**Endothermic and Exothermic Reactions**

**Purpose:** To observe exothermic and endothermic reactions.

Data: Record the temperatures at the instructed intervals in your data table. Record your qualitative observations underneath.

***Safety: Wear goggles at all times.***

**Reaction #1 – Baking Soda & Citric Acid**

1. Place the thermometer in a beaker of citric acid. Record the temperature for time “0.”
2. Add a spoonful of baking soda to the beaker using the thermometer to stir lightly a few times. Record the temperature after 15 seconds.
3. Continue to record the temperature every 15 seconds for up to 5 minutes.

**Reaction #2 – Steel Wool & Vinegar**

1. Place the steel wool in a beaker.
2. Pour vinegar on to the steel wool and allow it to soak in the vinegar for around one minute.
3. Remove the steel wool and drain any excess vinegar.
4. Wrap the steel wool around the base of the thermometer and place them both in the second beaker. Record the initial temperature.
5. Cover the beaker with paper or a lid to keep the heat in (make sure you can still read the temperature on the thermometer, having a small hole in the paper or lid for the thermometer to go through is a good idea).
6. Record the temperature every 30 seconds for around five minutes.

**Reaction #3 – Calcium & Water**

1. Place a thermometer in a beaker about half full with water. Record the initial temperature.
2. Pour the calcium pieces into the water. Do not touch the calcium and do not stir.
3. Record the temperature after 15 seconds and continue to record it every 15 seconds for up to 5 minutes.

**Reaction #4 – Baking Soda & Vinegar**

1. Place a thermometer into a beaker about ¼ full of vinegar. Record the initial temperature.
2. Place one spoonful of baking soda into the vinegar.
3. Record the temperature after 15 seconds.
4. Record the temperature every additional 15 seconds for up to 3 minutes.

