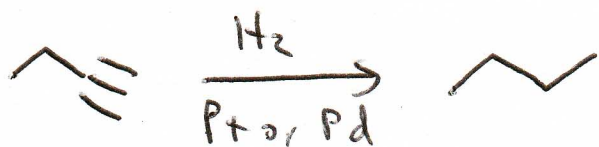


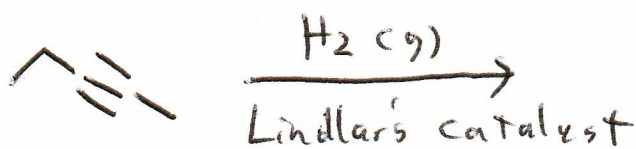
Hydrogenation



Since the initial product of the hydrogenation of an alkyne is an alkene, and given that alkenes, in turn, can be

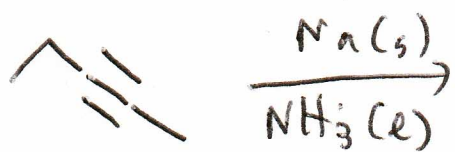
hydrogenated, the hydrogenation of an alkyne will produce an alkane.

"Poisoned" catalyst - A catalyst that has been deactivated by the inclusion of additional reagents.

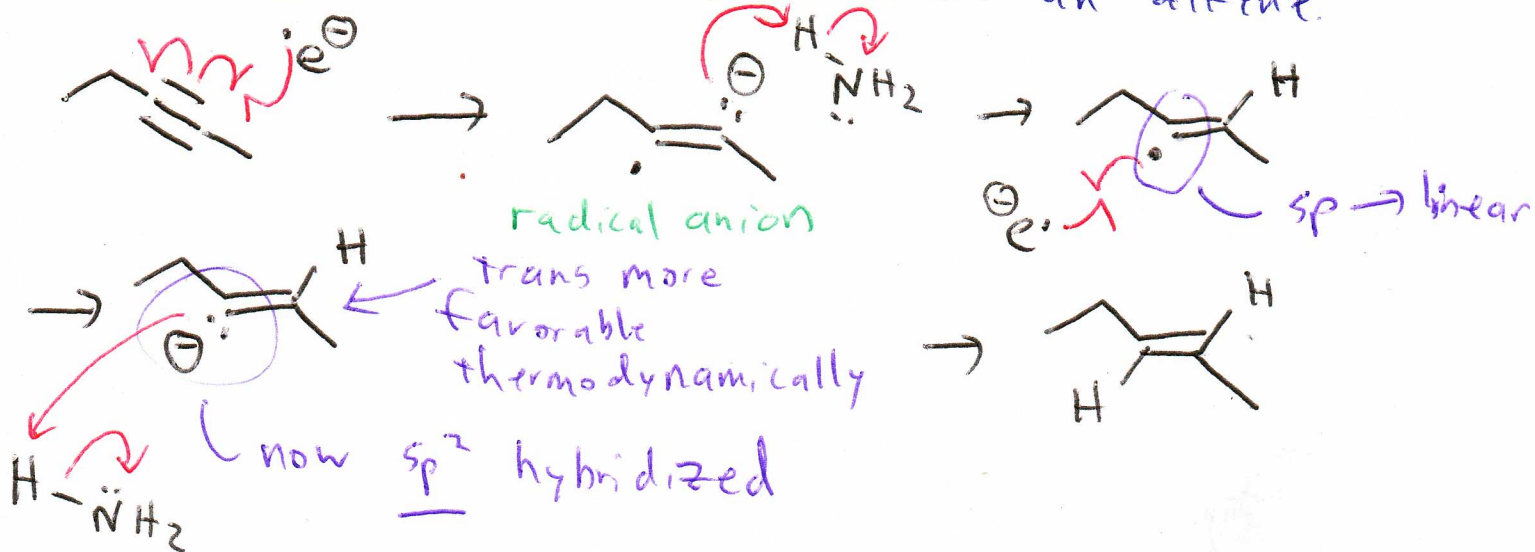


Cis alkene forms due to syn addition.

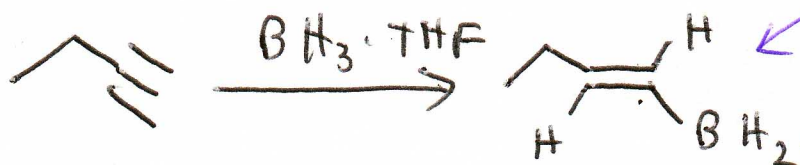
Reductive hydrogenation



Sodium metal acts as a reducing agent, providing electrons that can add into one of the π -bonds of an alkyne.



Hydroboration - oxidation

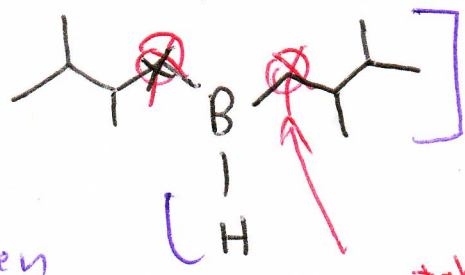


The alkene could react w/ another molecule of BH_3 and

The other hydrogens on boron can react \rightarrow (a big mess)

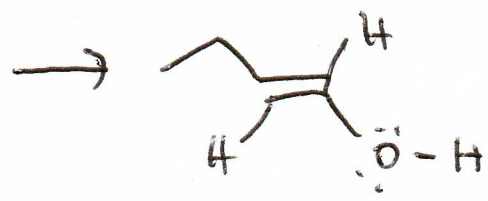
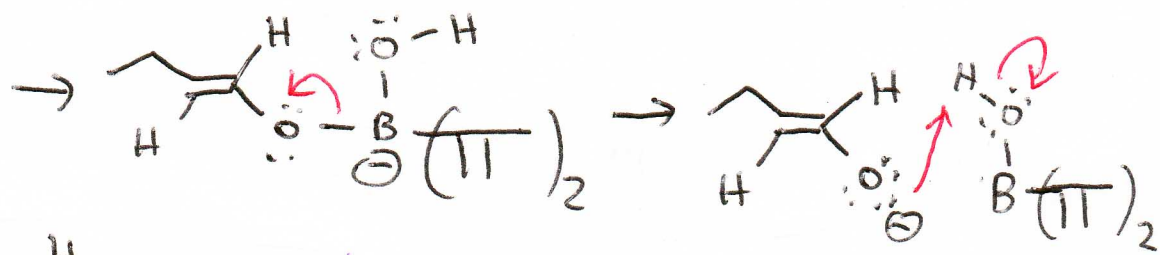
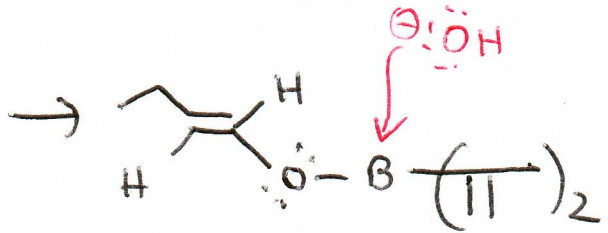
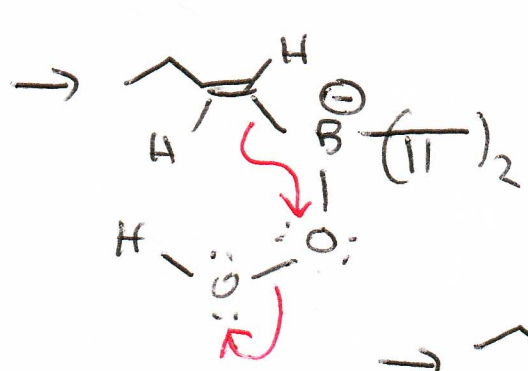
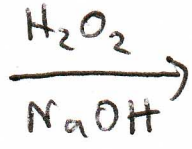
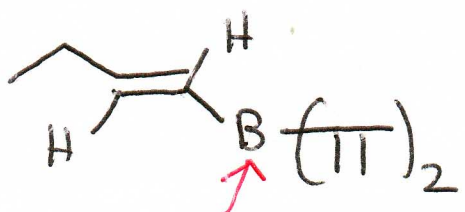
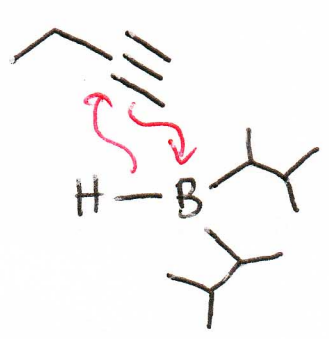


only one reactable hydrogen is present per molecule



The bulky alkyl substituents prevent multiple additions to an alkyne

mistake (extra carbon)



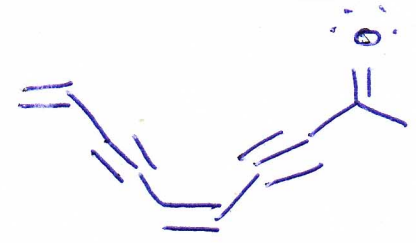
enol (contains both an alkene and an alcohol)

vinyl alcohols and amines are unstable

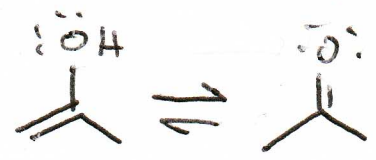
tautomerization

tautomers - structural isomers related by the interchange of a single + double bond.

Keto-enol Tautomerization

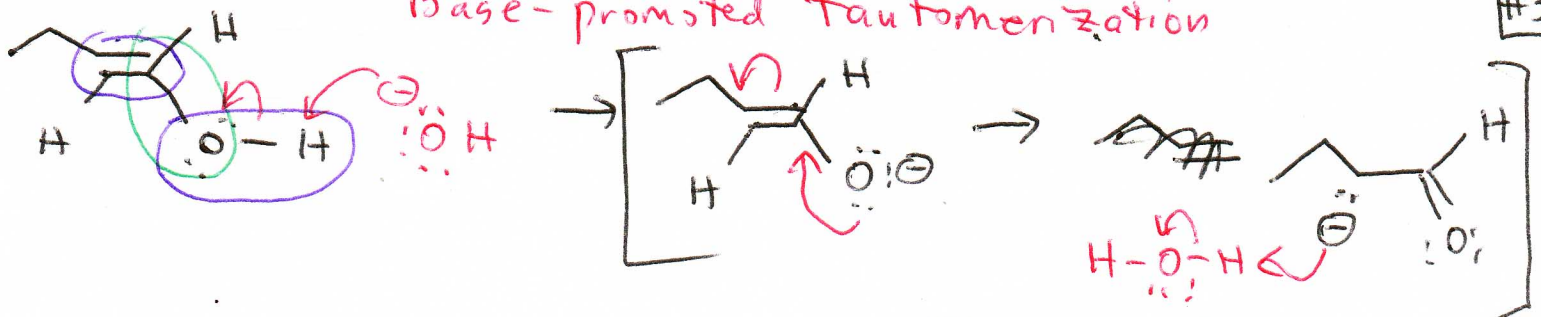


ene-yne-ene-yne-one



Base-promoted tautomerization

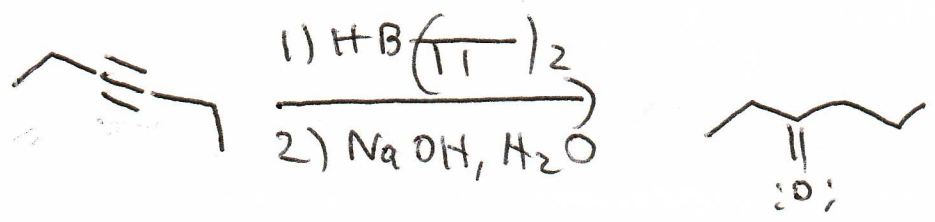
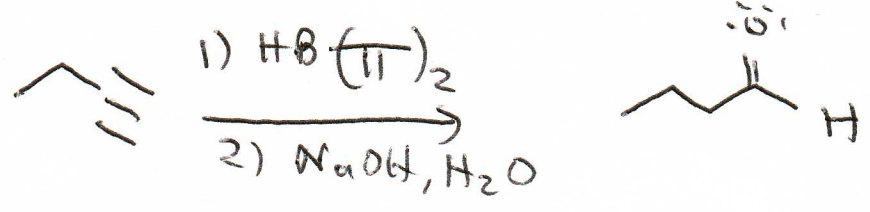
#3



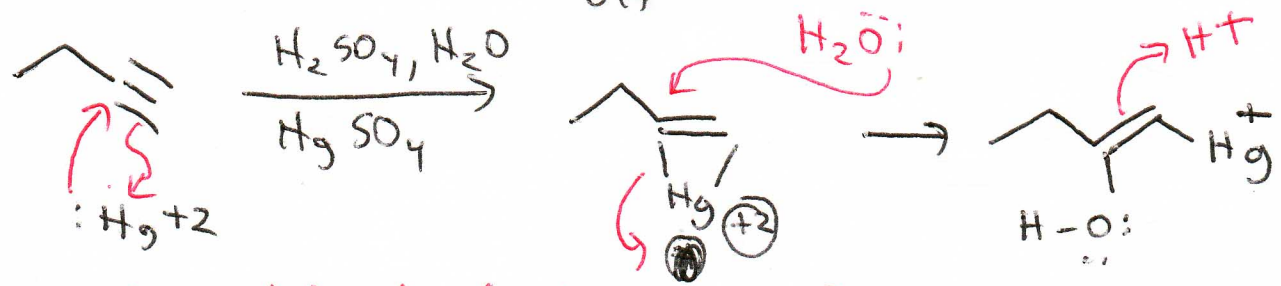
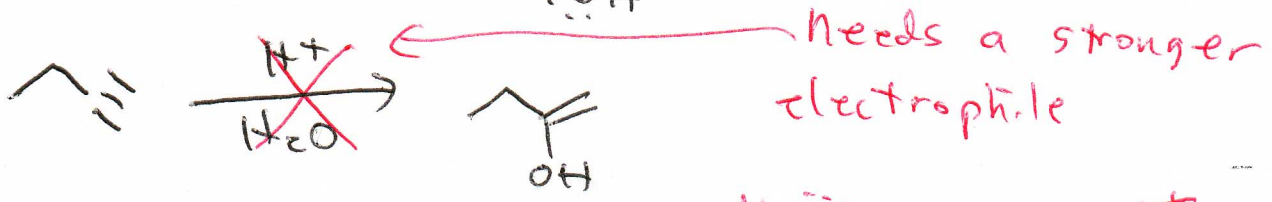
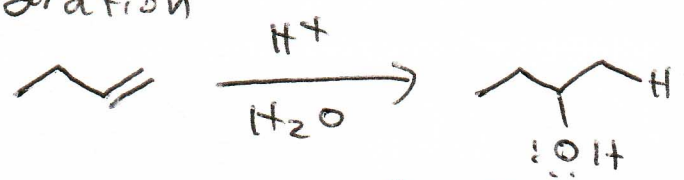
H^+ cannot be used here!!

Overall, the conversion of an enol to a ketone (or aldehyde) is

exothermic.



Hydration



acid catalyzed tautomerization

