CHAPTER OVERVIEW

13: STRUCTURE DETERMINATION - NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

LEARNING OBJECTIVES

- fulfillall of the detailed objectives listed under each individual section.
- solve road-map problems which may require the interpretation of ^{1}H NMR spectra in addition to other spectral data.
- define, and use in context, the key terms introduced.

In Chapter 12, you learned how an organic chemist could use two spectroscopic techniques, mass spectroscopy and infrared spectroscopy, to assist in determining the structure of an unknown compound. This chapter introduces a third technique, nuclear magnetic resonance (NMR). The two most common forms of NMR spectroscopy, ^{1}H NMR and ^{13}C NMR, will be discussed, the former in much more detail than the latter. Nuclear magnetic resonance spectroscopy is a very powerful tool, particularly when used in combination with other spectroscopic techniques.

13.0: Nuclear Magnetic Resonance Spectroscopy
13.1: The Nature of NMR Absorptions
13.2: The Chemical Shift
13.3: Chemical Shifts in ^{1}H NMR Spectroscopy
13.4: Integration of ^{1}H NMR Absorptions - Proton Counting
13.5: Spin-Spin Splitting in ^{1}H NMR Spectra
13.6: ^{1}H NMR Spectroscopy and Proton Equivalence
13.7: More Complex Spin-Spin Splitting Patterns
13.8: Uses of ^{1}H NMR Spectroscopy
13.9: ^{13}C NMR Spectroscopy - Signal Averaging and FT-NMR
13.10: Characteristics of ^{13}C NMR Spectroscopy
13.11: DEPT ^{13}C NMR Spectroscopy
13.12: Uses of ^{13}C NMR Spectroscopy
13.S: Structure Determination - Nuclear Magnetic Resonance Spectroscopy (Summary)