

OCR (A) Chemistry GCSE

PAG 3 - Separation Techniques

Flashcards

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How do you carry out evaporation?



How do you carry out evaporation?

Place the solution in an evaporating basin.

Gently heat with Bunsen burner.



How do you separate an insoluble solid from a liquid?



How do you separate an insoluble solid from a liquid?

Filtration - Place filter paper into a funnel. Place the funnel in a beaker. Pour the solution into the funnel. Solid remains in the filter paper.



How do you separate a soluble solid
from a solution?



How do you separate a soluble solid from a solution?

Evaporation:

Solution is warmed in an evaporating basin
(Bunsen burner).

Liquid evaporates, solid remains in basin.



How could you separate a soluble solid from a solution, if the solid decomposes when heated?



How could you separate a soluble solid from a solution, if the solid decomposes when heated?

Crystallisation:

Pour the solution into an evaporating dish and heat gently.

When the crystals start to form, remove the dish from the heat and leave to cool.

Once cold, filter the crystals out of the solution and leave them in a warm place to dry.



How would you separate coloured soluble substances?



How would you separate coloured soluble substances?

Chromatography:

Place a spot of the sample on a pencil line which is 2cm from the bottom of a piece of chromatography paper. Place paper in a beaker of solvent (solvent level must be below pencil line).



What are the 2 phases in chromatography?



What are the 2 phases in chromatography?

Mobile phase - solvent which carries substances up the stationary phase

Stationary phase - paper or thin layer of an inert substance on a glass plate



What affects how long molecules spend in each phase in paper chromatography?



What affects how long molecules spend in each phase in paper chromatography?

- Solubility in mobile phase
- Attraction to stationary phase



Why should the line be drawn onto chromatography paper in pencil?



Why should the line be drawn onto chromatography paper in pencil?

Pencil doesn't travel up the paper whereas pen ink would



Ink spots are placed above the level of solvent in the beaker. Why?



Ink spots are placed above the level of solvent in the beaker. Why?

The ink would dissolve in the solvent rather than moving up the chromatography paper



Why should chromatography paper be removed from the solvent before the solvent front reaches the top?



Why should chromatography paper be removed from the solvent before the solvent front reaches the top?

To allow the distance moved by the solvent to be measured so that the R_f value can be calculated



How do you calculate the R_f value?



How do you calculate the Rf value?

$$R_f = \frac{\text{Distance travelled by substance}}{\text{Distance travelled by solvent}}$$

Rf is between 0 and 1



What affects the R_f value?



What affects the R_f value?

The solvent and the stationary phase

Changing these will change the R_f value



What is the purpose of simple distillation and fractional distillation?



What is the purpose of simple distillation and fractional distillation?

Simple - separate one liquid from a solution

Fractional - separates several different liquids



Describe how to carry out simple distillation



Describe how to carry out simple distillation

Heat a solution in a round bottomed flask using a Bunsen burner. The solvent evaporates then cools in the condenser. The pure liquid is collected in a beaker.



How do you set up a condenser for simple distillation?



How do you set up a condenser for simple distillation?

Condenser should be horizontal with water in at the bottom and out at the top.



Describe how to carry out fractional distillation



Describe how to carry out fractional distillation

Heat mixture. Vapors rise up a column and condense when the temperature is below their boiling point (temp decreases up the column). Liquids flow out.

