

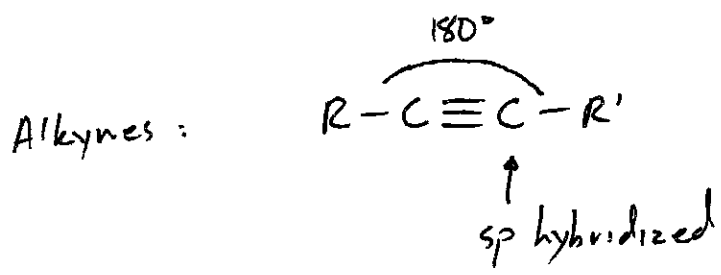
Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**

Exam: same locations as before!

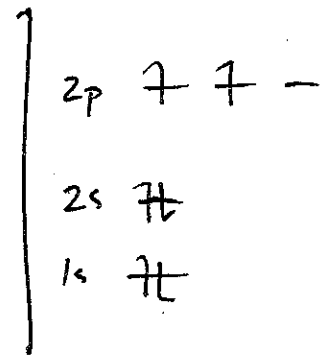
Chapter 14: ~~Part 1~~ Chemistry of alkynes

Problems: 7-29, 31-34, 36-39, 42-45

\* Don't worry about Chapters 12/13 for final exam!

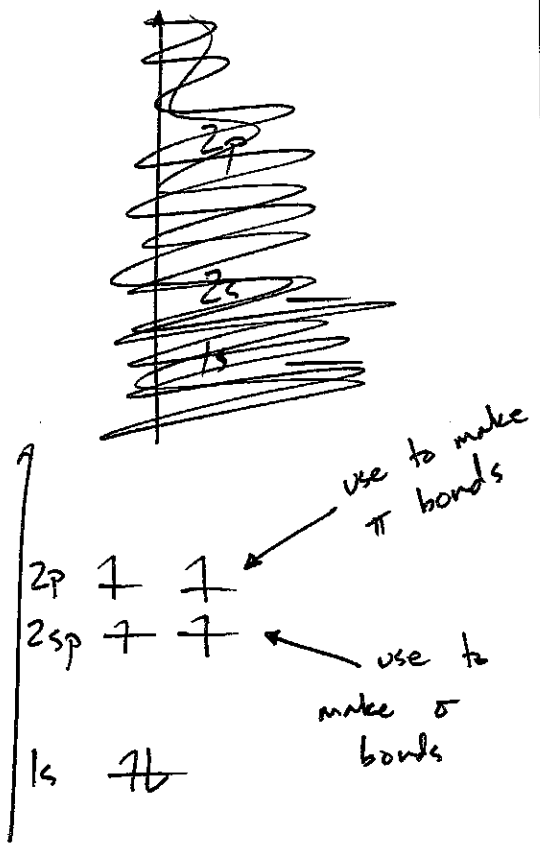


-sp hybridization



normal C

→



sp-hybridization

Course 343Instructor Hackenberger

Day \_\_\_\_\_

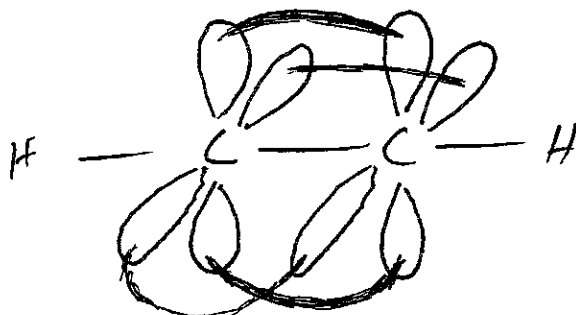
Date 11/27

Notes Taken By \_\_\_\_\_

Total # of Pages \_\_\_\_\_

Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**

Diagram of  $\text{HC}\equiv\text{CH}$  (acetylene)



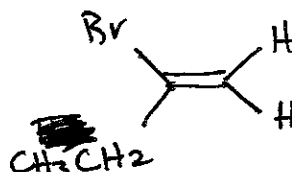
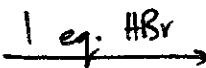
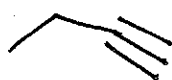
- $\cdot$   $sp$  orbitals are more compact than  $sp^2/sp^3$  orbitals
- 's character' of  $sp$  orbital is higher than for  $sp^2/sp^3$

- ~~consequence~~ this has an effect on the acidity of  $\equiv\text{C}-\text{H}$  bonds

Reactions: Very similar to alkene chemistry

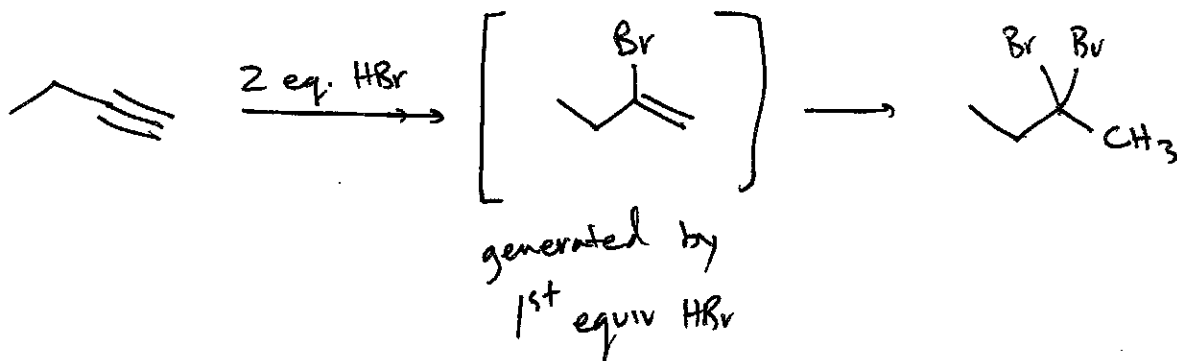
1)  $\text{H}-\text{X}$  addition

1-butyne

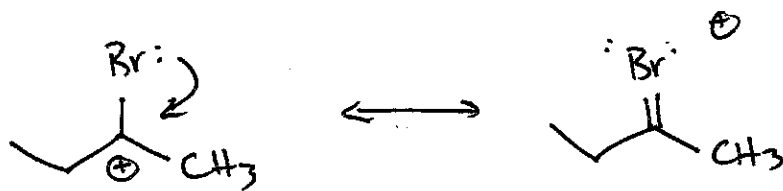
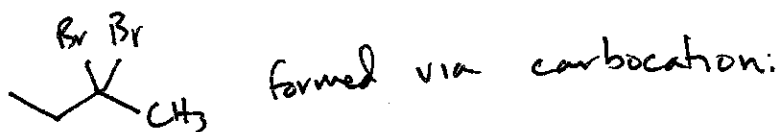


Markovnikov product!

Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**



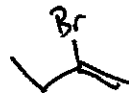
~~Mechanism~~



resonance stabilization  
of carbocation

- 2<sup>nd</sup> addition of HBr is slower than 1<sup>st</sup> addition

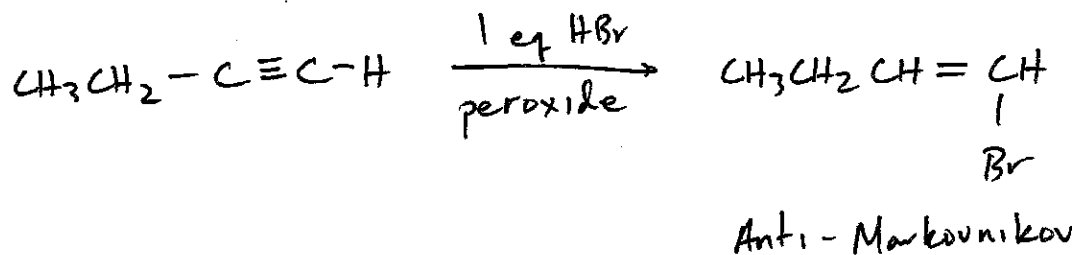
- this allows you to isolate



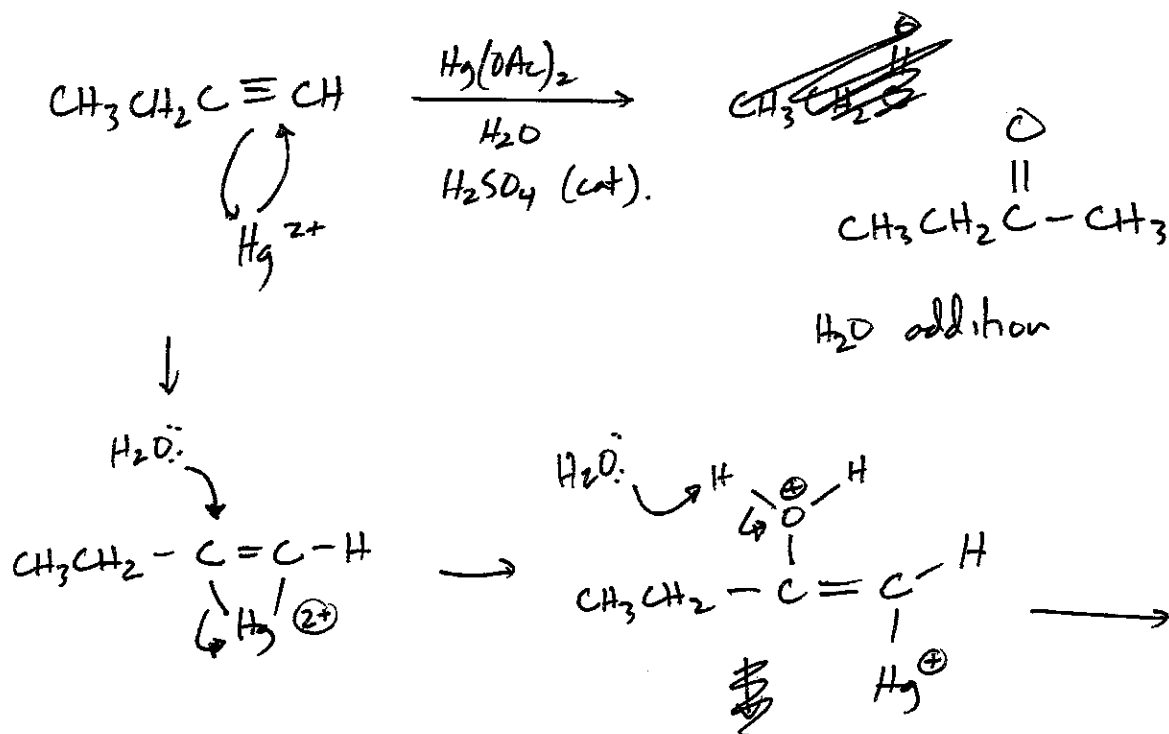
- see book for more info

Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**

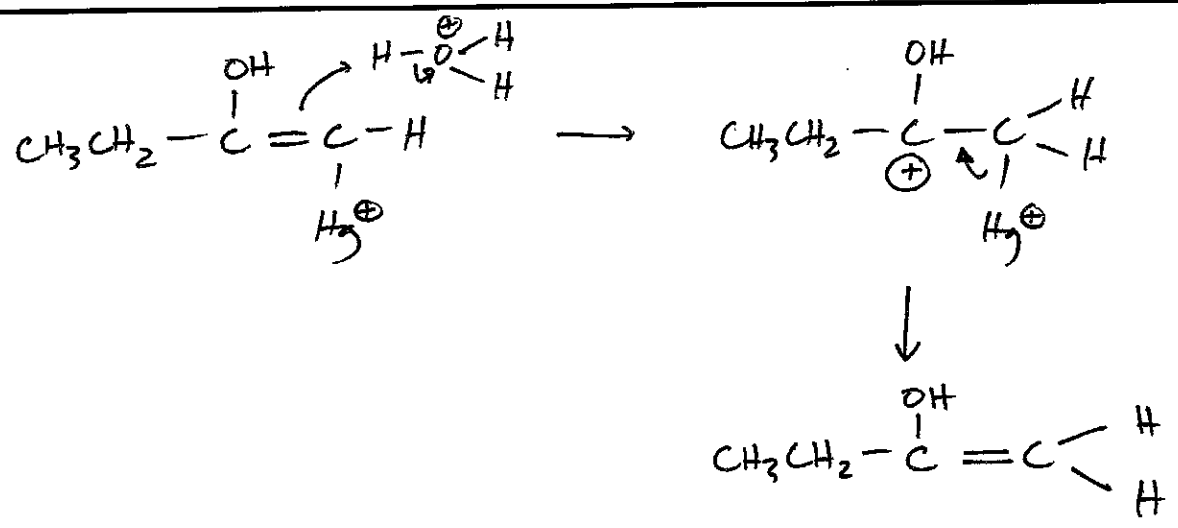
- Anti-Markovnikov pdt is possible with a radical mechanism



- 2) Hydration facilitated by  $\text{Hg}^{2+}$

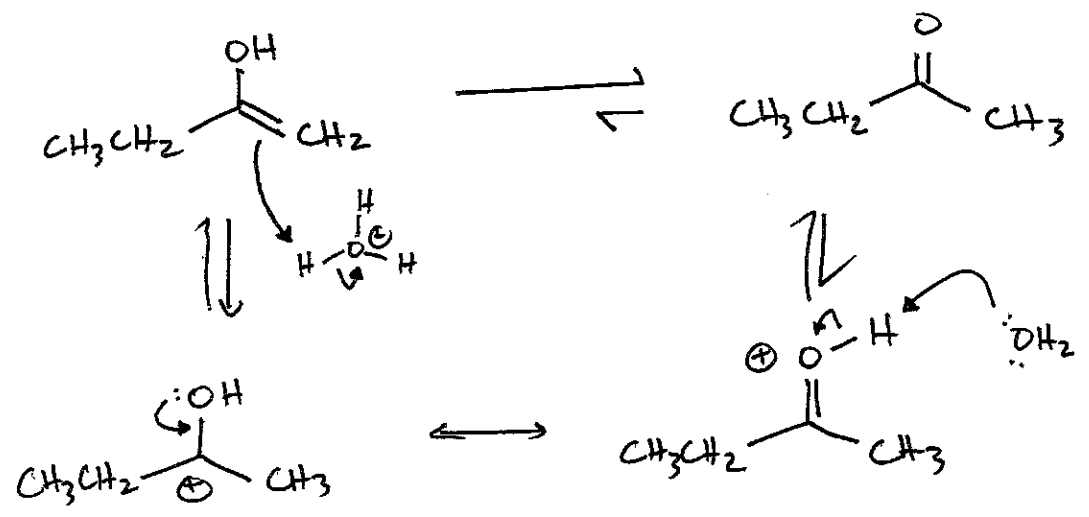


Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**



"enol" - ~~is~~ tautomer of ketones

Equilibrium between enols and ketones



Course 343

Instructor Hackenberger

Day \_\_\_\_\_

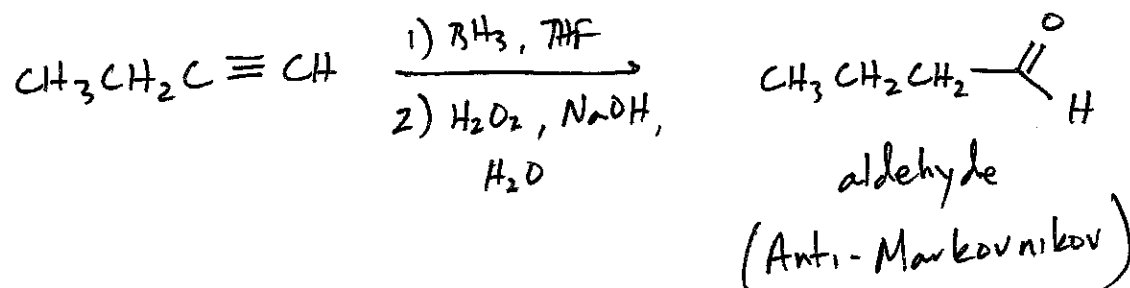
Date 11/27

Notes Taken By \_\_\_\_\_

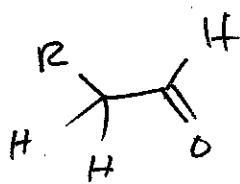
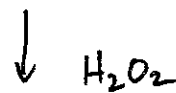
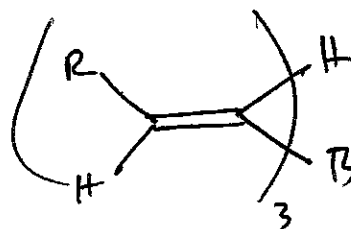
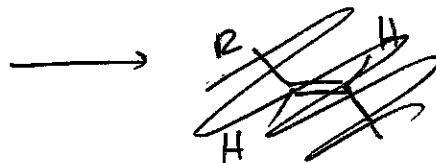
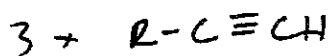
Total # of Pages \_\_\_\_\_

Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**

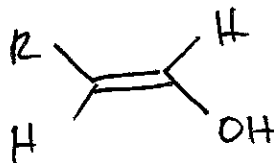
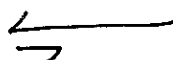
## 3) Hydroboration



Mech:



aldehyde



enol

Course 343

Instructor Hackenberg

Day \_\_\_\_\_

Date 11/27

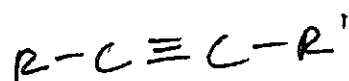
Notes Taken By \_\_\_\_\_

Total # of Pages \_\_\_\_\_

Submit notes to the Undergraduate Chemistry Office for posting.  
**PLEASE COMPLETE NOTES IN INK AND DO NOT STAPLE.**

• Terminal alkynes display selectivity for Markovnikov  
vs. Anti-Markovnikov addition.  $R-C\equiv C-H$

• Internal alkynes do not.



$R, R' = \text{alkyl}$

no selectivity!