of the search results, decide if the current search profile is doing what you want it to do. If it is not, decide how it can be modified to get the number and types of answers you desire. The ability to respecify your search profile when you get unexpected results, and then immediately reexecute the search is the heart of online searching.

In this search, we decide not to modify the profile.

5. Display answers

Obtain a hard copy of the final set of answers in an appropriate format. Decide how much information you really need, since the costs of displaying answers depends on the number of answers and the format for displaying them. If you can look up the original paper in the library, then bibliographic information (BIB format) is sufficient. If you can check the abstracts in the printed *Chemical Abstracts*, the Accession Number (AN format) in the CA File tells you the volume and reference number of the abstract. In this example we display all the answers in BIB format which gives you all the bibliographic information.

=> D L1 BIB 1-51

L1 ANSWER 1 OF 51 LCA COPYRIGHT 1994 ACS

AN 109:189478 LCA

TI Fluoride ion-catalyzed reduction of aldehydes and ***ketones*** with hydrosilanes. Synthetic and mechanistic aspects and an application to the three-directed reduction of .alpha.-substituted alkanones

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CS Sagami Chem. Res. Cent. Sagamihara 229, Japan

SO J. Org. Chem., 53(23), 5405-15

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DT Journal

LA English

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-
-

Lesson 3 Text Searching I: Strategies to Increase Number of Answers

Objectives: To recognize types of terms that occur in the Basic Index of the CA File.
To learn techniques for increasing answers in word searches of the Basic Index in the CA File.

Topics: Types of words in the Basic Index of the CA File
Using truncation to increase number of answers
Using alternate terms
Using CAS abbreviations

References: CAS Standard Abbreviations

There are a number of techniques you can use to broaden your online search so that you can increase the number of answers retrieved.

The example of the search on stereospecific reactions of ketones (see Text Searching I) illustrated two of those techniques:

- use terms for only the main components of the search topic

We focused only on two broad components of the search: ketones and stereospecific or stereoselective reactions. Specific types of reactions or the term “reactions” were not incorporated as part of the search strategy.

- use truncation

Left and right truncation were used in the Basic Index to allow retrieval of words containing a common stem.

?KETONE? AND ?STEREO?

Other techniques for expanding the number of answers in word searches of the Basic Index of the CA file are discussed and illustrated in this section. The main general method for increasing the number of answers is to use more alternate terms for the same component of the search. The reason for using alternate terms is that when you do an online search, the system matches the term you enter with the term found in the records. So the more alternate terms you have, the greater the likelihood of retrieving answers.

Types of Words in Basic Index

In order to have a strategy for coming up with alternate terms in text searching, you need to be aware of what types of terms you are likely to encounter in the various fields of the Basic Index of the CA file.

To review, the Basic Index of the CA file contains words from:

- the title
- the supplementary terms (CA keywords)
- the Indexing Terms that consist of the Heading and the text phrase that follows it
- the abstract

What types of words are found in the Basic Index of the CA file? What are the implications for searching?

Variations in spelling

Author terminology may be used. You need to allow for variations in spelling.

TI **Fluorometric** gas analyzer

TI Online photoreaction and **fluorimetric** determination of diazepam

Singular and plural

Singular and plural words may be found.

ST controlled drug release polymer **membrane** iontophoresis

TI Polymer **membranes** on chemical semiconductor devices - their electrical influence on sensor characterization

Acronyms

Acronyms may be part of terminology in titles, indexing phrases, or abstracts. Acronyms may or may not be spelled out. Since you are already familiar with common acronyms in the field or subject matter, incorporate them in search profiles along with spelled out phrases.

TI Junction field-effect transistor formed in silicon carbide

ST junction field effect transistor silicon carbide; **FET**
junction silicon carbide

IT Transistors
(field-effect, junction, from silicon carbide)

IT 409-21-2, Silicon carbide (SiC), uses
(junction FETs from)

AB A junction **FET** is disclosed that comprises a bulk single-crystal SiC substrate having opposite 1st and 2nd surfaces, the substrate having a single polytype and having a concn. of suitable dopant atoms so as to make the substrate a 1st cond. type.

•
•
•

CAS Abbreviations

CAS Abbreviations are used in supplementary terms, index modifying phrases, and abstracts. You need to look them up in the booklet CAS Standard Abbreviations or find them by browsing records online.

- TI Mass spectral study of copper(II) pivalate
- ST copper pivalate volatilization analysis sublimation enthalpy; **dissocn** enthalpy dicopper dipivalate; **evapn** dicopper dipivalate vapor analysis
- IT 75-98-9D, Pivalic acid, copper complexes 7440-50-8D, Copper, pivalic acid complexes 28149-41-9
(**detn.** of, in copper pivalate-copper system vapor)
- IT 32276-73-6, Copper(II) pivalate
(volatilization species mass spectrometric **anal.** and sublimation enthalpy of)
- AB The volatilization of copper (II) pivalate was studied using the effusion method of Knudsen and mass spectrometry for gas phase **anal.** Sublimation also occurs, and the **satd.** vapor consists mostly of Cu₃L₆ (where L = Me₃CCO₂), but also small quantities of Cu₃L₃, Cu₂L₂, CuL, AND L. The enthalpy of sublimation of copper (II) pivalate was **calcd.** in **addn.** to the **dissocn.** enthalpy of Cu₂L₂.

Order of terms may vary

In records prior to 1997, CA Index headings may be inverted, i.e., the main concept may appear first followed by a comma and words further differentiating the heading. For example, the heading Chromatography may be followed by terms such as thin-layer to further describe the type of chromatography that is being used. You can find CA index headings by browsing answers online or by using the CA Index Guides that have cross-references to CA index headings.

- TI High-performance thin layer chromatography of sulfa drugs
- IT Chromatography, thin-layer
(high-performance, of sulfa drugs)

With the start of the 14th Collective Index Period (1997-2001), CAS refined many of its subject index headings and replaced inverted expressions or divided terms with natural word order index headings. For example, the heading Chromatography, thin-layer became Thin-layer chromatography and has been used in records starting in 1997.

Search Example

Let's illustrate the techniques for increasing number of answers in one search example.

Question: Find references on multiphoton dissociation of polyatomic molecules such as aromatic or heterocyclic compounds

Initial approach

Our initial approach is to break down the topic into main components and words that describe the main components of the topic. Under Concept 3 there are three alternate terms that may be used to search that concept.

Concept 1		Concept 2		Concept 3
MULTIPHOTON	AND	DISSOCIATION	AND	POLYATOMIC AROMATIC HETEROCYCLIC

Add synonyms

What kinds of alternate terms can we come up with by doing some preparation before starting this search? We can add appropriate synonyms such as the term highlighted below.

MULTIPHOTON	AND	DISSOCIATION	AND	POLYATOMIC AROMATIC HETEROCYCLIC
		PHOTODISSOCIATION		

Include CAS Abbreviations

If you look up your terms in the booklet CAS Standard Abbreviations, you can find the following abbreviations that need to be included for a comprehensive search:

MULTIPHOTON	AND	DISSOCIATION	AND	POLYATOMIC
		PHOTODISSOCIATION		HETEROCYCLIC
		DISSOCN		AROMATIC
		DISSOCNS		POLYAT
		PHOTODISSOCN		AROM
		PHOTODISSOCNS		

The easiest way to include CAS abbreviations in your searches is to first use the command SET ABBREVIATIONS ON. Then STN automatically checks to see if there are CAS abbreviations for any of your search terms and searches those abbreviations automatically. If you have SET PLURALS ON, you also automatically retrieve plural abbreviations, as well as plurals of other terms. For a list of terms that are monitored with SET ABBREVIATION, enter HELP ABBREVIATION in the CA file.

Use truncation

You can also use truncation to include terms with variable endings. Truncated terms retrieve abbreviations with SET ABBREVIATION ON.

```
MULTIPHOTON AND DISSOCIAT? AND POLYATOMIC
                PHOTODISSOCIAT? AROMATIC
                                   HETEROCYCLIC
```

The simplest way to execute this search is to search terms for one concept at a time, using the OR operator to combine alternate terms or synonyms. Then simply combine the L-numbers using the AND operator.

```
=> SET ABB ON PERM; SET PLURAL ON PERM
SET COMMAND COMPLETED

SET COMMAND COMPLETED

=> S MULTIPHOTON
    9158 MULTIPHOTON
     24 MULTIPHOTONS
L1  9162 MULTIPHOTON
      (MULTIPHOTON OR MULTIPHOTONS)

=> S DISSOCIAT? OR PHOTODISSOCIAT?
    53636 DISSOCIAT?
     7139 DISSOC
     4031 DISSOCS
    10926 DISSOC
      (DISSOC OR DISSOCS)
    22080 DISSOCD
     3886 DISSOCC
   114054 DISSOCN
     1156 DISSOCNS
   114545 DISSOCN
      (DISSOCN OR DISSOCNS)
   161103 DISSOCIAT?
      (DISSOCIAT? OR DISSOC OR DISSOCD OR
      DISSOCC OR DISSOCN)
    4472 PHOTODISSOCIAT?
     42 PHOTODISSOC
     15 PHOTODISSOCS
     57 PHOTODISSOC
      (PHOTODISSOC OR PHOTODISSOCS)
     229 PHOTODISSOCD
     42 PHOTODISSOCC
    9182 PHOTODISSOCN
     64 PHOTODISSOCNS
    9198 PHOTODISSOCN
      (PHOTODISSOCN OR PHOTODISSOCNS)
    9888 PHOTODISSOCIAT?
      (PHOTODISSOCIAT? OR PHOTODISSOC OR
      PHOTODISSOCD OR PHOTOD
      ISSOCC OR PHOTODISSOCN)
L2 167052 DISSOCIAT? OR PHOTODISSOCIAT?
```

=> S POLYATOMIC OR HETEROCYCLIC OR AROMATIC

3486 POLYATOMIC

144 POLYATOMICS

3579 POLYATOMIC

(POLYATOMIC OR POLYATOMICS)

5998 POLYAT

15 POLYATS

6006 POLYAT

(POLYAT OR POLYATS)

6752 POLYATOMIC

(POLYATOMIC OR POLYAT)

50631 HETEROCYCLIC

1030 HETEROCYCLICS

51132 HETEROCYCLIC

(HETEROCYCLIC OR HETEROCYCLICS)

108432 AROMATIC

5050 AROMATICS

110684 AROMATIC

(AROMATIC OR AROMATICS)

184476 AROM

9759 AROMS

189504 AROM

(AROM OR AROMS)

234127 AROMATIC

(AROMATIC OR AROM)

L3 281320 POLYATOMIC OR HETEROCYCLIC OR AROMATIC

=> S L1 AND L2 AND L3

L4 152 L1 AND L2 AND L3

After browsing some answers online, you may find additional words. Use the DISPLAY SCAN option for browsing of answers. Here's one answer retrieved by this search. This answer contains additional terms such as PHOTOLYSIS, PHOTOIONIZATION, and FRAGMENTATION.

CC	74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes) Section cross-reference(s): 73
TI	Highly efficient production of neutral carbon atoms in the ultraviolet ***multiphoton*** fragmentation of ***aromatic*** molecules
ST	***arom*** mol UV ***multiphoton*** ***dissocn***; photodecompn UV ***multiphoton*** benzene; fluorobenzene photolysis carbon atom formation; photoionization photolysis carbon atom formation
IT	Photolysis (UV, laser-induced, ***multiphoton*** , of benzene and its fluorinated and deuterated derivs., carbon atom formation in)
IT	Ionization, photo- (***multiphoton*** , of ***arom*** . mols., carbon atom formation in)
IT	Mass spectra (photoionization, of benzaldehyde and benzene derivs., at. carbon lines in)
IT	7440-44-0P, preparation (formation of, in UV ***multiphoton*** fragmentation of ***arom*** . mols.)
IT	71-43-2, reactions 100-52-7, reactions 392-56-3 462-06-6 1076-43-3 (photolysis of, UV ***multiphoton*** , carbon atom formation in)

Additional terms might be added as alternatives for the second concept in the topic.

MULTIPHOTON AND DISSOCIATE? AND POLYATOMIC
PHOTODISSOCIAT? AROMATIC
HETEROCYCLIC

PHOTOLYSIS
FRAGMENTATION
PHOTOFRAGMENTATION
PHOTOIONIZATION

The easiest way to revise the search is to redo the search for the second concept by using the OR operator to combine additional terms with the L-number from the initial search. Next you can combine the appropriate L-numbers by the AND operator.

=> S MULTIPHOTON

•
•
L1 9162 MULTIPHOTON
(MULTIPHOTON OR MULTIPHOTONS)

=> S DISSOCIAT? OR PHOTODISSOCIAT?

•
•
L2 167052 DISSOCIAT? OR PHOTODISSOCIAT?

=> S POLYATOMIC OR HETEROCYCLIC OR AROMATIC

•
•
L3 281320 POLYATOMIC OR HETEROCYCLIC OR AROMATIC

=> S L1 AND L2 AND L3

L4 152 L1 AND L2 AND L3

=> S L2 OR PHOTOLYSIS OR FRAGMENT? OR PHOTOFRAGMENT? OR PHOTOIONIZ?

66570 PHOTOLYSIS
215752 FRAGMENT?
2627 PHOTOFRAGMENT?
17603 PHOTOIONIZ?
L5 441138 L2 OR PHOTOLYSIS OR FRAGMENT? OR PHOTOFRAGMENT? OR PHOTOIONIZ?

=> S L1 AND L5 AND L3

L6 266 L1 AND L5 AND L3

Lesson 4 Text Searching II: Strategies to Decrease Number of Answers

- Objective:** At the end of this lesson the student will:
- be able to use text searching techniques for decreasing the number of answers.
 - be able to use techniques for obtaining more precise results.

Topics: Proximity operators
Searching more specific terms

References: Guide to Commands

In this section we'll discuss and illustrate two techniques for decreasing number of answers and obtaining more precise results in text searches. Proximity operators may be used to specify the relative closeness of search terms to each other. In addition, more specific search terms may be used to obtain fewer and more precise answers.

Proximity Operators

So far we have discussed and illustrated use of Boolean operators to combine terms for main aspects of search questions. In addition to Boolean operators, proximity operators may be used. Proximity operators are useful in making your search more precise and restricting the number of answers. Proximity operators are used to specify the relative closeness of search terms to each other. The following proximity operators are available in the CA File on STN:

- (W) - terms are adjacent in the specified order
- (A) - terms are adjacent in either order
- (S) - terms occur within the same subfield in any order
- (L) - terms occur within the same field or information unit

(W) operator

The (W) operator is used to specify that terms have to be adjacent to each other, in the specified order.

```

=> S HIGH(W)PERFORMANCE
    1517809 HIGH
    183153 PERFORMANCE
L1 55747 HIGH(W)PERFORMANCE

=> D L1 HIT 1
L1 ANSWER 1 OF 55747 CA COPYRIGHT 1994 ACS
IT Chromatography, column and liquid
   ( ***high*** - ***performance*** , in detn. of pyridinolines)

```

Note that (W) may be used with the same terms.

```

=> S CARBON(W)CARBON
    488675 CARBON
    488675 CARBON
L2   7126 CARBON(W)CARBON
  
```

```

=> D HIT L2 1
  
```

```

L2 ANSWER 1 OF 7126 CA COPYRIGHT 1994 ACS
AB A miniaturized electrochem. detector cell is described specifically for microbore liq. chromatog.
   (column internal diams. of 1 mm or less). The new cell is, in effect, an end-fitting for the microbore
   column. The column joins the injection valve and the detector with no extra column dead vol. A
   centrosym. radial flow thin-layer geometry is used with a stainless steel auxiliary electrode and a ref.
   electrode without a liq. junction (salt bridge). A variety of working electrodes including glassy
   ***carbon***, ***carbon*** composites, fold, and platinum can be used, depending on the application.
   The working electrodes are disks of 1-6 mm diam., Improved performance for flow rates of
   .ltoreq. 200 .mu. l/min is achieved.
  
```

Implied (W)

If you enter a phrase in the Basic Index of the CA file, the system automatically inserts the (W) operator.

```

=> S GENETIC ENGINEERING
    220764 GENETIC
    33899 ENGINEERING
L3   4259 GENETIC ENGINEERING
      (GENETIC(W)ENGINEERING)
  
```

You can separate words in a phrase by blanks or you can use punctuation.

```

=> S NUCLEON-NUCLEON INTERACTION
    25146 NUCLEON
    25146 NUCLEON
    404631 INTERACTION
L4   688 NUCLEON-NUCLEON INTERACTION
      (NUCLEON(W)NUCLEON(W)INTERACTION)
  
```

(A) operator

When you use the (A) operator, terms have to be adjacent, but they may be in either order.

```

=> S CHROMATOG?(A)GAS
    406097 CHROMATOG?
    658176 GAS
L5   110537 CHROMATOG?(A)GAS
  
```

Answers:

- TI ***Gas*** - ***chromatography*** method for analysis of alkylphenols
- IT ***Chromatography*** , ***gas***
(for sepn. and detn. of chlorobenzenes and PCBs and chlorophenols using silica gel fractionation and electron capture detection)

(S) operator

When you use the (S) operator in the CA File, you specify that the search terms must occur within the same subfield in any order i.e., same title, same supplementary term phrase, same index entry, or the same abstract sentence.

=> S GAS (S) CHROMATOG? (S) PHENOL#

658176 GAS
406097 CHROMATOG?
119326 PHENOL#

L6 1596 GAS (S) CHROMATOG? (S) PHENOL#

Answers:

- TI ***Gas*** ***chromatographic*** analysis for ***phenol***
in the products of vapor-phase hydrolysis of chlorobenzene
- ST ***gas*** ***chromatog*** detn ***phenol*** ;
chlorophenol vapor phase hydrolysis analysis phenol
- IT 1319-77-3, Cresol
(as internal std. in ***phenol*** detn. by ***gas***
chromatog .)
- AB A method has been developed to detect petroleum products and volatile ***phenols*** that included extn. evapn. of extractant, and ***gas*** - ***chromatog***. detection of the analyzed components in the conc. The conditions for selective extn. of petroleum products and phenols from water samples when present together have been established. The method is recommended for sanitary and toxicol. anal. of the raw and treated sewage.

The (L) operator is broader than the (S) operator. The (L) operator in the Basic Index of the CA file requires that terms must occur in the same title, same supplementary term field, same index entry, or the same abstract.

Search Example

Let's illustrate use of proximity operators in a text search.

Using (W) or implied (W)

Question: Find references on oxidation-resistant coatings used for carbon-carbon composites in a hot atmospheric environment

This search question can be broken down into three main concepts that can be expressed by the following set of terms. CAS abbreviation for OXIDATION is used. Carbon may be spelled out or it may appear as a symbol. The (W) operator is needed to get retrieval of answers containing the phrase CARBON-CARBON or C-C in the Basic Index.

Concept 1	Concept 2	Concept 3
OXIDATION OXIDN	CARBON-CARBON C-C	COMPOSITES

The search is executed by searching one concept at a time and combining L-numbers. The system searches phrases in the Basic Index by automatically inserting the (W) operator.

```

=> S OXIDAT? OR OXIDN
    232431 OXIDAT?
    385790 OXIDN
L1  455619 OXIDAT? OR OXIDN

=> S CARBON-CARBON OR C-C
    488675 CARBON
    488675 CARBON
    7126 CARBON-CARBON
        (CARBON(W)CARBON)
    1159527 C
    1159527 C
    24848 C-C
        (C(W)C)
L2  29701 CARBON-CARBON OR C-C

=> S COMPOSITE#
L3  121390 COMPOSITE#

=> S L1 AND L2 AND L3
L4  285 L1 AND L2 AND L3

```

Answers show that terms for the three concepts in the search may occur in any of the fields of the Basic Index.

```

TI  In-depth ***oxidation*** distribution of reinforced
    ***carbon*** - ***carbon*** material
AB  Mass-loss rate distribution at 1000-3010° F and O 0.01-1.0 atm through the reinforced ***C***-
    ***C*** ***C*** material is calcd. by using a math. model which describes O2 diffusion and reaction
    rates within material pores. Results are consistent with photomicrographs and coating adherence
    for oxidized test specimens. Both temp. and pressure affect the mass-loss distribution. Substrate
    mass-loss distribution is relatively uniform at low temps. and high pressure but becomes in-
    creasingly concd. at the coating-substrate interface as temp. increases and pressure decreases.
ST  carbon ***composite*** ***oxidn*** distribution
IT  7440-44-0, properties
    ( ***composite***, ***oxidn***. distribution of)

```

Using the (S) operator

The (S) operator may be used to restrict the answers to those in which words expressing the main components of the search are present in the same subfield. In the CA File, (S) restricts to the same title, same supplementary term phrase, the same index entry, or the same abstract sentence.

If you have already done a search and have L-numbers for the main components of the search statement, you can simply use (S) with the L-numbers.

In this example, SCAN HIT format is used to show only the fields in which the hit terms occurred.

```

=> S L1(S)L2(S)L3
L5      199 L1(S)L2(S)L3

=> D SCAN HIT L5

L5      199 ANSWERS CA COPYRIGHT 1994 ACS
TI      Basic thermodynamic consideration related to ***oxidation***
        protection of structural ***carbon*** - ***carbon*** ***composites***
IT      ***Oxidation***
        (of ***carbon*** - ***carbon***
        ***composites***, control of, thermodyn. considerations in)
HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0

```

Adding more precise terms

To restrict the number of answers, you can also add terms for other “concepts” implied by the search question. In this example, we could AND the term for COATING or COATINGS, since this is also part of the search question.

```

=> S L5 AND COATING?
      358687 COATING?
L6      117 L5 AND COATING?

```

To decrease the number of answers even further, you can also add more specific terms to your profile. In this example, terms such as HIGH TEMP? (for high temperature or high temp.) are highly specific terms.

```
=> S L6 AND HIGH TEMP?  
    1517809 HIGH  
    1491308 TEMP?  
      159217 HIGH TEMP?  
        (HIGH(W)TEMP?)  
L7      38 L6 AND HIGH TEMP?
```

The last refinement drastically decreased the number of answers to those that must have HIGH TEMPERATURE or HIGH TEMP. in the Basic Index fields.

```
TI Protection of carbon-carbon composites in ***high***  
   ***temperature*** oxidizing environments  
IT ***Coating*** materials  
   ( ***oxidn*** .- ***resistant*** , silicon carbide, on  
   ***carbon*** - ***carbon*** ***composites*** ,  
   characterization of)
```

Lesson 5 Searching Author Names

Objectives: At the end of this lesson the student will:
be able to search for author names in the CA File.

Topics: EXPAND in Author Name (/AU) index
Searching Author Names

References: Database summary sheets for CA and LCA files

Author Names

Author names are searched in the Author Name field /AU. Author names are inverted on STN, that is, the last name is first, followed by first name, initials, etc., and they must be searched in this format.

In CAS files, names are taken from the original document. Consequently, the exact form of entry of the name may vary, depending on how the author is cited on a particular publication. The first and middle names may be given in full, or either or both may be given as initials. The middle name or initial may not be present in all entries. For a given document, up to nine author names are displayable and searchable in the CA File. When a document has more than nine author names, the first nine are displayed followed by the abbreviation “et al” that may be searched. Author names are displayed in the order in which they appear in the original document, separated by semicolons.

Always EXPAND on an author’s name before you search for it. You may then search on the E-numbers that appear to correspond to their name. When you use the EXPAND command be sure to include the space before the first name or initial.

You may also use truncation to retrieve all forms of an author’s name, after you check them using the EXPAND command.

```

=> E CHURCHILL M R/AU
E1      2  CHURCHILL M J/AU
E2      1  CHURCHILL M P/AU
E3     10 —>CHURCHILL M R/AU
E4     11  CHURCHILL MAIR E A/AU
E5      1  CHURCHILL MAIR ELISA ANNABELLE/AU
E6      9  CHURCHILL MARGARET A/AU
E7      4  CHURCHILL MARK E/AU
E8      1  CHURCHILL MARK EDWARD/AU
E9      1  CHURCHILL MARY S/AU
E10     1  CHURCHILL MELISSA J/AU
E11     1  CHURCHILL MELVIN R/AU
E12     1  CHURCHILL MELVYN/AU

```

=> E

E13	127	CHURCHILL MELVYN R/AU
E14	287	CHURCHILL MELVYN ROWEN/AU
E15	1	CHURCHILL MILO A/AU
E16	2	CHURCHILL MONIQUE/AU
E17	5	CHURCHILL MONIQUE C/AU
E18	33	CHURCHILL NORMA D/AU
E19	2	CHURCHILL P/AU
E20	2	CHURCHILL P A/AU
E21	1	CHURCHILL P C/AU
E22	11	CHURCHILL P F/AU
E23	1	CHURCHILL PAUL/AU
E24	15	CHURCHILL PAUL C/AU

=> S E3 OR E11-E14

	10	"CHURCHILL M R"/AU
	1	"CHURCHILL MELVYN R"/AU
	1	"CHURCHILL MELVYN "/AU
	127	"CHURCHILL MELVYN R"/AU
	287	"CHURCHILL MELVYN ROWEN "/AU
L1	426	"CHURCHILL M R"/AU OR ("CHURCHILL MELVYN"/AU OR "CHURCHILL MELVYN R"/AU OR "CHURCHILL MELVYN ROWEN"/AU)

If the last name contains punctuation, e.g. O'Neil, replace the punctuation with a blank, i.e., O NEIL.

=> E O NEIL/AU

E1	8	O NEALL JOHN S/AU
E2	1	O NEEL T R/AU
E3	0	—> O NEIL/AU
E4	1	O NEIL B/AU
E5	2	O NEIL B D/AU
E6	4	O NEIL B W/AU
E7	9	O NEIL BELL CHRISTOPHER/AU
E8	2	O NEIL BERT H/AU
E9	1	O NEIL BRAIN H/AU
E10	6	O NEIL BRIAN J/AU
E11	2	O NEIL BRIAN W/AU
E12	1	O NEIL C/AU

If the last name contains a prefix, e.g. Van der Beek, look for it both with and without blanks. Enter SET EXPAND CONTINUOUS to allow the E-numbers to continue with each EXPAND command in the current online session.

```
=> SET EXPAND CONTINUOUS
```

```
SET COMMAND COMPLETED
```

```
=> E VAN DER BEEK/AU
```

```
E1 1 VAN DER BECK MARTEN H B/AU
E2 5 VAN DER BECK ROLAND R/AU
E3 0 ->VAN DER BEEK/AU
E4 9 VAN DER BEEK A/AU
E5 1 VAN DER BEEK ADRIAAN/AU
E6 1 VAN DER BEEK BEN J/AU
E7 1 VAN DER BEEK C/AU
E8 22 VAN DER BEEK C J/AU
E9 4 VAN DER BEEK C P/AU
E10 1 VAN DER BEEK CEES P/AU
E11 1 VAN DER BEEK D/AU
E12 1 VAN DER BEEK DOUWE CHRISTIAAN/AU
```

```
=> E VANDERBEEK/AU
```

```
E13 1 VANDERBECK N F/AU
E14 0 VANDERBECK S/AU
E15 0 ->VANDERBEEK/AU
E16 1 VANDERBEEK JAMES L/AU
E17 2 VANDERBEEK R G/AU
E18 1 VANDERBEEK RANDALL B /AU
E19 1 VANDERBEEKEN Y/AU
E20 1 VANDERBEEKEN Y E/AU
E21 1 VANDERBEEKEN YVES/AU
E22 1 VANDERBEEKEN YVES E/AU
E23 1 VANDERBEEKEN YVES EDUOARD/AU
E24 1 VANDERBEKE E/AU
```

```
=> E VANDER BEEK/AU
```

```
E25 10 VANDER AUWERA MAHIEU A/AU
E26 1 VANDER AUWERA MAHIEU A M/AU
E27 0 ->VANDER BEEK/AU
E28 2 VANDER BEEK LEO C/AU
E29 1 VANDER BEKE B/AU
E30 2 VANDER BEKE R/AU
E31 1 VANDER BEKEN R/AU
E32 1 VANDER BEND HERMAN T/AU
E33 1 VANDER BERG DON A /AU
E34 5 VANDER BORGHT P/AU
E35 1 VANDER BORGHT T/AU
E36 1 VANDER BORGHT THIERRY/AU
```

The German letters ä, ö, ü, are usually converted to ae, oe, ue. However, check both spellings of a name with the EXPAND command to verify what forms are posted.

=> E STOEFFLER M/AU

E1	1	STOEFFLER GEORGE/AU
E2	1	STOEFFLER GOERG/AU
E3	0	—> STOEFFLER M/AU
E4	5	STOEFFLER MEILICKE M/AU
E5	43	STOEFFLER MEILICKE MARINA/AU
E6	1	STOEFFLER R C/AU
E7	1	STOEFFLER RICHARD CLARK/AU
E8	1	STOEFFLER ULYSSES G/AU
E9	7	STOEFFLER W/AU
E10	1	STOEFFLER WERNER/AU
E11	1	STOEFS J A/AU
E12	1	STOEFS JEAN PIERRE/AU

=> E STOFFLER M/AU

E13	2	STOFFLER G/AU
E14	6	STOFFLER GEORG/AU
E15	0	—> STOFFLER M/AU
E16	3	STOFFLER MEILICKE MARINA/AU
E17	1	STOFFMACHER JOSEPH/AU
E18	2	STOFFNER D/AU
E19	14	STOFFOLANO J G JR/AU
E20	6	STOFFOLANO JOHN G JR/AU
E21	4	STOFFREGEN ANDREA/AU
E22	1	STOFFREGEN ANGELA/AU
E23	5	STOFFREGEN C/AU
E24	2	STOFFREGEN J/AU

Some Spanish names may contain two family names, i.e., father's and mother's names. In those cases, EXPAND under both names, for example, ALVAREZ or SANCHEZ ALVAREZ.

=> E ALVAREZ FRAN/AU

E1	2	ALVAREZ FLORIA L/AU
E2	1	ALVAREZ FORNARIS MIGUEL/AU
E3	0	→ ALVAREZ FRAN/AU
E4	8	ALVAREZ FRANCIS/AU
E5	32	ALVAREZ FRANCISCO/AU
E6	16	ALVAREZ FRANCISCO J/AU
E7	1	ALVAREZ FRANCISCO JAVIER/AU
E8	10	ALVAREZ FRANCISCO M/AU
E9	1	ALVAREZ FRANCISCO MARTIN/AU
E10	21	ALVAREZ FRANCISCO S/AU
E11	1	ALVAREZ FRANCISCO SANCHEZ/AU
E12	3	ALVAREZ FRANCISCO V/AU

=> E ALVAREZ F S/AU

E13	3	ALVAREZ F OCTAVIO/AU
E14	2	ALVAREZ F P/AU
E15	1	→ ALVAREZ F S/AU
E16	1	ALVAREZ F V/AU
E17	1	ALVAREZ FALCON J M/AU
E18	1	ALVAREZ FDEZ REPRESA J/AU
E19	1	ALVAREZ FERNADEZ A/AU
E20	2	ALVAREZ FERNANDA/AU
E21	1	ALVAREZ FERNANDA B/AU
E22	1	ALVAREZ FERNANDE J/AU
E23	1	ALVAREZ FERNANDEZ/AU
E24	4	ALVAREZ FERNANDEZ ANGEL/AU

=> E SANCHEZ ALVAREZ/AU

E25	1	SANCHEZ ALONSO R M/AU
E26	1	SANCHEZ ALVARADO PANFILO/AU
E27	0	→ SANCHEZ ALVAREZ/AU
E28	1	SANCHEZ ALVAREZ EMILIO/AU
E29	3	SANCHEZ ALVAREZ FRANCISCO/AU
E30	2	SANCHEZ ALVAREZ INSUA A/AU
E31	1	SANCHEZ ALVAREZ INSUA ALBERTO/AU
E32	1	SANCHEZ ALVAREZ J L/AU
E33	2	SANCHEZ ALVAREZ M/AU
E34	1	SANCHEZ ALVAREZ MARCELA/AU
E35	2	SANCHEZ ALVAREZ RAFAEL/AU
E36	5	SANCHEZ ALVARO/AU

In general, consider and check variations on any author name. What other variations could you consider in this case?

=> E NGUYEN DINH N/AU

E1	1	NGUYEN DINH LAN/AU
E2	2	NGUYEN DINH LY/AU
E3	0	→ NGUYEN DINH N/AU
E4	2	NGUYEN DINH NGHI/AU
E5	6	NGUYEN DINH NGO/AU
E6	28	NGUYEN DINH NGUYEN/AU
E7	4	NGUYEN DINH P/AU
E8	6	NGUYEN DINH PHUC/AU
E9	5	NGUYEN DINH PHUNG/AU
E10	2	NGUYEN DINH QUYEN/AU
E11	3	NGUYEN DINH SOA/AU
E12	1	NGUYEN DINH T/AU

=> E DINH NGUYEN N/AU

E13	1	DINH NGOC LAM/AU
E14	1	DINH NGOC XUAN/AU
E15	4	→ DINH NGUYEN N/AU
E16	1	DINH NINA/AU
E17	5	DINH PAUL C/AU
E18	1	DINH PAUL CHARLES/AU
E19	1	DINH PHAM LIEN/AU
E20	2	DINH PHAM THAI/AU
E21	1	DINH PHAM VAN/AU
E22	2	DINH Q/AU
E23	1	DINH QUAN TUAN/AU
E24	1	DINH QUOC HUY/AU

=> E DINH N/AU

E25	2	DINH LIEN PHAM/AU
E26	1	DINH MAN VO/AU
E27	0	→ DINH N/AU
E28	2	DINH N D/AU
E29	7	DINH N N/AU
E30	2	DINH NGOC B/AU
E31	4	DINH NGOC DANG/AU
E32	1	DINH NGOC LAM/AU
E33	1	DINH NGOC XUAN/AU
E34	4	DINH NGUYEN N/AU
E35	1	DINH NINA/AU
E36	5	DINH PAUL C/AU

Lesson 6 Refining Searches

Objectives: At the end of this lesson the student will:

- be able to refine search results by searching publication year.
- be able to refine search results by searching language of the original document.
- be able to refine search results by searching the types of publications.

Topics: Searching publication year
Searching language of the original publication
Searching for types of documents

References: Database summary sheets for CA and LCA

After you conduct a search for references on a particular topic, you might want to restrict answers by parameters that are not subject-specific, such as publication year of the documents, the type of publication, or the language of the original publication. These are the most commonly used parameters for limiting answers, and they will be discussed in this lesson.

Publication Year

Publication year of the citation is searched in the /PY index. Publication year is specified as a 4-digit year, e.g., 1990. You may search for specific years or ranges of years. For example, to find only documents published in a given year, for example, 1994, add 1994/PY or PY=1994 to your search query.

S PY=1994

To find documents published in a range of years, for example, 1991-1993, add 1991-1993/PY to your search query.

S 1991-1993/PY

To find documents published after a certain year, for example, after but not including 1992, add PY>1992 to your search query.

S PY>1992

To find documents published in or after a certain year, for example, 1993 and beyond, add PY>=1993 to your search query.

S PY>=1993

Finally, to find documents published earlier than a particular year, for example earlier than 1968, and not including 1968, search PY<1968.

S PY<1968

If you want to restrict search results to a specific publication year or a range, combine the L-number for the search with the appropriate search term in the /PY index.

```

=> S CYSTIC FIBROSIS
    3981 CYSTIC
    7110 FIBROSIS
L1  2740 CYSTIC FIBROSIS
      (CYSTIC(W)FIBROSIS)

=> S L1 AND PY>=1993
    623245 PY>=1993
L2    462 L1 AND PY>=1993
  
```

Document Type

You may restrict the results of a search to certain kinds of publications by searching document types in the /DT field. The following document types may be searched in DT index:

- B/DT or BOOK/DT
- P/DT or PATENT/DT
- C/DT or CONFERENCE/DT
- D/DT or DISSERTATION/DT
- J/DT or JOURNAL/DT
- T/DT or REPORT/DT
- GR/DT or GENERAL REVIEW/DT or REVIEW/DT

The following example shows a search for reviews on cystic fibrosis published since 1933.

```

=> S CYSTIC FIBROSIS
    3981 CYSTIC
    7110 FIBROSIS
L1  2740 CYSTIC FIBROSIS
      (CYSTIC(W)FIBROSIS)

=> S L1 AND PY>=1993 AND REVIEW/DT
    623245 PY>=1993
    973977 REVIEW/DT
L4    65 L1 AND PY>=1993 AND REVIEW/DT

=> D
L4  ANSWER 1 OF 65 CA COPYRIGHT 1994 ACS
AN  121:32067 CA
TI  ***Cystic*** ***fibrosis***
AU  Aoki, Takahisa
CS  Cancer Institute., Japanese Found. Cancer Res., Tokyo, 170, Japan
SO  Jikken Igaku (**1994**), 12(6), 790-1
    CODEN: JIIGEF; ISSN: 0288-5514
DT  Journal; ***General Review***
LA  Japanese
  
```

Language

Language of the original document is searched in the /LA index. Usually a search in the language field is combined with other search terms to restrict results to just those documents published in that language.

The following search is for reviews on cystic fibrosis published in English.

=> S CYSTIC FIBROSIS AND REVIEW/DT AND ENGLISH/LA

```

3981  CYSTIC
7110  FIBROSIS
2740  CYSTIC FIBROSIS
      (CYSTIC(W)FIBROSIS)
973977 REVIEW/DT
6955368 ENGLISH/LA
L6      287  CYSTIC FIBROSIS AND REVIEW/DT AND ENGLISH/LA

```

=> D 4 BIB

```

L6  ANSWER 4 OF 287 CA COPYRIGHT 1994 ACS
AN  121:6184 CA
TI  Neutrophil elastase in ***cystic*** ***fibrosis*** patients
AU  Doring, G.; Frank, F.; Bellon, G.
CS  Clin. Med. Infant. A, Cent. Hosp. Lyon-Sud, Pierre-Benite, 69310, Fr.
SO  Biol. Porspect., C.R. Colloq. Pont-a-Mousson, 8th (1993), Meeting Date 1992, 261-4.
     Editor(s): Galteau, Marie-Madeline. Publisher: Libbey, Montrouge, Fr.
     CODEN: 59QGAM
DT  Conference; ***General Review***
LA  ***English***

```

Lesson 7 Substance Searching

Objectives: At the end of this lesson the student will:

- know about CAS Registry Numbers and why they are needed for specific substance searching.
- be able to use three techniques for finding CAS Registry Numbers in the Registry File by searching: chemical names, molecular formula, chemical name segments.
- be able to find references for the preparation of a specific compound.

Topics: CAS Registry Numbers
Searching Registry File by chemical name,
molecular formula and name segments
Finding references on preparation of a specific
compound

References: Database summary sheet for the Registry File
Quick Reference Card: How to Search for CAS Registry Numbers
Registry File Dictionary searching manual

CAS Registry Numbers

The key to finding references on a specific substance in the CA file is the CAS Registry Number for that substance. CAS Registry Numbers are unique identifiers for chemical compounds. CA and LCA records contain CAS Registry Numbers for all the substances that have been indexed by CAS from a particular document.

The CAS Registry Numbers are displayed in the IT (Index Terms) field.

IT 63160-13-4
(oxidn. by, of enolates)

CAS Registry Numbers are searched in the Basic Index of the CA file.

So, in general, the most effective (most comprehensive and most precise) strategy for finding information on a particular substance in the CAS database is to search the CAS Registry Number for that substance. In this section we'll show how to find CAS Registry Numbers and how to search them in order to find references in the CA file.

Finding CAS Registry Numbers

You may find CAS Registry Numbers in various printed sources such as catalogs (e.g., Aldrich). Printed publications from Chemical Abstracts Service include CAS Registry Numbers. For example, the CA Index Guide contains many cross-references from common names to CA Index names and CAS Registry Numbers. The CA Formula Index provides CA Index Names and CAS Registry Numbers for substances with a particular molecular formula. The CA Chemical Substance Index includes CA index names with the corresponding CAS Registry Numbers.

You can also search for CAS Registry Numbers online on STN in the Registry File.

Finding References to Specific Substances

The Registry File contains substance information for over 13 million records for substances. You can search such information as common or CA Index names, chemical name segments, molecular formulas, structures etc.

For practice searching, the LREGISTRY File may be used. LREGISTRY contains all the substances indexed in the LCA documents. The substance information for a particular compound in LREGISTRY is the same as in the Registry File.

Once you find the CAS Registry Number, you can search it in the CA File to obtain references in which that substance was indexed.

There are basically two approaches to searching for references on a particular substance. If you already have the CAS Registry Number, enter it in the Basic Index of the CA file and you obtain all the references in which this particular substance was indexed.

The other approach is to find the CAS Registry Number in the Registry File and transfer it to the CA file.

Several examples of how to find CAS Registry Numbers in the Registry File will be shown to illustrate the basic techniques that can be used, depending on what type of information you have about the substance.

Searching Registry

Searching Chemical Names

The Chemical Name (/CN) index in the Registry File contains all types of names for substances: CA index names, IUPAC names, other names that CAS encountered in the literature such as commonly used names or trade names.

Only complete names of chemical compounds are searched in the Chemical Name field. To search the name, follow the name with the field code /CN. It's always a good idea to check with the EXPAND command if the name that you have is present in the index.

Make sure that you include any spaces or other punctuation. To EXPAND on a name, follow the name with /CN to tell the system that you want to check the name in the Chemical Name index. Using the EXPAND command in the Registry file is useful to verify the name or to find related compounds.

You can search the E-number obtained in EXPAND.

```

=> FILE REGISTRY
=> E FENTANYL/CN
E1  1  FENTANEST/CN
E2  1  FENTANIL/CN
E3  1  →FENTANYL/CN
E4  1  FENTANYL CITRATE/CN
E5  1  FENTANYL CITRATE MIXTURE WITH DROPERIDOL AND ACEPROMAZ
    INE MALEATE AND ATROPINE SULFATE/CN
E6  1  FENTANYL CITRATE-DROPERIDOL MIXT./CN
E7  1  FENTANYL CITRATE-DROPERIDOL-ACEPROMAZINE MALEATE-ATROP
    INE SULFATE MIXTURE/CN
E8  1  FENTANYL-DROPERIDOL MIXT./CN
E9  1  FENTANYL-PENTOTHAL MIXT./CN
E10 1  FENTANYL-XYLAZINE MIXT./CN
E11 1  FENTAPTON/CN
E12 1  FENTATHIENIL/CN

=> S E3
L1  1  FENTANYL/CN

```

You can display the information about a substance in the Registry File. The IDE format shows all substance identifying information. Other formats are listed on the Registry File summary sheet. You can easily display any field, for example, RN to see just the CAS Registry Number for the substance.

Notice some of the fields present in Registry File records:

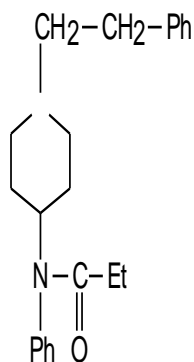
- RN - CAS Registry Number that identifies the substance
- CN - any type of chemical name that CAS has encountered in the literature as well as the CA index names.
- MF - molecular formula
- LC - locator field; contains a list of files in which this CAS Registry Number appears

The structure diagram is displayed. You may display the structure on any type of terminal or personal computer you have. In this example, the structure is shown as it appears on a graphics terminal.

Notice that the HIT name, i.e., the name that caused the retrieval, is highlighted by asterisks.

=> **D L1 1 IDE**

L1 ANSWER 1 OF 1 COPYRIGHT 1994 ACS
 RN 437-38-7 REGISTRY
 CN Propanamide, N-phenyl-N-[1-(2-phenylethyl)-4-piperidiny]- (9CI)
 (CA INDEX NAME)
 OTHER CA INDEX NAMES:
 CN Propionanilide, N-(1-phenethyl-4-piperidyl)- (7CI, 8CI)
 OTHER NAMES:
 CN 1-Phenethyl-4-(N-phenylpropionamido)piperidine
 CN 1-Phenethyl-4-N-propionylanilinopiperidine
 CN Fentanest
 CN Fentanil
 CN ***Fentanyl***
 CN Phentanyl
 CN R 4263
 FS 3D CONCORD
 DR 80832-90-2
 MF C22 H28 N2 O
 CI COM
 LC STN Files: ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS, CA, CAOLD,
 CAPREVIEWS, CEN, CHEMLIST, CIN, CJACS, CSNB, DRUGNL, EMBASE,
 HODOC*, HSDB*, IPA, MEDLINE, MSDS-OHS, MSDS-SUM, PHAR, PNI,
 RTECS*, USAN
 (*File contains numerically searchable property data)
 Other Sources: EINECS**, WHO
 (**Enter CHEMLIST File for up-to-date regulatory information)



1264 REFERENCES IN FILE CA (1967 TO DATE)
 46 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
 20 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

L-number crossover from Registry to CA

Once you do a search in the Registry File, you can search the L-number in the CA File, without having to type the CAS Registry Number.

The following example shows this crossover of an L-number from Registry to CA. The HIT format is used in the CA file to show just the index entry containing the hit search term, i.e., the CAS Registry Number for fentanyl.

```

=> FILE REGISTRY

=> S FENTANYL/CN
L1      1 FENTANYL/CN

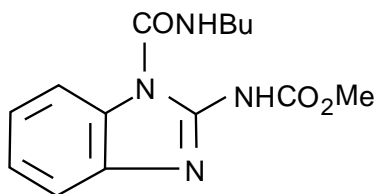
=> FILE CA

=> S L1
L2      1264 L1

=> D L2 HIT 550
L2 ANSWER 550 OF 1264 CA COPYRIGHT 1994 ACS
IT  57-27-2, biological studies ***437-38-7***
    (cardiovascular and metabolic effects of, in heart-lung preps.)
  
```

Finding CAS Registry Number when you have a molecular formula and name fragments

Question: Find CAS Registry Number for the compound with the following structure:



In this case we have a structure diagram for which we might be able to generate a name. If we have a name, we could do a Chemical Name search in the /CN field to find the CAS Registry Number. However, it may be easier to generate a molecular formula from the structure. If you have access to the printed CA Formula Index, you could find CA Index Names and CAS Registry Numbers there. In this example, we'll use the Registry File online to search the molecular formula first.

Molecular formula /MF

The first step is to calculate the molecular formula and arrange the elements in Hill order. For carbon-containing compounds, the Hill order means that carbons are listed first, hydrogens are listed next, and all other elements are then listed in alphabetical order. For compounds that do not contain carbon, simply arrange the elements in alphabetical order and indicate the number of each element.

EXPAND on the molecular formula followed by /MF to indicate that you want the molecular formula index. EXPAND is useful to verify the search term, find the number of compounds with that search term, and to see related molecular formulas.

In this example, EXPAND on the molecular formula showed that there are many substances with that molecular formula. Consequently, further refining of the answers needs to be done.

```

=> FILE REGISTRY

=> E C14H18N4O3/MF
E1      1   C14H18N4O2TL/MF
E2      1   C14H18N4O2ZR/MF
E3     248 → C14H18N4O3/MF
E4      1   C14H18N4O3.(C2H4O)NC15H24O/MF
E5      1   C14H18N4O3.(CH2O)X/MF
E6      1   C14H18N4O3.1/2CL4PT.H/MF
E7      1   C14H18N4O3.1/2H2O4S/MF
E8      1   C14H18N4O3.2C2H6O3S/MF
E9      1   C14H18N4O3.2C7H3IN2O3/MF
E10     1   C14H18N4O3.2C7H6O2/MF
E11     3   C14H18N4O3.2CLH/MF
E12     3   C14H18N4O3.BRH/MF

```

Name fragments

To reduce the number of answers from the molecular formula /MF alone, combine the molecular formula search with name fragments in the Basic Index of the Registry File.

```

=> S E3 AND BUTYL
      248 C14H18N4O3/MF
      526169 BUTYL
L1      28 C14H18N4O3/MF AND BUTYL

=> S L1 AND AMINO AND METHYL
      1927517 AMINO
      6665678 METHYL
L2      10 L1 AND AMINO AND METHYL

```

When you have a reasonably small answer set, displaying of answers may be more effective than adding more search terms.

The DISPLAY SCAN option may be used if you just want to evaluate the answers. DISPLAY SCAN in Registry provides the CA index name, molecular formula, and structure diagram for each substance. Answers are not labeled and CAS Registry Numbers are not provided.

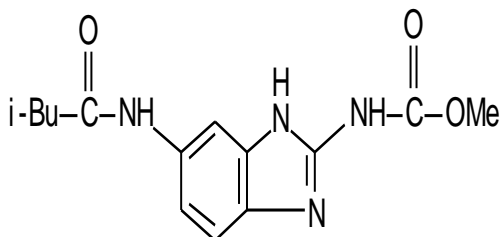
In this example, since we need to find the CAS Registry Number for the structure, we display the RN field (CAS Registry Number) along with the Index Name (IN) and the structure diagram (STR).

=> D RN IN STR 1-10

L2 ANSWER 1 OF 10 COPYRIGHT 1994 ACS

RN 125705-88-6 REGISTRY

IN ***Carbamic acid, [5-[(3-methyl-1-oxobutyl)amino]-1H-benzimidazol-2-yl]-, methyl ester (9CI)***

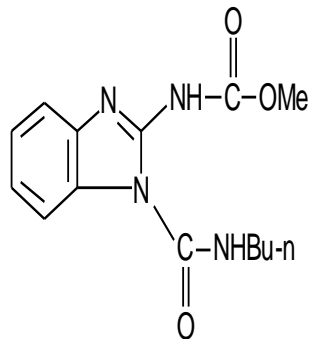


•
•

L2 ANSWER 10 OF 10 COPYRIGHT 1994 ACS

RN 17804-35-2 REGISTRY

IN ***Carbamic acid, [1-[(butylamino)carbonyl]-1H-benzimidazol-2-yl]-, methyl ester (9CI)***



Searching for preparation

To find references on preparation of a specific substance, search the CAS Registry Number followed by P in the CA File.

=> FILE CA

=> S 84-74-2P

L1 138 84-74-2P

If you have done a search first in the Registry File, enter the CA File and search the L# from the substance file search followed by /P.

The following example shows a search for the CAS Registry Number of dibutyl phthalate followed by a search for references dealing with preparation of that substance.

```
=> FILE REGISTRY
=> E DIBUTYL PHTHALATE/CN
E1  1  DIBUTYL PHOSPHORODIAMIDATE/CN
E2  1  DIBUTYL PHOSPHORODITHIOATE/CN
E3  1  —> DIBUTYL PHTHALATE/CN
E4  1  DIBUTYL PHTHALATE-ETHYLENE GLYCOL-TEREPHTHALIC ACID
      POLYMER/CN
E5  1  DIBUTYL PHTHALATE-VINYL ACETATE-VINYL CHLORIDE COPOLYMER/CN
E6  1  DIBUTYL PHTHALYL-BIS-GLYCOLATE/CN
E7  1  DIBUTYL PIMELATE/CN
E8  1  DIBUTYL PIMELATE-DIETHYLENE GLYCOL COPOLYMER/CN
E9  1  DIBUTYL PIPERAZINE-1,4-BIS(CARBODITHIOATE)/CN
E10 1  DIBUTYL PIPERIDINOMETHYLPHOSPHONATE/CN
E11 1  DIBUTYL PIPERIDINOPHOSPHONATE/CN
E12 1  DIBUTYL POLYETHYLENE GLYCOL PHOSPHATE/CN

=> S E3
L1  1  "DIBUTYL PHTHALATE"/CN

=> FILE CA

=> S L1/P
L2  138 L1/P

=> D SCAN

L2  138 ANSWERS  CA  COPYRIGHT 1994 ACS
CC  22-8 (Physical Organic Chemistry)
TI  Thermal analysis of .beta.-substituted phthalic acid diesters
ST  phthalate dialkyl thermal stability; pyrolysis dialkyl phthalate kinetics
IT  Kinetics of thermal decomposition
      (of dialkyl phthalates)
IT  ***84-74-2P***  2553-24-4P  4131-84-4P  83415-90-1P
      83646-71-3P
      (prepn. and thermal decompn. of, kinetics and mechanism of)

HOW MANY MORE ANSWERS DO YOU WISH TO SCAN? (1):0
```

Section 8 Cost of Online Searching

- Objectives:** At the end of this section the student will:
- understand the variety of charges associated with searching.
 - be able to find the costs incurred in an online session.
 - be able to find information about the costs of using a certain file.

- Topics:**
- Viewing incurred costs - DISPLAY COST
 - Setting detail on breakdown of costs - SET COST
 - Finding charges in file - HELP COST

References: STN International Price List for current year

There are many advantages to searching for information online rather than in the library stacks. However, online searching does have certain costs associated with it. The purpose of this section is to present background information on the full costs of online searching.

Discounts are not discussed or shown in the specific examples.

Types of Costs

Costs on STN International are of three types:

- Connect hour charges in each file
You are charged a certain fee per minute while you are in the file.
- Display charges
In each file there are charges for records displayed. This fee varies depending on how much data you display.
- Search term charges
In some files there is a charge for each term you search.
- Telecommunication charges
If you use a telecommunications service such as Telenet or Tymnet, each service has its own charges. The costs of an internal network or Internet may be transparent to you.

Viewing Online Cost Information

Enter D COST to see the charges that have been incurred in the session. In this example, connect hour charges were \$9.72 in the session, search term charges were \$3.15 for the session, display charges were \$.20 for the session. Telecommunication charges are not shown.

=> D COST		
COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
CONNECT CHARGES	9.57	9.72
SEARCH CHARGES	3.15	3.15
DISPLAY CHARGES	0.20	0.20
FULL ESTIMATED COST	<u>12.92</u>	<u>13.07</u>
IN FILE 'CA' AT 07:54:40 ON 21 FEB 94		

Costs are automatically displayed when you change files and logoff.

SET COST may be used to vary the amount of detail displayed about the costs. Enter SET COST FULL to see the greatest amount of detail.

HELP COST

Costs vary by file. To see the current cost information for a file, enter HELP COST at an arrow prompt in the file. HELP COST shows the full cost for an online session. Discounts are not shown.

The following example shows partial HELP COST message for the CA file. Notice that different display formats have different charges.

=> FILE CA	
=> HELP COST	
STN International Fees and Prices Effective January 1, 1997.	
<u>CA File</u>	<u>U.S. Dollars</u>
Connect Hour Fee (per hour).....	32.00
Search Fees	
Search Terms.....	1.21
SDI Search Fee.....	6.80
Format Display and Display Fees (per answer)	
CAN.....	0.13
BIB or CBIB or STD.....	0.69
ABS (CA subscriber).....	0.54
(non-subscriber).....	1.00
ALL (CA subscriber).....	1.45
(non-subscriber).....	1.91
SAM or IND.....	0.22
HIT or KWIC.....	Variable, depending on displayed fields
OCC.....	FREE
DISPLAY SCAN.....	FREE
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Section 9 Practice Problems

The following problems may be used in the LCA and LREGISTRY files as well as in the CA and Registry files

For lessons 2-4

1. Find references on use of high-pressure liquid chromatography in analysis of amino acids.
2. Find references on toxic effects of alkaloids.
3. Find references on genetic engineering of antibiotics.
4. Find references on analysis of transition metals using thin-layer chromatography.

For lesson 5

1. Find papers authored by John D. O'Keefe.
2. What are some publications by Robert C. A. Frederickson?

For lesson 6

1. Find reviews on opiate receptors.
2. Find patents in English on gas sensors.

For lesson 7

1. Are there toxic effects of Sevin to the liver?
2. Find patents on ibuprofen.
3. Find information on methods of preparation of a Vitamin D analog known as Inhoffen Lythgoe diol.

STN Contacts

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Internet: help@cas.org

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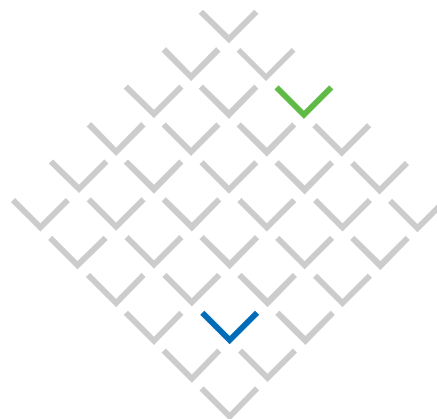
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