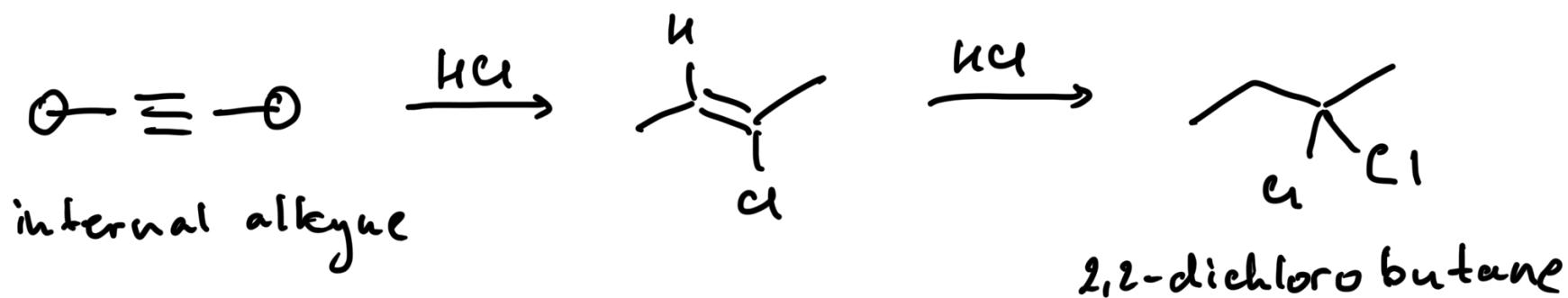
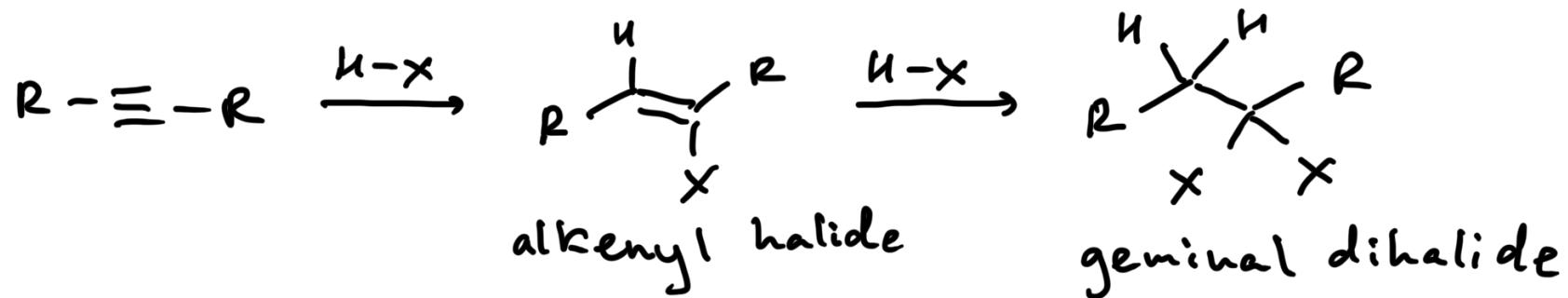


Comments on midterm 2

- Chapters 9, 10, 11*
 - *some of the material overlaps with Chapter 8.10 (double elimination, included in midterm 2)
- What should (must?) you do first when preparing for midterm 2?
 - focus on reactions of alcohols, ethers, epoxides, alkenes, alkynes (including synthesis, for all of the above)!!!

Reactions of alkynes: hydrohalogenation

General considerations. Regioselectivity

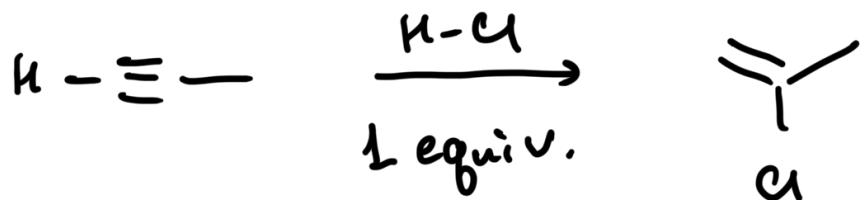
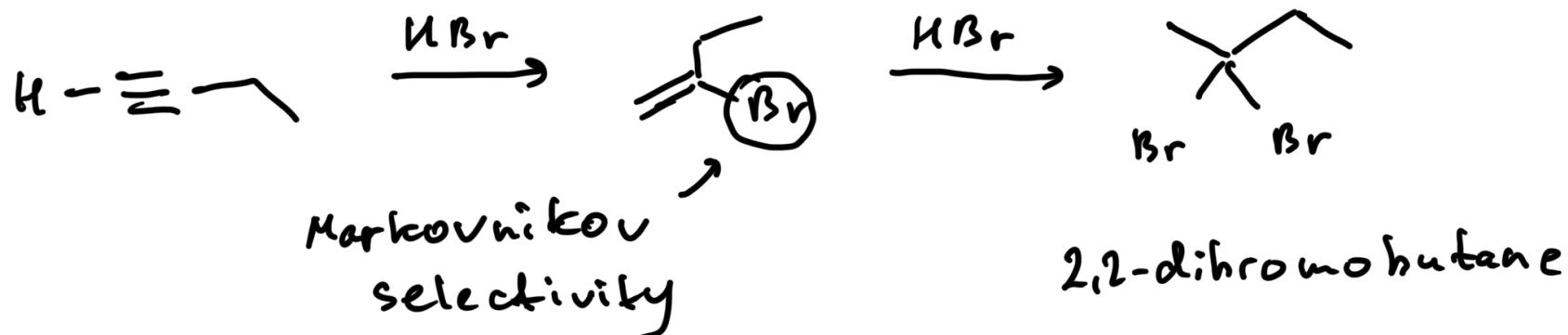


difficult to predict

regioselectivity for unsymmetrical internal alkynes

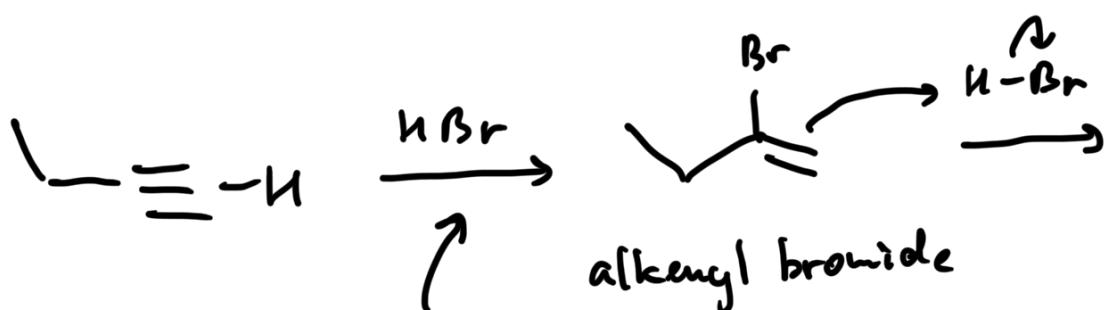
Reactions of alkynes: hydrohalogenation

General considerations. Regioselectivity



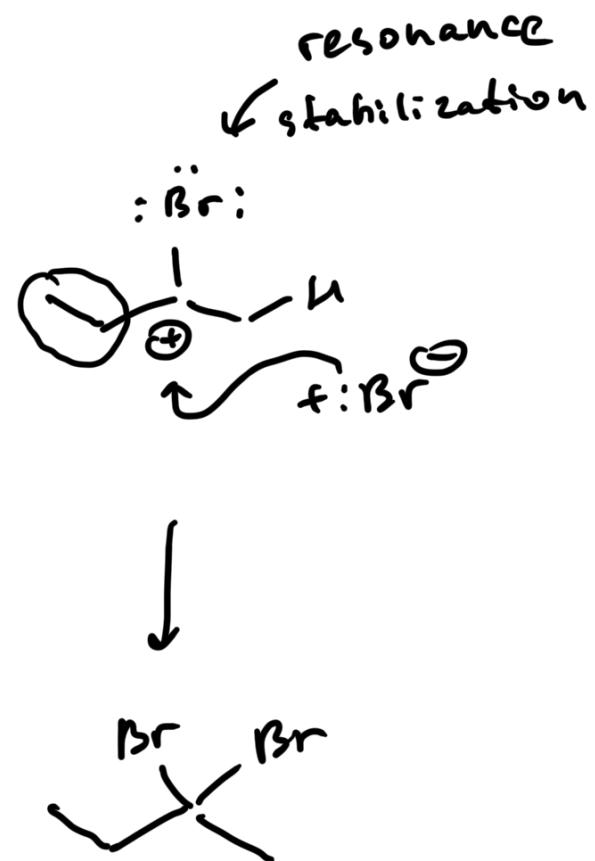
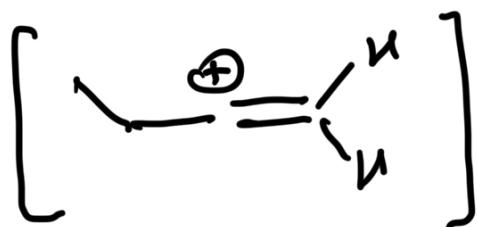
Reactions of alkynes: hydrohalogenation

Mechanistic aspects



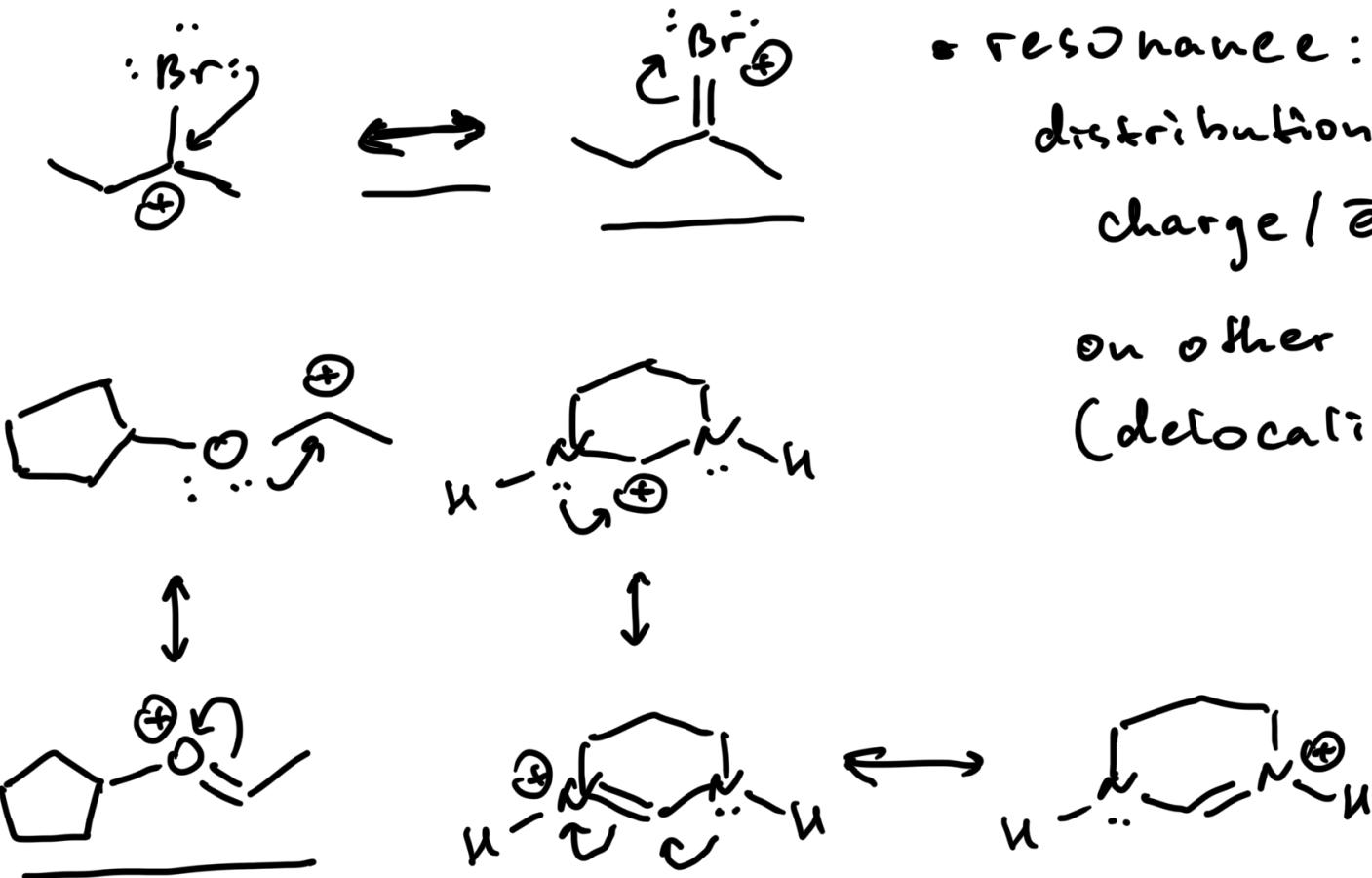
multiple mechanisms
operate

may proceed via



Reactions of alkynes: hydrohalogenation

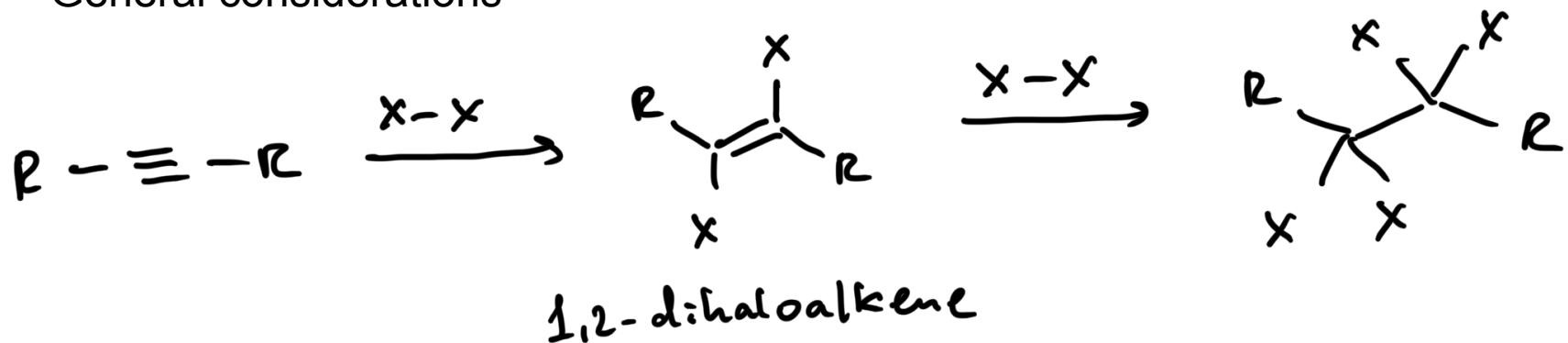
Resonance stabilization of carbocations



• resonance:
distribution of
charge / e density
on other atoms
(delocalization)

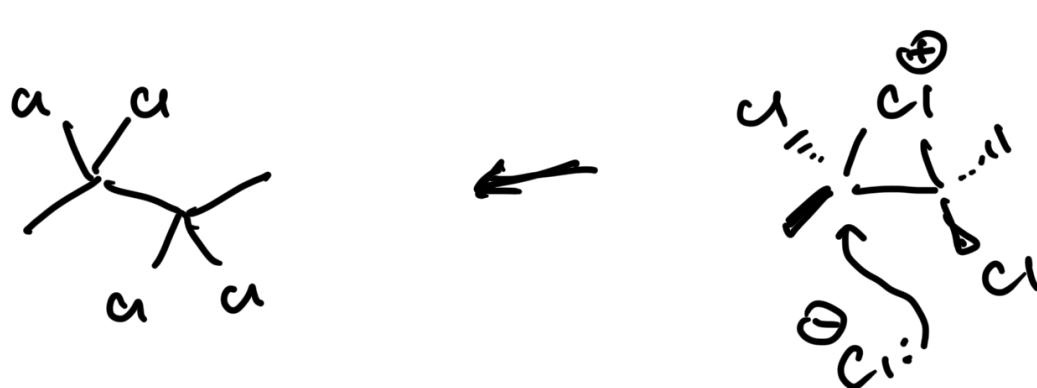
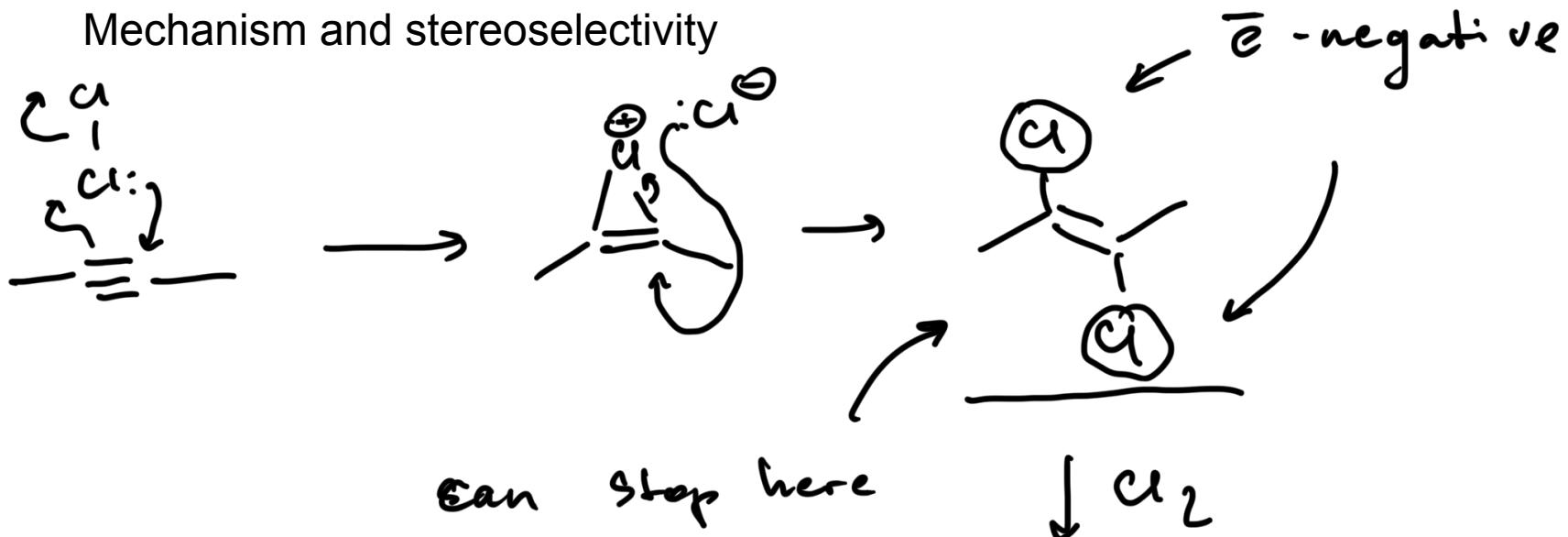
Reactions of alkynes: addition of halogens

General considerations



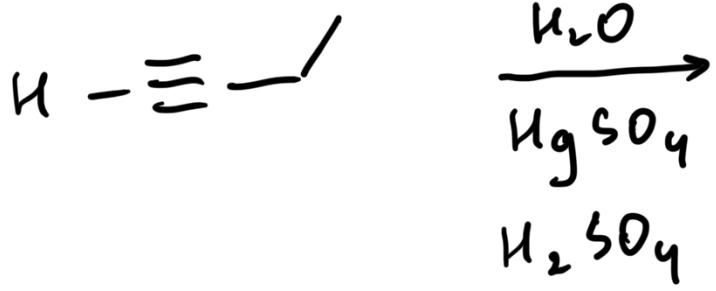
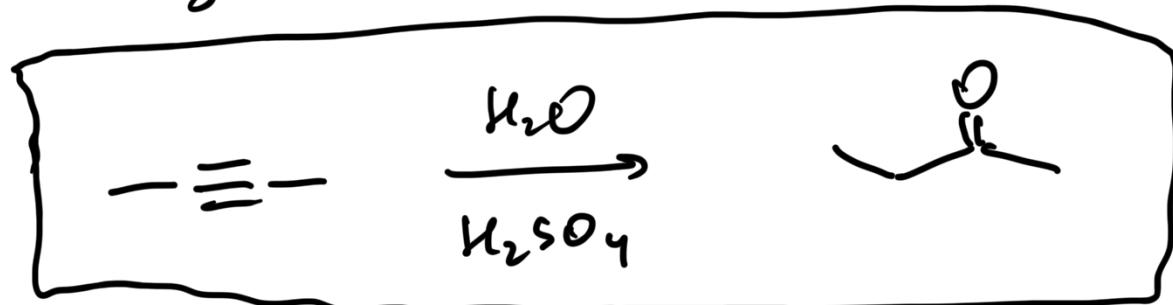
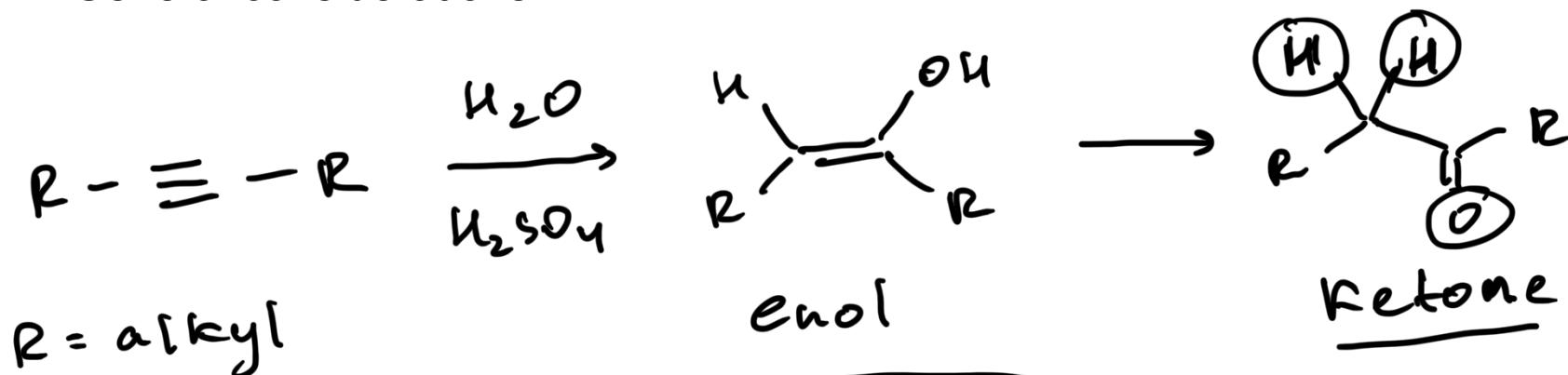
Reactions of alkynes: addition of halogens

Mechanism and stereoselectivity



Reactions of alkynes: hydration

General considerations



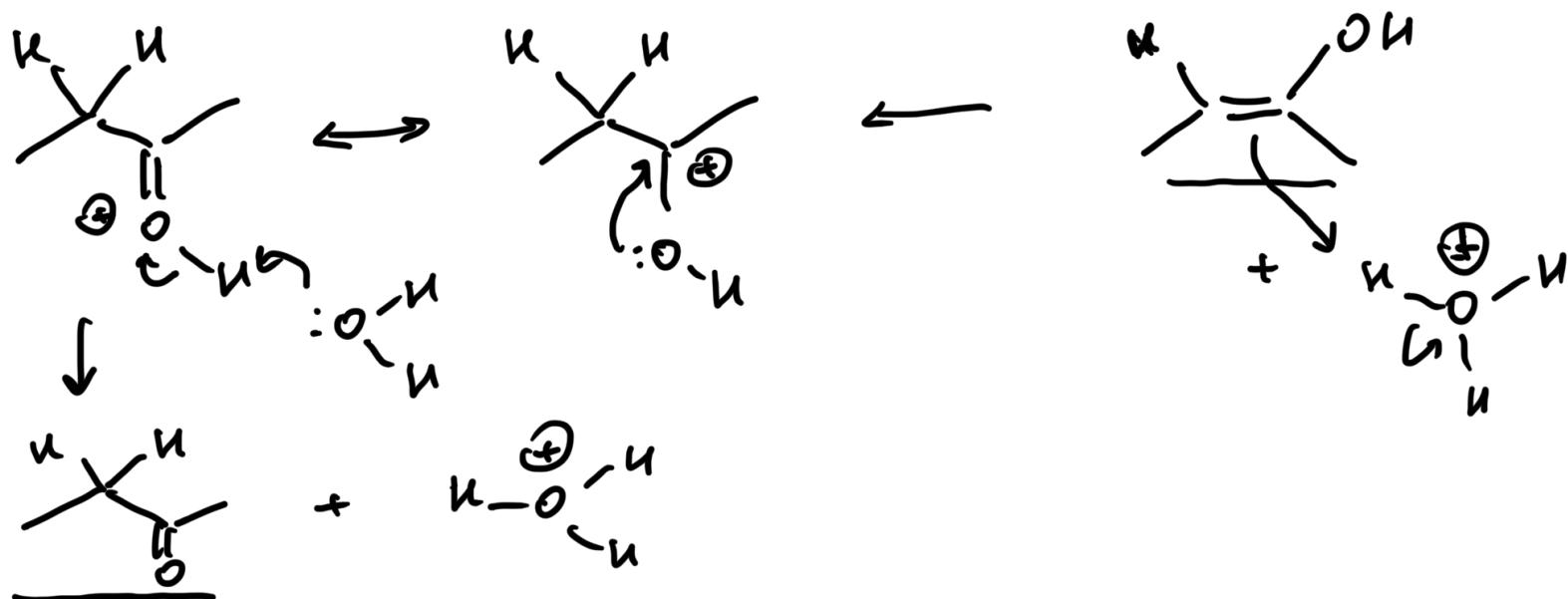
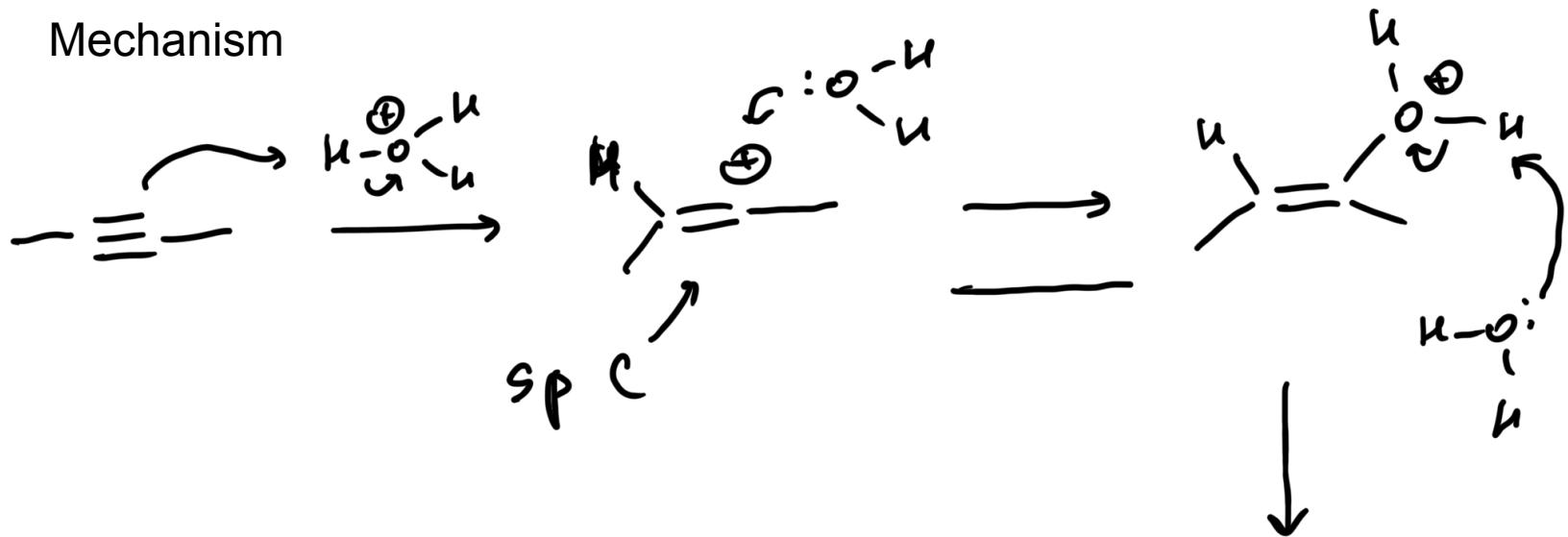
Markovnikov

Selectivity

aldehyde is
NOT observed

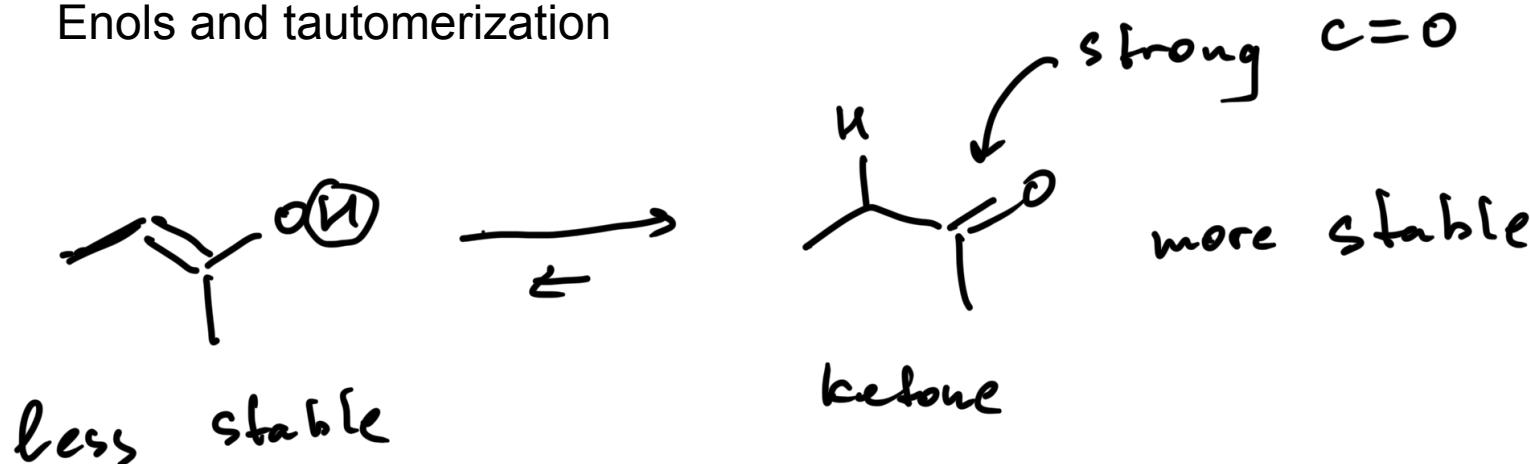
Reactions of alkynes: hydration

Mechanism



Reactions of alkynes: hydration

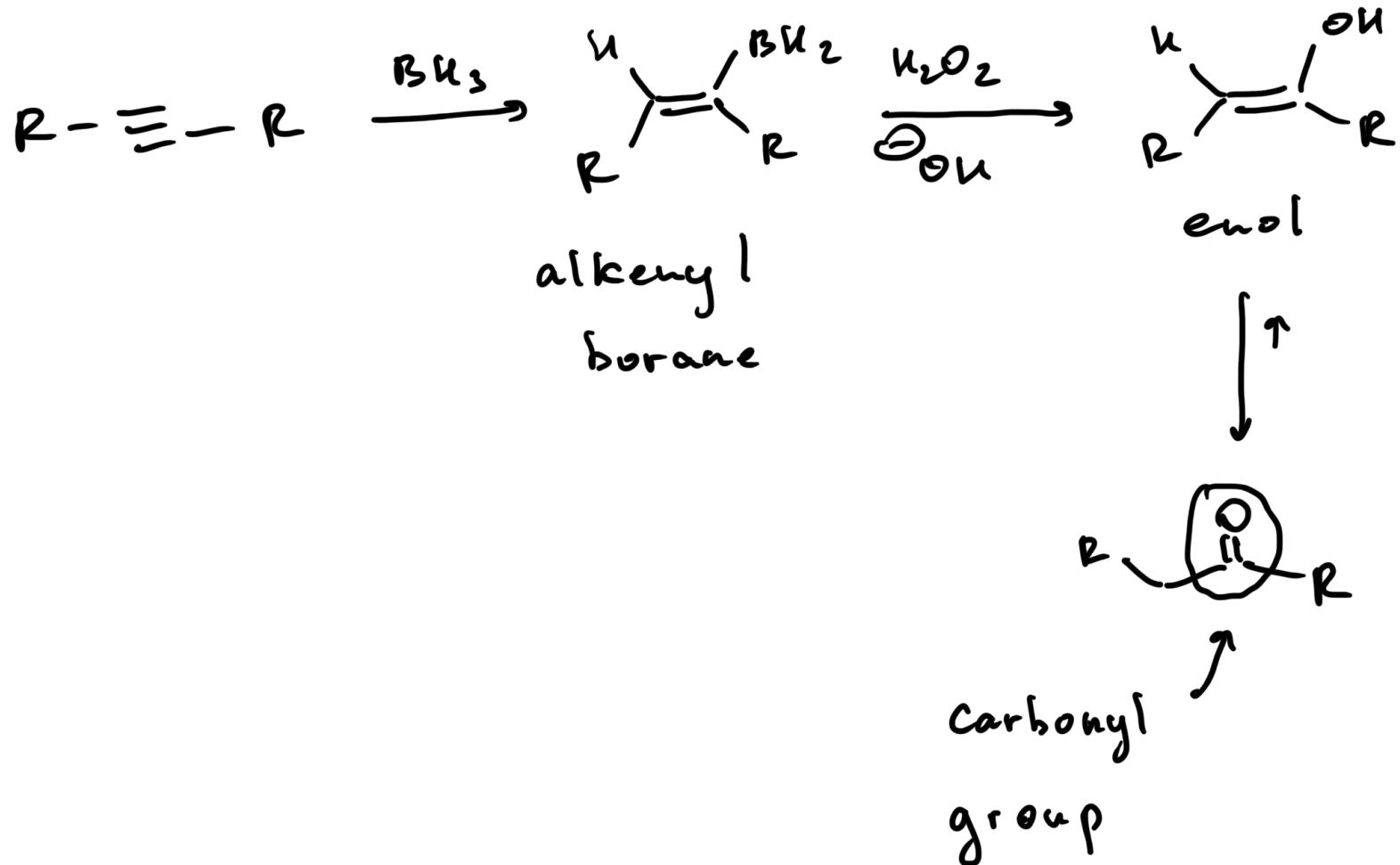
Enols and tautomerization



- Tautomers are constitutional isomers
- typically result from proton migration
- Tautomers are in equilibrium

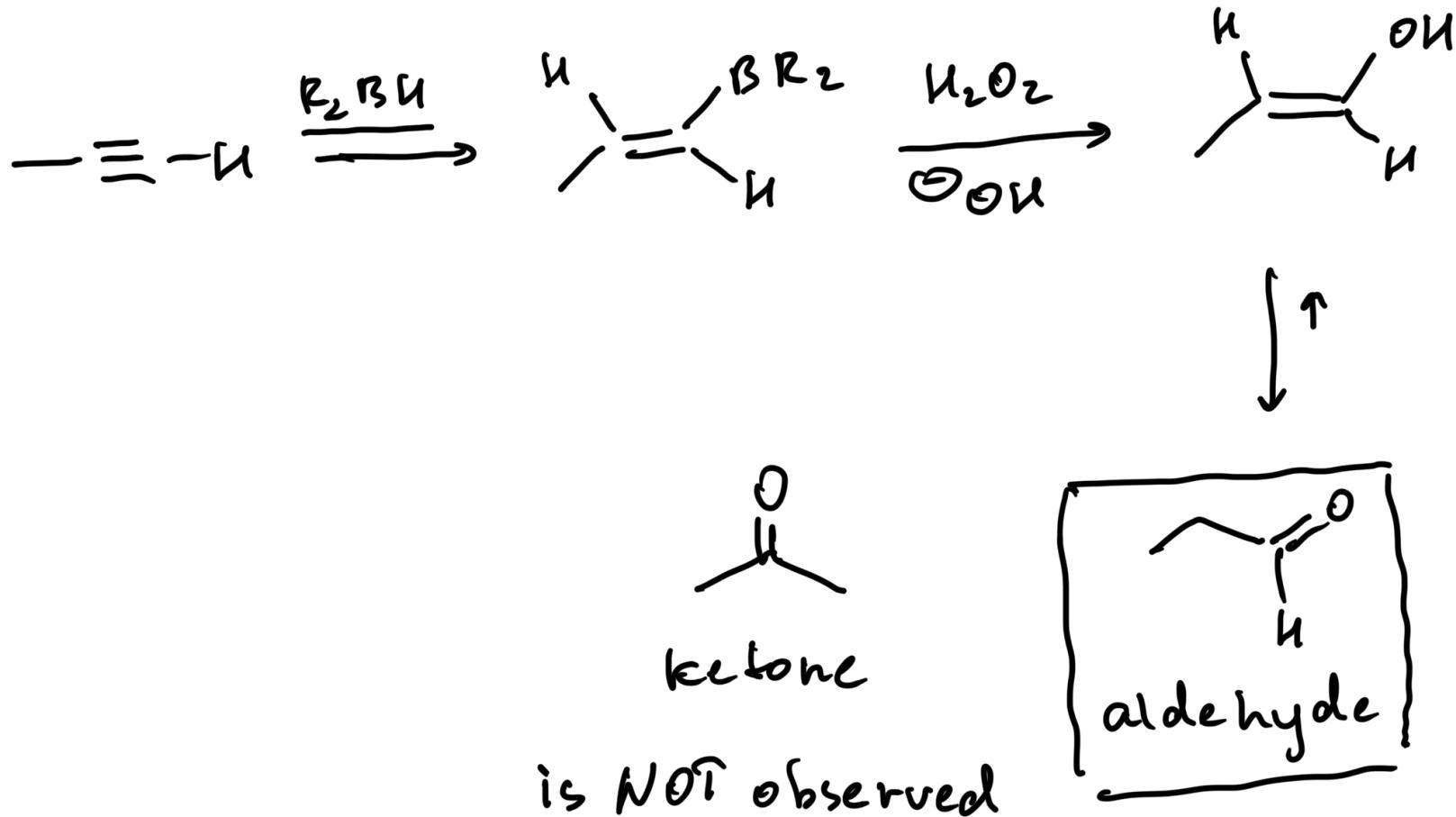
Reactions of alkynes: hydroboration–oxidation

General considerations and mechanism



Reactions of alkynes: hydroboration–oxidation

General considerations and mechanism



Reactions of alkynes: hydroboration–oxidation

Complimentary methods for hydration of alkynes

Acetylide anions in synthesis

Nucleophilic substitution: refresh your S_N2/ E2 knowledge

Acetylide anions in synthesis

Nucleophilic substitution: refresh your S_N2/ E2 knowledge

Acetylide anions in synthesis

More reactions to consider in synthesis/ retrosynthetic analysis

Acetylide anions in synthesis

More reactions to consider in synthesis/ retrosynthetic analysis