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11. Molecular Mass Determination Using Boiling and Freezing Point

Purpose:

To practice calculating the molecular mass of solutes by comparing boiling and freezing point of two solutes with known concentrations.

Procedure:

A.

1. Measure 50g of distilled water into a 125ml flask. set up the flask on a hot plate and hang a thermometer in the flask using a clamp, not letting the thermometer touch the flask. Record the temperature to the nearest 0.5 ^{o}C after heated.
2. Prepare a solution of 10g potassium nitrate in 50g of distilled water. Determine the boiling point of the solution using the equation $m=\Delta T_{BP}/K_{BP}$ where $K_{BP}=0.512\ ^{o}C$, m=molality, and ΔT=change in temperature. Dispose of the solution by rinsing it down a sink.
3. Repeat step 2, but replace the KNO_3 with C6H12O_6, Dextrose.

B.

1. Dissolve 5g of KNO_3 in 50g of water in a 125ml flask. Place the flask in a beaker with rock salt, with the beaker wrapped in a paper towel. Wait until crystals form in the solution and becomes slushy. Record the temperature. Rinse the solution down a drain.
2. Dissolve 10g $C_6H_{12}O_6$ in 50g of distilled water. Place the flask with the solution in a beaker filled with ice an rock salt and wait until the solution crystalizes. Measure the temperature and rinse down a drain.

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