

Energy changes in neutralisation

Topic

Energy changes in reactions.

Timing

20 min.

Description

In this experiment students do reactions at dropscale on thermometer strips and observe temperature changes.

Apparatus (per group)

- One student worksheet
- One thermometer strip.

Chemicals (per group)

Solutions contained in plastic pipettes, see 'Apparatus and techniques for microscale chemistry' handout.

- Hydrochloric acid 2 mol dm^{-3}
- Sodium hydroxide 2 mol dm^{-3}
- Magnesium ribbon.

Observations

In both cases – the reaction of the piece of magnesium with the hydrochloric acid and the neutralisation reaction – it should be apparent that energy has been given out as heat since the numbers under the drops should illuminate. The highest green number can be regarded as the highest temperature reached.

It might be possible to obtain a value for the enthalpy change of the neutralisation of a strong acid by a strong base. Students know the concentration of the reagents and will be able to observe the temperature rise. They will need to know the volumes involved – the volume of one drop is ca 0.02 cm^3 .

Health & Safety

Students must wear suitable eye protection (Splash resistant goggles to BS EN166 3).

Hydrochloric acid, $2 \text{ mol dm}^{-3} \text{ HCl (aq)}$, is of low hazard.

Sodium hydroxide solution, $2 \text{ mol dm}^{-3} \text{ NaOH (aq)}$ is CORROSIVE.

Magnesium ribbon is FLAMMABLE.



Credits

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Health & safety checked May 2018

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