

Course Chem 343 11 AM Lecturer Gellman
Day Wednesday Date 11/30/11
Notes Taken By Herndon Total # of Pages 5

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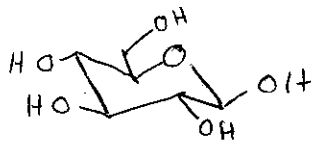
Exam 3 Mon 5 Dec. *Same rooms as previously
Chaps 8, 9, 10, 11

Glycols

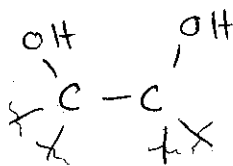
or
"1,2-diols"

↓
relative positioning

"cluster of functional groups"



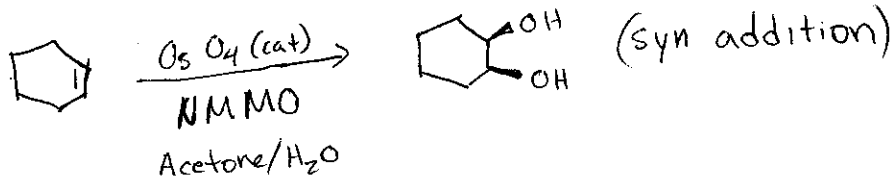
"glucose"



2 synthetic procedures

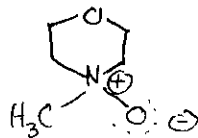
① OsO_4 - catalyzed dihydroxylation of alkenes

Ex:

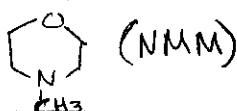


1) NMMO

(stoichiometric oxidant)



By-product, = amine

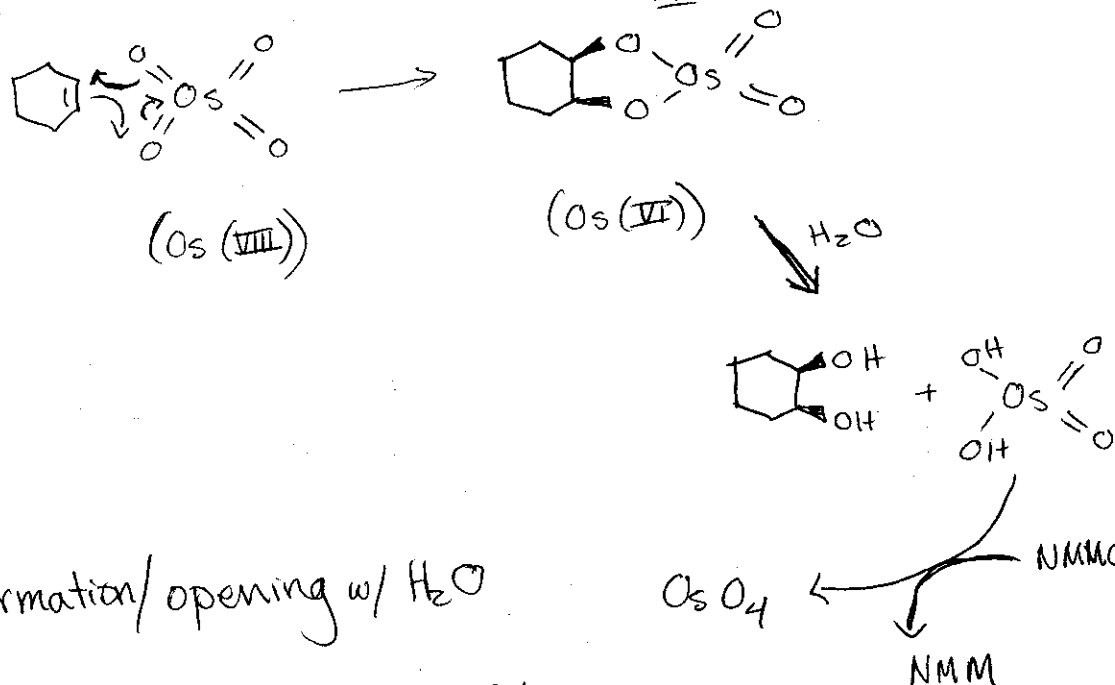


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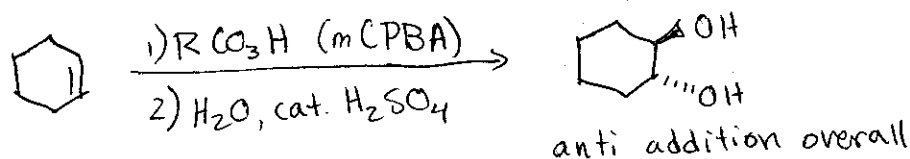
2) OsO_4 is catalytic oxidant

Mech.

Note: concerted rxn of OsO_4 leads to syn.



② Epoxide formation/opening w/ H_2O



Note: Determine diol stereochemistry via reagent choice

Read Carefully: § 11.9! (organic synthesis)

END of EXAM 3 MATERIAL

Ch. 14 - Alkynes ($\text{R}-\text{C}\equiv\text{C}-\text{R}'$)

Rec. Problems = 7-29, 31-34, 36-39, 42-45.

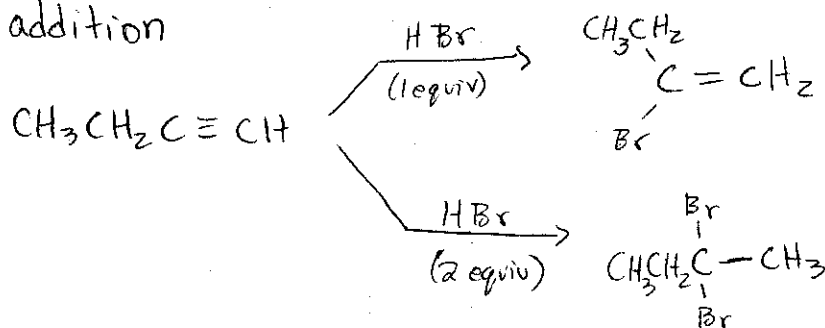
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Read § 14.1 + 14.2

- Skip § 14.3

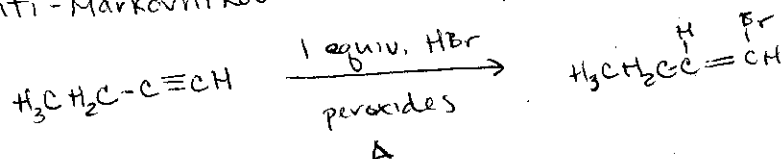
Alkyne Rxns - many parallels

① HX addition



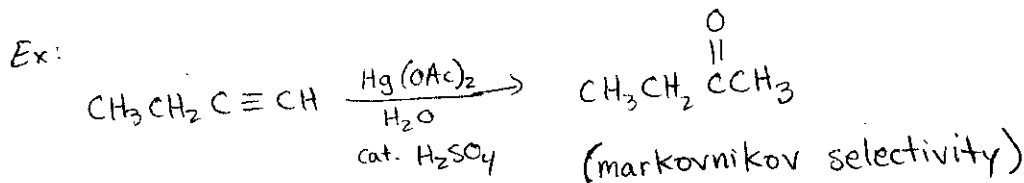
[Note:
Markovnikov
Selectivity!!]

② Anti-Markovnikov Addition of HBr (under "Radical" conditions)



③ Hydration → produces ketone

Process facilitated by $\text{Hg}^{(2)}$

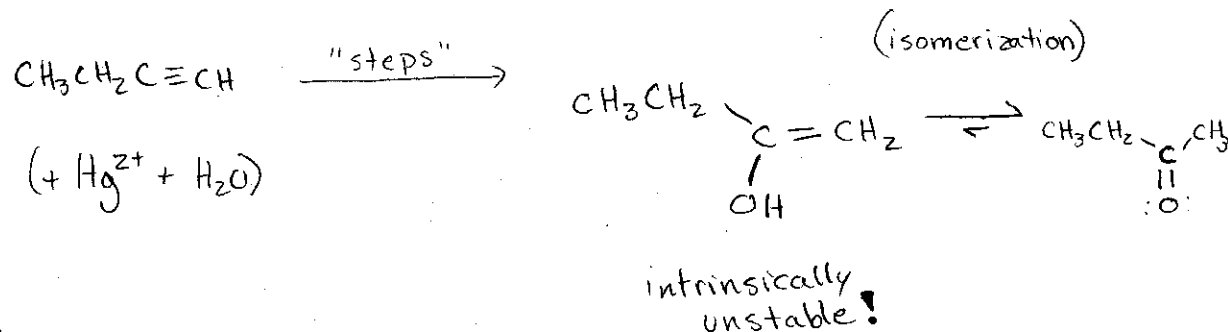


Detailed mech discussion in text.

Key points:

i) initial product is an "enol"

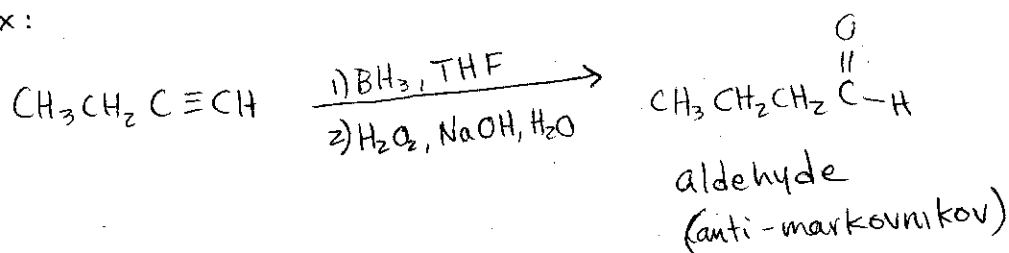
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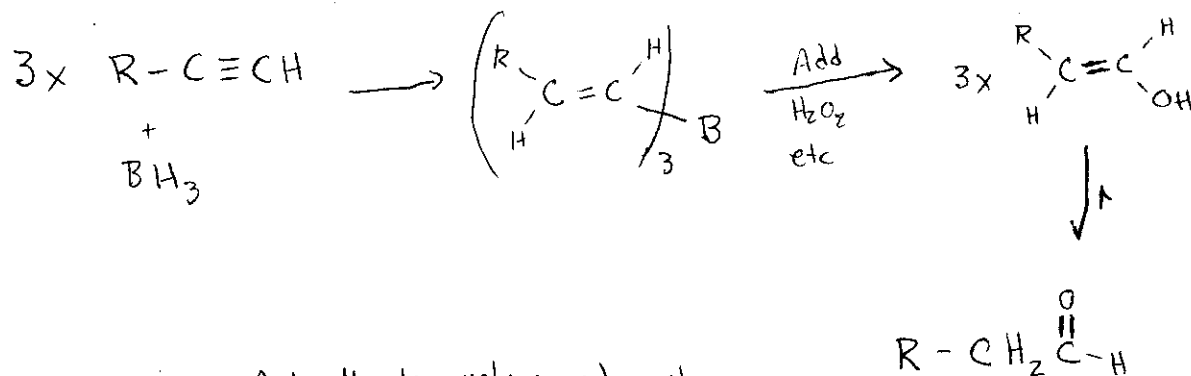
(ii) Do not need NaBH_4
 to get rid of the Hg^+ !

④ Hydroboration-oxidation of alkynes

Ex:



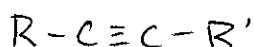
Intermediates...



Note: Mark. vs. Anti-Mark. relevant only
 for "terminal alkynes" $\text{R}-\text{C}\equiv\text{C}-\text{H}$

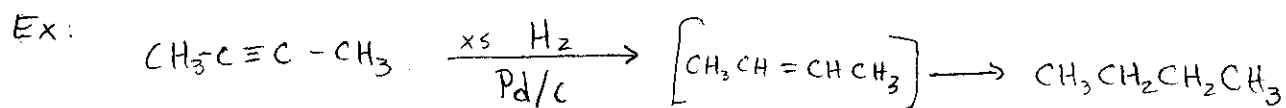
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vs. other type = "internal alkynes"



expect mixtures of products!

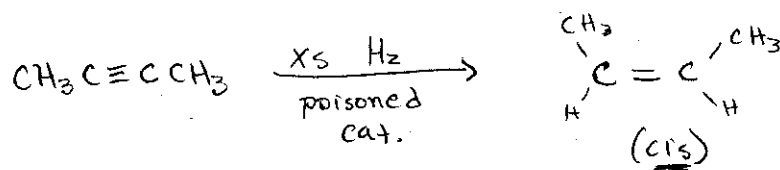
Hydrogenation ("reduction")



xs = excess

typical catalysts - cannot stop at alkene stage

"poisoned catalysts" - allow rxn to stop at alkene (cis)



Complementary reduction method that produces trans alkenes