

## Distillation and Gas Chromatography (GC) Guidelines

Pre-lab report is due at the beginning of the lab section. Pre-lab report **MUST** be written inside your lab notebook.

### (I) On-line Technique Videos and Resources For This Experiment

Click on the title below to download the video (require [Real Player](#))

- (1) [Laboratory Safety](#) (this video was shown on the first day of the lab)
- (2) [Gas Chromatography \(GC\)](#)
- (3) [Simple Distillation](#)

If you have trouble downloading the videos, go to the following Web site and click on the appropriate title to download the video.

<http://oid.ucla.edu/Webcast/Chemistry/>

[Guides for Writing Lab Reports](#)

[Basic Theory on Gas Chromatography](#)

### (II) Pre-lab Report

***There is only ONE PRE-LAB REPORT FOR THIS EXPERIMENT***

1. Introduction for the ENTIRE experiment (i.e. **both the distillation and gas chromatography**)
2. Procedure in Flowchart Format (**for the entire experiment**). Make sure you reference the procedures.
3. Complete **ALL** the pre-lab questions (see page 105, both period 1 & 2).

*For question #2, you may also use the following Web site in addition to the ones that are listed on the MSDS handout (the one you obtained from your TA during the first day of the lab).*

<http://chemfinder.cambridgesoft.com/>

*Note: Merck Index is also located in the Chemistry Library (4238 Young Hall). Web site for the Merck index is listed on the MSDS handout.*

**You MUST explain the ranking of the boiling points in terms of intermolecular forces.**

***Refer to the online resource listed above for the concepts in gas chromatography (GC).***

## Distillation and Gas Chromatography (GC) Guidelines

Refer to laboratory syllabus for the due date of the post-lab report. Post-lab report **MUST** be written inside your lab notebook.

### (III) Post-lab (This is a GROUP Report)

*Write the names of the group members on the report. Write down the responsibilities of each group member in writing this report as well as in performing the experiment.*

**(I) Abstract** – outline the goals of the experiment as well as the technique that you used in achieving such goal(s). Also, summarize all experimental results.

**(II)** Record the temperature at which the first drop of condensate forms and the temperature ranges over which each of your fractions distilled.

**(III)** Label each of your gas chromatograms as to the sample injected. Calculate the % composition of each of your fractions from the gas chromatograms. Show ALL your work.

*Make sure your group attach the ORIGINAL GC chromatograms for the various fractions that you obtained in the lab to this post-lab report.*

**(IV)** Compare the retention time of the standard toluene/ethyl acetate mixture with your samples. What can you conclude? **Explain.**

### **(V)** Conclusion

- Summarize your results (again)
- Justify the % composition results from the gas chromatograms. In other words, are they what you expected based on the theory of simple distillation?
- Discuss how you could have achieved a better separation in the distillation.

**(VI)** Sketch the GC chromatogram inside your lab notebook for your first distillate fraction based on the following conditions:

- (1) there had been twice as much toluene in the fraction
- (2) the GC column had been twice as long
- (3) the temperature of the column had been higher
- (4) the chart paper advance had not been turned on.

DO NOT DRAW ANY SKETCHES ON YOUR ORIGINAL GC CHROMATOGRAMS