

CHAPTER OVERVIEW

3: ORGANIC COMPOUNDS - ALKANES AND THEIR STEREOCHEMISTRY

LEARNING OBJECTIVES

After you have completed Chapter 3, you should be able to

1. fulfill the detailed objectives listed under each section.
2. identify some of the commonest functional groups.
3. write the structures and names of the first ten straight-chain alkanes.
4. recognize and name the simple alkyl substituents, and give the systematic names for branched-chain alkanes.
5. briefly describe some of the processes used during the refining of petroleum.
6. briefly describe the physical properties of alkanes.
7. draw a number of possible conformations of some simple alkanes and alkane-like compounds, and represent the energies of such conformations on energy versus rotation diagrams.
8. define, and use in context, the key terms introduced in this chapter.

This chapter begins with an introduction to the concept of the functional group, a concept that facilitates the systematic study of organic chemistry. Next, we introduce the fundamentals of organic nomenclature (i.e., the naming of organic chemicals) through examination of the alkane family of compounds. We then discuss, briefly, the occurrence and properties of alkanes, and end with a description of *cis-trans* isomerism in cycloalkanes.

[3.0: Chapter Objectives](#)

[3.1: Functional Groups](#)

[3.2: Alkanes and Alkane Isomers](#)

[3.3: Alkyl Groups](#)

[3.4: Naming Alkanes](#)

[3.5: Properties of Alkanes](#)

[3.6: Conformations of Ethane](#)

[3.7: Conformations of Other Alkanes](#)

[3.8: Gasoline - A Deeper Look](#)

[3.S: Organic Compounds- Alkanes and Their Stereochemistry \(Summary\)](#)

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