A Libretexts Textmap organized around McQuarrie and Simon's textbook

Physical Chemistry: A Molecular Approach

• Front Matter
• 1: The Dawn of the Quantum Theory
• 2: The Classical Wave Equation
• 3: The Schrödinger Equation and a Particle in a Box
4: Postulates and Principles of Quantum Mechanics

R = bond length

m1 \quad m2

r1 \quad r2

5: The Harmonic Oscillator and the Rigid Rotor

6: The Hydrogen Atom

\[ E_n^{(1)} = \langle \phi_n | H_1 | \phi_n \rangle \]

\[ c_{nk}^{(1)} = \frac{\langle \phi_k | H_1 | \phi_n \rangle}{E_n^{(0)} - E_k^{(0)}} \]

\[ E_n^{(2)} = \sum_{k \neq n} \frac{|\langle \phi_k | H_1 | \phi_n \rangle|^2}{E_n^{(0)} - E_k^{(0)}} \]

7: Approximation Methods
8: Multielectron Atoms

9: Chemical Bonding in Diatomic Molecules

10: Bonding in Polyatomic Molecules

11: Computational Quantum Chemistry
12: Group Theory - The Exploitation of Symmetry

13: Molecular Spectroscopy

14: Nuclear Magnetic Resonance Spectroscopy

15: Lasers, Laser Spectroscopy, and Photochemistry
16: The Properties of Gases

17: Boltzmann Factor and Partition Functions

\[ Z = \sum_i e^{-\beta E_i} \]

18: Partition Functions and Ideal Gases

19: The First Law of Thermodynamics
20: Entropy and The Second Law of Thermodynamics

21: Entropy and the Third Law of Thermodynamics

22: Helmholtz and Gibbs Energies

23: Phase Equilibria
24: Solutions I - Liquid-Liquid Solutions

25: Solutions II - Solid-Liquid Solutions

26: Chemical Equilibrium

27: The Kinetic Theory of Gases
• 28: Chemical Kinetics I - Rate Laws

• 29: Chemical Kinetics II - Reaction Mechanisms

• 30: Gas-Phase Reaction Dynamics

• 31: Solids and Surface Chemistry
$e^{i\pi} + 1 = 0$

32: Math Chapters

- Back Matter