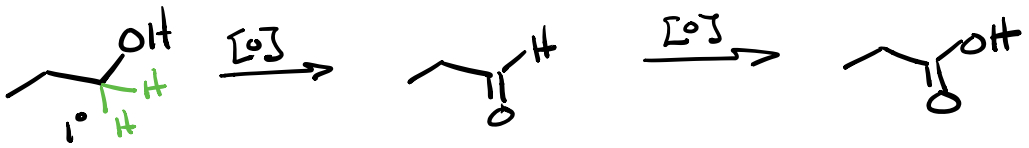
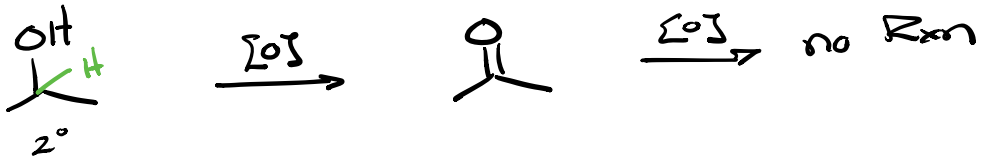
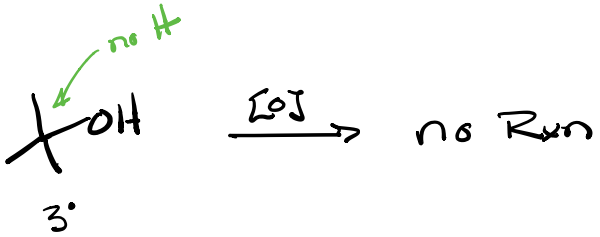
Oxidation



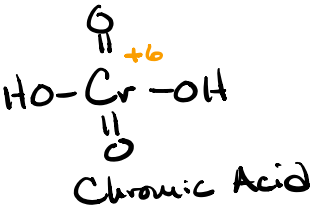




Jones Oxidation (Jones Reagent)

CrO_3, H_2SO_4 / Acetone

$Na_2Cr_2O_7$ / H_2SO_4 / H_2O

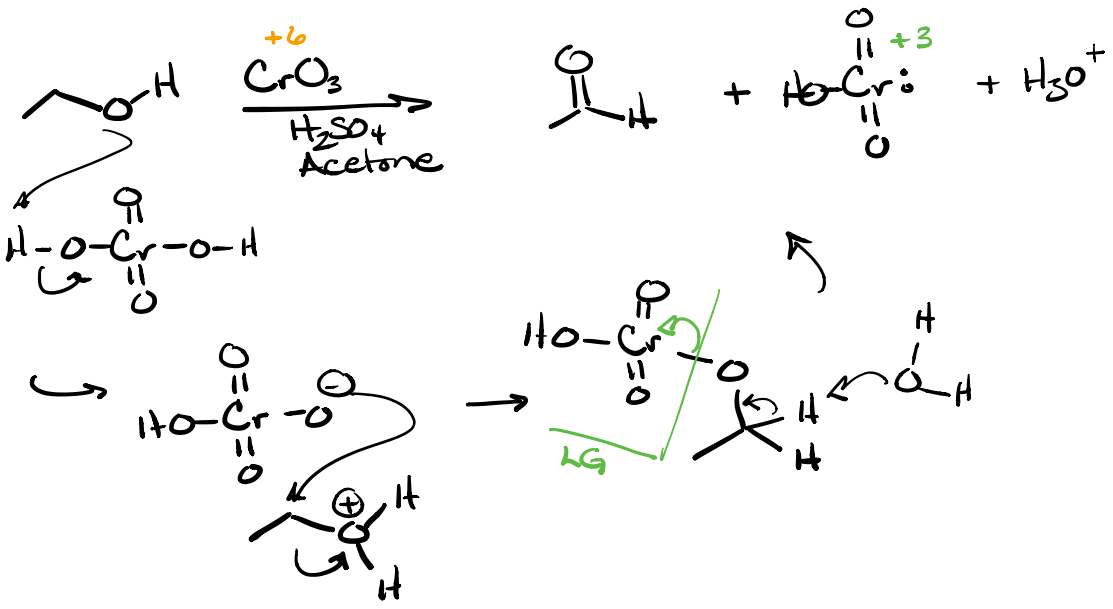


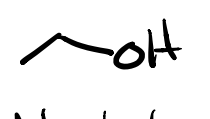
Chromic Acid

Hexavalent Chromium

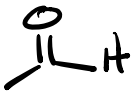
"known Carcinogen"

Mechanism of Oxidation



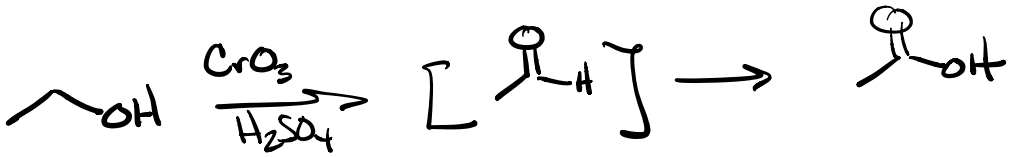


Alcohol

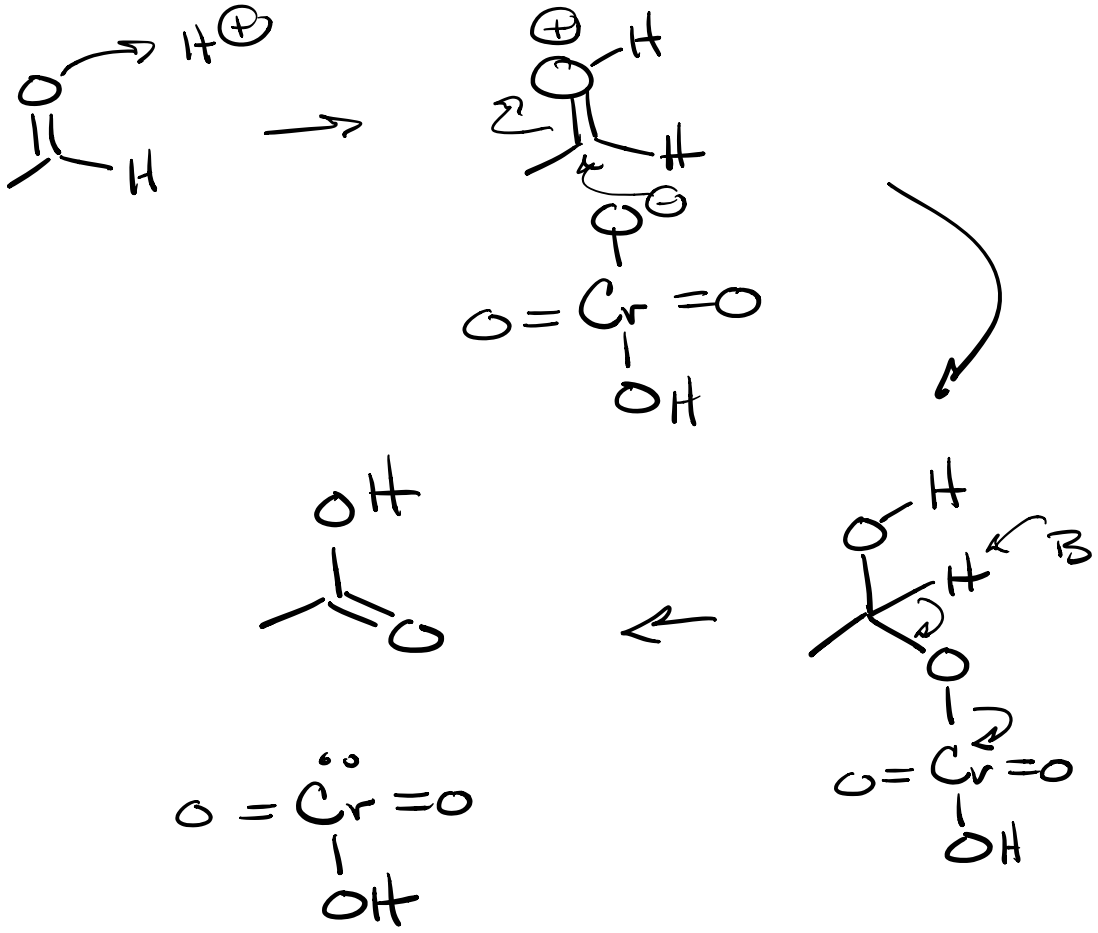


Aldehyde

more reactive towards oxidation

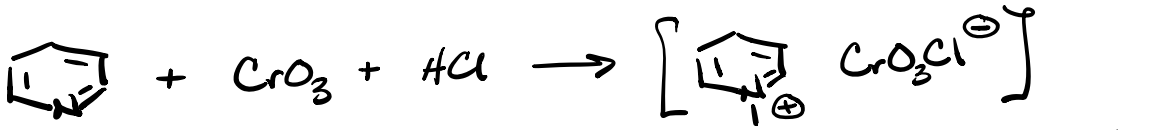


no way to stop @ aldehyde



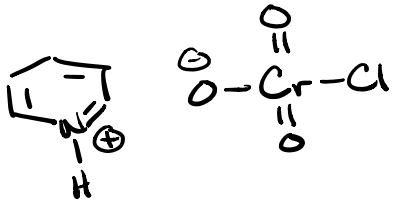
If we could reduce the acidity of the oxidizing agent we could stop at the aldehyde.

Corey's Reagent

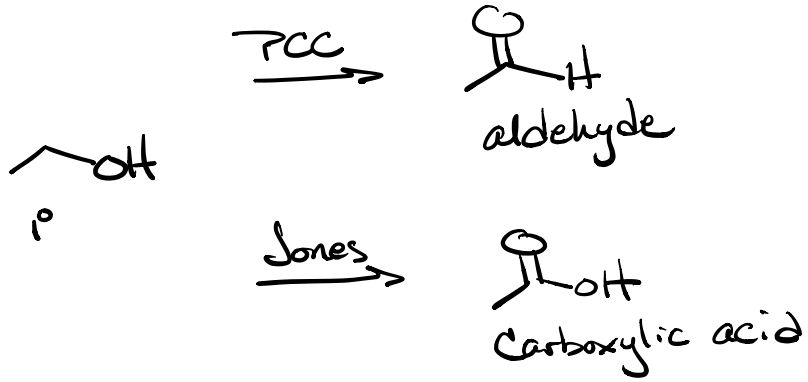


Pyridinium chlorochromate

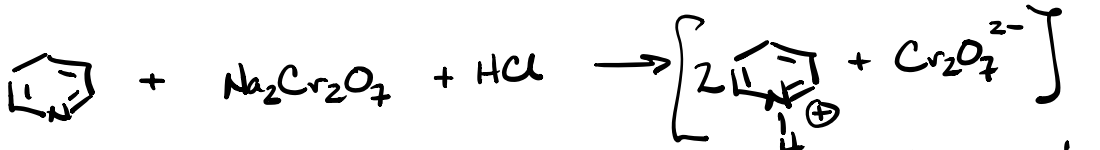
PCC



Complex ion, but not acidic

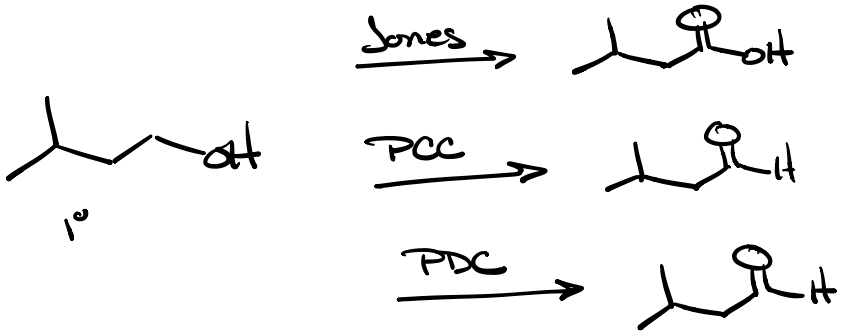


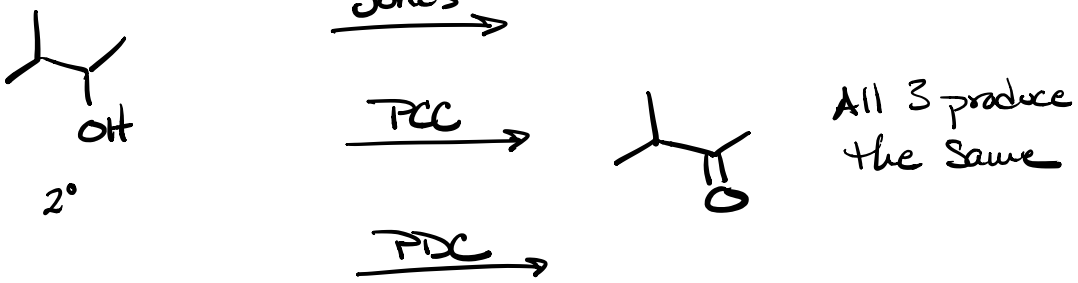
Cornforth Reagent



Pyridinium dichromate

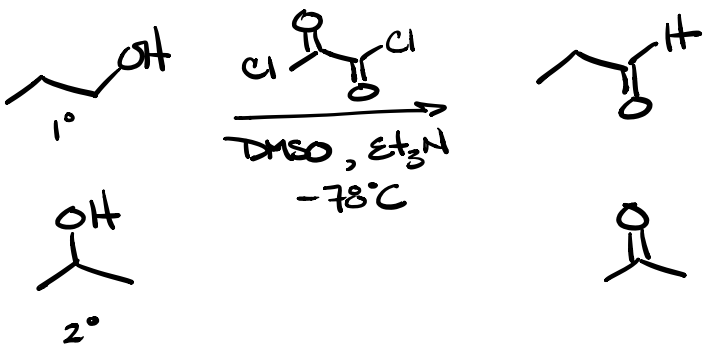
PDC



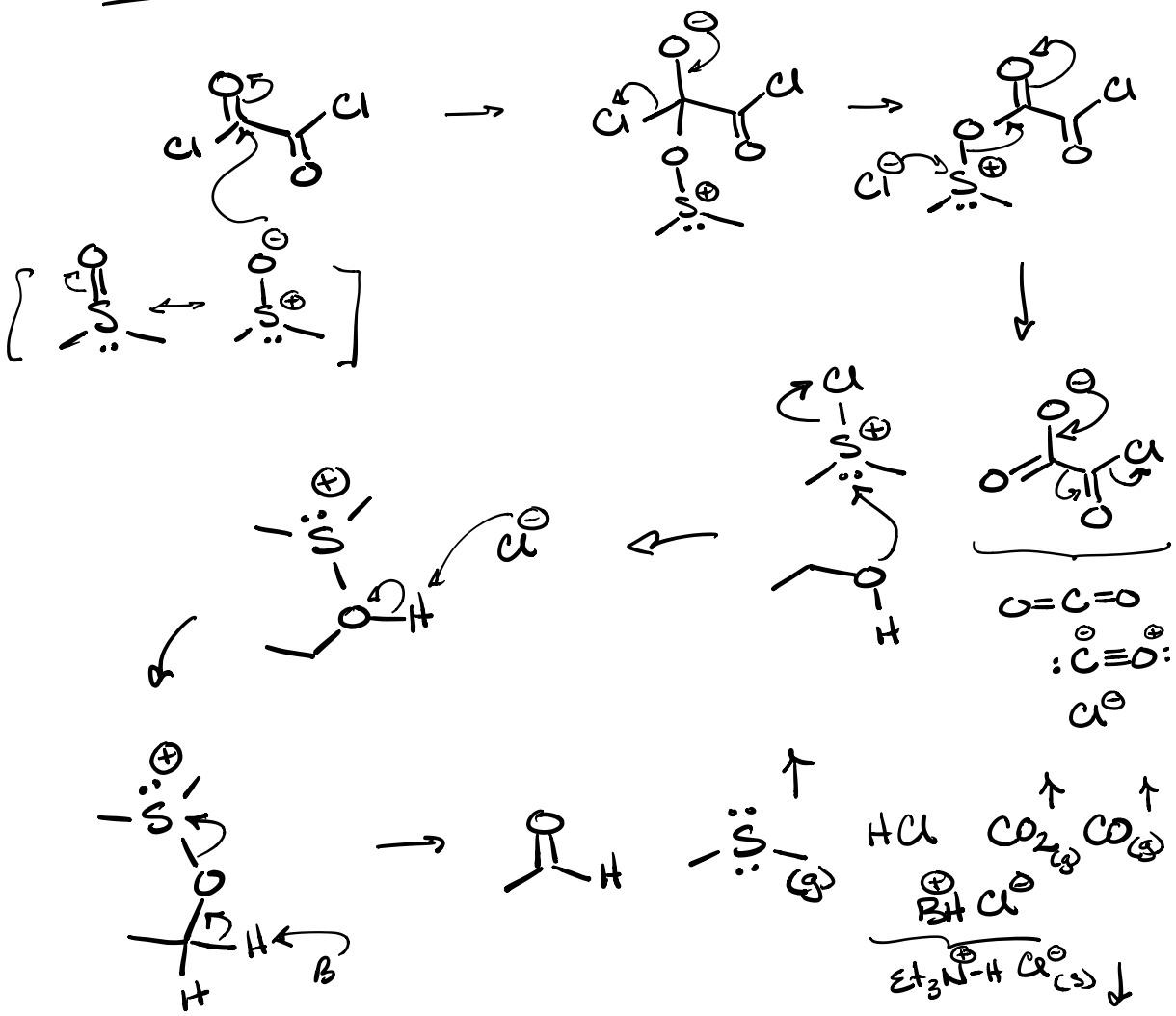


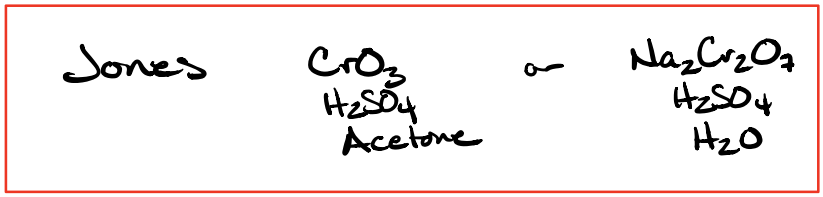
* All use Cr^{6+}

Swern Oxidation — mild



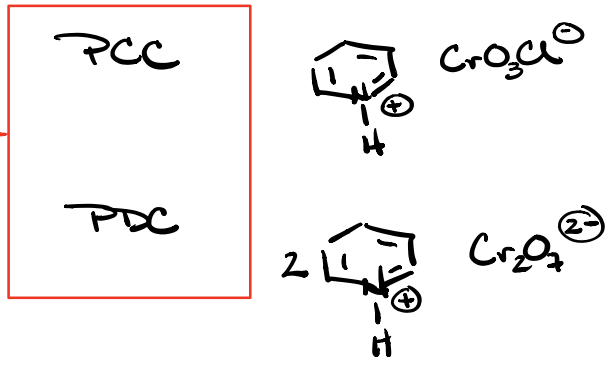
mechanism

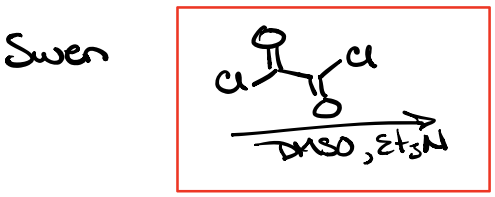




50/50 Name Formula

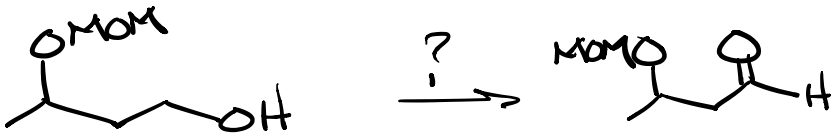
Name more Common

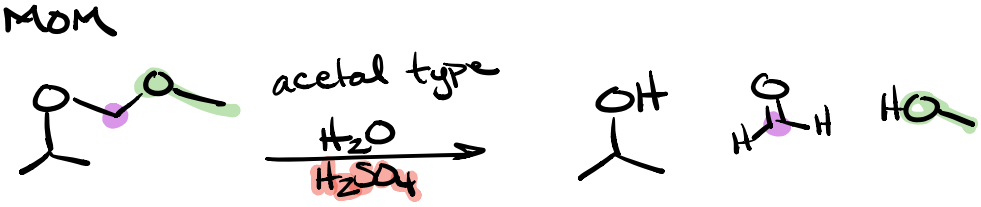


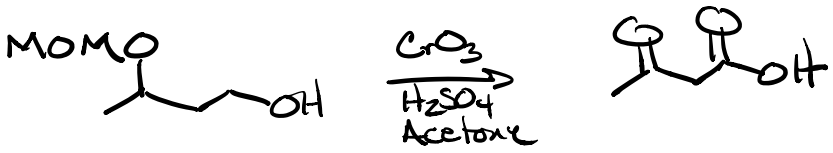


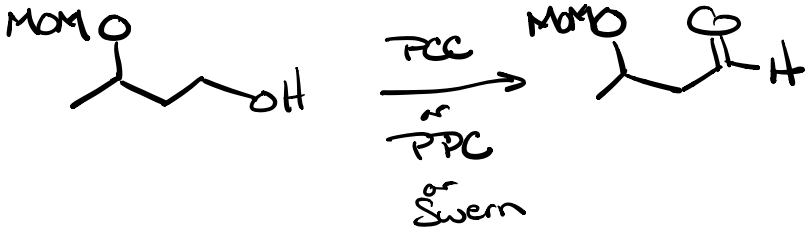
Reagent more Common

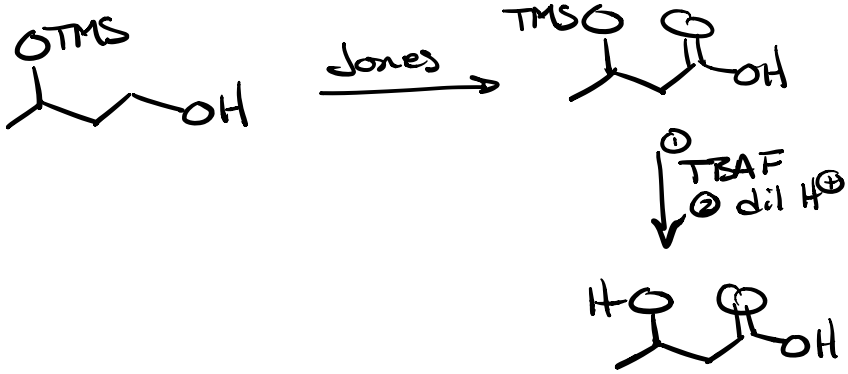
Question – what are the advantages or disadvantages of the reagents

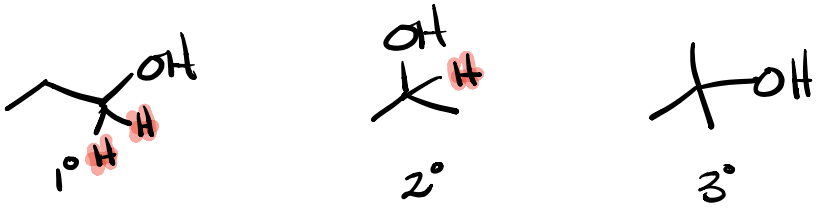






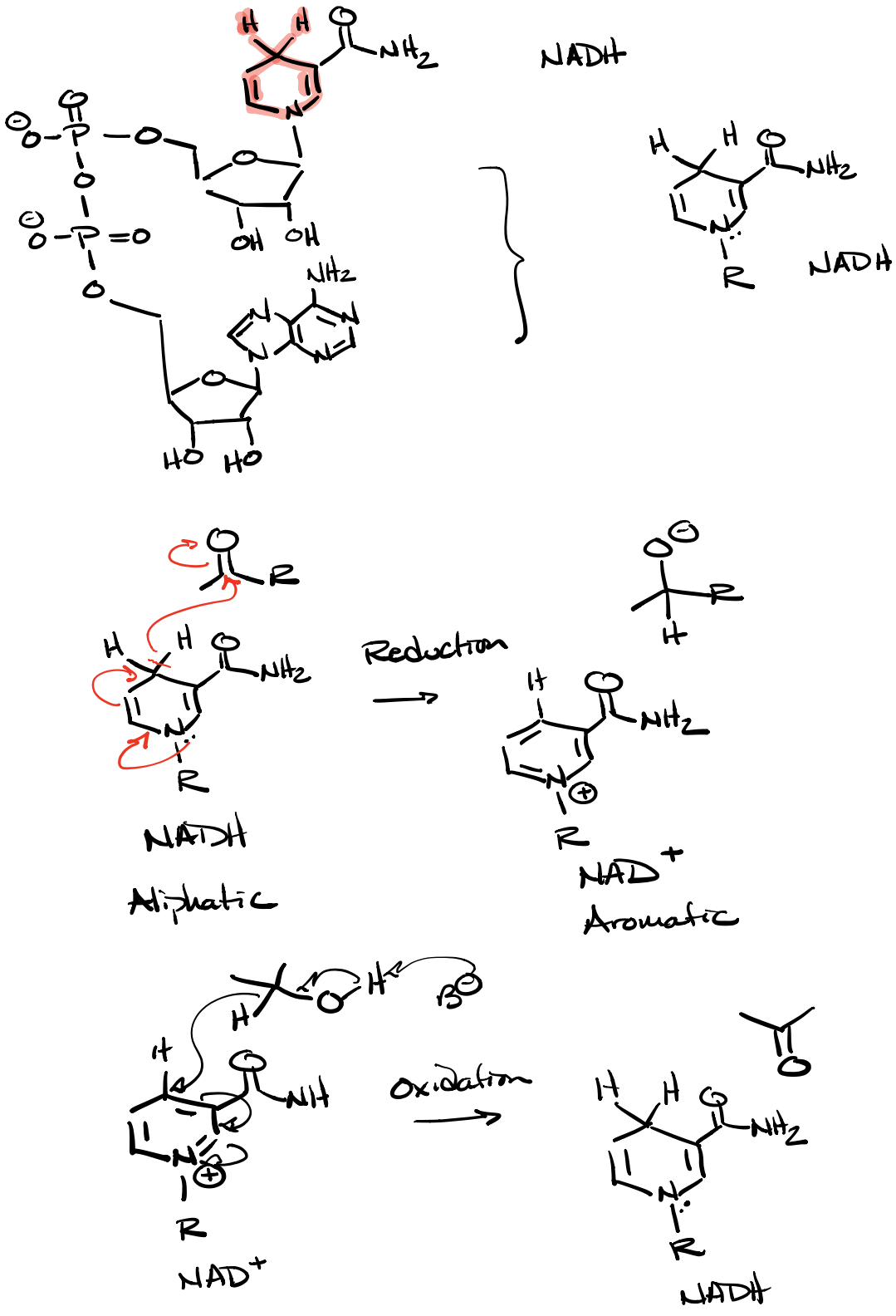


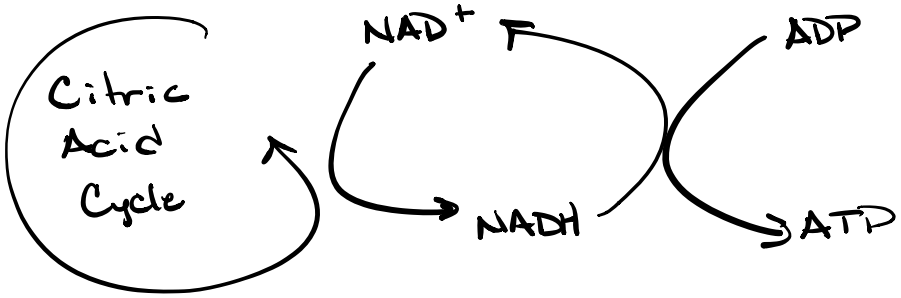




Not influenced by Sterics

⇒ only dependent on the geminal protons

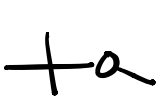

NADH
NADH
NADH
Aliphatic
Reduction
NAD+
Aromatic
Oxidation
NAD+
NADH


Citric
Acid
Cycle
NAD+
NADH
ADP
ATP

Chapter 14 Ethers & Epoxides

Nomenclature

ethyl methyl ether



tert-butyl methyl ether

diethyl ether

1-methoxy-3-methylbutane

Common Solvents

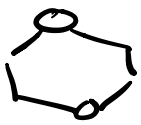
Et_2O

diethyl ether

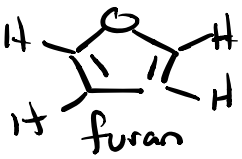
THF

tetrahydrofuran

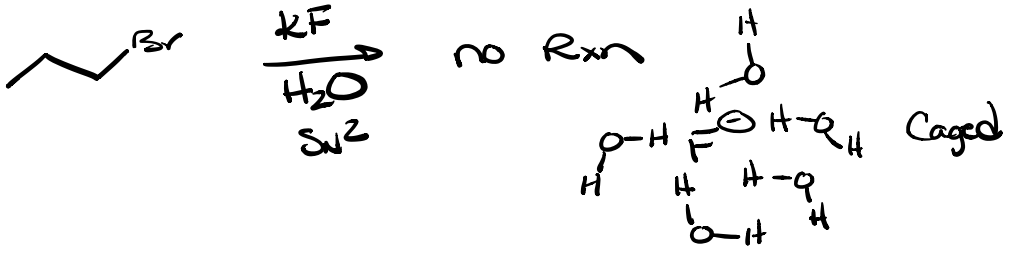
Dioxane

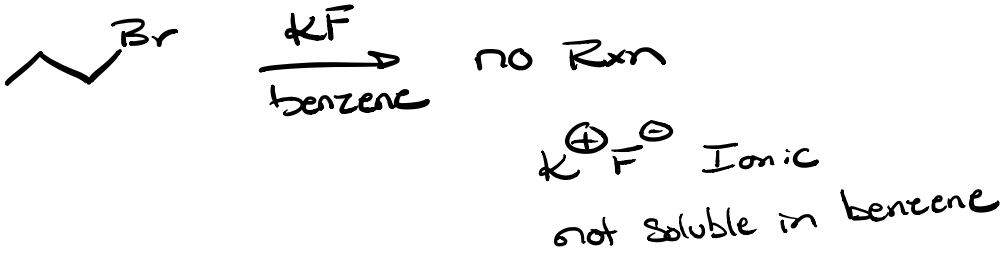


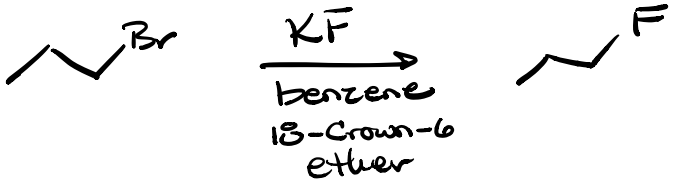
all aprotic polar



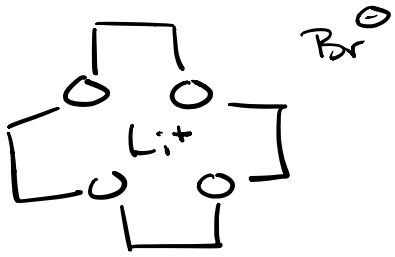
furan







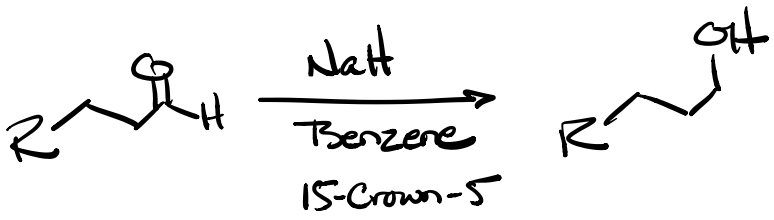
Crown Ethers



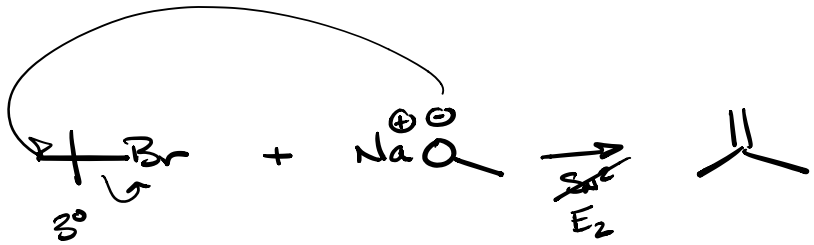
12-Crown-4 Li^+

15-Crown-5 Na^+

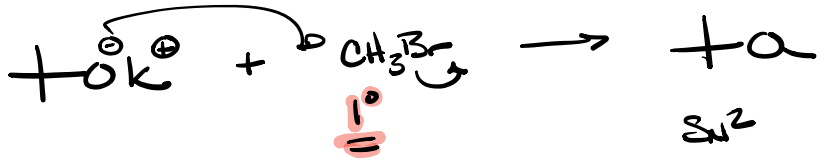
18-Crown-6 K^+



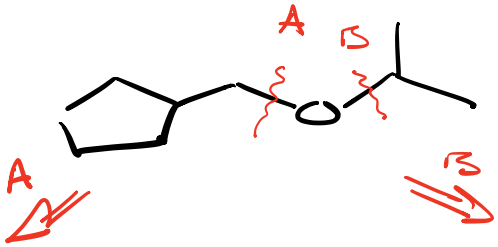
A)

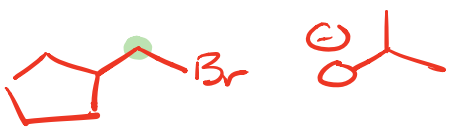


B)



Williamson Ether Synthesis





1°

SN2

X 2°