Chemistry and electricity

Topic
Acids and alkalis, electrolysis of salt solution.

Timing
30–45 min.

Description
Students make up a salt solution with indicator and complete an electrical circuit. The cations / anions are attracted to the carbon electrode causing the indicator to change colour.

Apparatus and equipment (per group)
- Plastic petri dish
- Filter papers
- 6 V battery or power pack
- Leads and crocodile clips
- Carbon electrode
- Dropping pipette. Use the type of teat pipette (usually fitted to Universal Indicator bottles) that does not allow squirting – eg Griffin.

Chemicals (per group)
- Sodium chloride
- Universal Indicator (Flammable)
- Methyl orange.

Teaching tips
Other indicators to try might include: bromocresol green (lead attached to positive terminal), screened methyl orange (try both terminals), blue litmus (positive) and red litmus (negative). Phenolphthalein does not work very well in this experiment.

Background theory
When the ‘pencil’ is attached to the negative lead, H⁺ ions are attracted to it, producing the colour associated with acids for that particular indicator. If the ‘pencil’ is attached to the positive lead, the reverse happens.

Safety

Answers
1. When attached to the negative lead the writing is red, when attached to the positive lead it is purple.
2. H⁺ ions are attracted to the negative electrode, OH⁻ ions are attracted to the positive electrode. So depending on which electrode the pencil is attached to it will affect the colour of the indicator and therefore the writing.

Credits

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Health & safety checked January 2018

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