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

- $m_1$ and $m_2$

- $r_1$ and $r_2$

5: The Harmonic Oscillator and the Rigid Rotor

- $1.7 \times 10^{-10}$ Å

- $1.1$ Å

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

![Graph showing the relationship between entropy (S) and temperature (T)].

- 21: Entropy & the Third Law of Thermodynamics

![Image of a man with the caption: Helmholtz and Gibbs Energies].

- 22: Helmholtz and Gibbs Energies

![Image of an iceberg with the caption: Phase Equilibria].

- 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
\[ e^{i\pi} + 1 = 0 \]