



Energy



CHAPTER 9 Energy



CHAPTER 10 Thermal Energy in Matter



CHAPTER 11 How Thermal Energy is Transferred



CHAPTER 12 Thermodynamics



CHAPTER 13 Atoms, Molecules, and Thermal Energy

Energy has proven to be extraordinarily useful for explaining differences we often sense intuitively. A moving car has something more than a stationary car—kinetic energy. An airplane in flight has something more than an airplane on the ground—gravitational potential energy.

Our model of matter is, in most respects, a transposition of these experiences with macroscopic objects to the microscopic world of molecules. How is ice different from water? Ice has a different amount of potential energy stored in the bonds that hold its molecules together. How is hot water different from cold water? The molecules in hot water have more kinetic energy, on the average, than the molecules in cold water. The success of this model enables us to examine thermal processes in matter from a broader perspective and offers our first glimpse at the probabilistic view of matter.