OCR Chemistry A-Level

PAG 01b - Moles Determination

Determination of the relative atomic mass of magnesium
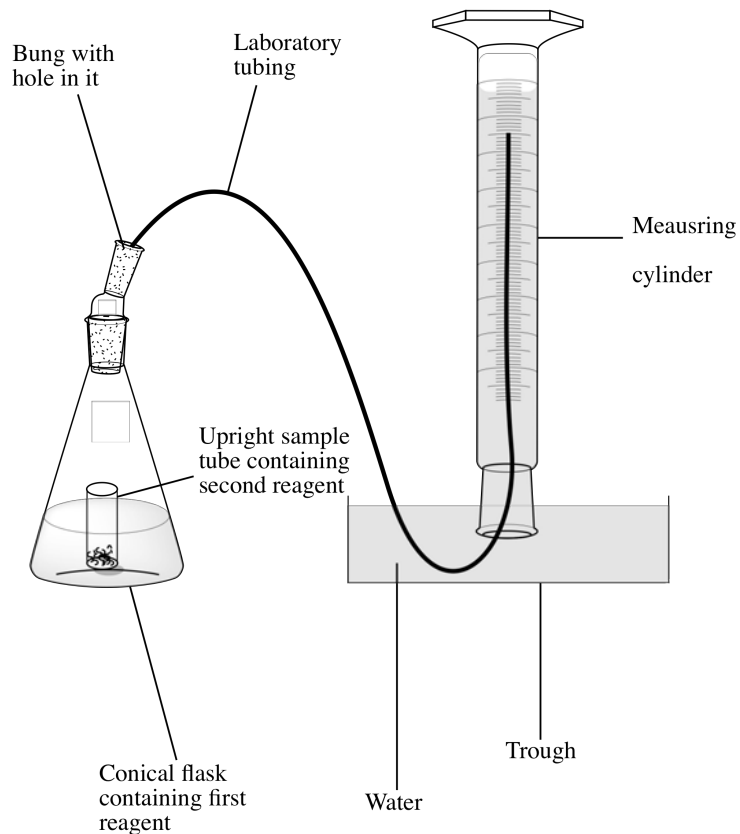
Flashcards

Describe how to set up the apparatus to measure the volume of gas produced in a reaction

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A gas syringe or an upside-down water-filled measuring cylinder in a trough of water may be used to collect the gas.

Bung with hole in it

Laboratory tubing

Meausring cylinder

Upright sample tube containing second reagent

Conical flask containing first reagent

Water

Trough

What is used to accurately measure mass?

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A digital balance that records mass to 2 decimal places

Write the chemical equation for the reaction that occurs when magnesium reacts with sulfuric acid

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$$Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$$

How can measuring the volume of gas produced during the reaction between magnesium and sulfuric acid be used to determine the relative atomic mass of magnesium?

How can measuring the volume of gas produced during the reaction between magnesium and sulfuric acid be used to determine the relative atomic mass of magnesium?

- Measure the mass of some magnesium then react it with sulfuric acid
- Measure the volume of hydrogen gas produced in a gas syringe or an upturned water-filled measuring cylinder
- Calculate the number of moles of H_2 produced (number of moles = volume / 24 dm^3)
- Use the ratio in the chemical equation to find the number of moles of magnesium
- Since the original mass of magnesium is known, the relative atomic mass can be calculated by dividing mass of magnesium by the number of moles

Give 2 possible sources of error in this experiment

Give 2 possible causes of sources in this experiment

- Some hydrogen gas may escape before the bung is put in the conical flask

- Some magnesium may not react

Why is it important to rapidly put the bung in the conical flask after adding the sulfuric acid?

Why is it important to rapidly put the bung in the conical flask after adding the sulfuric acid?

The reaction starts as soon as the acid is added so H_2 will start to be produced. To reduce the amount of H_2 that escapes, the bung should be inserted rapidly.

What equation links moles, molecular mass and mass?

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Mass (grams) = molecular mass x number of moles (mol)

m = M x n

What safety precautions should be taken when conducting an experiment with magnesium and sulfuric acid?

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- Sulfuric acid cause skin and eye irritation so wear safety goggles and avoid contact with skin

- Magnesium is highly flammable so keep away from naked flames