

General Instructional Objectives

Chapter 14. Alcohols, Phenols, and Ethers

14.1 Bonding Characteristics of Oxygen Atoms in Organic Compounds

- Describe the bonding characteristics of the carbon atom in alcohols, and ethers.

14.2 Structural Characteristics of Alcohols

- Describe the bonding characteristics of the carbon atom forming alcohols and ethers.
- Be able to classify alcohols as 1^{ry}, 2^{ry} or 3^{ry} alcohols depending on the carbone atom attached to -OH.

14.3 Nomenclature for Alcohols

- Know the names of common alkyl groups found on alcohols and give common names of alcohols.
- Know IUPAC nomenclature for simple alcohols.
- Describe the ways Alcohols are named using IUPAC rules.

14.4 Isomerism for Alcohols

- Describe the types of isomerism found in alcohols: constitutional isomerism (skeletal and positional)
- Be able to draw constitutional isomers (Lewis structures or condensed formulas as specified) given alcohol formula.

14.6 Physical Properties of Alcohols

- Describe the physical properties of commonly used alcohols.

14.7 Preparation of Alcohols

- Know preparations of alcohols by dehydration of alkenes including knowing the reagents necessary to carry out these reactions.

14.8 Classification of Alcohols

14.9 Chemical Reactions of Alcohols

- Classify reactions as substitution, rearrangement, addition or elimination.
- Know reactions of alcohols by intramolecular dehydration of alkenes, intermolecular dehydration to produce ethers, oxidation of alcohols, halogenations of alcohols including knowing the reagents necessary to carry out these reactions.
- Be able to apply opposite of Markovnikov's rule- Zaitsev's Rule.

14.11 Structural Characteristics of Phenols

- Describe the bonding characteristics of the phenols.

14.12 Nomenclature for Phenols

14.13 Physical and Chemical Properties of Phenols

14.15 Structural Characteristics of Ethers

14.16 Nomenclature for Ethers

14.18 Physical and Chemical Properties of Ethers

14.20 Sulfur Analogs and Alcohols

14.21 Sulfur Analogs of Ethers

Menthol: A Useful Naturally Occurring Terpene Alcohol; Ethers as General

Anesthetics; Marijuana: The Most Commonly Used Illicit Drug; Garlic and Onions: Odiferous Medicinal Plants