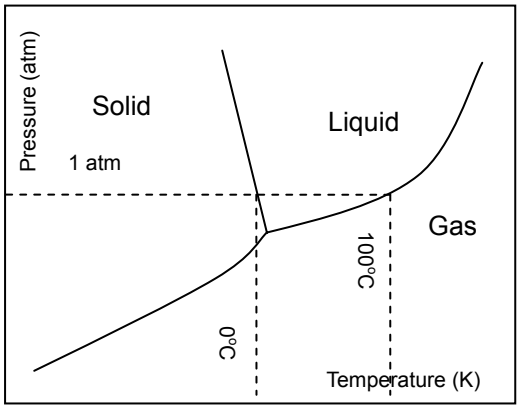
Pressure-temperature Diagram of Water

Student Handout

Purpose: To study the pressure-temperature diagram of water.

Introduction

Have you ever skate on ice? Ice skaters actually are not skating on ice – they are skating on liquid water. In this activity you will study the process that accounts for the nearly effortless glide of an ice skater across the rink.



A block of ice is placed on a support. Two 5 kg objects are suspended on each side of the ice block from a heavy duty fishing line placed on the top of the ice. The weights are hanged on the ice block for at least an hour, and the depth of the line is observed.

Tasks

1. Observe the experiment media and record all observations. (http://resources.emb.gov.hk/~science/exemplars_ec.htm)

   _____

   _____

2. Draw a phase diagram for water. Use a vertical arrow to indicate the phase change that has occurred.

3. Do you think that the change will occur if 10 g weights (instead of 10 kg) are suspended from the lines? Explain.

   _____

4. Ice skaters sometimes find it more difficult to skate when the weather is extremely cold (-30°C or colder) than when it is close to the m.p. of water. Explain by using the phase diagram of water.

   _____

   _____