

## **Chapter 20 Thermodynamics: Entropy, Free Energy, and the Direction of Chemical Reactions**

Whether or not a reaction is likely to happen is determined by thermodynamics. It is crucial to understand the laws of thermodynamics and the concepts of enthalpy, entropy, spontaneous processes, and Gibb's Free Energy to understand why reactions happen. This is then an essential part of the AP curriculum and is tested every year on the AP Exam. Thermodynamics is the way scientists account for energy relationships in a quantitative manner. Because of this it is vital to pay attention to sign conventions for each concept. Several interrelated skills and concepts such as equilibrium and kinetics will be involved in successfully understanding the factors that govern the likelihood of a chemical reaction. It is also important to understand how external conditions such as temperature and pressure can affect chemical reactions. From the material in this chapter, a clear explanation of reasons why a reaction is moving forward or backward and under what conditions this can change will be addressed.