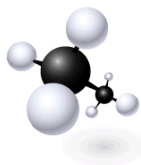


# $^1\text{H}$ NMR Practice Problems

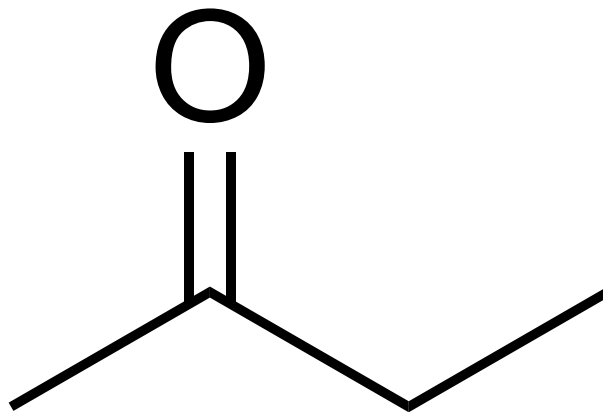
**Dr. Peter Norris**

**Youngstown State University**

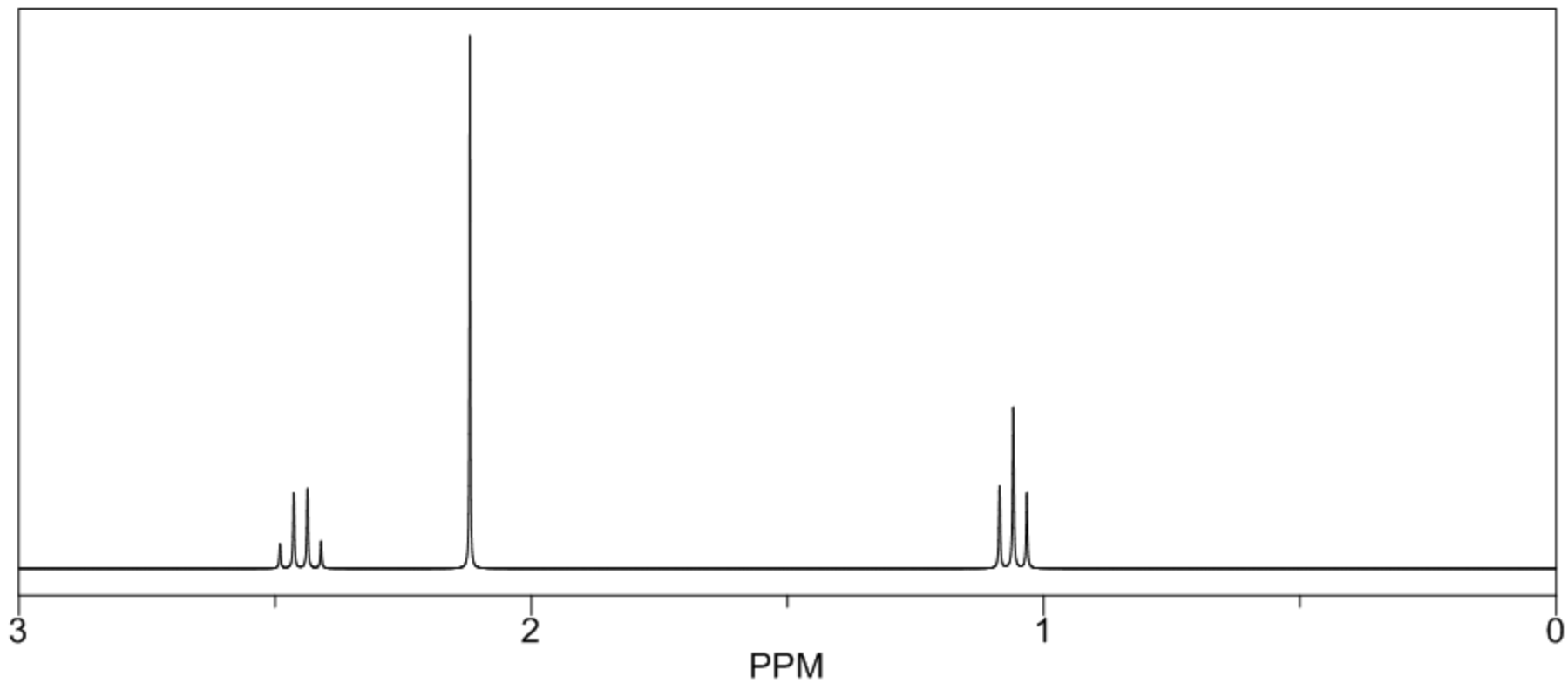
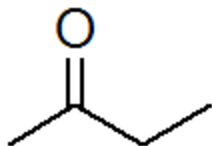
*The following exercises are designed to help you become familiar with predicting the  $^1\text{H}$  NMR spectra of simple organic molecules. For each example you should find the number of signals you expect, where they should show on the scale (chemical shift), and what shape they should be (splitting patterns). Use the spectroscopy sheet to become familiar with types of protons and where they show on the spectra.*



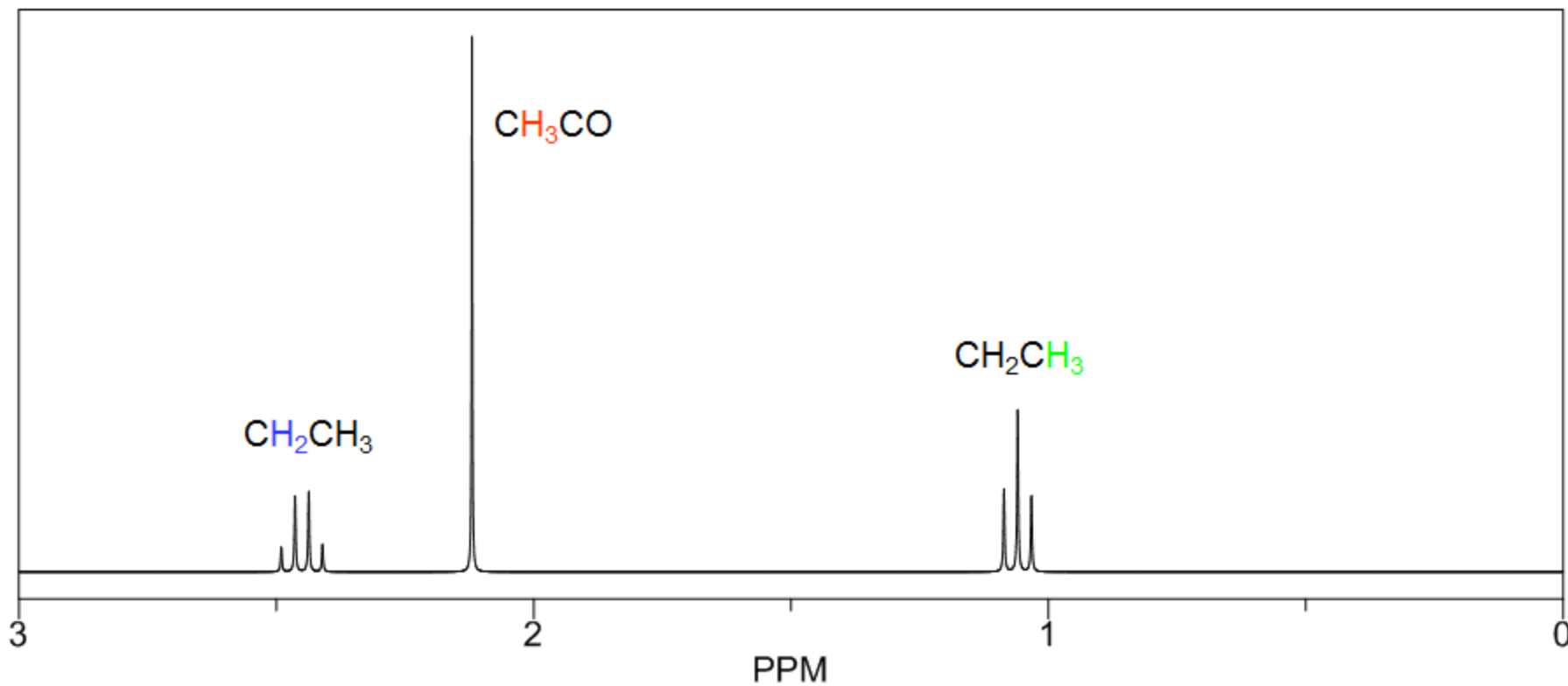
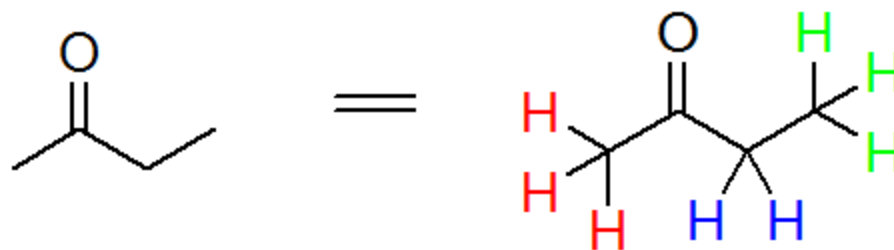
# Proton NMR Example 1 : Predict The Spectrum



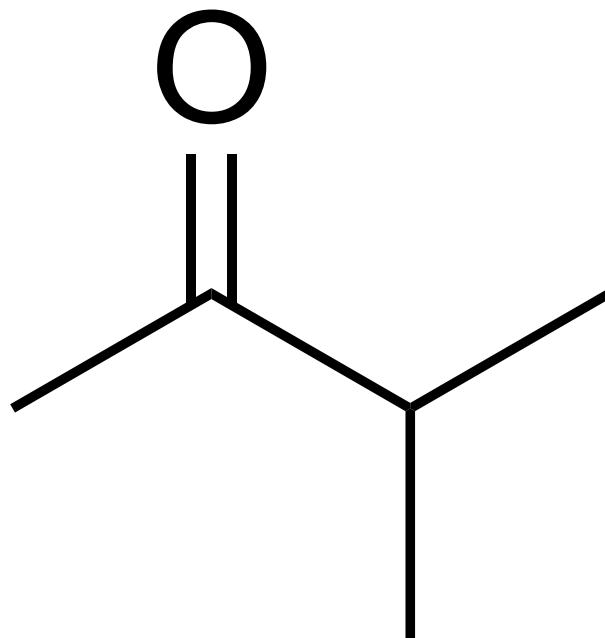
# Proton NMR Example 1 : The Spectrum



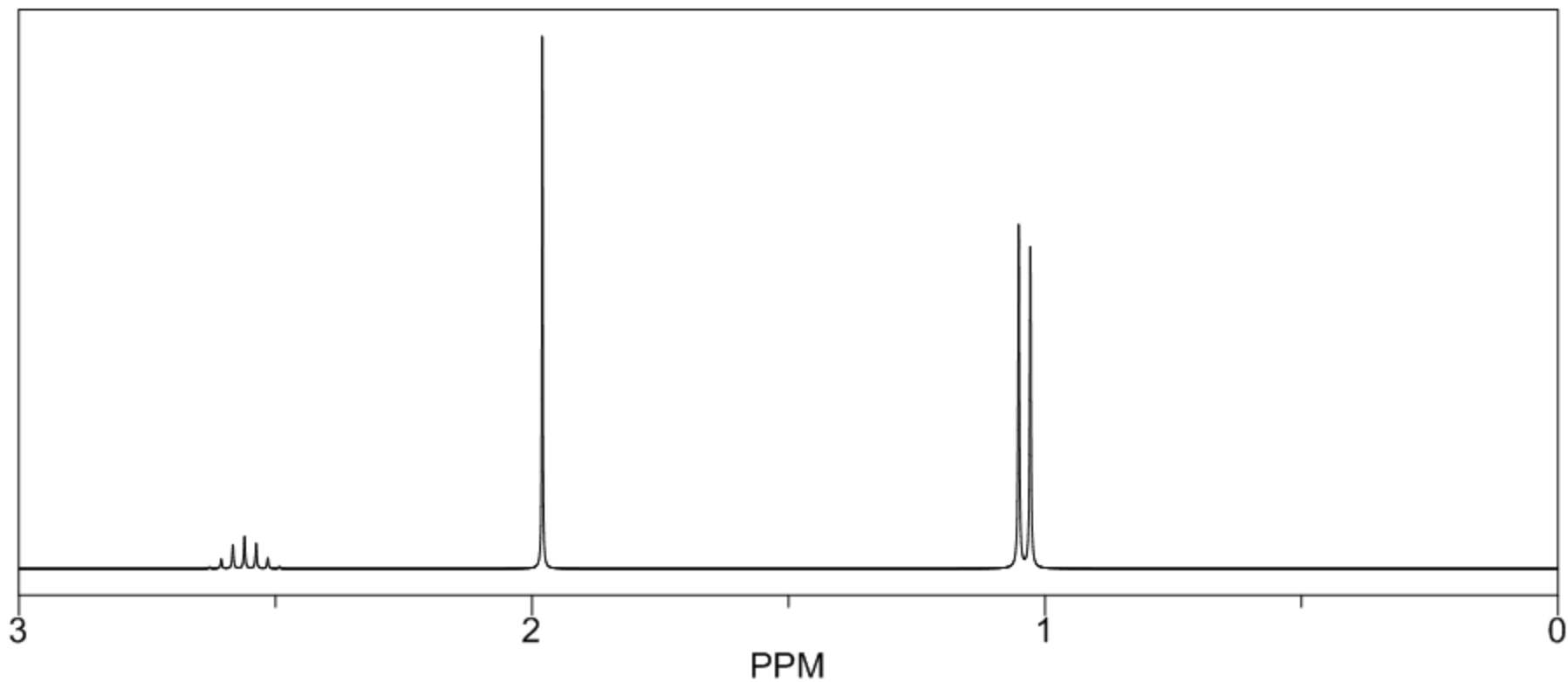
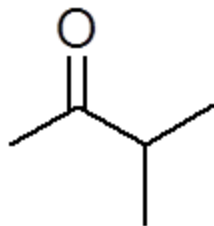
# Proton NMR Example 1 : The Assignment



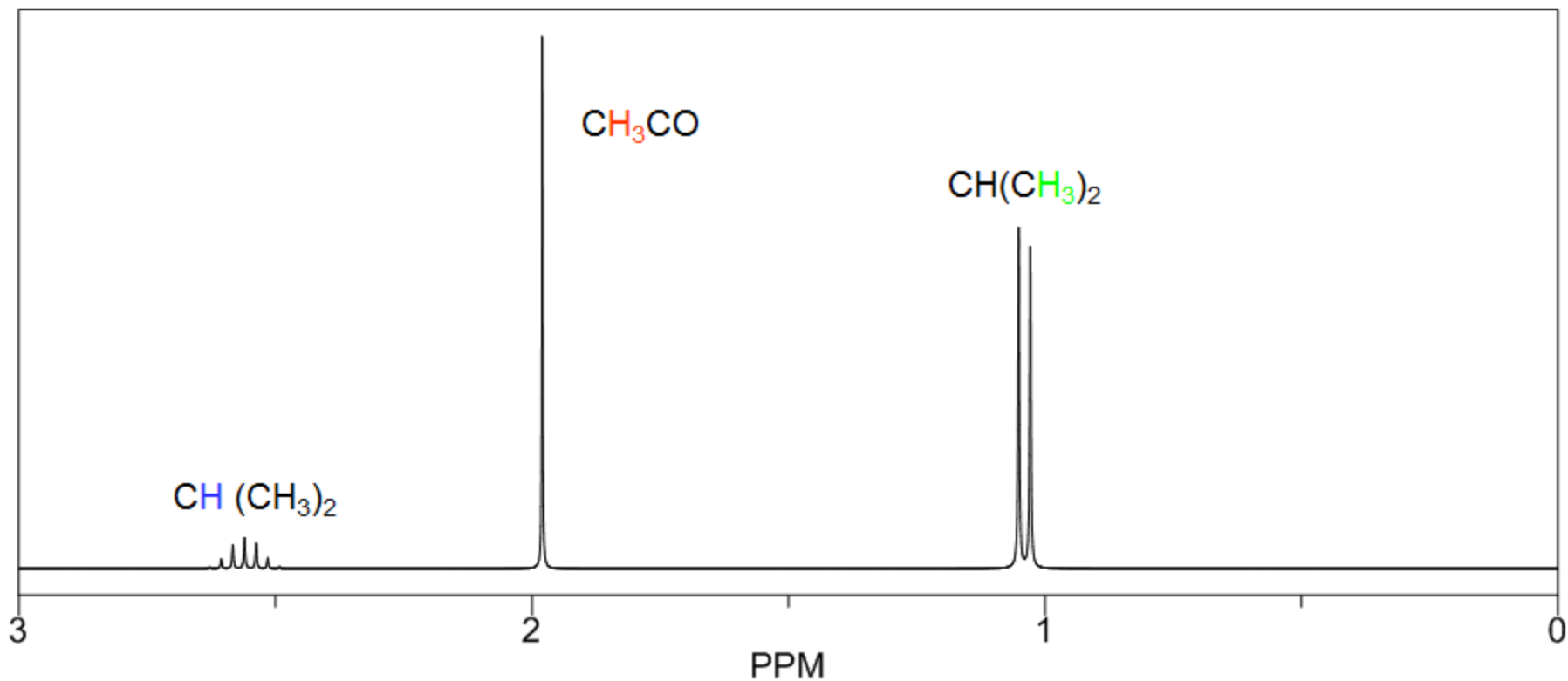
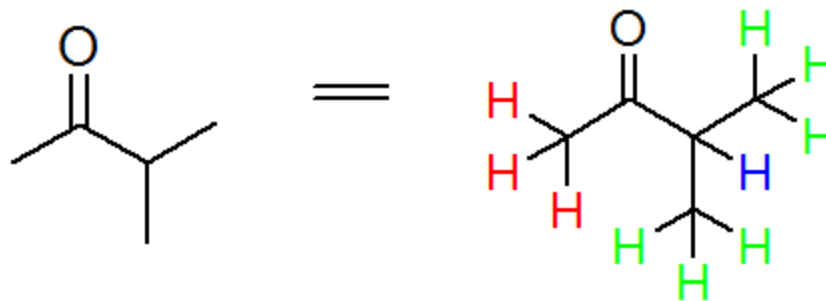
# Proton NMR Example 2 : Predict The Spectrum



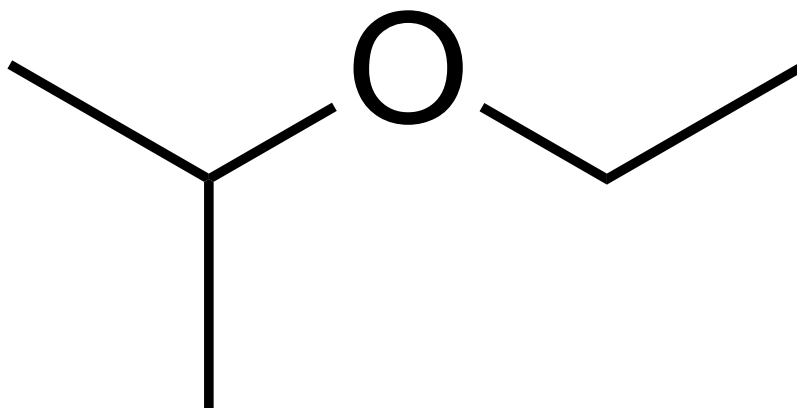
# Proton NMR Example 2 : The Spectrum



# Proton NMR Example 2 : The Assignment

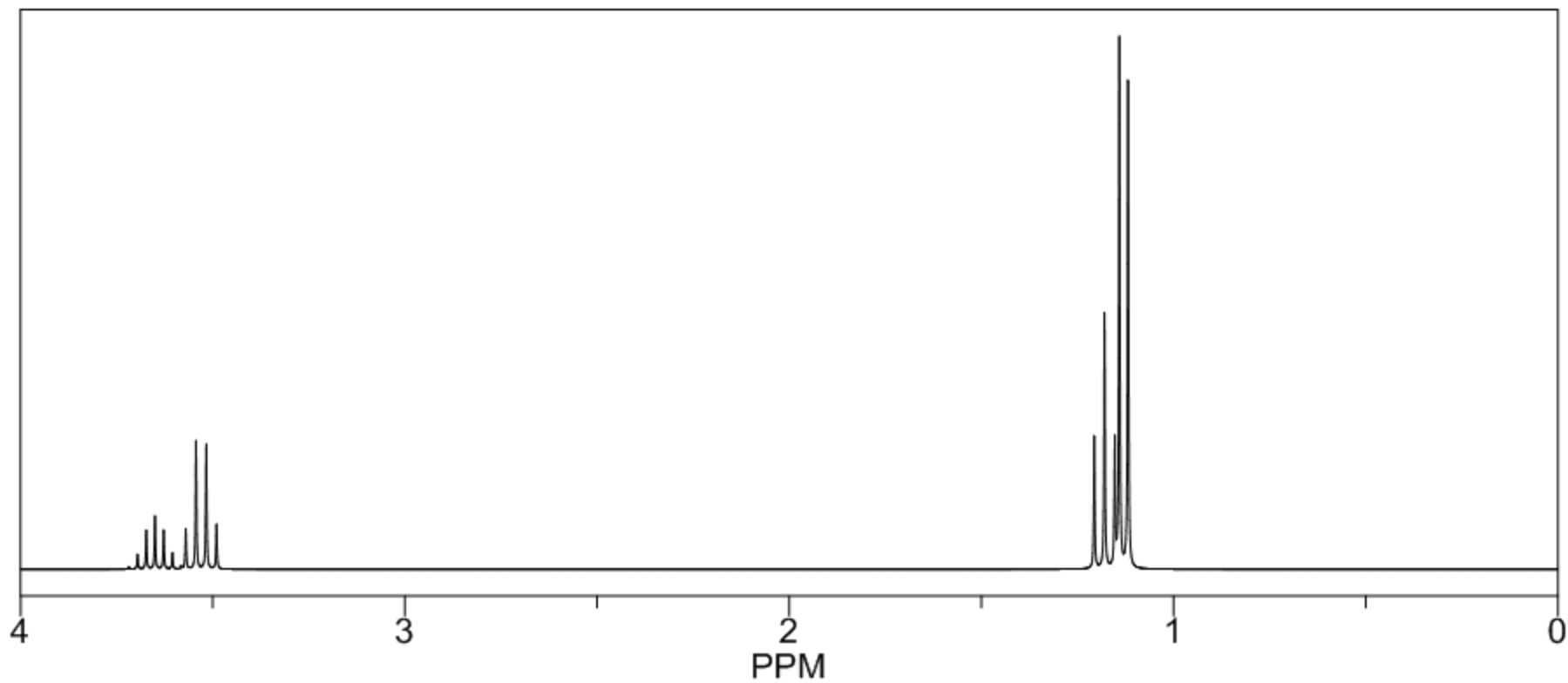
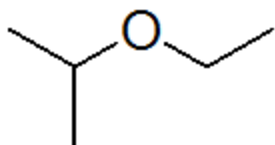


# Proton NMR Example 3 : Predict The Spectrum

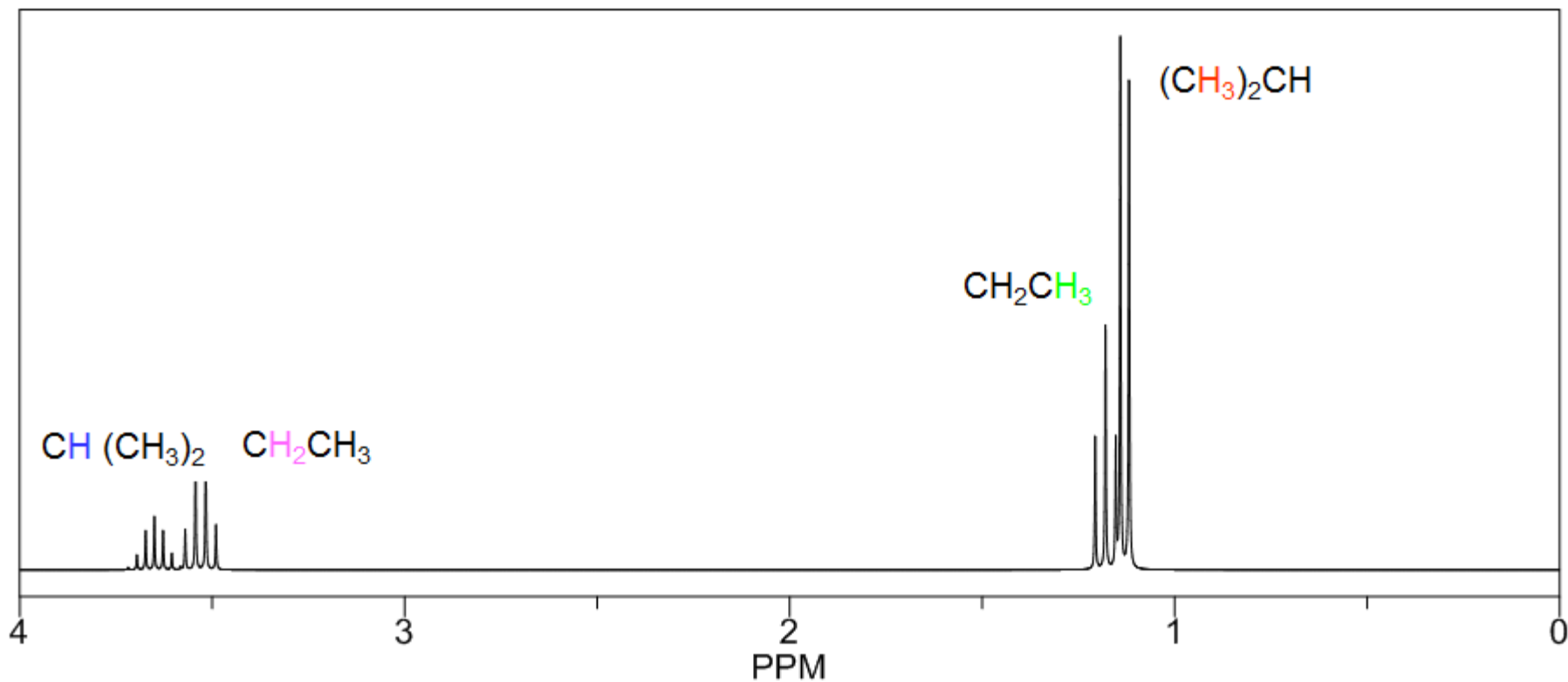
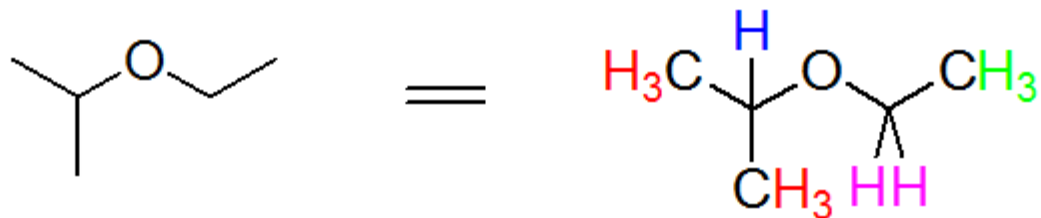




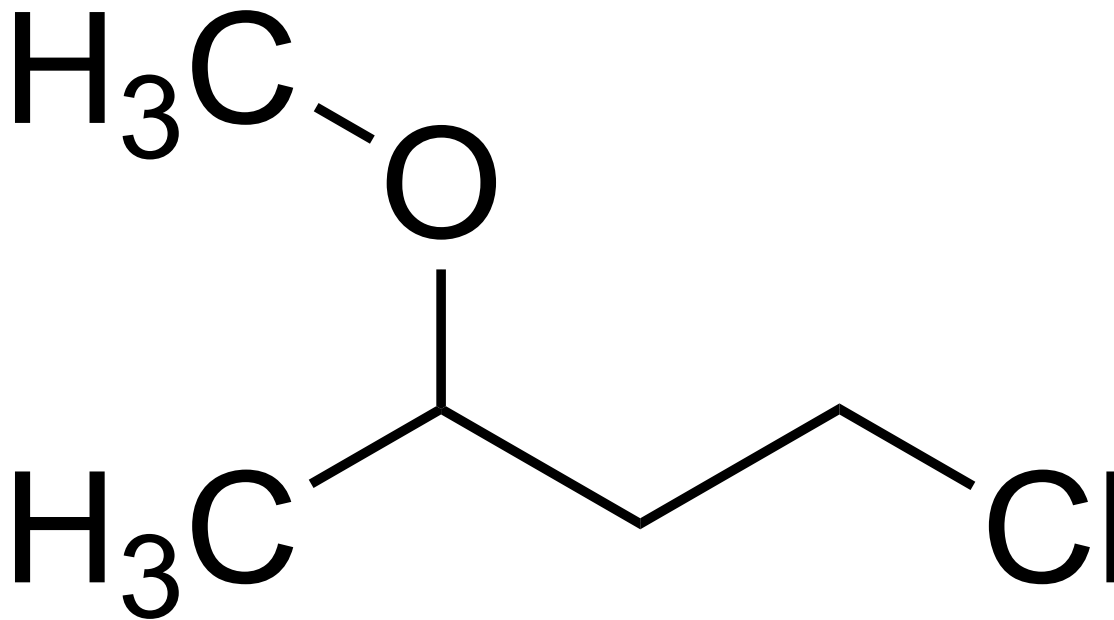
# Proton NMR Example 3 : The Spectrum



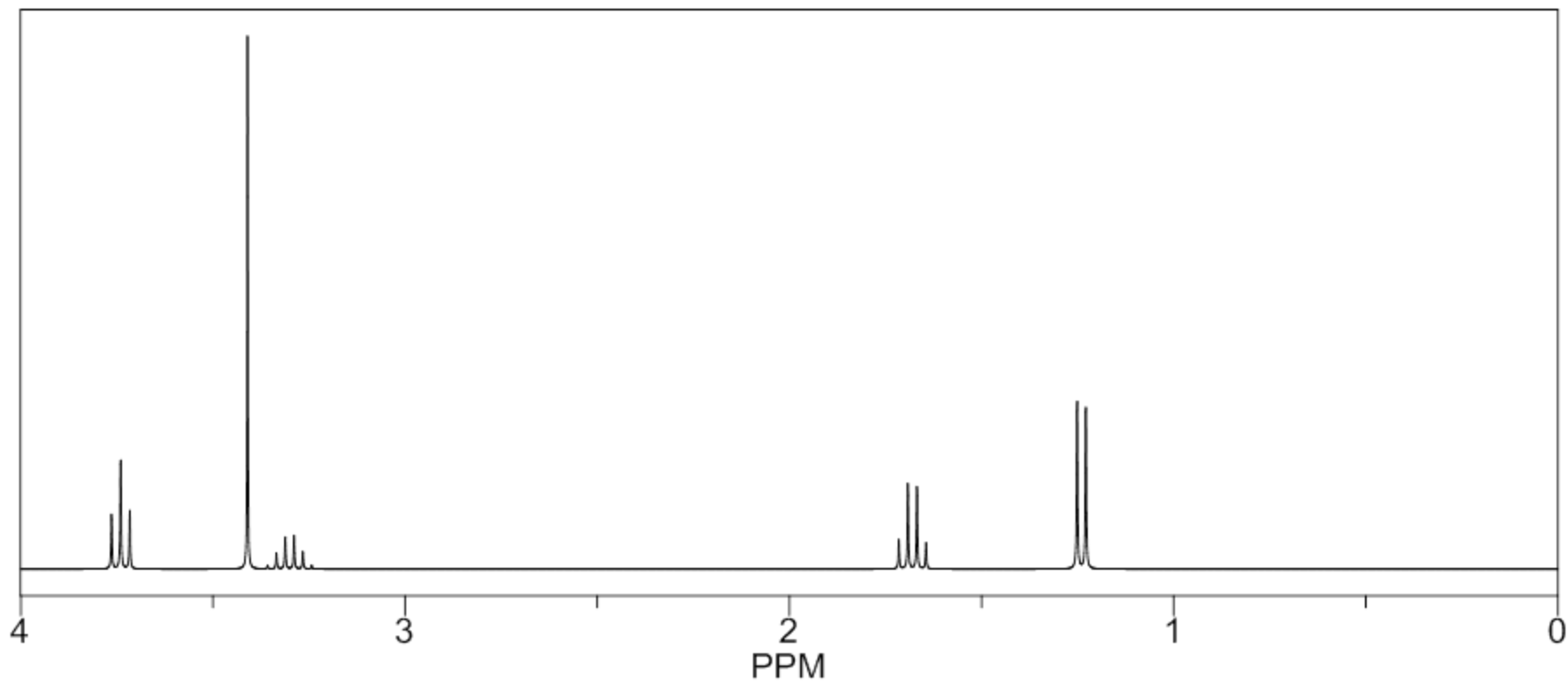
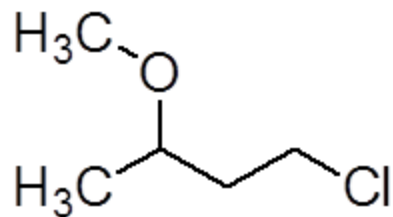
# Proton NMR Example 3 : The Assignment



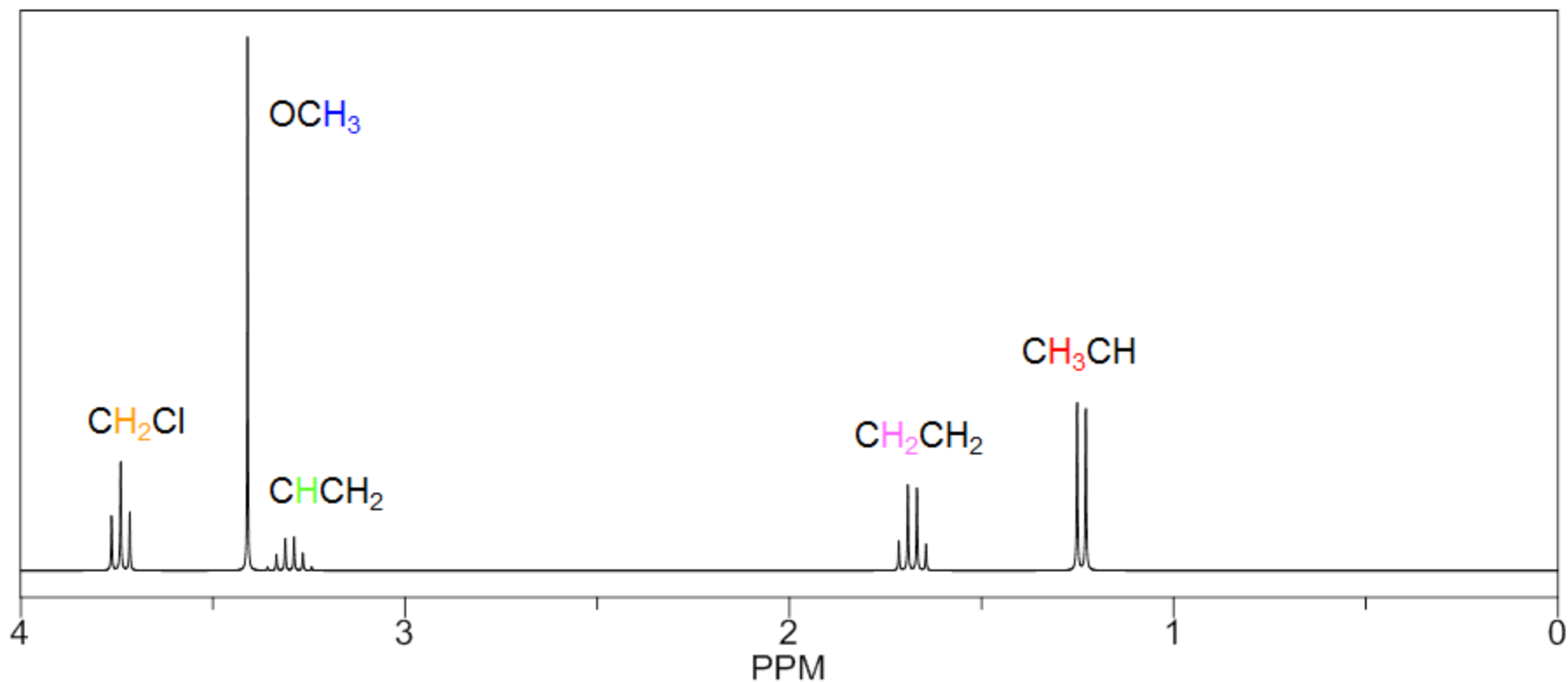
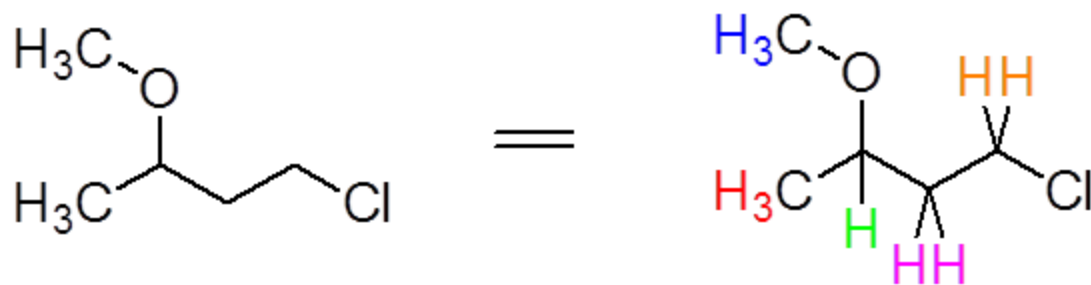
# Proton NMR Example 4 : Predict The Spectrum



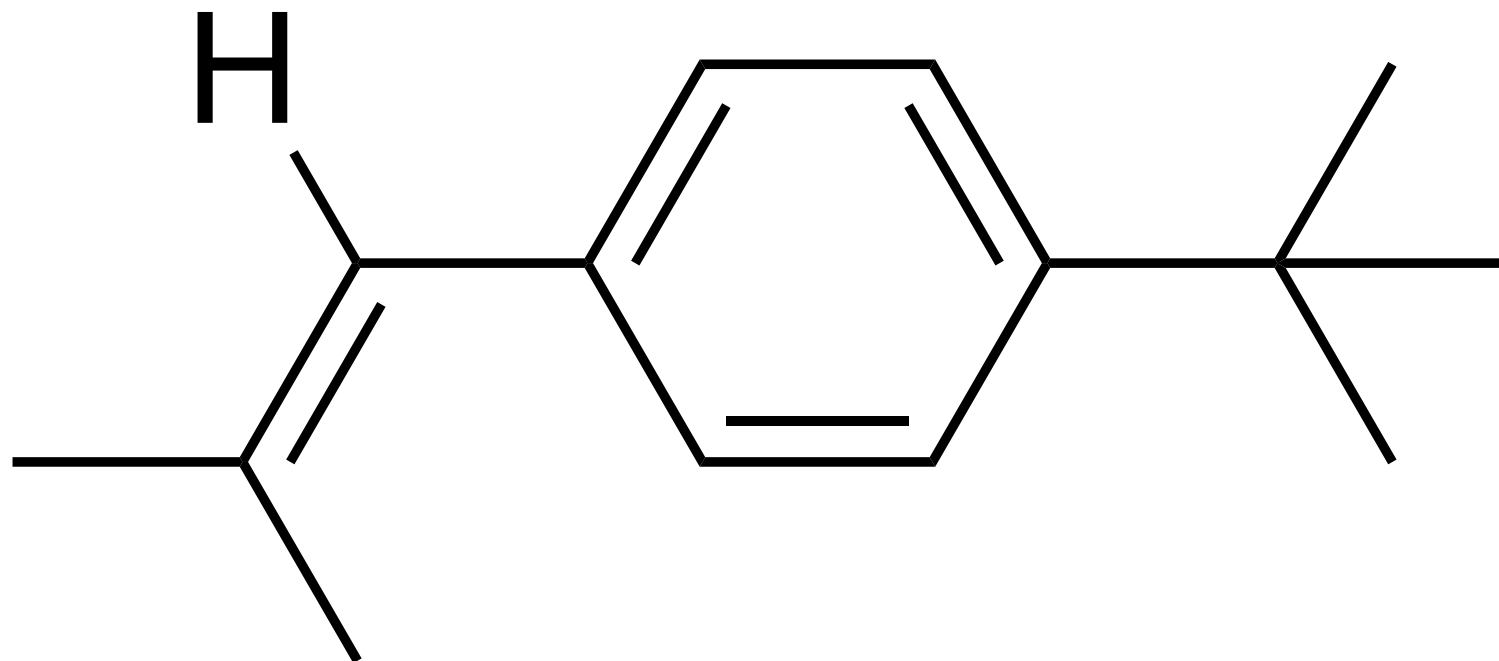
# Proton NMR Example 4 : The Spectrum



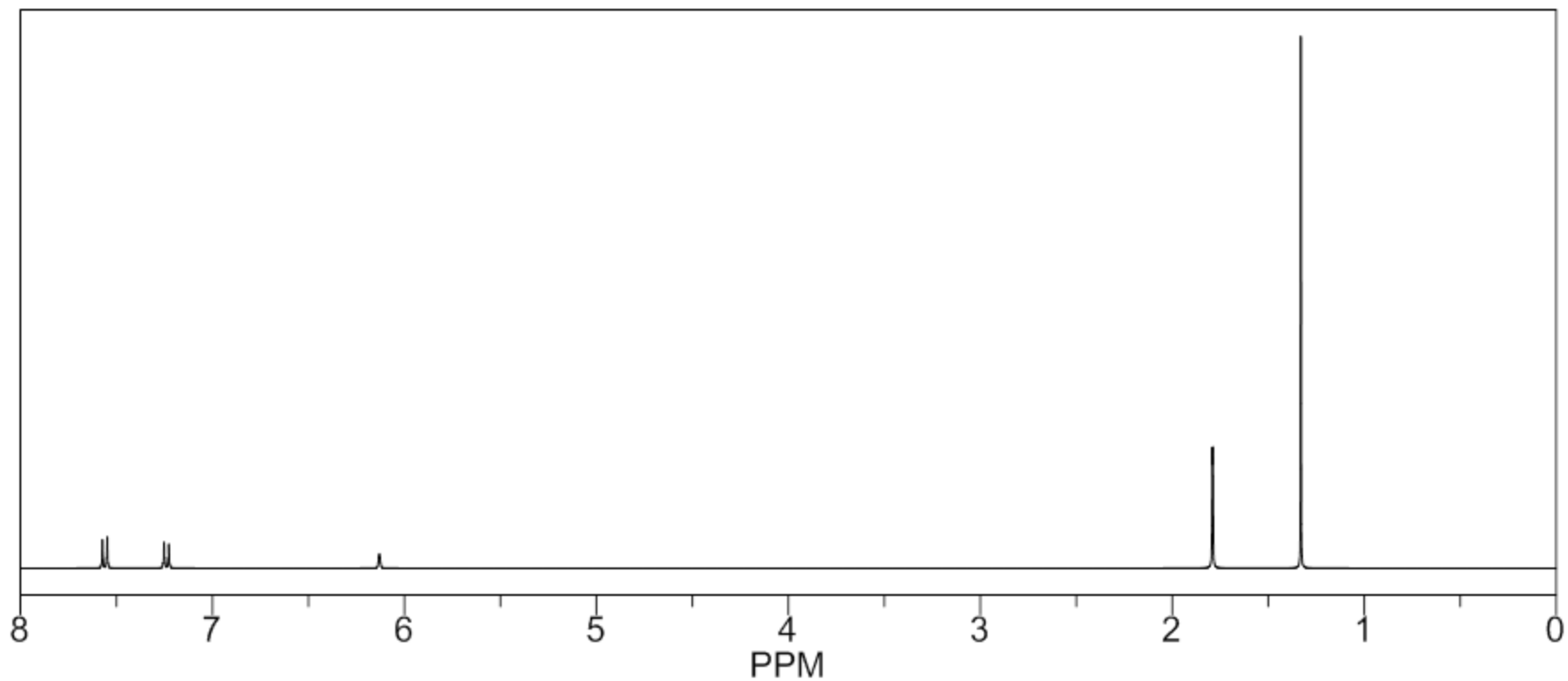
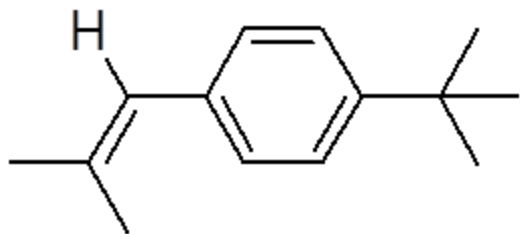
# Proton NMR Example 4 : The Assignment



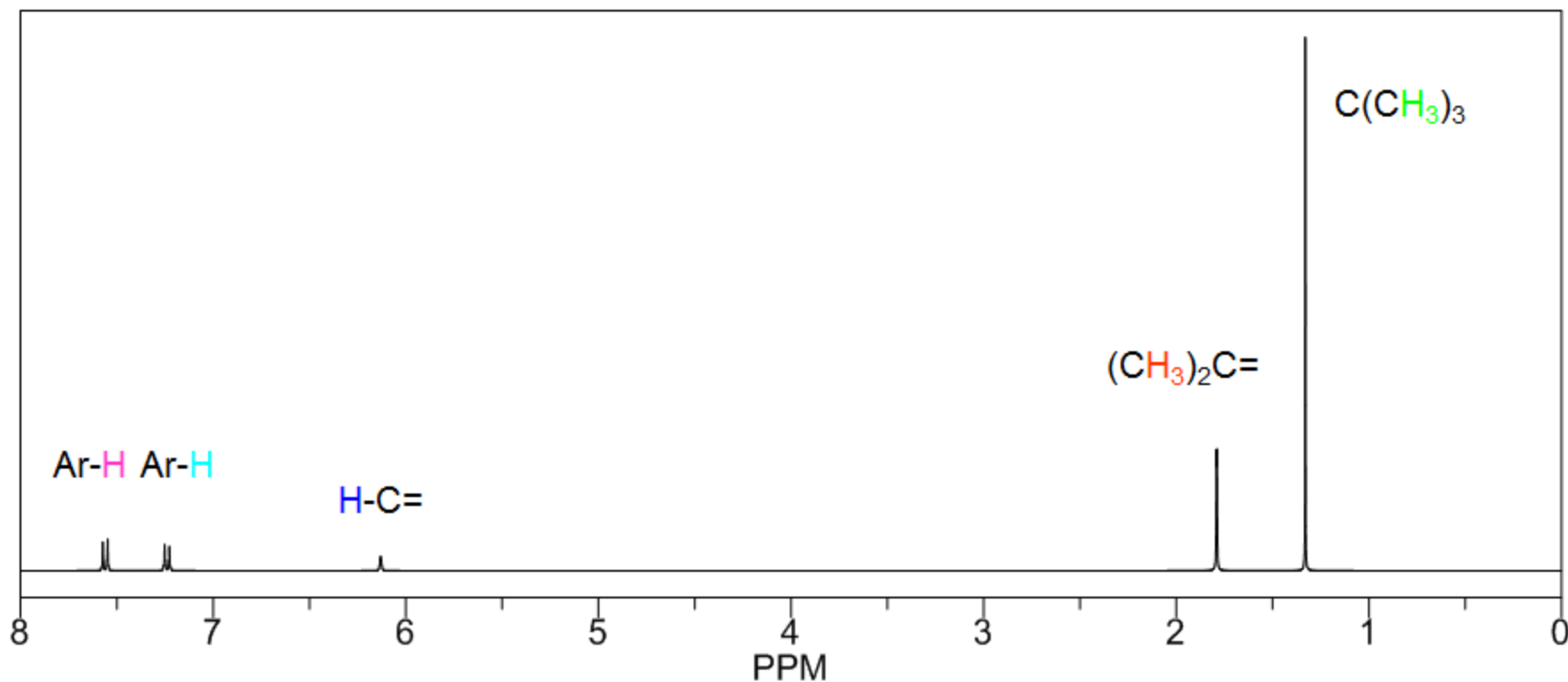
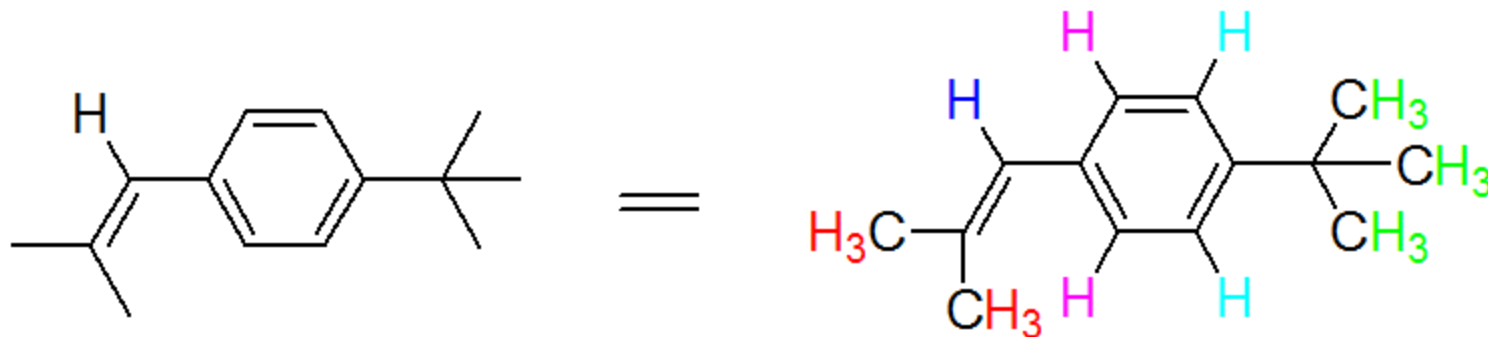
# Proton NMR Example 5 : Predict The Spectrum



# Proton NMR Example 5 : The Spectrum

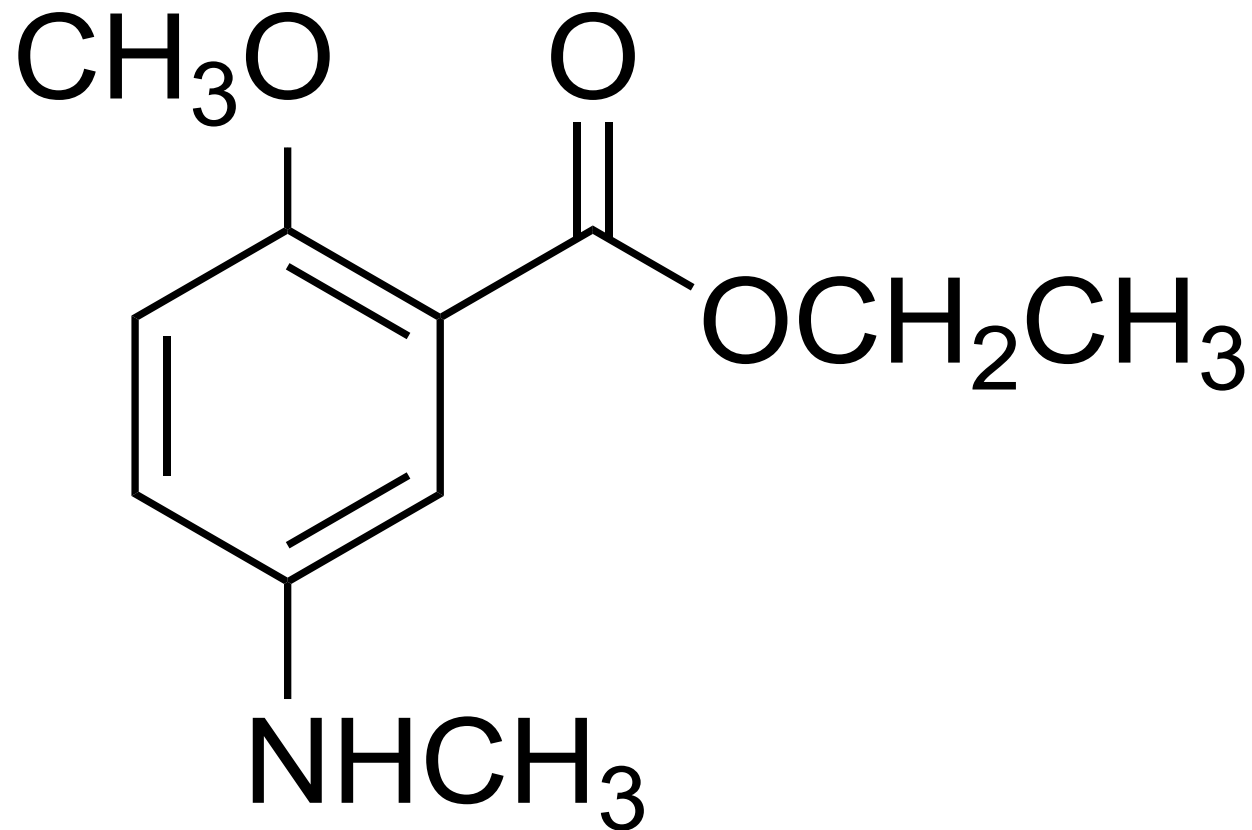


# Proton NMR Example 5 : The Assignment

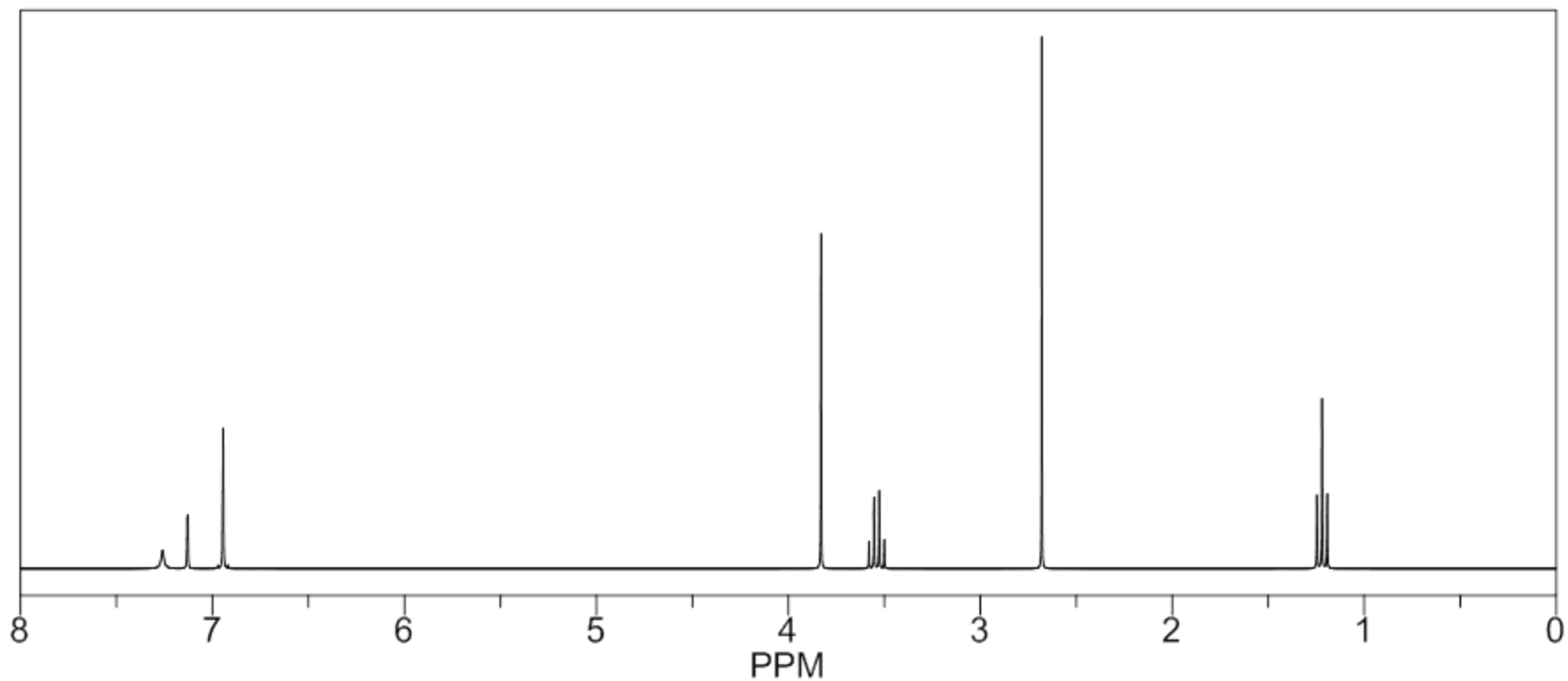
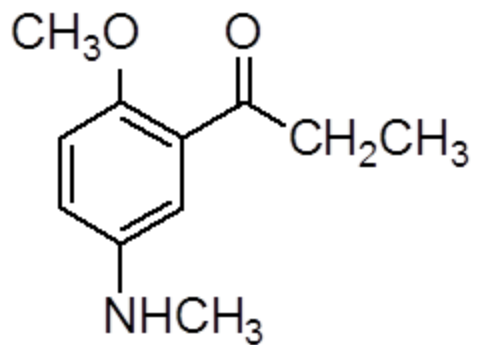




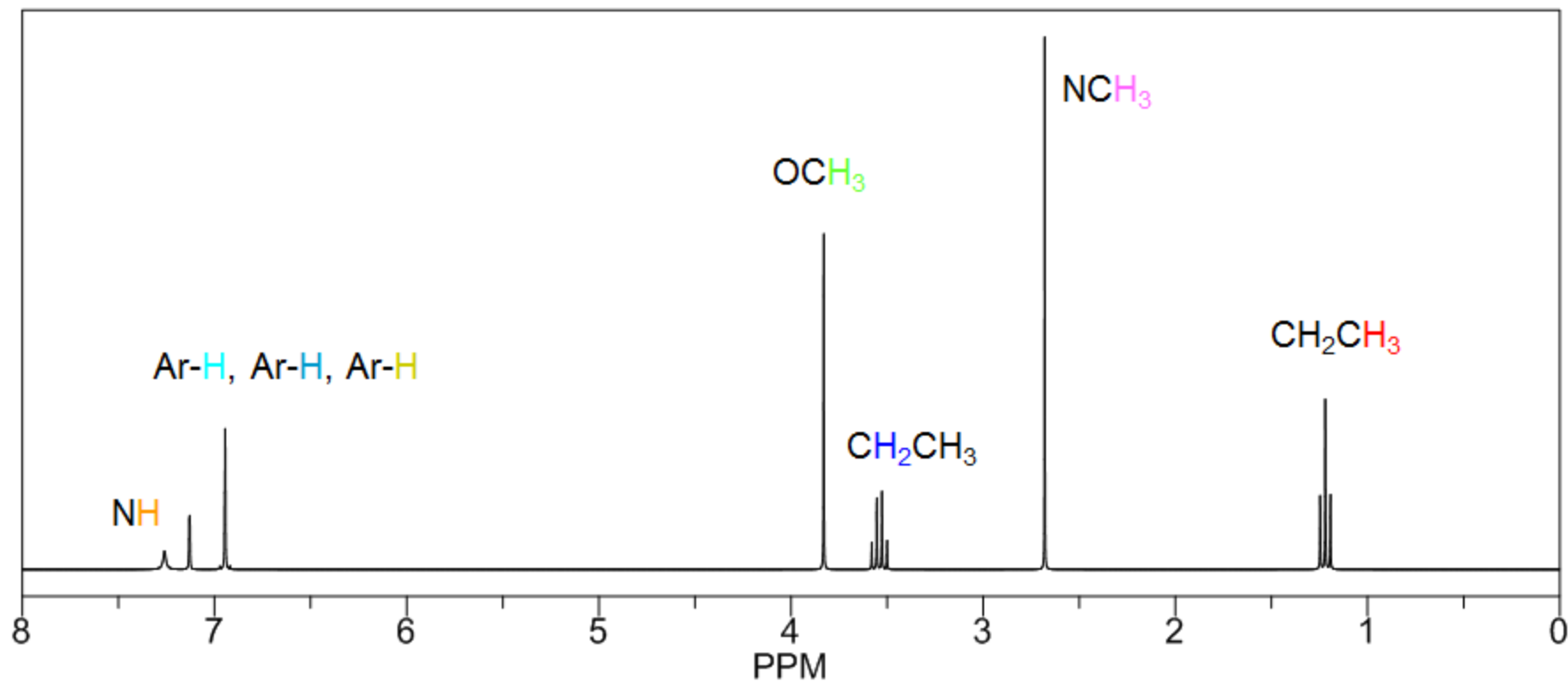
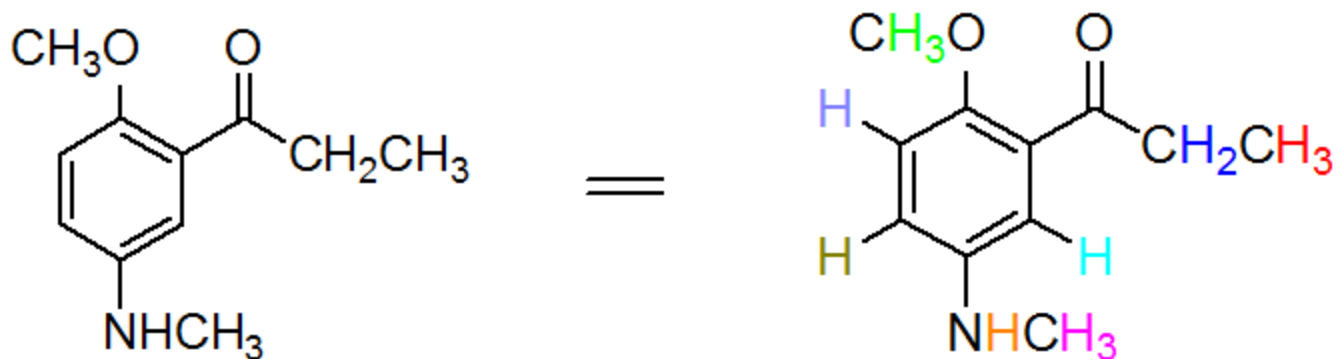
# Proton NMR Example 6 : Predict The Spectrum



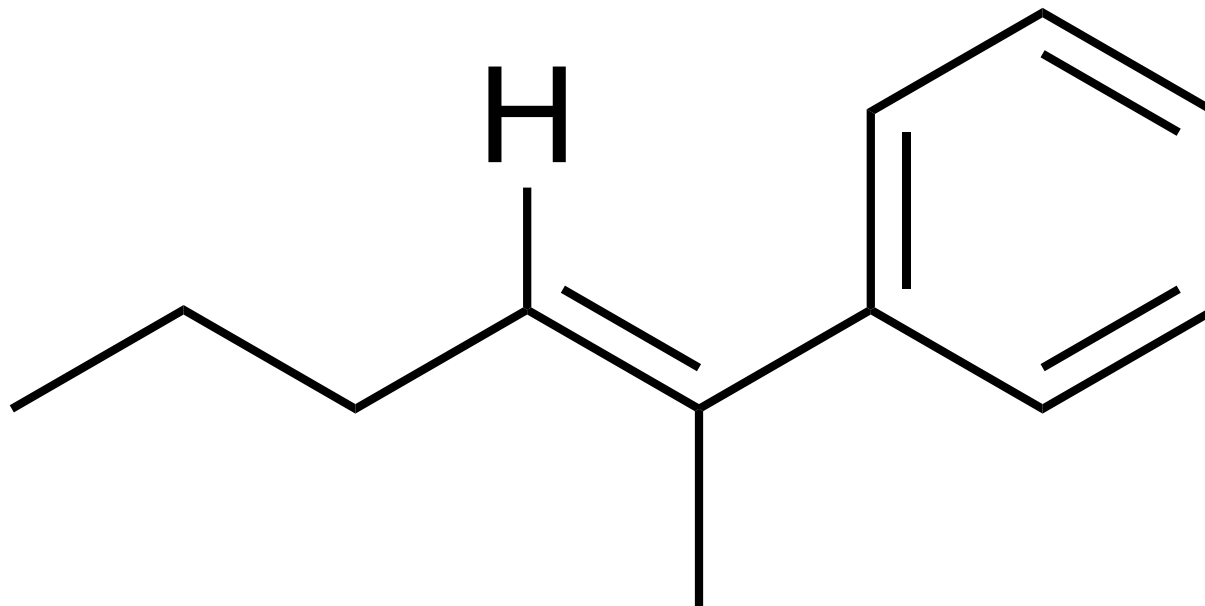
# Proton NMR Example 6 : The Spectrum



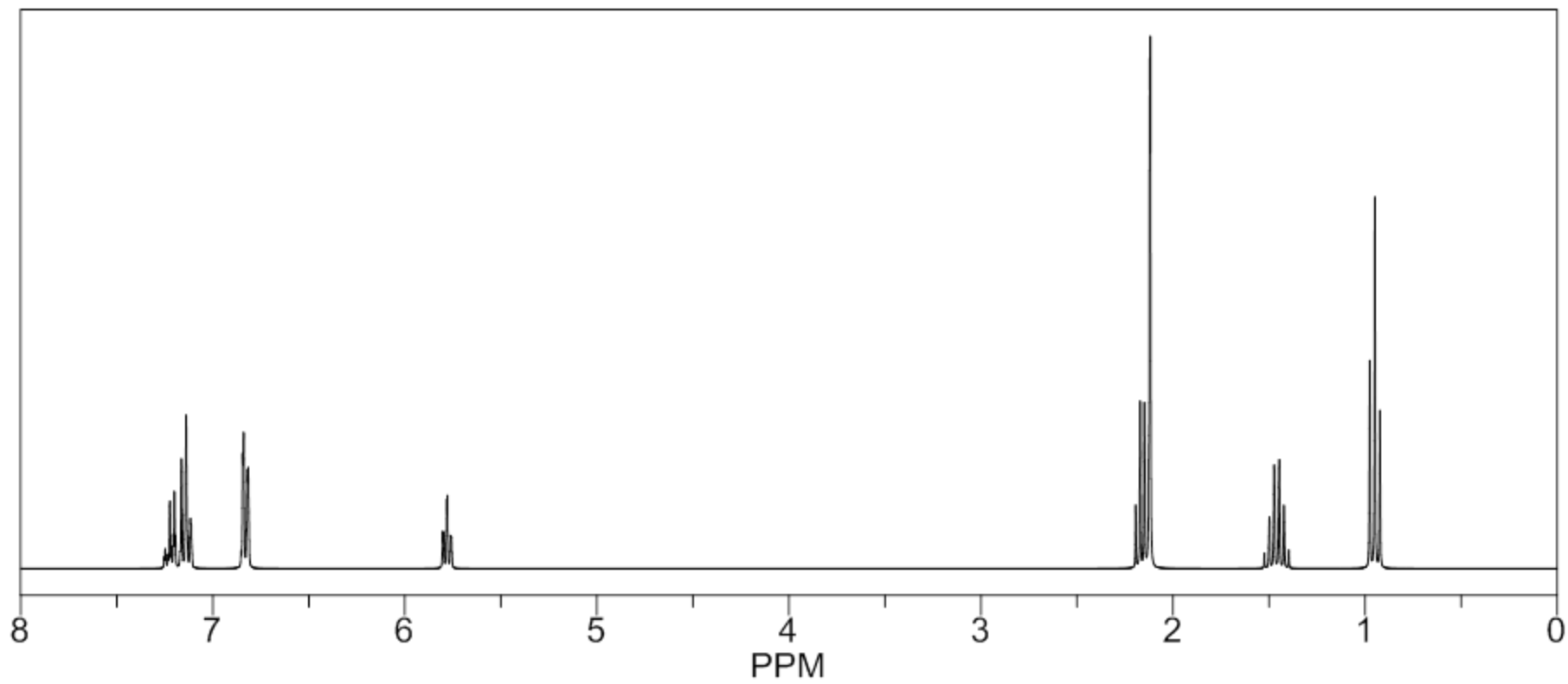
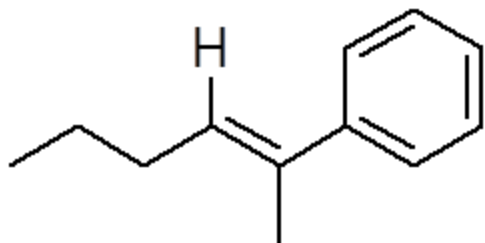
# Proton NMR Example 6 : The Assignment



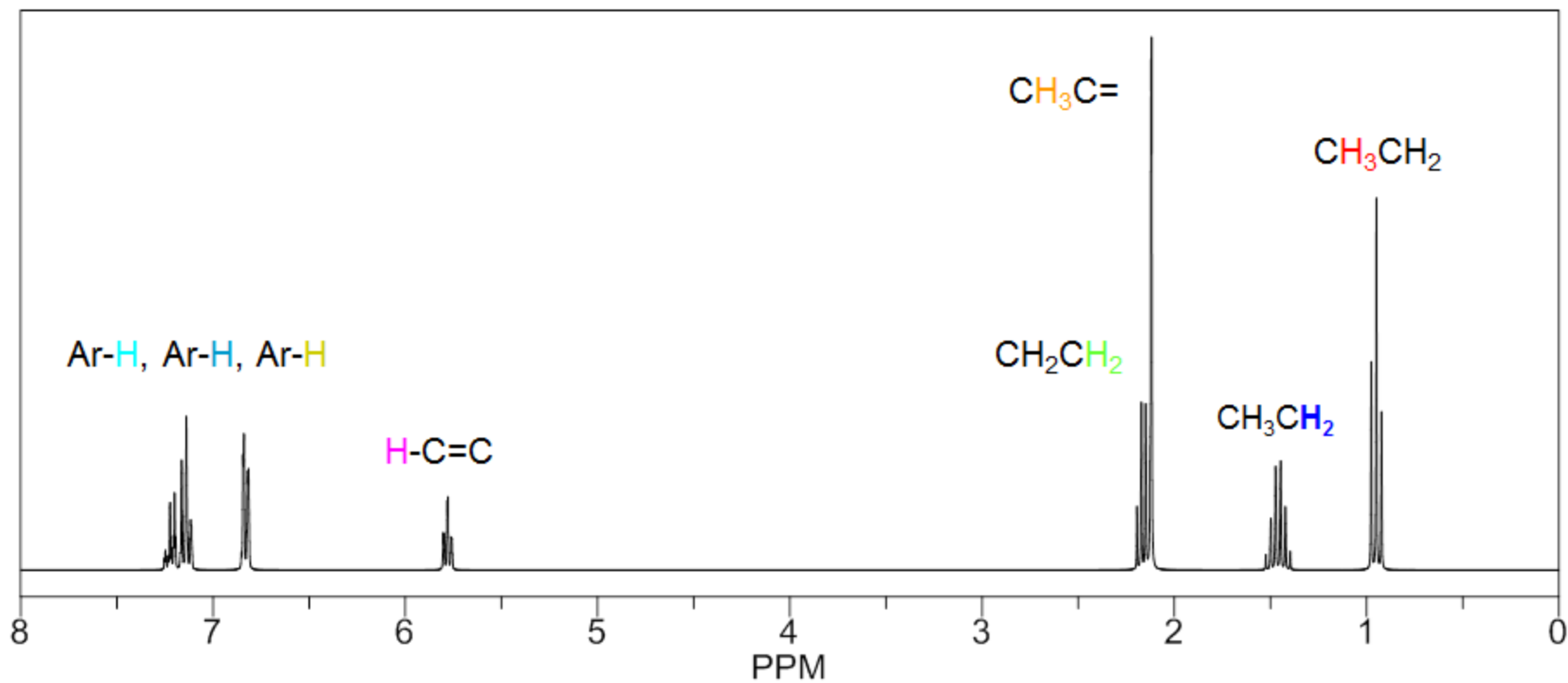
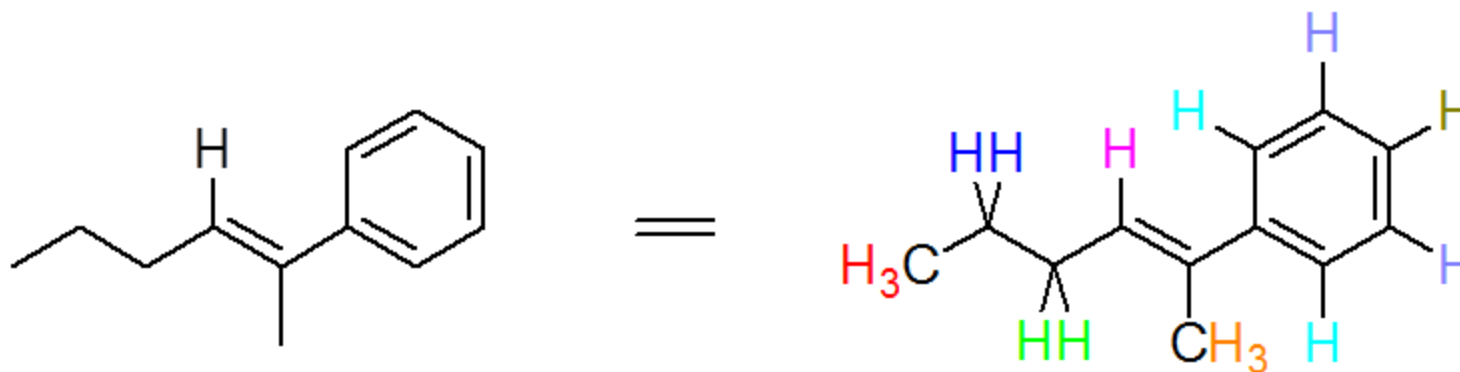
# Proton NMR Example 7 : Predict The Spectrum



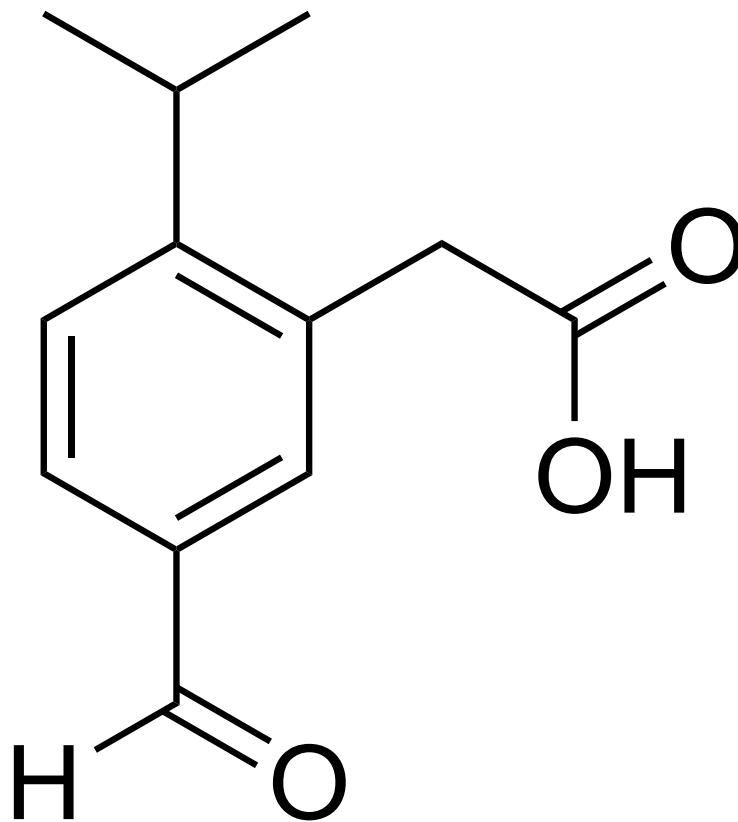
# Proton NMR Example 7 : The Spectrum



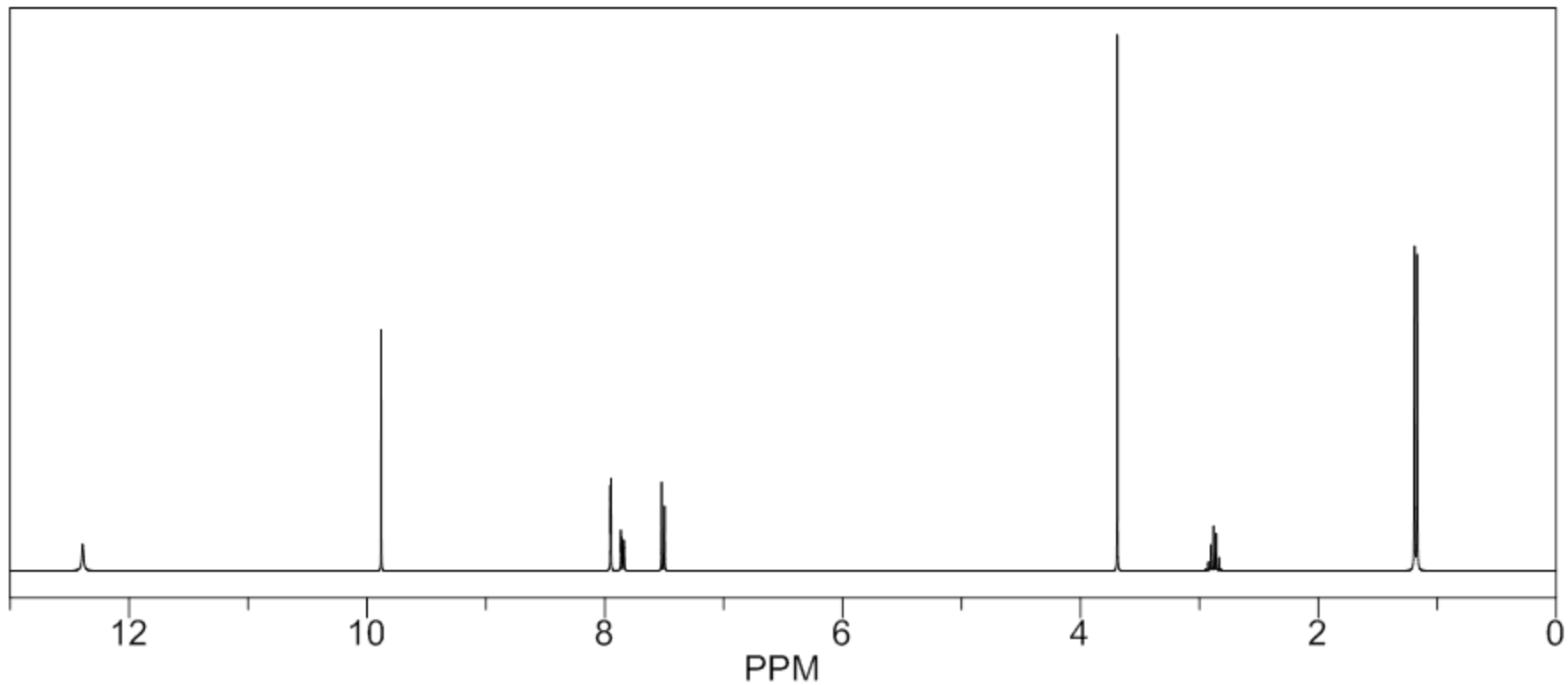
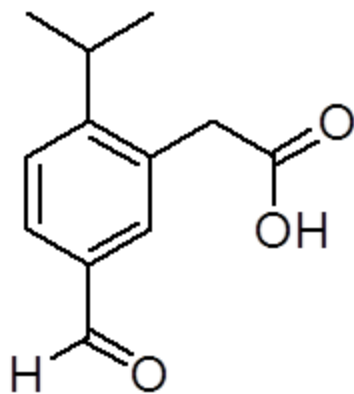
# Proton NMR Example 7 : The Assignment



# Proton NMR Example 8 : Predict The Spectrum

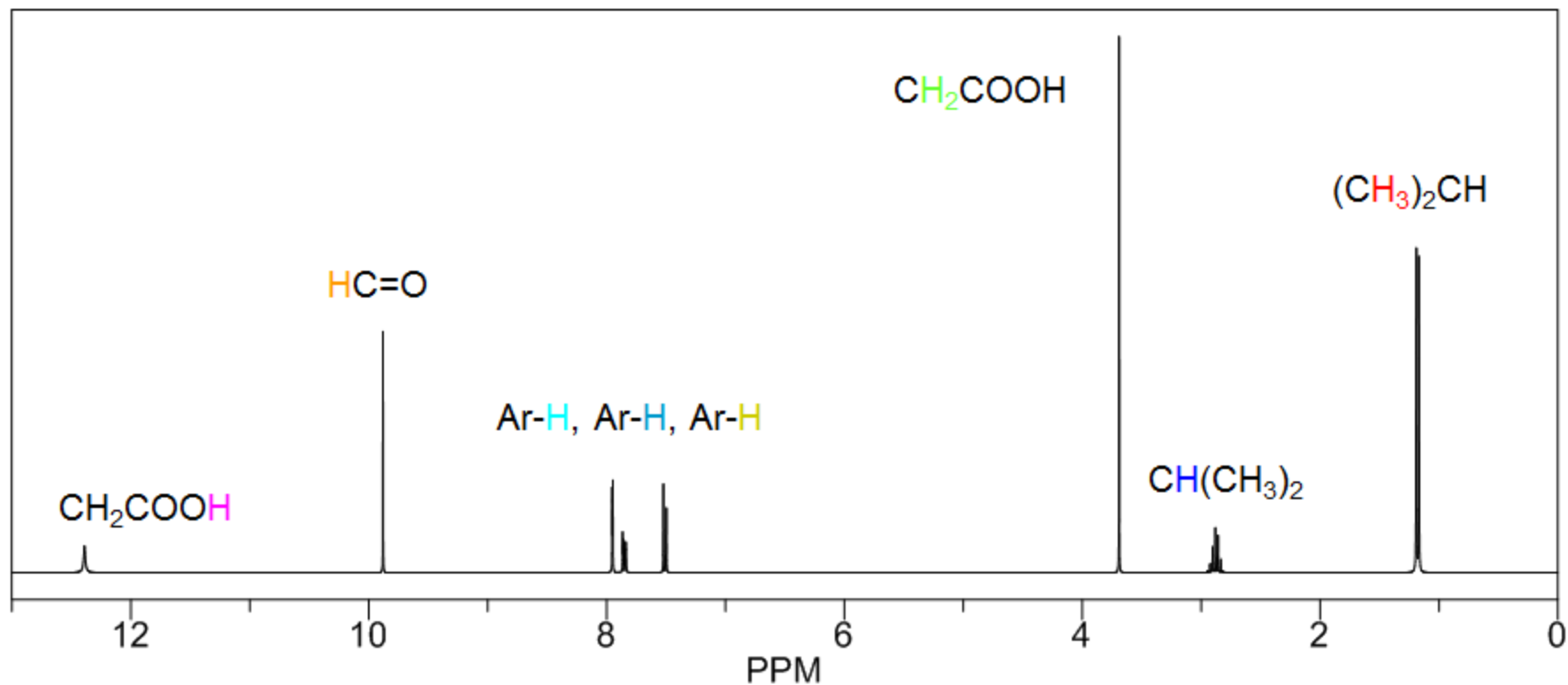
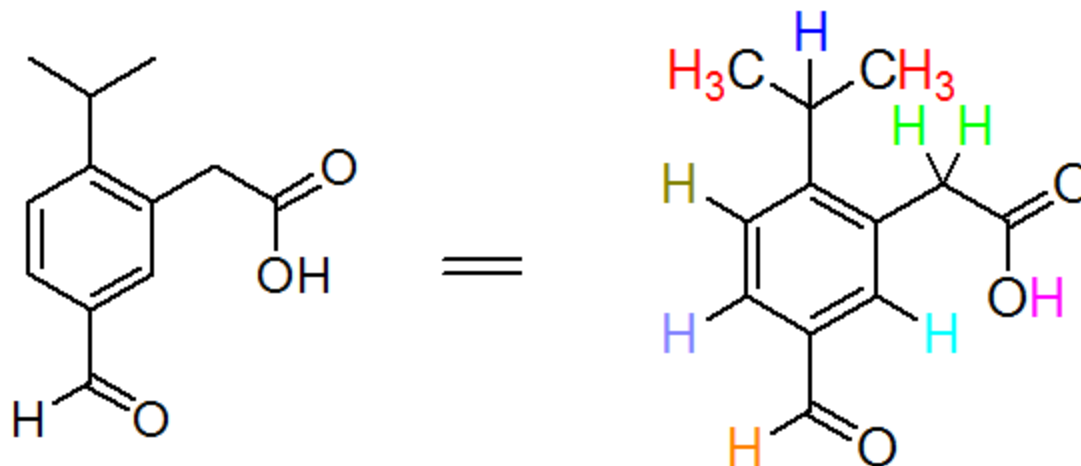


# Proton NMR Example 8 : The Spectrum

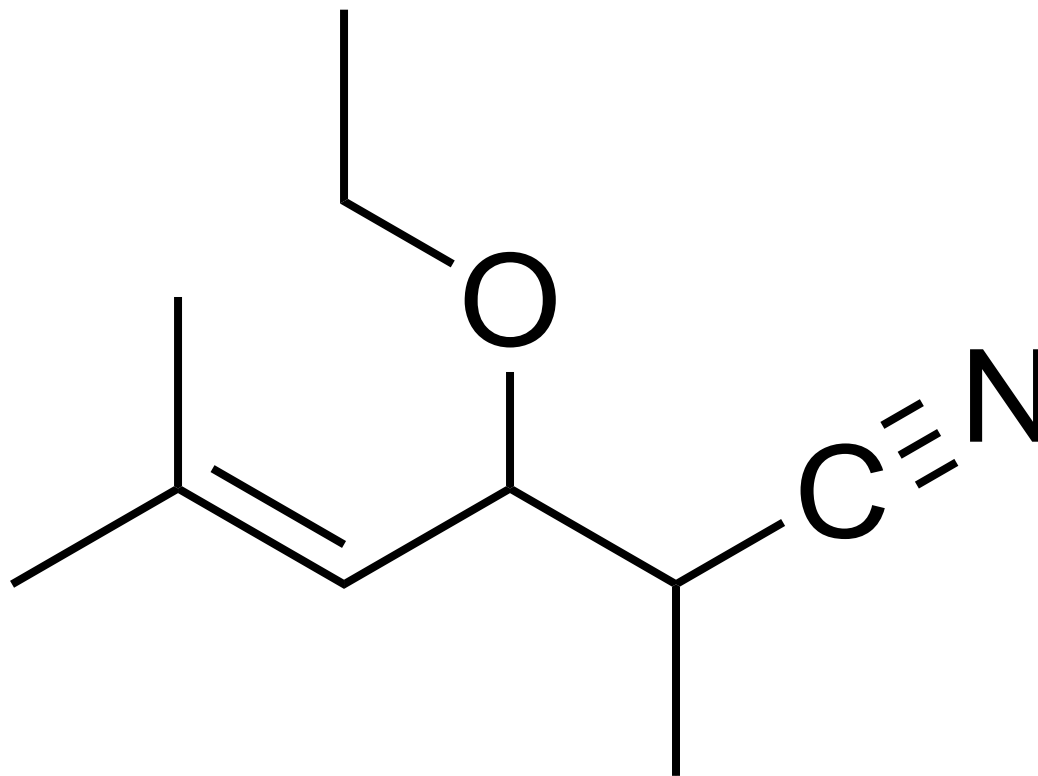




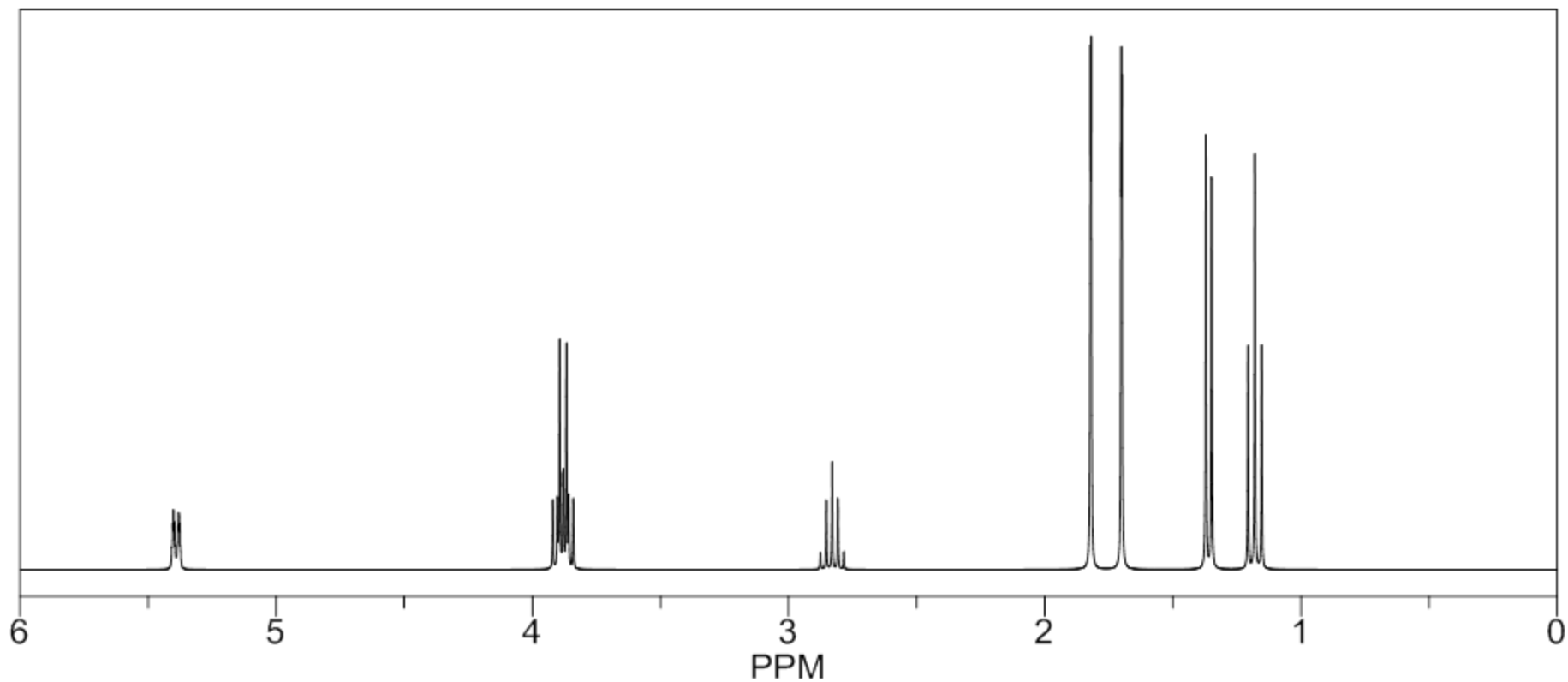
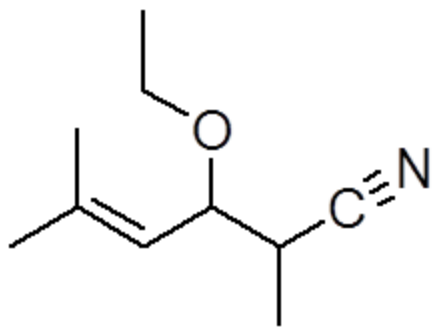
# Proton NMR Example 8 : The Assignment



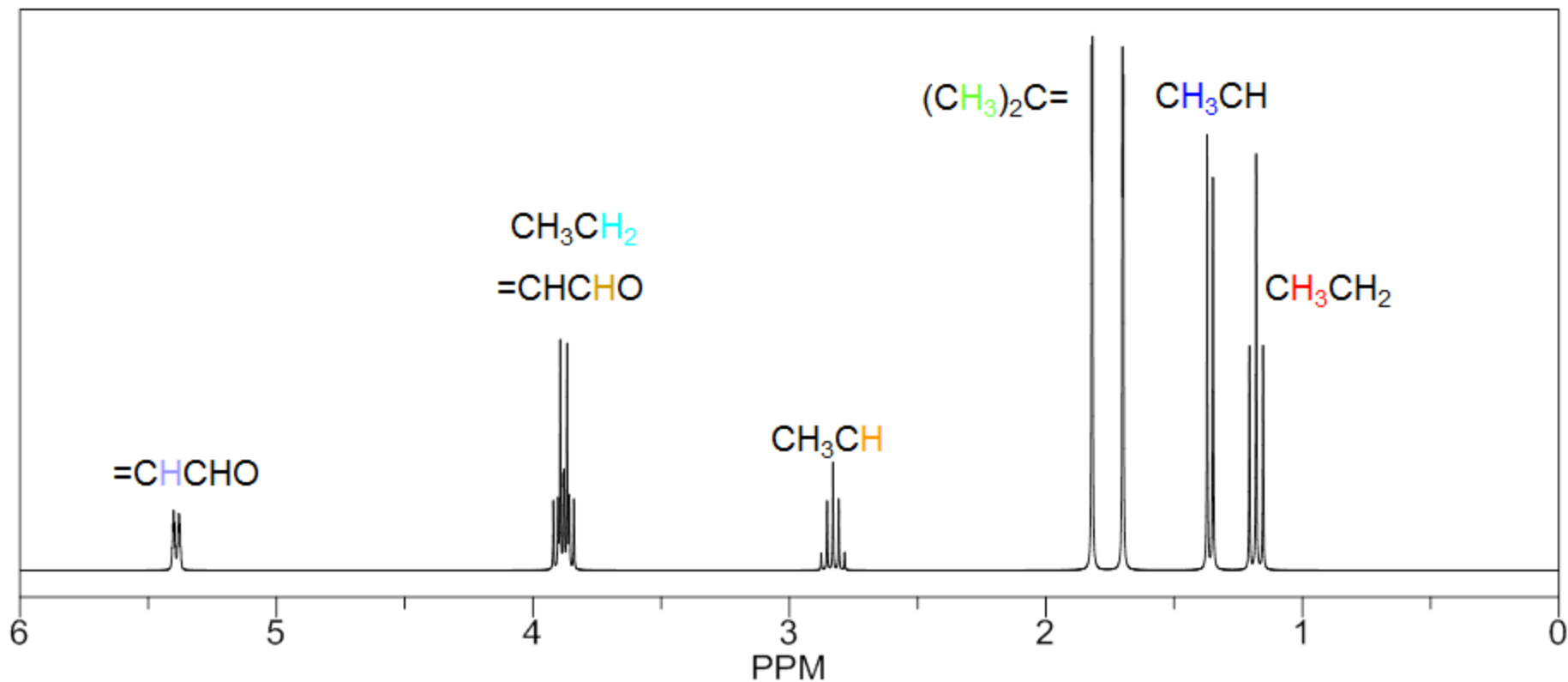
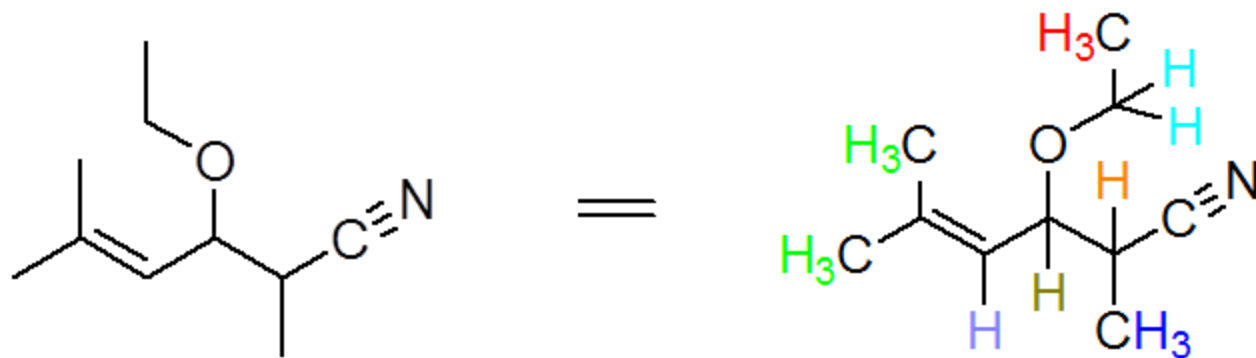
# Proton NMR Example 9 : Predict The Spectrum



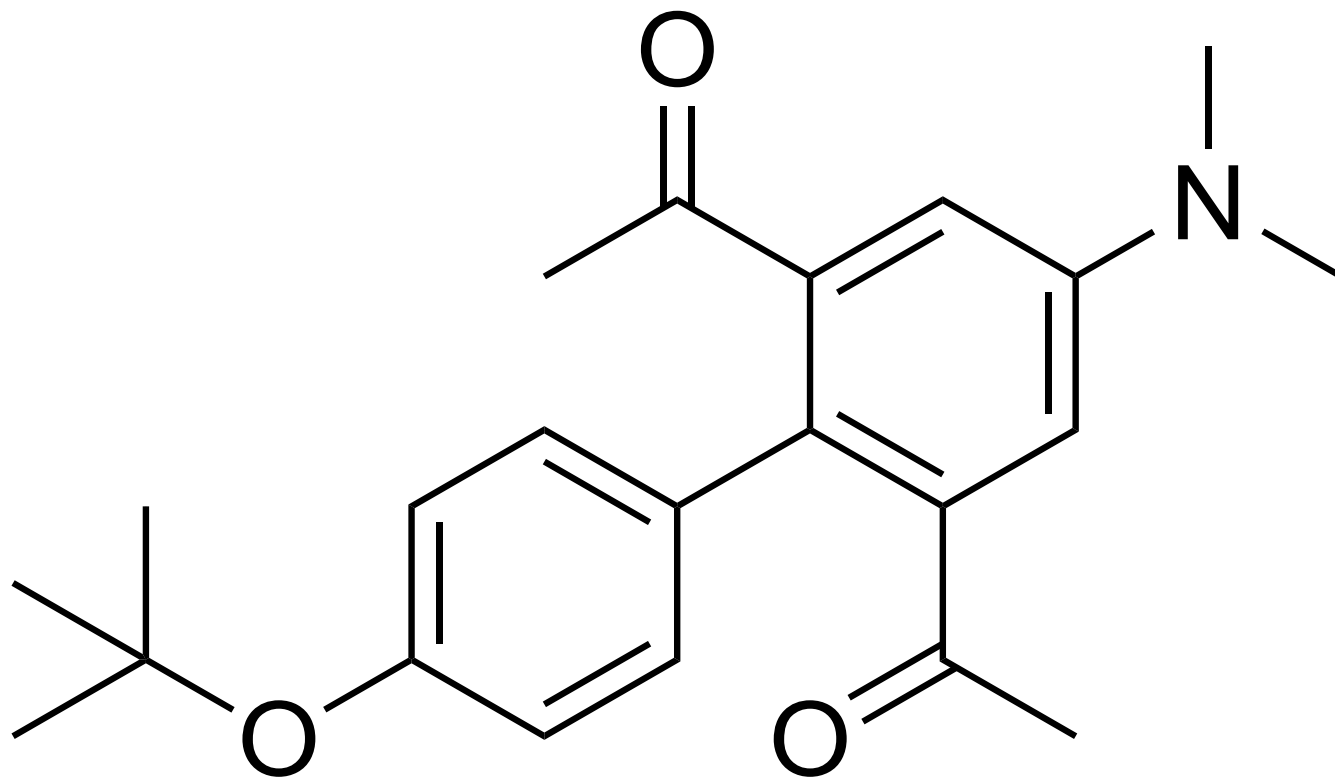
# Proton NMR Example 9 : The Spectrum



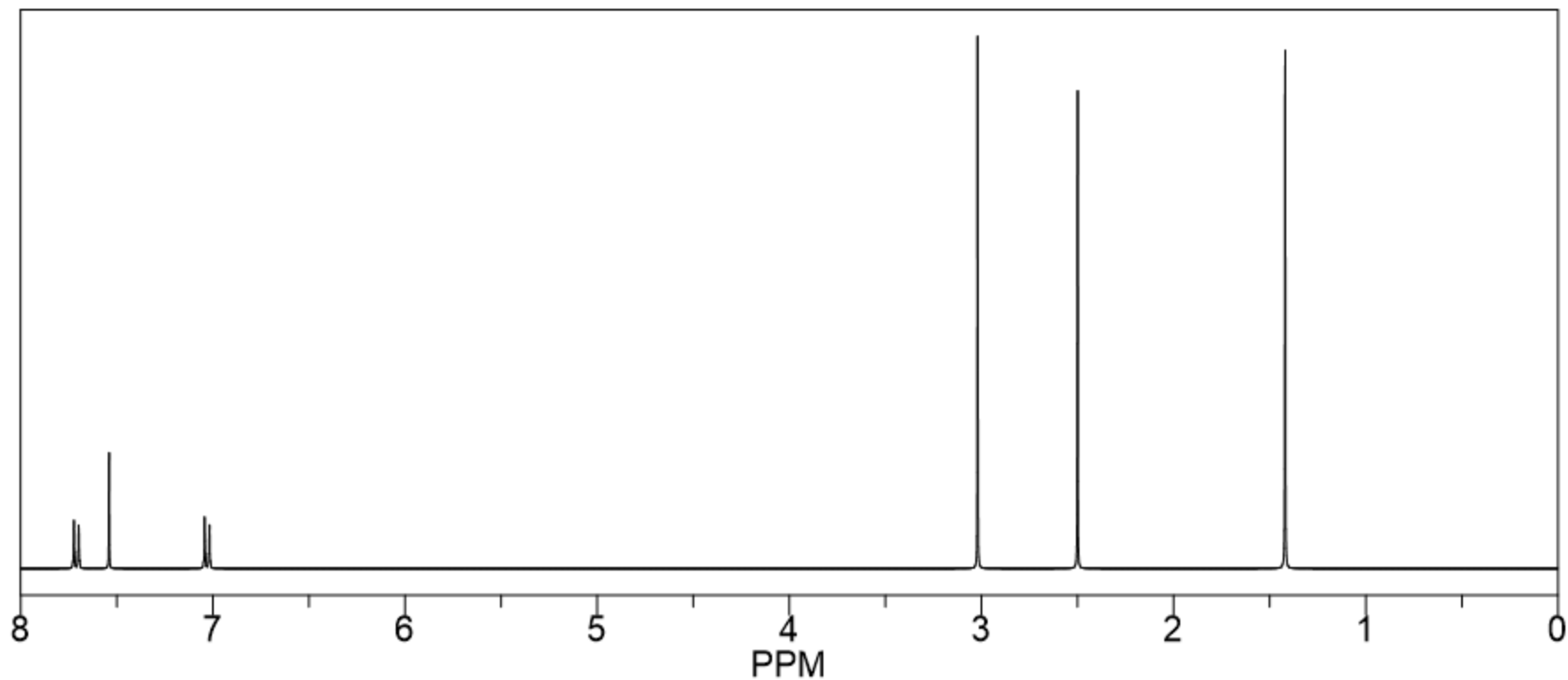
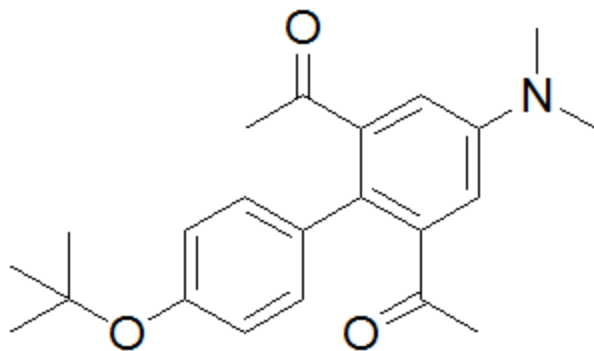
# Proton NMR Example 9 : The Assignment



# Proton NMR Example 10 : Predict The Spectrum



# Proton NMR Example 10 : The Spectrum



# Proton NMR Example 10 : The Assignment

