

A.S.U. Science
Chemical Reactions

Record data in your lab notebook.

What is the name of one of the A.S.U. presenters?

What is his or her subject major?

What are his or her aspirations?

**Evidence that a chemical reaction
has occurred**

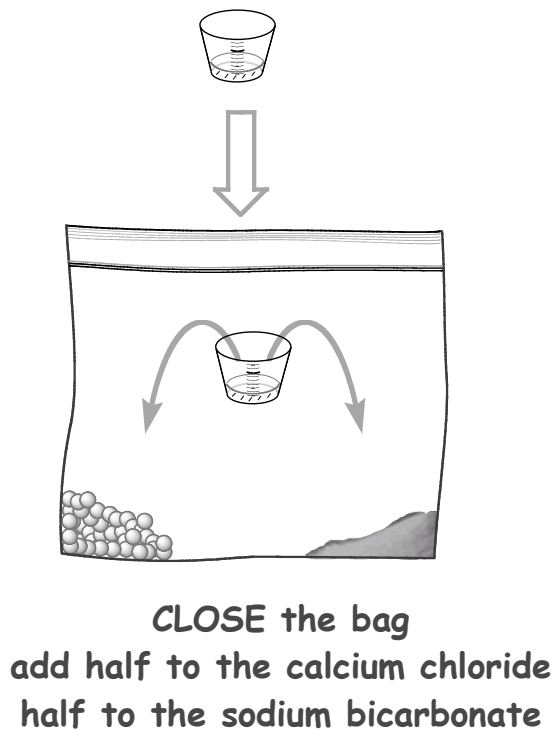
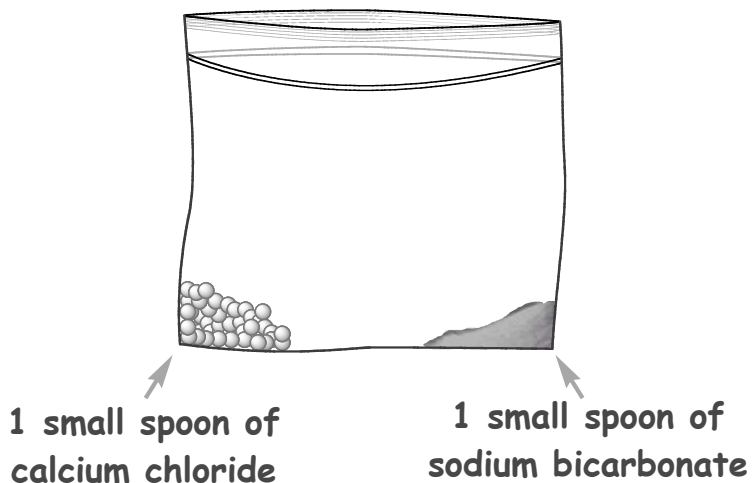
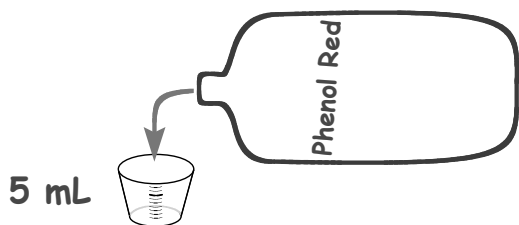
- *Change in color*
- *Change in temperature*
- *Gas is generated*
- *New substance is formed*
- *Light is given off*

EXPERIMENT #1

What reactions occur when *phenol red (dissolved in water)*, *calcium chloride* and *sodium bicarbonate (baking soda)* are mixed?

DIRECTIONS

- 1) Pour 5 mL of the Phenol Red solution into the small plastic cup
- 2) Add 1 small teaspoon of calcium chloride into one corner of the ziplock bag, and 1 teaspoon of sodium bicarbonate (baking soda) into the other corner
- 3) Put the plastic cup into the ziplock bag, and CLOSE the bag
- 4) Pour half of the solution onto the calcium chloride and RECORD YOUR OBSERVATIONS of which of the evidences of a chemical reaction you observe (temperature, color etc. see front page)
- 5) Pour the rest of the solution onto the sodium bicarbonate (baking soda) and RECORD YOUR OBSERVATIONS of which of the evidences of a chemical reaction you observe (temperature, color etc. see front page)
- 6) MIX the entire contents of the ziplock bag together and RECORD YOUR OBSERVATIONS of which of the evidences of a chemical reaction you observe (temperature, color etc. see front page)

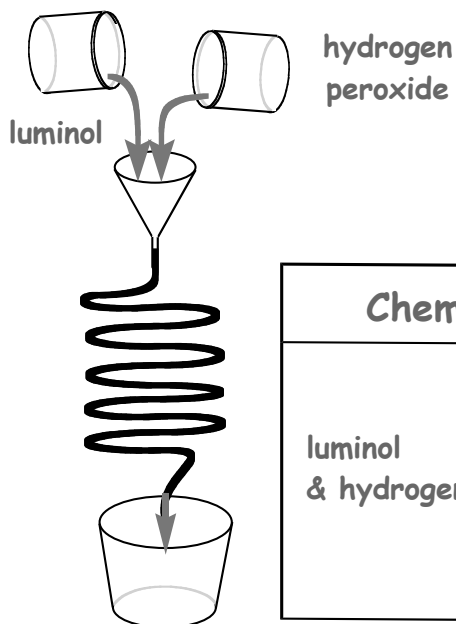


Data Table

Chemicals	Results: Observations
Phenol Red & Calcium Chloride	
Phenol Red & Sodium Bicarbonate	
Phenol Red & Calcium Chloride & Sodium Bicarbonate	

EXPERIMENT #2 Chemiluminescence

What reactions occur when the Luminol and hydrogen peroxide are Mixed



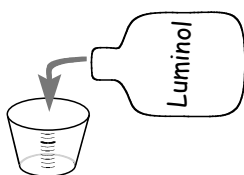
Data Table

Chemicals	Results: Observations
luminol & hydrogen peroxide	

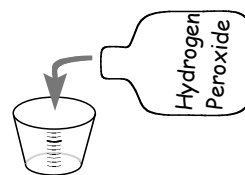
EXPERIMENT #3

Question: What is the Best Ratio of Luminol to Hydrogen Peroxide to cause the longest glow

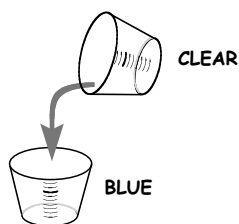
DIRECTIONS



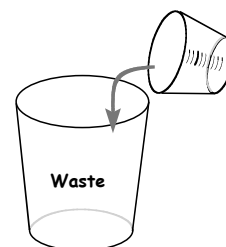
1. Measure the Luminol solution, 10 mL MAXIMUM
RECORD YOUR VOLUME ON THE DATA SHEET



2. Measure the Hydrogen Peroxide solution, 10 mL MAXIMUM
RECORD YOUR VOLUME ON THE DATA SHEET



3. ADD the hydrogen peroxide solution to the luminol solution
MEASURE & RECORD THE GLOW TIME using a stopwatch



4. Pour the solution into the waste container
REPLACE THE LID

Data Table

Independent Variable Ratio		Dependent Variable
Volume of Hydrogen Peroxide (mL)	Volume of Luminol (mL)	Glow Time (s)

Conclusion: What Ratio of Luminol to Hydrogen Peroxide Gives the Longest Glow Time

You are the scientist!!

A company is interested in developing a product that generates heat to warm hands. You have been hired as a chemist for the company.

Your assignment is . . .

1. Identify a chemical that will react with water and give off heat.
2. Test one teaspoon of the chemical with 10 mL of water to find out how long the heat will last. Make a data table of time and temperature.
3. Make a graph of temperature vs. time.
4. Write a conclusion that will summarize the results of your experiment.

Record all measurements and all information in your lab notebook