

Dynamic Equilibrium

The rates of forward and reverse reaction becomes equal

The concentration of products and reactants do not change

Normal Boiling Point

It is the temperature at which any pure liquid and vapours are at equilibrium, at one atmospheric pressure

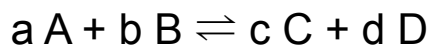
Boiling point depends on atmospheric pressure, at high altitude the boiling point decreases

Henry's Law

The mass of a gas dissolved in a solvent is proportional to the pressure of the gas above the solvent

Equilibrium Constant

For a reaction:



The equilibrium constant is:

$$K_c = \frac{[C]^c [D]^d}{[A]^a [B]^b}$$

Equilibrium Constant

Is independent of initial concentrations of the reactants and products

It is temperature dependent

Equilibrium constant for the reverse reaction (K_c') is the inverse of the equilibrium constant for the forward reaction (K_c), i.e. $K_c' = 1/K_c$

Le Chatelier's Principle

A change in any of the factors determining the equilibrium conditions will cause the system to change so as to counteract the effect of the change

Arrhenius Concept of Acids and Bases

Acids - give hydrogen ions $H^+_{(aq)}$
in aqueous solution

Bases - produce hydroxyl ions
 $OH^-_{(aq)}$

The Brönsted-Lowry Acids and Bases

Acids - Proton donors

Bases - Proton acceptors

Lewis Acids and Bases

Acids - Accept electron pair, e.g.
 BF_3 , $AlCl_3$, Co^{3+} , Mg^{2+} , etc.

Bases - Donate an electron pair,
e.g. H_2O , NH_3 , OH^- etc.

The Ionization Constant of Water

K_w is an equilibrium constant and is temperature dependent

$$K_w = [H^+][OH^-] = 10^{-14}, \text{ at } 298K$$

$$-\log K_w = -\log 10^{-14}$$

$$pK_w = pH + pOH = 14$$

$$pH = -\log [H^+]$$

Buffer Solution

The solutions, which resist any change in pH on dilution or by adding small amounts of acid or alkali

Buffer solution is prepared by adding weak acid and its salt formed with strong base or weak base and its salt formed with strong acid