

CHAPTER OVERVIEW

6: STEREOCHEMISTRY AT TETRAHEDRAL CENTERS

Learning Objectives

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

- recognize and classify molecules as chiral or achiral and identify planes of symmetry - refer to section 6.1
- draw, interpret, and convert between perspective formulae and Fischer projections for chiral compounds - refer to section 6.2
- name chiral compounds using (R) & (S) nomenclature - refer to section 6.3
- recognize and classify diastereomers and meso compounds - refer to section 6.4 and 6.5 respectively
- explain how physical properties differ for different types of stereoisomers - refer to section 6.6
- distinguish and discern the structural and chemical relationships between isomeric compounds - refer to section 6.6
- define and explain the lack of optical activity of racemic mixtures - refer to section 6.7
- determine the percent composition of an enantiomeric mixture from polarimetry data and the for specific rotation formula - refer to section 6.7
- explain how to resolve (separate) a pair of enantiomers - refer to section 6.8
- interpret the stereoisomerism of compounds with three or more chiral centers - refer to section 6.9
- compare and contrast absolute configuration with relative configuration - refer to section 6.10
- interpret the stereoisomerism of compounds with nitrogen, phosphorus, or sulfur as chiral centers - refer to section 6.11
- recognize and explain biochemical applications of chirality - refer to section 6.12
- describe Jean Baptiste Biot and Louis Pasteur's contributions to the understanding of optical isomers - refer to section 6.13

[6.1: Chirality](#)

[6.2: Fischer Projections to communicate Chirality](#)

[6.3: Absolute Configuration and the \(R\) and \(S\) System](#)

[6.4: Diastereomers - more than one chiral center](#)

[6.5: Meso Compounds](#)

[6.6: Isomerism Summary Diagram](#)

[6.7: Optical Activity and Racemic Mixtures](#)

[6.8: Resolution \(Separation\) of Enantiomers](#)

[6.9: Stereochemistry of Molecules with Three or More Asymmetric Carbons](#)

[6.10: Absolute and Relative Configuration - the distinction](#)

[6.11: Chirality at Nitrogen, Phosphorus, and Sulfur](#)

[6.12: Biochemistry of Enantiomers](#)

[6.13: The Discovery of Enantiomers](#)

[6.14: Additional Exercises](#)

[6.15: Solutions to Additional Exercises](#)

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