

Chem 215

Poster Assignment

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1. Requirements

1.1. Turn in your poster topic one month after the first lab

1.2. Turn in a physical poster one week before the poster session

(Strictly Optional: If you prepare a handout turn that in as well)

1.3. Present your poster during the poster session - five minutes maximum to present the poster and three minutes to answer questions

Poster Features:

- Poster size should ideally be 32 x40 , possibly less, but by no means should it exceed 34 x43
- Poster should display a three-step transformation:

Starting Compound \longrightarrow Intermediate Product A \longrightarrow Intermediate Product B \longrightarrow Final Product

OR

Starting Compound \longrightarrow Intermediate Product \longrightarrow Final Product

and

Starting Compound \longrightarrow Final Product 2

OR

Starting Compound *and* Starting Compound 2 *and* Starting Compound 3

→ Final Product

→ Final Product 2

→ Final Product 3

Chemical structures should be drawn in ChemDraw or a similar program

Note: Students can make minor changes to their poster during the week before the poster session, but this should be the exception rather than the rule.

2. Choosing Your Topic

Here's your chance to be creative while investigating problem that interests you. This assignment asks you to research an organic chemistry process, issue, or question and explain it to other class members through a well designed poster.

The poster session in class Chem215/217 will help you become familiar with the features of a good poster. This handout will guide you through the poster design process.

It is preferred that you choose an organic process that requires a three-step reaction. However, you may choose an alternative (See examples above).

If your topic covers only one simple compound that can be synthesized in one or two steps, please modify the topic to include at least one other compound with similar properties.

Example: Kevlar is a polymer that can be obtained in two steps from 1,4 dibenzoic acid. You can add another polymer with similar properties to the poster and show its synthesis as well, comparing the two.

To find a topic:

- skim your Vollhardt and Schore textbook
- browse some of the most recent issues of popular chemistry magazines such as *Chemical & Engineering News* (call #TP1.I616) or *Chemistry in Britain* (call #QDI.C76)
- check out the web site, www.chemistry.org

Your poster should go through the relevant organic transformation(s) from the starting compound to the final product and **you** should be able to explain the mechanisms involved in each step. You can search for mechanisms in the literature or ask a teaching assistant for help.

The following books might be of assistance in rationalizing the mechanisms involved in the project you select:

- Jie, Jack Li. *Name Reactions: A Collection of Detailed Reaction Mechanisms*. Springer, 2002.
- Ahluwalia, V. K. & Parashar, R.K. *Organic Reaction Mechanisms*. CRC Press, 2002.
- Laue, L. & Plagens, A. *Named Organic Reactions*. Wiley, 1999.
- Smith, M.B. & March J. *Advanced Organic Chemistry*, (5th edition). 2001.
- Mundy B.R. & Ellerd M.G. *Name Reactions and Reagents in Organic Synthesis*. Wiley, 1988.
- Wang S. et al., *Orgo Cards*. Barron s Educational Series, 2002.
- Grossman, R. *The Art of Writing Reasonable Organic Reaction Mechanisms*. Springer, 1998.

3. Guidelines

3.1 Basic principles of poster design

Follow the advice below to ensure that you have legible images and structures.

- Make your poster in PowerPoint or a similar publishing program. These programs are available on many OwlNet computers. Ask your TA to teach you how to draw chemical structures in specialized program if you need help.
- There is no need to put all of the details on your poster, but include the organic transformation(s) from starting compound to final product and **be able to explain the mechanism on each step**.
- Do not forget to indicate reagents and conditions used on each step. **Avoid including too many details on the reaction schemes**.
- Explaining the mechanisms clearly will help your audience integrate a great deal of chemical information covered on the poster and make sense out of abstract chemical structures. When the subject is difficult to explain verbally, provide handouts to reinforce your explanation. Handouts with *supplementary* information are very handy when you have limited poster sizes and only a few minutes to present the topic.

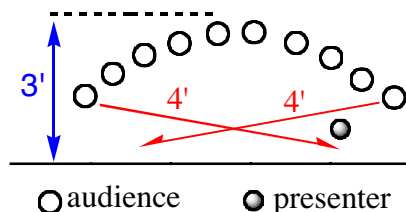
3.2 Working with images

3D structures can be drawn in HyperChem, Spartan, or other programs. Ask your TA well in advance if you require assistance with this task. Spartan software is installed on the OwlNet PCs in Dell Butcher Hall, rooms 212 and 214. You can download a 30 day evaluation copy of HyperChem at <http://www.hyper.com>

2D chemical structures can be created using ChemDraw, ISIS Draw or ChemSketch software. ChemDraw should be installed on all OwlNet PCs. ISIS Draw and ChemSketch are freeware for academic use.

- ISIS Draw 2.4 <http://www.mdli.com>
- ChemSketch 5.0 <http://www.acdlabs.com>

All the images on your poster, including pictures taken from books, journals, handouts, etc. should be visible from a distance of 3 to 6 feet.



If you are using PowerPoint to create your poster, you can adjust the size of your image by dragging from the corner points. Hold the shift key down to ensure that the proportions of the images remain constant as you enlarge the photo. Images can also be enlarged in Photoshop (before they are inserted into the poster) by changing the size under "Image." However, when a 1" jpeg, gif, or bitmap picture is stretched to 8 or 10 inches or more, it becomes blurry or pixelated and is not legible, so pay attention to the quality when enlarging images and make appropriate changes from the "Image" menu.

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3.3 Tips for using ChemDraw and drawing chemical structures

Use This Basic Set of Choices for ChemDraw:

A. Go to menu File / Drawing Settings / and set up these parameters:

Chain angle	120 degrees
Bond spacing	12 % of bond length
Fixed length	0.4167 in (or longer)
Bold width	0.0556 in
Line width	0.0333 in
Margin width	0.0278 in
Hash spacing	0.0375 in

B. Then go to menu File / Caption Text Settings / and set up these parameters: Arial, Regular, 18pt (or greater)

C. Then go to menu File / Label Text Settings / and set up these parameters: Arial, Bold, 18pt (or greater)

D. You may use a different font, but Arial is the most common for drawing chemical structures.

- Do not use black colored text on a dark background; it is hard to read.
- If your poster discusses a particular organic transformation, be sure to have the actual procedure with you.
- Regardless where you found the organic transformation (web, book, journal, etc.), remove all of the details not related to the posters' key points.
- Draw chemical structures for all the abbreviations you use (you may save space on poster by using abbreviations, but keep structures on handout). If the abbreviation stands for a polymer, find out what the single unit structure is.
- Use the arrow-pushing strategy while working out the mechanism for organic transformations.
- Draw arrow pushings with different colors than ones used for drawing organic structures. For example, if the structures are drawn in black, use **red** for the arrow-pushings. If the structures are drawn in white on dark background, you may want to use **orange** arrow-pushings.

Note: Avoid using scanned images of chemical structures on your poster.

3.4 Selecting text sizes for your poster

Improve your poster's legibility with the correct font size. To make the information you display legible to your audience, you must judge how close a reader must be to read the smallest crucial piece of data.

Here is a guideline for which font styles and sizes to use if your viewers are likely to be three to five feet from your poster:

Title (6 — 8 words)	Sans Serif (Arial) Bold	90 - 120 pt
Headings (3 words)	Sans Serif (Arial) Bold	36 - 48 pt
Text	Serif (Times New Roman)	30 - 36 pt.

Headings of the same level of importance should be in the same size and type of font. All labels should be legible from at least 3 feet away.

4. Awards

Students are encouraged to come up with interesting poster design, content and organic transformations. Four prizes will be awarded for:

- Best design
- Best organic transformation
- Best content
- Best poster

5. Applying the Checklist

Test Whether Your Poster Can Stand Alone

<i>Content</i>	<i>Visual Display</i>
<ul style="list-style-type: none"><input type="checkbox"/> Provides introductory summary<input type="checkbox"/> Defines problem<input type="checkbox"/> Emphasizes "The News"<input type="checkbox"/> Sufficient detail to support "The News"<input type="checkbox"/> Presents benefits of solution<input type="checkbox"/> Coherent pattern of organization<input type="checkbox"/> Jargon is translated<input type="checkbox"/> Correct grammar and spelling<input type="checkbox"/> Appropriate number of words and images on titles (not overloaded)<input type="checkbox"/> Comparisons that make analysis clear and easy to evaluate<input type="checkbox"/> "Excerpts" diagrams identify key components	<ul style="list-style-type: none"><input type="checkbox"/> Figures and graphs are explained and labeled<input type="checkbox"/> <u>Persuasive</u> headings ("Room for Improvement in Base Case") rather than low content phrases ("Base Case")<input type="checkbox"/> Font sizes that can be read easily from 4 - 6 ft. away<input type="checkbox"/> Diagrams that focus on critical elements, not excessive in detail<input type="checkbox"/> Backgrounds that do not interfere with text or diagrams<input type="checkbox"/> Adequate white space to make organization of information clear<input type="checkbox"/> Consistent formatting<input type="checkbox"/> Images relevant to purpose<input type="checkbox"/> Color choices that are easy to view

Presentation Checklist

- Practiced the timing for 2 minutes, 3 minutes, and 4 minutes
- Practiced 3-sentence summary
- Chose reinforcing, concept-related gestures for main processes and transformations
- Can point to poster sections without blocking view
- No distracting gestures
- Good eye contact with practice partner
- No reading or notes