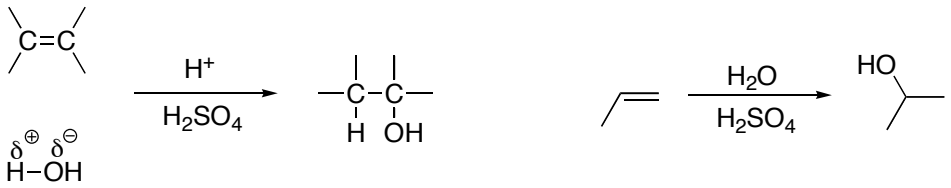
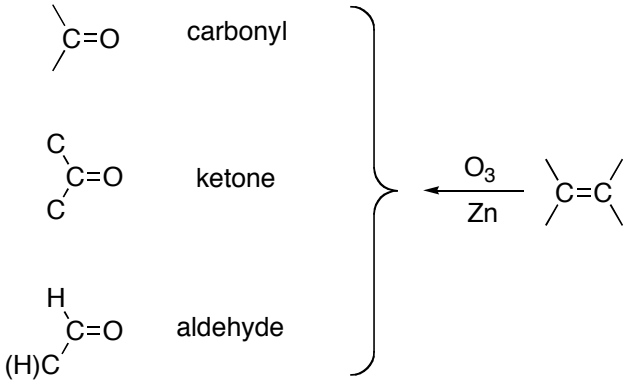
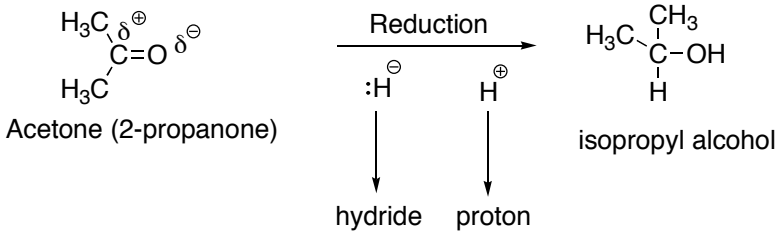
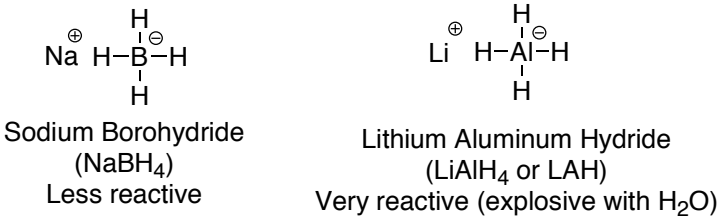


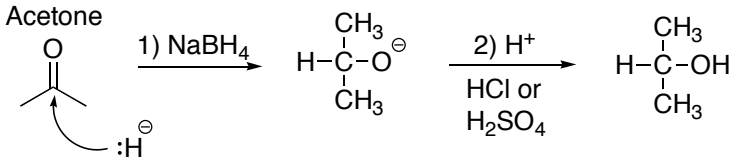


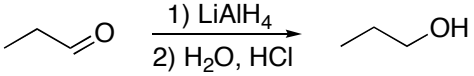
- Carbonyls undergo addition reactions



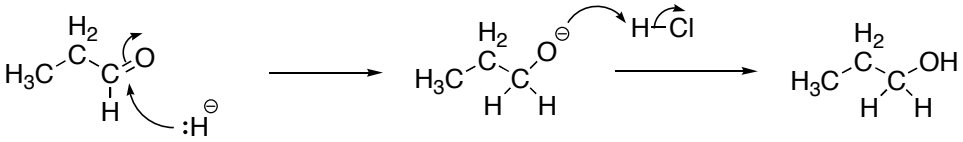
Hydride Donors



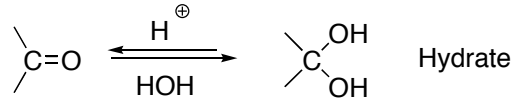


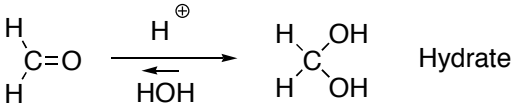


Mech:

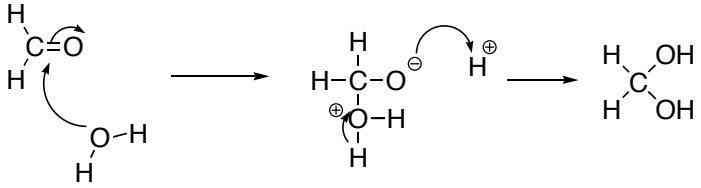


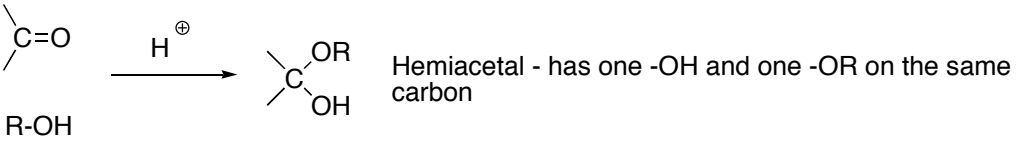
Addition of H-OH to C=O





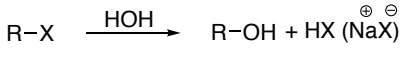
formaldehyde



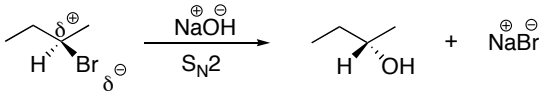


R-OH

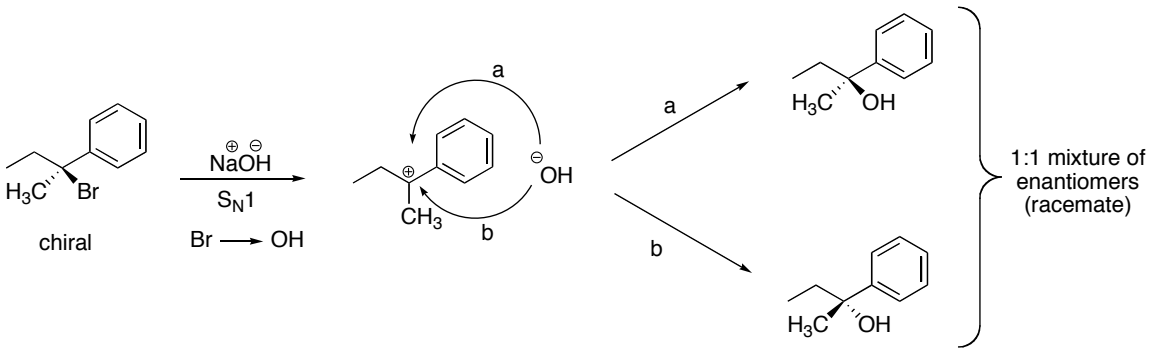
Alcohols by substitution reaction – S_N1, S_N2

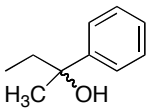


X = usually Cl, Br, I



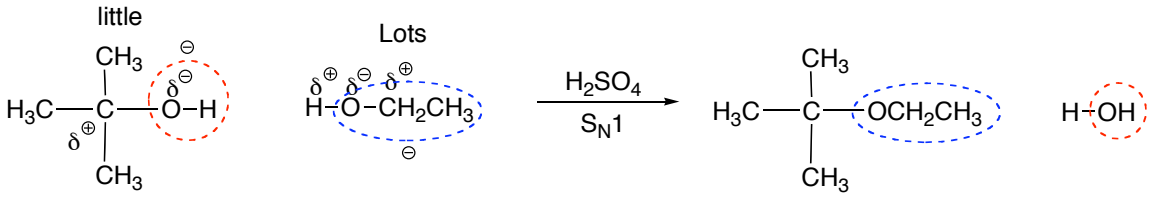
Inversion of stereochemistry



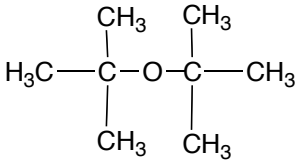


- means loss of stereochemistry or undefined stereochemistry

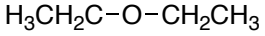
Formation of Ethers



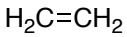
- side products:



none

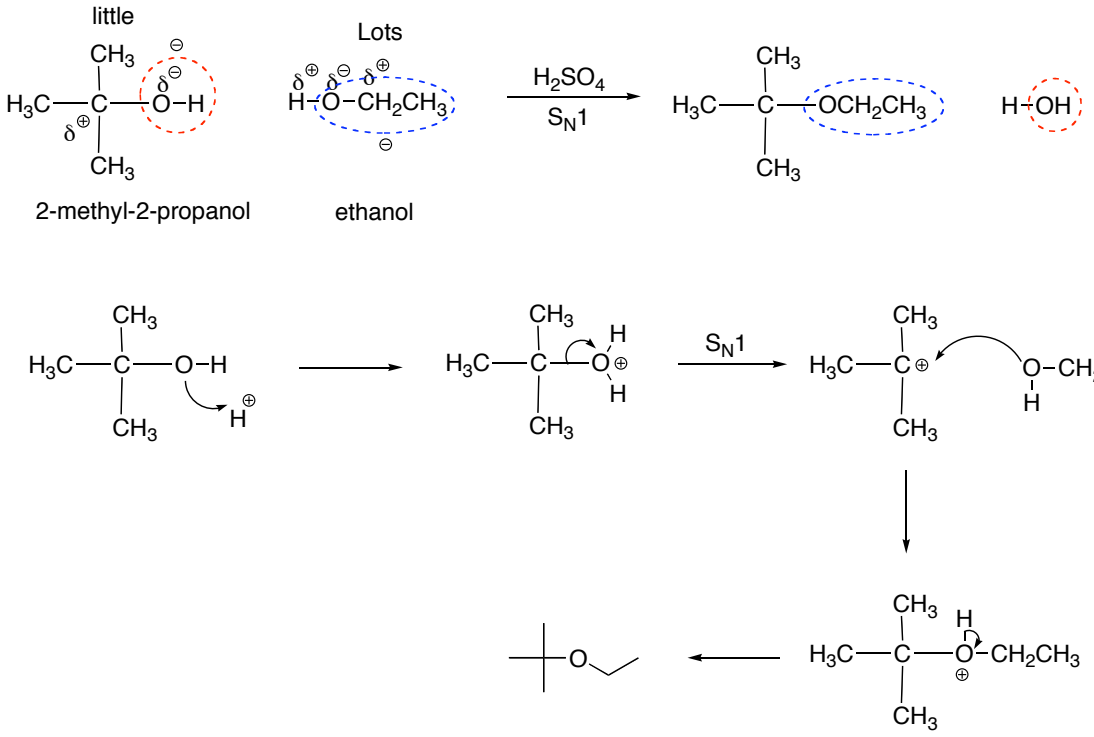


little

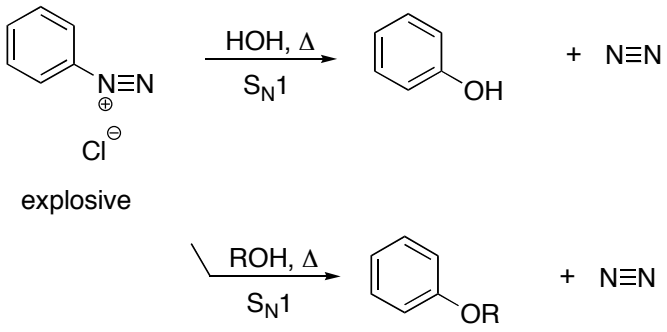


lots

Mech:

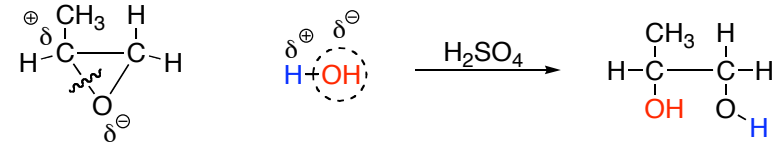


Diazonium salt:

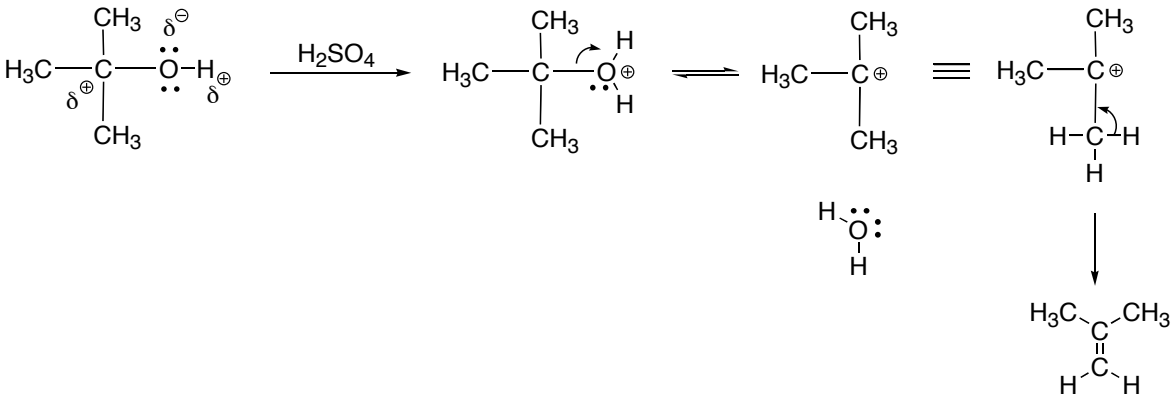


- No S_N2 on sp^2 carbons.

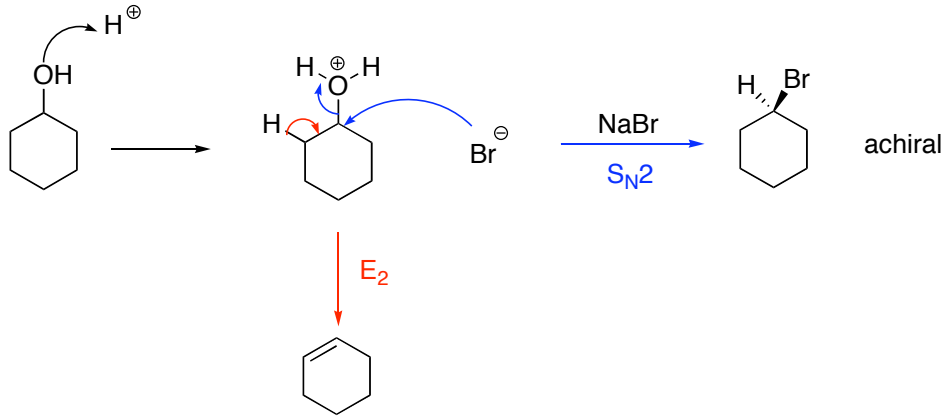
Epoxide:



Eliminations, E_1



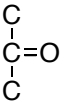
Mech: (MUST have acid to displace water, can NOT displace OH under basic conditions)



Sugars = Carbohydrates = Saccharides

- $C + H_2O$
- $C_N H_{2N} O_N$ is the general molecular formula
- 3 carbons or more

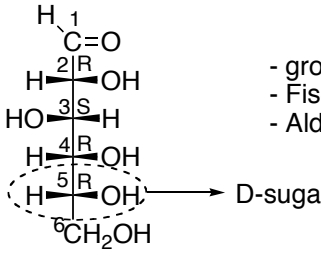
Classification:
- 3C Triose
- 4C Tetrose
- 5C Pentose
- 6C Hexose

Prefix:
-  Aldo-
-  Keto-

$$CO_2 + H_2O \xrightarrow[\text{plants}]{h\nu} \underset{\text{D-glucose}}{C_6H_{12}O_6} + O_2$$

- 4×10^{11} metric tons of CO_2 fixed
- hv = 0.02% sun's energy on earth

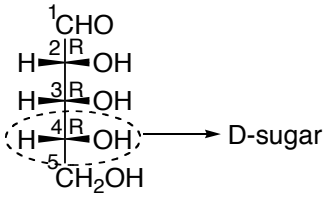
D-Glucose:



- groups on horizontal are toward you
- Fischer projection
- Aldo-Hexose

- A D-sugar has R configuration for highest number stereogenic center.

D-Ribose:



- Aldo-pentose
- D-sugar
- D-ribose

CHO =