

## Microscale reactions of ammonia – student sheet

In this experiment, you'll observe what happens when ammonia reacts with indicator solution, copper(II) sulfate solution and Nessler's reagent.

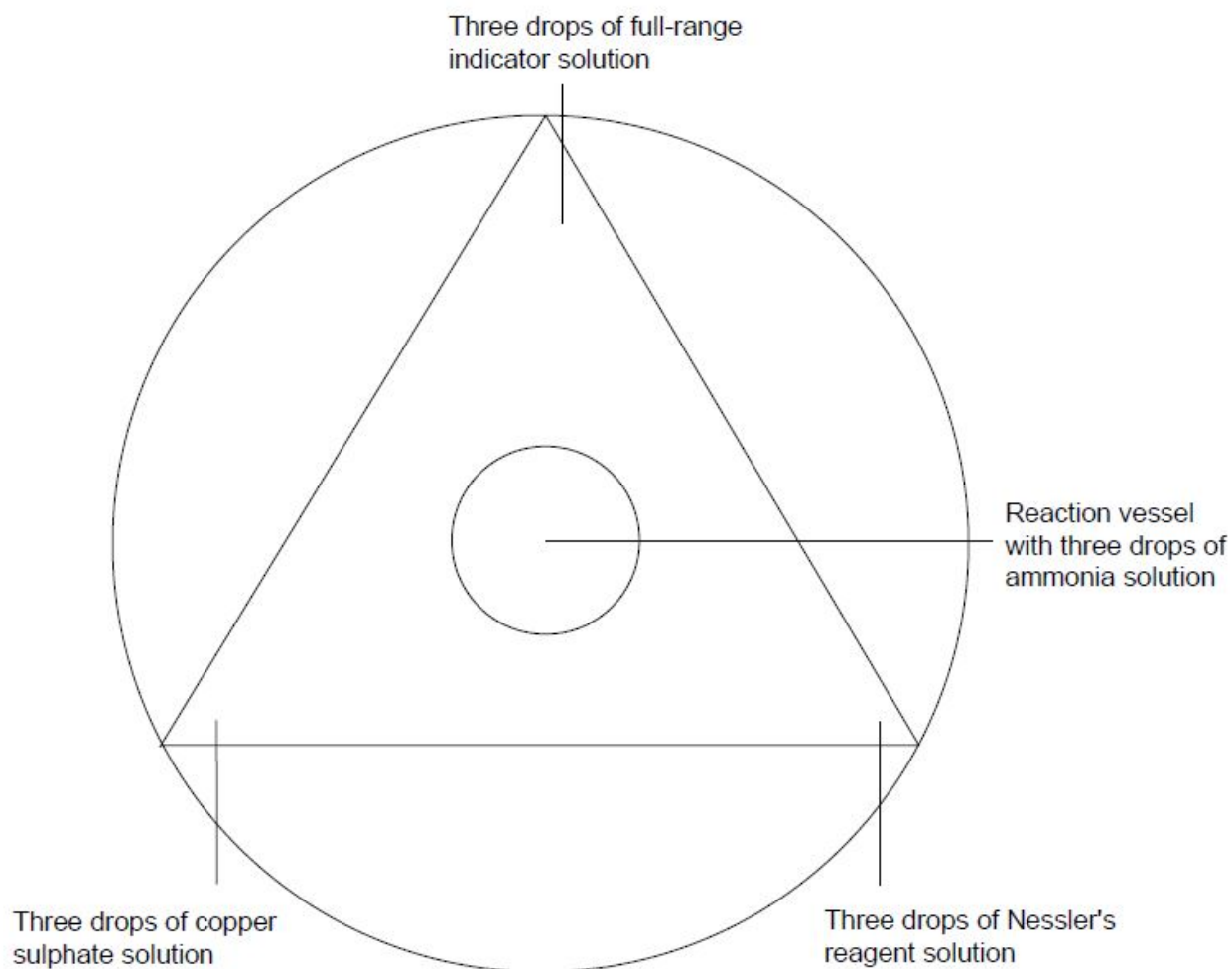
### Instructions

1. Cover the diagram (see below) with a clear plastic sheet.
2. Place the base of the Petri dish directly over the circle below. Place the reaction vessel in the centre.
3. At the corners of the triangle add drops of the test solutions only as indicated below. (Take care: Nessler's reagent is toxic – it contains mercury compounds – make sure that you do not get any on your skin. If you do, wash it off quickly with water.)
4. Put three drops of ammonia solution into the reaction vessel and quickly replace the lid on the Petri dish.
5. Record all your observations over the next 15 minutes.

### Health, safety and technical notes

- Wear eye protection throughout (splash-resistant goggles to BS EN166 3).
- Wear protective gloves.
- Nessler's reagent,  $\text{K}_2\text{HgI}_4$ , is extremely TOXIC by all routes and contains mercury. It is also CORROSIVE and toxic to aquatic life. Avoid contact with the skin and wash off quickly with water if this does occur.
- Ammonia solution,  $3 \text{ mol dm}^{-3} \text{ NH}_3(\text{aq})$ , is CORROSIVE.
- Copper(II) sulfate solution,  $0.2 \text{ mol dm}^{-3} \text{ CuSO}_4(\text{aq})$ , causes eye damage and is toxic to aquatic life.
- Some formulations of universal indicator can still be flammable at a 1:1 dilution. Keep away from sources of ignition.

Use the diagram on the next page when setting up the experiment.



There must be a gap between the top of the reaction vessel and the lid of the petri dish

