

Honors Chemistry: Gases Podcast 8 Problem Set

1. A 256 mL sample of an unknown gas was collected over water at 23°C and 750 mmHg. The gas has a mass of 0.80 grams. What is the molar mass of the gas? (The vapor pressure of water at 23°C is 21.0 mmHg)

2. 0.235 grams of magnesium reacts with excess hydrochloric acid to make 309 mL of hydrogen gas at 28°C and 615 mmHg. (The vapor pressure of water at 28°C is 28.3 mmHg). From the experimental data what is the molar mass of magnesium? What is the percentage error?

3. 0.855 grams of Potassium chlorate decomposes into oxygen gas and potassium chloride. A 350 mL sample of oxygen gas was collected at 65°C and 810 mmHg over water. (The vapor pressure of water at 65°C is 187.5 mmHg). According to experimental data, what is the molar mass of potassium chlorate? What is the percentage of error?

4. A compound contains only nitrogen and hydrogen and is 87.4% nitrogen by mass. A one liter sample of gas has a mass of 0.977 grams at 710 mm Hg and 100°C. What is the molecular formula of the gas?