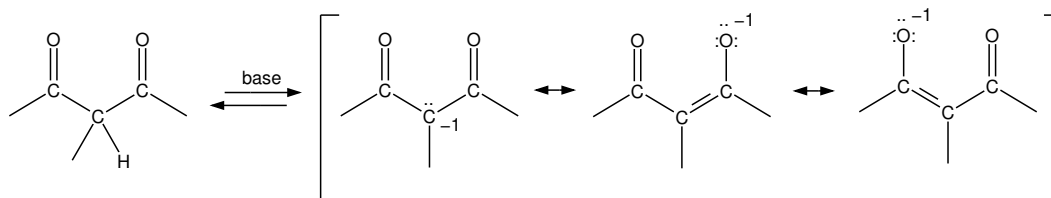


CHEM 20482 - Basic Organic Chemistry - Chapter 21 Review

Ester Enolates

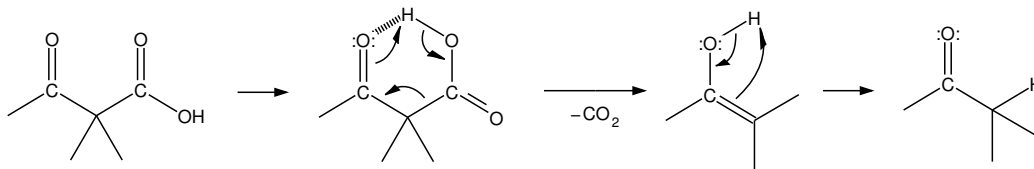
Key Features

- Acidity of C_{α} -H in β -dicarbonyls

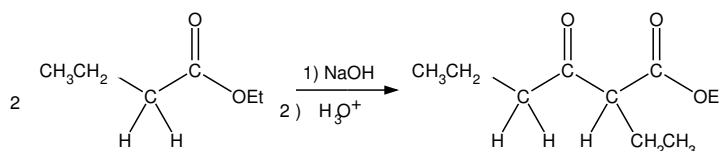
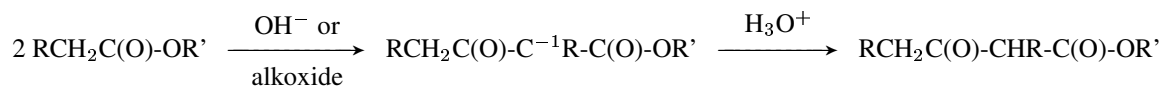


	Most acidic	<i>neutral compounds</i>		Least Acidic
	β -dicarbonyls	water/alcohols	C_{α} -H (aldehydes/ketones)	NHR_2
pK_a	9-13	~ 16	16-20	36
	Least basic	<i>conjugate base</i>		Most basic

- Decarboxylation of β -ketoacids



Claisen Condensation

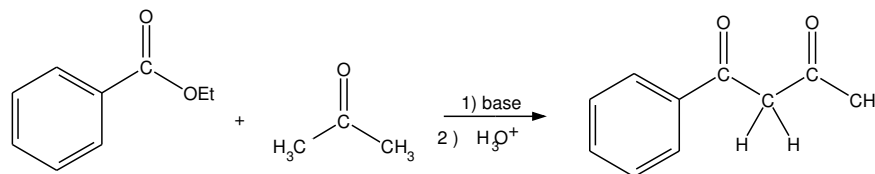


Dieckmann Reaction: Intramolecular cyclization of diester via Claisen condensation to make 5- or 6-membered ring.

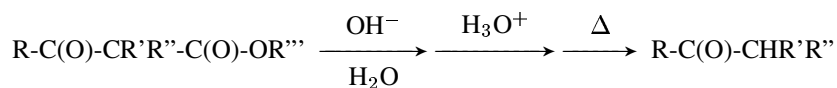
Mixed Claisen Condensation: Practical if only one ester has C_{α} -H

Acylation of Ketones

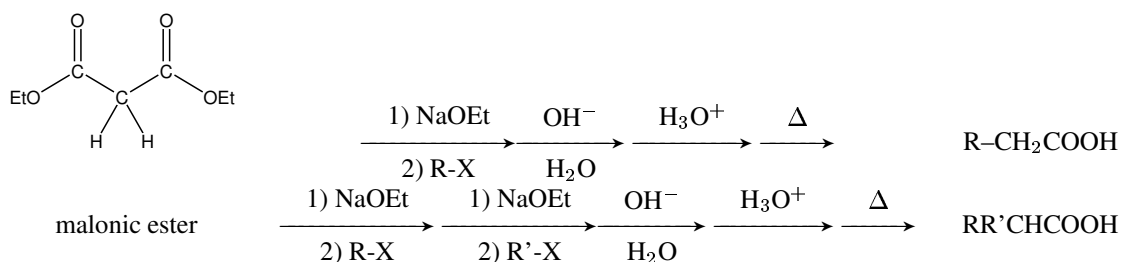
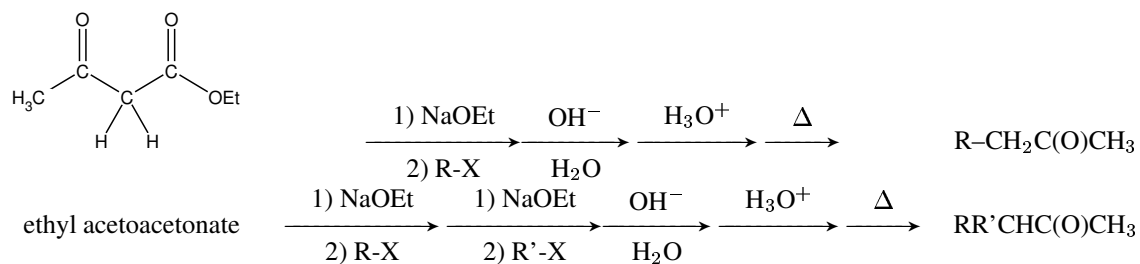
Mixed Claisen condensation where nucleophile is a ketone (or aldehyde) which attacks an ester without any C_{α} -H



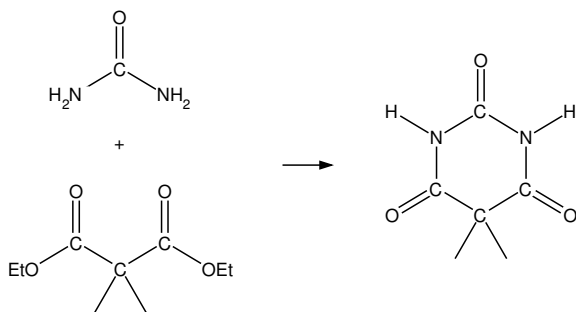
Decarboxylation of β -ketoesters



Acetoacetic Ester and Malonic Ester Syntheses



Barbiturates



Malonic ester, monosubstituted derivatives, or disubstituted derivatives can be used in this reaction.

LDA

Lithium diisopropylamide is a commonly used strong base. It is strong enough to deprotonate ketones and aldehydes, creating a nucleophile that can react with:

- 1° alkyl halides via S_N2 reaction
- aldehydes and ketones via a nucleophile addition
- esters via a nucleophilic substitution