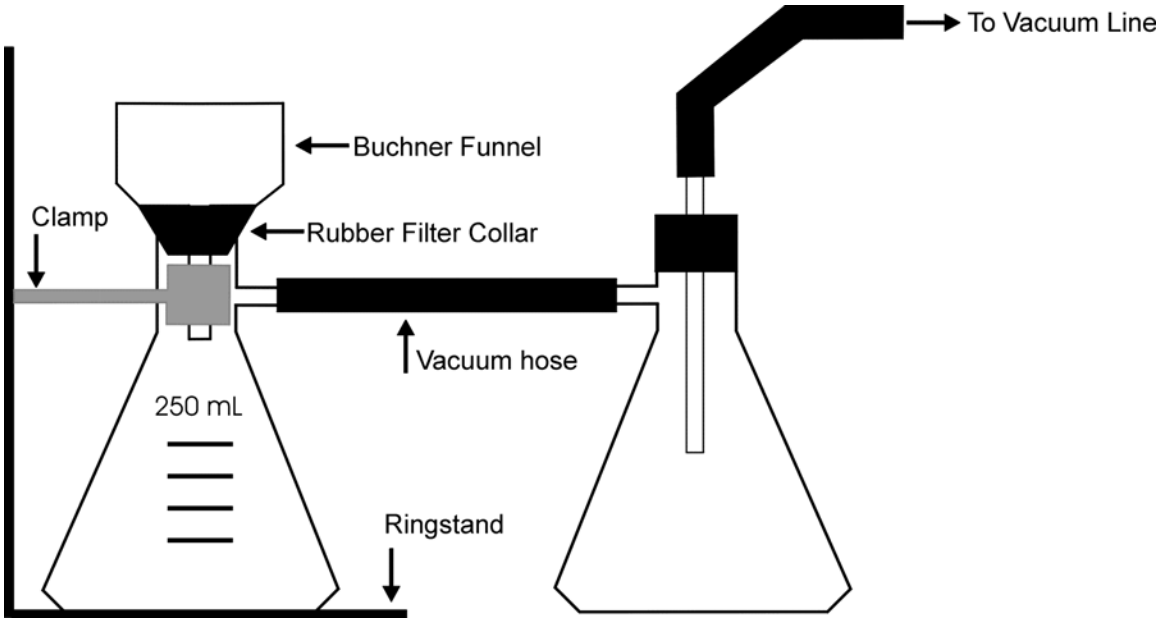
Performing a Suction Filtration

Supplemental Lab Handout
CHM2260

One of the most fundamental laboratory techniques is the separation of a liquid from a solid, and you will be required to perform this task many time throughout the semester. The most commonly employed technique is that of *suction filtration*. A typical setup for suction filtration is shown below. To set this up this apparatus you will need the following pieces of equipment.

Two 250-mL sidearm flasks
A rubber filter collar
A Buchner funnel (may be porcelain or plastic, porcelain is better)
Two pieces of heavy-walled vacuum hosing
A ringstand and clamp



1. Clamp the first filter flask (the flask that is to hold the funnel) to a ring stand. The funnels are quite heavy, making the flask very easy to tip over. They become even easier to tip over once the rubber hose is attached. So once again, clamp down the filter flask!

2. Add the rubber filter collar and Buchner funnel. Note that a rubber filter collar is not the same thing as a rubber stopper! The purpose of the rubber filter collar is to ensure a good seal between the funnel and the flask. Without this in place, air will leak in between the flask and funnel.

3. Use one piece of rubber hosing to connect the first flask to the second. This second flask need not be clamped. This second flask essentially functions as a water trap to prevent filtrate from being sucked into the vacuum system.

4. Equip the second flask with rubber stopper fitted with glass tubing. Use a second piece of rubber hosing to attach the glass tubing to the vacuum line. Note: you have three outlets at each station: one is a vacuum, one is compressed air, and one is gas. Be sure you used the vacuum outlet! If you use compressed air, you will wind up blowing your product all over the lab bench!

5. You must always use filter paper when performing a suction filtration. Furthermore, you muse use the *correct size* for your Buchner Funnel. Jamming in a larger piece of filter paper will not work as well as using paper of the correct size.

6. Turn on the suction and listen for any air leaks. Make sure all of your connections are tight. You are now ready to filter your solution.

While filtering your solution, you may wish to note the following.

1. Periodically swirl the solution you are filtering. This will help to reduce the likelihood that you will wind up with solid stuck to the bottom of your flask.

2. Once the entire solution has been filtered, wait for all of the filtrate to pass through (until it finishes dripping) and then allow air to pass through the solid for several minutes. Very often you can see the color of your solid change slightly as it dries. Once the solid has air-dried, break it up into a fine power using your microspatula.

3. In most cases the solid is the final product. In some cases, however, the remaining solution (the *filtrate*) is the product. Be sure you know which you are to keep before you dump anything into the waste bottle.