

Experiment No. 19: Copper: Its Chemical Transformations

Parts A and B

These notes are meant to be a supplement to the manual, not a substitute. The manual usually does a good job of covering the theory of the experiments. These notes mainly cover the modifications to the procedure described in the lab manual. Last week, some students made things difficult for themselves by not bringing their manual. They did not have ready access to the solubility rules, hints and reaction discussion in the manual. Study both the manual and the notes before lab.

Check out a small + stir bar and a triangular one. This week, we will follow the procedure pretty closely. You will be working with copper turnings, not wire. It is in the form of thin ribbons of copper. Do not try to pull the snags apart or you can cut your fingers; use a scissors. Use the 50-mL flask in your desk and the + stir bar for the reaction. Cover the flask with an inverted 50-mL beaker while heating to convert the white copper (II) hydroxide into the copper (II) oxide. As the heavy black copper oxide forms, it will restrict the movement of the stir bar and the mixture will bump and splatter. Keep it covered.

You will use the alternate workup on page 416 to separate the CuO from the rest of the mixture. For this experiment, whenever possible we will centrifuge to perform separations, rather than filtering. Before you start this procedure, put a 125-mL Erlenmeyer flask containing about 110 mL of water on the hot plate to heat. After you have finished washing the CuO, add 12-13 mL of 6 M acetic acid and the triangular magnetic stir bar to the centrifuge tube containing the CuO. Place upright in the flask of hot water. Heat and stir until all of the black CuO dissolves. Again, the heavy black CuO will restrict the movement of the stir bar. You will need to use your glass stir rod to manually stir the mixture until the stir bar can do the stirring. When the CuO has dissolved, retrieve the stir bar, cool to room temperature, and seal the tube with a piece of Parafilm. Label with your name and store in the test tube rack in your section's drawer.

Check in the two stir bars.