Technical consideration – Heating liquids

Care has to be taken when heating hot liquids. With such small volumes, salt solutions may quickly begin to "spit" and the solid may even decompose.

Vials (See Figure 6.6 on page 59 of the book) are really useful in microscale techniques as they are free standing.

Anti-bumping granules are a must – only one or two granules are required per vial.

Hot water

The vials can be placed in small beakers or in plastic reaction/microwave containers with holes in the lid (Figure 6.7 on page 60 of the book). Hot water from a kettle is then added.

The electric hotplate

Laboratory hotplates are not cheap and many include a stirrer. However, many (labelled) vials can be placed on a single hotplate. To remove a hot vial, use forceps and move the vial into a small beaker so that it does not tip over.

A less expensive hotplate

A less expensive hotplate can be found in kitchen shops. Place a kitchen baking tray over the hotplate and fill the tray with sand. This is particularly useful when using a watch glass where the hand and fingers can get dangerously close to the hot surface.

Individual heating device

CLEAPSS have made an individual heating device which has been used, not only for simple warming of liquids, but also for simple distillation and for the steam distillation and extraction of oils from plants.