

CHEM 475 Assessment

Some explanation...this is the first time this course has been taught, we're hoping to get feedback about how to improve the structure of the course for next time. We're also hoping to gain info about your personal experiences in the class. (i.e. have you noticed improvement in your own ability to understand and use chemistry literature, to discuss ethical issues, to give oral presentations, and to feel like part of a scholarly community?) We are also interested in getting feedback about the impact of this course on your experience with the senior exercise.

PART I. INFORMATION LITERACY ASSESSMENT

1. Summarize and describe your experience (challenges, breakthroughs, what you learned) in defining your senior research topic and searching the chemistry literature for relevant articles. We are interested in the *process* you used this semester, not the mechanics of the actual search.

2. Identifying types of chemical literature

1. Moutet, J.-C.; Reverdy, G. *Nouveau. Journal de Chemie* **1983**, 7, 105.
2. Shida, T.; Haselbach, E.; Bally, T. *Accounts of Chemical Research* **1984**, 17, 180.
3. Bard, A. J.; Faulkner, L. R. *Electrochemical Methods: Fundamentals and applications*; Wiley: New York, 1980.
4. Faulkner, L. R.; Bard, A. J. in *Electroanalytical Chemistry*; Bard, A. J., Ed.; Marcel Dekker: New York; 1977; Vol. 10, pp 1-95.
5. Skotheim, T. A., Ed. *Handbook of Conducting Polymers*; Marcel Dekker: New York, 1986.
6. Shirakawa, H.; Louis, E. J.; MacDiarmid, A. G.; Chiang, C. K.; Heeger, A. J. *Journal of the Chemical Society: Chemical Communications* **1977**, 578.
7. Chiang, C. K.; Louis, E. J.; Druy, M. A.; Gau, S. C.; Heeger, A. J.; Louis, E. J.; MacDiarmid, A. G.; Park, Y. W.; Shirakawa, H. *Journal of the American Chemical Society* **1978**, 100, 1013.
8. Frisch, M. J.; Trucks, G. W.; Schlegel, H. B.; Scuseria, G. E.; Robb, M. A.; Cheeseman, J. R.; Zakrzewski, V. G.; Montgomery, J. A.; Stratmann, R. E.; Burant, J. C.; Dapprich, S.; Millam, J. M.; Daniels, A. D.; Kudin, K. N.; Strain, M. C.; Farkas, O.; Tomasi, J.; Barone, V.; Cossi, M.; Cammi, R.; Mennucci, B.; Pommelli, C.; Adamo, C.; Clifford, S.; Ochterski, J.; Petersson, G. A.; Ayala, P. Y.; Cui, Q.; Morokuma, K.; Malick, D. K.; Rabuck, A. D.; Raghavachari, K.; Foresman, J. B.; Cioslowski, J.; Ortiz, J. V.; Stefanov, B. B.; Liu, G.; Liashenko, A.; Piskorz, P.; Komaromi, I.; Gomperts, R.; Martin, R. L.; Fox, D. J.; Keith, T.; Al-Laham, M. A.; Peng, C. Y.; Nanayakkara, A.; Challacombe, M.; Gill, P. M. W.; Johnson, B. G.; Chen, W.; Wong, M. W.; Andres, J. L.; Gonzales, C.; Head-Gordon, M.; Repogle, E. S.; Pople, J. A. *Gaussian 98*, Revision A1; Gaussian, Inc.: Pittsburgh, PA, 1998.
9. Dodabalapur, A.; Torsi, L.; Katz, H. E. *Science* **1995**, 268, 270.
10. Pei, Q.; Klavetter, F. US Patent Appl. No. 08/268763, June 28, 1994.
11. Cosman, M. Ph.D Dissertation, New York University, 1991.
12. Xu, R.; Mao, B.; Amin, S.; Geacintov, N. E. unpublished results.
13. Roundhill, D. M. *Progress in Inorganic Chemistry* **1995**, 43, 533.
14. Song, S.-Y.; Jang, M. S.; Shim, H.-K.; Song, I.-S.; Kim, W.-H. *Synthetic Metals* **1999**, 102, 1116.
15. Ewen, J. A. *Scientific American* **1997**, 276 (5), 86-91.

- a. Which references are primary sources? _____
- b. Which reference is a secondary source? _____
- c. Which reference is a tertiary source? _____
- d. Which reference is a book? _____
- e. Which reference is a book chapter? _____
- f. Which reference is a review article? _____
- g. Which reference is found in a monograph series? _____
- h. Is reference 10 available in print? _____
- i. Is reference 11 available in print? _____
- j. Which of the publications listed is in the most prestigious journal? _____
- k. Which reference is a communication, rather than a full report? _____
- l. Which reference is a popular science magazine? _____
- m. Can reference 12 be used as a citation in a publication? _____
- n. How would you determine if reference 13 is available at Kenyon?
- o. Which two references are by Nobel prize winners? _____

An Antibody-Catalyzed Isomerization Reaction

Tetsuo Uno, Jung Ku, James R. Prudent, Anita Huang, and Peter G. Schultz* *J. Am. Chem. Soc.* **1996**, 118(16), 3811-3817.

- p. Who is the primary author of this article? _____
- q. Who is the principle author of this article? _____

3. Assess your ability to use the following databases/search engines effectively:

	1 = uncomfortable		5 = highly confident		
a. Science Citation Index	1	2	3	4	5
b. ACS Journal search	1	2	3	4	5
c. Electronic Journal Center	1	2	3	4	5
d. CONSORT and OhioLINK catalogs	1	2	3	4	5
e. Chemical Abstracts (via STN)	1	2	3	4	5

4. Assess your skills/comfort with the following activities:

	1 = uncomfortable			5 = highly confident	
a. Giving an oral presentation	1	2	3	4	5
b. Creating a PowerPoint presentation	1	2	3	4	5
c. Preparing an annotated bibliography	1	2	3	4	5
d. Writing a paper on a scientific research topic	1	2	3	4	5
e. Importing/exporting electronic data (Excel data sheets or graphs, Chemdraw structures, spectra from instruments, etc.) for a presentation or paper	1	2	3	4	5
f. critically analyzing a primary paper	1	2	3	4	5
g. formatting citations in a paper/report	1	2	3	4	5

5. Which of these assessment criteria did you consider when selecting articles for your literature review and when conducting background research for your topic? (adapted from Mary Ann Fitzgerald, *The Cognitive Process of Information Evaluation in Doctoral Students*, *Journal of Education of Library and Information Science* 41:3, summer 2000.)

Quality markers:

- Clarity
- Demonstrates deep analysis
- Attempts to establish objectivity
- Scope of information is clear
- Cites authorities
- Well organized
- Thorough coverage
- Analysis is demonstrated and explained
- Acknowledges opposing viewpoints
- Long bibliography
- Smooth transitions between sections of text
- Contains helpful figures
- Stimulates further reading
- Demonstrates methodology that matches topic or research questions
- Uses scholarly literature and direct evidence as support
- Describes study well enough for duplication

Problem Markers:

- Author's purpose is unclear
- Length does not correspond with stated scope
- Grammatical, spelling or typographical errors
- Dismisses important ideas without sufficient cause
- Inactive links on a web site
- Inappropriate vocabulary: too simple or overly complex
- Research studies with low or uncertain generalizability
- Opinions not supported by reasoned analysis
- Disorganization
- Popular literature
- Literature review merely describes series of studies--insufficient analysis
- Arguments are insufficiently detailed or developed
- Raises questions that are never addressed
- Overgeneralization
- Gaps in reasoning
- False linkage between cause and effect
- Tautology (circular argument)
- Inappropriate repetition
- Mistakes or inaccuracies in content
- Internal inconsistency

PART II. COURSE ASSESSMENT**6. Course Content**

Evaluate the effectiveness of each of the following topics that we covered in CHEM 475. Please comment on the amount of time we spent on them, the depth and breadth of their coverage and the quality of exercises you did.

	1 = ineffective/useless 5 = highly effective/worthwhile				
Nature of chemistry literature	1	2	3	4	5
Searching using SCI, ACS and EJC search engines	1	2	3	4	5
Searching using Chem. Abstracts (STN)	1	2	3	4	5
oral presentations of literature searches	1	2	3	4	5
writing workshop	1	2	3	4	5
oral presentation skills and PowerPoint workshop	1	2	3	4	5
readings & discussion of trends in chemistry research	1	2	3	4	5
graduate school information session	1	2	3	4	5
readings & discussion ethics and responsibility in research	1	2	3	4	5
peer evaluation of research papers	1	2	3	4	5

Comments on these topics:

7. Course Goals

Evaluate the effectiveness with which we met the broader goals of CHEM 475:

	1 = ineffective/useless 5 = highly effective/worthwhile				
preparation for your Senior Exercise	1	2	3	4	5
interaction with peers on individual research topics	1	2	3	4	5
“capstone” experience in the major	1	2	3	4	5
learning about important bio/chemistry research topics	1	2	3	4	5
teaching yourself new skills and knowledge	1	2	3	4	5
consideration of your career plans & strategies	1	2	3	4	5

Comments on these topics:

8. Information Literacy Goals

a. One of the goals of this course was to increase your skills and capabilities in using library and information resources. How successful was this course in helping you to reach that goal?

b. In what ways has this course helped you to understand better the research process?

c. In what ways has this course helped you understand how to locate, use, and evaluate sources of information available electronically? Please be specific.

d. In what ways has this course helped you understand how to locate, use, and evaluate sources of information available in print? Please be specific.

e. The Internet offers a wealth of materials that vary widely in quality and scope. What strategies have you developed that help you evaluate and make appropriate use of them?

f. The development of sound information literacy skills should be an integral part of a liberal arts education. Do you agree or disagree with this statement, and why?