

CHAPTER OVERVIEW

21: Spectra and Structure of Atoms and Molecules

In the following sections we are going to study the way in which matter can both absorb energy and emit it in the form of [electromagnetic radiation](#) such as light. The pattern in which matter absorbs or emits radiation is called its **spectrum**. In the past, and still to this day, studies of the spectrum of a substance have furnished important clues to the structure of matter. At the same time, the spectrum of a substance is often a very useful way of characterizing and hence identifying and analyzing that substance.

[21.1: Prelude to Spectroscopy](#)

[21.2: The Nature of Electromagnetic Radiation](#)

[21.3: Atomic Spectra and the Bohr Theory](#)

[21.4: Bohr Theory of the Atom](#)

[21.5: The Spectra of Molecules- Infrared](#)

[21.6: The Visible and Ultraviolet Spectra of Molecules- Molecular Orbitals](#)

[21.7: Molecular Orbitals](#)

[21.8: Delocalized Electrons](#)

[21.9: Conjugated Systems](#)

This page titled [21: Spectra and Structure of Atoms and Molecules](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by [Ed Vitz](#), [John W. Moore](#), [Justin Shorb](#), [Xavier Prat-Resina](#), [Tim Wendorff](#), & [Adam Hahn](#).