

Construction of the microscale electrolysis apparatus

Elegant electrolysis – the microscale way

Materials

- Plastic Petri dish and lid (55 mm disposable)
- Nail or metal knitting needle
- Bunsen burner
- 2 mm carbon fibre rods (these are available from online kite shops, see notes below)
- Dropping pipette (optional)

Procedure

1. Using a hot, mounted nail or needle (heated in a Bunsen flame), make two small holes in the sides of the Petri dish big enough to take the carbon-rod electrodes. The holes must be opposite each other and a few millimetres above the base to allow the carbon rods to come in at an angle.
2. Push 2 mm carbon rods through the holes, which will act as electrodes. The tips of the electrodes should rest on, or be close to, the base of the Petri dish. If this does not happen, the electrolyte, when placed between them, will spread out along their length. If your electrodes end up a little too far from the base of the Petri dish, you can generally deal with this by placing a short length of a plastic 3 ml dropping-pipette barrel, cut in half lengthways, under the tips of the electrodes, as shown in the figure below.
3. The electrode can be attached to a DC power supply or a 9 V battery using crocodile clips.

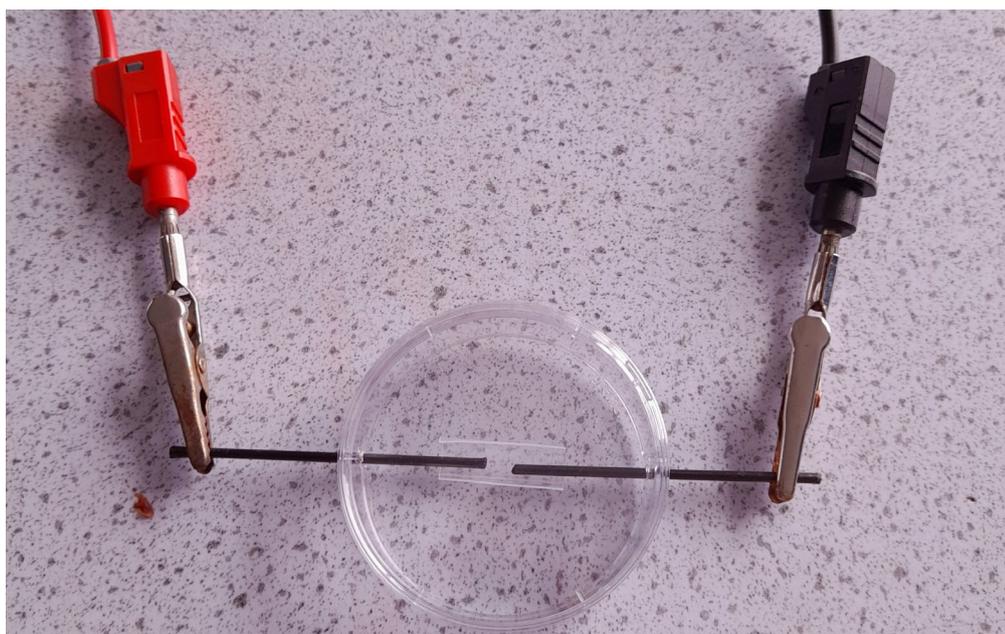


Image courtesy of Adrian Allan

Alternative setup

An alternative setup can be used where the electrodes are held in place using polypropylene corrugated board (often referred to by the trade names Corriflute or Correx). The instructions on how to make this are based on CLEAPSS guide GL163. A version with acrylic plastic can also be made.

Materials

- Polypropylene corrugated board (e.g. Corriflute)
- 2× carbon rods (2 mm in diameter cut into 70 mm lengths)
- Petri dish and lid (55 mm, disposable)

Procedure

1. Using the template below as a guide, mark out a sheet of 'Corriflute' for cutting/scoring.

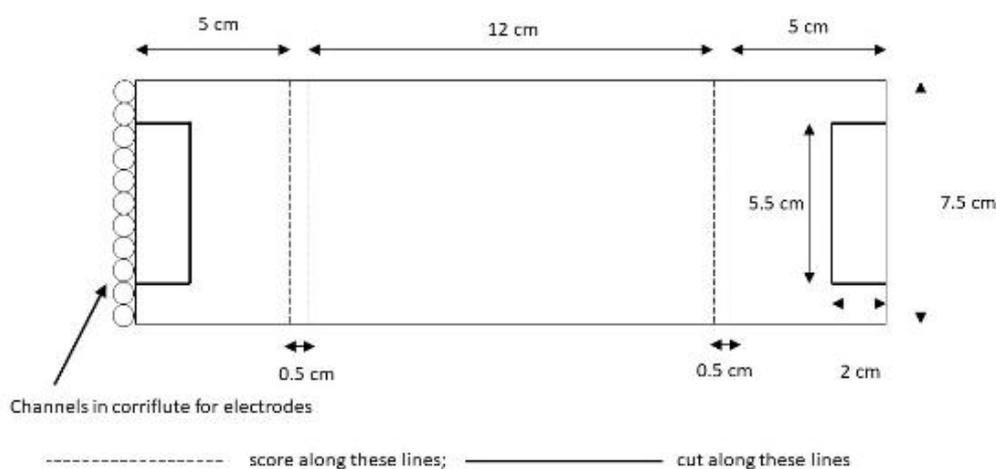


Image courtesy of Adrian Allan

2. Score the Corriflute with a craft knife; apply gentle pressure on the craft knife as you score to prevent cutting through both layers of the sheet.
3. Cut the Corriflute by scoring first with a craft knife then cutting with scissors.
4. Turn the Corriflute over and bend along the score lines.

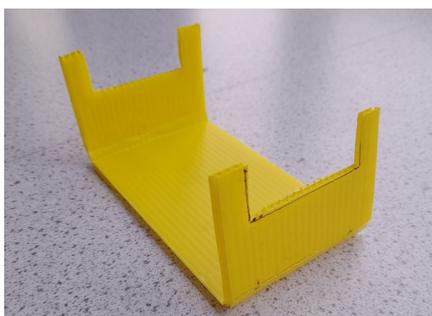


Image courtesy of Adrian Allan

5. Glue (a hot glue gun works well) the Corriflute into the final position.

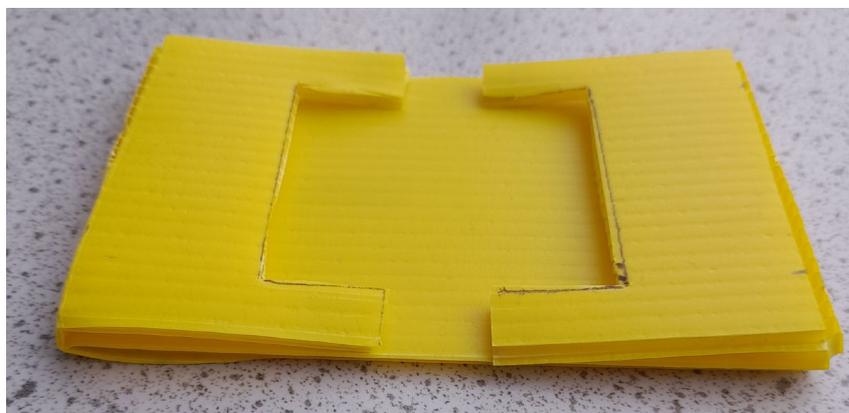


Image courtesy of Adrian Allan

Whilst the glue is setting, hold the Corriflute into place so that the 0.5 cm Corriflute strips between the score lines are vertical.

6. Using a hot, mounted needle (heat in a Bunsen flame), make two small holes in the sides of the Petri dish big enough to take the carbon-rod electrodes. The holes must be opposite each other and as near to the base as possible.
7. Insert the carbon rods through the Corriflute holes at the side and through the holes in the Petri dishes, as shown in the photo below. A short length of a plastic 3 ml dropping-pipette barrel, cut in half lengthways, under the tips of the electrodes will help to stop the electrolyte from spreading out. If the Corriflute is not white, a piece of white paper can be placed under the Petri dish to see the products clearly.

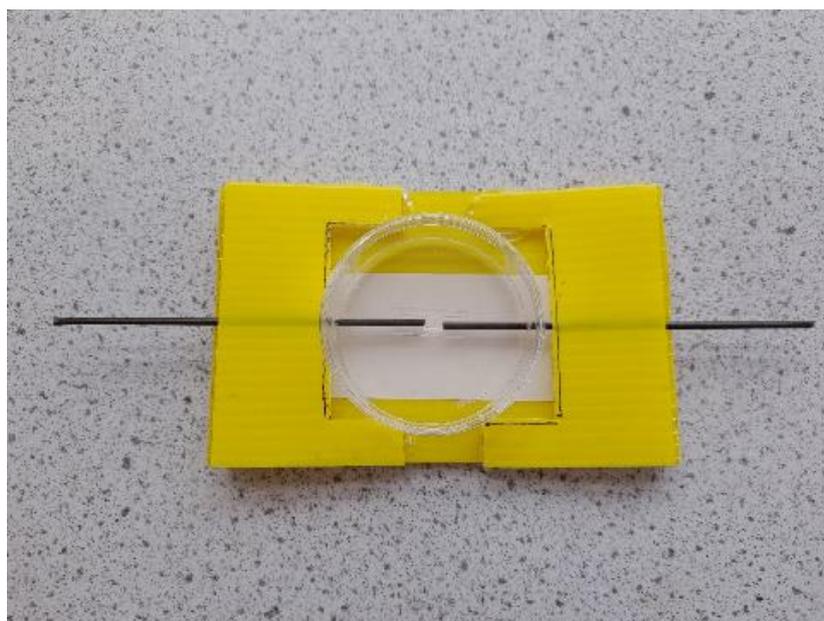


Image courtesy of Adrian Allan