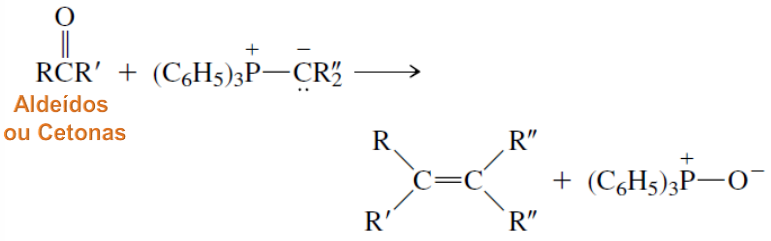
A reação de Wittig

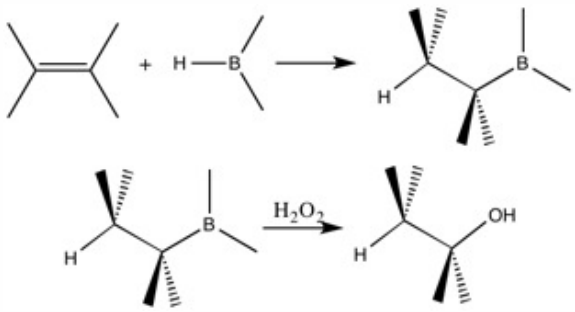
Contribuições de destaque em química

O Prêmio Nobel de Química de **1979** foi concedido conjuntamente a **H. C. Brown** e **Georg Wittig** "pelo desenvolvimento e uso de compostos contendo **boro** e **fósforo**, respectivamente, como importantes reagentes na síntese orgânica"



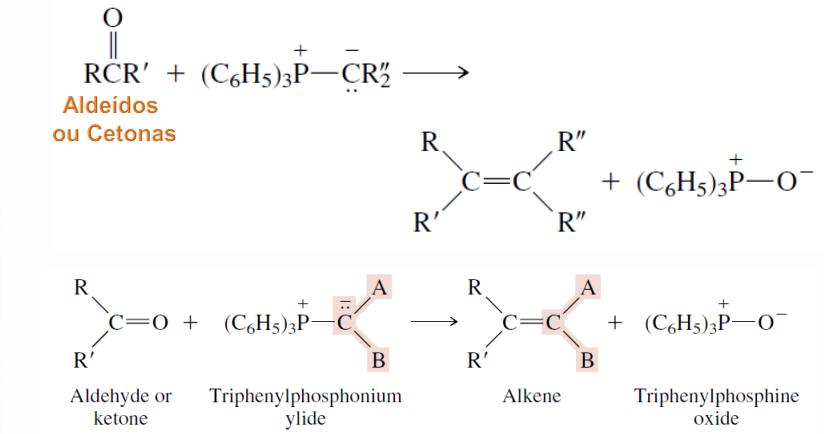
Herbert Charles Brown. Prêmio Nobel em 1979

Na hidroboração-oxidação, o grupo OH adiciona-se ao carbono menos substituído na ligação dupla.



Álcoois anti-Markovnikov

A reação de Wittig



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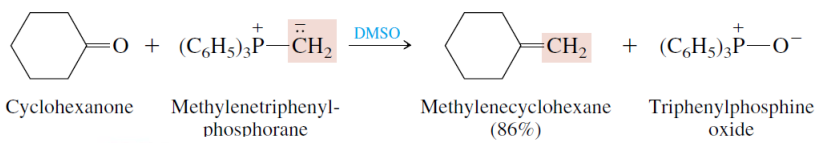
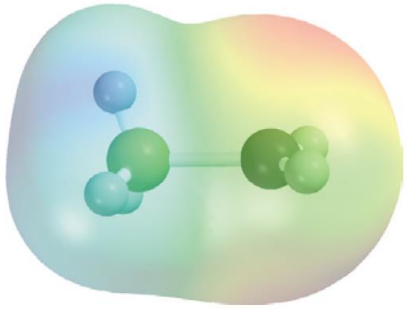


130 kcal mol^{-1}



H_3P^+-CH_2^-

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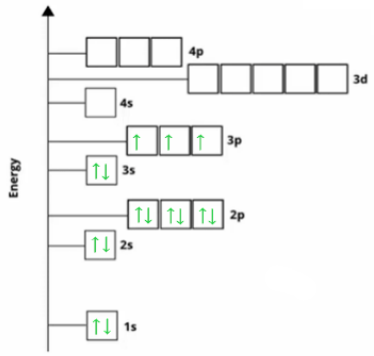
[Ne] $3s^2\ 3p^3$

Electron Configuration vs Orbital diagram for Phosphorus

Phosphorus (P):

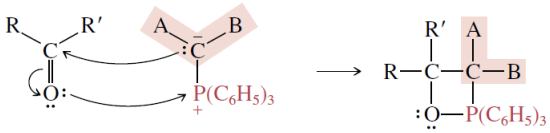
15 electrons

$1s^2 2s^2 2p^6 3s^2 3p^3$



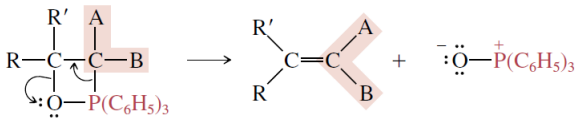
Como planejar a síntese de alcenos via reação de Wittig

Step 1: The ylide and the aldehyde or ketone combine to form an oxaphosphetane.



Aldehyde or ketone — Triphenylphosphonium ylide — Oxaphosphetane

Step 2: The oxaphosphetane dissociates to an alkene and triphenylphosphine oxide.



Oxaphosphetane — Alkene — Triphenylphosphine oxide

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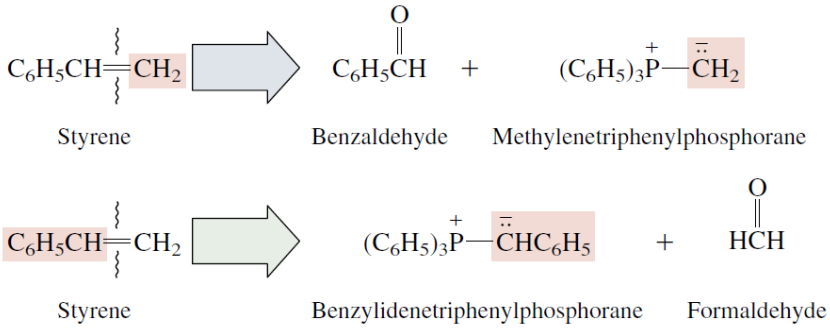
Síntese do Estireno



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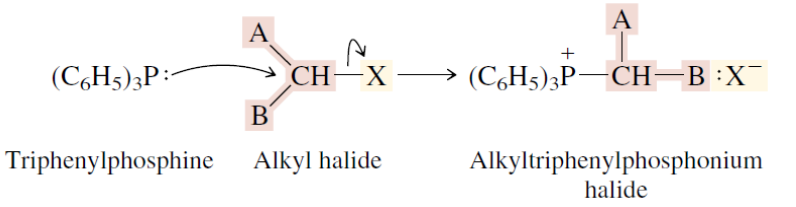
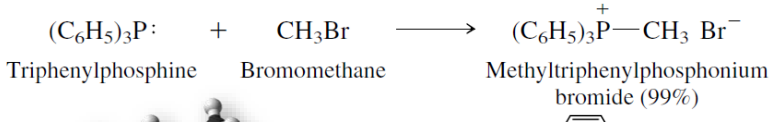
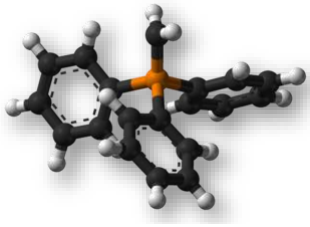
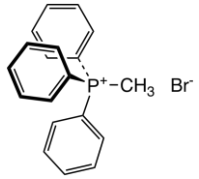
Preparação da Ilida de Fósforo









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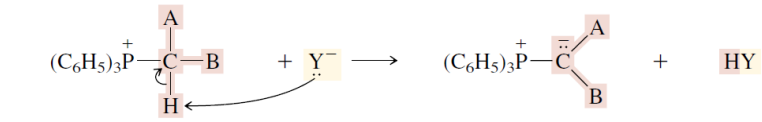
Conversão para a Ilida desejada via desprotonação com base forte



Alkyltriphenylphosphonium salt | Base | Triphenylphosphonium ylide | Conjugate acid of base used

Methyltriphenylphosphonium bromide | Sodiomethyl methyl sulfoxide | Methylenetriphenylphosphorane | Dimethyl sulfoxide | Sodium bromide

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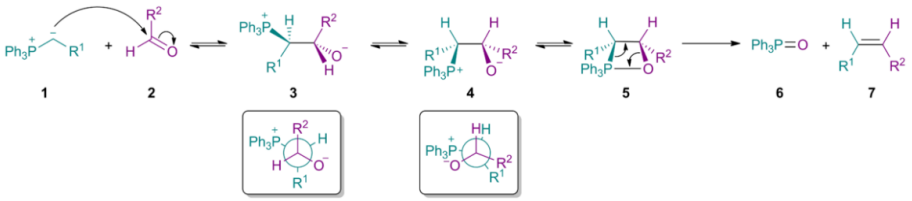
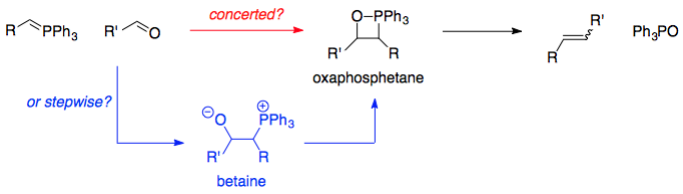
Mecanismo da reação: clássico





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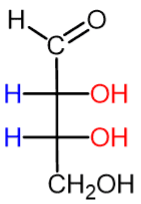
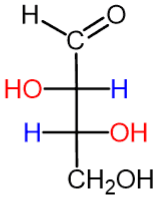
Estereoquímica de sacarídeos: éritro e tréo



Erythrose

Two H's on the same side

Two OH's on the same side



Threose

Two H's on opposite sides

Two OH's on opposite sides

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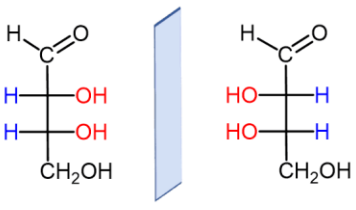
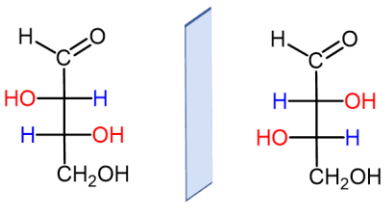


D-erythrose **L-erythrose**

enantiomers



D-threose **L-threose**

enantiomers

Nomenclatura (R,S)?

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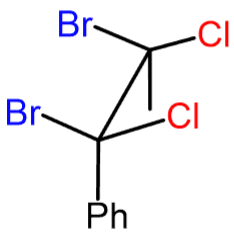
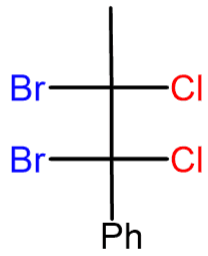
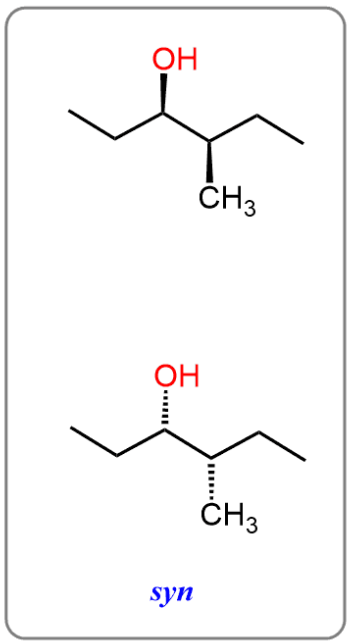
Sawhorse



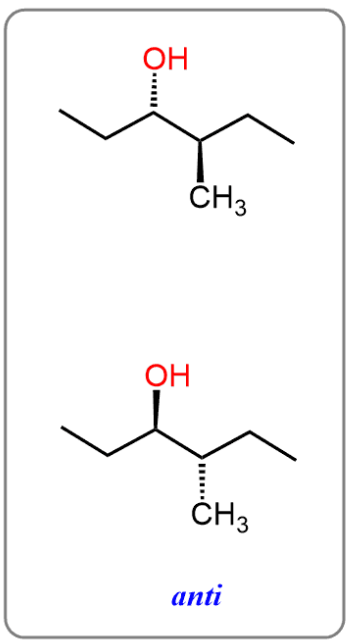
Fischer



An erythro isomer



on the same side of the plane



on opposite sides of the plane

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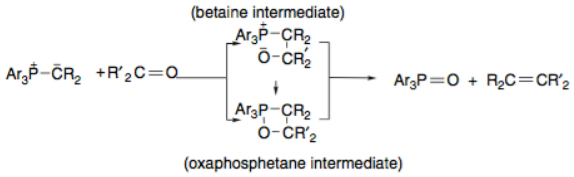
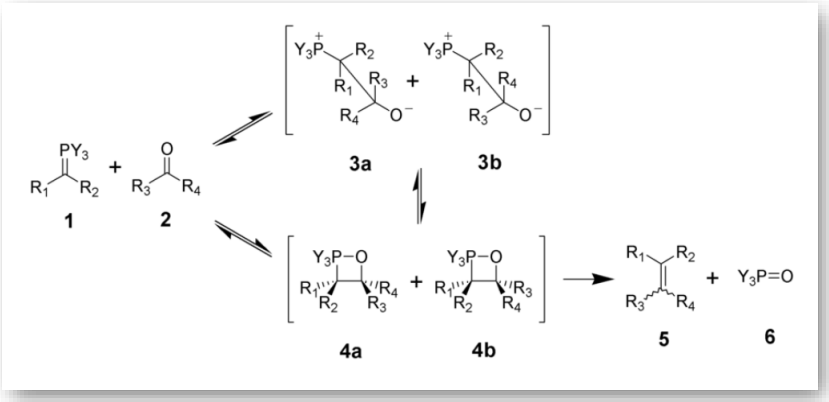
Betaína ou Oxafosfoetano?





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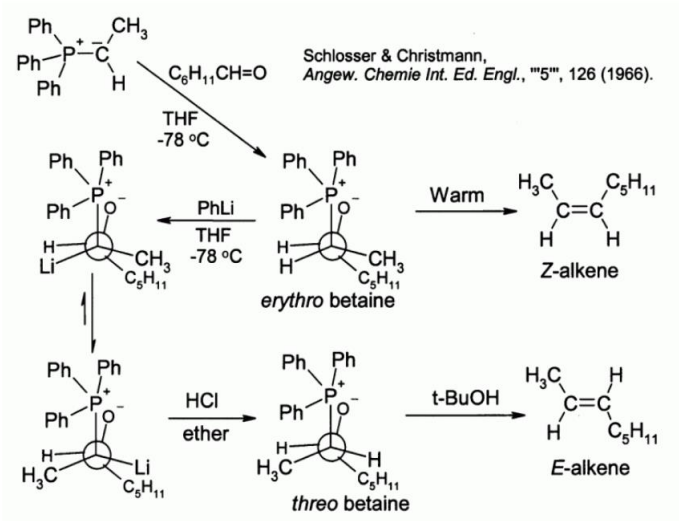
Modificação de Schlosser



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Álcoois alílicos podem ser preparados pela reação do ilídeo de betaína com um segundo aldeído.