

Ch 11 Reactions of Alcohols

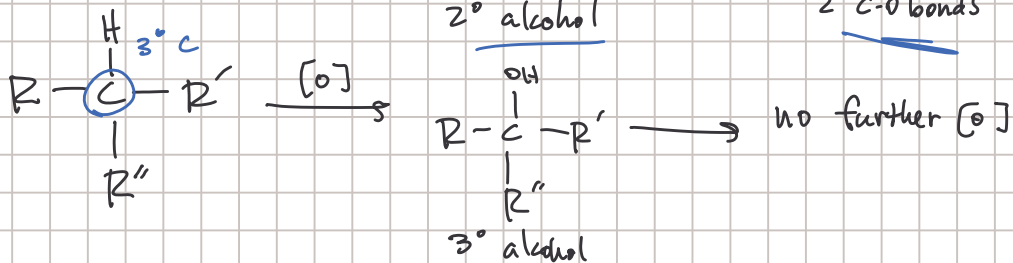
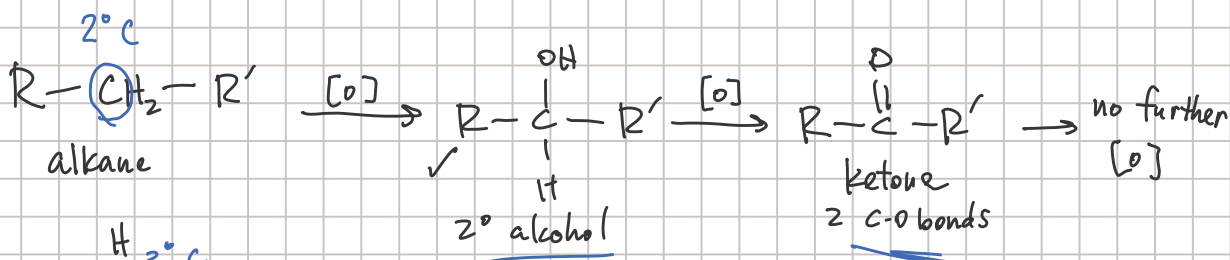
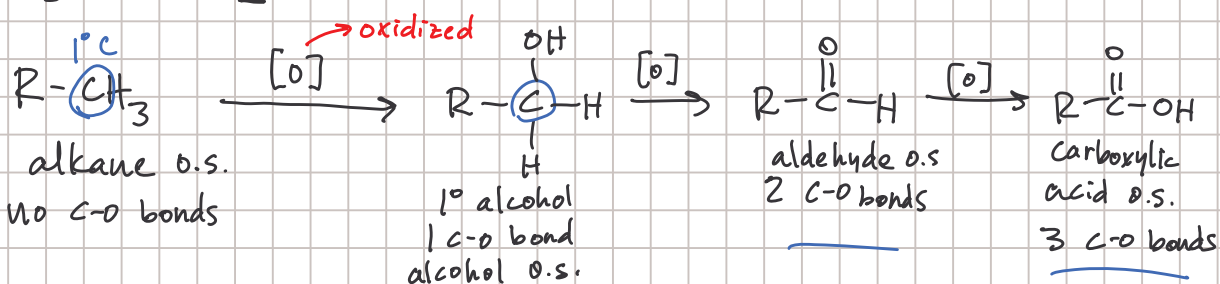
Note Title

1/11/2006

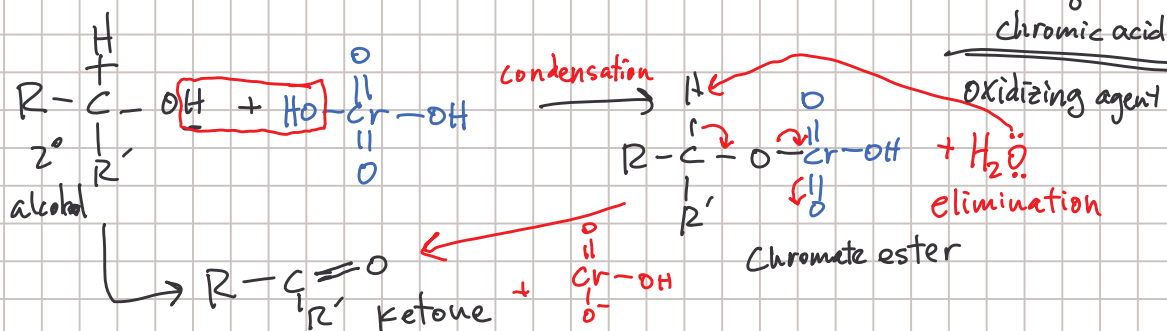
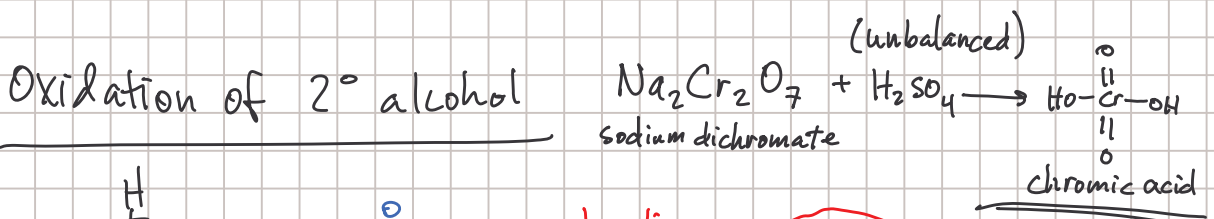
oxidation: addition of C-O bonds

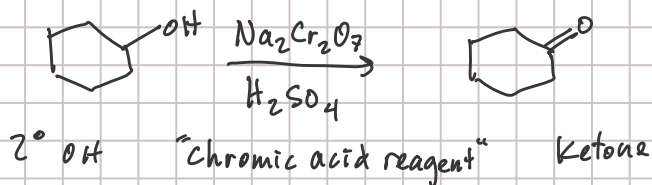
reduction: removal of C-O bonds
(or addition of H₂)

Oxidation states of alcohols

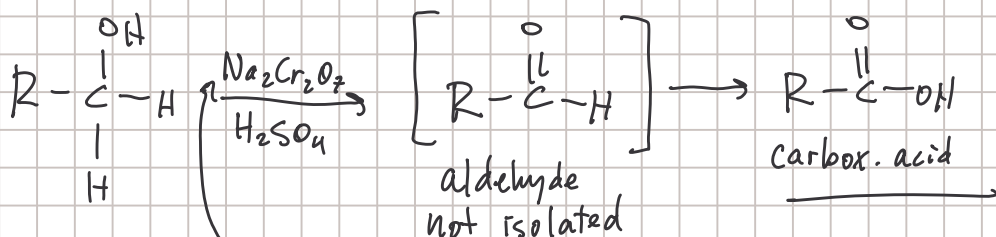


← REDUCTION →





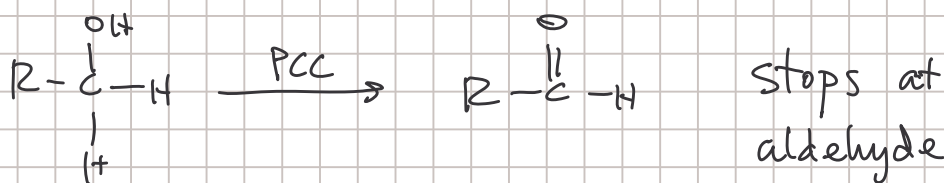
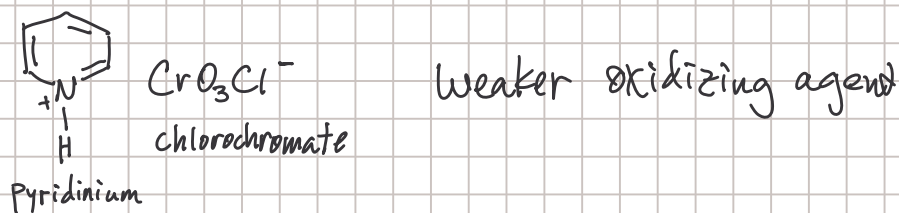
Oxidation of 1° alcohols



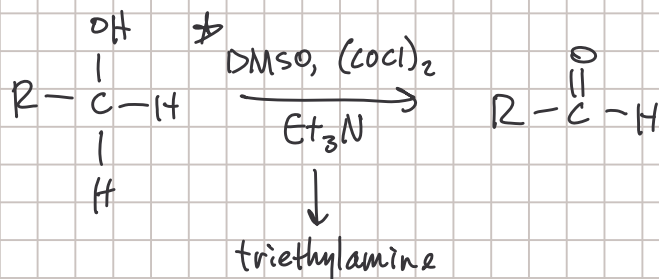
too strong of an oxidizing agent to stop at aldehyde

to stop @ aldehyde: need weaker oxidizing agent

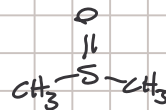
PCC pyridinium chlorochromate



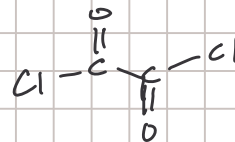
Swern oxidation



DMSO: dimethyl sulfoxide



$(\text{COCl})_2$: oxalyl chloride



* higher yield

* no Cr waste

1° alcohol → aldehyde PCC or Swern

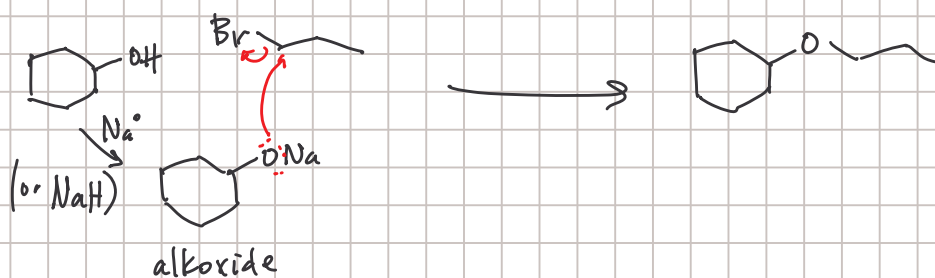
1° alcohol → carbox acid chromic acid

2° alcohol → ketone chromic acid, PCC, or Swern

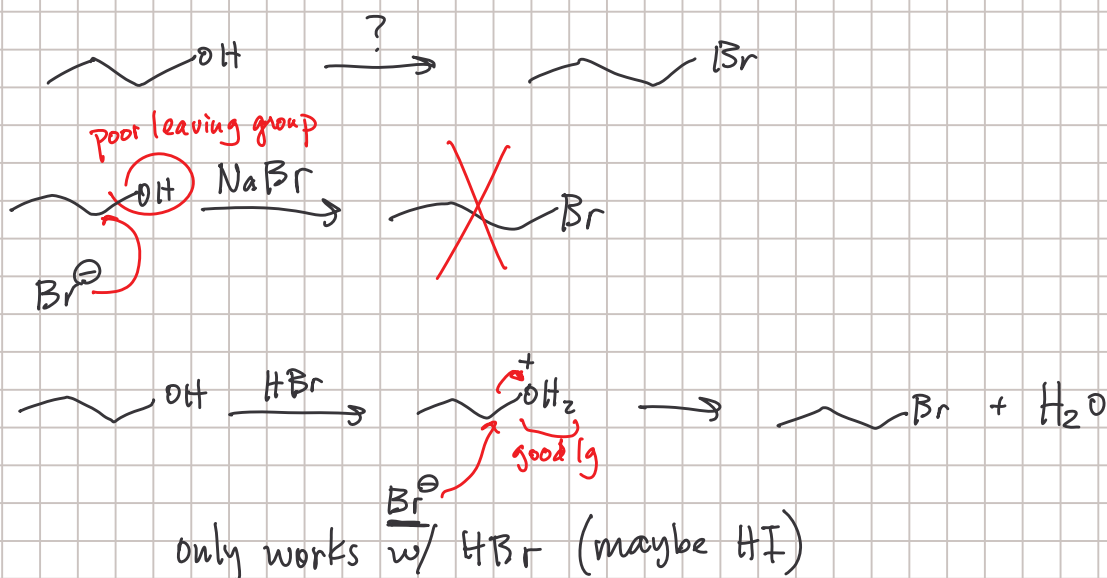
compare w/ reductions (NaBH_4 & LiAlH_4)

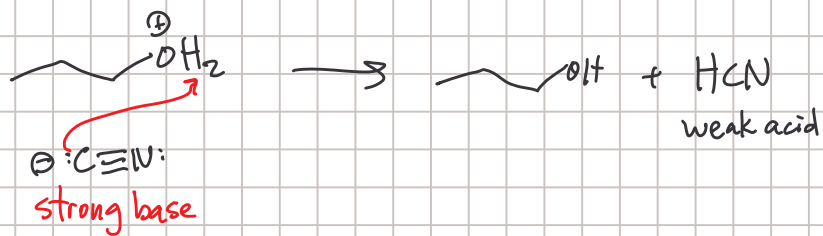
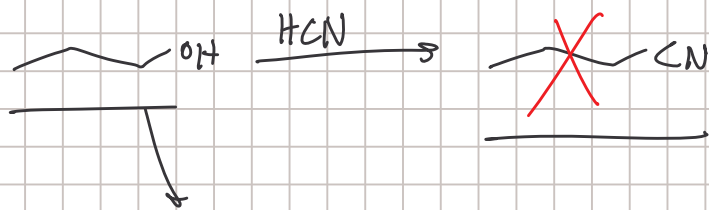
Nucleophilic substitution w/ alcohols

alcohol: can be made into excellent nucleophile

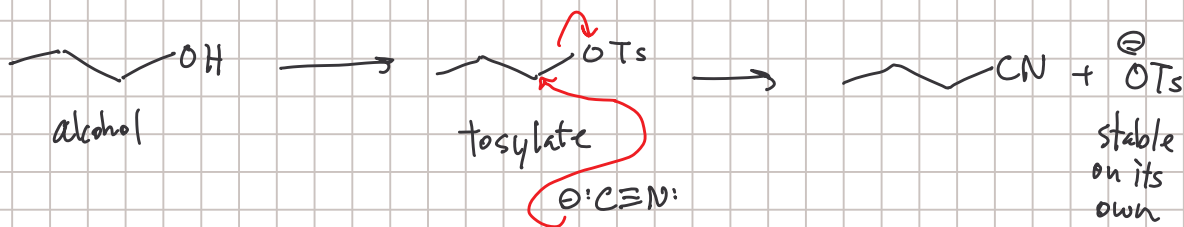
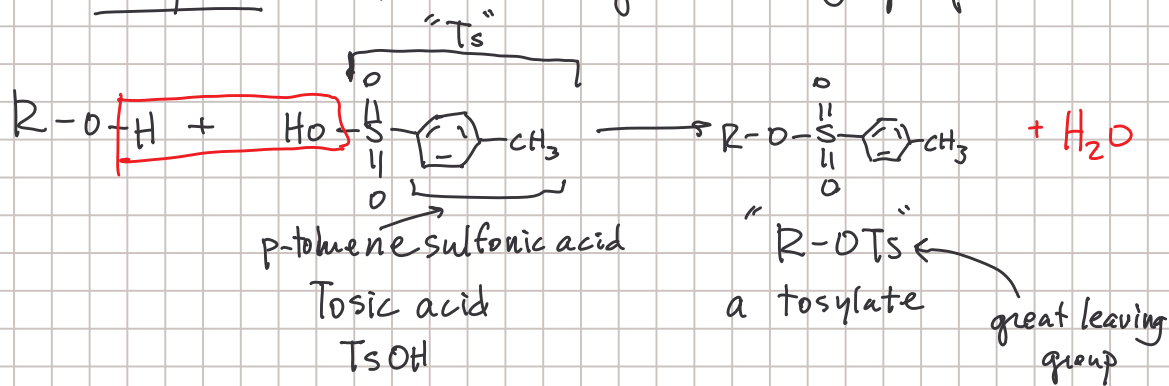


alcohols can be electrophiles under certain conditions





Make tosylate to make OH a good leaving group



TsCl : tosic chloride

