

Nuclear Magnetic Resonance (NMR) Practice Problems and Resources.

The primary sources of information on NMR for this class are:

1. David Klein *Organic Chemistry* (Chapter 15 – 3rd edition, Chapter 16 – 2nd edition)
2. Pavia, *et al.*, *A Microscale Approach to Organic Laboratory Techniques* (Techniques 26 and 27, 5th edition).

Below are good additional resources to practice NMR problems – many of them have “combined” spectral problems (ones that have proton, carbon, IR and MS data).

Try this site for tons of practice problems at all levels, from beginning to advanced. Try to avoid looking at the answers until you have considered all of the data and have come up with a consistent structure.

<http://www.chem.ucla.edu/~webspectra/>

The **Smith** site has only combustion analysis to find the molecular formula, so review the method for calculating empirical and molecular formulas from this information.

<http://www.nd.edu/~smithgrp/structure/workbook.html>

The following site is useful for predicting the NMR from a structure that you draw in the web-based program.

http://www.nmrdb.org/new_predictor/index.shtml?v=v2.82.3

Official NMR theory and background sites:

Wikipedia: https://en.wikipedia.org/wiki/Nuclear_magnetic_resonance

The websites below are loaded with enormous (over-the-top) amounts of NMR chemical shifts and detailed background theory information – they are oriented to Organic Chemistry.

The **Reich** site,

<http://www.chem.wisc.edu/areas/reich/chem605/index.htm>

And the **Reusch** site,

<https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/spectrpy/nmr/nmr2.htm>

Official guide to interpreting complex splitting patterns, see:

http://matematicas.udea.edu.co/~carlopez/practical_guide_nmr_1994_2002.pdf