

## Suggestions for Writing Your Notebook Procedure

When writing the procedure in your notebook it should be in your own words, as much as possible, in an outline form (using reasonably understandable abbreviations when possible). You should be able to follow your own procedure without looking at the lab manual (you should not have to use your manual during lab, although you can, particularly for the pictures of the lab setup). Also, someone with a basic understanding of chemistry should be able to do the experiment by following your procedure without the manual and understand what's been recorded during lab. Here's a partial example of a procedure (based on an old experiment from 1220). See the next page for an idea of what the procedure in the manual looks like.

### Part A:

- 1a. Clean, dry 30-mL syringe (obtained from TA).
  - 1b. Remove glass plunger, rinse with 5 mL acetone.
  - 1c. Lubricate plunger with graphite using pencil, rubbing entire surface.
  - 1d. Temporarily place plunger in 400-mL beaker.
  - 1e. Rinse barrel using 5 mL acetone. Repeat.
  - 1f. Dry barrel by drawing air through it w. aspirator.
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- 2a. Attach serum stopper to syringe (Fig. 14.5, p 9).
  - 2b. Fold back serum stopper before pushing onto Luer-Lok fitting.
  - 2c. Push small end onto Luer-Lok fitting on syringe.
  - 2d. Do not pull on too tightly – don't cover slits in fitting.

Note this looks like a “cookbook” using short concise individual steps. This is much easier to read and follow in lab when you're busy, rather than the paragraph form in the lab manual. Plus, doing this helps you to learn the procedure a little better than just copying it word-for-word from the manual. While in lab you can check off each step as you do them to make sure you don't skip a step or do a step twice. Often, you may have trouble fully understanding what you're supposed to do just based on the written procedure. Watching the lab video for an experiment (in the pre-lab) before or while writing the procedure will often help in understanding the procedure.

After preparing your notebook, do the pre-lab (which may include on-line data-entry, depending on the experiment). You should be able to answer the pre-lab questions if you've understood the Discussion, Procedure and Data Analysis sections. The on-line pre-lab with data entry will have questions pertaining to the experiment and data-entry which will pretty much follow the report sheets you will use for your data collected in lab for the data template (as will the on-line data entry for your results from lab). The on-line pre-lab data entry programs use randomly generated data similar to what you will collect in lab. These will be easier to do if you've read the manual and written the procedure first.

## Materials Required

### Equipment

30-mL syringe  
2-mL syringe with needle  
two serum stoppers  
thermometer  
600-mL beaker  
100-mL beaker  
4-mL test tube  
capillary tube  
rubber bands  
Bunsen burner, wire gauze  
thin-walled rubber tubing  
ring stand, ring  
utility clamp

### Chemicals

acetone (15 mL)  
One of the following compounds within a given set (TA assigned):

#### Set 1—Alcohols

methanol (1 mL)  
ethanol (1 mL)  
1-propanol (1 mL)

#### Set 2—Alkanes

n-hexane (1 mL)  
n-heptane (1 mL)  
n-octane (1 mL)

### Common Equipment

none

## Cautions

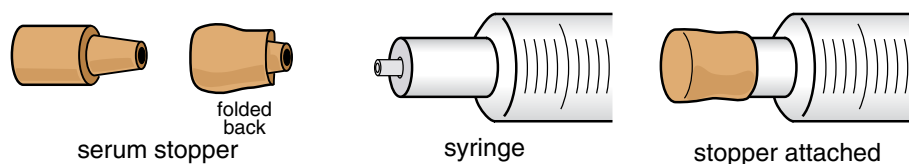
Be careful to avoid burns from the ring, beaker, and open flame. Vapors from the organic compounds can be irritating. Fume hoods should be on.

## Procedure

Your TA will assign you to a group for Part A—each student does a different known in the assigned set. Your TA will also distribute an unknown.

### A. Determine temperature–volume data for the known compound.

1. Clean and dry a 30-mL syringe. Remove the glass plunger from the syringe and rinse it with a 5-mL portion of acetone. Lubricate the plunger with graphite by rubbing the entire surface with a pencil. Temporarily place the plunger in a 400-mL beaker. Rinse the barrel with acetone using two 5-mL portions. Dry the barrel by drawing air through it with the aspirator.
2. Attach a serum stopper to the syringe. The small end of the serum stopper goes around the small metal tube of the Luer-Lok fitting. The larger end of the serum stopper is folded back around the outside. See Figure 14.5. The preferred method is to fold the serum stopper back on itself before pushing it onto the Luer-Lok fitting. Do not pull the stopper back too tightly as this will cause leaks—the slits in the metal fitting should not be covered (see Figure 14.5).



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Figure 14.5 Attaching the serum stopper to the syringe.