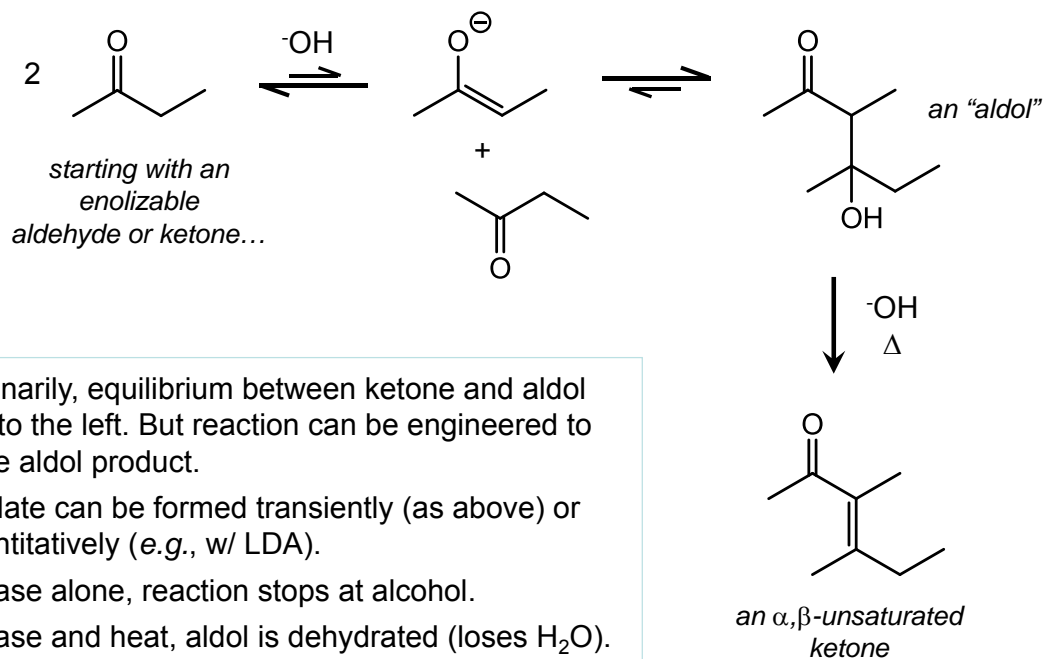


The Aldol Condensation

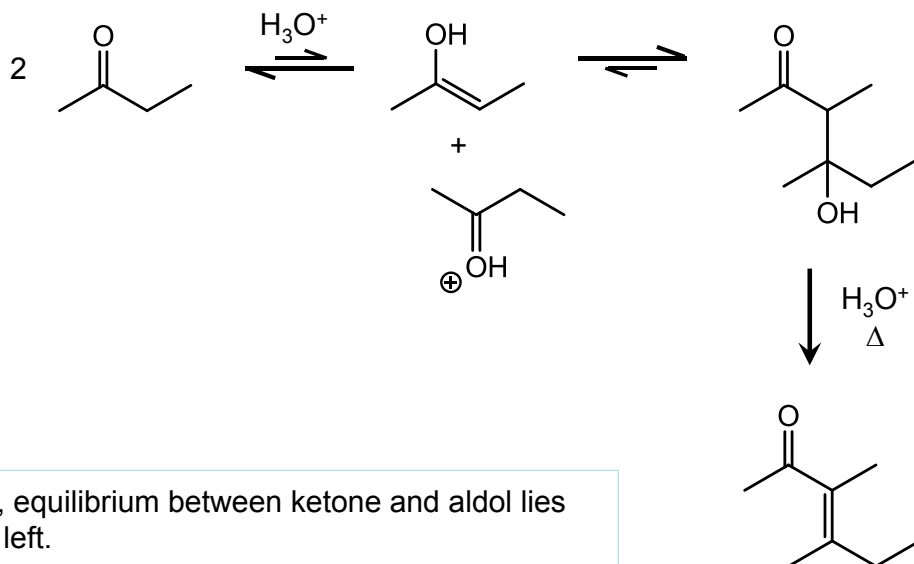
Base-catalyzed:



- Ordinarily, equilibrium between ketone and aldol lies to the left. But reaction can be engineered to force aldol product.
- Enolate can be formed transiently (as above) or quantitatively (e.g., w/ LDA).
- In base alone, reaction stops at alcohol.
- In base and heat, aldol is dehydrated (loses H_2O).

The Aldol Condensation

Acid-catalyzed:

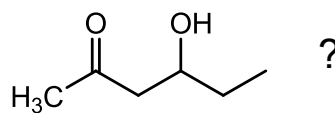


- Again, equilibrium between ketone and aldol lies to the left.
- In acid alone, reaction stops at alcohol.
- In acid and heat, aldol is dehydrated (loses H_2O).

Crossed Aldol Condensations

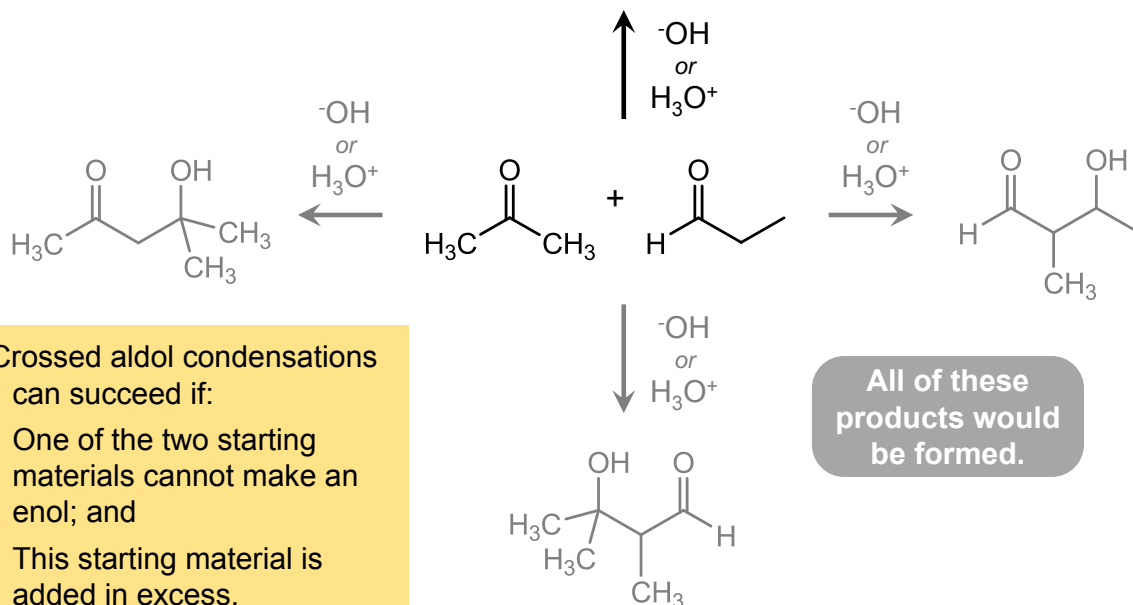
Question:

Using an aldol condensation, could we make



Answer:

No, not selectively.



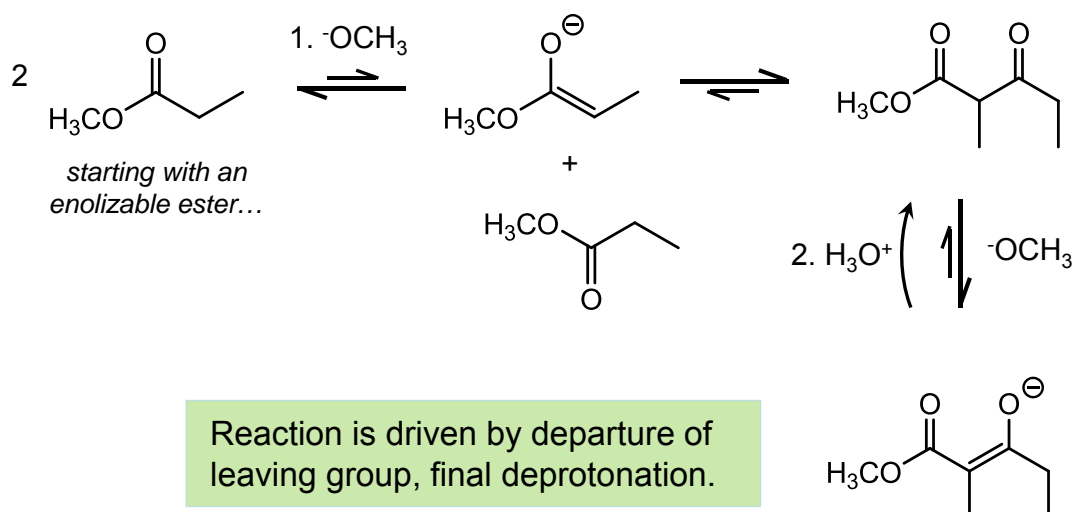
Crossed aldol condensations can succeed if:

- One of the two starting materials cannot make an enol; and
- This starting material is added in excess.

All of these products would be formed.

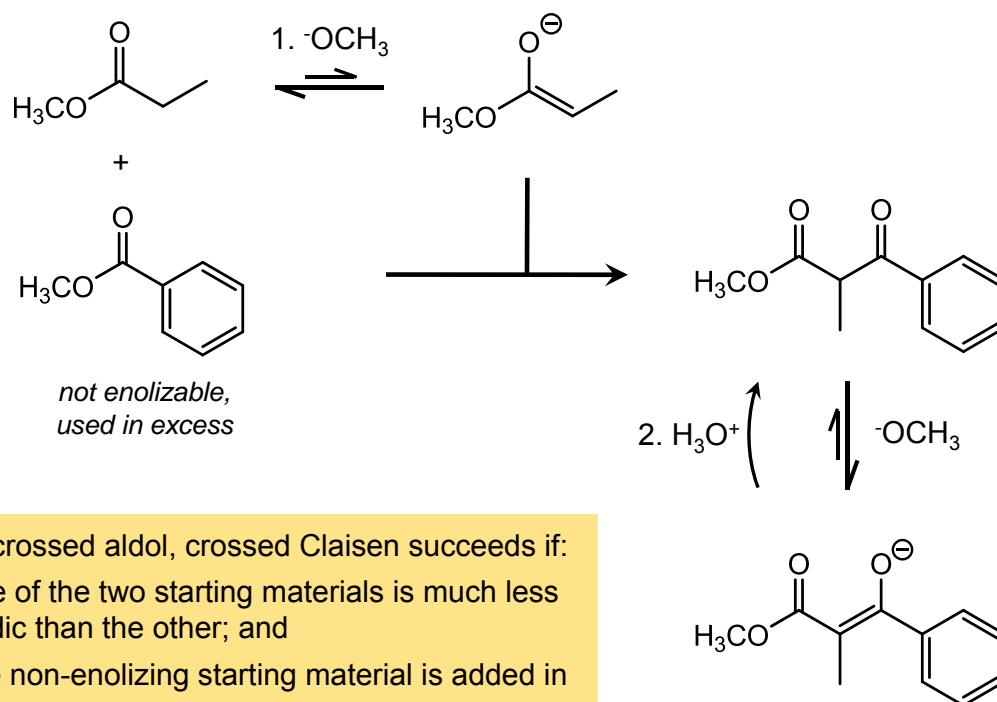
The Claisen Ester Condensation

Alkoxide-catalyzed:



Reaction is driven by departure of leaving group, final deprotonation.

Crossed Claisen Condensations



Crossed Claisen Condensations

