

Thinking Thermally

What will happen to molecules within a glow stick as they are exposed to different temperatures? How can this be observed?



Materials:

- 3 glow sticks (same size and color)
- 3 beakers
- Room Temperature Water
- Ice
- Hot plate

Procedure:

Allow students to make observations and predictions about which temperature will cause the glow stick to glow brightest.

Students will develop a hypothesis.

Note: To allow for differentiation, you may choose to encourage students to design the experiment themselves or you can help them define the following variables and constants.

Identify the independent variable (water temperature).

Identify the dependent variable (amount of light given off by the glow stick/molecular movement).

Discuss control groups (room temperature water).

Identify experimental constants (color of glow stick, age of glow stick, amount of water, etc).

Students will carry out their experiment by observing the amount of light given off by each glow stick. They will fill the first beaker with cold water, the second with room temperature water, and the third with hot water. They will then crack the three glow sticks until they light up and place one in each beaker.

They will develop a conclusion explaining the outcome of their hypothesis and discussing the data and variables they tested.

The Effect of

on

(independent variable)

(dependent variable)

Science is all about investigating questions or problems in order to find a solution. This means that curiosity is one of the most important aspects of science! Think about the questions you come up with on a daily basis. Where do they come from? What makes you question the world around you? Every question you develop comes from an observation, so you must begin any scientific process with your five senses!

You will design your own procedure based on the following information. In order to carry out a successful experiment, you must organize your initial observations, your hypothesis, your subjects or groups, and the variables you will be manipulating and observing.

Observations:

Hypothesis: Is it testable? Be sure to include both variables!

Independent (manipulated) variable:

Dependent (responding) variable:

Control Group:

Control Variables/Constants: Make sure they're kept the same throughout the experiment!

Procedure: Describe the steps you will take to carry out the process of testing your hypothesis:

1.

2.

3.

4.

5.

Data: Use another sheet of paper to construct a data table for your experiment.

Conclusion: Write a detailed summary describing the outcome of your experiment. Was your hypothesis correct? Why or why not? What could be done to improve your experiment?