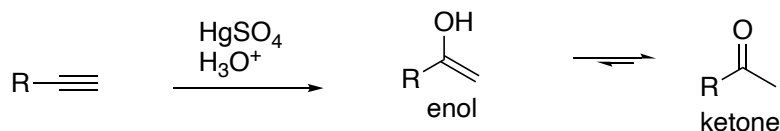
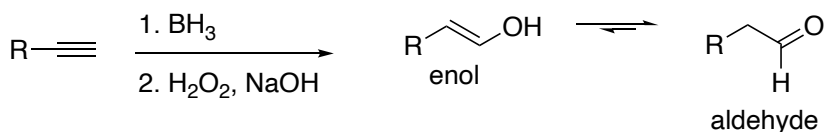
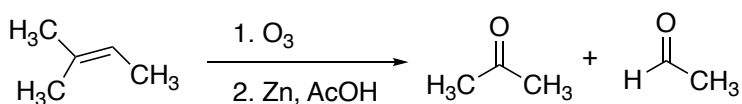
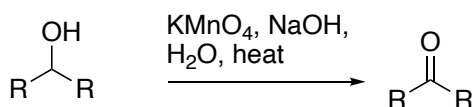
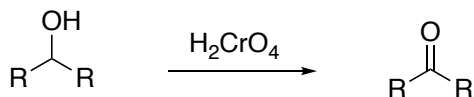
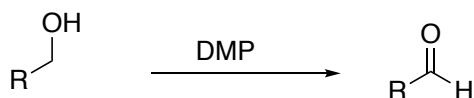
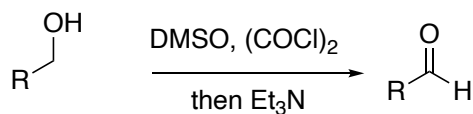
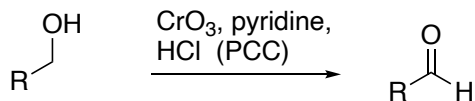


Chapter 19: Summary of Reactions and Mechanisms

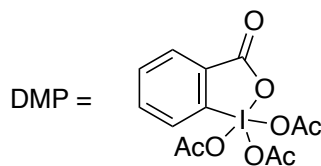
Review, on your own, nomenclature of aldehydes and ketones

Review: Preparation of Aldehydes and Ketones

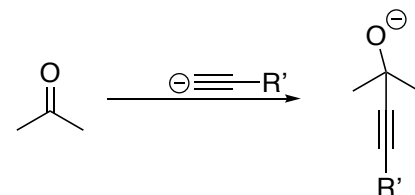
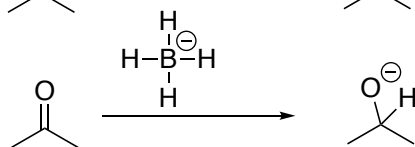
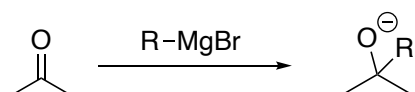

Notes:

R' = H and other groups alkyl, ph, etc.
R = is alkyl, ph, etc. generally not H

Blue numbers (i.e. 1 2 3) near mechanism arrows indicate which arrow I would draw first in that particular step.

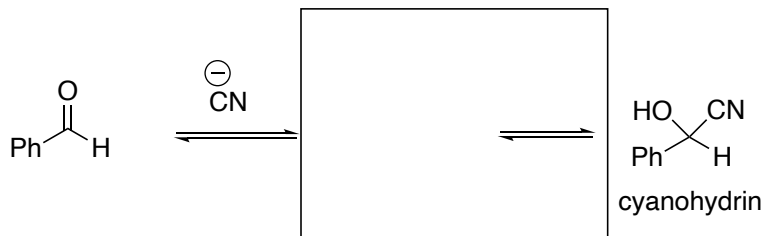
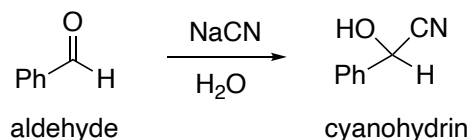


Review: Nucleophilic Addition to Aldehydes and Ketones

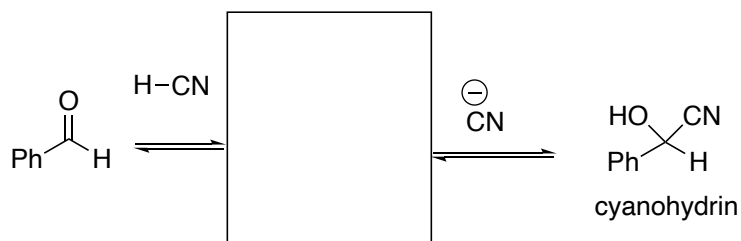
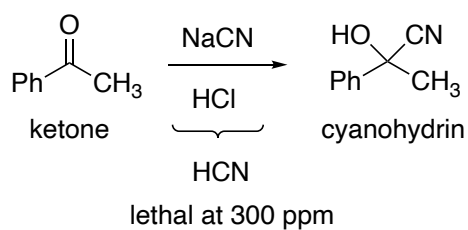


Cyanohydrin Formation

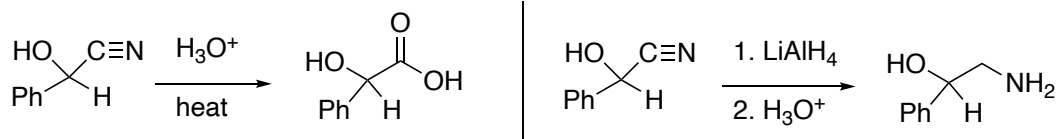
Hydrocyanation under neutral/basic conditions



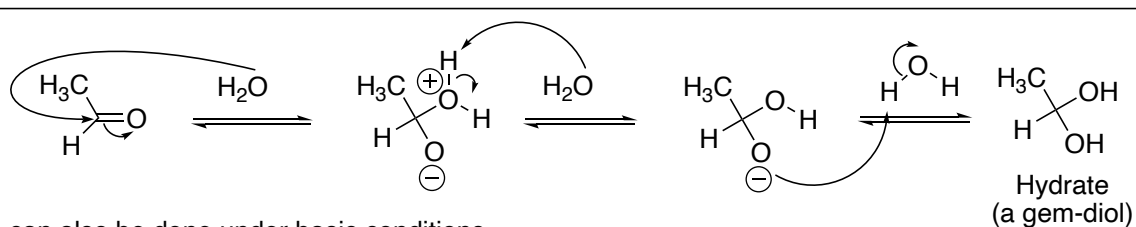
Hydrocyanation under neutral/basic conditions



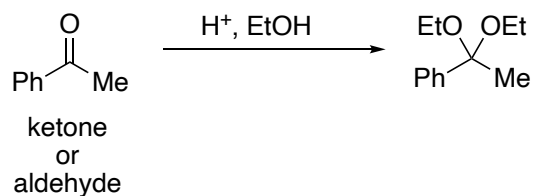
Reactions of cyanohydrins



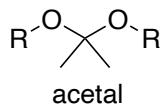
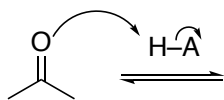
Hydrate formation (neutral conditions)



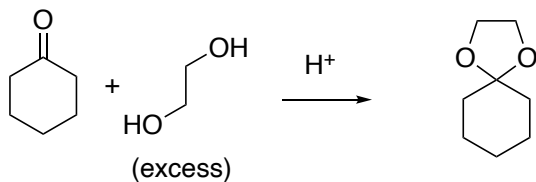
Acetal Formation



Mechanism for Acetal Formation (Acid-Catalyzed):

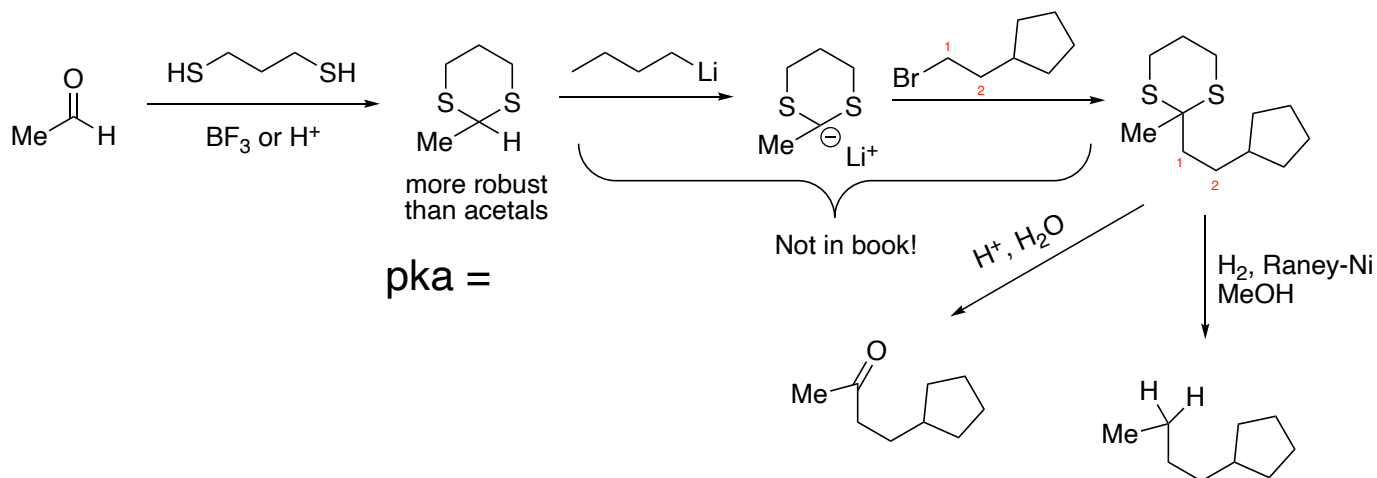


Draw out the mechanism for the following acetal formation

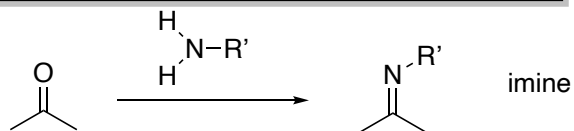


Sulfur Acetals: dithianes

Section 19.8, 4th edition Klein

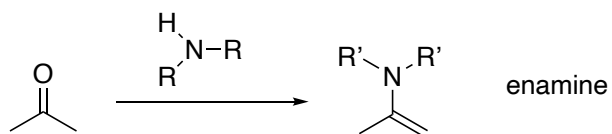


Nitrogen Nucleophiles: Imines and enamines



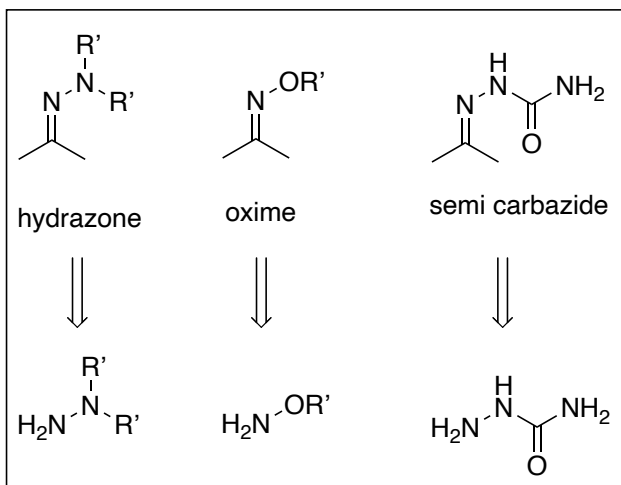
Requires:

- 1) Aldehyde or ketone
- 2) 2 N-H



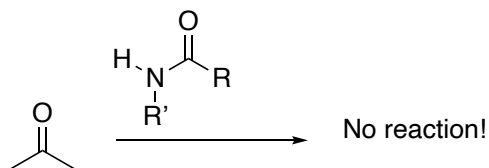
Requires:

- 1) Aldehyde or ketone
- 2) 1 alpha H
- 3) only 1 N-H



solid compounds, characterization, Wolff-Kishner Reduction

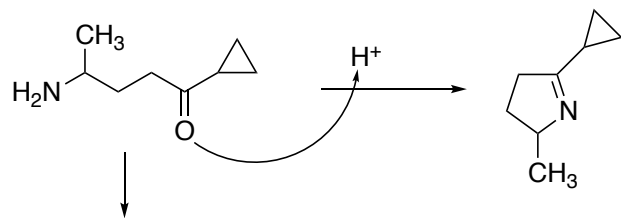
Do not use the nitrogen of amides



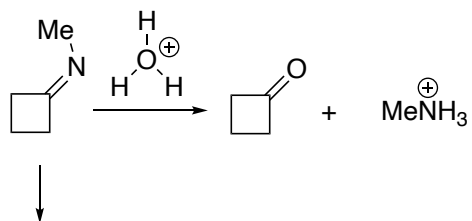
Mechanism for Imine Formation: (acid-catalyzed, best when pH between 4 and 5)

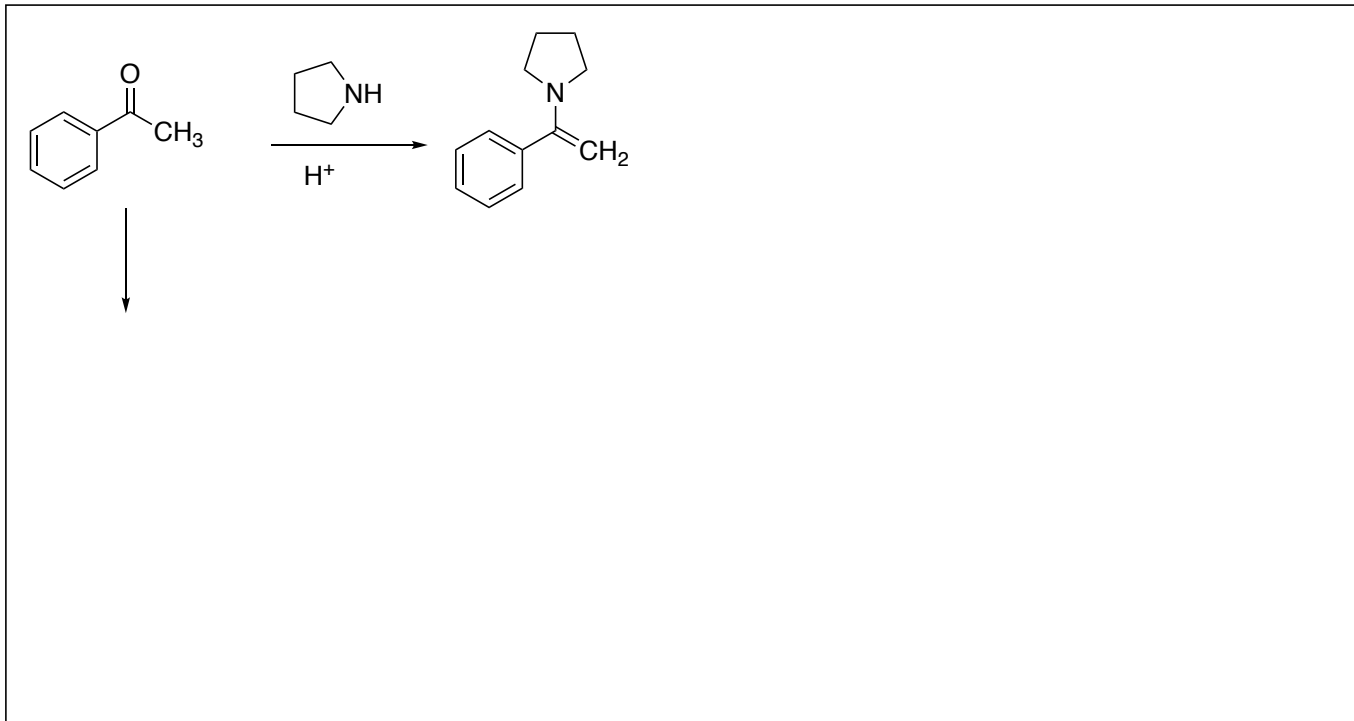


Draw the mechanism for the following imine formation:



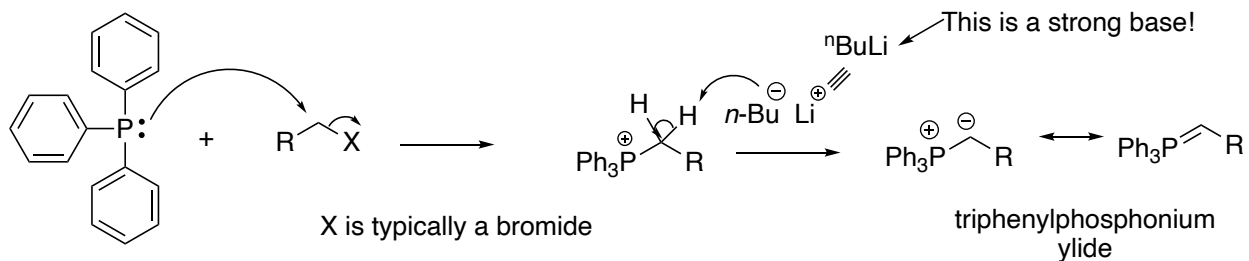
Draw the mechanism for the following hydrolysis reaction:



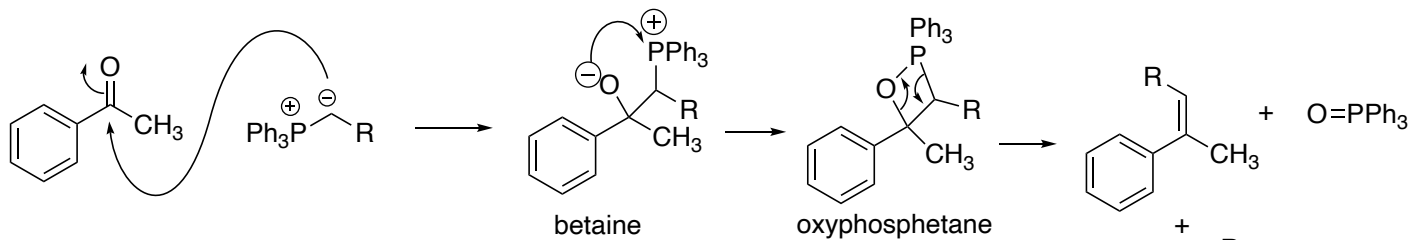


Wittig Reaction:

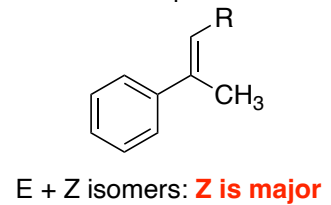
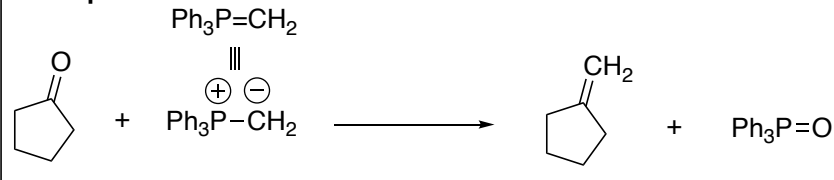
1. Ylides are prepared by S_N2 reactions of phosphines with alkyl halides followed by deprotonation.



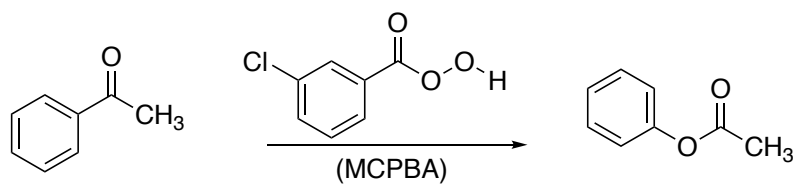
2. Ylides are nucleophilic and will react with carbonyls.



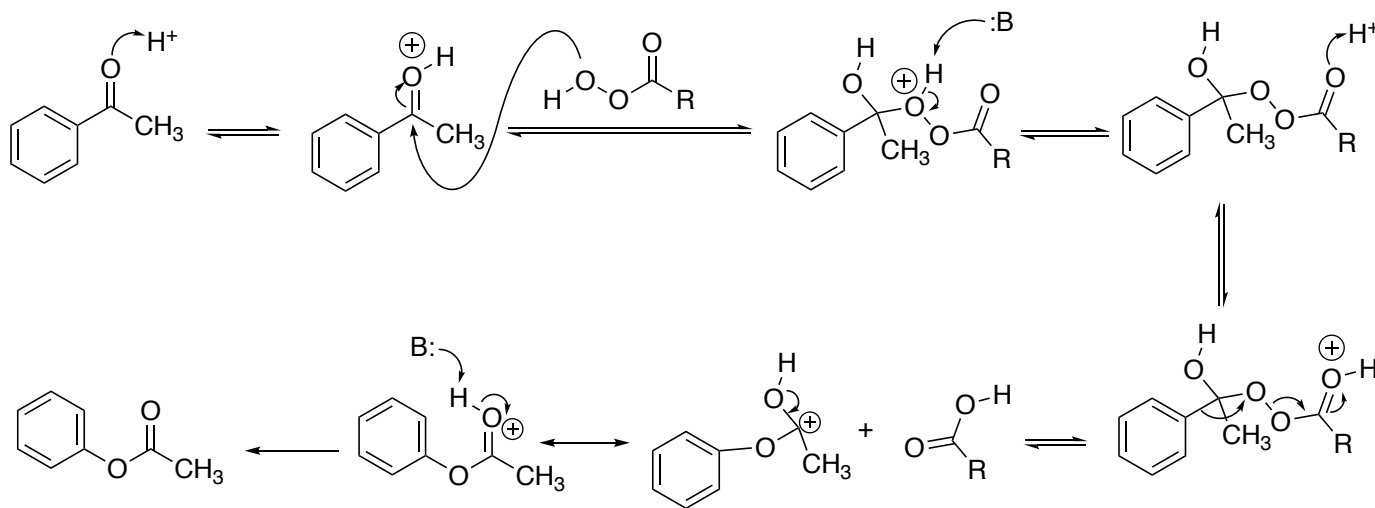
Example



Baeyer-Villiger Oxidation



Mechanism for Baeyer-Villiger



Migratory aptitude of R groups: $\text{H} > 3^\circ > 2^\circ$, $\text{Ph} > 1^\circ > \text{methyl}$

Examples :

