

Using a microscale conductivity meter — teacher notes

Topic

Solutions – conductivity, ions.
Metals – conducting electricity.

Timing

15 minutes

Description

In this experiment students use the conductivity meter to test the conductivity of solids (eg metals) or solutions. The test is very easy to do and virtually any material can be examined. Students will need to be careful about cross-contamination when testing solutions.

Apparatus

- Clear plastic sheet (eg OHP sheet)
- Conductivity meter

Chemicals

- Copper(II) sulfate solution
- Sodium chloride solution
- Tap water
- Deionised water
- Sugar solution
- Copper foil
- Aluminium foil
- Iron nail
- Pencil lead

Observations

Metals and solutions/liquids that contain ions should cause the light emitting diode (LED) to shine. This experiment provides a quick and simple method for testing conductivity. The LED will light for any substance – whether liquid or solid – that conducts.

Health, safety and technical notes

- Read our standard health and safety guidance here <https://rsc.li/3LNbkfo>
- Students must wear suitable eye protection (Splash resistant goggles to BS EN166 3).
- Copper(II) sulphate solution, CuSO_4 (aq) causes eye damage (above 0.12 mol dm⁻¹), is harmful if swallowed and HAZARDOUS to the aquatic environment (see CLEAPSS Hazcard [HC027c](#)).