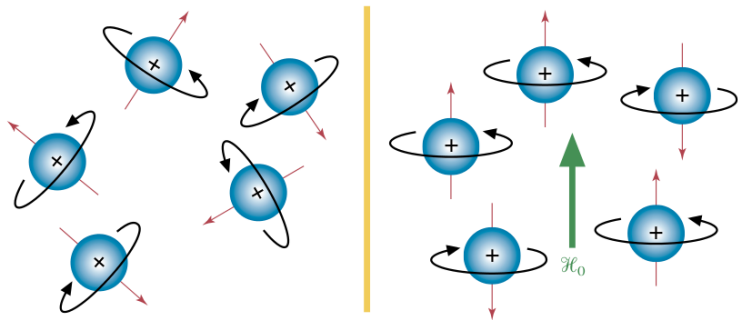


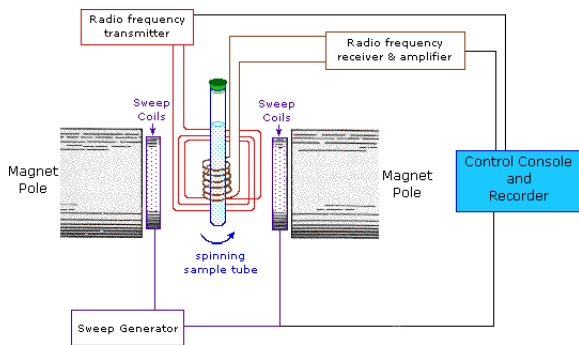
# Nukleární magnetická rezonance



Jádra s  $I = 1/2$ , např.:

$^1\text{H}$  (99,99 %),  $^{13}\text{C}$  (1,1 %),  $^{15}\text{N}$  (0,37 %),  $^{19}\text{F}$  (100 %),  $^{29}\text{Si}$  (4,67 %),  
 $^{31}\text{P}$  (100 %).

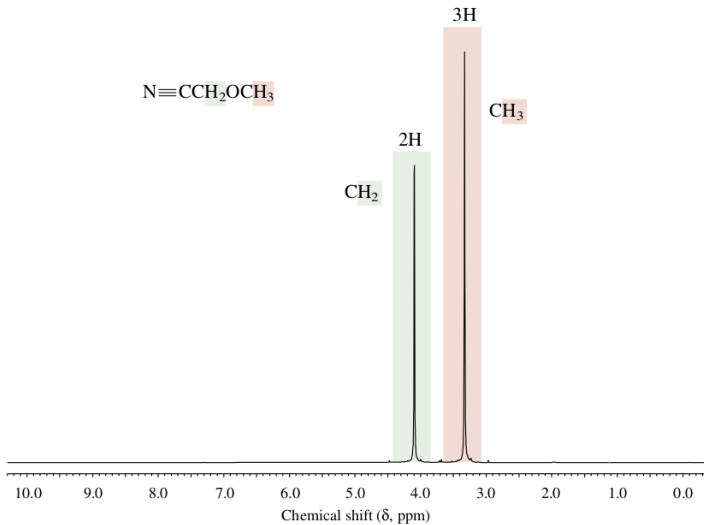
# Nukleární magnetická rezonance



Chemický posun:

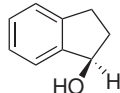
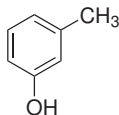
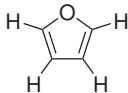
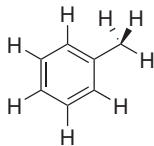
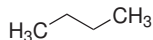
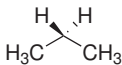
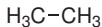
$$\delta = \frac{\nu - \nu_{ref}}{\nu_{ref}} \times 10^6 \text{ ppm}$$

# Nukleární magnetická rezonance

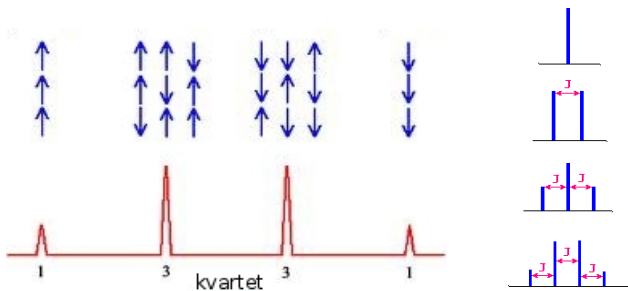
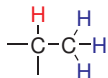


# Nukleární magnetická rezonance

Počet chemicky neekvivalentních atomů vodíku?



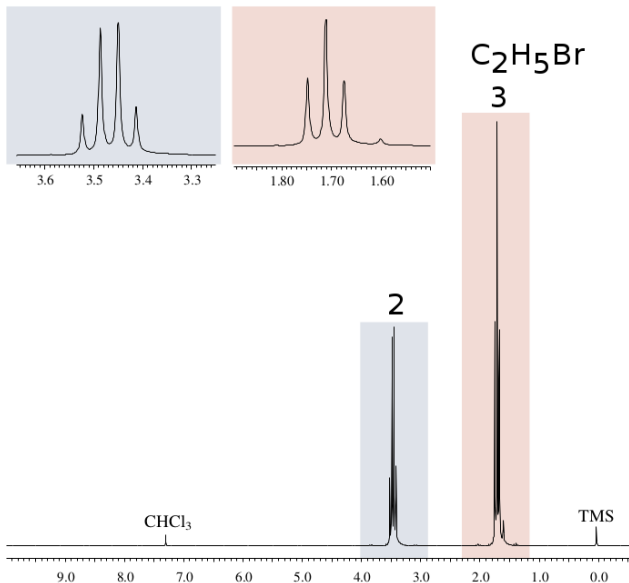
# Nukleární magnetická rezonance



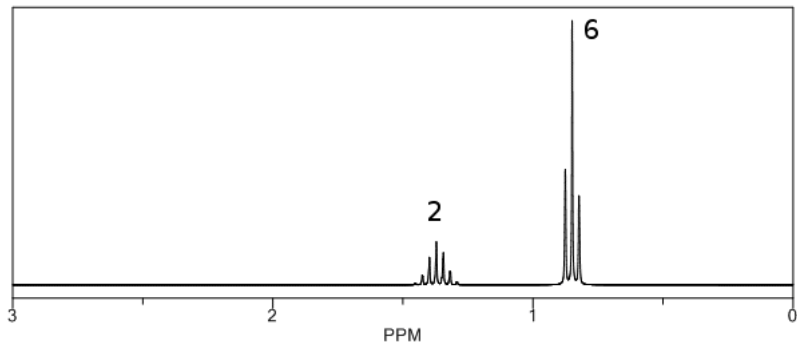
Počet linií:

$$N = 2nI + 1$$

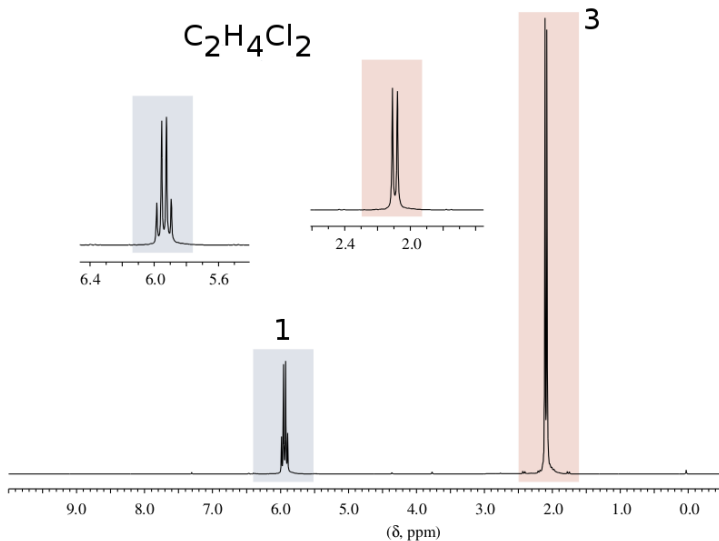
# Nukleární magnetická rezonance



# Nukleární magnetická rezonance

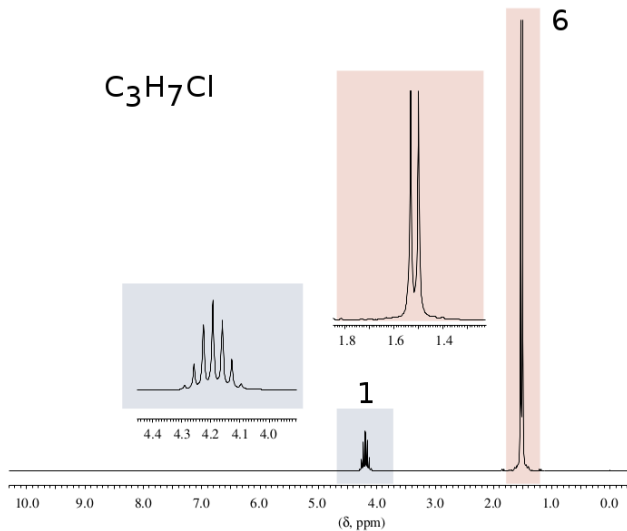


# Nukleární magnetická rezonance

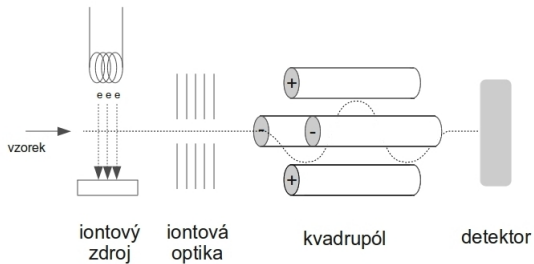




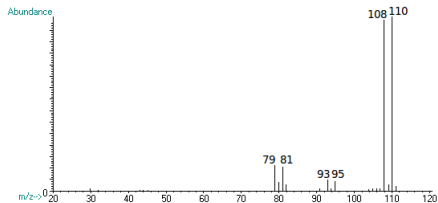
# Nukleární magnetická rezonance



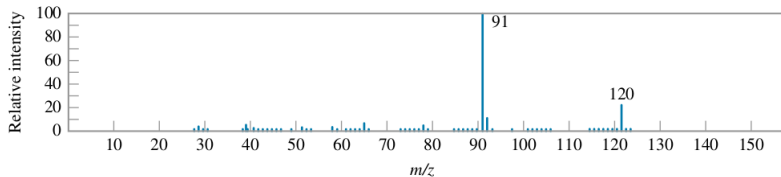
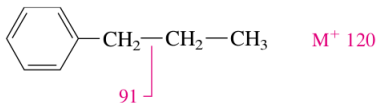
# Hmotnostní spektroskopie



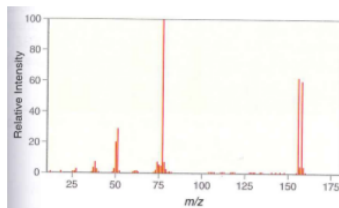
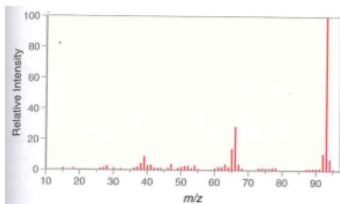
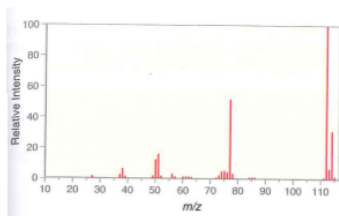
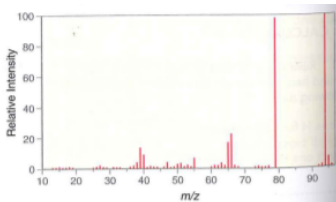
Bromethan:



# Hmotnostní spektroskopie

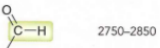
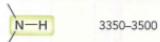


# Hmotnostní spektroskopie



# Infračervená spektroskopie

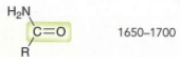
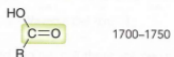
## Single Bonds (X—H)



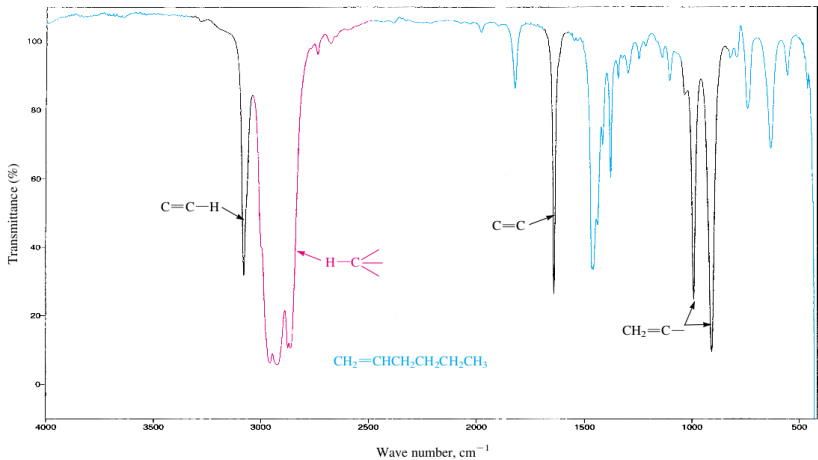
## Triple Bonds



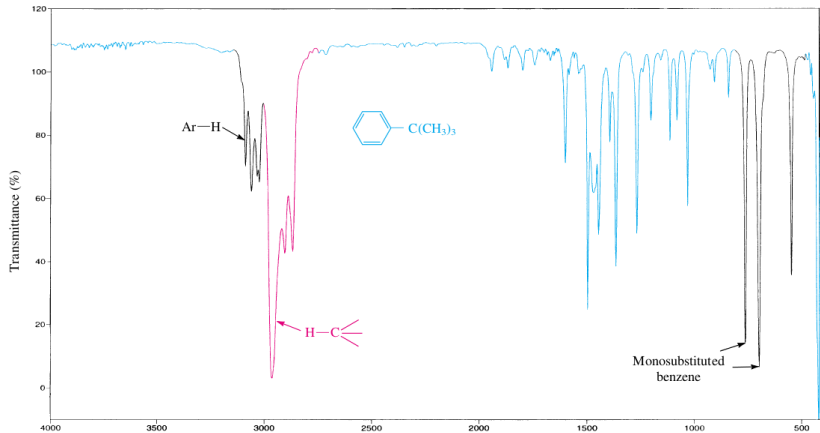
## Double Bonds



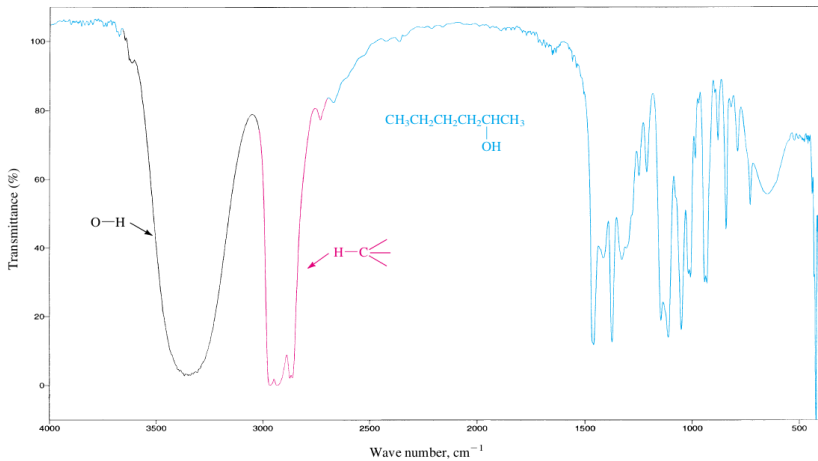
# Infračervená spektroskopie



# Infračervená spektroskopie

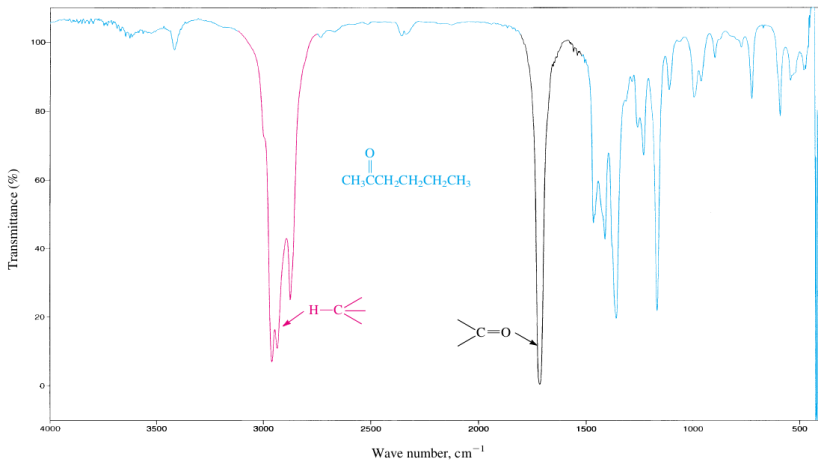


# Infračervená spektroskopie

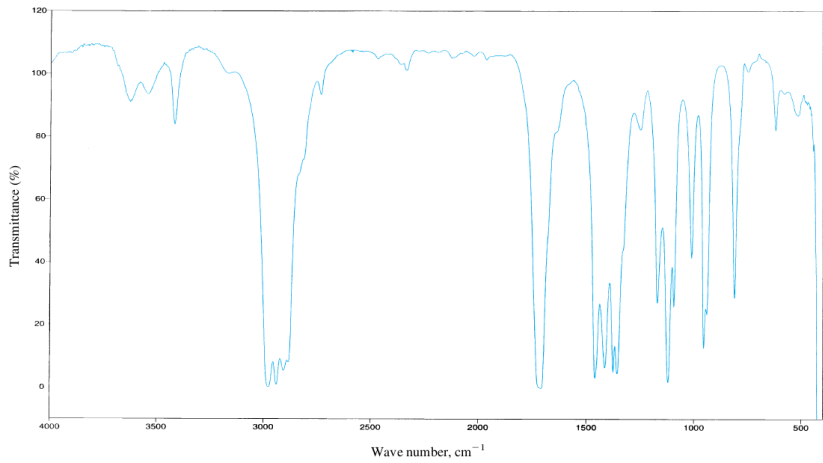




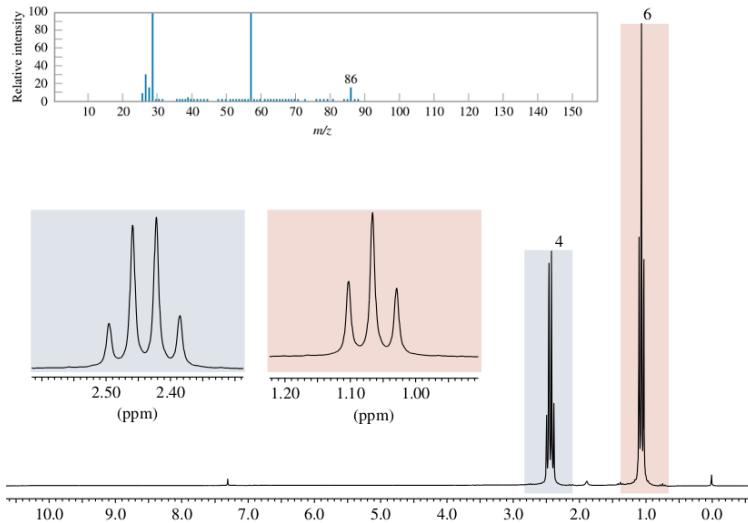
# Infračervená spektroskopie



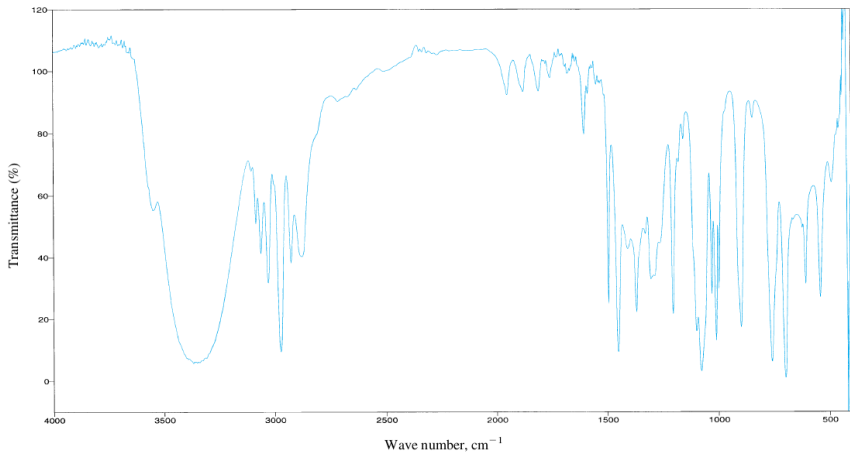
# Příklad č. 1



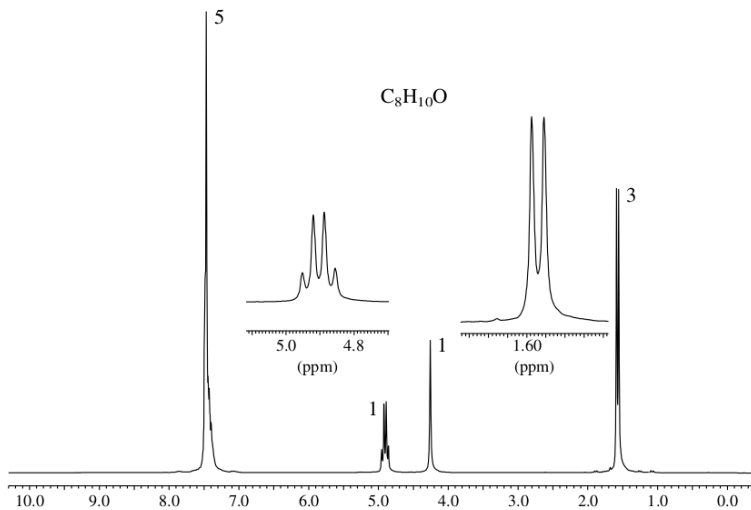
# Příklad č. 1



## Příklad č. 2



## Příklad č. 2



# Příklad č. 3

