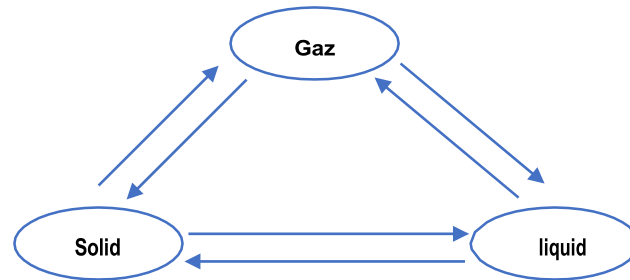


Practical work No. 5 : Measurement of the Latent Heat of Fusion of Ice

I. Principle of the Experiment:

The latent heat of fusion of a substance is defined as the heat that must be supplied to a unit mass of the substance at its melting point and under a certain pressure to completely convert it to the liquid state.



II. Experiment Objective:

To calculate the latent heat of fusion of ice (L_f) by calculating Q_{fusion} and then deduce the latent heat of freezing of liquid water (L_s).

Q_{fusion} is given by the equation:

$$Q_{\text{fusion}} = m L_f$$

III. Experiment Materials and Equipment:

Calorimeter- Beaker (500 ml)- Graduated cylinder (250 ml)- Thermometer- Electronic balance- a piece of ice- Distilled water

IV. Experiment Procedure:

1. Place 400 ml of distilled water in the calorimeter (m_1). Put the stopper on and read the temperature using the thermometer. Let this be T_1 .
2. Weigh a quantity of ice and water mixture (m_2) such that the amount of water is 5 ml and the amount of ice is 15 g. Shake the mixture well with the thermometer and read the temperature until it reaches $T_2 = 0^\circ\text{C}$.
3. Very quickly, pour the mixture into the calorimeter containing the cold water. Close it tightly and stir until you are sure that the ice cubes have completely melted. Then read the temperature at equilibrium, which is T_{eq} .

Given: Specific heat of liquid water $C_{P(H_2O)l} = 1 \text{ cal/g} \cdot ^\circ\text{C}$