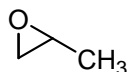


**In-Class Exercise:
Deciphering Multiplets with Many J 's**

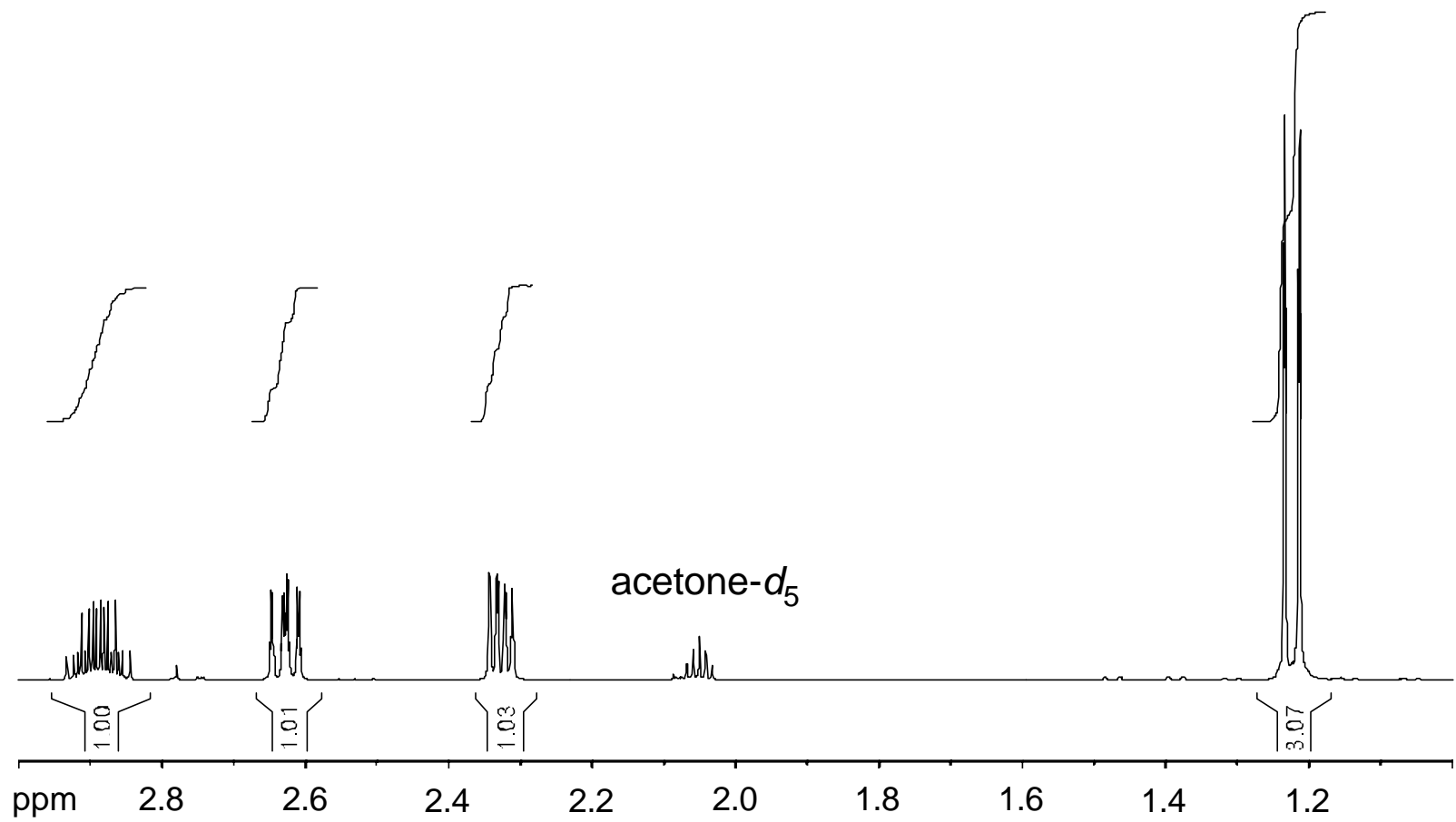
The spectra on the following three pages correspond to propylene oxide (**1**). The spectrum closeup of the 1.2-1.25 ppm region is resolution enhanced to better illustrate the splitting pattern.



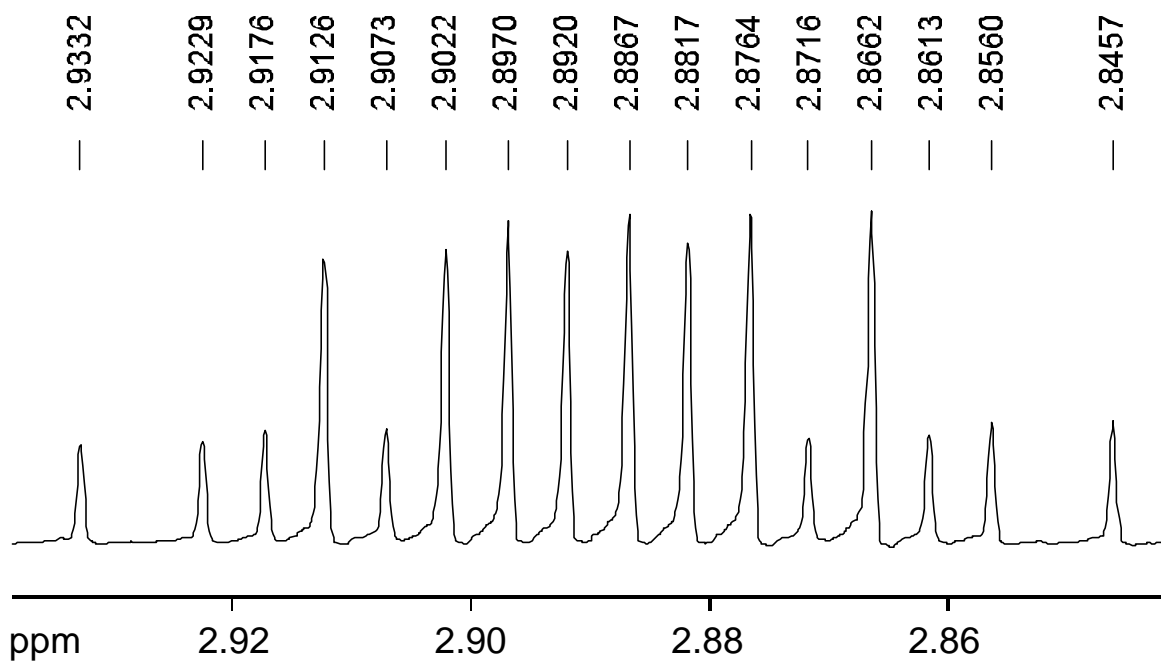
1

- a. Label the multiplets on the first spectrum “a” through “d”. Determine the coupling constants J that are involved in each multiplet, and create a map of which proton (a-d) is coupled to which. Do not attempt to assign the protons while you are doing this—just map out the coupling.

- b. Assign each multiplet to a specific protons in **1**. How does each coupling constant J relate to the geometric arrangements of nuclei in the molecule?

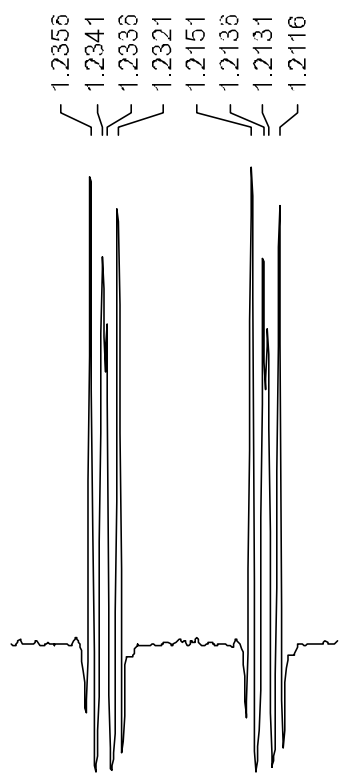
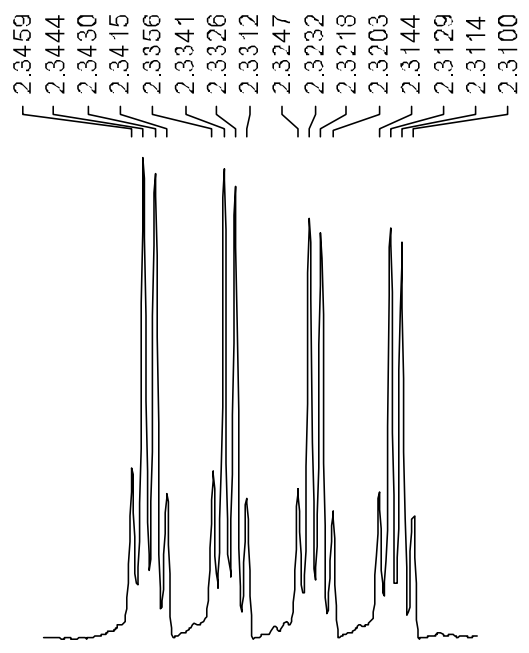
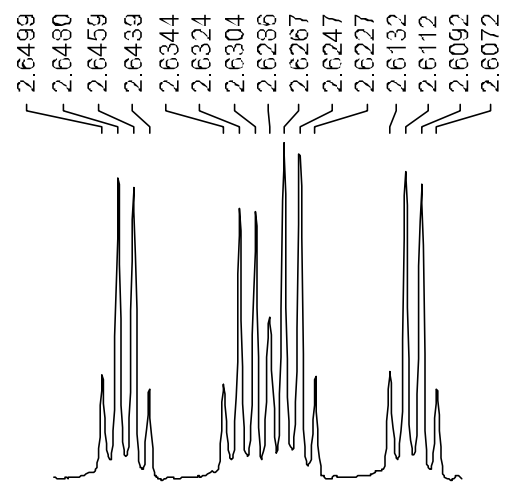


^1H NMR, 250 MHz, acetone- d_6



^1H NMR, 250 MHz, acetone- d_6

ppm



¹H NMR, 250 MHz, acetone-*d*₆