

CHAPTER OVERVIEW

13: STRUCTURE AND SYNTHESIS OF ALCOHOLS

LEARNING OBJECTIVES

After reading this chapter and completing ALL the exercises, a student can be able to

- distinguish between alcohols, phenols, enols, and carboxylic acids - refer to section 13.1
- classify alcohols as primary, secondary, or tertiary - refer to section 13.2
- predict relative physical properties of alcohols, such as relative boiling points and solubility in a specified solvent - refer to section 13.3
- determine the structure of alcohols and phenols from spectroscopic data - refer to section 13.4
- predict the relative acidity of alcohols - refer to section 13.5
- use resonance to explain why phenols are more acidic than alcohols - refer to section 13.5
- specify the base needed to ionize an alcohol or phenol - refer to section 13.5
- predict the products and specify the reagents for alcohol and diol synthesis from alkyl halides, alkenes, and alkynes from the previous chapters - refer to section 13.6
- predict the products and specify the reagents to synthesize alcohols from the reduction of carbonyls - refer to section 13.7
- predict the products and specify the reagents to prepare Grignard and organolithium reagents - refer to section 13.8
- predict the products and specify the reagents for alcohol synthesis from organometallic reagents with aldehydes, ketones, esters, acyl halides, & epoxides - section 13.9
- distinguish between the structure and reactivity of thiols and sulfides - refer to section 13.10
- explain the commercial synthesis of alcohols - refer to section 13.11

Please note: IUPAC nomenclature and important common names of alcohols were explained in Chapter 3.

[13.1: Introduction to Structure and Synthesis of Alcohols](#)

[13.2: Classification of Alcohols](#)

[13.3: Physical Properties of Alcohols](#)

[13.4: Spectroscopy of Alcohols](#)

[13.5: Acidity of Alcohols and Phenols](#)

[13.6: Synthesis of Alcohols - Review](#)

[13.7: Reduction of the Carbonyl Group - Synthesis of 1° and 2° Alcohols](#)

[13.8: Organometallic Reagents](#)

[13.9: Organometallic Reagents in Alcohol Synthesis](#)

[13.10: Thiols \(Mercaptans\)](#)

[13.11: Commercially Important Alcohols](#)

[13.12: 13.12 Additional Exercises](#)

[13.13: Solutions to Additional Exercises](#)

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