

CHEM 1110: THE MOLAR MASS OF MAGNESIUM

Date: _____ *Name:* _____ *Lab Day/Time:* _____

Objective

To determine the molar mass of magnesium with the aid of the ideal gas law.

Procedure

As in Chem 1110 lab manual, pages _____

Observations

Data

Table 1. Pressure and Constants

Barometric pressure (mm Hg)	
Density of Mercury (g/cm ³)	13.6
Density of water (g/cm ³)	1.00
Gas constant, R (L·atm / mol·K)	.0820573

Table 2. Magnesium Data

	Run 1	Run 2
Mass of Mg turnings and weigh boat (g)		
Mass of <i>emptied</i> weigh boat(g)		
Mass of Mg turning used (g)		
Temperature of solution after reaction (°C)		
Distance between top of water in gas buret and top of water in beaker <i>after</i> reaction (mm)		
Volume of H _{2(g)} given off (mL)		
Vapour pressure of water at solution temperature (mmHg)		

Calculations

In the space below, show the following calculations

1. The total pressure inside the gas buret after reaction

2. The pressure inside the gas buret after reaction due to the H₂ *only*

3. The number of moles of H₂ in the gas buret after reaction

4. The moles of Mg

5. The atomic mass of Mg

6. Average

State the average atomic mass of magnesium determined. Do not automatically average your runs; only average them when both have no known experimental error, and in the case where there is known experimental error, use only the one good run and state why the other run is being discarded in your discussion.

7. The % error

$$\%Error = \frac{|Expected Value - Experimental Value|}{Expected Value} \times 100\%$$

Results

Table 3. Results

Molar Mass of Mg	Run 1	Run 2	Average

Discussion

Give one possible experimental error, and explain how this error would cause your experimental g/mole calculated to be higher or lower than the accepted value. If you omitted a run explain why.

Conclusion

Questions

Answer any questions your instructor assigns from the lab manual.