

Chemistry Lab Behavior of Copper in a Solution of Silver Nitrate

PROBLEM In this experiment, you will observe the reaction of a weighed quantity of copper wire with a solution of silver nitrate. You will compare the moles of copper reacted with the moles of silver formed and write a balanced equation representing this reaction.

MATERIALS/EQUIPMENT: Copper Wire, balance, 50 ml beaker, silver nitrate solution, stirring rod, distilled water, & oven

PROCEDURE

Day One-

1. Cut a piece of copper wire 20 cm long. Mass the wire to the nearest .01 grams. Coil the wire around a pencil. Remove coil from pencil and fashion a hook at the end of the wire.
2. Label and mass a 50 cm³ beaker.
3. Add 40 cm³ of silver nitrate solution to the 50 cm³ labeled beaker.
4. Suspend the coil of copper into the silver nitrate solution.
5. Let it stand over night.

Day Two-

1. Observe the beaker in detail the next day. Write down your observations.
2. Shake the silver crystals off the coil. Use a wash bottle to wash the silver crystals off. Dry the copper coil and weigh it.
3. Carefully pour (decant) the liquid off the silver. Add 20 cm³ of distilled water, stir, decant. Repeat a total of 4 times.
4. Place the silver and beaker away to dry overnight

Day Three-

1. Weigh the dry beaker and silver. DO NOT THROW SILVER AWAY.

Data table

mass of Cu wire day one	_____
mass of the dry beaker	_____
mass of Cu wire day two	_____
mass of beaker and dry Ag	_____
mass of dry silver	_____
mass of Cu used in Reaction	_____

CALCULATIONS

1. Calculate the number of moles of Cu that reacted and entered the solution.
2. Calculate the number of moles of Ag formed.
3. Determine the ratio, mole Ag/ mole Cu.
4. Determine and write a balanced equation for this reaction. (Single displacement, **Copper(II)**)
5. What is the ratio, moles Ag/moles Cu according to the balanced equation.
6. Calculate the % error.