

Core Lab: Energy Changes During Melting and Evaporation

Unit 2: Weather Dynamics

When a substance melts, it changes from a solid to a liquid. When a substance evaporates (or vaporizes), it changes from a liquid to a gas. Heat energy is needed to cause these **phase changes** and the energy taken in by the substance during melting and evaporation is known as **Latent Heat**.

Hypothesis: State a hypothesis in the space below.

Purpose: To investigate the amount of heat put into a system, to the energy needed to bring about a change of phase, that is, melting and evaporation.

Materials: 500 mL beaker graph paper
hot plate thermometer
crushed ice

Procedure: Set up the materials so that a beaker of crushed ice is placed on a hot plate. Turn the hot plate to its high setting. Using a thermometer to gently stir the crushed ice, read and record the temperature at one minute intervals and record this data in table #1. Temperature readings should be recorded until the water starts to boil, at this point record three additional readings and then stop to analyze your data. Construct a line graph using the data recorded in Table #1. Place time on the horizontal axis and temperature on the vertical axis.

Discussion:

1. Explain what happens during the time when the temperature being recorded is at;
i) 0°C; and ;ii) 100°C
2. When did the greatest temperature change occur between readings? What phase was the material during this temperature change?
3. Discuss the shape of your graph with respect to the slope of the line at different points along the graph. Explain why the graph displays different slopes.

