

Today

Review IR Questions
Section 13.10 - 13.18

Start NMR Spectroscopy
Chap 14

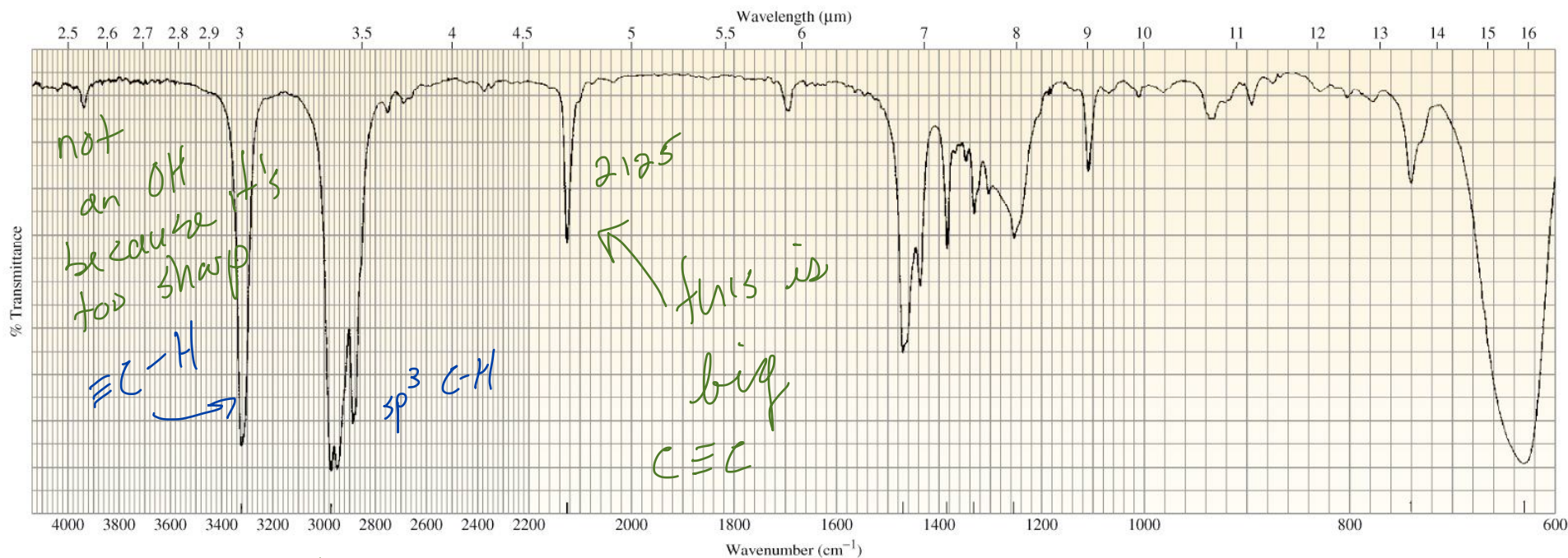
Next Class

Continue NMR Spectroscopy
Chap 14

IR is very good at identifying functional groups

- With a large library a computer can identify unknown compounds
- people can identify functional groups
- quick check to see how a reaction is proceeding based on the presence or absence of a functional group

IR data from our textbook: "Organic Chemistry" 8th ed, Bruice. Pearson (2016)

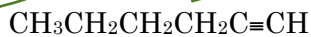


C≡C

C-H sp³

presence of
≡C-H rules
in IR spectrum

this one out



alkyne

C≡C

CH's sp³

CH sp

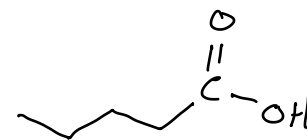
present

present



CH's sp³

OH
no OH
peak



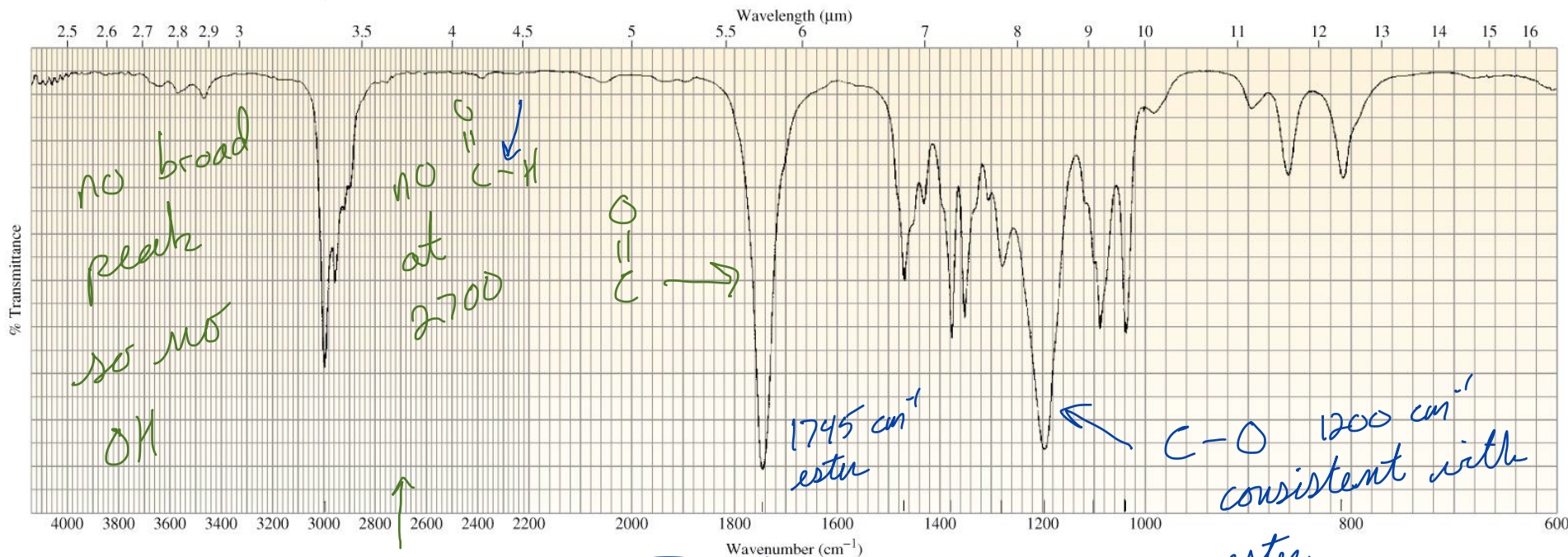
C-H's sp³

C=O

O-H

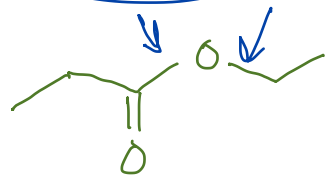
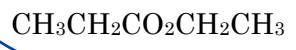
no very broad OH peak
no strong peak in the
1700 cm⁻¹ region

C-H



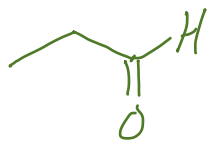
carboxylic acid

no OH peak present



ester position of C=O

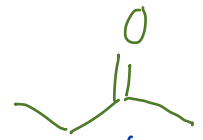
1745 ✓ presence of C-O ✓



aldehyde

C=O

not present in spectrum



ketone

these show up around

1715 - 1720

C=O too high for ketone

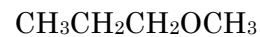
C=C-H > 3000 cm⁻¹



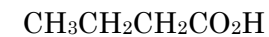
No OH on molecule
IR says no =C-H



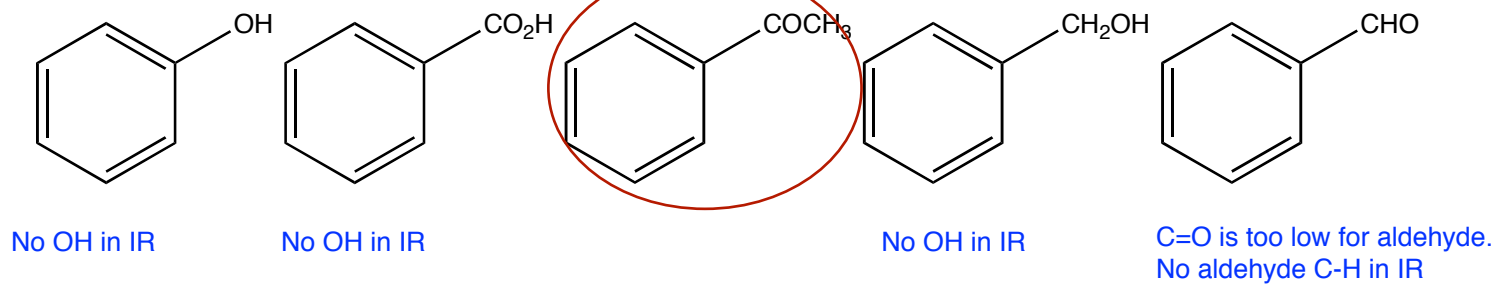
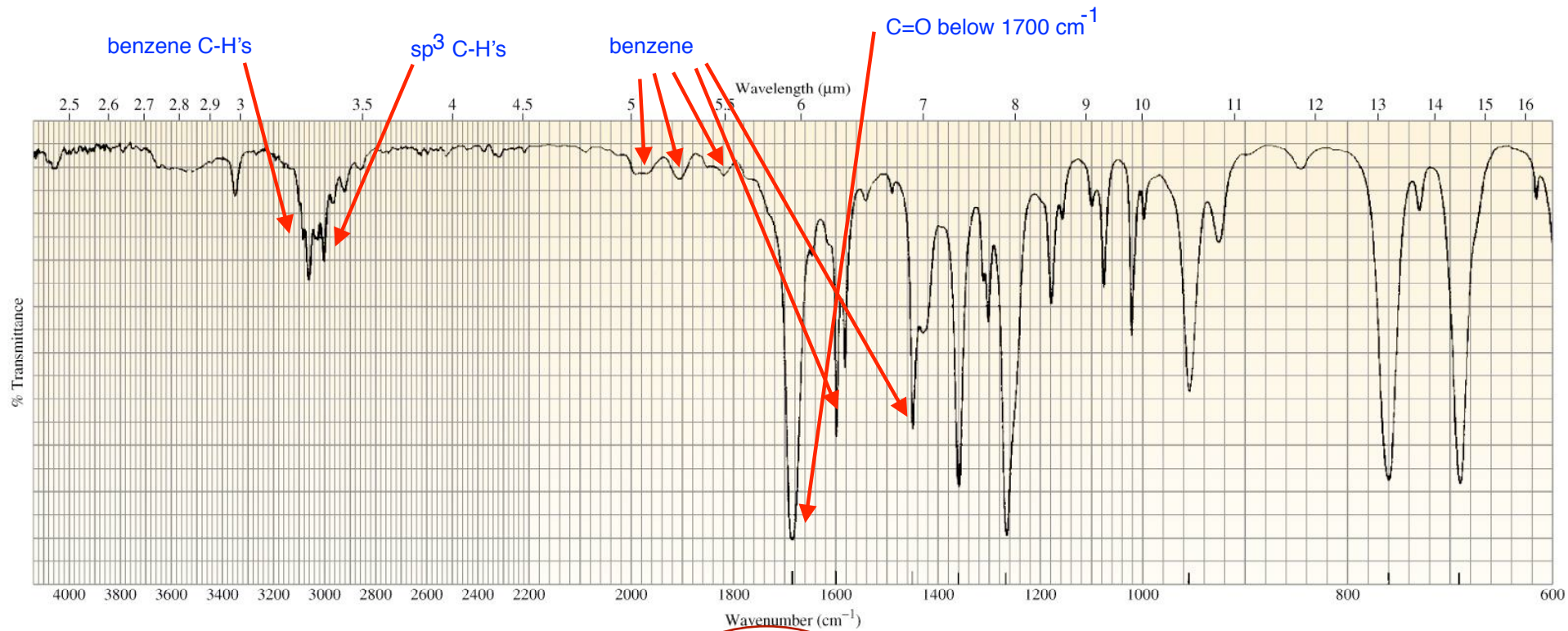
IR says no =C-H

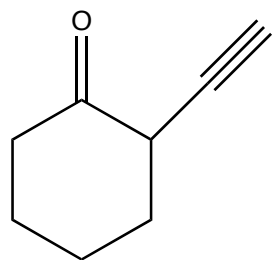
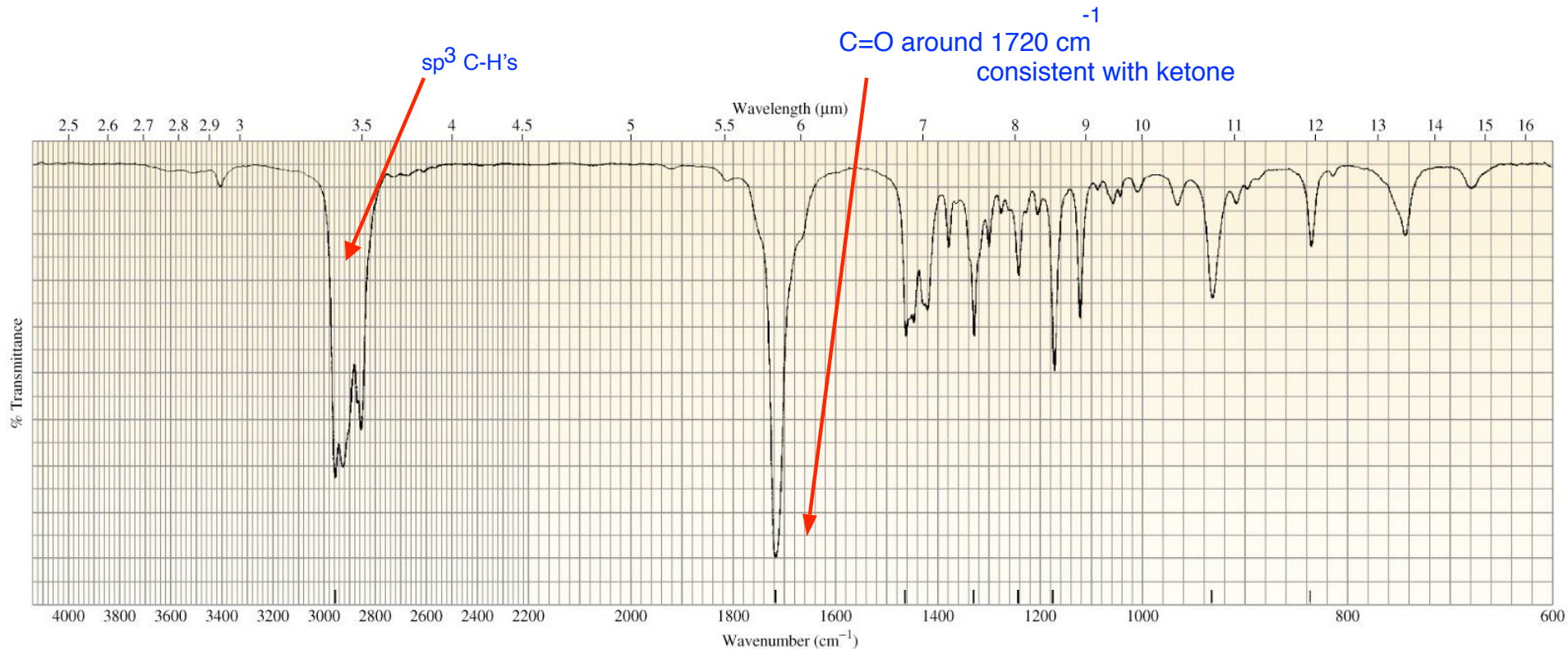


No OH on molecule;
this is an ether.

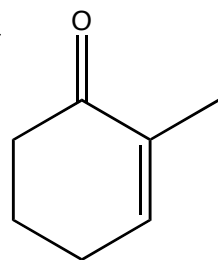


IR says no C=O. This
is a carboxylic acid

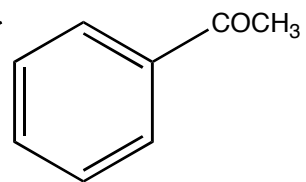




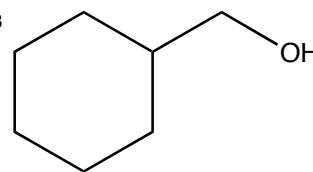
No alkyne peak in IR.
No sp C-H stretch in IR



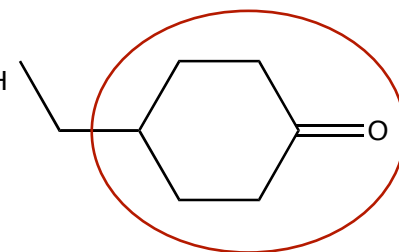
C=O peak too high for delocalized C=O.
No =C-H stretch in IR



C=O peak too high for delocalized C=O.
No =C-H stretch in IR



No OH in IR



ketone with just sp^3 C-H stretches

