Rate of passive transport through cellulose tubing

Teacher and technician sheet

Equipment and materials

Each student or pair of students will require:

- 15 cm length of cellulose tubing knotted at one end and attached to a sawn-off plastic syringe barrel
- Elastic band
- 0.01 mol dm^{-3} solution of methylene blue
- 100 cm^3 beaker
- Clamp stand and boss
- Colorimeter and suitable filter (red)

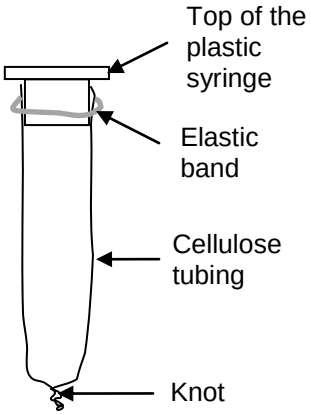

Figure Cellulose tubing attached to cut-off top of a plastic syringe.

Make sure that students wear eye protection and are aware that methylene blue is harmful.

Reagents and solution preparations

- 0.01 mol dm^{-3} solution of methylene blue

  Weigh out 3.20 g of methylene blue, dissolve in deionised water and make up to the mark in a 1 dm^3 volumetric flask to produce a 0.01 mol dm^{-3} solution.

Extension suggestions

The method may be adapted to investigate the rate of transport of any coloured solute through a cellulose membrane.