

Course 343

Lecturer Heckenberger

Day Friday

Date 10/25/13

Notes Taken By Guenette

Total # of Pages 4

Submit a *Single-sided Copy* to the Undergraduate Office  
**NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW**

Last lecture: - Distub cyclohexanes, preferred con formations

- Relative reactivity of stereoisomers, different ~~substituents~~ stereoisomers

- enantiomeric w. diastereomeric starting materials

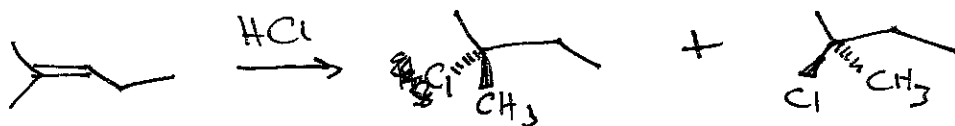
1 a.

b.

2.

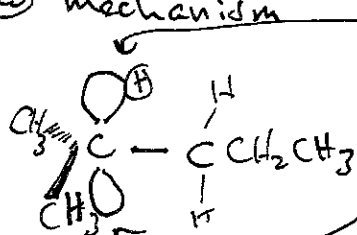
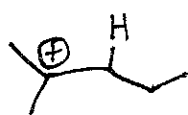
3) Achiral starting material reacts to form a product w/ one stereogenic center

→ products must be racemic



1:1 racemic mixture → Both enantiomers formed

Why? → Look @ mechanism

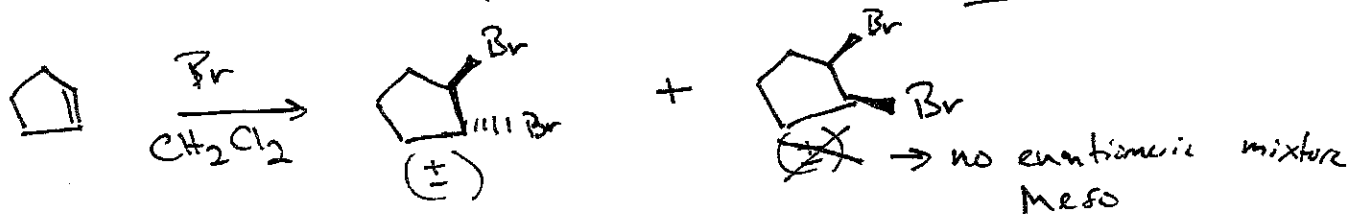
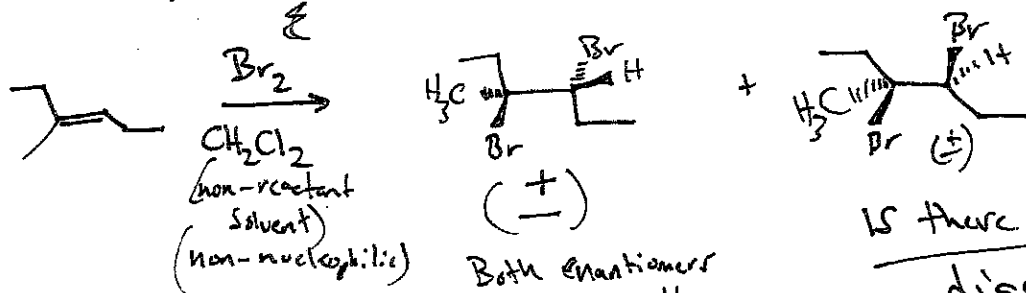


Cl<sup>-</sup> → Cl<sup>-</sup> can attack from top or bottom  
No preference → 1:1 addition  
equal likelihood of attack

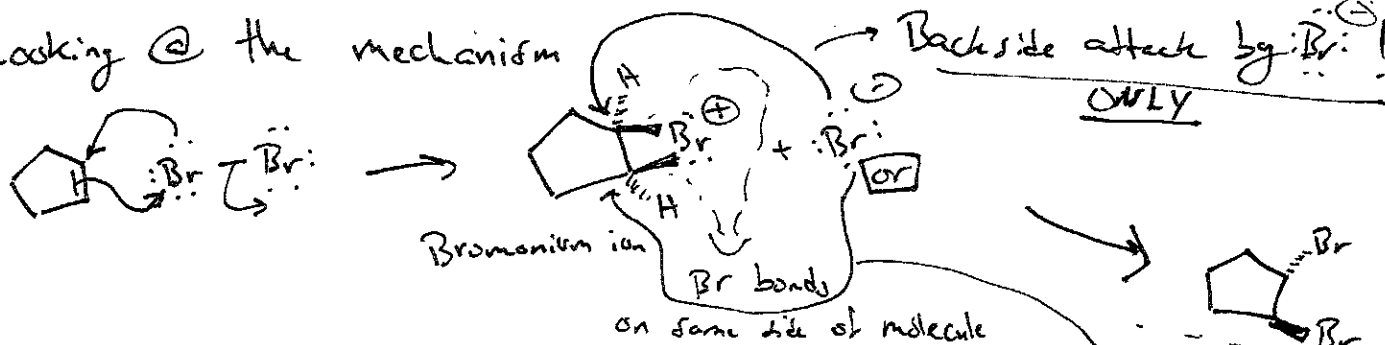
→ Because of planar carbocation (equal T.S. for top or bottom attack)

Submit a *Single-sided Copy* to the Undergraduate Office  
**NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW**

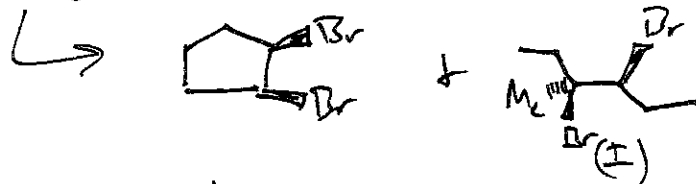
4.) Achiral S.M. forms a product w/  $\geq 2$  stereocenters  
 → Diastereomeric products are possible



Looking @ the mechanism



Cannot form diastereomers w/ Br on the same side

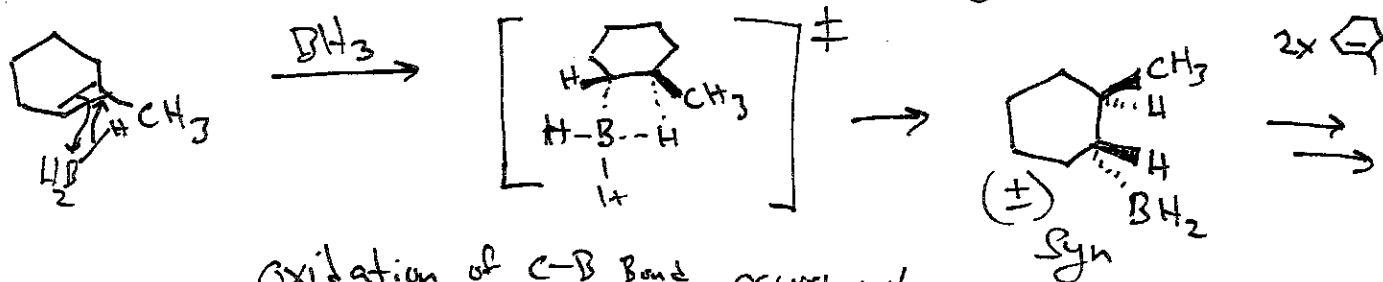


Not Formed in this reaction

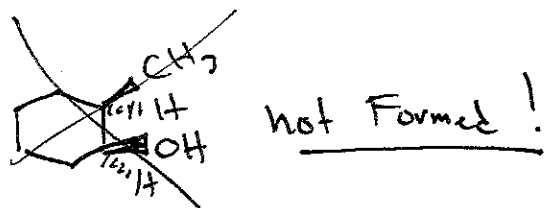
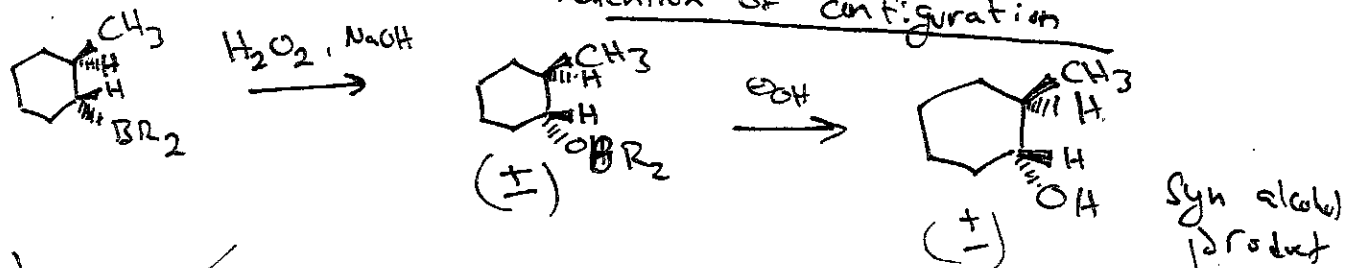
Submit a *Single-sided Copy* to the Undergraduate Office  
**NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW**

-  $\text{Br}^{\oplus}$  attack always occurs on the backside of the Bromonium  $\rightarrow$  Forms one diastereomer selectively over the other one  $\rightarrow$  ANTI addition product  
 (Syn addition not formed)  
 (same side)  
This is Diastereoselectivity!

Hydroboration/Oxidation: Example of syn addition

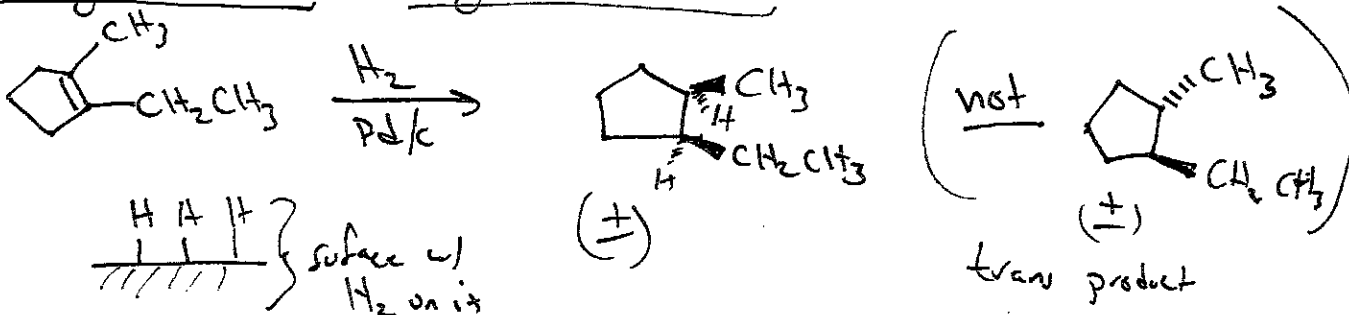


Oxidation of C-B Bond occurs w/ retention of configuration

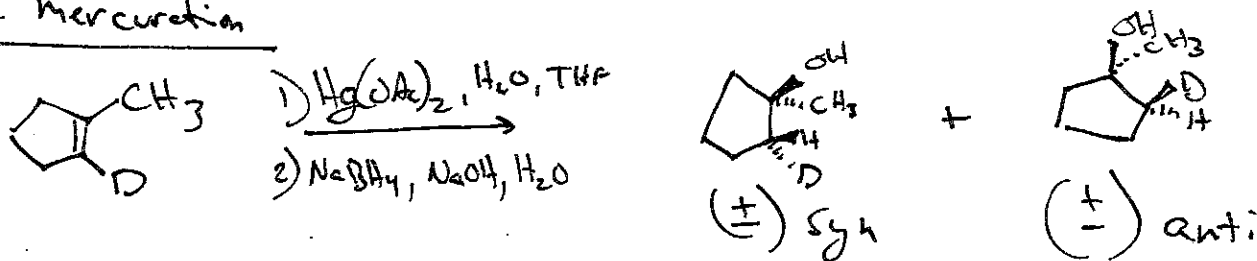


Submit a *Single-sided Copy* to the Undergraduate Office  
**NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW**

Hydrogenation : syn addition



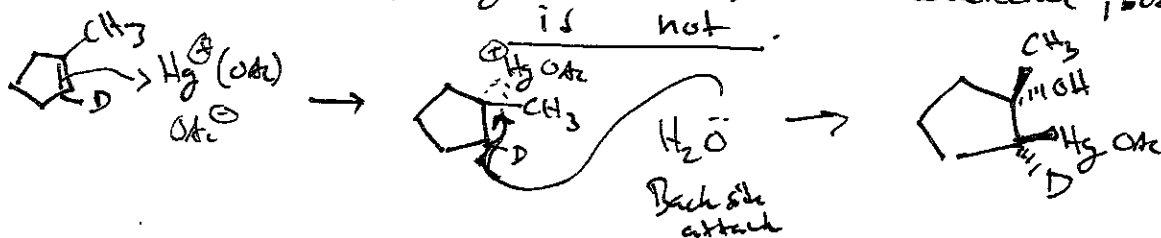
Oxymercuration



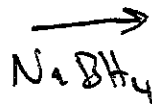
both are formed in equal amounts  
 not diastereoselective reaction

but it is a regioselective reaction

Mechanism - first step ( $\text{Hg}(\text{OAc})_2$  addition) is stereoselective, but the reduction is not.



reduction



Not specific

ion formation → allows racemization