# Experiment 17: Part B Procedure

First, some general information. At the start of the experimental procedure in the lab manual the author usually lists equipment and chemicals that you will use for the experiment and says to collect them. DON'T! You may collect some of the glassware and other equipment, but do not get the chemicals until you are ready to use them. For example, this week you will be using acetone, but you will not need it until almost an hour after you start the experiment. Acetone is very flammable and somewhat poisonous. Having it setting at your desk is an unnecessary safety hazard.

When you enter the lab, check the left hand end of the blackboard. There will be a list of chemicals and equipment that are not in your drawers. The location in the lab for each and the amount you will need, will be indicated. If there is an asterisk (*) in front of the item, you can get it while you are waiting for lab to start. Possible locations are in the left hood (LH), under the windows (UW), at or above your desk (YD), at the T.A.'s desk (TA) or in the balance room (BR). In the balance room will be solids that you may need to weigh out, usually in several vials and equipment you need to check out, such as stir bars, timers or thermometers. There will also be spatulas for you to use. There are two beakers: one marked "clean" and one "dirty". Take a spatula from the "clean' and as soon as you have used it put it in the "dirty". Chemicals that have noxious vapors will be in the left hood. Under the windows will be equipment and less hazardous chemicals.

**Part B**

It will not be necessary for you to clean and dry the beakers. In a large desiccator will be 30-mL beakers that have been oven-dried. [A desiccator is an enclosed jar that contains a substance that absorbs moisture (a desiccant). Therefore the air in the desiccator is dry. The two main uses of desiccators are to (1) to store chemicals that absorb and/or react with moisture and (2) to cool heated chemicals or objects so that they will not absorb moisture as they cool.]

Check out 3 magnetic stir bars from the balance room. There will be a copy of the class roster. Write down your hood number and how many stir bars you are checking out. At the end of the class return the clean stir bars and cross off your name. This is important because if some are not returned we need to know where to start looking for them. They can be very hard to find especially if dropped on the floor.

In this experiment you are determining the amount of zinc that reacts with an amount of iodine. You determine the amount of zinc that reacted by weighing the mass of zinc you started with and at the end of the experiment you wash and dry the unreacted zinc to find how much did not react and to calculate how much did. With the iodine you are assuming that all of the iodine that you weighed out reacted. For this to be accurate you must minimize the loss of iodine. There are two places where you may lose iodine. After you weigh it out, get it reacting as soon as possible as iodine sublimes. You may actually see purple vapor rising from the iodine crystals. Secondly if the reaction becomes too vigorous, you could see purple iodine vapors passing off. You need to warm the reaction to get it started, but it is exothermic and can easily go too fast.

Turn the hotplate on to 2-3. Get a beaker from the desiccator with the tongs and take the beaker, watchglass and stir bar into the balance room. Zero the balance by tapping the horizontal bar with the doors closed, place the beaker and stir bar on the balance, close the doors and note the weight (#1 page 400). Tare (rezero) the balance by tapping the horizontal bar, open the doors and add the zinc. Close the doors and note the mass of the zinc (#5 page 400). Tare the balance again and add the iodine and note the mass of iodine (#8 page 400). It is not usually important to get a certain weight. If you get a little more than is called for, it should not be a problem. It is important to know the exact amount you weighed.

You can use a spatula to transfer the zinc or even carefully pour it, but you will have to use the spatula for the iodine. It will stick together and stick to the spatula. Put the spatula in the "dirty" beaker immediately after using so that no iodine gets on the bench or you It is poisonous and will stain your clothing or skin.

Cover the beaker with the watchglass, take it to your desk, add water and start warming it. Watch the reaction. If it starts to go too fast, move it to the edge of the hotplate. The reaction should start out as a reddish brown, lighten to a yellow, and finally become colorless. If it seems to be losing a little iodine, you might put a piece of ice on the watchglass as that might cause iodine to deposit on the watchglass and you can wash it back into the reaction with your distilled water bottle. When the reaction becomes yellow you can move it to the edge of the hotplate and go start the second reaction; and then the third.

When you start the third, the first should be ready to start washing with water and then acetone. Rather than decanting (pouring off) the washes, you will probably find it easier to use a Pasteur pipet to suck up the washes. Collect them in a beaker for waste. After washing with the acetone place the beaker on the edge of the hotplate to dry. Then put in the small desiccator that you will be sharing with you neighbor to cool. When cool weigh the beaker, stir bar and leftover zinc (#6 page 400)

Finally pour the water-acetone mixture into the waste jug in the right hood and scrape the zinc into the plastic jar in the right hood. Clean the beaker and stir bar with detergent and vigorous brushing. Rinse with tap water and then distilled water. Check in the stir bars. Put the beakers in the tray by the ovens.