

CHEMISTRY 391

Chemistry Seminar

Spring 2007
C. A. Baumann
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941-6389
Room: HYL 202

Chemistry 391 is a course which provides an opportunity for the student to give an organized and logical oral presentation of technical information to peers and faculty members.

Textbook: Dodd, Janet S., The ACS Style Guide, 2nd Edition, ACS, Washington, DC, 1997.

Topic of Seminar: Those students who are performing undergraduate research are encouraged to present a topic related to their research project. Other students should consult faculty in the Chemistry Department and select a topic of chemical interest. This topic then must be approved by the seminar instructor. Regardless of the topic chosen, you are reminded this is a chemistry seminar and you should concentrate on the chemical nature of your subject.

Grading: Each faculty member attending the seminar will receive a copy of the evaluation sheet. The faculty member will assign ratings to each of the items under content and presentation and arrive at an overall score. Your final grade will be a composite of these evaluation scores. Your grade will also be based on your participation during other student's seminars. In addition, your record of reading the references placed on file by other students with the seminar instructor will affect your grade.

Attendance: Attendance at each seminar is mandatory. Your grade will be reduced by one-half letter grade per absence unless you are excused by the seminar instructor. Your attendance at other "outside" seminars may also be required.

Abstract: Each student is required to submit an abstract to the seminar instructor by 2 PM, February 16. In addition, copies of the abstract must be given to each faculty member of the Chemistry Department and to each student in your seminar class one week prior to your seminar. The abstract must be no more than 250 words, typed, single spaced and be headed as follows:

Title

Name, Major, Mentor (if applicable), Seminar Date, Time, Room No.

The abstract should state: The principal objectives and scope of your seminar; and if applicable, describe briefly any important experimental techniques, results and conclusions. The student is directed to journals in chemical fields relative to your seminar topic for examples of abstracts. A sample abstract is also provided.

Outline and Bibliography: Each student is required to submit an outline of his/her seminar to each faculty member of the Chemistry Department and to each student in the seminar class one week prior to your seminar. A sample outline is provided. The outline should be followed during the seminar.

Major Literature References: One week prior to the seminar, 2 copies of major literature references for your seminar will be placed on file with the seminar instructor. The other students in the class will read these papers prior to the seminar.

Seminar: Each seminar will be a minimum of 20 minutes and a maximum of 30 minutes. Each seminar will then be followed by questions from the audience. It is expected that you will make appropriate use of visual aids. The student should read and follow Chapter 12 (Making Effective Oral Presentation) in the "ACS Style Guide."

Introduction of the Speaker: The student that presented the previous week will introduce the speaker. The speaker will provide this individual with pertinent information such as: name, year, major, hometown, high school, mentor (if applicable), future aspirations and any other relevant information.

SAMPLE ABSTRACT

THE DIBENZOTROPYLIUM IONS: AROMATIC CARBONIUM IONS

John Smith, Biochemistry, Mentor: Joe Vinson, 2/23/05, 1:00PM, 2/6/05, BRN 109

Carbocations are trivalent, positively charged carbons that have been implicated as unstable intermediates in many chemical reactions. In part to lend credibility to these ions as intermediates, chemists have prepared stable carbocations. Many stable carbocations, including tropylium ion, owe their stability to the fact that they are aromatic. This seminar will discuss the structure, preparation, aromaticity/stability, and electronic structure of dibenzotropylium ions.

SAMPLE OUTLINE

THE DIBENZOTROPYLIUM IONS: AROMATIC CARBONIUM IONS

- I. Introduction
- II. Their Structures
 - A. dibenzo (a, e) tropylium cation
 - B. dibenzo (a, d) tropylium cation
- III. Some Methods of Preparation
 - A. reduction of alcohol in acid
 - B. other
- IV. Aromatic Properties
 - A. review of aromaticity
 - B. aromaticity of dibenzotropylium ions
 - C. $(4n + 2)$ pi electrons
 - D. planar molecules
 - E. conjugated ring system
- V. Their Stability
 - A. aromaticity
 - B. in polar and non-polar solvents
- VI. Electronic Spectra
- VII. Conclusion

SAMPLE BIBLIOGRAPHY

Berti, Grancarlo. "Dibenz (a,e) tropylium and 5-phenyldibenzo(a, e)tropylium cations." J. Org. Chem. 22, 230 (1957).

Bethelle, Clare. "Photoxidation of Triarylmethanes Sensitized by Carbonium Ions." J. Chem. Soc., Perkin Trans. 2, 1972, 1464-71.

Bethell, D. and Gold, V. Carbonium Ions. An Introduction. New York: Academic Press, 1967.

Boyd, G. O. and Singer, N. "Molecular Orbital Calculations of the First Transition Energy of Substituted Tropylium Ions." Tetrahedron 22, 547-55 (1966).

De Selms, Roy C. and Wilson, Charles V. (Eastman Kodak Co.) "Sensitizers for Organic Photoconductor Layers." U.S. patent (3,503,740), 31 Mar. 1970. CA 72, P138325c, (1970).

Feldman, Martin and Flythe, William. "Stabilities of trivalent carbon species. 4. Electrochemical reduction of carbocations in H₂SO₄." J. Org. Chem. 43, 2596-600 (1978).

Feldman, Martin R. and Thame, Nenill, G. "Stabilities of Trivalent Carbon Species. 5. Equilibriums of Excited Singlet Alcohols and Carbocations." J. Org. Chem. 44, 1863-5 (1979).

Lewis, David and Peters, David. Facts and Theories of Aromaticity. London: The MacMillan Press, 1975.

Morrison, Robert T. and Boyd, Robert N. Organic Chemistry, 3rd Ed., Boston: Allyn and Bacon, Inc., 1973.

Olah, George A. and Liang, Gao. "Stable Carbocations. CLXXXI. Dihydrodibenzotropylium and Dibenzotropylium Ions. Neighboring Methyl, Cyclopropyl, and Phenyl Substituent Effects in Geometrically Constrained Systems." J. Org. Chem. 40, 2108-16 (1975).

Olah, George A. and Schleyer, Paul von R. Ed. Carbonium Ions, Vols. I and II. New York: Interscience Publishers, 1968.

