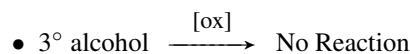
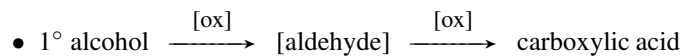
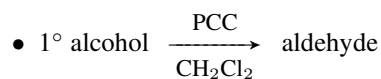
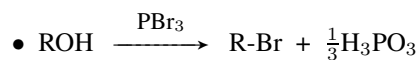
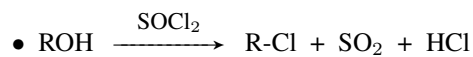


CHEM 20481 - Basic Organic Chemistry - Chapter 15 Review Alcohols, Diols, and Thiols

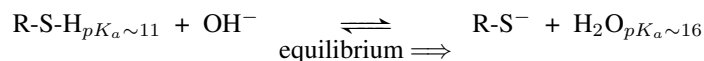
(Note: This Chapter is a continuation of Chapter 4)

Preparation of Alcohols (See also text Table 15.1, pp 626-627)

- $R_2C=CH_2 \xrightarrow[H_2SO_4]{H_2O} R_2C(OH)-CH_3$ Markovnikov Addition
- $R_2C=CH_2 \xrightarrow[2) H_2O_2, OH^-]{1) BH_3/THF} R_2CH-CH_2OH$ Anti-Markovnikov Addition
- $RCH_2X \xrightarrow{OH^-} R-CH_2-OH$ S_N2 conditions
- $R-M + \text{aldehyde/ketone} \longrightarrow \text{alcohol}$ R-M = Grignard, organolithium, or acetylenic anion
- $2 RMgX + \text{ester} \longrightarrow \text{alcohol}$ Two equivalents of 'R' added (alkoxide acts as leaving group)
- Aldehyde $\xrightarrow[\text{Pt, Pd, Ni, or Ru}]{H_2}$ or $\xrightarrow[\text{H}_2\text{O or alcohol}]{NaBH_4}$ 1° alcohol (LiAlH₄ works too)
- Ketone $\xrightarrow[\text{Pt, Pd, Ni, or Ru}]{H_2}$ or $\xrightarrow[\text{H}_2\text{O or alcohol}]{NaBH_4}$ 2° alcohol (LiAlH₄ works too)
- Carboxylic acid or ester $\xrightarrow[2) H_2O]{1) LiAlH_4}$ 1° alcohol (NaBH₄ does NOT work)
- alkene $\xrightarrow[\text{peroxide, } OH^-]{OsO_4}$ vicinal diol

Reactions of Alcohols (See also text Table 15.2, p 636 and Table 15.3, p654)**Thiols and Thioethers****R-S-H:** Thiol**R-S-R':** Thioether

Thiols are stronger acids than corresponding alcohols.

Thiolate ions (RS^-) are weak bases, but very good nucleophiles.

Many reactions analogous to reactions of alcohols, but oxidation is different:

