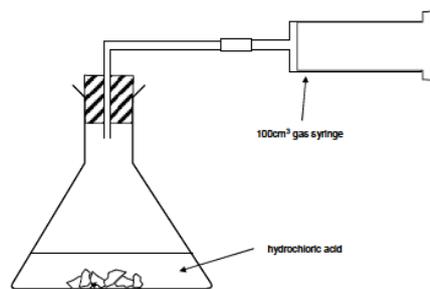
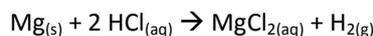


Introduction

Reactions that produce gases can be studied by collecting the gas. There are two main ways to collect gas, one with a gas syringe and another by the displacement of water. In this experiment you will compare these two methods using the reaction of magnesium ribbon with hydrochloric acid.

Magnesium + Hydrochloric acid → Magnesium chloride + hydrogen



Procedure

1. Set up the apparatus as shown above.
2. Take a 5 cm piece of magnesium ribbon and weigh
3. Place the magnesium into the conical flask
4. Add 20 cm³ of 1M acid, quickly reassemble the apparatus, take an initial reading at time 0s.
5. Take volume readings every 5 seconds until there is no further change in volume
6. Record your results in a table
7. When the reaction is completed, pour away the solution, rinse the flask in distilled water.
8. Repeat experiment using 2M HCl.

Analysis

1. Plot your data on one graph with time (s) on the x axis and volume of hydrogen (cm³) on the y axis. You will need to plot two lines, one for 1M HCl and the other for 2M HCl.
2. Add lines of best fit
3. Calculate the initial rate of each reaction by drawing a tangent to the line at its steepest point and calculating the slope.
4. Extrapolate your best fit line to show possible results had results been recorded for a longer period of time.
5. Why do the curves become less steep as the reaction takes place?
6. What does it mean about the reaction when the curve flattens out? Explain your answer.

Conclusion

Make a statement to explain what this experiment has shown. Use the collision theory to explain your results.

Evaluation

Were there any problems with the experiment? Suggest some improvements or extension to the experiment.

Assessment:

- You will be assessed on criteria E and F
- You will be given one lesson to carry out the practical activity and one other lesson to complete the report. Report should include: data table, graph, calculations of rate, discussion of results, conclusion with explanation, errors and improvements.

