Design Your Own Controlled Experiment

**States of Matter and Temperature Focus**

**Introduction**

In this lab you will be using the information that you have gained in this unit to design a lab using the scientific method and having a CONTROL, MANIPULATED (independent) VARIABLE, AND A RESOPONDING (dependent) VARIABLE. You must track *temperature* during your experiment to make a graph for your results section. Your experiment must also have a purpose that **pertains to the states of matter** (testing boiling points, melting points, freezing points, state changes, evaporation, sublimation, distillation, pressure changes, etc.)

**Objectives**

* Use scientific process to set up a controlled experiment and its procedures.
* Measure the temperature of substances/mixtures that you choose for your experiment against a control to infer results.

**Materials you may need**

* beakers
* graduated cylinders
* flasks
* Safety goggles
* Tongs
* Electric hot plate
* Stopwatch
* Graphing calculator

**Experimental Design**

1. Work with your group to decide on an experiment. Decide on a CONTROL, MANIPULATED VARIABLE, AND A RESPONDING VARIABLE. Write the procedure for your experiment and decided on any other materials that may be needed.
2. Decide what kind of data to collect and how to analyze it. Make sure your experiment has a constant (same water in each beaker, same amount of dry ice used, etc) Make sure you can graph your information and make a data table for your lab book.

**Lab book requirements**

Pre-Lab: must be done before the lab day.

* Title, Date, Lab partners
* Purpose
* Materials
* Procedure
* Hypothesis

Post-Lab:

* Observations (with chemical and physical properties/changes)
* Data Table
* One Temperature Graph with all variable on it
* Conclusion:
  + Was your hypothesis supported or rejected (3 reasons)
  + What were your results (explain % yield)
  + What would you change if you did the experiment again
  + What did you learn
  + etc