

Unit 2: Kinetics & Equilibrium

Ch. 12 (p. 462-487), Ch. 13 (p. 488-541)

Kinetics Introductory Concepts

- Reaction Kinetics
- Kinetic Molecular Theory
- Collision Theory

Potential Energy Diagrams

- Constructing diagrams
- Endothermic vs. exothermic
- Activation Energy (E<sub>a</sub>)
- Activated Complex
- Heat of reaction, ΔH

Factors Affecting Reaction Rates

- Nature of Reactants
- Surface Area of Solid Reactants
- Concentration of Reactants
- Temperature of Reaction System
- Presence of a Catalyst

Reaction Mechanisms

- Elementary reactions
  - Definition
  - Types
- Rate-determining step (RDS)
- Reaction Intermediate
- Catalyst

STSE: Smog, Catalytic Converters and You

Equilibrium Introductory Concepts

- Irreversible vs. reversible reactions
- Dynamic equilibrium
- Establishing equilibrium

Equilibrium Constant Expression, K or K<sub>eq</sub>

- Writing expression
- Using K expression to solve for:
  - K
  - concentrations of reactant or product in equilibrium equations

"ICE" problems

Le Chatelier's Principle

- Shifting of equilibrium to account for "stresses" on an equilibrium system
- Stresses:
  - change in concentration of a reactant or product
  - change in pressure or volume
  - change in temperature