

Aldehydes and Ketones List of Syntheses and Reactions

Aldehyde Synthesis

- Oxidation of 1° alcohols with PCC
- Oxidation with ozone of olefins with H on sp² carbon
- Reduction of Acid chlorides, nitrile and esters with DIBAL-H
- Isoamyl borohydride/oxidation of terminal alkynes (Anti Mark addn)
- Monoalkylation of dithiane followed by hydrolysis of thioacetal

Ketone synthesis

- Oxidation of 2° Alcohols
- Ozonolysis
- Hydration of terminal alkynes (Mark addn)
- Cuprates with acid chloride
- Alkyl lithium with acids (hydrate dianion)
- Alkyl lithium or Grignard with nitriles (imine salt)
- Dialkylation of dithiane followed by hydrolysis of thioacetal
- Aryl ketones from Friedel Crafts acylation

Reactions of Aldehydes & Ketones

- Hydrates
- Acetals
- Wittig Reaction
- Cyanohydrins
- Addition of NH_3 and derivatives (Imines and Enamines)
- Baeyer-Villiger Oxidation (RAR to ester)
- Reductions
 - Clemmensen
 - Raney nickel on thioacetals
 - Wolff-Kishner

Nitriles

Reduction gives amine

Hydrolysis gives acid