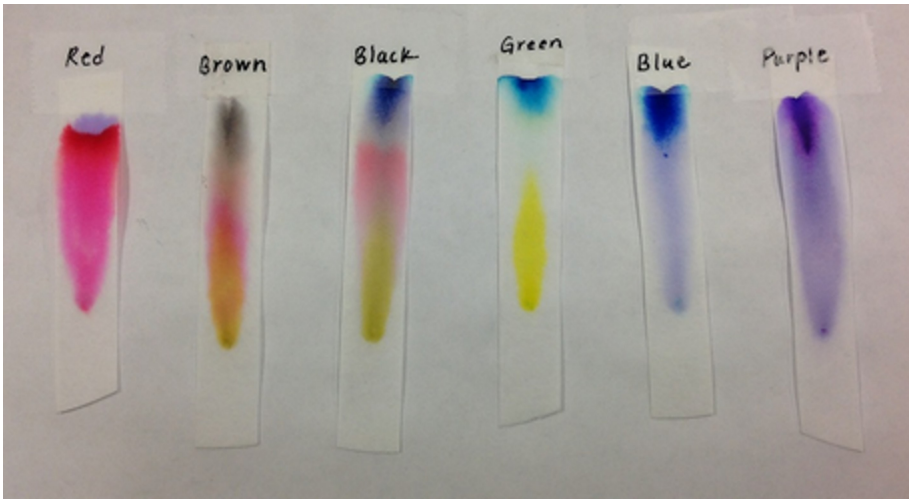
8 - Chromotography

02 March 2020 09:21



Separate substances in a mixture (liquid or gas)

Chromatography relies on two different 'phases':

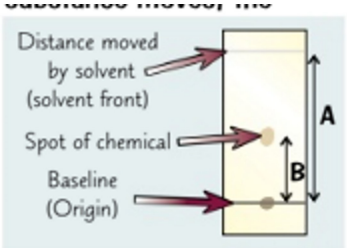
In the mobile phase the substances can move. In the stationary phase they cannot (solid or very thick liquid)

- the stationary phase, which in paper chromatography is very uniform, absorbent paper
- the mobile phase is the solvent that moves through the paper, carrying different substances with it

The different dissolved substances in a mixture are attracted to the two phases in different proportions. This causes them to move at different rates through the paper.

E can tell if a substance is pure because it will only produce one spot. You can therefore tell what substances are in a mixture by comparing the mixture's dots with pure samples.

The R_f value is a ratio between the distances travelled by the solvent and one of the spots.



The solvent has moved from the baseline a distance A.

The spot has moved a distance B.

$$R_f = \frac{B}{A}$$

A paper chromatogram can also be used to identify substances by comparing them with known substances. Two substances are likely to be the same if:

- they produce the same number of spots, and these match in colour
- the spots travel the same distance up the paper (have the same R_f value)

From <https://www.bbc.co.uk/bitesize/guides/zqc6w6f/revision/4>