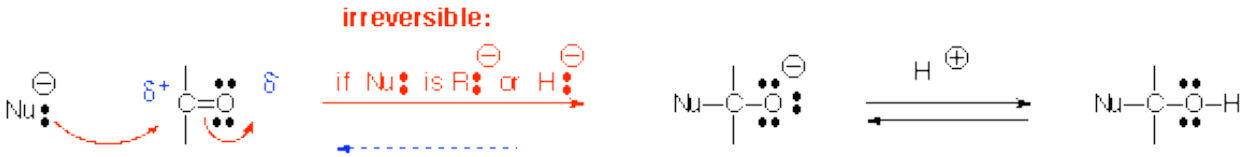
REACTIONS OF ALDEHYDES & KETONES

Most of the reactions of aldehydes and ketones can be classified as:

1. Addition to carbonyl by strong (irreversible) or weak (reversible) nucleophiles
2. Addition to carbonyl followed by an elimination (RNH2 and Wittig)
3. Reaction at alpha carbon with an electrophile

1. Addition to Carbonyl



Nu : =	ROH , RO⁻	Hemiacetal
	HOH , HO⁻	Hydrate
	HCN , CN⁻	Cyanohydrin
	R–NH$_2$	Aminal

Usual Final Product for all but :

R–NH$_2$

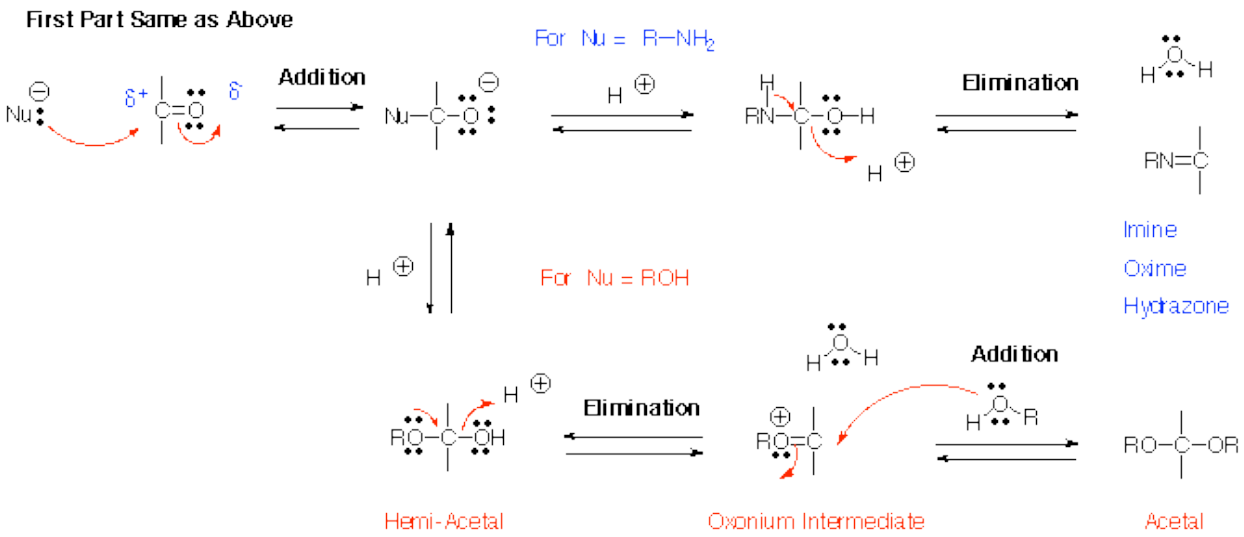
ROH excess

which react further to form

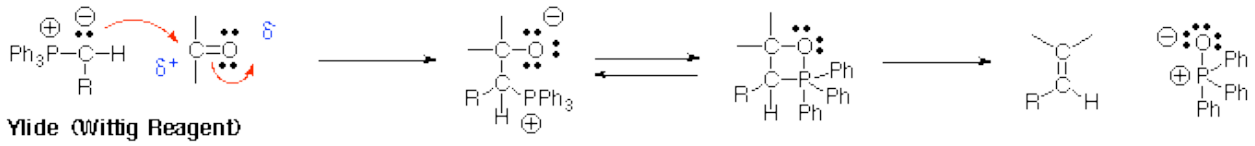
imines (see below)

or acetals (OH replaced by OR)

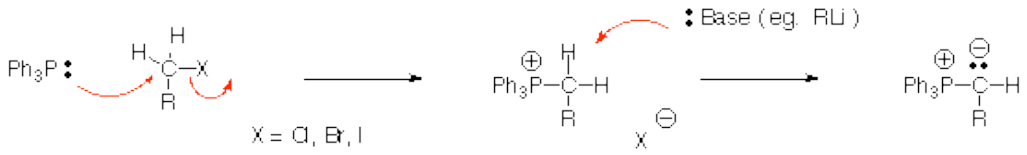
2. Addition to Carbonyl Followed by Elimination (for RNH2 and ROH Excess)



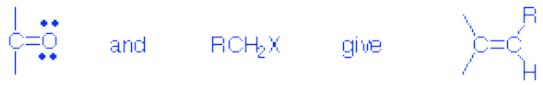
3. Wittig Reaction (also an Addition-Elimination)



Wittig Reagent can be formed by:



Overall Transformation:



4. Reaction at Alpha Carbon