1. Introduction: Matter and Measurement

2. Atoms, Molecules, and Ions
3. Stoichiometry: Chemical Formulas and Equations

4. Reactions in Aqueous Solution
5. Thermochemistry

6. Electronic Structure of Atoms

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<tr>
<td>S 16</td>
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7. Periodic Properties of the Elements
8. Basic Concepts of Chemical Bonding

9. Molecular Geometry and Bonding Theories

10. Gases

11. Liquids and Intermolecular Forces
### 16. Acid–Base Equilibria

![Ammonium and Hydroxide Equilibrium]

The reaction between ammonium ion ($\text{NH}_4^+$) and hydroxide ion ($\text{OH}^-$) can be represented as:

$$\text{NH}_4^+ + \text{OH}^- \rightleftharpoons \text{NH}_3 + \text{H}_2\text{O}$$

#### Key Points
- Ammonium is a weak acid.
- Hydroxide is a strong base.
- The reaction shifts to the right when more $\text{OH}^-$ is added or to the left when more $\text{H}_2\text{O}$ is added.

### 17. Additional Aspects of Aqueous Equilibria

![Sodium Chloride Crystal]

Sodium chloride ($\text{NaCl}$) dissolves in water to form sodium ions ($\text{Na}^+$) and chloride ions ($\text{Cl}^-$), which are distributed uniformly through the solution.

#### Key Points
- Dissociation occurs when $\text{NaCl}$ dissolves.
- The solution is electrically neutral.

### 18. Chemistry of the Environment

![Industrial Emissions]

The chemistry of the environment is crucial for understanding pollution and environmental health.

#### Key Points
- Industrial emissions contribute to pollution.
- Chemical reactions in the environment affect ecosystems.
- Understanding these reactions is essential for environmental protection.
19. Chemical Thermodynamics

20. Electrochemistry

21. Nuclear Chemistry
22. Chemistry of the Nonmetals

23. Metals and Metallurgy

24. Chemistry of Coordination Chemistry