# C NMR Spectroscopy – Introduction

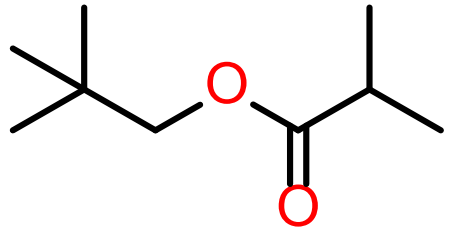
The following exercises are to help you become familiar with predicting the $^{13}C$ NMR spectra of simple organic molecules.

For each example you should find the number of signals you expect, roughly where they should show on the scale (chemical shift), and what shape they should be in coupled spectra (splitting patterns).

Use the spectroscopy sheet to become familiar with types of carbons and approximately where they show on the spectra.

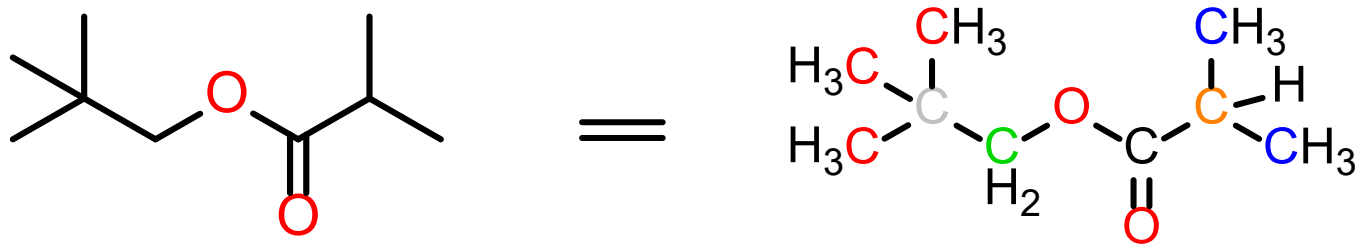
**Have the spectroscopy sheet ready to use**

# C NMR Spectroscopy Basics – 1

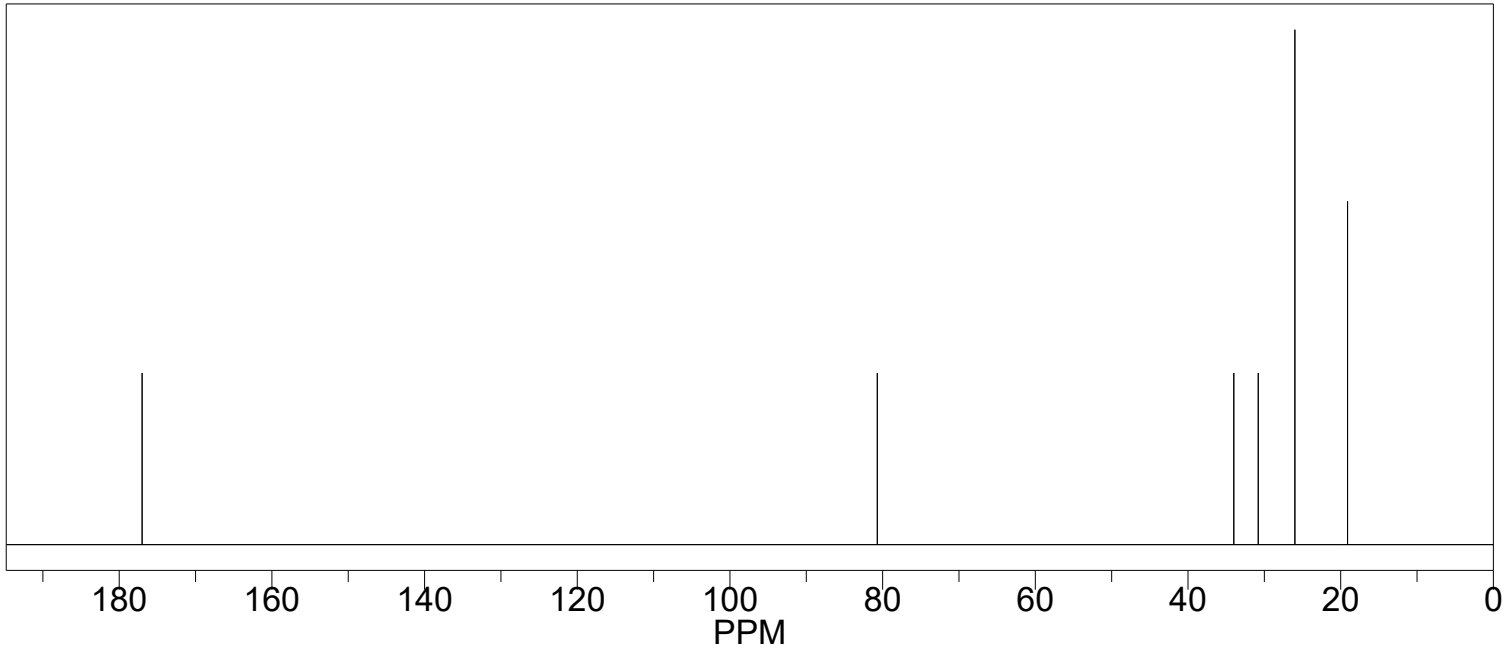



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 1

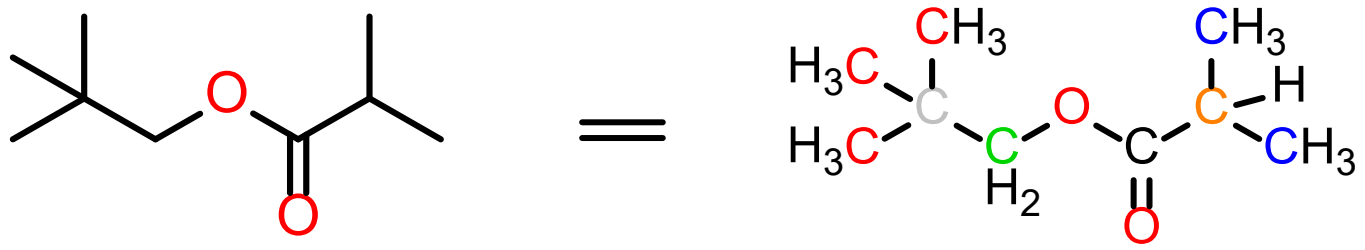


6 types of C = 6 signals

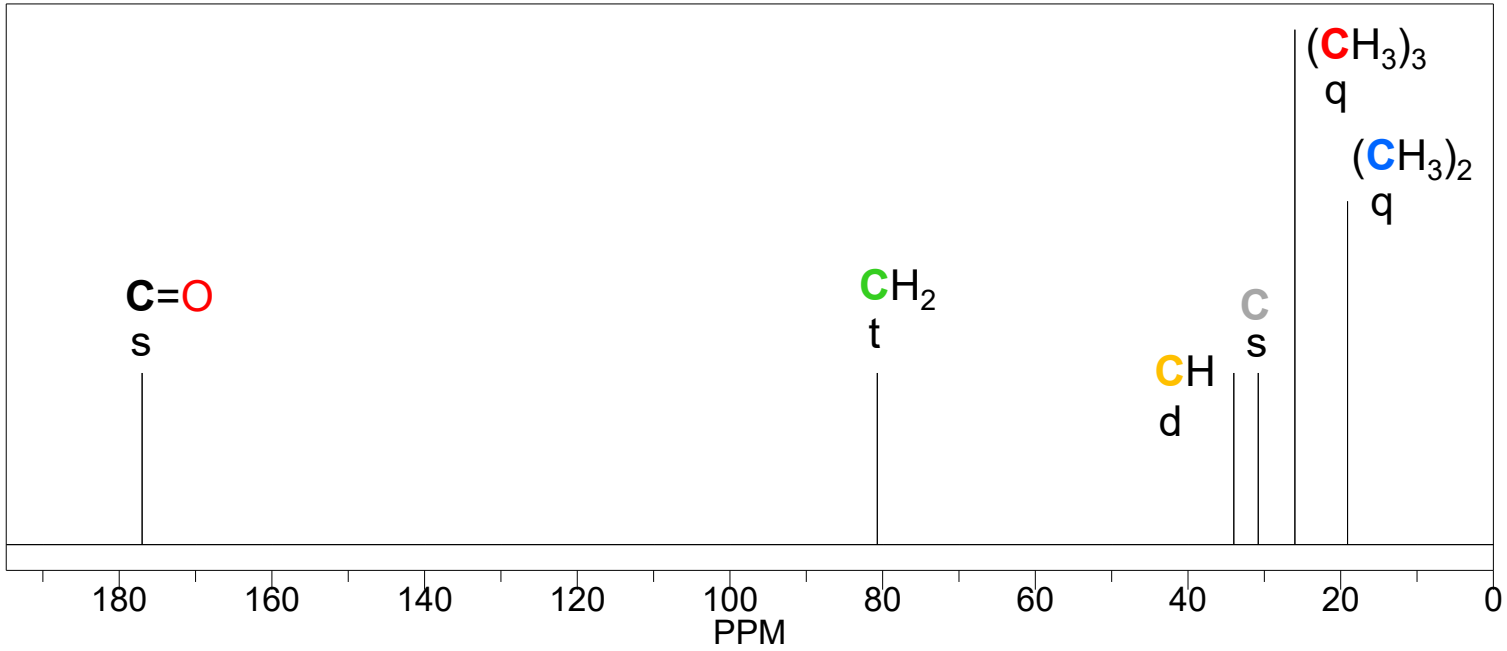



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 1

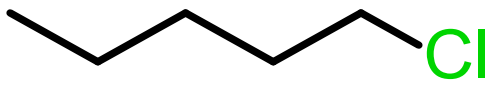


6 types of C = 6 signals



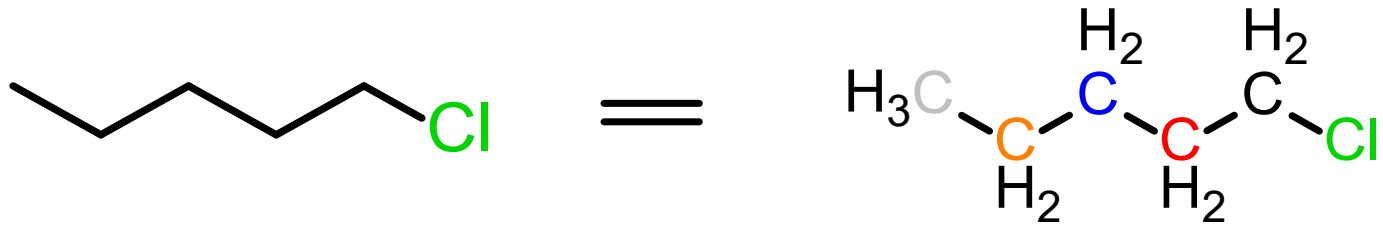

**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 2

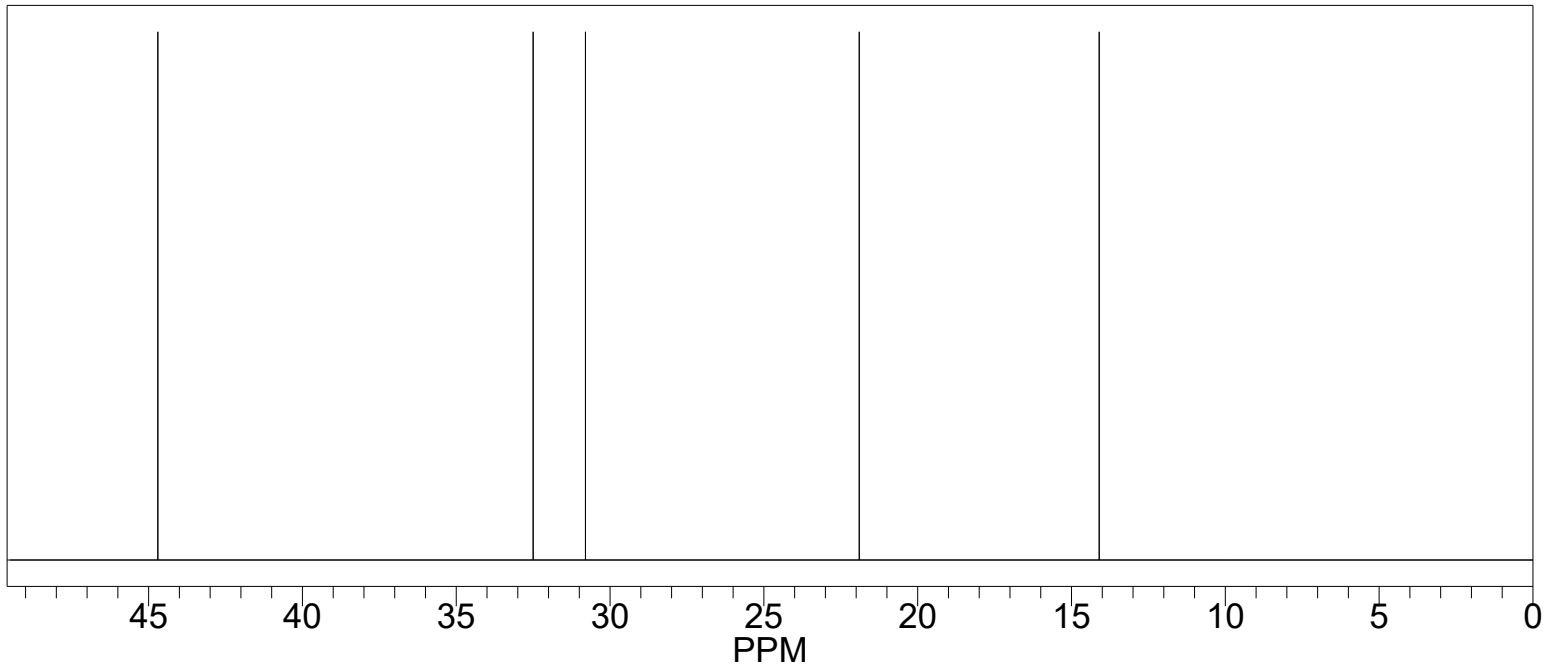



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 2

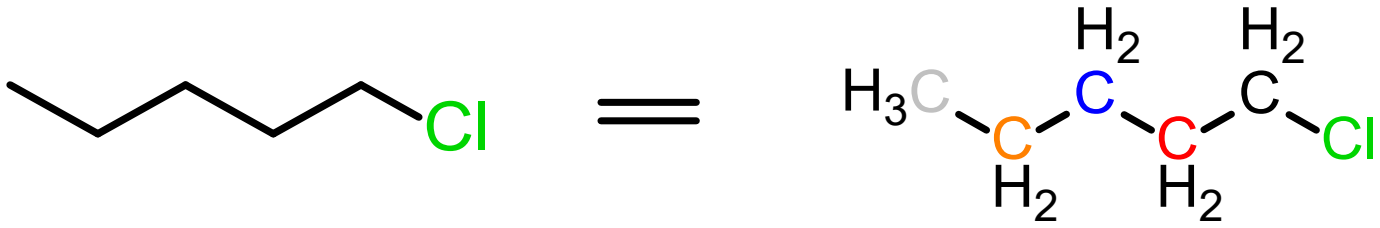



5 types of C = 5 signals

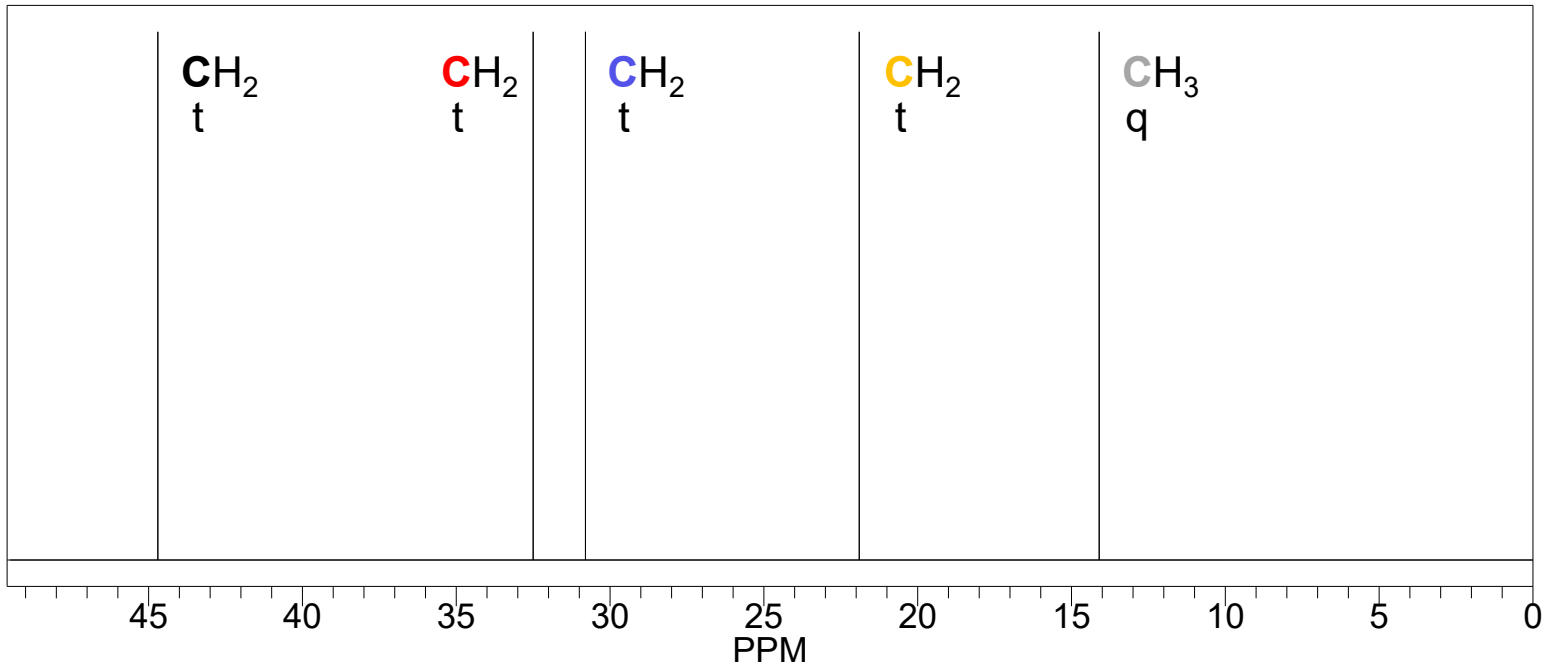



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 2

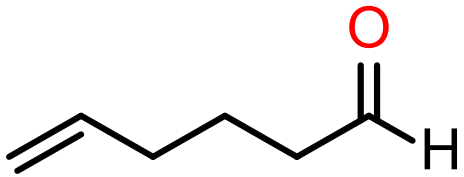



5 types of C = 5 signals



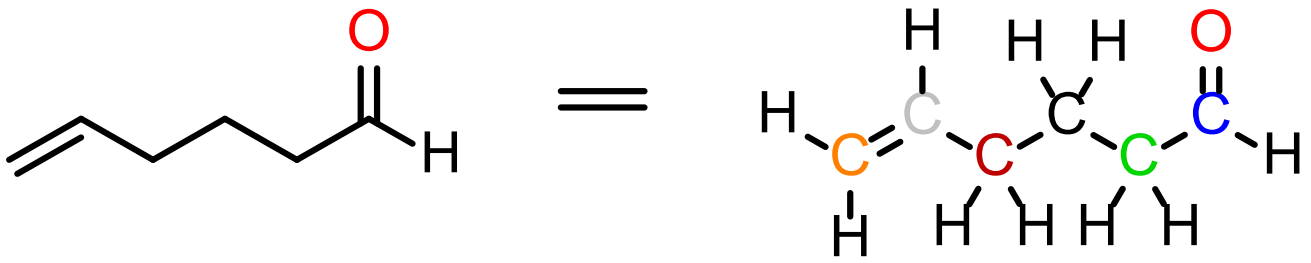

**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 3

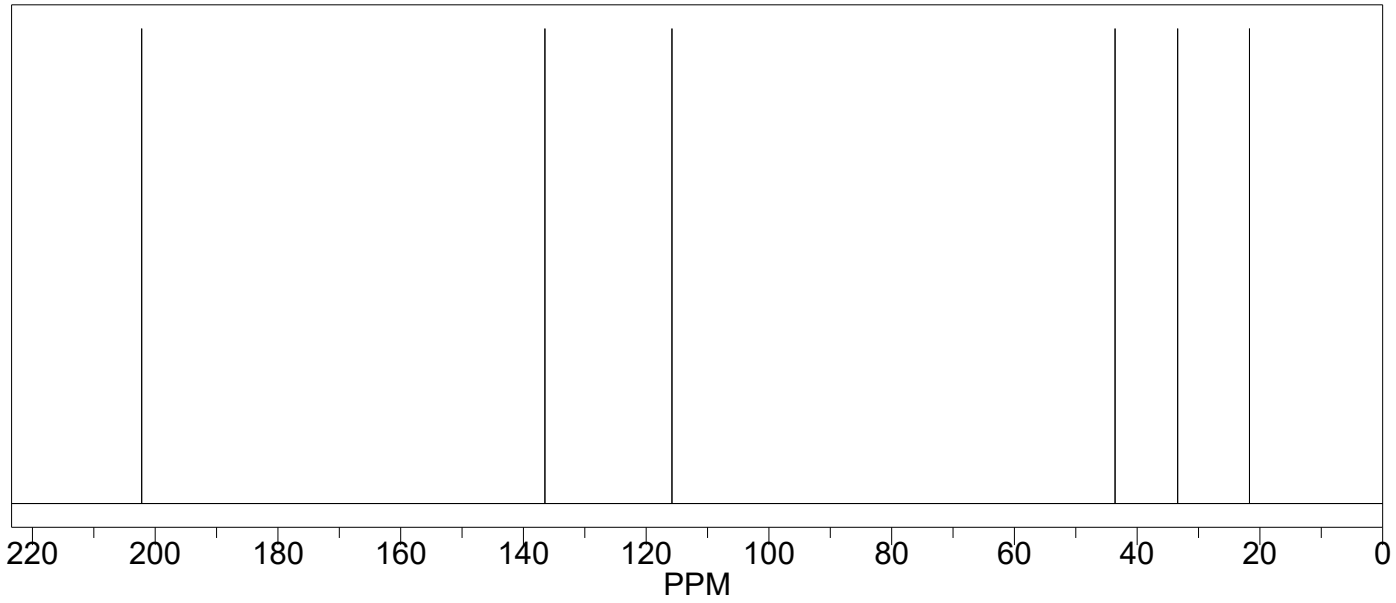



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 3

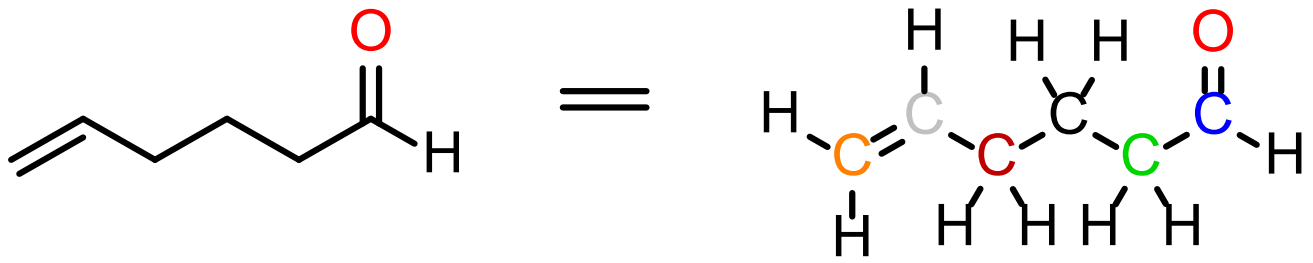



6 types of C = 6 signals

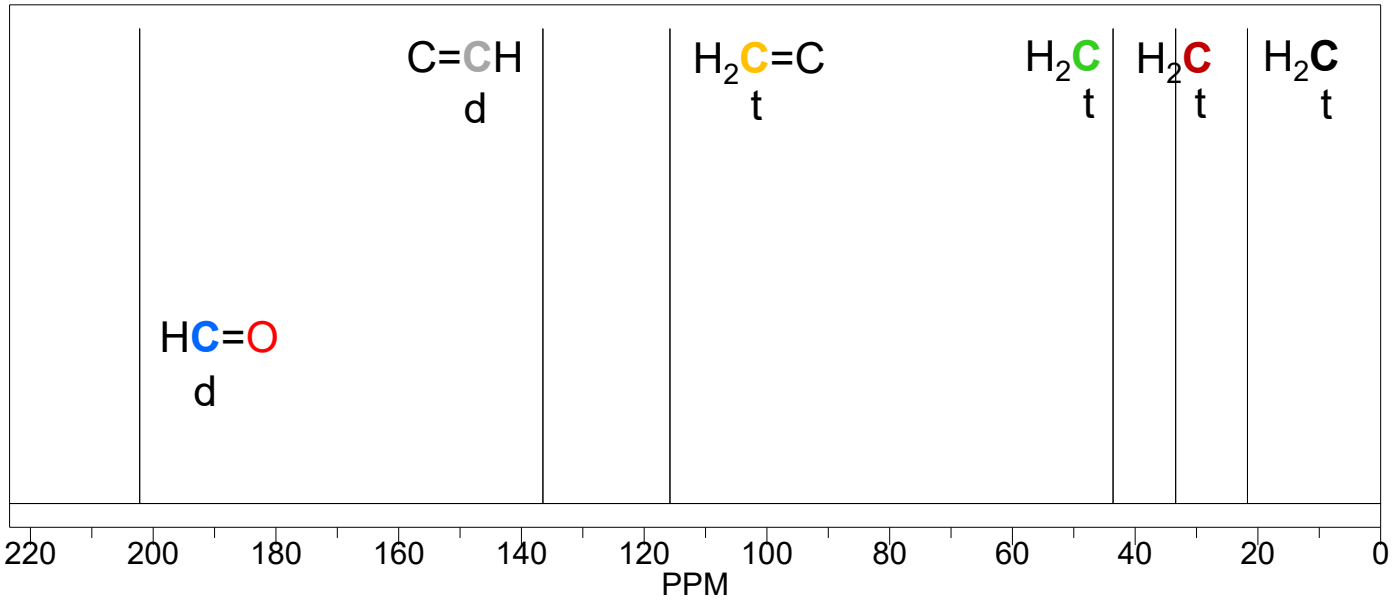



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 3

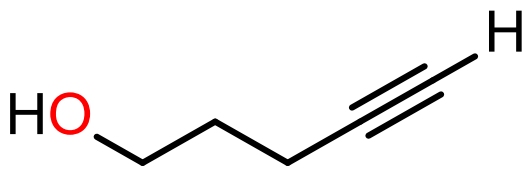


6 types of C = 6 signals



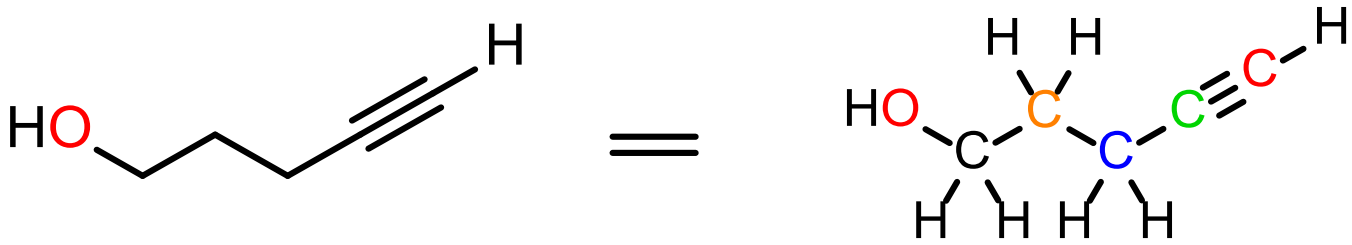

**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 4

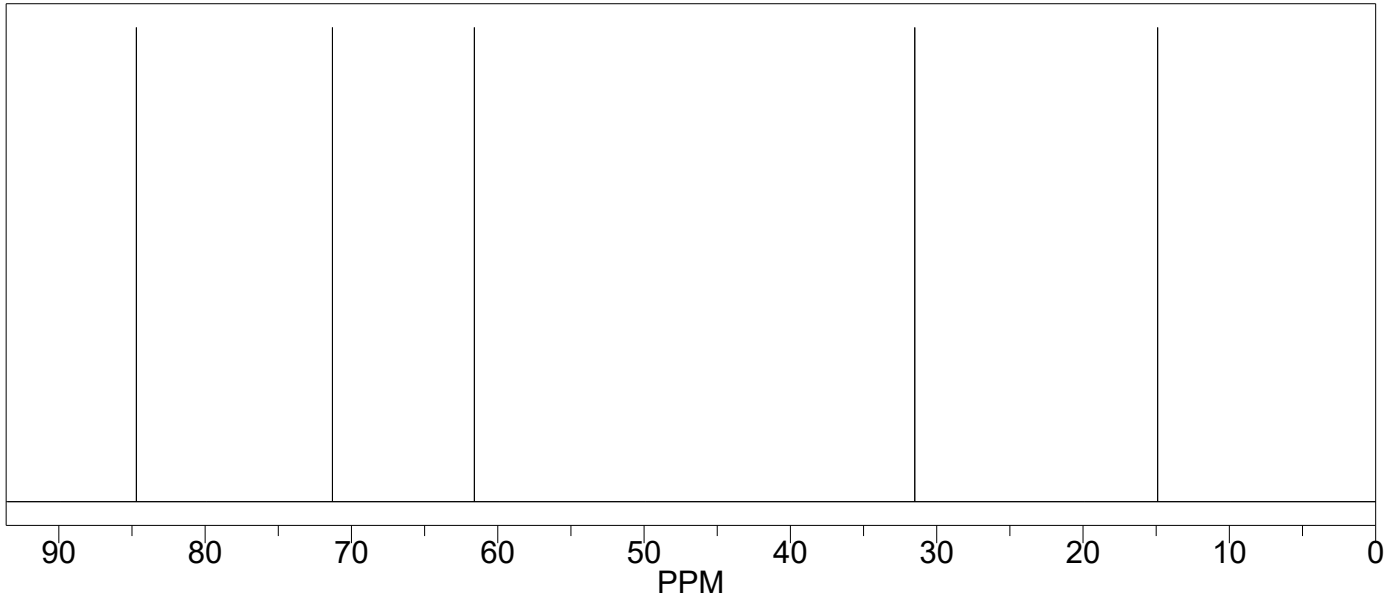



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 4

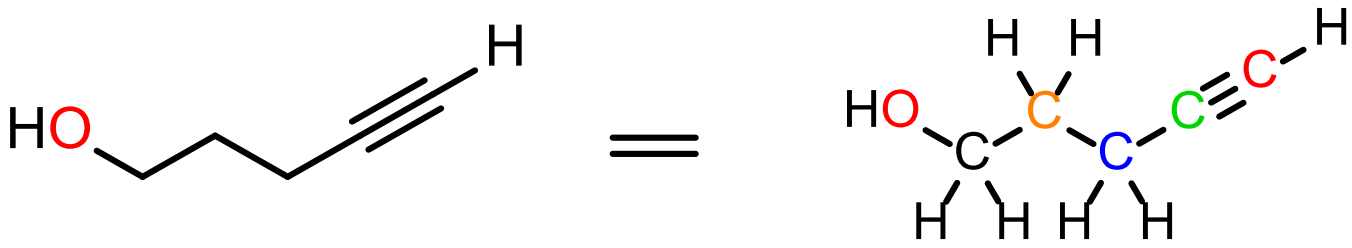



5 types of C = 5 signals

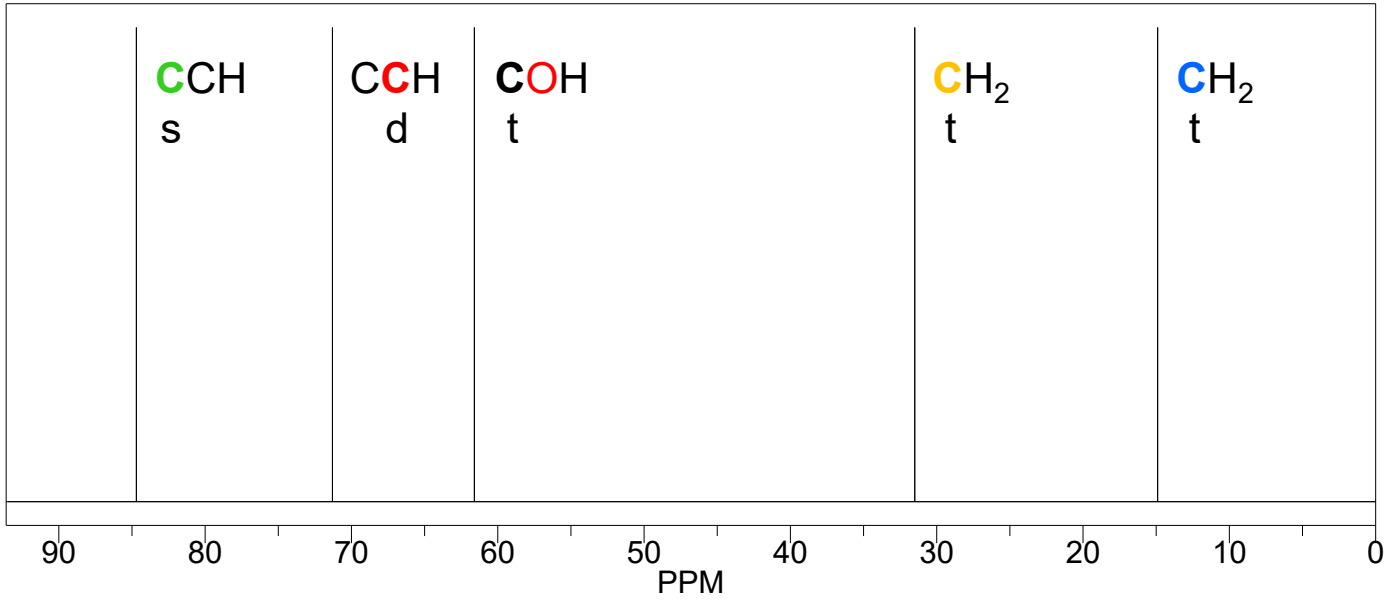



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 4

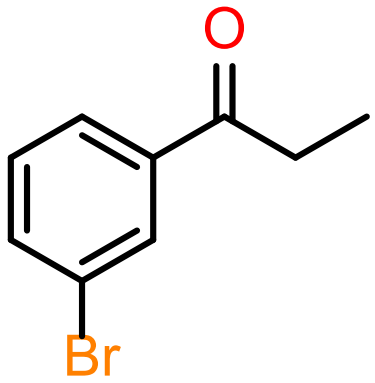



5 types of C = 5 signals



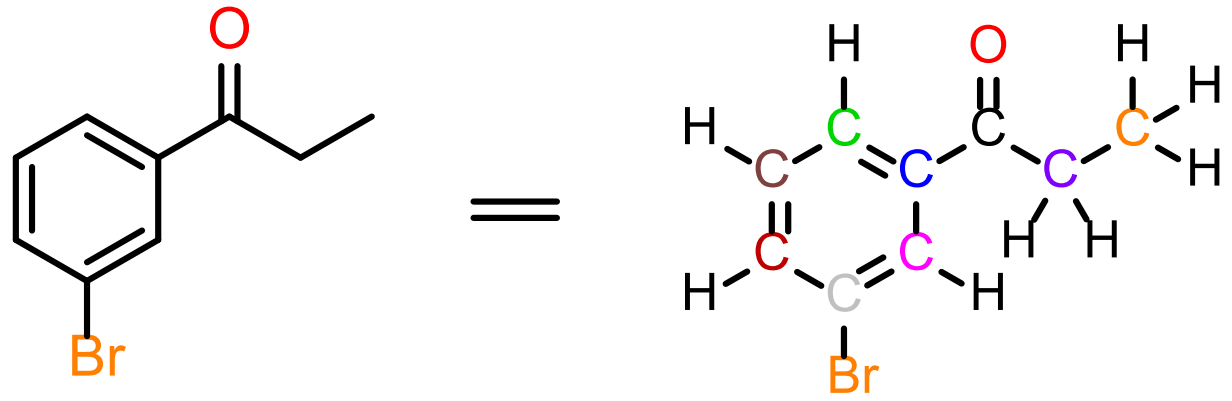

**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 5

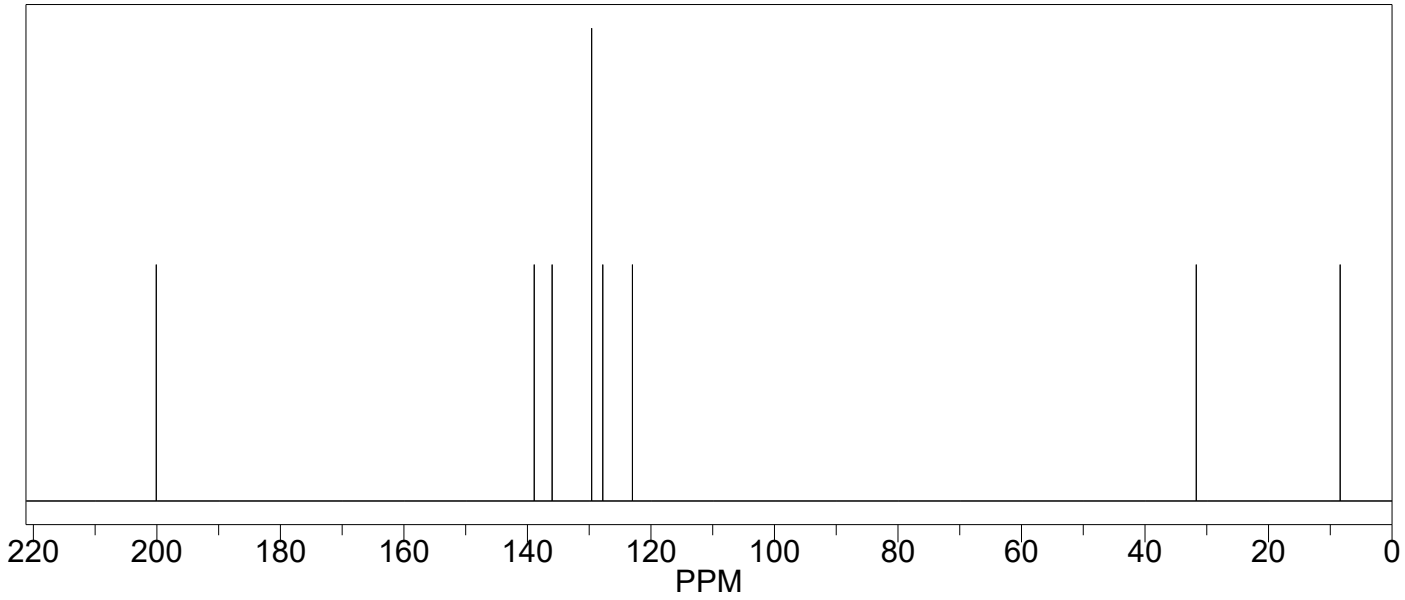



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 5

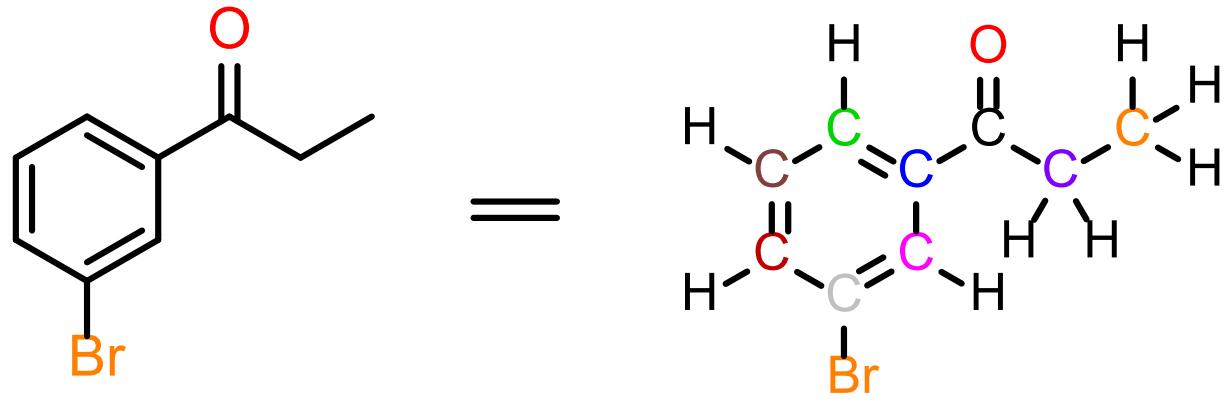



8/9 types of C = 8/9 signals

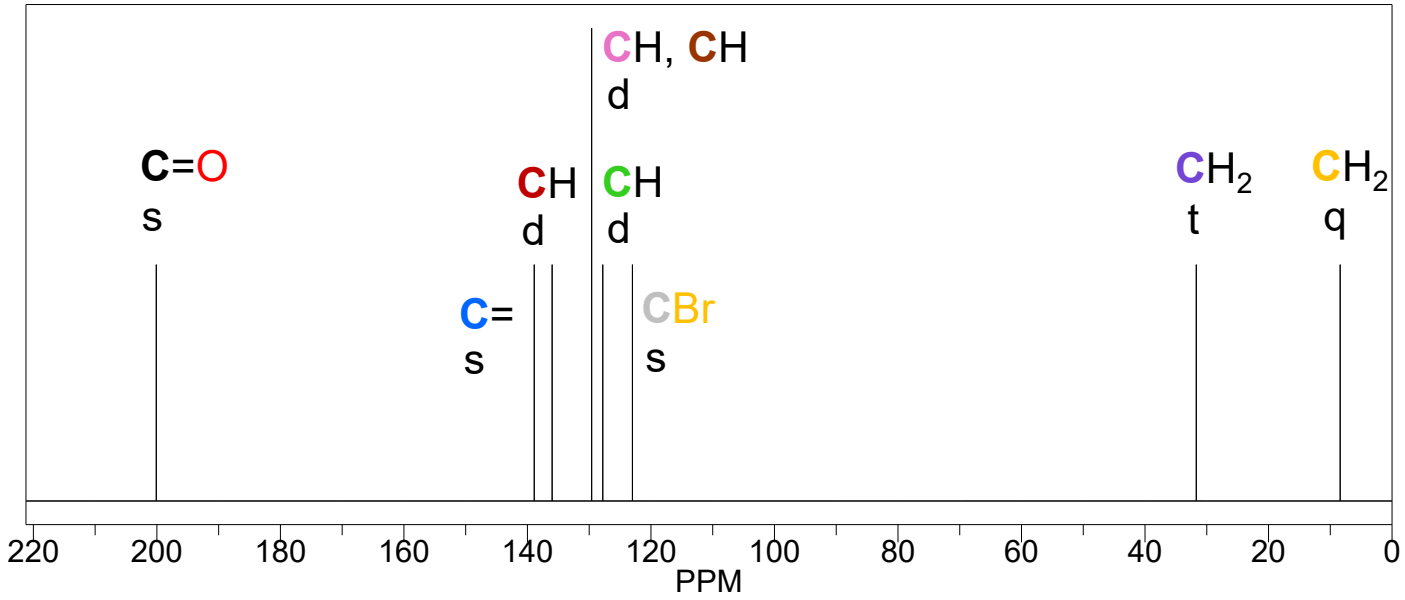



**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 5

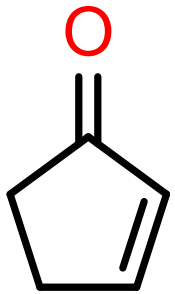



8/9 types of C = 8/9 signals



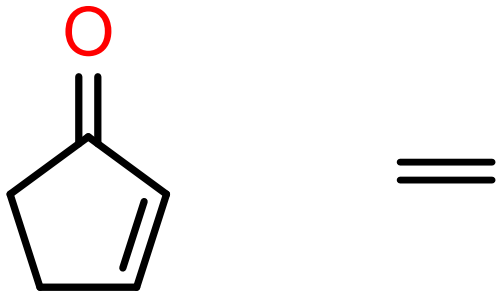

**Predict the number of signals, chemical shifts, and signal shapes**

# C NMR Spectroscopy Basics – 6

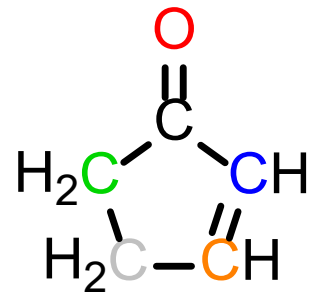



Predict the number of signals, chemical shifts, and signal shapes

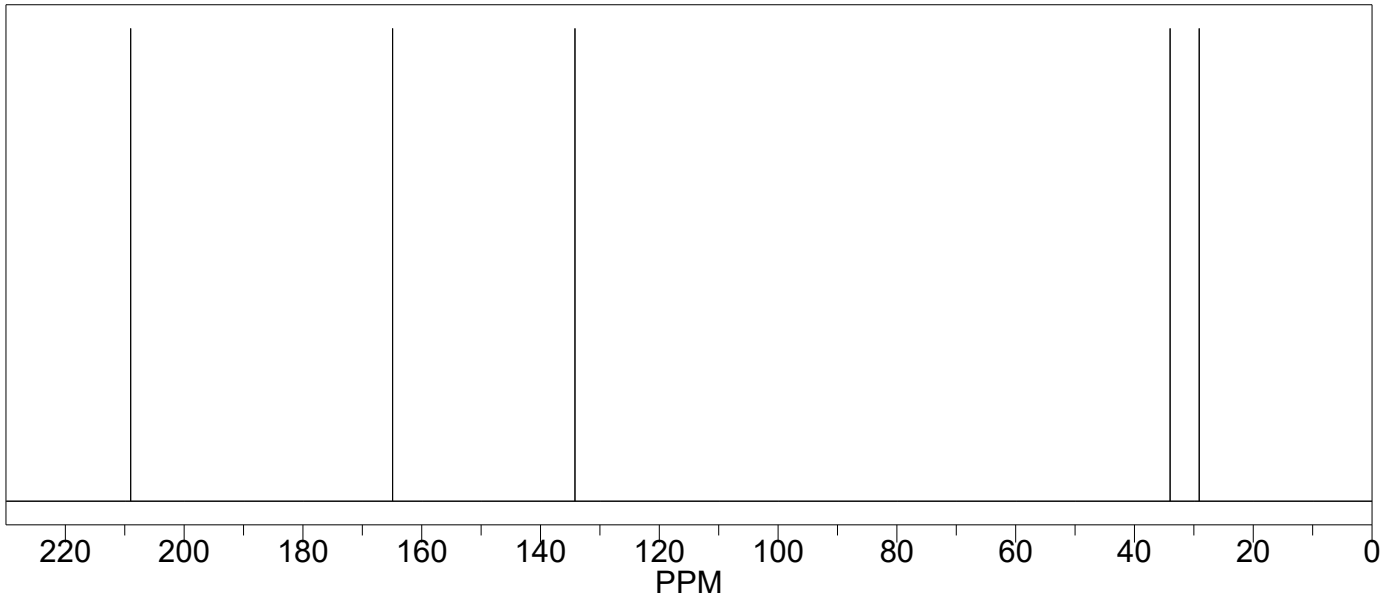
# C NMR Spectroscopy Basics – 6




=

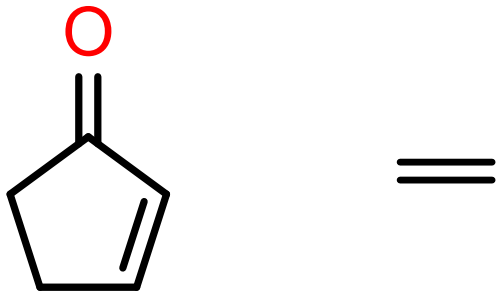



5 types of C = 5 signals

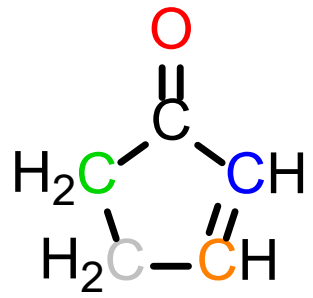



**Predict the number of signals, chemical shifts, and signal shapes**

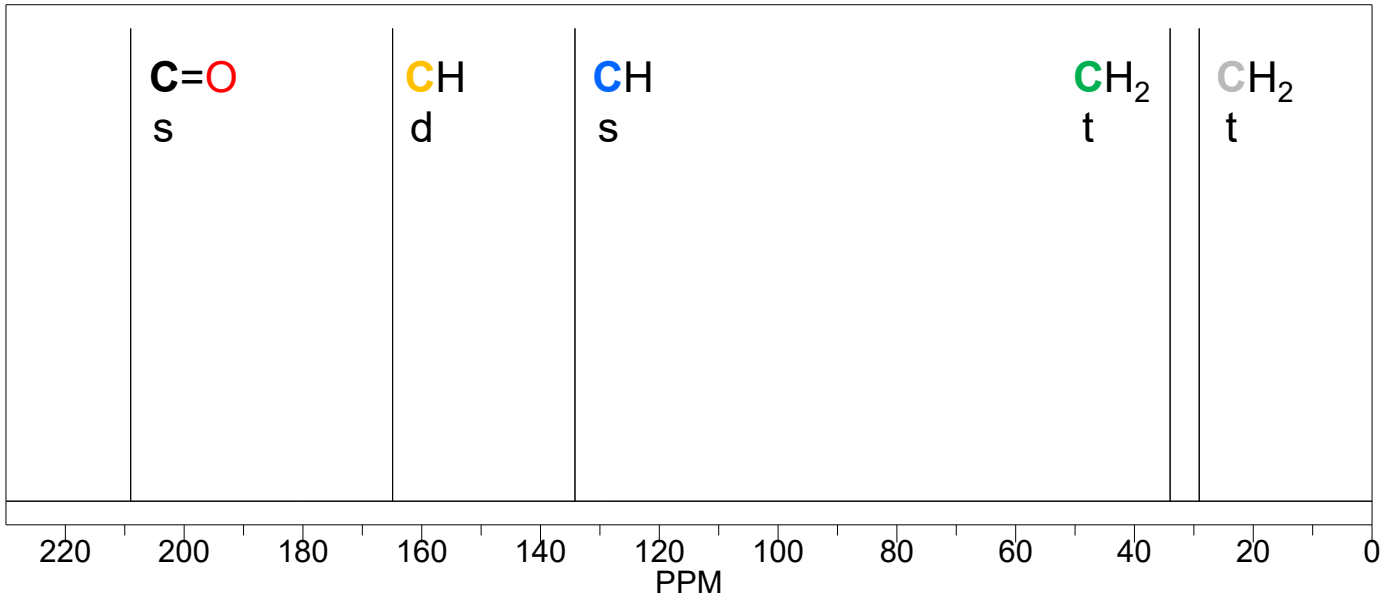
# C NMR Spectroscopy Basics – 6



=




5 types of C = 5 signals




**Predict the number of signals, chemical shifts, and signal shapes**