Molar Volume of a Gas Virtual Lab

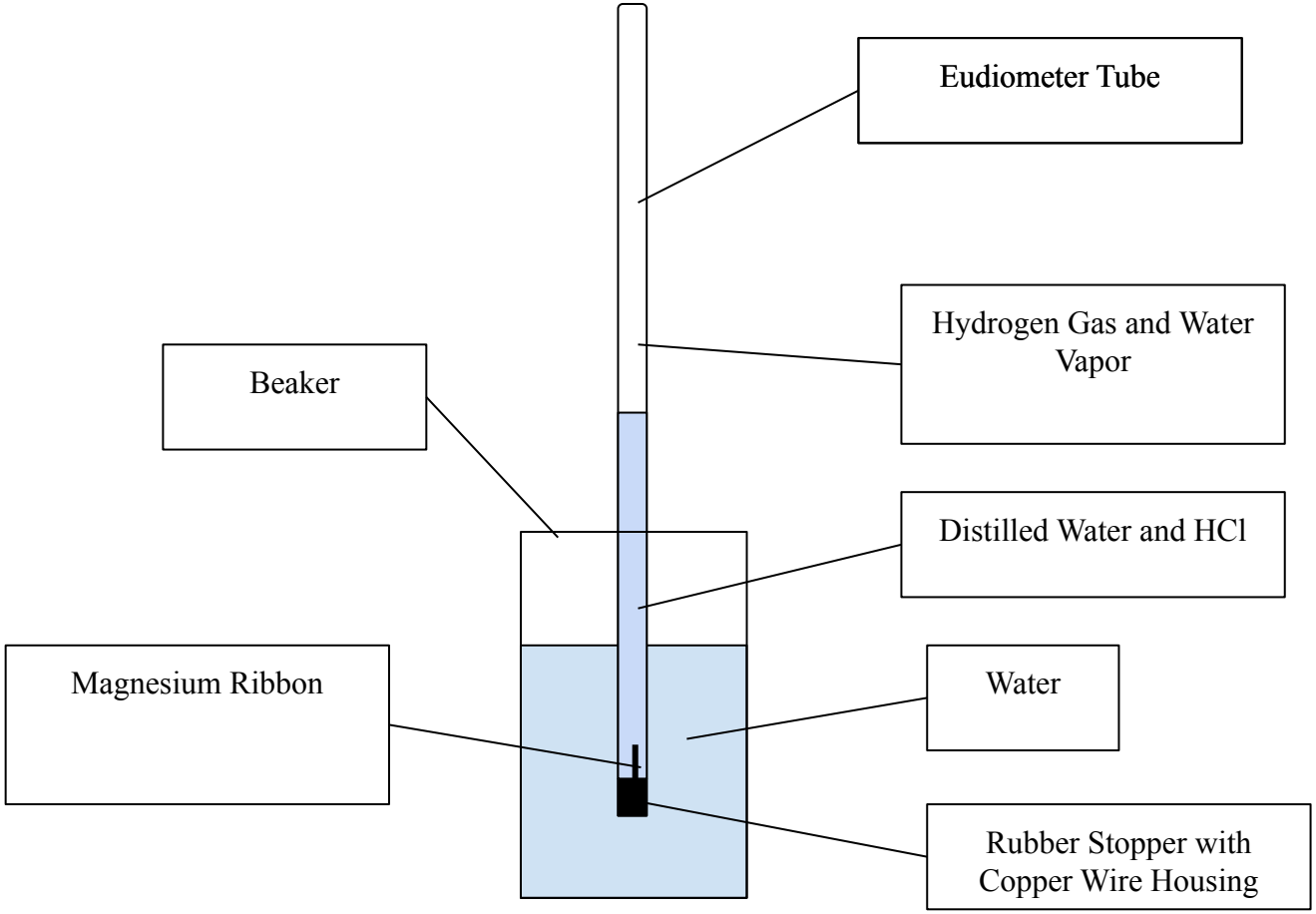
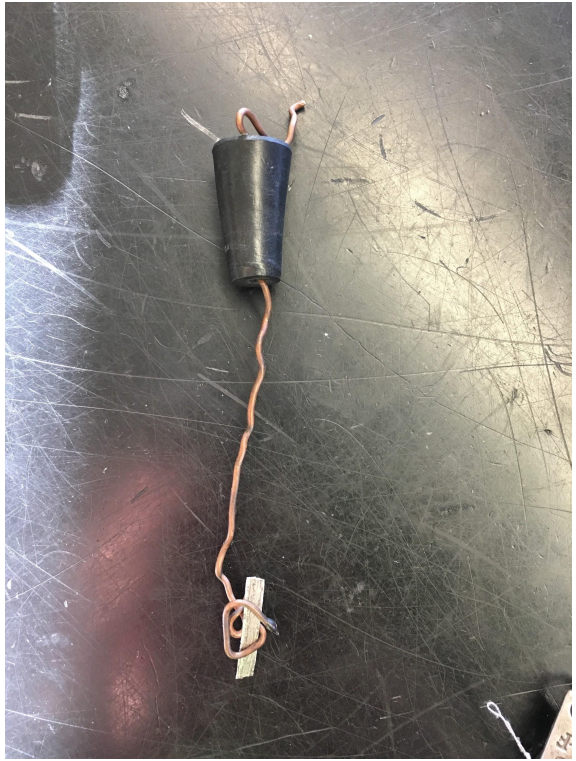


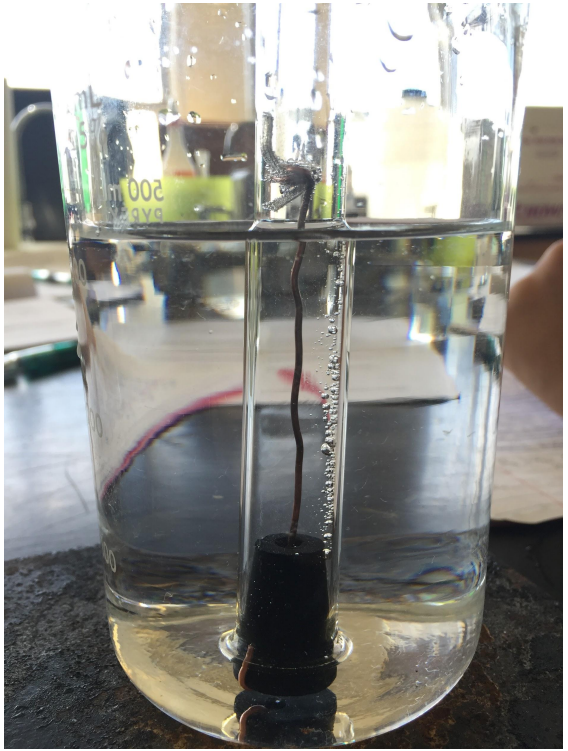
Figure: Lab Setup, Inverted Eudiometer

THE EXPERIMENT IN PICTURES



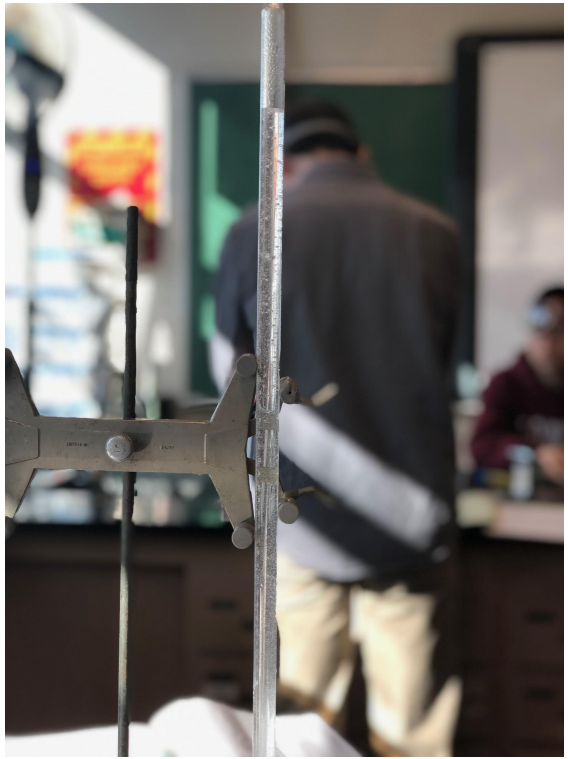
(1) The magnesium is secured in the copper wire attached to the rubber stopper.

(2) The stopper is placed snugly on the open end of the eudiometer. The eudiometer is inverted.

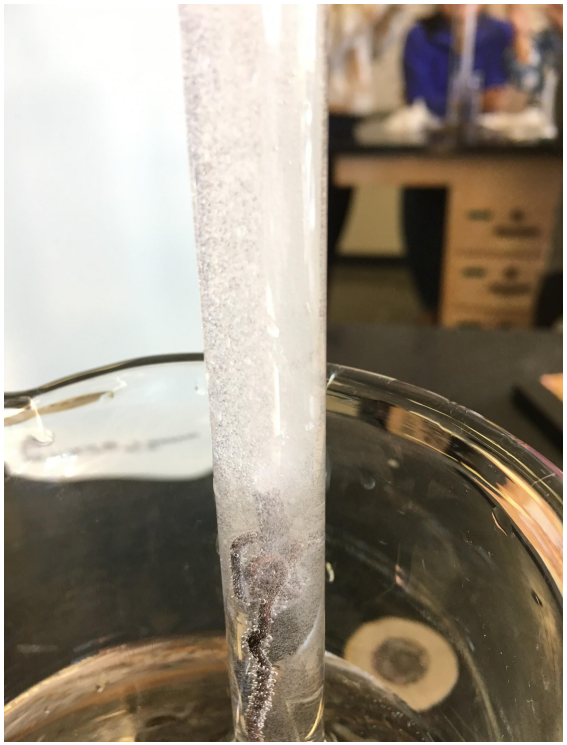


(3) A closer look at the setup from picture 2. The HCl is now in the top of the eudiometer.

THE EXPERIMENT IN PICTURES



(4) HCl moves from the top to the bottom of the eudiometer.

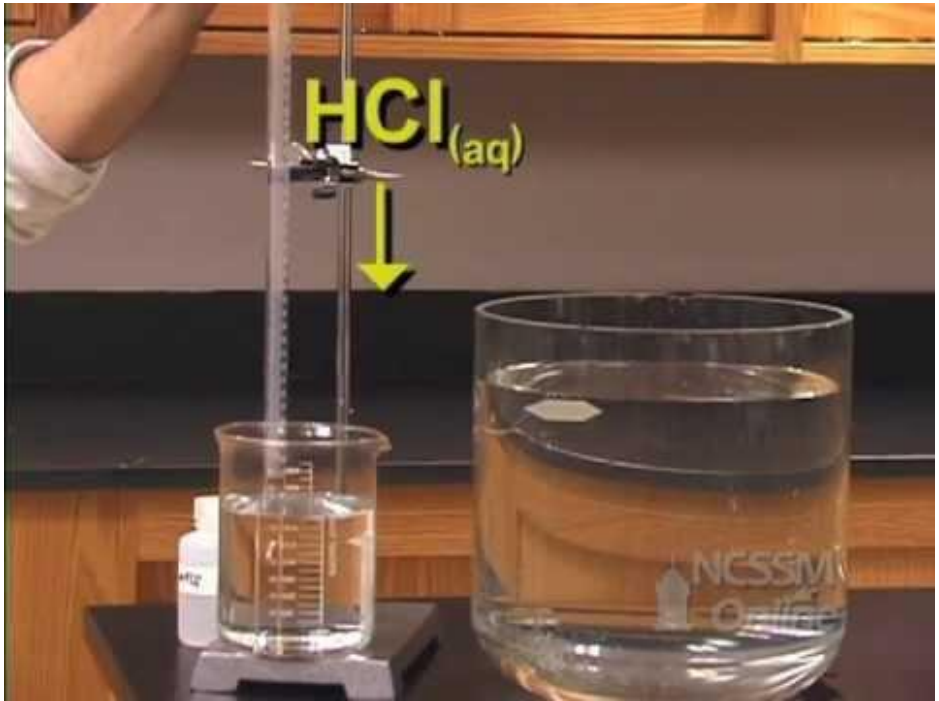


(5) Hydrogen gas bubbles are produced. The reaction stops when all of the Mg is used up and no more bubbles form.

(6) The water level in the eudiometer is equalized with the water level in the graduated cylinder and the volume recorded.

Watch YouTube Video: Determination of the Molar Volume of a Gas at STP

https://www.youtube.com/watch?v=6dmtLj2dLi0



Molar Volume of a Gas Lab Data

There are 9 sets of lab data for the experiment on the following slides.

1. Each student will be put into a group and you will use the data provided for the lab.
2. Each student will fill out their own data table.

Your assignment...

- Read the lab protocol and watch the lab video (in this PPTX).
- Go through the lab sheet and this PPTX.
- Answer the pre-lab questions/calculations with work shown.
- Complete all calculations needed based on the group's data you were assigned.
  - Show all work for each calculation
    - Insert pictures of your handwritten work.
    - Your name in INK must be in every picture inserted into your document.
  - Input your data into the data table provided.
- Answer the post-lab questions individually on your own sheet.
- You may discuss with others in your group sample, but each person produces their own work.

Data Set #1:

Conversion Factor for Mg ribbon: 0.007485 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.70 cm	2.77 cm
Volume of H_2 Gas	21.90 mL	22.30 mL
Corrected Volume of H_2 Gas	20.53 mL	21.75 mL
Barometric Pressure	752.4 mm Hg	752.4 mm Hg
Temperature of Water Bath	26.1℃	26.1℃

Data Set #2:

Conversion Factor for Mg ribbon: 0.01442 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.47 cm	2.45 cm
Volume of H_2 Gas	39.80 mL	36.24 mL
Barometric Pressure	759.1 mm Hg	752.4 mm Hg
Temperature of Water Bath	26.5℃	26.5℃

Data Set #3:

Conversion Factor for Mg ribbon: 0.01772 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	1.99 cm	2.24 cm
Volume of H_2 Gas	35.56 mL	37.13 mL
Barometric Pressure	762.5 mm Hg	762.5 mm Hg
Temperature of Water Bath	21.9℃	21.9℃

Data Set #4:

Conversion Factor for Mg ribbon: 0.007484 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.79 cm	2.71 cm
Volume of H_2 Gas	21.55 mL	21.47 mL
Barometric Pressure	753.5 mm Hg	753.5 mm Hg
Temperature of Water Bath	23.9℃	23.9℃

Data Set #5:

Conversion Factor for Mg ribbon: 0.01744 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.12 cm	2.07 cm
Volume of H_2 Gas	36.52 mL	36.40 mL
Barometric Pressure	758.715 mm Hg	758.715 mm Hg
Temperature of Water Bath	23.5℃	23.5℃

Data Set #6:

Conversion Factor for Mg ribbon: 0.007485 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.48 cm	2.89 cm
Volume of H_2 Gas	20.52 mL	23.40 mL
Barometric Pressure	753.8 mm Hg	753.8 mm Hg
Temperature of Water Bath	29.1 ℃	29.1 ℃

Data Set #7:

Conversion Factor for Mg ribbon: 0.01772 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.49 cm	2.10 cm
Volume of H_2 Gas	37.22 mL	35.61 mL
Barometric Pressure	758.95 mm Hg	758.95 mm Hg
Temperature of Water Bath	23.9℃	22.5℃

Data Set #8:

Conversion Factor for Mg ribbon: 0.01772 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	1.92 cm	2.11 cm
Volume of H_2 Gas	34.10 mL	36.02 mL
Barometric Pressure	759.1 mm Hg	759.1 mm Hg
Temperature of Water Bath	25.2℃	23.2℃

Data Set #9:

Conversion Factor for Mg ribbon: 0.01771 g/cm

	Trial 1	**Trial 2**
Length of Mg Ribbon	2.11 cm	2.00 cm
Volume of H_2 Gas	38.11 mL	36.18 mL
Barometric Pressure	756.79 mm Hg	756.79 mm Hg
Temperature of Water Bath	27.8℃	28.5℃