Chemistry 2201 Lab: CLAUSIUS

Determining ΔH_{vap} of water using Clausius-Clapeyron equation.

$$\ln P = \frac{-\Delta H_{vap}}{RT} + C$$

Thus by measuring the vapor pressure of water($P(H_2O)$) vs. T(K), can determine ΔH_{vap}.

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By plotting the vapor pressure of water($P(H_2O)$) vs. $1/T(K^{-1})$, obtain a straight line.

$$\Delta Hvap = -R \times slope$$

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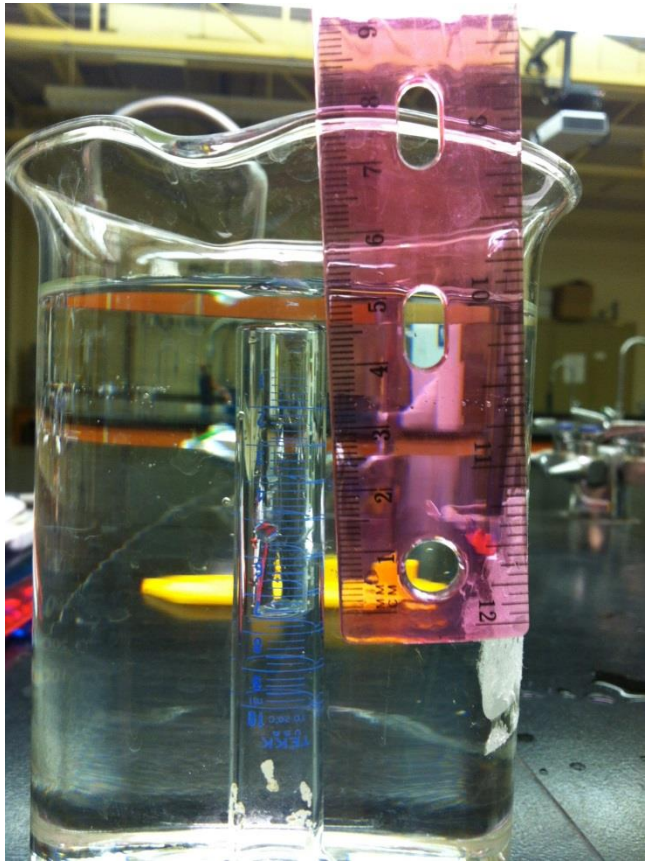
Vapor pressure of water($P(H_2O)$) determined by measuring the volume of air + H_2O trapped in a graduated cylinder.



Volume = 7.60 mL

Height = 5.20 cm

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Calculate:

1. **Correct Volumes(-0.20 mL).**
2. **P_{exert} from height.**
3. **P_{total} from $P_{total} = P_{atm} + P_{exert}$**
4. **Using 0°C trial calculate n from P_{total}, T, V, and ideal gas law PV = nRT.**
5. **Using n determine P_{air} at each temp.**
6. **$P(H_2O)$ from $P(H_2O) = P_{total} – P_{air}$**