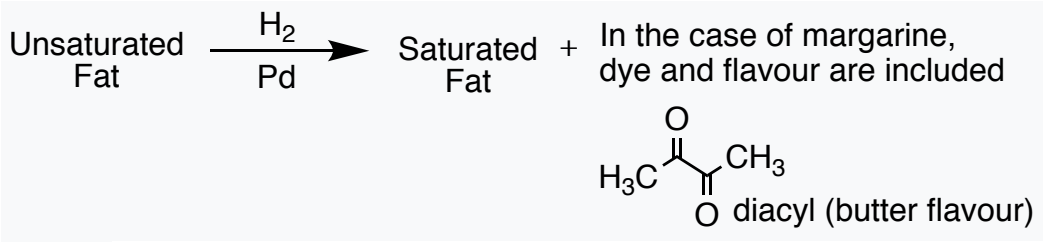
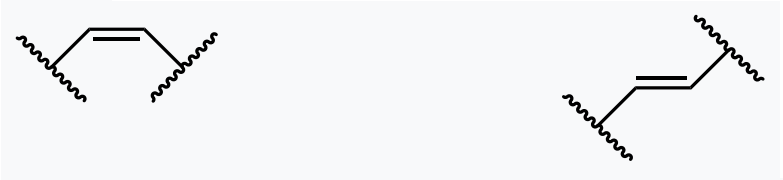
Review

1) H_2 Addition (*cis* addition)



NOTE:

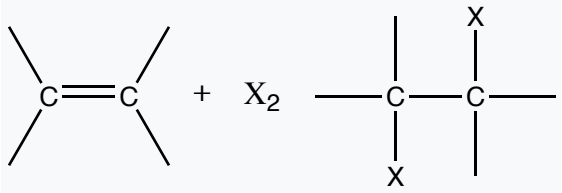


cis unsaturated fats (healthier) *trans* unsaturated (bad, artery diseases)

2) Halogenation of Alkenes

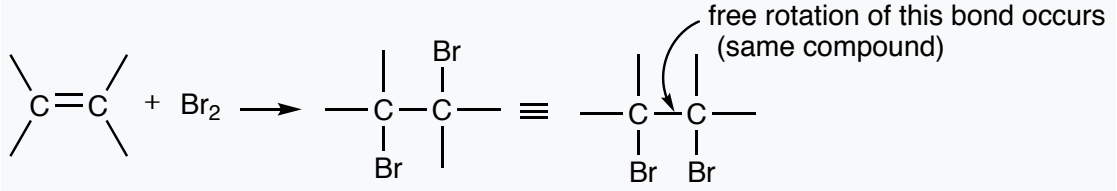
- X_2 addition (X_2 = Br_2, Cl_2, I_2)
- anti-addition (*trans* addition)
- no heat or no light
- heterolytic reaction ($2e^-$)

General scheme:

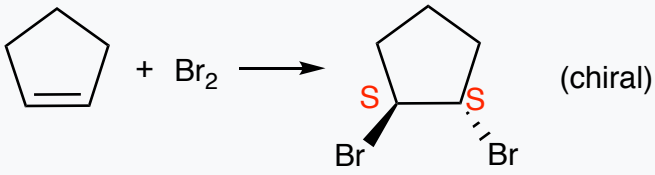


Example

a)

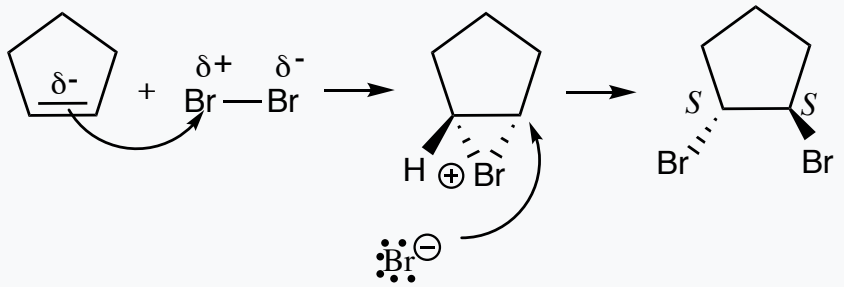


b)



(1*S*, 2*S*)-*trans*-dibromo pentane

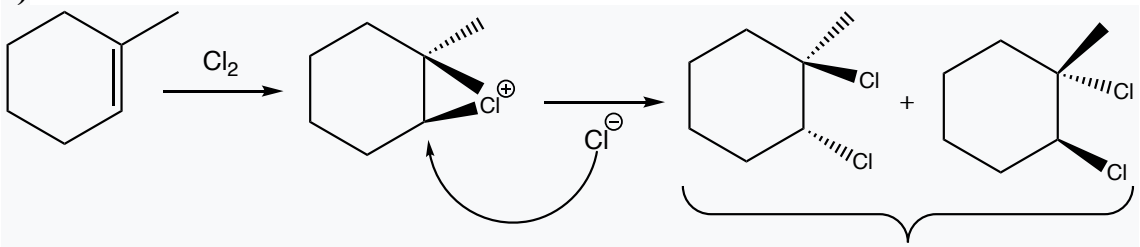
If we look at the progress of above reaction, we can include the intermediate



(Intermediate)

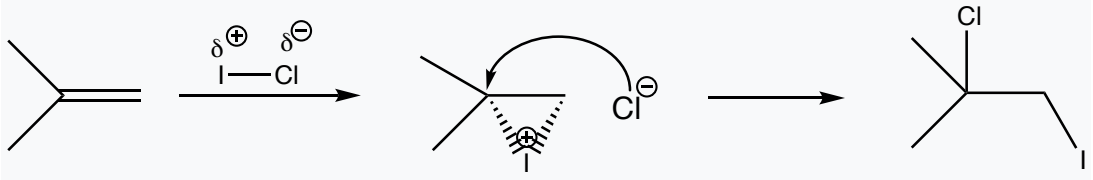
- The Br^+ in the intermediate attacked from the bottom side, therefore the incoming Br^- will have to attack from the top which gives the *trans* configuation (anti-addition) giving rise to (1*S*, 2*S*)-*trans*-dibromopentane.

c)



Racemic Mixture (50:50)

d)

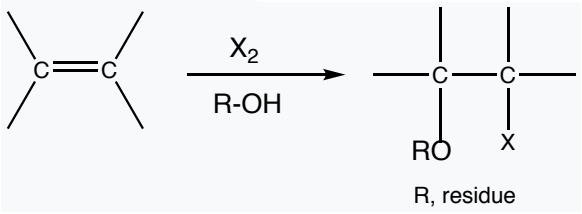


*I-Cl (iodine monochloride)

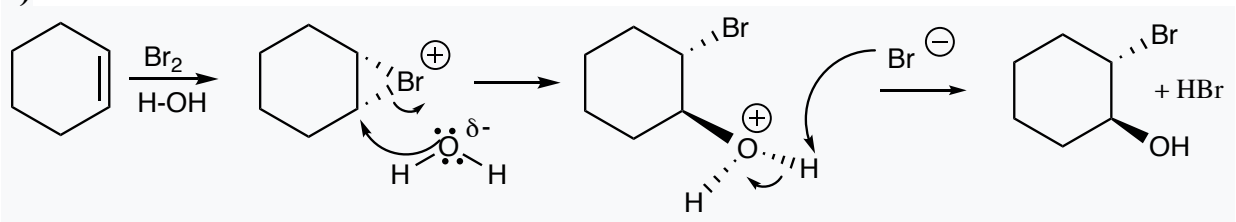
- Iodine (I^+)will attack the less substituted side of the double bond (Markovnikov)
- Chlorine will attack the more substituted (i.e. with two methyl substituents) side of the double bond

3) Halohydrin Formation – *trans* addition

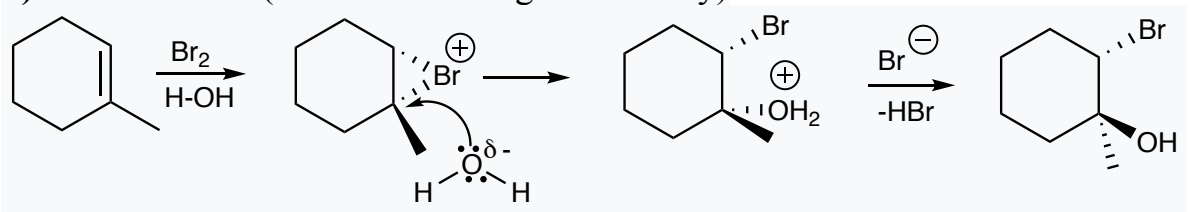
General Scheme:



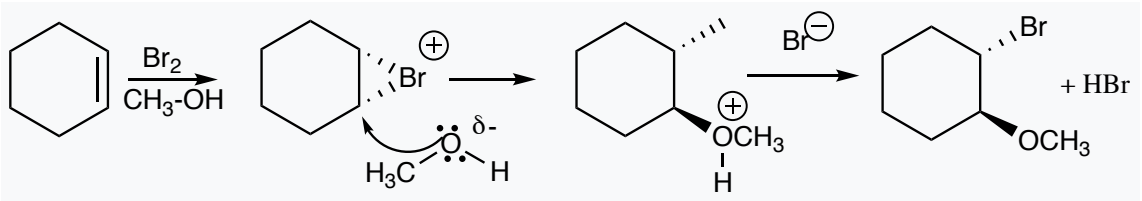
a)



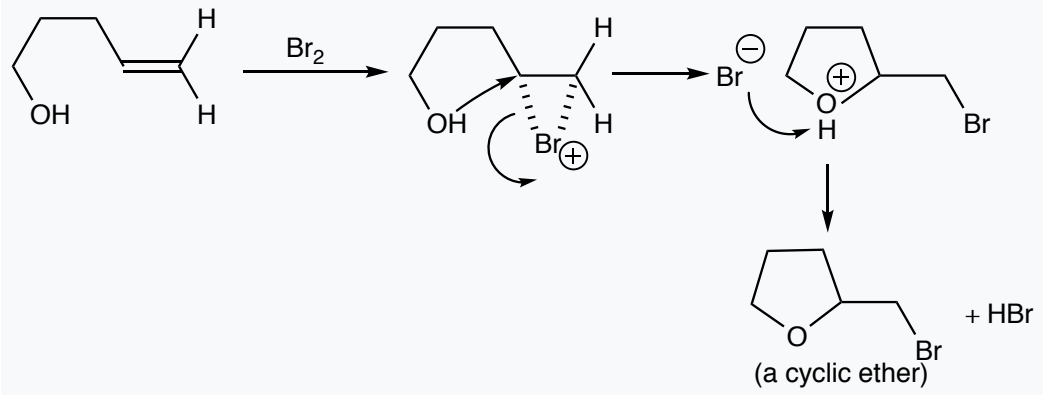
b) *trans* addition (Markovnikov regioselectivity)



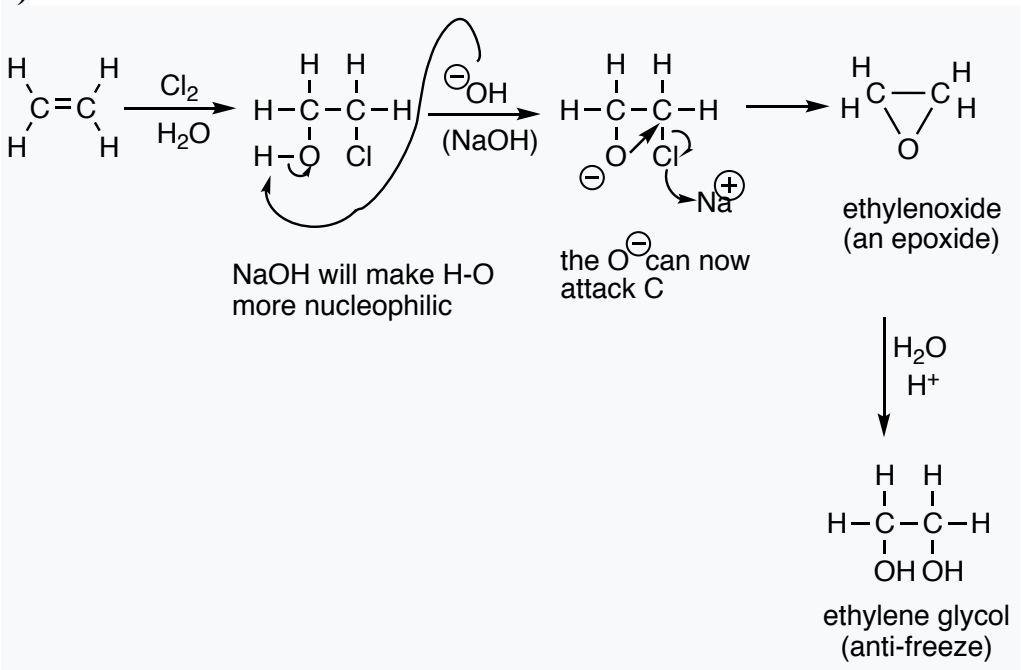
c)



d)



e)



4) Hydrogen Halide (HX) Addition

General Scheme: