



*Some reactions of aldehydes and ketones progress beyond the nucleophilic addition stage*

Acetal formation

Imine formation

Compounds related to imines

Enamines

The Wittig reaction

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## *The Wittig Reaction*

Synthetic method for preparing alkenes.

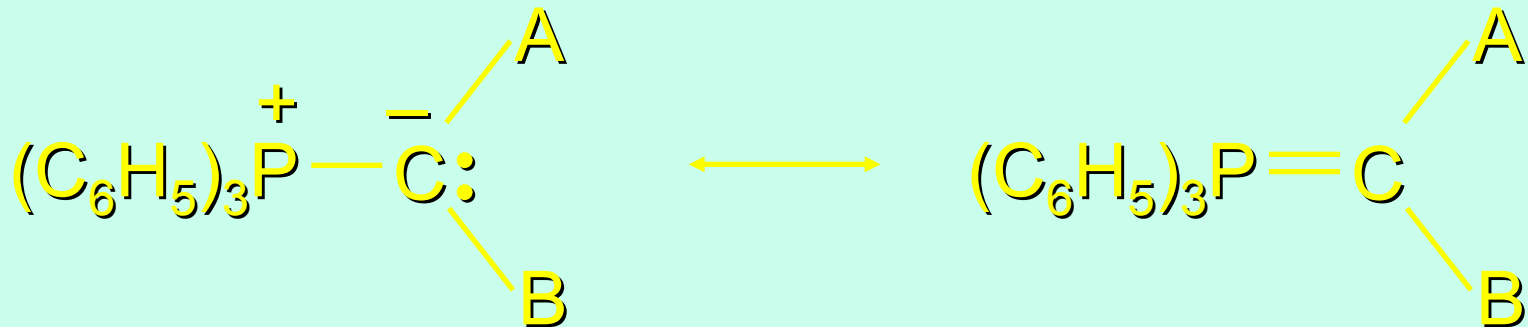
One of the reactants is an aldehyde or ketone.

The other reactant is a phosphorus ylide.

# *Phosphorus ylides*

R is usually  $C_6H_5$  (phenyl)

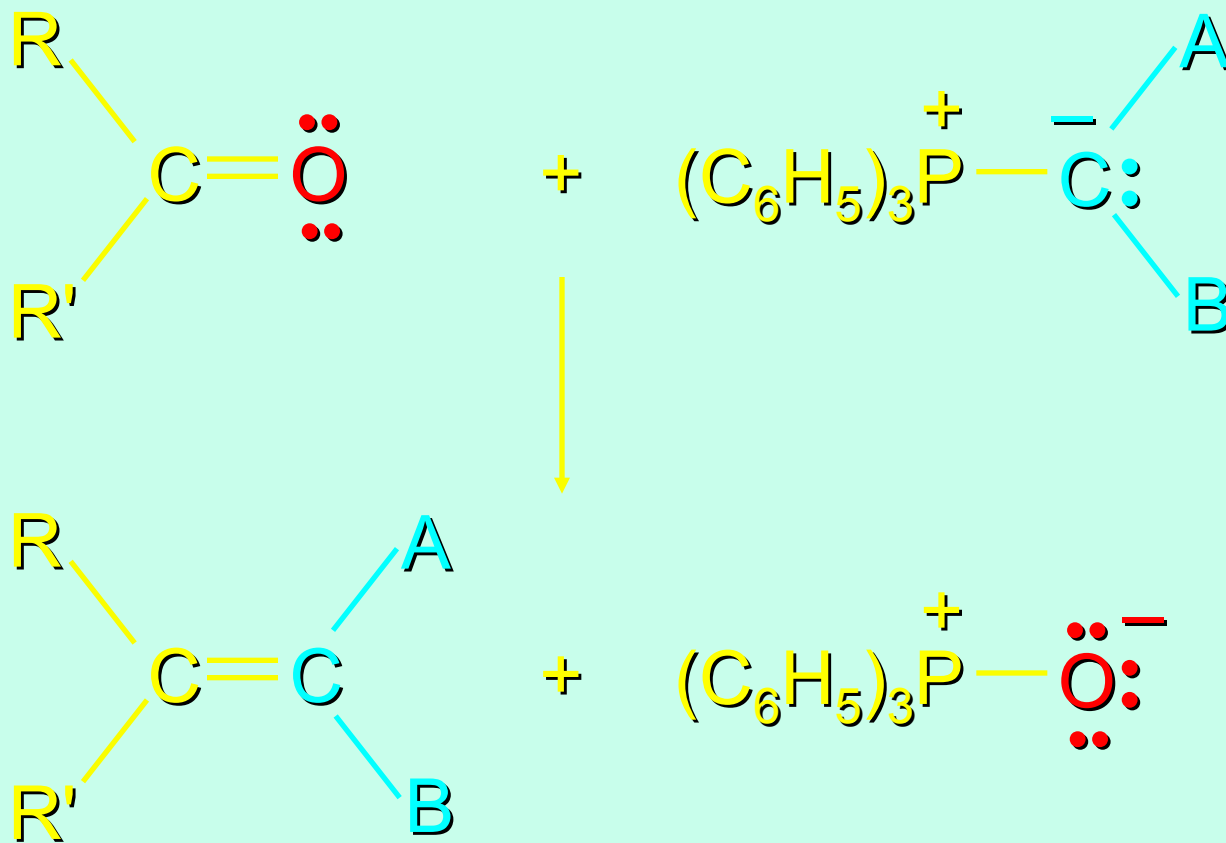
key point is that carbon is negatively polarized and nucleophilic



*Figure 17.9 Charge distribution in a ylide*

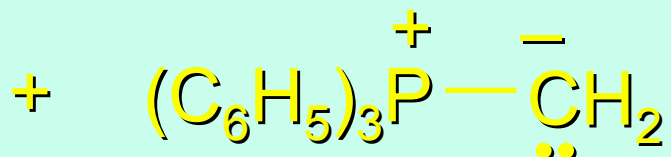
**No  
Image**

# The Wittig Reaction



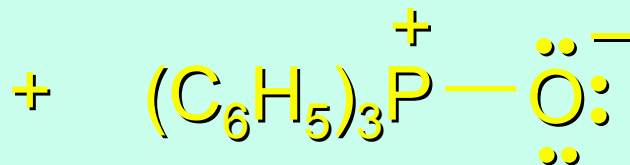
## Example

No  
Image



DMSO

No  
Image



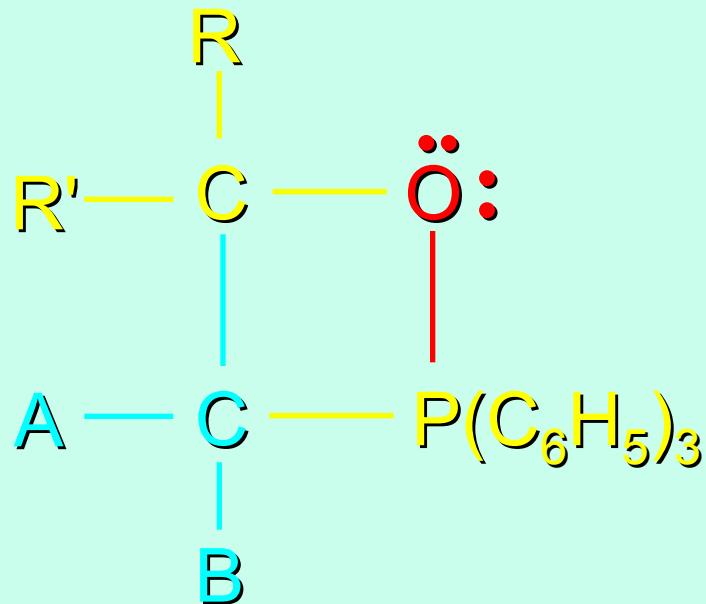
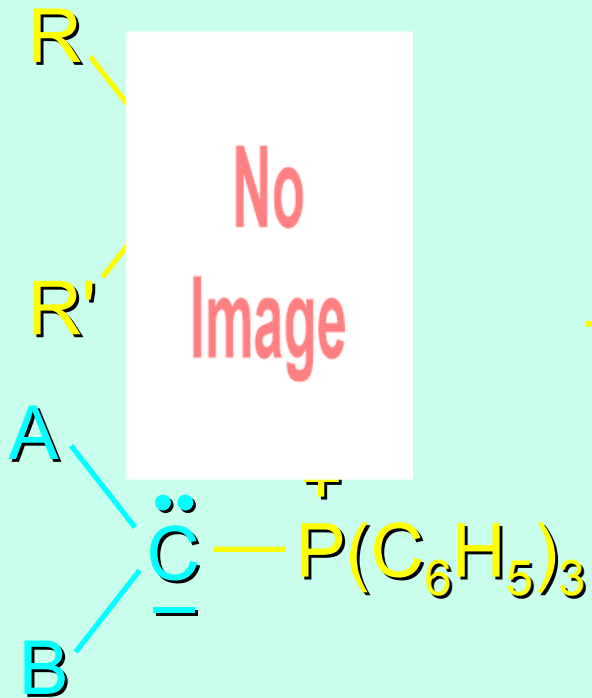
(86%)

dimethyl sulfoxide (DMSO) or tetrahydrofuran (THF) is the customary solvent



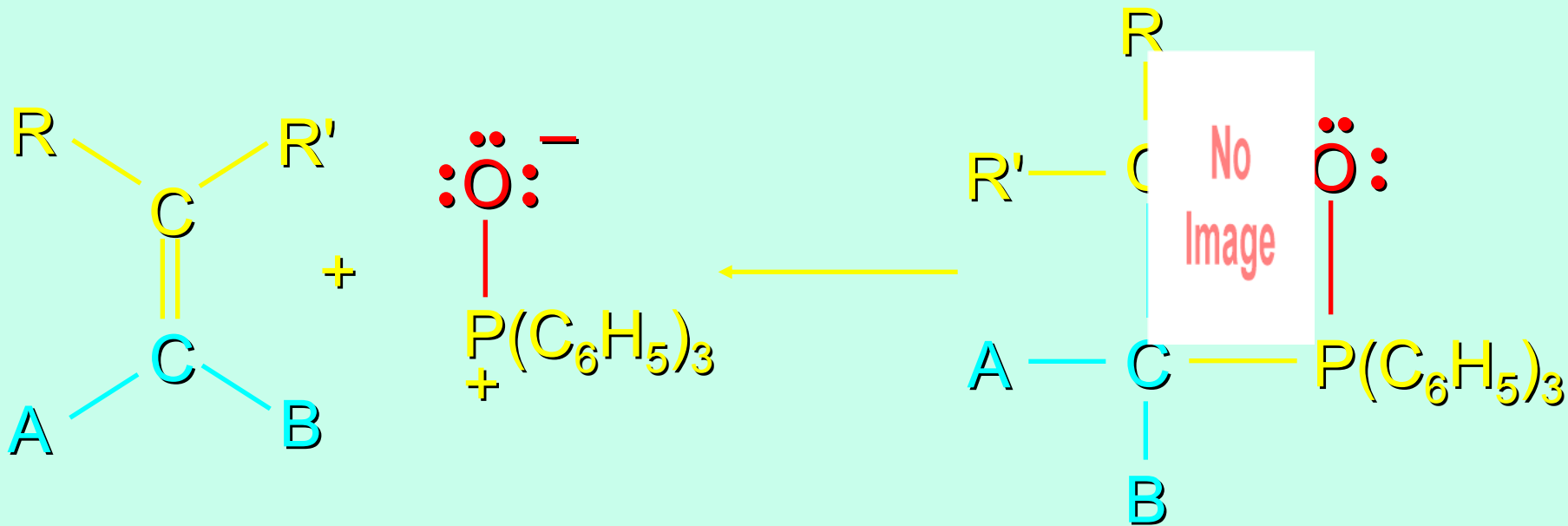
# Mechanism

## Step 1



# Mechanism

## Step 2



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