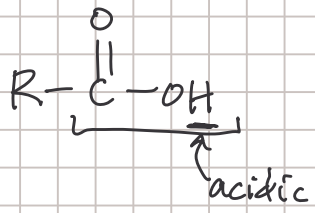
Ch 12

Note Title 10/12/2005

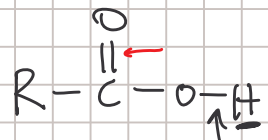
Ex 4 & 18 due Friday

Ex 5 due Tuesday

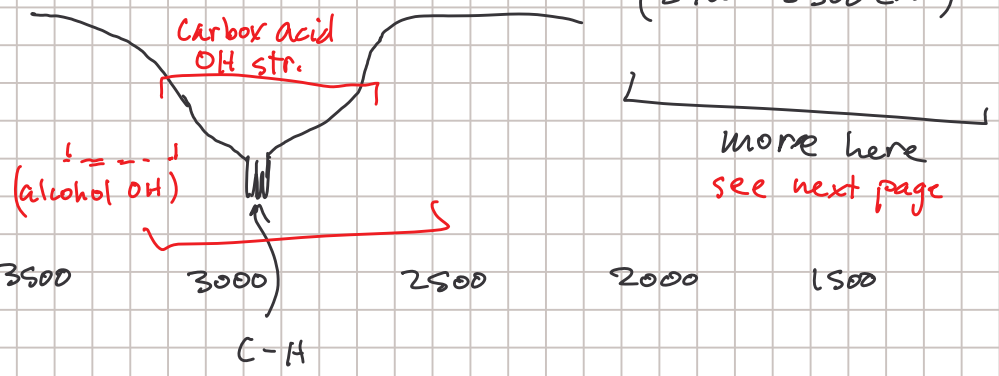
Ch 5 homework due Friday



carboxylic acid



will show O–H stretch centered at 3000 cm^{-1}, very broad ($2700 - 3300\ cm^{-1}$)

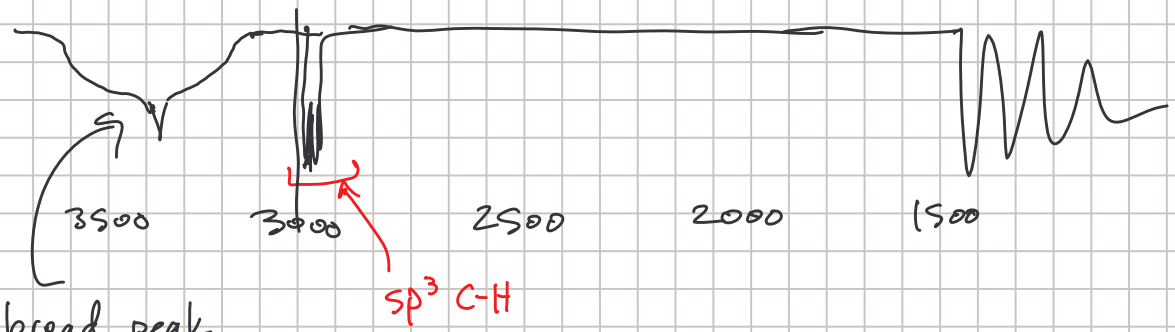


amine $R-\underset{1^\circ}{NH_2}$ or $R-\underset{\underset{H}{|}}{\overset{2^\circ}{N}}-R'$

broad peak centered around 3300 cm^{-1} (like OH)

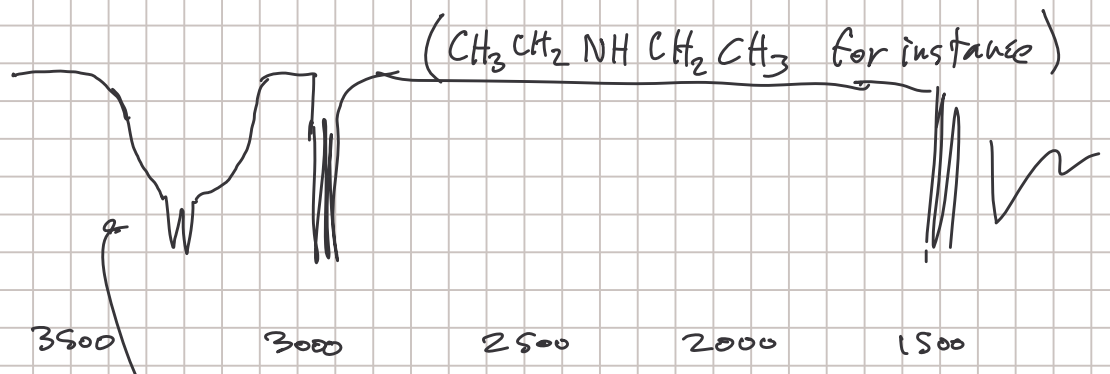
pointy spikes at bottom

(1° = 2 spikes - 2 N-H bonds / 2° = 1 spike)



broad peak w/ 1 spike

1 N-H bond → 2° amine w/ no other func groups

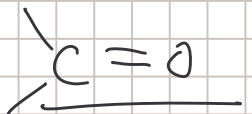


broad w/ 2 spikes

2 N-H bonds → 1° amine

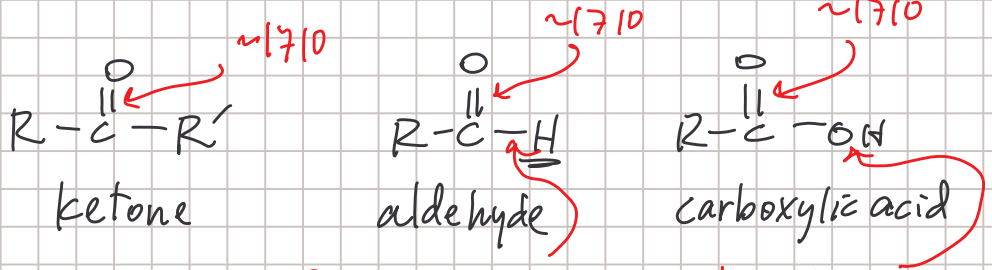
for instance $CH_3CH_2CH_2NH_2$

Carbonyl compounds



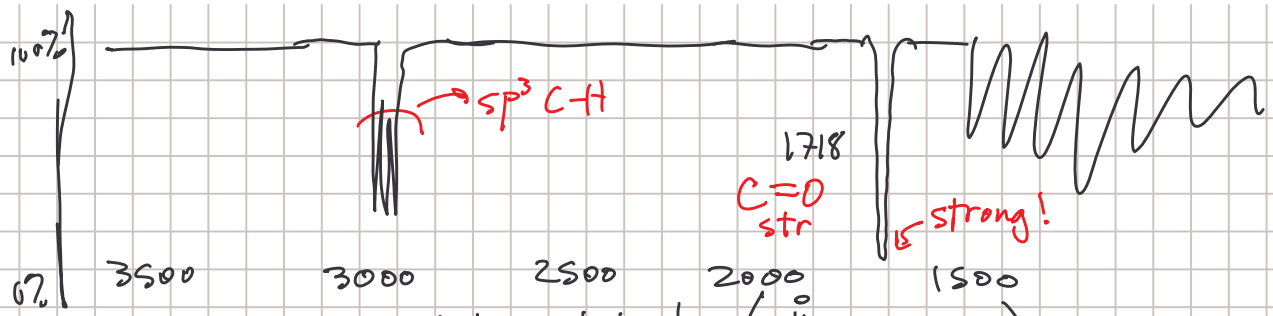
a carbonyl

1710 cm^{-1} base value



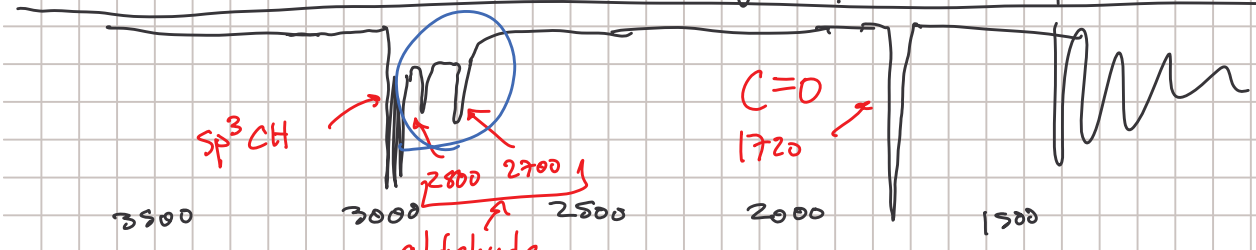
2 C-H str
2800 + 2700

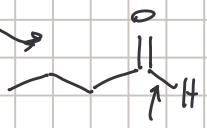
br. OH ~3000

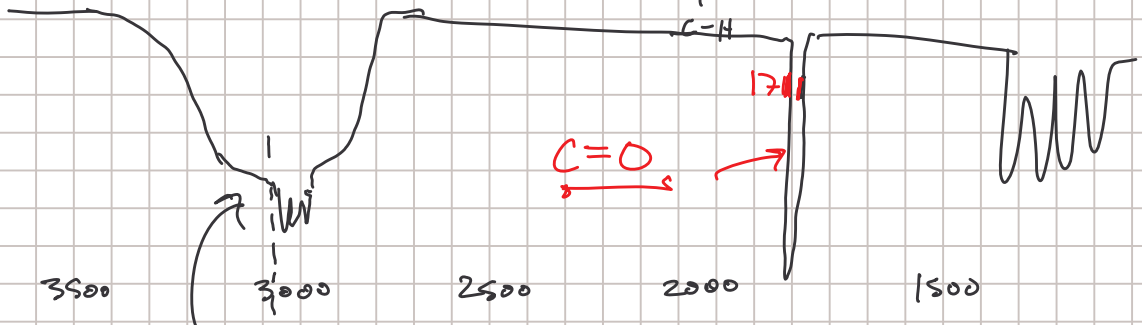


must be a ketone!

C=O str are usu. the strongest peaks on spectrum







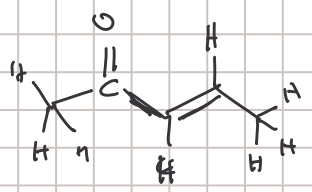
a carboxylic acid

for example:

isolated C=O ~1710 cm^{-1}

conjugated C=O ~1685 cm^{-1}

conjugated carbonyls have less π e^- density than isolated carbonyls. C=O has lower frequency



predict important peaks in spectrum

C=O conjugated 1685

C–H sp^3 < 3000

C–H sp^2 > 3000

C=C conjugated 1620