

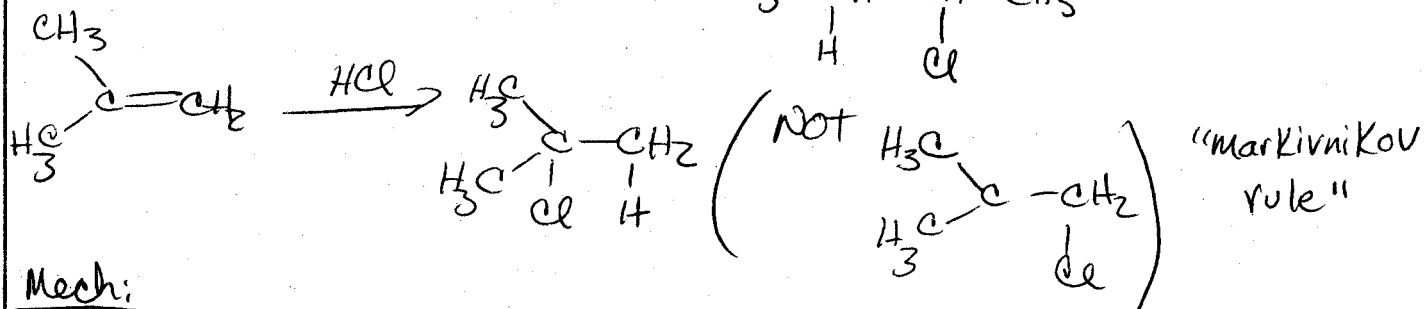
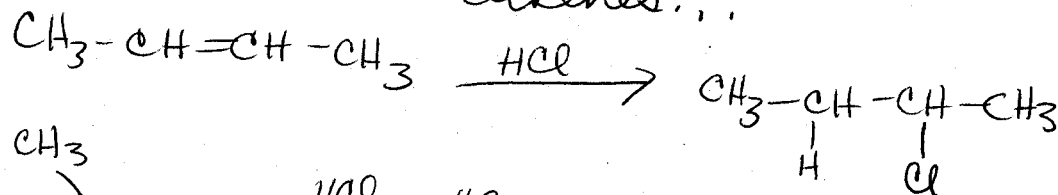
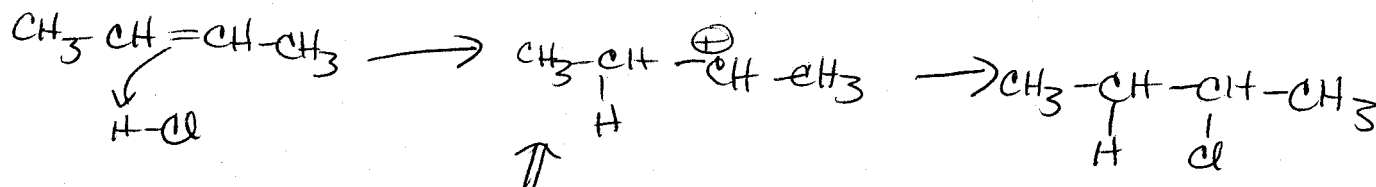
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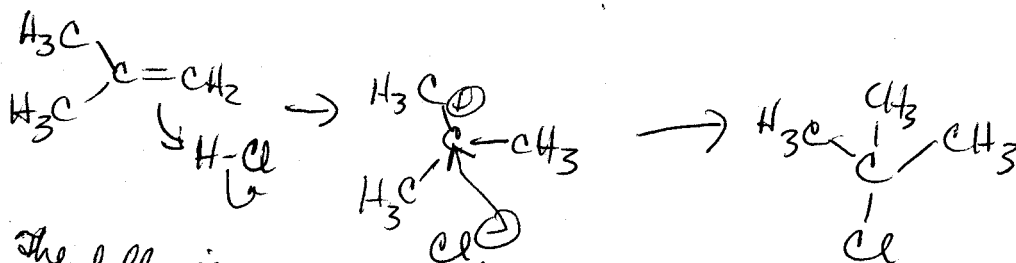
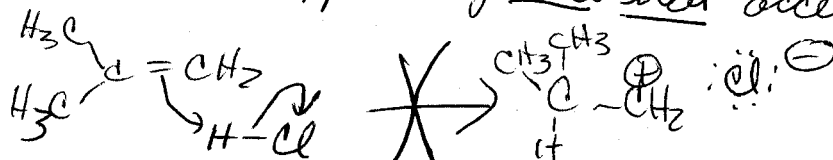
Exam 1 Next Wed (5 Oct)

→ See website for student locations

Recall H-X adds to alkenes...

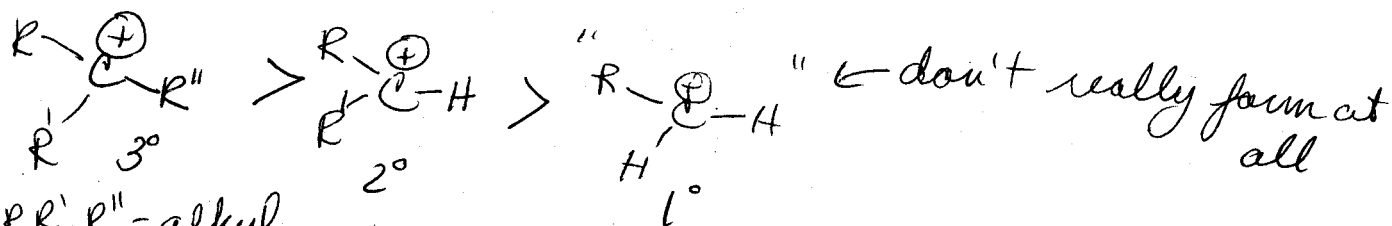
Mech:

HCl "adds across" the double bond

Mech for unsymmetrical case:The following apparently does not occur.

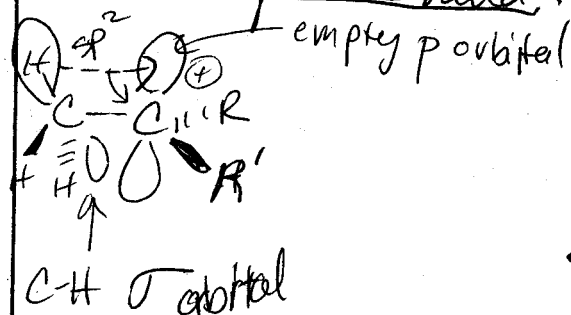
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From many analogous observations, conclusions about
 $\text{C}^\oplus$ stability as a function of structure



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

Rationale for this trend:



• $\sigma \rightarrow \pi$ electron delocalization
 (hyperconjugation)

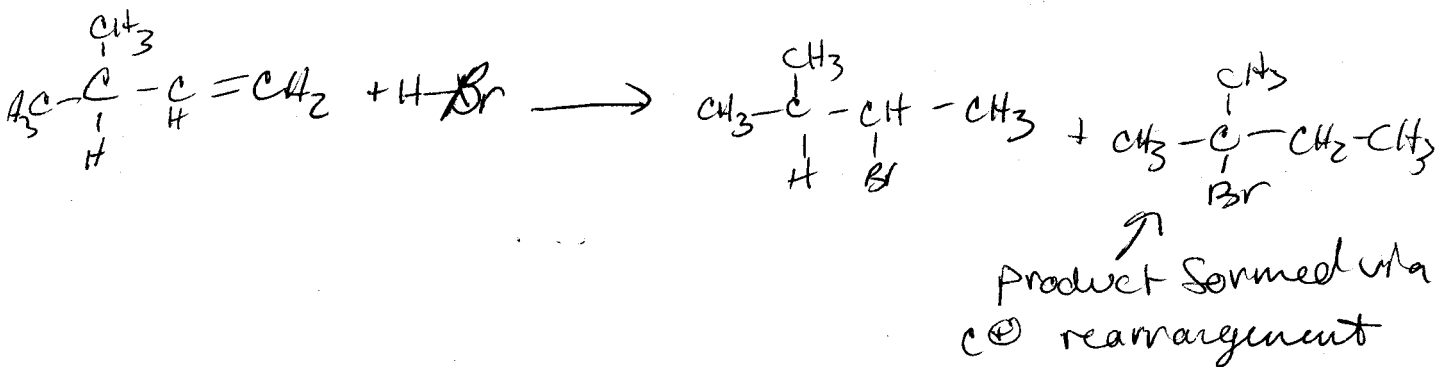
• Stabilizes $\text{C}^\oplus$

• More alkyl groups = more hyperconjugation

Carbocation Rearrangement

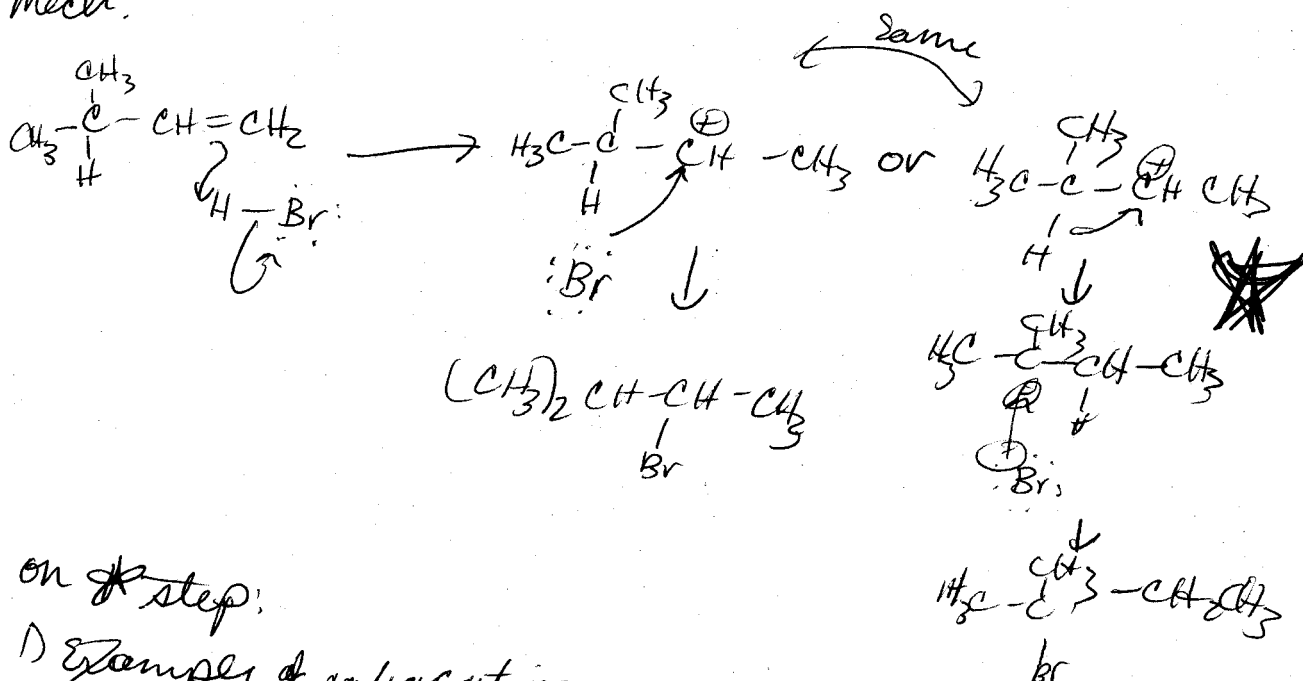
• Can occur in the course of $\text{H}-\text{X}$ addition to alkene

Consider:



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Mech.



on *step:

- 1) Examples of carbocation rearrangement
- 2) "1,2 hydride shift"
- ↳ by relative H's

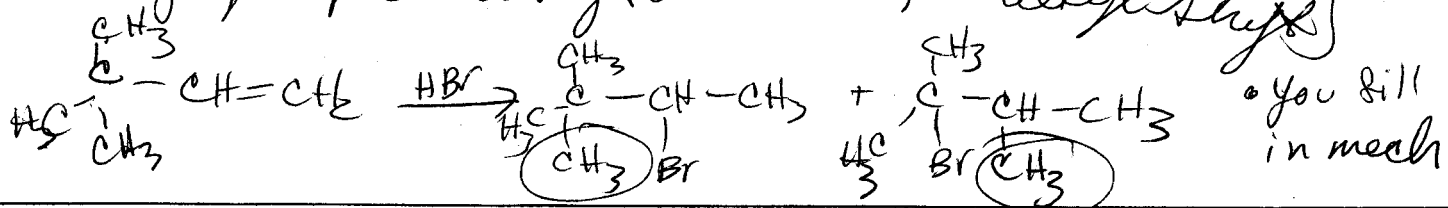
"hydride"

H:⊖ H migrates w/ the group

3. Note in this case $2^\circ \text{C}^+ \rightarrow 3^\circ \text{C}^+$

• Generally rearranging to a more stable cation

• Alkyl group can shift as well (1,2-alkyl shift)



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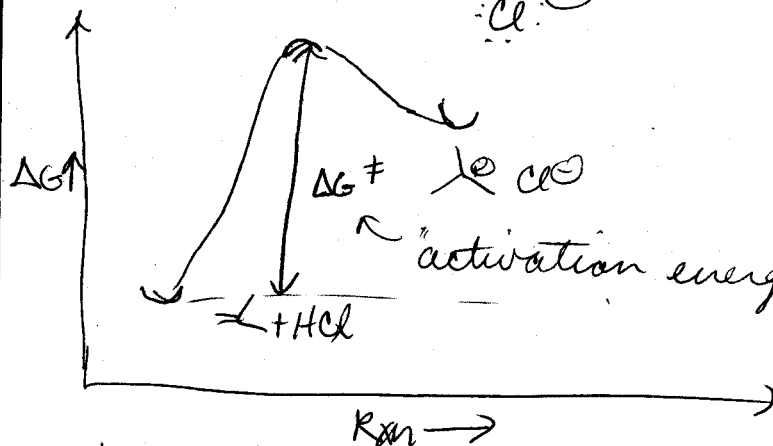
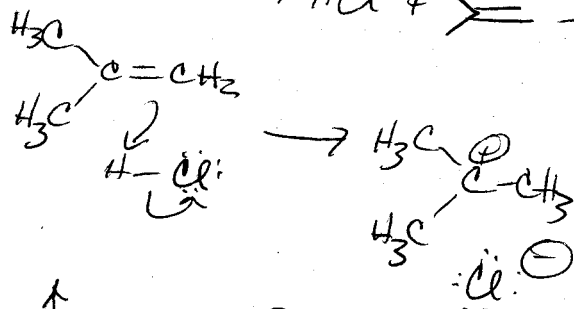
End of Section § 4.7

= End of material for Exam 1

• Reaction energy diagrams: a second graphical formalism for indicating what happens in a rxn

→ Complementary to curved arrow formalism

Illustrate w/ $\text{HCl} + \text{CH}_3\text{CH}=\text{CH}_2 \rightarrow 1^{\text{st}} \text{ step}$



Note: $\Delta G > 0$ = endothermic process
 "‡" means it's related to the transition state

$\Delta G^\ddagger$ = activation energy - important because it determines the rate of rxn

• Higher $\Delta G^\ddagger$, slower rxn

Course CH343 SUC003 Lecturer Shm. Hellman
Day Wednesday 1:20 Date 9/28/11
Notes Taken By Alicia Phelps Total # of Pages 5

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Horizontal axis = "reaction coordinate"
- a measure of progress of rxn

