(31) **Today**

7.7 Electrophilic Addition Reactions of Alkenes
7.8 Orientation of Electrophilic Additions: Markovnikov's Rule (Regioselectivity)
7.9 Carbocation Structure and Stability
7.10 The Hammond Postulate
Drawing a transition state
7.11 Evidence for the Mechanism of Electrophilic Additions: Carbocation Rearrangements

Next Class (32)

7.11 Evidence for the Mechanism of Electrophilic Additions: Carbocation Rearrangements
Practice Predicting Outcome of H+ Initiated Electrophilic Addition Reactions
8.2 Halogenation of Alkenes: Addition of X2
8.3 Halohydrins from Alkenes: Addition of HO-X

(33) **Second Class from Today**

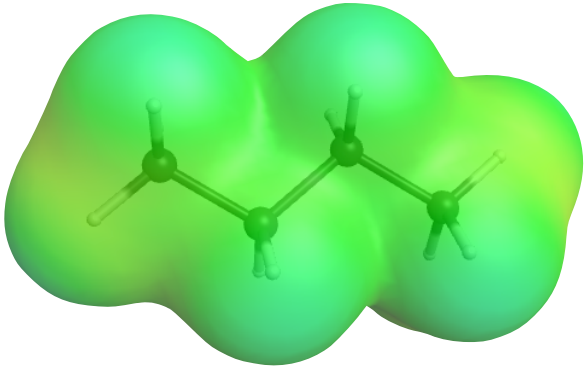
Test 3 on Chap 5, 6 and Chap 7.3 – 7.5

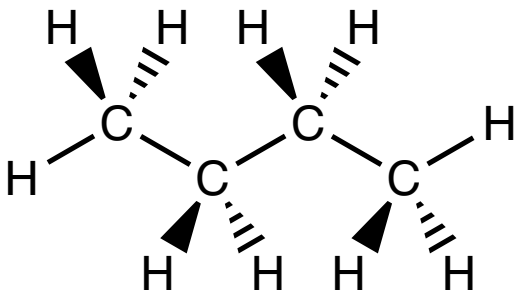
Third Class from Today (34)

8.4 Hydration of Alkenes: Addition of H_2O by Oxymercuration
8.5 Hydration of Alkenes: Addition of H2O by Hydroboration
8.6 Reduction of Alkenes by Hydrogenation
8.12 and 13: Stereochemistry of addition reactions

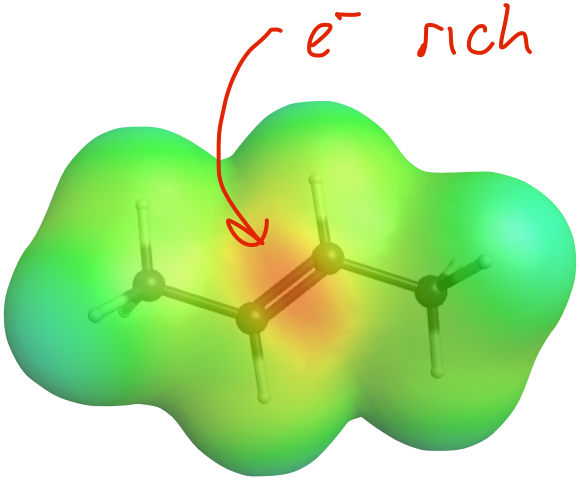
Please hand in reworked test 2.

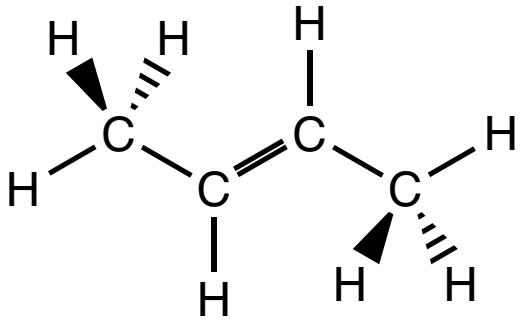
Alkenes are electron rich





butane

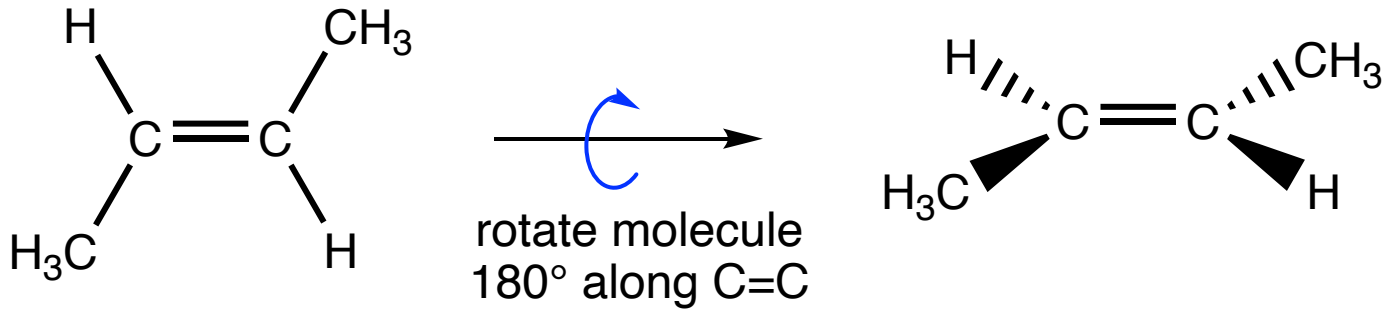


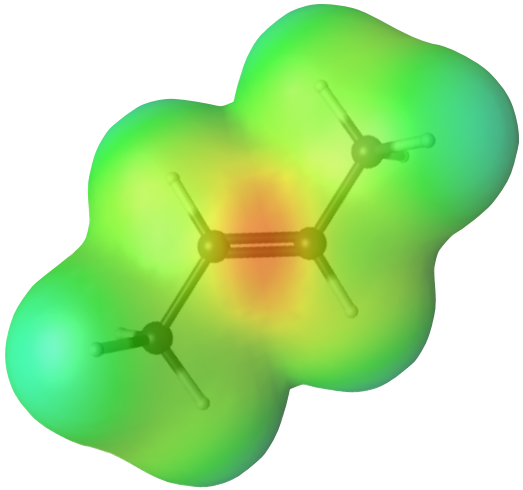


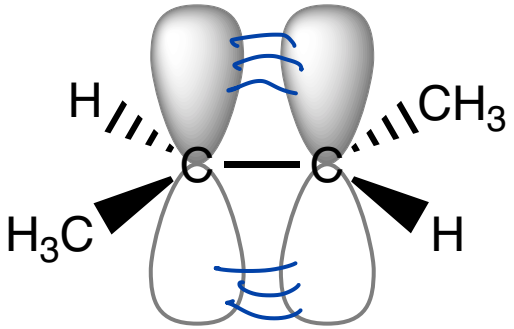
(E)-2-butene

these will be reactive towards ⊕ reactants

Alkenes are electron rich

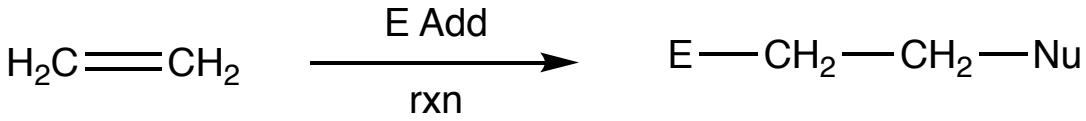






e⁻ rich π bonds stick out away from the nuclei

Alkenes react with electrophiles…



E = generic electrophile Nu = generic nucleophile

The reactions are called electrophilic additions because the are initiated by an electrophile and two groups/atoms are added across the double bond.

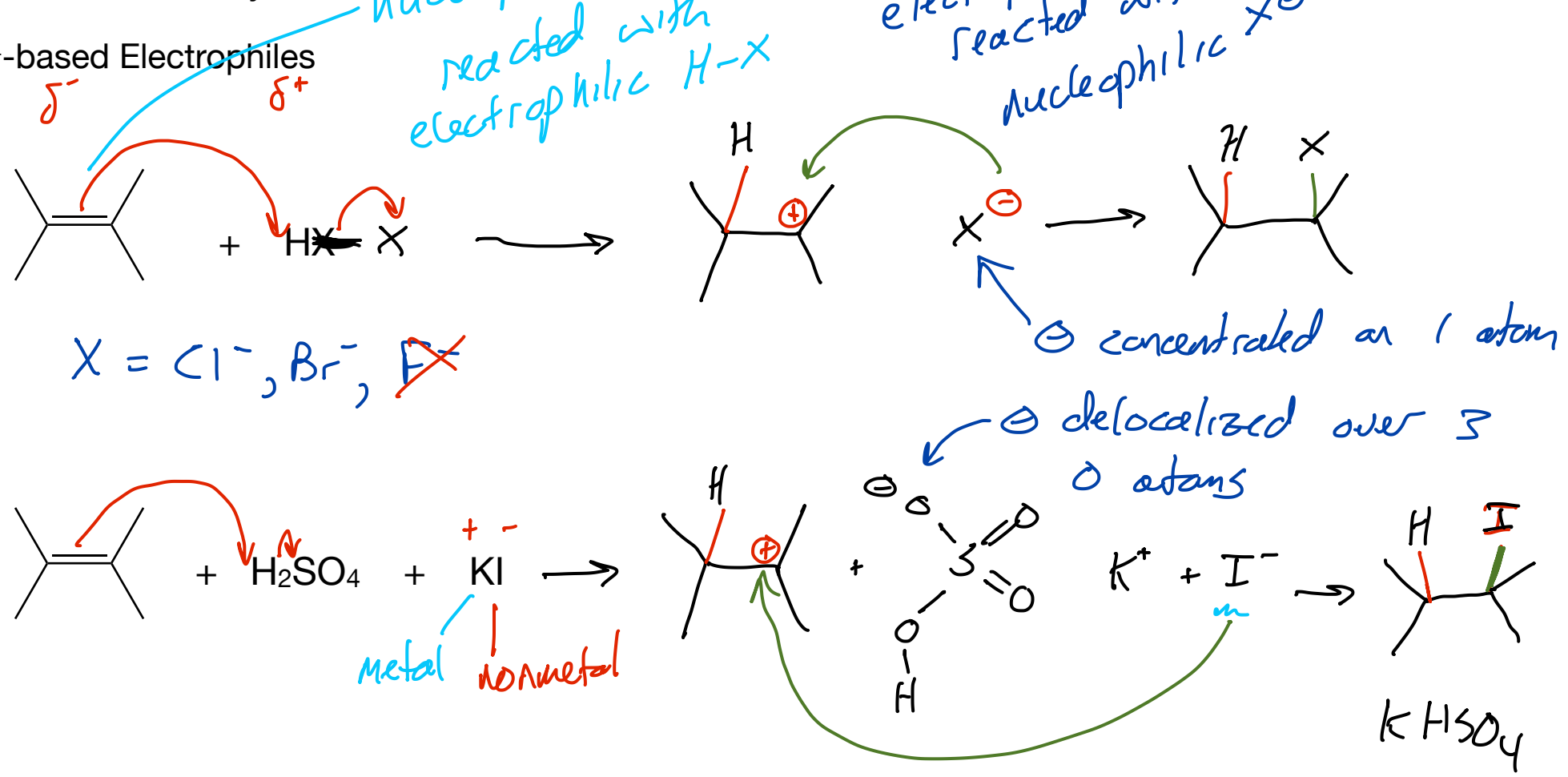
Electrophile… electron loving… they don't have any e⁻ have a strong δ+

an exaggeration

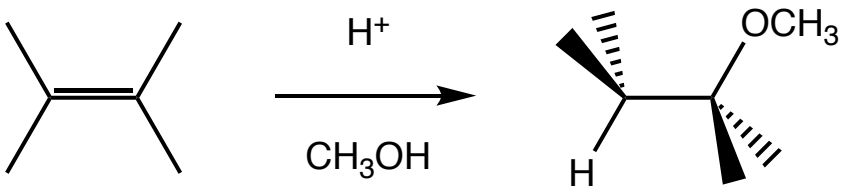
Nucleophile… has lots of e⁻ density… willing to share e⁻ density with a nucleus

Alkene Reactivity

H^+-based Electrophiles



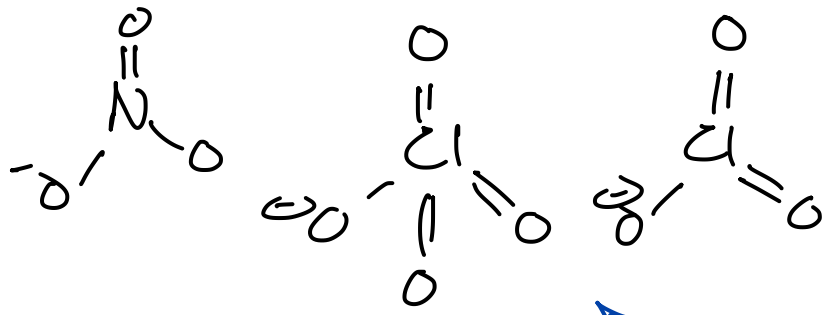
What H^+ producing acid to use?



CH_3CO_2H, HF too weak

Strong acids .. HCl, HBr, H_2SO_4, H_3PO_4 (meh)

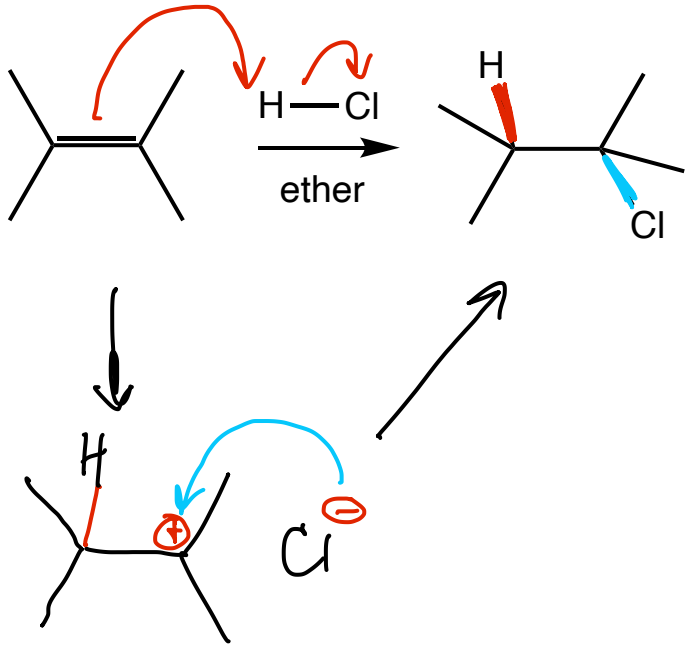
HNO_3, $HClO_4$, $HClO_3$ we don't tend to uses these strong acids the counter ions are non nucleophilic



organic → Fuel

can form dangerously reactive mixtures

nitrates + chlorates + perchlorates → oxidizing agent

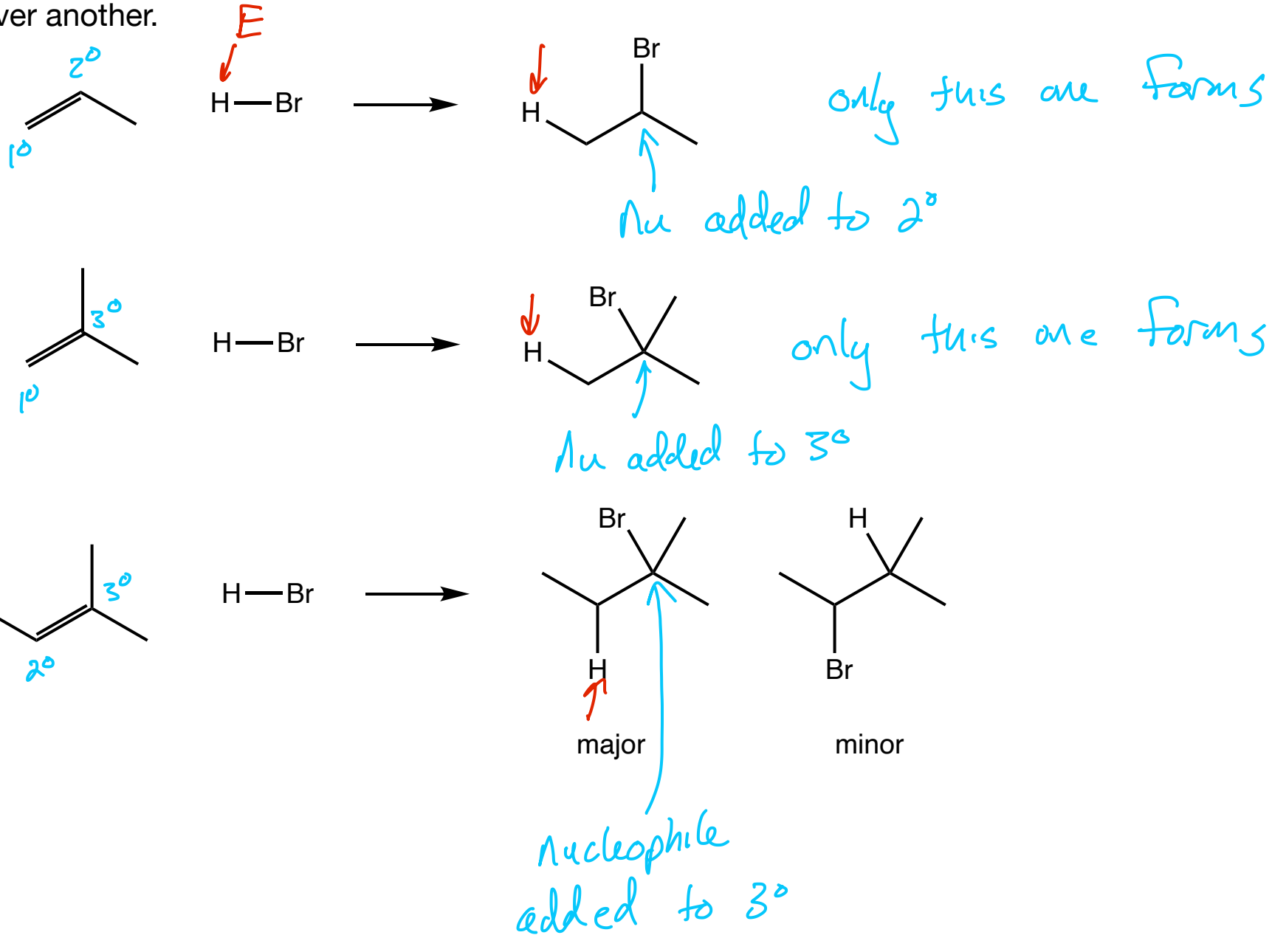


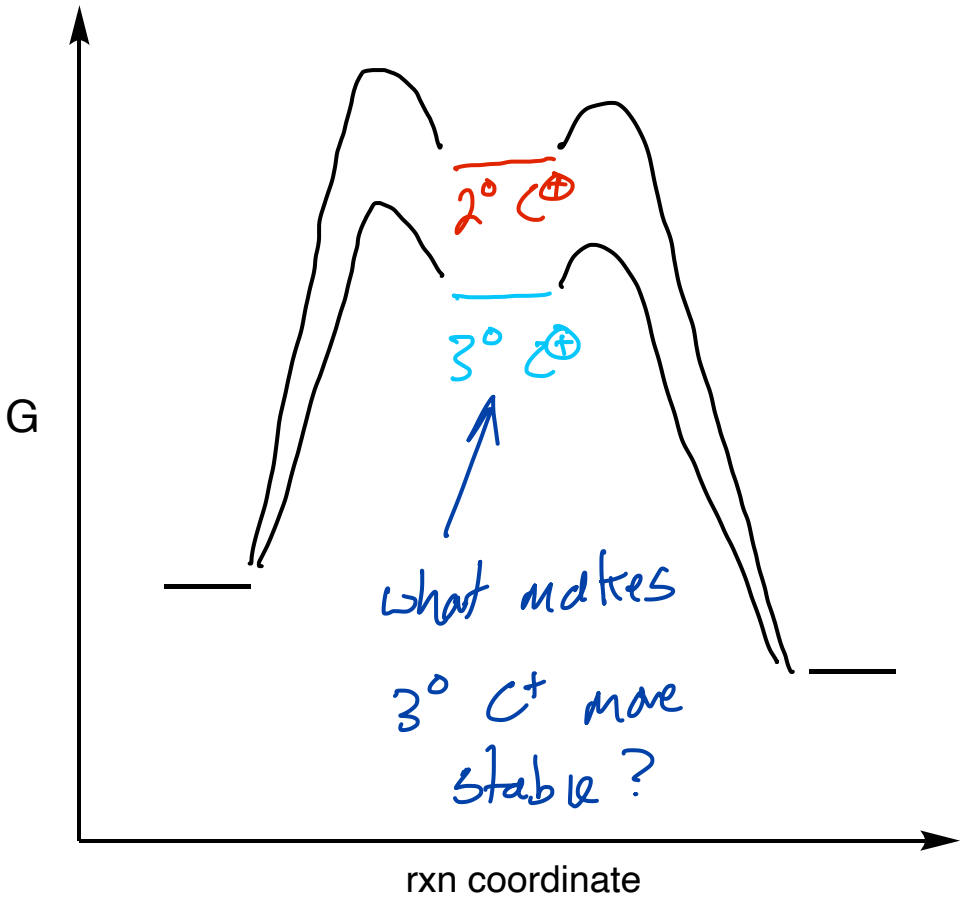
e⁻ rich π bond is attracted to the e⁻ poor electrophile (H^+) in this case the C atom that loses the π bond becomes ⊕

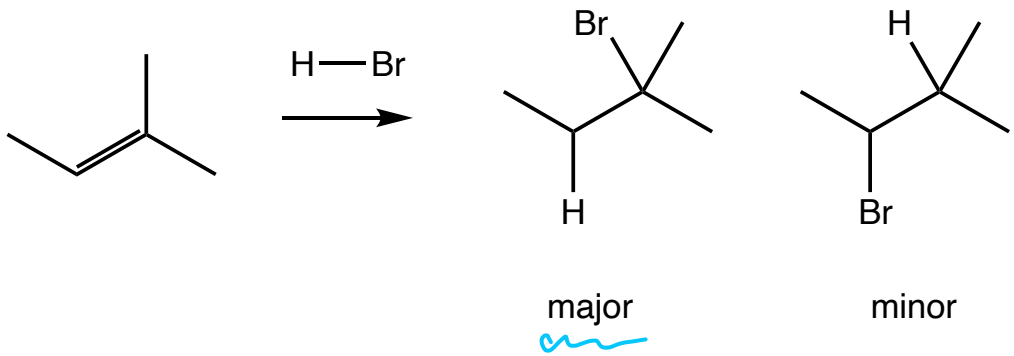
The π e⁻ are used to form a C to H bond

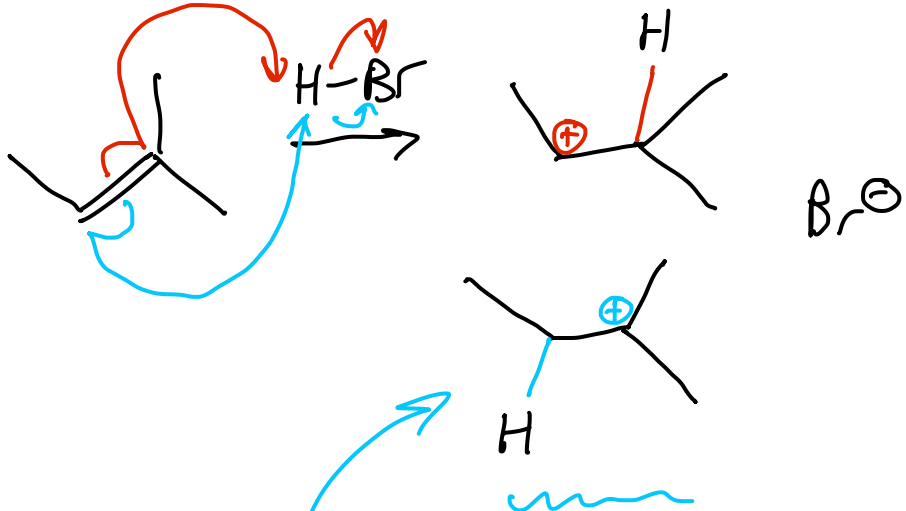
the e⁻ rich Cl^- (nucleophile) that formed in the 1st step reacts with the electrophilic C+ that also formed

Regioselectivity: The ability of a reaction to prefer the formation of one constitutional/structural isomer over another.









the major product comes from this intermediate