

Experiment # 5

Molar Mass by Vapor Density

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Section -----

Lab Partners: -----

Data Section

- | | |
|---|------------------|
| 1. Temperature of water | -----317.5-----K |
| 2. Weight of flask, foil and condensed vapor
g | -----117.95----- |
| 3. Weight of empty flask plus foil
g | -----117.71----- |
| 4. Weight of condensed vapor | -----0.29----- g |
| 5. Volume of water required to fill the flask
(that is equal to the volume of the gas)
mL | ----0.265L----- |
| 6. Barometric Pressure
atm----- mmHg | ----1.0015 |
| 7. Molar mass of compound (see Equation 1
and 2- remember to use the proper units
for ideal gas equation. Show your work) | ----- |

28.5g/mol

$$\begin{aligned}n &= PV/RT \\ &= 1.0015(0.265\text{L})/ 0.0821 (317.5\text{k}) \\ &= .0101814572 \text{ mol}\end{aligned}$$

$$\begin{aligned}M &= n/n \\ &= 0.29/0.0821 (317.5) \\ &= 28.48315269 \text{ mol} = 28.5 \text{ mol g/ mol}\end{aligned}$$

$$\begin{aligned}n &= m/M \\ 0.29/28.48315269 &= .0101814572 \text{ mol}\end{aligned}$$