Group # _____ Name _____

Period ___ Date ___/___/___

Ch 3 Lab • Observing a Chemical Reaction

Lab Partners: _____ _____ _____

Introduction

You and your friend's feelings about a movie you've just seen may be very different. You may disagree about whether you liked the movie, or about the movies intended meaning. Although you both have observed the same movie, your interpretation is very important in chemistry. An observation is a statement or fact, based on what you detect by your senses. An interpretation is your judgment or opinion about what you have observed. A statement such as "the liquid is clear and colorless" is an observation. It would be an interpretation to say, without further testing, that the clear and colorless liquid is water.

Purpose

The purpose of this experiment is to help you distinguish observation from interpretation while examining a chemical reaction. Try to make as many observations of the reaction as possible. Remember that there are two types of observations: A quantitative observation is an observation that involves a measurement; a qualitative observation is a general description and does not involve a measurement. "The liquid is hot" is a qualitative observation. "The temperature of the liquid is 95.0^{o}C" is a quantitative observation.

Materials

Chemicals	Equipment
copper (II) chloride dehydrate, $CuCl_2 * 2H_2O$	1 100-mL beaker
DI water	Thermometer
Aluminum foil	Glass stirring rod
	100mL Graduated cylinder
	Plastic spoon
	Magnifying glass

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Procedures

1. Bring your beaker to the teacher to obtain your sample.
2. Using a spoon, obtain a level teaspoonful of copper (II) chloride dehydrate, $CuCl_2 * 2H_2O$ crystals from the teacher. Using the magnifying glass, examine the crystals and record your qualitative (color, size, shape, etc) observations about the crystals in the **Data Table.**
3. Using a graduated cylinder, measure out 25.0mL of DI water. Be accurate.
4. Pour the DI water into the 100-mL beaker with the crystals.
5. Record your observations of the crystals in the water in the **Data Table**.
6. Use the glass stirring rod, stir the mixture until the crystals are completely dissolved. Record your observations of the solution in the **Data Table**.
7. Place the thermometer in the copper (II) chloride solution and record the temperature in the **Data Table**. (One number after decimal. Don't forget the units.)
8. **CAUTION:** Observe the mixture from the side; do not look directly down into the beaker. Place a loosely crumpled ball of aluminum in the solution and record our observations in the **Data Table**.
9. In this lab, the solution you are working with may become quite hot following the addition of aluminum foil. Feel the beaker carefully. Stir the mixture occasionally and observe for at least 5 minutes. Record any change in temperature (highest temperature possible) in the **Data Table**.
10. Follow your teacher's instructions for proper disposal of the materials.

Disposal/Clean Up

- The solution **cannot go down the drain** and must be filtered out.
- Bring your beaker carefully to the teacher and pour all contents into the waste beaker. Using the rubber part of the glass stirring rod, scrap the remaining solid into the trash.
- Clean ALL equipment with LAB Equipment soap & brushes (especially the oil/water)
- Dry dishes with paper towels.
- Clean Lab BENCH with small soap bottle and sponge.
- Dry lab bench with paper towels.
- Wash hands with hand soap.
- Let me know when you are ready. Do not get unprotected until dismissed.

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Data Table/Observations

Procedure	Observations
1. Dry copper(II) chloride	
2. Copper (II) chloride in water	
3. Stirred copper(II) chloride in water	
4. Copper(II) chloride solution plus aluminum foil	
5. Initial temperature:	
6. Final Temperature:	

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Post lab Questions:

1. Which of the following observations above from the data table were qualitative? **List the data table numbers only.**

2. Which of the following observations above from the data table were quantitative? **List the data table numbers only.**

3. Is the final mixture heterogeneous or homogeneous? Explain your answer.

4. Based on the observations you made during this lab, develop a **hypothesis** about what happened when aluminum metal was added to the solution of copper (II) chloride.