

## Technicians' notes (for photosynthesis . . . using algae wrapped in jelly balls)

### 3 - 4 weeks before the investigation

#### Instructions for the culture of the algae

Obtain a culture of *Scenedesmus*. Make up a solution of algal enrichment medium\* and sub culture the alga into this medium. Aerate gently and keep at temperatures between 18 to 22 °C and under constant illumination. (Constant illumination is not essential but growth is faster if this is available.) After 3 to 4 weeks the solution should be a dark 'pea soup' colour at which point you should subculture the algae again to maintain a healthy population.

### 1 day before the investigation

#### Making up the alginate

Make up a 3% solution of sodium alginate 100 cm<sup>3</sup> should be enough for a class of 30 students. This needs to be dissolved slowly on a warm hotplate and takes several hours to mix fully but lasts for several days in the refrigeration once made up. Different brands of sodium alginate have different consistencies when made up but this is not crucial as long as a fairly viscous mixture is obtained to drip steadily through the syringe.

#### Making up buffer solutions

If access to a colorimeter is not realistic then the colour change can be semi-quantified by comparing it to a series of coloured buffered solutions.

Solutions ranging from pH 7.6 – pH 9.2 can be made up using borax/boric acid buffers. If 9 cm<sup>3</sup> of buffer solution is placed in a series of vials and 1 cm<sup>3</sup> of concentrated (i.e. off the shelf) hydrogencarbonate indicator is added to this just prior to the lesson it gives a lovely spread of colours and students can then compare their test solution with the buffer. The buffers can be kept for weeks but the colour of the indicator deteriorates so it is best to add the indicator just before the lesson.

### 1 hour before the practical

Each student will need 50 cm<sup>3</sup> of algal culture solution and it is best if this can be poured out and left to stand for at least 30 minutes so that the algae begin to sediment out. This avoids wasting time waiting for this to happen in the lesson.