Course CH343 Sec 003 Lecturer Sam Gellman

Day Friday 1:20 Date 9/30/11

Notes Taken By Alicia Phelps Total # of Pages 4

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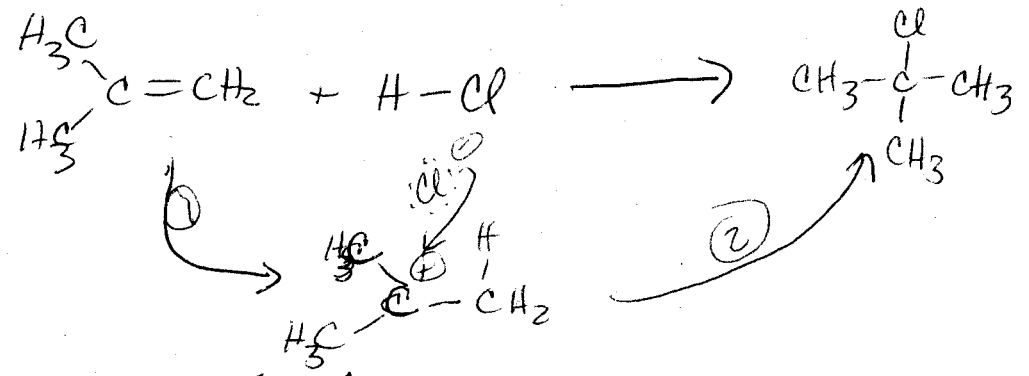
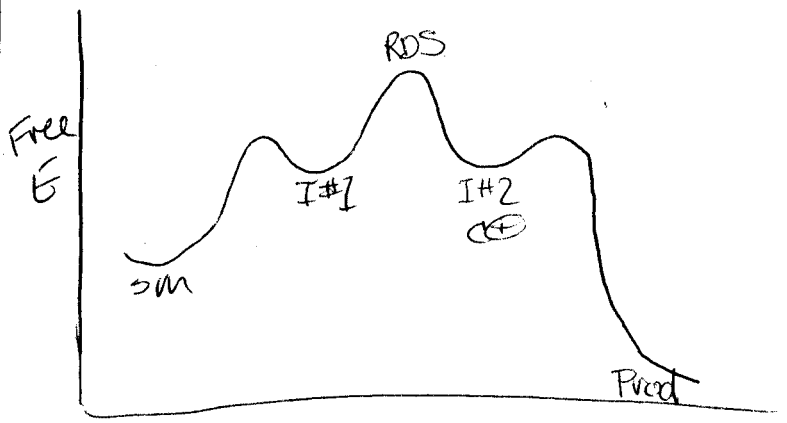


- One intermediate, 2 T.S
- Step w/ highest activation energy is RDS (rate determining step): determines how fast reaction goes



- 4 chemical species: SM, I#1, I#2, Prod
- 3 TS
- Step 2 is RDS

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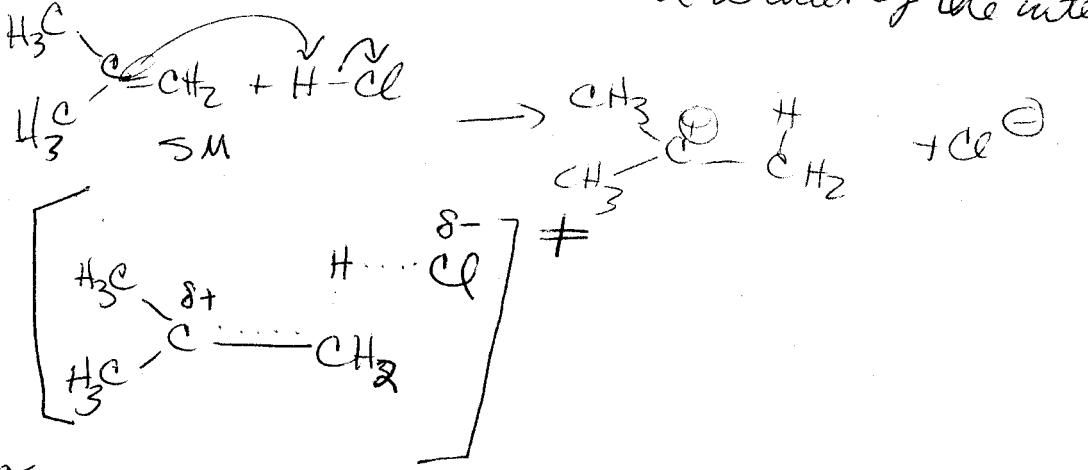
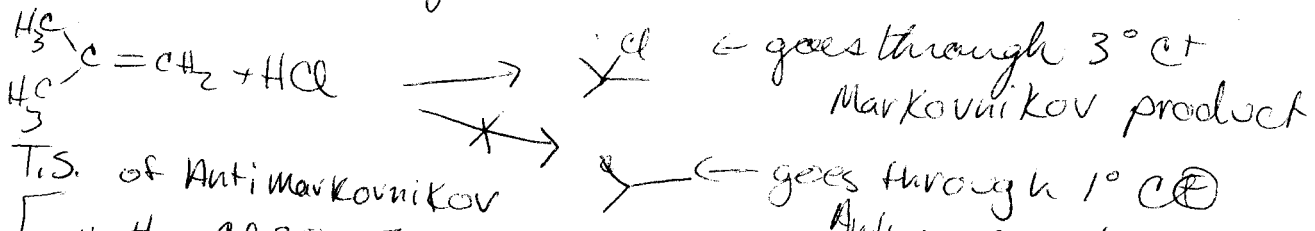
- Transition ~~states~~ are always at an energy maximum → React too quickly to actually isolate

Hammond Postulate:

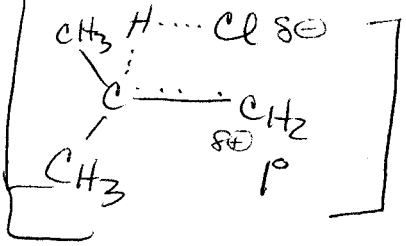
- T.S. that is adjacent to ↑E intermediate (ie, formation or rxn) will have a structure similar to that of the intermediate.



Factors that stabilize C⊕ in the intermediate will exert comparable stabilization on C⊕ of the T.S.



T.S. of Anti Markovnikov



- TS will not form if intermediate is really unstable

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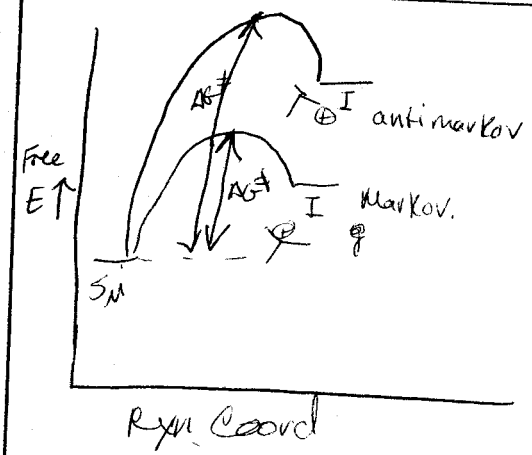
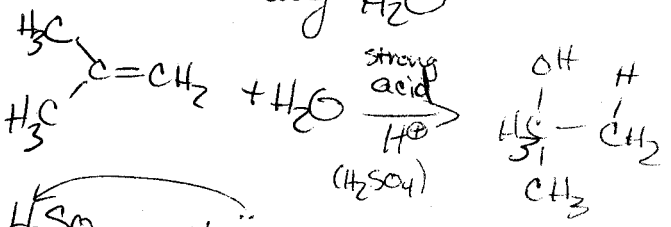


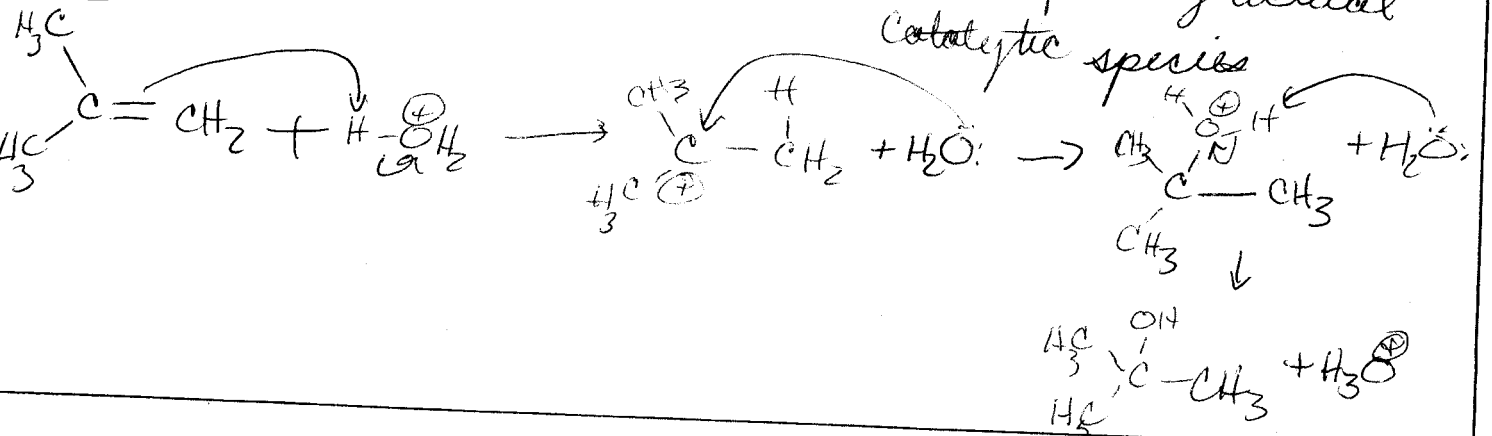
Catalysis

Catalyst = species that lowers $\Delta G^{\ddagger}$ for a process, but is not consumed in the rxn

- **Acid Catalysis of alkene Hydration**
  - C=C adding H_2O



Mech:



$H_3O^{\oplus}$ ends up being actual Catalytic species

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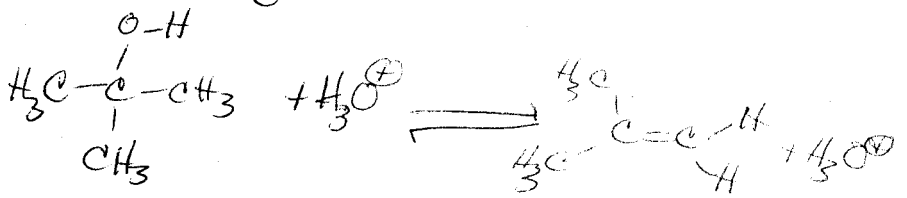
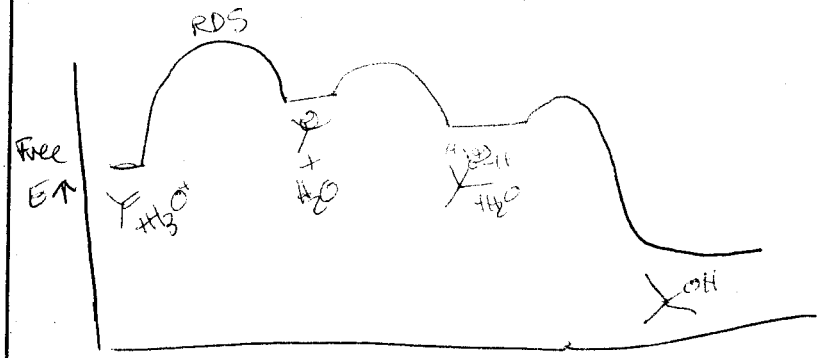
4 Impt things about this:

1. H_3O^+ was regenerated
2. Similar to H-X addn.
3. $H-\overset{\oplus}{O}H_2$ $H-OH$
   $pKa \approx -2$ $pKa = \sim 16$
4. Reversible





- without acid, RDS would take too much E to ever happen