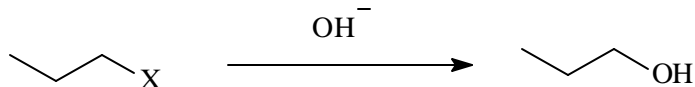


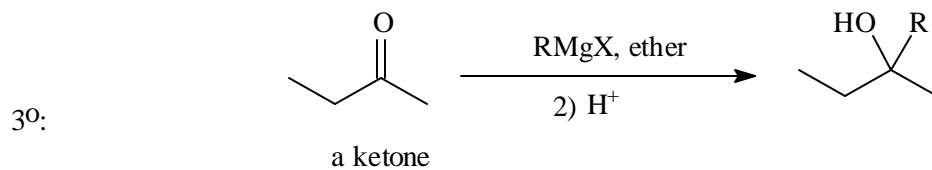
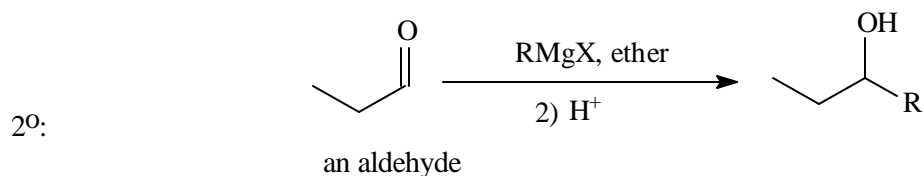
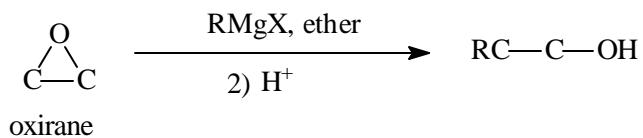
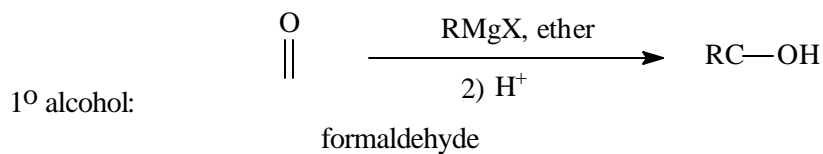
## Alcohol Reaction Summary

### Preparation

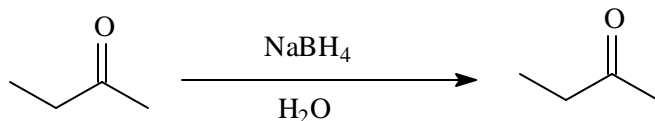
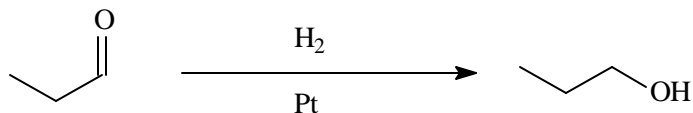
1) Substitution – a primary alkyl halide plus  $\text{OH}^-$  **without heat**



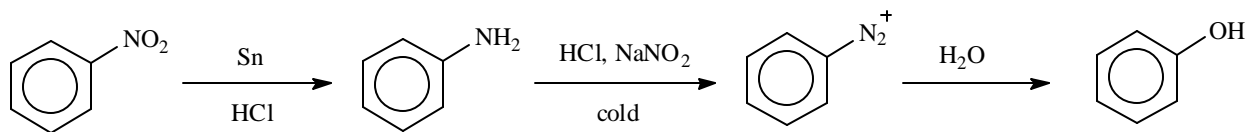
2) Grignard reactions – a Grignard reagent is  $\text{RMgX}$



3) Reduction of aldehydes or ketones – use  $\text{H}_2/\text{Pt}$  or  $\text{NaBH}_4/\text{H}_2\text{O}$

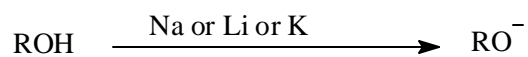


4) Preparation of **Phenol**



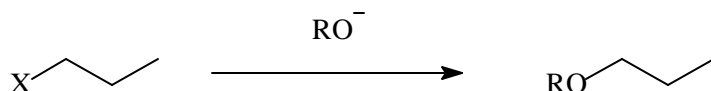
## Reactions

1) Alkoxide formation -- an alcohol plus an alkali metal (Li, Na, or K)

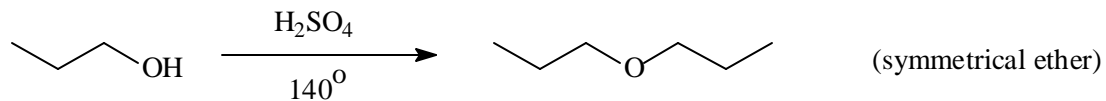


2) Ether formation:

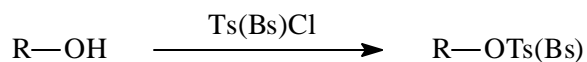
1° alkyl halide plus an alkoxide ion:



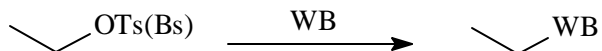
Alcohol + acid at 140°C:



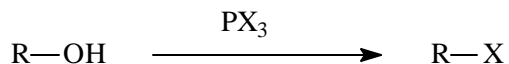
3) Reaction with tosyl chloride (TsCl) or brosyl chloride (BsCl)



\*\*\* -OTs and -OBs are good leaving groups, so you can substitute weak bases for them \*\*\*



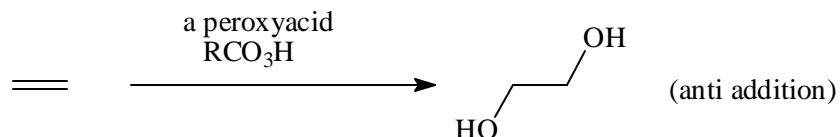
4) Substitution for OH with Br or Cl using  $\text{PX}_3$  (X = Br or Cl)



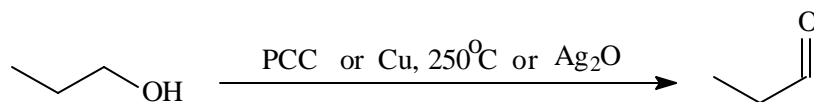
5) Substitution for OH with Cl using  $\text{SOCl}_2$  (sulfonyl chloride)



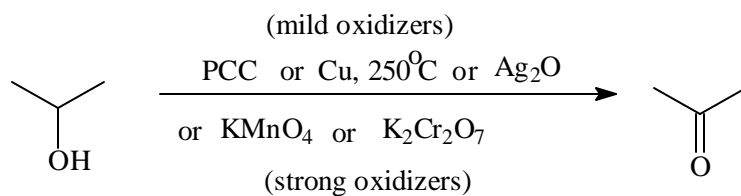
6) Glycol or Diol formation



7) Mild oxidation of a 1° alcohol to form an aldehyde (you can only use a mild oxidizer)



8) Oxidation of a 2° alcohol to form a ketone (you can use a mild or a strong oxidizer)



9) Preparation of an ester by an equilibrium reaction of an alcohol with a carboxylic acid

