A flash in the pan

Education in Chemistry
September 2017
rsc.li/EiC517ec

Technician notes

Kit

- Tall nickel crucible (diameter 25 mm)
- Cooking oil (3 cm^3)
- Pipe-clay triangle
- Tripod
- Heat-resistant mats
- Heat-resistant gloves
- Bunsen burner
- Small square of aluminium large enough to completely cover crucible and smother the flame
- Test tube rack
- Test tube
- Metre rule
- Test tube holder that grips the tube firmly, eg peg-type
- Sticky tape

Safety and disposal

Do not use more than 3 cm^3 of oil. Do not perform the demonstration in a fume cupboard as the flame is too tall. The demonstrator and audience should wear eye protection. Place safety screens around the equipment so that both audience and demonstrator are protected. The audience should be at least 3 metres away.

Short crucibles are unsuitable as they spit fat out to the side. Ceramic crucibles must not be used as they can break.

Following the demonstration all equipment (including tripod and pipe clay triangle) should be washed with detergent and dried.

Preparation

Set up the equipment in an open lab. Ensure plenty of room overhead, clear of light fittings or objects hung from the ceiling. Cover the demonstration desk with heat-resistant mats and set up the Bunsen, tripod and pipe-clay triangle. The nickel crucible should fit snugly in the pipe-clay triangle. Bend the ends of the triangle's wires around the frame of the tripod to secure it in position so the crucible does not tip when the flame is smothered.

Fix the test tube holder to a metre rule and place a test tube containing about 5 cm^3 of water in its grip. This can be propped up in a test tube rack ready for use.

In front of the class

Place 3 cm^3 of cooking oil into the crucible, light the Bunsen and open the air hole. After a few minutes the oil will ignite. Turn off the Bunsen at the gas tap. Put on heat-resistant gloves and show the fire can be extinguished by placing a piece of aluminium over the crucible to smother the flames.

Reignite the oil by relighting the Bunsen then turn the Bunsen off at the gas tap again. At arm's length, plus the length of the metre rule, add the water from the test tube to the crucible. A fireball will be ejected and rise about one metre above the crucible.

For more spectacular demonstrations, take a look at the Exhibition Chemistry archive on the Education in Chemistry *website: https://eic.rsc.org/exhibition-chemistry*

