

Halides

add nitric acid (HNO_3) and silver nitrate solution (AgNO_3)

- Cl^- Chloride - white precipitate
- Br^- Bromide - cream precipitate
- I^- Iodide - yellow precipitate

Sulfates (SO_4^{2-})

add HCl acid and Barium chloride (BaCl_2) solution $\rightarrow$ white precipitate

Nitrates (NO_3^-)

add Sodium Hydroxide solution (NaOH) if no ammonia add Al powder.
gas produced turns damp red litmus paper blue

Organic Compounds ($\text{C}=\text{C}$) (char when burns)

unsaturated ($\text{C}=\text{C}$) bromine brown $\rightarrow$ colorless
saturated ($\text{C}-\text{C}$) bromine stays brown.

amount of unsaturation can be determined by titration with 'redine' solution.

Empirical formulae

- Find mass of elements
- Calculate mass by elements' atomic mass.
- Ratio elements to one another.

Instrumental methods

Adv. Highly accurate
• Quicker

• Small quantities can be analysed

Disadv.

- usually very expensive
- special training needed.
- results can only be interpreted by comparison with already known specimens.

Mass Spectrometry - measures deflection of ions passed through magnetic field. (Finds mass of molecule)

Chromatography - separates different compounds in a mixture.

NMR Spectrometry - used in medicine; finds how atoms in molecule are arranged

Infrared Spectrometry - finds chemical bonds

Ultraviolet Spectrometry - measures amounts of substances present -