

Experiment # 5

Molar Mass by Vapor Density

Name: Anuli Segree _____

Date -October 5th, 2020

Section -CHEM 117L 02

Data Section

1. Temperature of water -----317.5-----K
2. Weight of flask, foil and condensed vapor -----117.95----- g
3. Weight of empty flask plus foil -----117.71----- g
4. Weight of condensed vapor -----0.24----- g
5. Volume of water required to fill the flask
(that is equal to the volume of the gas) -----0.265L----- mL
6. Barometric Pressure -----1.0015 atm---- mmHg

7. Molar mass of compound (see Equation 1
and 2- remember to use the proper units
for ideal gas equation. Show your work)
-----23.572g/mol-----

$$PV = nRT \quad M = m/n$$

P = pressure(atm), V = volume(L), R = gas constant (0.0821L atm/mol K), T = temperature(K), n = # moles

$$M = (m/v) * RT/P$$

$$M = (0.24/0.265) * 0.0821 * 317.5/1.0015$$

$$M = 23.572g/mol$$