**Name: Period:**

**Physical and Chemical Changes Lab**

**Purpose**

To study the difference between physical and chemical changes in matter.

**Introduction**

Chemistry is the study of matter and the changes it undergoes. These changes can be broken into two classes – physical changes and chemical changes. In some cases only the temperature, physical state, size of particle, or color is changed. Ice melts and water evaporates. These are physical changes. In other cases different substances with new characteristic properties are formed. Wood burns and metal tarnishes. There are chemical changes. In this lab through making observation on the changes of state you will determine the difference between chemical and physical changes.

**Materials**

* 1 birthday candle
* platinum wire test rod
* 2 magnesium strips
* sandpaper
* watch glass
* 100 mL beaker
* NaCl (sodium chloride)
* 0.1 M AgNO3 (silver nitrate)
* 6 M HCL (hydrochloric acid)
* 1 Alka-Seltzer tablet
* 1 wooden splint
* CuSO4 x 5H2O (copper
 sulfate pentahydrate)

**Demonstration Procedures**

1. Sandpaper a piece of magnesium ribbon about 5 cm in length to remove the tarnish. Note the color, luster, and flexibility of the metal after cleaning the metal. Holding one end with forceps, ignite the other end using the Bunsen burner then hold it over a watch glass to collect any ash. **CAUTION**: *Do not look directly at the magnesium while it is burning.* Compare the ash with the original metal.

Observations:

Chemical or Physical change? Why?

Is a new substance formed as magnesium burns? Justify your answer.

1. Add a small amount of NaCl to 5 mL of water in a test tube. Shake the contents of the test tube to make sure all of the NaCl has dissolved. Next, use a dropper to add 10 drops of 0.1 M AgNO3 (silver nitrate) to the NaCl-water mixture. Observe the results.

Observations:

What is formed in the reaction between AgNO3 and the NaCl – water mixture?

Is this product the result of a chemical or physical change?

1. Obtain a piece of magnesium ribbon about 2 cm long. Tear the ribbon in half. Place both pieces into a test tube and add a few drops of 6 M HCL. **CAUTION:** *Use extreme care in handling this acid.* *It will cause severe burns if allowed to come in contact with skin.* Touch the bottom of the test tube with your fingertip. Observe changes to the state of the magnesium ribbon pieces.

Observations:

When magnesium ribbons are added to HCL what kind of change in matter occurs? Why?

1. Us a mortar and pestle to grind several crystals of CuSO4 x 5H2O into a uniform powder. Place 1 microspatula of the powder into a test tube. Heat gently over a burner flame for 5 minutes. Allow the sample to cool and then add a few drops of water. Observe the changes throughout the experiment.

Observations:

Did the CuSO4 x 5H2O crystals go through a physical or chemical change? Why?

**Student Procedures**

1. Warm the bottom of a birthday candle until it is warm enough to stick to the middle of a watch glass. Light the candle and allow it to burn until it extinguishes itself.

Observations:

Did the wax and wick of the candle go through the same change? Explain.

1. Obtain and examine a platinum wire test rod. Observe the color and luster of the metal. Hold the wire in the flame of your burner for about two minutes. Observe the appearance of the wire while held in the hottest part of the flame. Allow the wire to cool and re-examine it.

Observations:

Does the appearance of the platinum wire change?

1. Combine one-half an Alka-Seltzer tablet with 5 mL of water in a 100 mL beaker. Observe the initial reaction. After the reaction proceeds for 15 seconds, put a burning splint into the beaker.

Observations:

What happens to the burning splint?

What gas do you think is being evolved during the reactions?