

## CHAPTER OVERVIEW

### 9: Chemical Kinetics

- 9.1: The Time Dependence of a Chemical Reaction is Described by a Rate Law
- 9.2: The Method of Initial Rates
- 9.3: Rate Laws Must Be Determined Experimentally
- 9.4: First-Order Reactions Show an Exponential Decay of Reactant Concentration with Time
- 9.5: Different Rate Laws Predict Different Kinetics
- 9.6: The Method of Half-Lives
- 9.7: Complex Rate Laws
- 9.8: Reaction Mechanisms
- 9.9: The Connection between Reaction Mechanisms and Reaction Rate Laws
- 9.10: The Rate Determining Step Approximation
- 9.11: The Steady-State Approximation
- 9.12: The Equilibrium Approximation
- 9.13: Arrhenius Equation
- 9.14: The Rate of Bimolecular Gas-Phase Reaction Can Be Estimated Using Hard-Sphere Collision Theory and an Energy-Dependent Reaction Cross Section
- 9.15: A Reaction Cross Section Depends Upon the Impact Parameter
- 9.16: The Rate Constant for a Gas-Phase Chemical Reaction May Depend on the Orientations of the Colliding Molecules
- 9.17: Kinetics of Reactions in Solution
- 9.18: Diffusion-controlled Reactions
- 9.19: Diffusion-Limited Reactions
- 9.20: Basics of Reaction Profiles
- 9.21: RK3. Activation Barriers
- 9.22: Eyring equation

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