

CHAPTER OVERVIEW

21: Organic and Biological Chemistry

Chemical Principles (Zumdahl and Decoste)

Textmap Alternative

Organic chemistry is the study of the chemistry of carbon compounds. Why focus on carbon? Carbon has properties that give its chemistry unparalleled complexity. It forms four covalent bonds, which give it great flexibility in bonding. It makes fairly strong bonds with itself (a characteristic called *catenation*), allowing for the formation of large molecules; it also forms fairly strong bonds with other elements, allowing for the possibility of a wide variety of substances. No other element demonstrates the versatility of carbon when it comes to making compounds. So an entire field of chemistry is devoted to the study of the compounds and reactivity of one element.

It was thought that organic compounds could only be manufactured in living organisms, and chemistry was divided into the subfields of inorganic and organic on this basis. This subdivision persists today, but the definition of organic has changed in response to the discovery of numerous ways to make organic compounds from inorganic starting materials. Biochemistry is the study of chemical elements found in living systems, and how these elements combine to form molecules and collections of molecules which carry out the biological functions and behaviors that we associate with life.

Topic hierarchy

[21.1: Alkanes: Saturated Hydrocarbons](#)

[21.2: Alkenes and Alkynes](#)

[21.3: Aromatic Hydrocarbons](#)

[21.4: Hydrocarbon Derivatives](#)

[21.5: Polymers](#)

[21.6: Natural Polymers](#)

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