

Principles of General Chemistry (Atoms First) | Table of Contents

Chapter 1: Essential Ideas

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- Understand the aim, scope, and importance of chemistry

1.2 The Scientific Method

- Understand how the scientific method works (5)
- Understand the domains of chemistry

1.3 Matter, Mass, and Weight

- Compare and contrast properties of three states of matter (5)
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1.4 Atoms and Molecules

- Identify and describe atoms and molecules

1.5 Elements, Compounds, and Mixtures

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1.6 Physical and Chemical Properties

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1.7 Extensive and Intensive Properties

- Understand extensive and intensive properties of matter (5)

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- Understand how to use metric and SI system of units names and abbreviations (5)
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Chapter 2: Atoms Molecules and Ions

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- Understand the laws of definite and multiple proportions

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- Understand the natural abundances and distributions of the elements (5)

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- Understand sp (1, 2, and 3) hybridization (5)

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- Understand heat transfer between substances (40)

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10.6 Phase Transitions: Vaporization, Sublimation, and Melting

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- Describe supercritical fluids and determine the critical point

10.10 Types and Properties of Solids

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 - Distinguish between ionic solids, metallic solids, covalent network solid, and molecular solids (5)
 - Identify properties of solids (5)
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10.11 The Structures of Metals

- Identify and describe types of unit cells in crystalline lattices
- Calculate atomic radius and density for metals (40)

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- Describe various structures of ionic crystals
- Identify and describe types of unit cells in ionic crystals
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- Describe the formation of solutions (5)

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- Describe the properties of solutions of solids in liquids

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- Describe how salts form from weak acids and strong bases
- Describe how salts form from weak acids and weak bases

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- Name and write formulas for alkynes and recognize physical properties of alkynes (5)

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- Name and write formulas for aromatic compounds and recognize physical and chemical properties of aromatic compounds (5)
- Name and write formulas for aromatic hydrocarbons

21.6 Alcohols and Ethers

- Identify the characteristics of alcohols (5)
- Recognize physical and chemical properties of ethers (5)

21.7 Aldehydes, Ketones, Carboxylic Acids, and Esters

- Identify the characteristics of aldehydes and ketones (5)
- Identify the characteristics of carboxylic acids and esters (5)

21.8 Amines and Amides

- Identify the characteristics of amines (5)
 - Identify the characteristics of amides (5)
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