

Freezing-Point Depression of Cyclohexane

Student Name:

Partner Name:

Date

Instructor Initials

Grade

Part A

Record your cooling curve to your LabQuest and export the data to a usb drive. Plot the data for each trial separately. For each curve, fit a line to the first and second part of the curve separately. Obtain the equations of these lines and find their intersection. Determine the freezing point from the intersection of these lines and record them below. You will need to upload your spreadsheet to Canvas.

Mass of cyclohexane (g) =

Freezing point 1 (°C) =

Freezing point 2 (°C) =

Freezing point 3 (°C) =

Average Freezing Point (°C) =

Part B

Record your cooling curve to your LabQuest and export the data to a usb drive. Plot the data for each trial separately. For each curve, fit a line to the first and second part of the curve separately. Obtain the equations of these lines and find their intersection. Determine the freezing point from the intersection of these lines and record them below. You will need to upload your spreadsheet to Canvas.

Mass of Napthalene (g) =

Freezing point 1 (°C) =

Freezing point 2 (°C) =

Freezing point 3 (°C) =

Average Freezing Point (°C) =

Calculate the molality of the naphthalene solution produced in Part B.

Calculate the average freezing point depression due to the addition of naphthalene to cyclohexane.

Calculate the experimental cryoscopic constant of cyclohexane. Compare the value to the accepted literature value ($20.8 \text{ kg}\cdot\text{K}/\text{mole}$) by calculating the % error.

Part C

Record your cooling curve to your LabQuest and export the data to a usb drive. Plot the data for each trial separately. For each curve, fit a line to the first and second part of the curve separately. Obtain the equations of these lines and find their intersection. Determine the freezing point from the intersection of these lines and record them below. You will need to upload your spreadsheet to Canvas.

Mass of Unknown (g) =

Mass of Cyclohexane (g) =

Freezing point 1 (°C) =

Freezing point 2 (°C) =

Freezing point 3 (°C) =

Average Freezing Point (°C) =

Calculate the freezing point depression due to the addition of the unknown to cyclohexane

Calculate the molality of the unknown solution.

Calculate the number of moles of unknown in the solution.

Calculate the formula mass of the unknown.