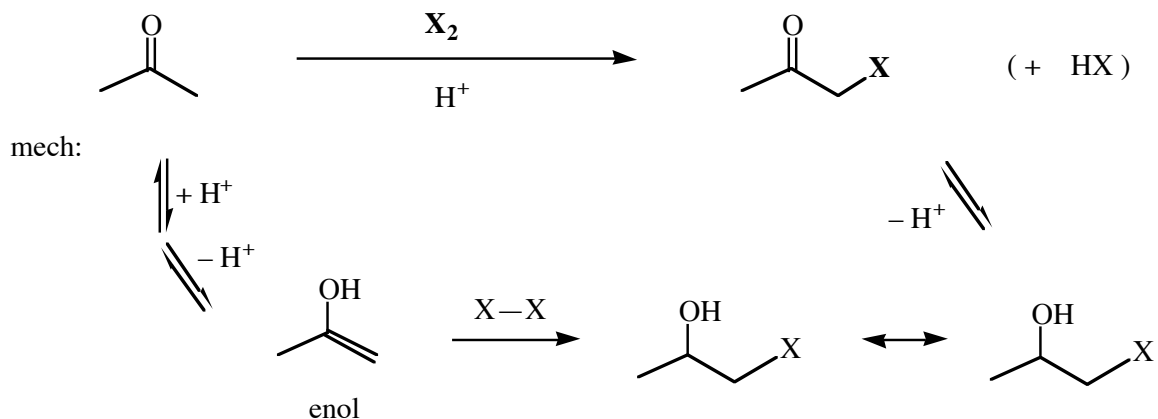


Lecture outline

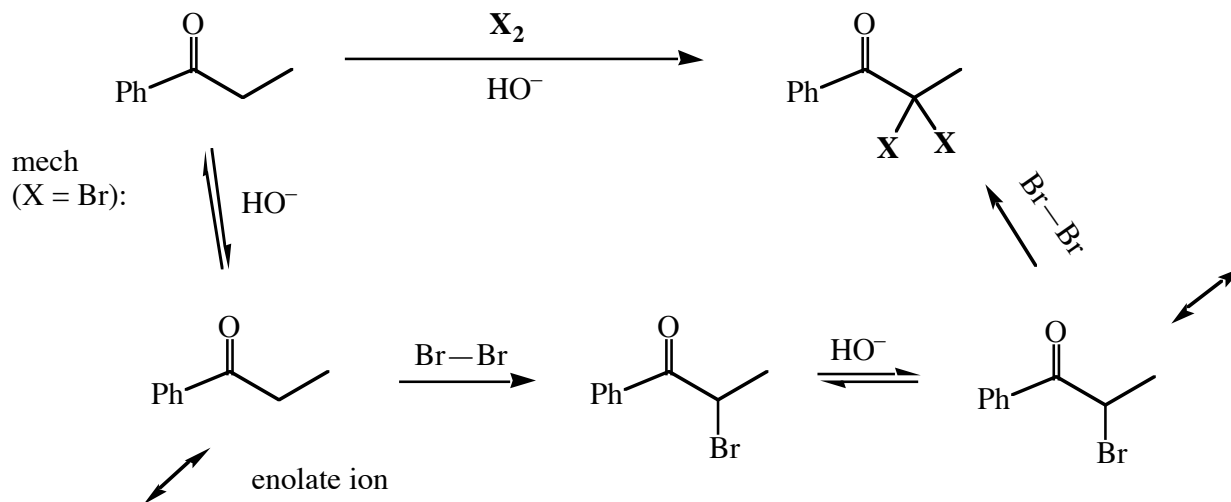
3. Halogenation

a. acid-catalyzed — one α -H is replaced with halogen



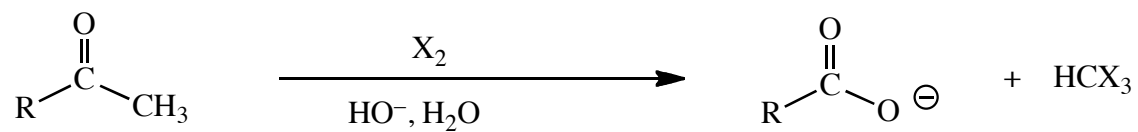
How does a halogen affect the stability of the key cationic intermediate?

b. base-induced — *all* α -Hs are replaced with halogen

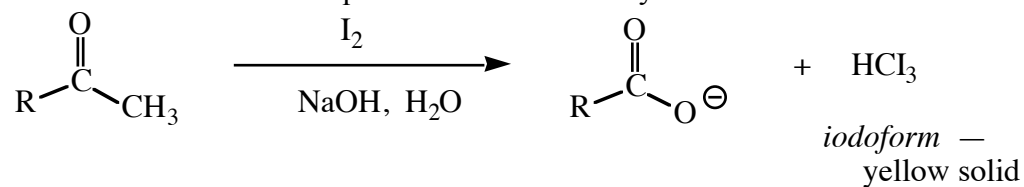


How does a halogen affect the stability of the key anionic intermediate?
(compare the first enolate ion with the second)

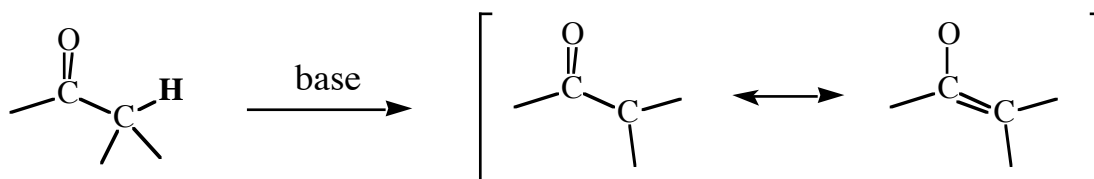
haloform rxn — occurs only with methyl ketones



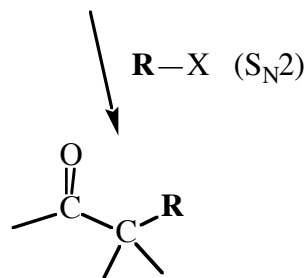
The iodoform rxn is a qualitative test for methyl ketones...



4. Alkylation of enolate ions



rxn occurs mostly
at C, even though O
carries more charge

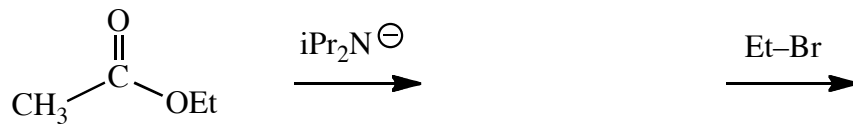


rxn requires a *strong, non-nucleophilic* base. (Why *strong*? Why *non-nuc*?)

— these bases *will* work:

— these bases *will NOT* work:

e.g.,

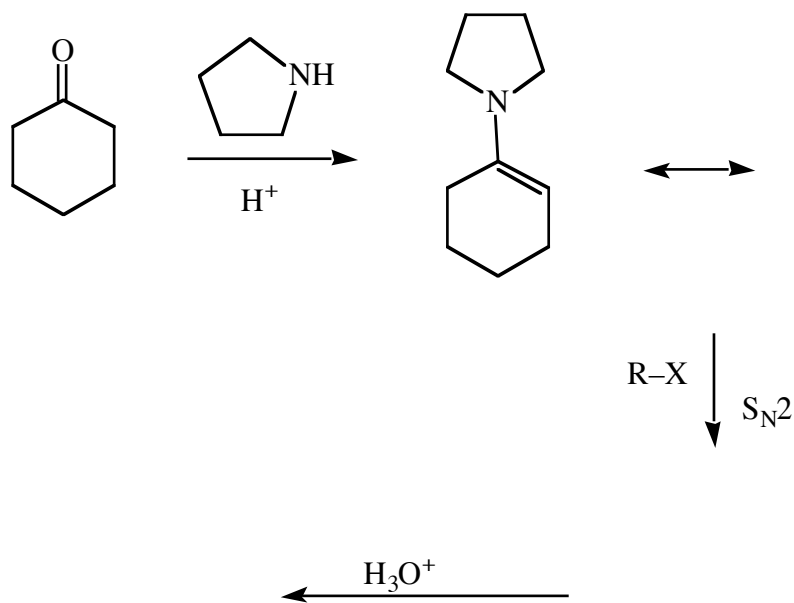


of course, this can be repeated is desired ...

... and the alkylated ester can then be hydrolyzed to the acid or converted to myriad other compounds

Cs between two carbonyl groups are even easier to alkylate, e.g.,

5. Alkylation of **enamines** is an alternative to direct alkylation of ketones —



alkylated ketone (+ amine)

(iminium ion)