Objective: Determine the formula of an unknown hydrate using gravimetric analysis.

Experiment:
- Determine the mass of a clean, dry crucible and lid
- Add the unknown hydrate to the pre-weighed crucible.
- Heat the unknown hydrate to evaporate off the water molecules.
- Weigh the now anhydrous unknown.
- Based on the difference of the mass before and after heating, determine the percent of the unknown water in the unknown hydrate.

Procedure:
Part A
1. Crucible Preparation
   - Examine the crucibles and lids very carefully. Make sure there are no hairline cracks. The crucible should be relatively stained free. Go to the stockroom for replacement of cracked and stained crucibles.
   - Heat the crucible initially with a soft blue flame and then increase the air opening to adjust the flame to a hot flame.
   - Once the crucible and the lid have been fired, it must be handled only with the crucible tongs. How will your results be affected if the crucible and lid were handled with your hands?
   - **The crucible and lid must be cooled to room temperature before weighing. Why?**

2. Mass Determination of Sample
   - Get your unknown hydrate from the stockroom.
   - Peel off the unknown label and transfer it to your data sheet.
   - Transport your crucible and lid on wire gauze from your desk to the balance area. Do not transport crucible by carrying it with the crucible tongs.
   - Weigh approximately 3 grams +/- 0.0001. Which balance should you use?
3. Adjusting the Crucible Lid.
   - Adjust the clay triangle to about 4 inches above the Bunsen burner.
   - **Note: There are two crucibles in your tray. If space allows, you may do two trials concurrently.**

Part B
1. Heating the Sample
   - It is very important not overheat to prevent decomposition of your sample.
   - Use a medium hot flame.
2. Have You Removed All Your Water?
   • To determine if all the water molecules have evaporated, reheat crucible with a soft to medium flame until the masses agree to +/- 0.0100 gram.
   • You will do at least two trials on the same unknown. Percent water must agree +/- 1%, if not do a third trial.
   • Put you anhydrous sample in the solid waste jar in the waste designated hood.

After Completion of Your Experiment
   • Empty your unknown vials into the waste jar. Rinse the vial and return it to the stockroom window.
   • Bring your data sheet to be signed. All data sheet must be signed immediately after the experiment's completion. This is the only time that the data sheet will be signed.