05 Molar Mass of a Metal Lab (1257234)

Question | 1 | 2 | 3 | 4 | 5 | 6 | 7

Description

Purpose: To determine the molar mass of an unknown metal using stoichiometry and the gas laws.

Materials: Eudiometer, 1.5 - 2.0 cm piece of metal, 400 mL beaker, copper wire gauze, distilled water, 6.0 M HCl, buret clamp and stand, balance, gas pressure sensor, logger lite software and computer, temperature probe, ruler

Hints:

1. The reaction of the metal with the HCl produces hydrogen gas in a one to one ratio with the metal.

2. About 5 mL of 6.0 M HCl should be placed in the eudiometer first, followed by distilled water.

3. The wire gauze should be wrapped around the metal and wedged into the opening of the eudiometer.

4. Use about 150 mL of tap water in the beaker.

5. The pressure of the gas in the eudiometer is not the same as the atmospheric pressure. There are two factors which must be considered.

6. Assume the temperature of the gas in the eudiometer is the same as the temperature of the room.

7. Clean up: Neutralize the acid solution in the beaker with baking soda before disposing of it in the sink. Retrieve the copper gauze (it can be reused).

Calculations:

1. Calculate the molar mass of the metal.
2. If the metal is pure magnesium, calculate the percent error.

Instructions

Density of mercury = 13.56 g/ml
Density of water = 1.00 g/ml

1. Question Details Lab Partners [1837468]

Enter the name(s) of your lab partner(s). (If you worked by yourself, enter "none").

2. Question Details — Objective and procedure summary [3413760]

Restate the objective in your own words using complete sentences. Summarize the steps in your procedure. (Be sure and include any safety concerns).

3. Question Details — Upload Lab Photo [3413757]

Upload a photo of the lab apparatus with your face in the photo as you perform some part of the lab. Title the image with a unique file name before you upload it.(Maybe use your initials and part of the lab title) Choose File no file selected It must be less than 5 MB in size.

4. Question Details — Molar Mass of a Metal Lab [1411515]

Enter the temperature of the room: 4.0 ____ °C
Enter the mass of the unknown metal: 4.0 ____ g
Enter the pressure in the room: 4.0 ____ kPa
Enter the volume of the gas in the eudiometer: 4.0 ____ mL
Convert the pressure in the room to mmHg: 4.0 ____ mmHg
Enter the water vapor pressure: 4.0 ____ mmHg
Enter the difference in the height between the water levels. 4.0 ____ mm
Convert the distance to mmHg 4.0 ____ mmHg
Calculate the pressure of the gas: 4.0 ____ mmHg
Calculate the moles of the gas: 4.0 ____ mol
Calculate the experimental molar mass of the metal: 4.0 ____ g/mol
Using Mg as the accepted value, calculate the percent of error. ____ %

5. Question Details — Upload Calculations (Show Work) [3418656]

Upload a photo of your calculations, showing your work. Make sure your name and the date are written on the page. Title the image with a unique file name before you upload it.(Maybe use your initials and part of the lab title and the word Calcs)
Choose File no file selected

6. Question Details Error discussion [3413763]

What are some specific sources of error, and how do they influence the data? Which measurement was the least precise? Does the error make the final value obtained larger or smaller than it should be (give at least one example and trace the steps)? If your calculated percent errors are significant, you must propose valid explanations here.
Instrumental error and human error exist in all experiments, and should not be mentioned as a source of error unless they caused a significant fault. Significant digits and mistakes in calculations are NOT a valid source of error. In writing this section it is sometimes helpful to ask yourself what you would do differently if you were to repeat the experiment and wanted to obtain better precision and accuracy. Use complete sentences.

7. Question Details Observations, Skills utilized and learning [3413764]

What observations did you make during the lab? What chemistry concepts, laws, and/or skills were necessary to complete this lab? What did you learn or re-learn? Use complete sentences.

Assignment Details

Name (AID): **05 Molar Mass of a Metal Lab (1257234)**
Submissions Allowed: **5**
Category: **Homework**
Code:
Locked: **Yes**
Author: **Ryan, Matt (** mryan@allsaintsschool.org **)**
Last Saved: **Sep 26, 2016 04:18 PM CDT**
Permission: **Protected**
Randomization: **Person**
Which graded: **Last**

Feedback Settings
Before due date
Question Score
Assignment Score
Publish Essay Scores
Question Part Score
Mark
Help/Hints
Response
Save Work
After due date
Question Score
Assignment Score
Publish Essay Scores
Key
Question Part Score
Mark
Help/Hints
Response