CAIE Chemistry A-level

22: Analytical Techniques

Definitions

Definitions and Concepts for CAIE Chemistry A-level

Analytical Techniques

Fingerprint region: The region on an IR spectrum below 1500 cm^{-1} which is unique to each molecule.

Functional group: An atom/group of atoms responsible for the characteristic reactions of a compound.

Infrared spectroscopy: An analytical technique used to identify particular bonds and functional groups within a molecule. Infrared spectroscopy can also be used to identify impurities.

Isotope: Atoms of the same element with the same number of protons but different numbers of neutrons in the nucleus, e.g. ^{35}Cl and ^{37}Cl.

M/Z ratio: The mass to charge ratio on a mass spectrum. For 1+ ions, this is equivalent to the mass of the ion.

Mass spectrometry: A technique used to identify compounds and determine their relative molecular mass.

Molecular ion peak: The peak on a mass spectrum with the highest m/z value. It is used to determine the molecular mass of a compound.

M+1 peak: The peak in the mass spectrum which is one unit higher than the molecular ion peak, caused by the ^{13}C isotope. The peak will be much smaller as only around 1% of carbon is ^{13}C.

Relative atomic mass: Average mass of an atom of an element, relative to 1/12 of the mass of an atom of carbon-12.

Relative formula mass: Average mass of a compound relative to 1/12 of the mass of an atom of carbon-12. Relative formula mass refers to compounds that have a giant structure.

Relative molecular mass: Average mass of a molecule relative to 1/12 of the mass of an atom of carbon-12.

Relative peak height: In mass spectra, the peak heights show the relative abundances of the substance that made the peak.

Wavenumber: Represents the energy and frequency of infrared radiation absorbed by a bond in a molecule. This is the x-axis on IR spectra.