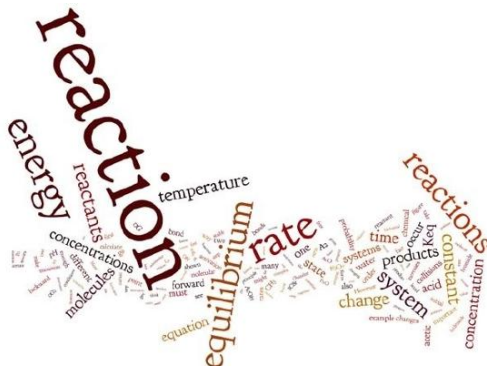


CHAPTER OVERVIEW

Chapter 8: How Far? How Fast?



After our overview of common chemical reactions in Chapter 7, the next questions on your mind may well be what determines whether or not a reaction will happen, how fast it will go, how far it will go, or whether it will go in the forward or reverse direction? What causes gasoline to suddenly combust in a violent explosion whereas an iron nail slowly rusts over many years? Are these mysteries of the universe, or can we untangle them in some coherent way?

Once again, it turns out that the universe behaves in an orderly way, and by paying attention to various experimental observations, chemists over the last few centuries have come to understand the factors that control the rate, extent, and direction of reactions. The subject of rate and extent will lead us back to thermodynamics and Gibbs free energy, as we work out the molecular reorganizations that occur during the forward and reverse reactions. In this chapter, we introduce concepts that will allow us to consider how fast a reaction occurs and predict how far it will go.

[8.1: What Factors Control Reactions](#)

[8.2: Reaction Rates](#)

[8.3: Kinetics and the Mechanisms of Reactions](#)

[8.4: Catalysis](#)

[8.5: Equilibrium](#)

[8.6: Back to Reaction Mechanisms](#)

[8.7: In-Text References](#)

Thumbnail: Molecular collisions frequency. (Public Domain; Sadi Carnot via [Wikipedia](#))

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