

## CHAPTER OVERVIEW

### 1: Basic NMR Theory

This section presents a basic overview of the theory of modern NMR. Readers interested in more in-depth treatments of this subject are encouraged to utilize the resources listed in the reference page at the end of this section. The embedded animations in the web book <http://www.cis.rit.edu/htbooks/nmr/> authored by Professor Hornak makes this site especially useful for students learning about NMR.

**This section will help you answer the following questions:**

- 1.1: What is spin?
- 1.2: How does absorption of energy generate an NMR spectrum?
- 1.3: How does the population difference in NMR compare to the difference between electronic ground and excited states?
- 1.4: What is chemical shift and how does it relate to resonance frequency?
- 1.5: What is Precession?
- 1.6: How does precession generate the macroscopic magnetization ( $M_0$ )?
- 1.7: How can the nuclear spins be manipulated to generate the NMR spectrum?
- 1.8: What is the tip angle?
- 1.9: What is the Free Induction Decay?
- 1.10: How do  $T_1$  and  $T_2$  relaxation affect NMR spectra?
- 1.11: Where should I look to learn more about NMR?

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