Writing an “Experimental”

An “experimental” is a concise description of the procedure that the experimentalist (you) follows to accomplish the goal of the experiment. More specifically, “experimentals” are written as part of journal article.

In general, the writer assumes that the reader has a working knowledge of all the techniques that are used during the procedure; thus, a description of the techniques used is not necessary. The phrase “transferred to a Hirsch funnel” is enough to let the reader know that vacuum filtration was used. For example, the following phrase

After 15 minutes elapsed, the inside of the flask was scratched with a microspatula to dislodge the crystals that had formed. The crystals were emptied onto a filter in the Hirsch funnel that was attached to a vacuum system.

could be rewritten

The solution was cooled in an ice-bath for 15 minutes, and the resulting white crystals were transferred to a Hirsch funnel.

An experimental is a very formal way of writing. It is written in the third person past passive voice. “I added” should never appear in an experimental. Measurements are typically placed in parentheses following the item that is being measured. For reagents, the measurement includes the amount in mol or mmol. A space should be included between the measurement and the unit; however, when a measurement is used to describe a container the measurement and unit are hyphenated. For example,

Benzoic acid (0.502 g, 4.11 mmol) and water (5 mL) were added to an Erlenmeyer flask (50-mL).

Also, OK

Benzoic acid (0.502 g, 4.11 mmol) and water (5 mL) were added to a 50-mL Erlenmeyer flask.

instead of something that is totally wrong like

I added about 0.502g of Benzoic Acid and 5 mL of water to a 50ml Erlenmeyer flask.

Comments concerning the difficulty of the lab, or what was learned during the lab are inappropriate. Discussing the quality of one's results in an experimental is inappropriate. An experimental is a description of the experiment.
Steps for Writing an Experimental

1. Type each step that you did into a computer.
   For example...
   I added benzoic acid to a flask.
   I added water to the flask.
   I heated the flask on a hot plate.
   I added more hot water until the benzoic acid dissolved.
   etc....

2. Add data and observations to each step
   For example...
   I added 5.013 g of benzoic acid to a 50 ml flask.
   I added 5 ml of water to the flask and a light blue slush formed.
   I heated the flask on in a boiling-water bath a hot plate.
   I added slowly added 20 ml of hot water until the benzoic acid dissolved, a blue solution resulted.
   etc....

3. Clean up technical details
   For example...
   I added benzoic acid (5.013 g, 41.0 mmol) to a 50-mL flask.
   I added 5 mL of water to the flask and a light blue slush formed.
   I heated the flask in a boiling-water bath on a hot plate.
   I added slowly added 20 mL of hot water until the benzoic acid dissolved, a blue solution resulted.
   etc....

4. Convert all sentences to third person past passive voice.
   Benzoic acid (5.013 g, 41.0 mmol) was added to a 50-mL flask.
   Water (5 mL) was added to the flask and a light blue slush formed. (Avoid starting sentences with numbers.)
   The flask was heated in a boiling-water bath on a hot plate.
   Boiling-hot water was slowly added (20 mL) until the benzoic acid dissolved, a blue solution resulted.
   etc....

5. Convert to paragraph from and clean up language.
   Benzoic acid (5.013 g, 41.0 mmol) and water (5 mL) were added to a 50-mL flask. The resulting light blue slurry was heated in a boiling-water bath on a hot plate. Boiling-hot water was slowly added (20 mL) until the benzoic acid dissolved; a blue solution resulted. etc....

The experimental ends with a statement about the chemical that was isolated.
Typically, one describes the appearance, lists the amount of chemical that was isolated (g and mol or mmol), the yield or percent recovered (whichever is appropriate), and any analytical data that were used to identify the chemical.