

Literature review project

In many research groups in the scientific disciplines, the team under the principal investigator (PI), typically a full professor at the university level or a research scientist at a company, meets to discuss the team's research progress, or relevant research papers that have been recently published in a journal.

It is this second action, called a literature review, that you will do for this project. What it involves is a close reading of a research paper, and the directing of the discussion of the paper by the whole group. Generally, chemistry papers tend to fall into one of these categories: a "**synthesis**" paper in which a novel compound is made and characterized, or a "**techniques**" paper in which a new method of characterization or synthesis is used on existing or known compounds.

To aid you in this task, the class will be divided into five or six groups; each group will be take the lead for one of the following papers:

Einterz, Ponder and Lenox, The Synthesis of 4-Methyl-3-heptanol and 4-Methyl-3-heptanone, *Journal of Chemical Education* **54** (1977), 382.

Walling and Cioffari, Cyclization of 5-Hexenyl Radicals, *Journal of the American Chemical Society* **94** (1972), 6059.

Fachinetti, Fochi and Floriani, Carbon Monoxide Insertion into Zirconium- and Hafnium-Carbon σ -Bonds: Synthesis, and Structural and Thermodynamic Data for Alkyl- and Aryl- η -acylbis(η -cyclopentadienyl) derivatives of Zirconium(IV) and Hafnium(IV), *Journal of the Chemical Society Dalton* (1977), 1946.

Chapman, Engel, Springer and Clardy, The Total Synthesis of Carpanone, *Journal of the American Chemical Society* **93** (1971), 6696.

Raftery, Dahlquist, Chan and Parsons, A Proton Magnetic Resonance Study of the Association of Lysozyme with Monosaccharide Inhibitors, *Journal of Biological Chemistry* **243** (1968), 4175.

Friedman and Miller, Odor Incongruity and Chirality, *Science* **172** (1971), 1044.

Main question to consider while doing a close reading of the paper:

- What is the "new information" that warranted the publication of this paper?

Other questions to consider while doing a close reading of the paper:

- If a "synthesis" paper, what is the mechanism of the reaction? What techniques were used to characterize the product? Any unusual behavior regarding product yield?

- If a “techniques” paper, is a new synthesis or characterization method? If a new synthetic method, what makes it different from the “old” method and what are the new method’s advantages? If a characterization method, what types of compounds is it useful on, and how is it better than existing methods?
- If possible, do a “literature search” and find out if this line of research resulted in subsequent discoveries on the same topic, and summarize that result. Hint: perform the search under the first author’s name only, then, if that fails, try the PI’s name (usually the last author, or the author with an asterisk).

So everyone in the class should read **all** of the papers, at least cursorily, and then read one of the papers intensively.

Presentation

On **Wednesday, May 31**, we will move the tables into a big circle and each group will take its turn leading a **seven-to-ten minute discussion** of their paper. Each of the points above should be addressed (if possible). Everyone should feel free to ask any member of the presenting group a question about their paper, and each person on the presenting group should feel all right about not knowing every single answer to the questions asked. Presenting groups may use the computer projector or overhead, if needed.

At that time, each group should turn in a **one-page summary** of their presentation, with all group members’ names listed.