

CHEMICAL LITERATURE EXERCISES

Organic Chemistry Lab II

USING SCIENTIFIC DATABASES AND CHEMISTRY RESOURCES TO RESEARCH A TOPIC OF PERSONAL INTEREST

This project is an exercise in utilizing scientific databases and resources to research a project of personal interest. The project consists of three stages, leading to two assignments.

1. Before you attend the library session on *introduction to the chemical literature*, think of two or three topics that hold your personal interest. The topics are open but must have an organic chemistry component. This simple step can make the library session much more interesting. If you cannot think of any topics, select a few from the list below or get some ideas from current interest issues by reading the science section of the New York Times, Discovery or Science magazines, or other major publications.
2. After attending the library session, use the knowledge acquired to do a preliminary, broad search aimed towards finding information relevant to your topics. This process will reveal how feasible or how impracticable your project actually is in terms of finding accessible and digestible information.
3. At this point you should be in a position to decide on **one topic** to be researched more thoroughly. Continue searching for information relevant to this topic until you have enough to produce a short, coherent report on the subject.

SEE SYLLABUS FOR DEADLINES
(Each assignment counts as a lab report)

CHEM. LIT. ASSIGNMENT # 1 (1-2 pages). After attending the library session and doing a preliminary search on your topic, make a *list of the sources used* (e.g. SciFinder, Chemical Abstracts) and *references to actual articles* found in these sources. Referencing an article means to indicate the authors, source of publication, and date of publication. Do not summarize the article or describe the contents in any length. *Precede this list with a brief introduction of your topic and why it holds your interest.*

CHEM. LIT. ASSIGNMENT # 2 (3-5 pages). Write a report on your findings, trying to give it a specific, narrow, and coherent focus, rather than a general, vague outlook. It must be informative to readers who do not know very much about the subject. Think of it as a piece of scientific journalism of the type you would find in the science section of the New York Times, Time magazine, or similar publications. Assume that your audience is made up of college science majors.

This second assignment must have the following components;

- (a) **An Introduction** to the subject (why it's important, etc.) – **20 pts.**
- (b) **Development** of the topic (a historical approach might work well in a number of cases) – **40 pts.**

- (c) **Conclusions** (what we have and have not learned, and what future directions might be) – **20 pts.**
- (d) **References** (make sure to provide references to sources used, style is free, but MLA or scientific styles are recommended). The instructor must be able to find and verify the contents of the sources without any assistance from the author. – **20 pts.**

OTHER REQUIREMENTS

The main intent of this exercise is to gain experience in using **legitimate** scientific sources to gather information about a topic. Avoid using the general internet (e.g. search engines) as the sole, or even main, source of information. Instead, use the sources you learned about in the library such as SciFinder, Chemical Abstracts, or Science Citation Index. The information found in the general internet may or may not carry scientific validity. This is the most important requirement. Otherwise style is free. Length requirements must be observed. If you wish to write a longer paper consult with your instructor or lab coordinator.

PROPOSED GENERAL TOPICS

(Must be narrowed down further)

Forensic chemistry	Soaps and detergents
Pesticides	Hormones and behaviour
Drug design and Pharmaceuticals	Chemical warfare agents
Steroids	Biological warfare agents
Chemistry of lethal injections	Hallucinogens
Poisons and venoms	Organic antioxidants
Photographic chemicals	Vitamins and cofactors
Chemistry of cosmetics	Chemicals for art preservation
organometallic catalysts	Magnetic resonance imaging
Essential oils and perfumes	Sex pheromones
Herbal medicine	Chirality and biological activity
Specialty fuels (race cars, jets, space shuttles)	Spices and chemistry of flavors
Polymers and fashion (synthetic fabrics)	Organic metals (molecular conductors)
Organic semiconductors	Chemistry of brewing and winemaking
Dyes and chemistry of colors	Molecular basis of odor

PROPOSED SPECIFIC MOLECULES

(Can be of interest by virtue of their history, properties, uses, or structural features)

caffeine	Epinephrine	Strychnine	Niacin	ritalin
aspirin	progesterone	cannabinol	Cocaine	prozac
codeine	novocaine	dioxin	ascorbic acid	aspartame
benzene	saccharin	quinine	luminol	DDT
Ibuprofen	TNT	MSG	nicotine	