Name: _____ Date: _____

Lab Section: _____

Prelab Assignment: Determination of Molar Mass by Freezing Point Depression

1. Camphor melts at 179.8°C and has a freezing point depression constant, K_f = 40°C/molal. When 0.186 g of an unknown organic solid is dissolved in 22.01 g of liquid camphor, the freezing point of the mixture is found to be 176.7°C. What is the molar mass of the solute?

2. A particular unknown solid depresses the freezing point of PDB (K_f = 7.1°C/molal) by 3.5°C. If you dissolve the same solid in H_2O (K_f = 1.86°C/molal) to the same final molality as you had it in the PDB, what would the change in freezing point be?

3. You are instructed to add about 2 g of the unknown solid when determining the freezing point of the solution. Suppose you accidentally add 5 g of solid. Will the measured freezing point of the solution be higher or lower as a result of this mistake? Explain.

4. Cleaning PDB from the test tube after the experiment could be a long and arduous process. Describe the procedure that you will use to clean PDB (and the unknown solid) from your test tube after your experiments are complete.