

## Chemistry and electricity

### Introduction

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.

### Equipment

#### Apparatus

- Plastic petri dish
- Filter papers
- 6 V battery or power pack
- Leads and crocodile clips
- Carbon electrode
- Dropping pipette

#### Chemicals

- Sodium chloride
- Universal indicator
- Methyl orange

### Health, safety and technical notes

- Read our standard health and safety guidance here <https://rsc.li/3u7uaFY>
- Universal indicator is flammable, see CLEAPSS Hazcard [HC032](#).
- For more information on sodium chloride, see CLEAPSS Hazcard [HC047b](#).
- Use of electrical charges is always of risk, use protective equipment where the charge is high.

### Notes

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.

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.

### 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.