1.1 Relative Mass

1 Relative Isotopic Mass

The relative isotopic mass of an isotope = $\frac{12 \times \text{mass of 1 atom of the isotope}}{\text{Mass of 1 atom of } {}^{12}C}$

2 Relative Atomic Mass, *Ar*

The relative atomic mass of an isotope = $\frac{12 \times \text{average mass of 1 atom of the element}}{\text{Mass of one atom of } {}^{12}C}$

If the element consists of two isotopes, *Y* and *Z*, the relative atomic mass of the element,

$$Ar = \frac{[\text{no. of atoms of } Y \times \text{relative isotopic mass of } Y] + [\text{no. of atoms of } Z \times \text{relative isotopic mass of } Z]}{\text{Total number of atoms of } Y \text{ and } Z}$$

1.2 The mole and the Avogadro constant

Moles of gases

Equal volumes of gases, measured under the same conditions of temperature and pressure, contain equal number of moles and therefore equal number of molecules which is known as the Avogadro's law.

At s.t.p. (standard temperature and pressure) one mole of a gas molecules occupies a volume of 22.4dm^3. This volume is known as the - **molar volume of gases (V_m).**

Volume of gas = Mole X Molar volume

1.3 Determination of Relative Atomic Mass by Mass Spectrometry

Deflection

- Different ions are deflected by the magnetic field by different amounts. The amount of deflection depends on:
  - the mass of the ion. Lighter ions are deflected more than heavier ones.
  - the charge on the ion. Ions with 2 (or more) positive charges are deflected more than ones with only 1 positive charge.