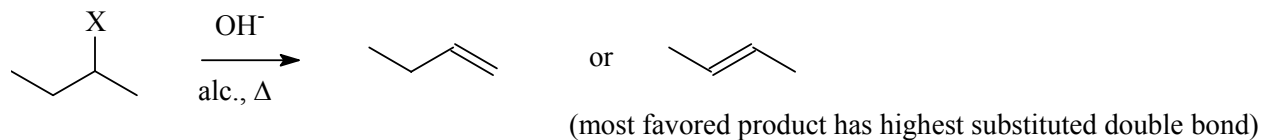


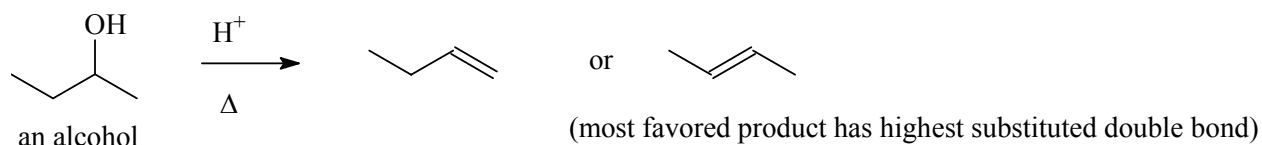
Alkene Reaction Summary

Preparation

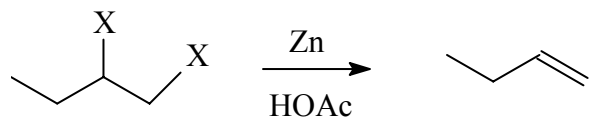
1) Dehydrohalogenation – alkyl halide plus strong base (e.g. OH^-) in alcohol solvent, with heating



2) Dehydration – an alcohol plus a strong acid (H_2SO_4 or H_3PO_4), with heating

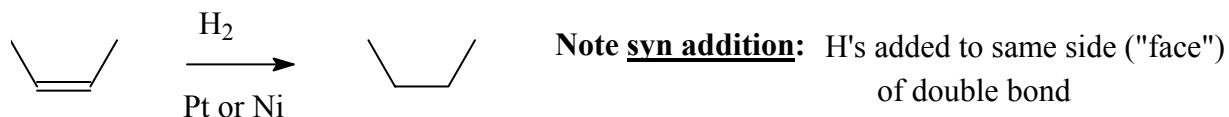


3) Dehydrohalogenation – a vicinal (adjacent carbons) alkyl halide plus Zn in acetic acid (HOAc)

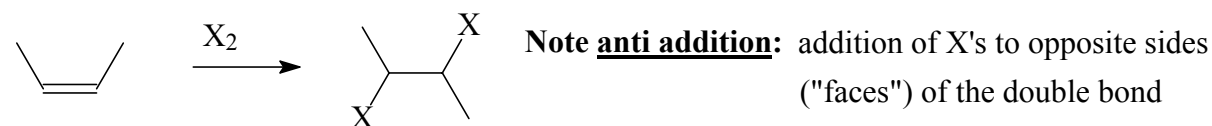


Reactions

1) Hydrogenation – addition of H_2 across a double bond Pt or Ni catalyst

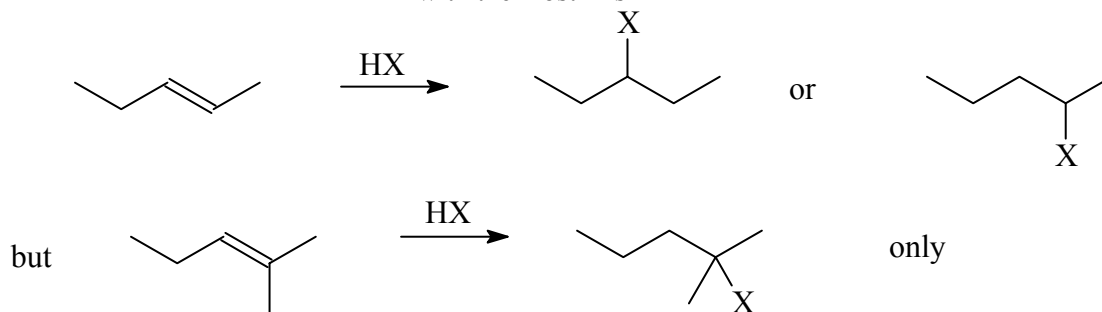


2) Halogenation – addition of Cl_2 or Br_2 across a double bond in CCl_4 or H_2O solvent



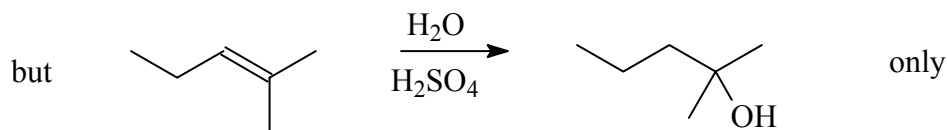
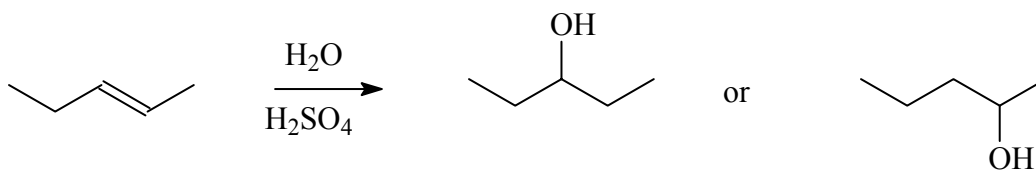
3) Hydrohalogenation – addition of a hydrogen halide (HX) across a double bond

This addition is **Marknikov** – the least electronegative element (in this case H) goes on the carbon with the most H's

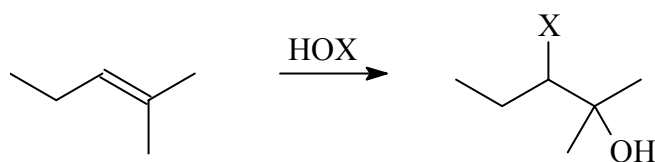


4) Hydration – addition of HOH (H₂O) across double bond, with H₂SO₄ catalyst

*** also Markovnikov – OH⁻ is the more electronegative group ***

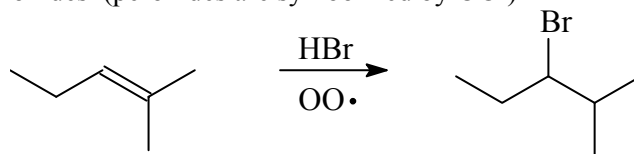


5) Hypohalite – use a hypohalous acid (HOX); addition is Markovnikov

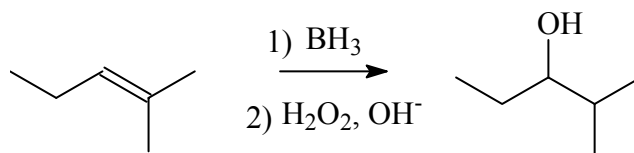


Two very important anti-Markovnikov additions:

6) HBr with peroxides (peroxides are symbolized by OO·)

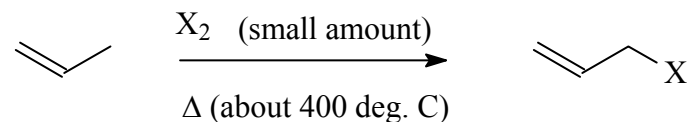


7) Hydroboration/oxidation – this is a two step reaction that you can show as follows:

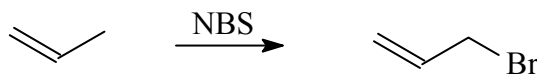


Two important allylic substitution reactions (substituting Cl or Br for H on an allylic carbon, which is a carbon directly adjacent to a C=C)

8)



9)



NBS is N-bromosuccinamide

