**Ziploc Bag Chemistry!**

Purpose: Three reactions are performed in a sealed Ziploc™ bag so that they can be easily observed.

**Materials per lab group:**

4 Ziploc bags

1 Tbsp. calcium chloride

2 Tbsp. sodium baking soda

30 mL water

1 small plastic cup to hold water

30 mL indicator solution (phenol red)

Safety Goggles

Lab Apron

**Procedure :**

1. Add 2 Tbsp.of baking soda to a Ziploc™ bag. Gently place the plastic cup (approximately1/3 full of water) inside the bag in the upright position. Squeeze out any excess air and seal the bag. Spill the water into the bag by shaking. DO NOT crush the cup! Look, listen, and feel. Record your observations.
2. Add 1 Tbsp. of calcium chloride to a second Ziploc™ bag. Repeat the remaining steps in procedure 1 for the calcium chloride, and record your observations for this material.
3. Mix 2 Tbsp. of sodium bicarbonate and 1 Tbsp. of calcium chloride in a third Ziploc™ bag and mix thoroughly. Repeat the remaining steps.
4. Repeat procedure 3, replacing the water in the cup with 30mL of indicator solution.

**Data and Observations:**

1. Baking soda in water\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. calcium chloride in water\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3. NaHCO3 + CaCl2 in water\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4. NaHCO3 + CaCl2 with indicator solution\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Questions:**

1. Classify each of these changes as chemical or physical. Use your observations to help you make your decisions.
2. In the fourth bag, what do you think the indicator tells you about the observed reaction?
3. What gas is being produced? How could you test this?
4. Which reactions are physical? Chemical? Both? How do you know?