

CHEM2 – Chemistry in Action

Definitions to Learn

6. Energetics

Enthalpy change	Change in heat energy measured at constant pressure
Standard enthalpy of formation, ΔH_f^\ominus	Enthalpy change when one mole of a compound is formed from its elements at 298K and 100 kPa
Standard enthalpy of combustion, ΔH_c^\ominus	Enthalpy change when one mole of a substance is completely burnt at 298K and 100 kPa
Hess's Law	Total enthalpy change is independent of route
Bond dissociation enthalpy	Enthalpy needed to break a covalent bond in the gas phase
Mean bond enthalpy	Enthalpy required to break a covalent bond averaged over many compounds

7. Kinetics

Activation energy	Minimum energy needed for a reaction to occur
Catalyst	Speeds up a reaction without being used up
Rate of reaction	the change in concentration of a substance in a given time (units are $\text{mol dm}^{-3} \text{s}^{-1}$)

8. Equilibria

Le Chatelier's Principle	When the conditions on a system in equilibrium are changed, the equilibrium moves to oppose the change
Dynamic equilibrium	Forward rate = backward rate Concentrations are constant

9. Alkenes

Stereoisomers	same structural formula but different arrangement of atoms in space
E/Z isomers	isomers resulting from restricted rotation about a double bond, where two different groups are attached to each carbon of the C=C
Unsaturated	contains one or more double C=C bonds
Electrophile	electron pair acceptor

10. Alcohols

Fuel	a substance that is burned to produce heat
Biofuel	a fuel produced from biological sources
Carbon neutral	an activity that has no net annual carbon emissions to the atmosphere

11. Haloalkanes

Nucleophile	lone pair donor
Hydrolysis	breaking bonds using water
Radical	contains an unpaired electron

12. Redox & Analytical Techniques

Oxidation	loss of electrons or increase in oxidation number
Reduction	gain of electrons or decrease in oxidation number
Oxidising agent	electron acceptor
Reducing agent	electron donor
Molecular ion	complete molecule minus one electron