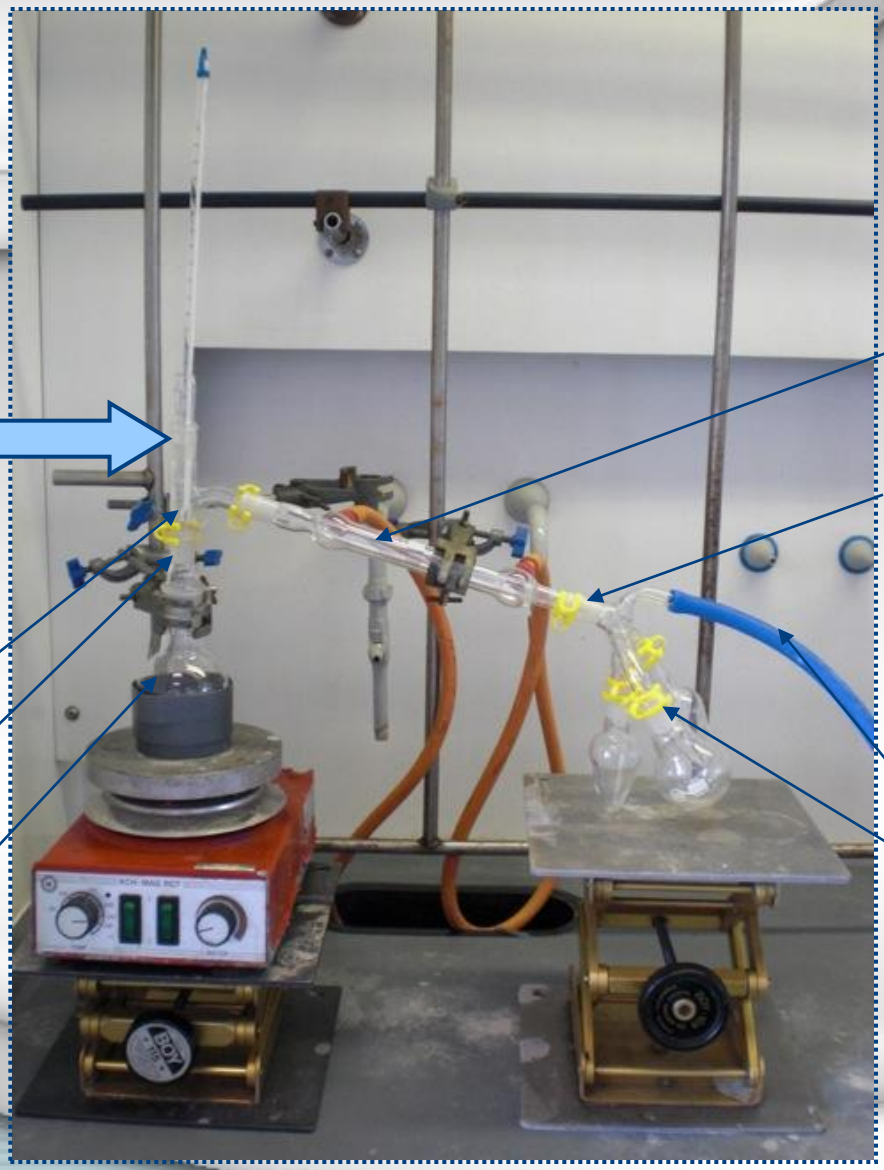
# Setting up a vacuum distillation

UNIVERSITY OF LIVERPOOL
Chemistry Department

Make sure you are familiar with the glassware and how each piece is used.



thermometer

holder

oil

still-head

adapter

Distillation flask

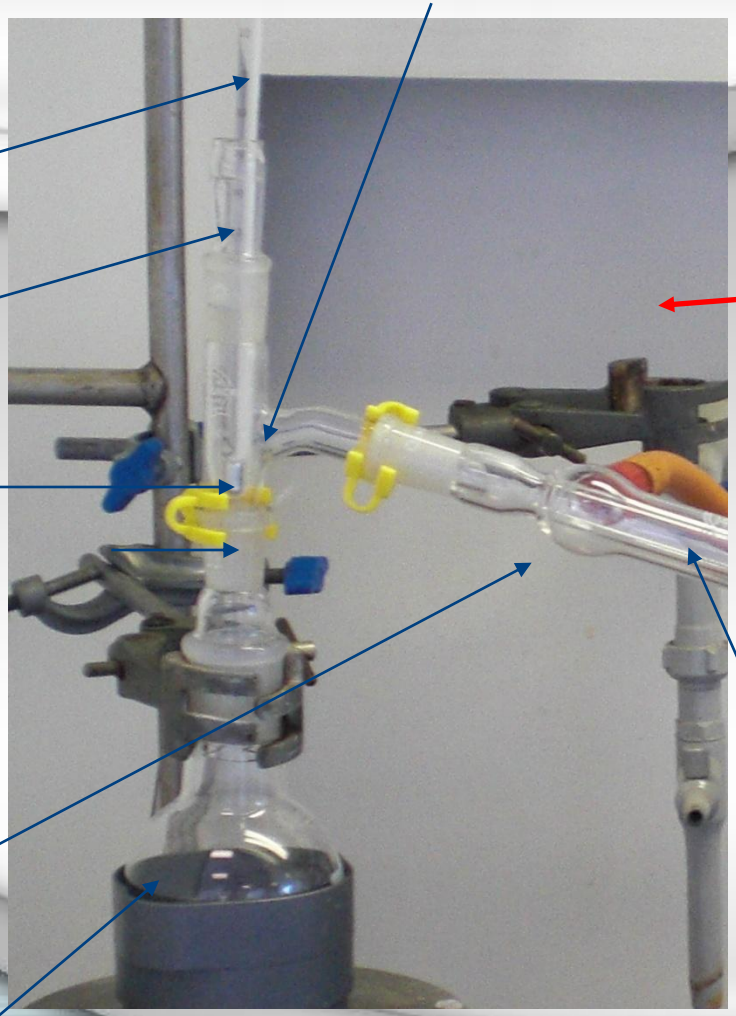
condenser

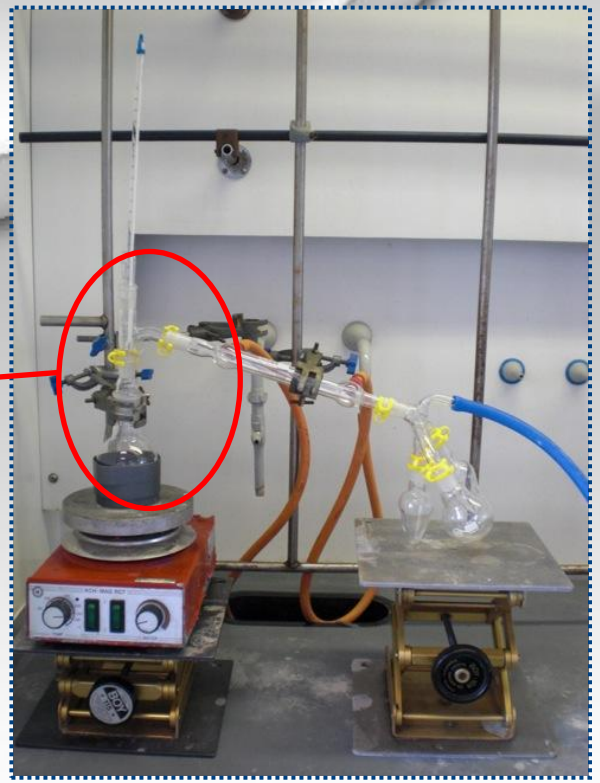
receiver adapter. For a vacuum distillation, this is known as a pig. See slides later

vacuum

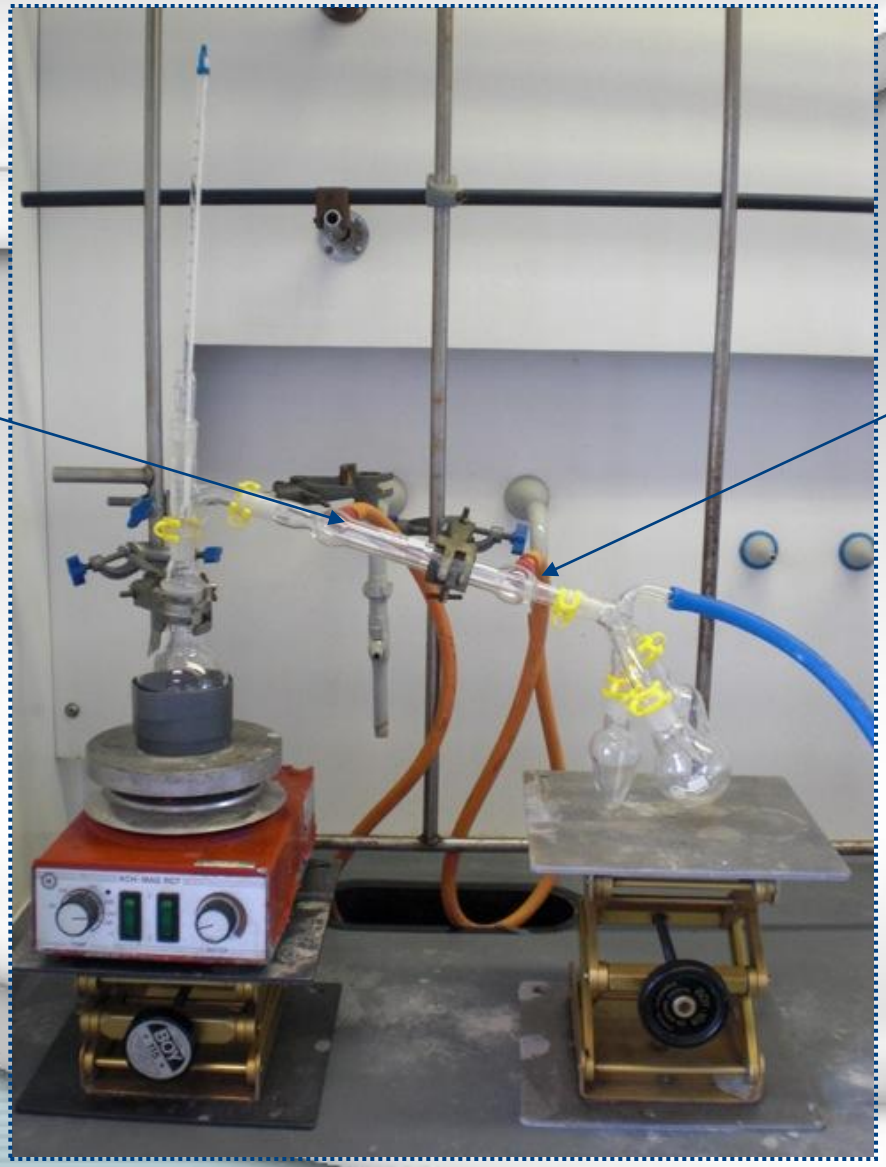
receiver flask

Make sure you are familiar with the glassware and how each piece is used.



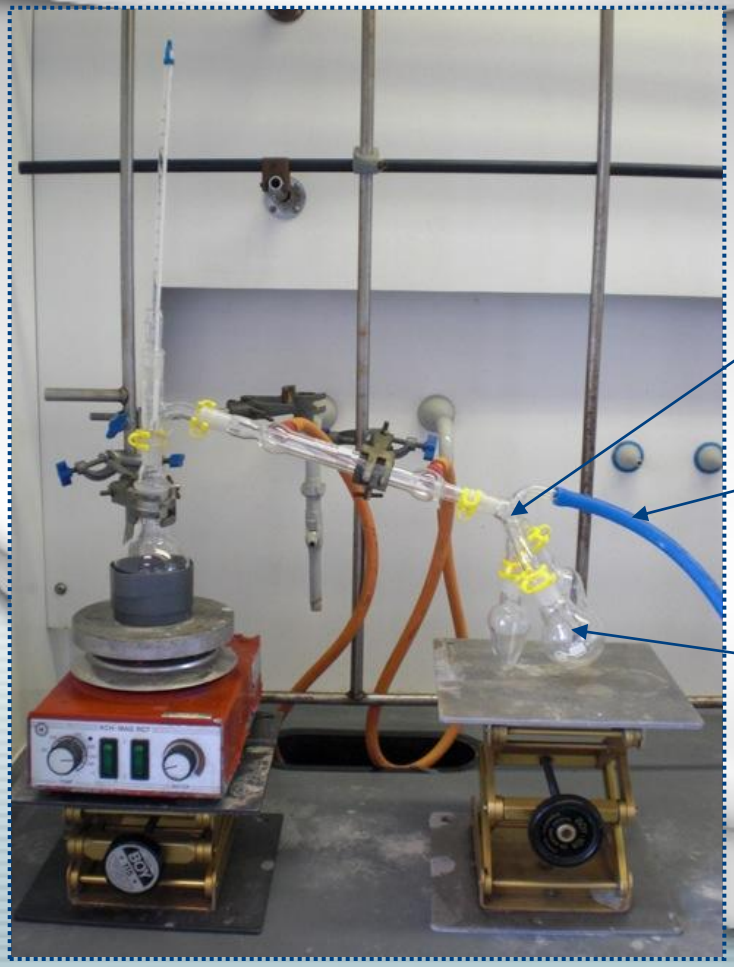



When setting up the condenser it is very important that you have the water flow in the correct direction.



When running a vacuum distillation, it can be a good idea to use a 'pig' adapter. The 'pig' adapter rotates to allow you to collect three fractions into three separate receiver flasks, without having to stop the distillation.

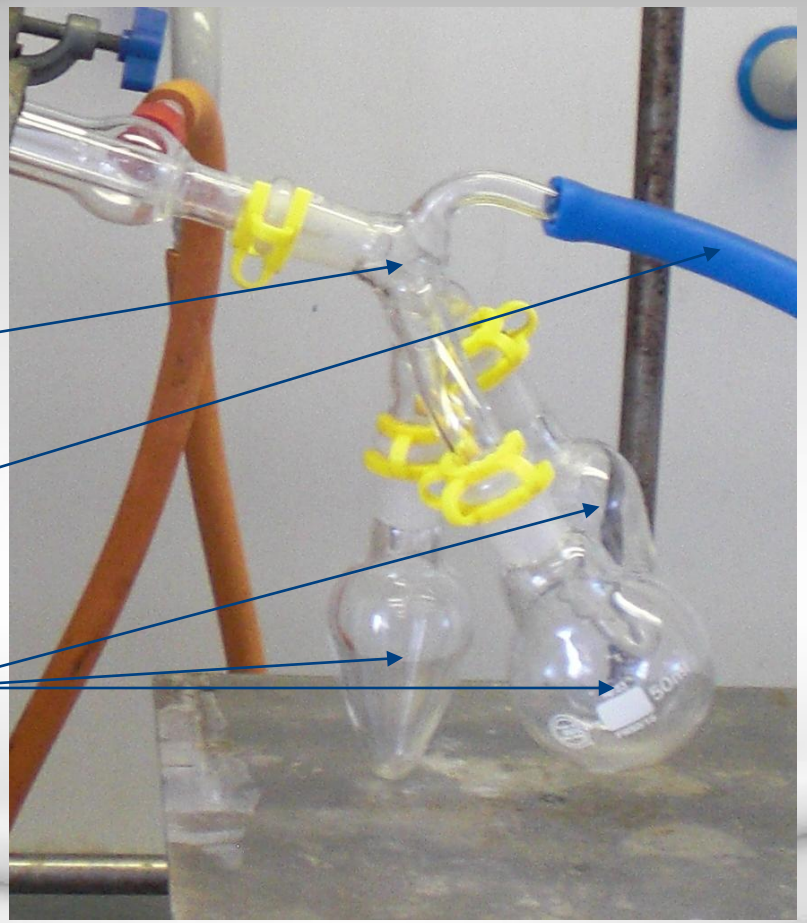
In a standard distillation, the flasks used to collect the distillate can be removed and added easily. This is not possible here since the system is under a vacuum.



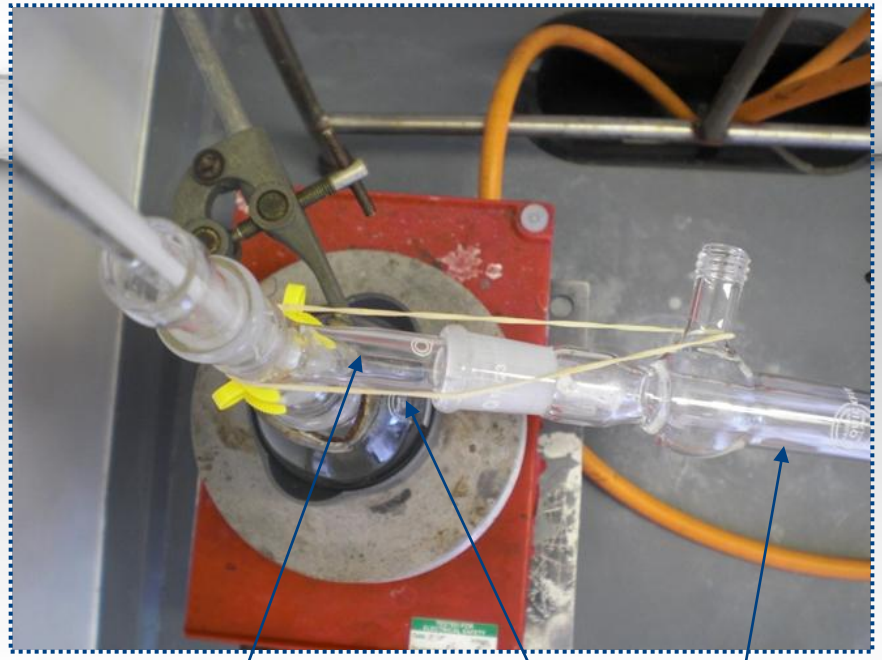
'pig' type receiving adapter

vacuum

receiver flasks



When setting up a vacuum distillation it is important to ensure that all of the ground-glass joints are clipped and clamped firmly. This will ensure that there is no movement in the joints and no vapour can escape.



Ensuring a tight seal can be helped by the use of using elastic bands as shown in the two diagrams:
*LEFT*: Ensuring condenser held tightly to the still head.
*BOTTOM*: Ensuring the 'Pig' is held tightly to the condenser.

Still-head

Condenser

Elastic Band

'Pig' type receiving adapter

When adding a heat source to the distillation set up, it is a good idea to use a lab jack, so the heat can easily be removed. An oil bath may be used instead of the heating blocks.

cotton wool. Used to insulate the glassware until the vapour path reaches the condensor. Ensures a more efficient distillation

heating blocks

heater stirrer

lab jacks

**Remember** to add either anti-bumping granules or a magnetic stirring bar to the distillation flask.