Chemistry 267 Fall, 2013

Schedule of Experiments

Before coming to lab, download the experimental procedure and any other necessary handouts from the course website, read that material and the assigned material from the lab text, do the OWL prelab assignment by the due date, and prepare a prelab outline. Downloads are found at "http://www.chem.umass.edu/people/samal/orginorgsites.html".

References given below are to your laboratory textbook, *Macroscale and Microscale Organic Experiments*, Custom 6th Edit for UMass Amherst, by Williamson and Masters. Bring to lab this text, your safety goggles, and your laboratory notebook, in which the prelab outline will be written. The required laboratory notebook is one in which a carbon copy of each page can be made and torn out. Before you may begin work, a carbon copy of the completed prelab outline and any other prelab material for that experiment must be submitted to your TA. Some references given below are to Wade, which refers to the lecture text, *Organic Chemistry*, 6th, 7th, or 8th Ed, by Wade. These refs provide useful background information.

Carefully read Chapters 1 and 2 in the lab text, and the handouts on Safety and Waste Disposal, Notebook and Grading Policies, and Make-up Policies and Procedures. You are responsible for knowing and following the contents of these handouts. Review and refer to this information throughout the semester. Refer to the link on the course website, "Sample Notebook Entry and Report". Refer also to the lab text, Chapter 1, "The Laboratory Notebook".

You must wear approved eye protection AT ALL TIMES while you are in the lab. Failure to do so will result in the loss of credit. Repeated failure to do so will result in expulsion from the course.

For many earlier experiments, the procedures to follow are those given in the handouts obtained from the web, not the procedures given in the text. For such cases the readings from the text provide background information and describe general techniques that will be followed. Later in the semester, the handouts will simply provide changes and suggestions and the procedure will mainly come from the text. When this is so, it will be specified in the handout.

WEEK

1 Sept 5. Introduction to Chem 267, Check-in to lockers. Familiarize yourself with Chapt 1 and 2 and the course website.

2 Sept 12. Melting Points. Read Chapt 3, pp. 41-45, 48-53. A Mel-Temp device will be used to determine melting points. CAUTION: Always turn both the Mel-Temp AND the digital thermometer off when you are finished using the apparatus.

and

Thin Layer Chromatography. Read Chapt 8, pp. 164-177, 182, 183.

3 Sept 19. Recrystallization - Part 1. Read pp. 45-48, Chapt 4, pp. 61-79, 83, 84 (omit "Macroscale" procedures). Include the prelab exercise on p. 61 as part of your prelab outline. Ref: Wade, Sect 2-11. (Wade also includes a discussion of physical properties, including solubilities, in chapters covering specific functional groups, e.g., alkanes, alcohols, etc.)

4 Sept 26. Recrystallization - Part 2. Review Chapt 3 (MP), 4. Finish Recryst - Part 1 if necessary.

5 Oct 3. Introduction to Computational Chemistry, Structure-Drawing Software, and Chemical Instrumentation. Read Chapt 10, pp. 205-211, Chapt 15, pp. 292-298. Ref: Wade, Sect 3-7 through 3-14.

6 Oct 10. Extraction of Acids and Bases.. Read Chapt 7, pp. 131-147. Review MP, Recrystallization. As part of your prelab outline, include a flow diagram for your extraction (example on p. 142). Ref: Wade, Sect 20-5.

7 Oct 17. Extraction of Acids and Bases (continued). Finish Week 6.

8 Oct 24. Isolation of Trimyristin and Its Hydrolysis. Ref: Wade, Sect 25-1 through 25-4.

9 Oct 31. Alkenes from Alcohols. Review and read all of Chapter 15. Read Chapt 10, pp. 205-211, 217, 218. SPARTAN calculations will be done outside of lab time in the CRC. Ref: Wade, Sect 7-7 through 7-7C, 7-10, 11-10A.

10 Nov 7. Radical Chlorination. Substituent Effects. Read Chapt 18 (omit Exp 2) and review GC (Chapt 10). Ref: Wade, Sect 4-13, A, B.

11 Nov 14. Distillation. Review GC. Read Chapt 5, pp. 86-95, Chapt 3, pp. 55-57. Include prelab exercise (a) on p. 86 as part of your prelab outline.

12 Nov 21. Preparation of Cyclohexene. Read Chapt 19, pp. 334-337 (see "On Percent Yield" on downloads page of website) and Chapt 11, pp. 220-230. Review distillation and GC. Include the prelab exercise on p. 334 as part of your prelab outline. In your prelab outline, prepare a table of reagents and products as shown on the website link to "Sample Notebook and Report". Ref: Wade, Sect 7-10, 11-10A, 12-1 through 12-7.

13 Dec 5. Searching the Chemical Literature. Check-out. Read Chapter 68. You will be assigned to do a literature search using online methods. Check out of locker. **NOTE**: If you do not check out properly, you will lose the credit equivalent to one experiment (10 pts).

Final report (Cyclohexene) is due Mon, Dec 2 at noon. Reports will not be accepted after this time.

Make-up Policy. To make up an experiment, a valid, well-documented excuse is required. All lab work must be made up within one week of the lab period which was missed. After this it will be considered to be late and will lose credit at the rate of one point per day. You must arrange a make-up time as soon as possible and submit a "Make-up Request Form". Follow exactly the procedure described in the handout, "Make-up Policies and Procedures". A TA signature is required on all work including make-up work.

Grades and Quizzes. See the handout, "Notebooks and Grading " for details.

Electronic communication. For your convenience, timely announcements about Chem 267 will occasionally be made via the Chem 267 web site and also via email through the OWL system (be sure your email address in OWL is one that you use regularly). You may also contact the course instructor via email or at his office at ISB-241F.

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