

CHAPTER OVERVIEW

5: STEREOCHEMISTRY AT TETRAHEDRAL CENTERS

LEARNING OBJECTIVES

After you have completed Chapter 5, you should be able to

- fulfill all of the detailed objectives listed under each individual section.
- use molecular models in solving problems on stereochemistry.
- solve road-map problems that include stereochemical information.
- define, and use in context, the new key terms.

This chapter introduces the concept of chirality, and discusses the structure of compounds containing one or two chiral centers. A convenient method of representing the three-dimensional arrangement of the atoms in chiral compounds is explained; furthermore, throughout the chapter, considerable emphasis is placed on the use of molecular models to assist in the understanding of the phenomenon of chirality. The chapter continues with an examination of stereochemistry—the three-dimensional nature of molecules. The subject is introduced using the experimental observation that certain substances have the ability to rotate plane-polarized light. Finally, certain reactions of alkenes are re-examined in the light of the new material encountered in this chapter.

[5.0: Chapter Objectives and Introduction](#)

[5.1: Enantiomers and the Tetrahedral Carbon](#)

[5.2: The Reason for Handedness in Molecules - Chirality](#)

[5.3: Optical Activity](#)

[5.4: Pasteur's Discovery of Enantiomers](#)

[5.5: Sequence Rules for Specifying Configuration](#)

[5.6: Diastereomers](#)

[5.7: Meso Compounds](#)

[5.8: Racemic Mixtures and the Resolution of Enantiomers](#)

[5.9: A Review of Isomerism](#)

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

[5.11: Prochirality](#)

[5.12: Chirality in Nature and Chiral Environments](#)

[5.S: Stereochemistry at Tetrahedral Centers \(Summary\)](#)

[5.xx: Enantiomers and Diastereomers](#)

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