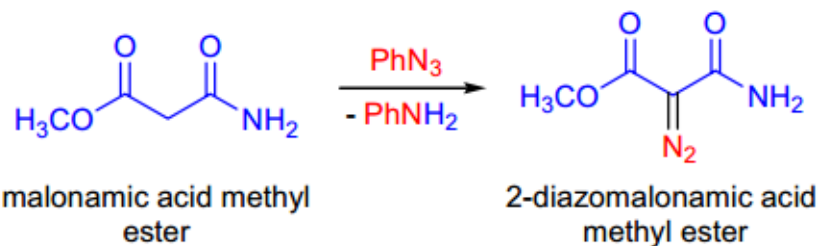
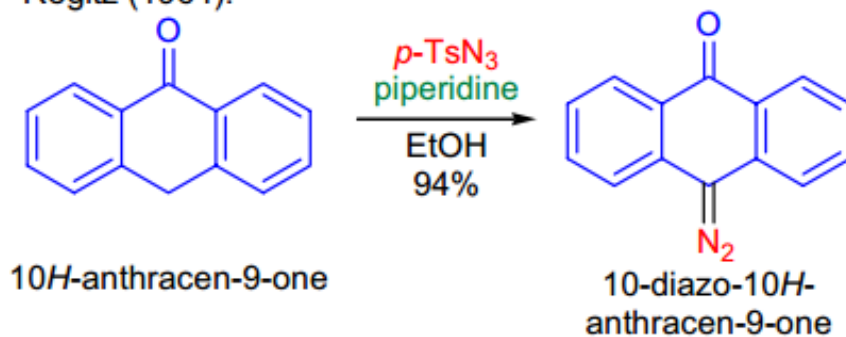


REGITZ DIAZO TRANSFER

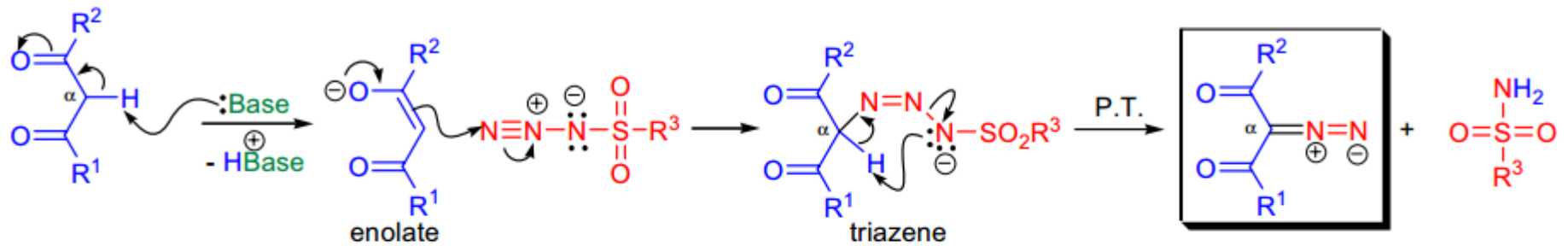
Dimroth (1910):



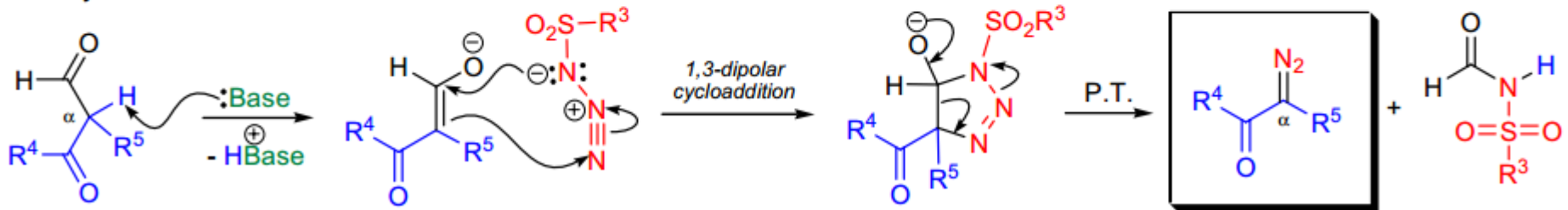
Regitz (1964):



Mechanism

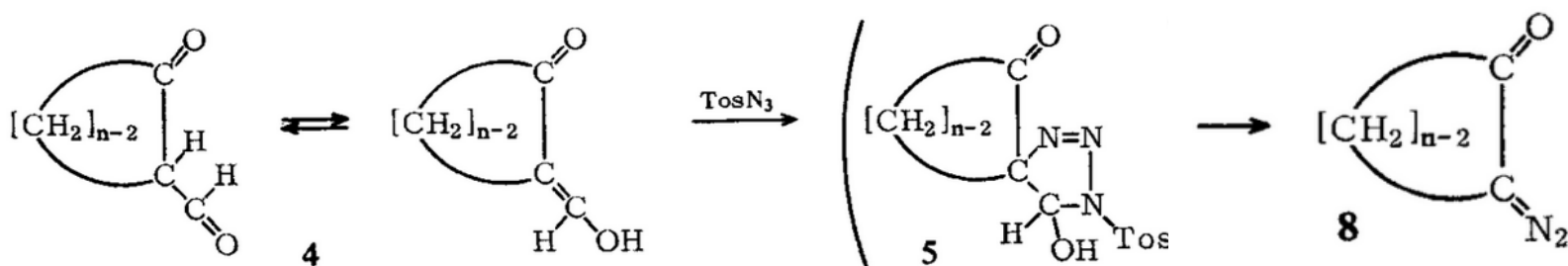


Deformylative diazo transfer:



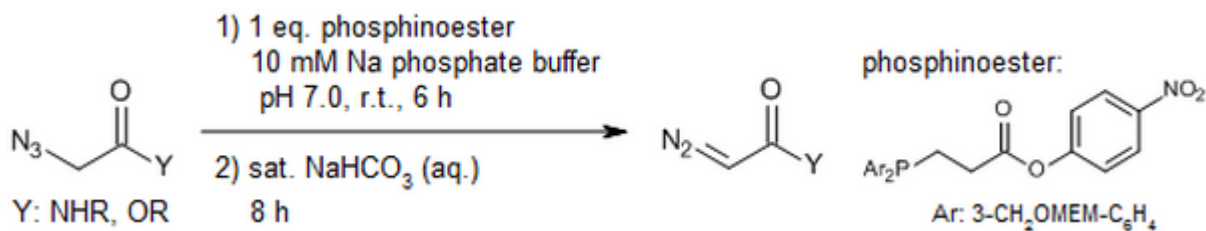
General features

- 1) Both cyclic and acyclic 1,3-diketones and β -keto esters undergo the diazo transfer in the presence of weak bases such as triethylamine, diethylamine, or piperidine, but if the acidity of the methylene group is not sufficient, the use of stronger bases (e.g., NaOEt, KOH) becomes necessary;
- 2) simple cyclic and acyclic ketones usually do not react directly with sulfonyl azides, so they need to be activated by formylation (Claisen reaction), and the resulting α -formyl ketone is treated with the sulfonyl azide in the presence of a base to give the corresponding α -diazo ketones;



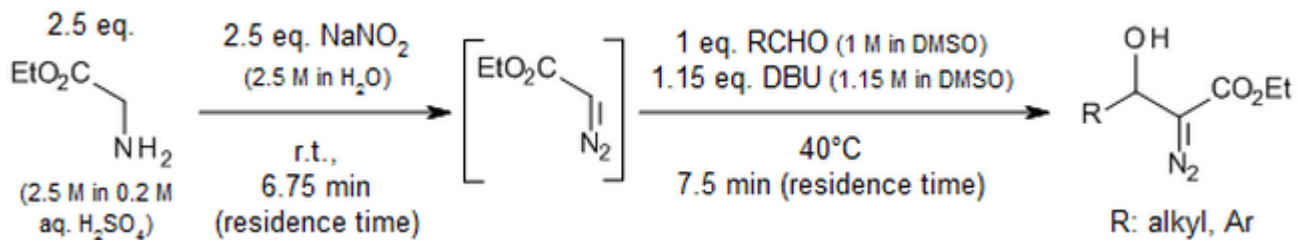
Updated of the Diazo-Transfer Reagent

- A water-soluble phosphinoester mediates an efficient conversion of azides into diazo compounds in phosphate buffer at neutral pH and room temperature.



H.-H. Chou, R. T. Raines, *J. Am. Chem. Soc.*, **2013**, 135, 14936-14939.

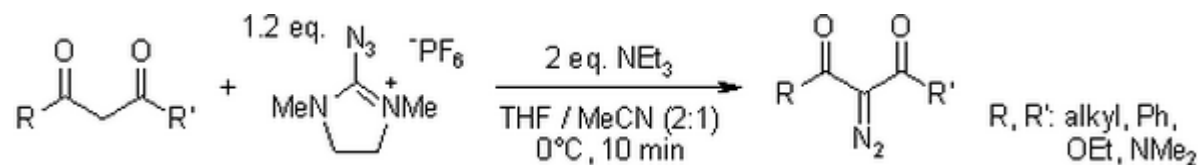
- A safe and fast method for the production of β -hydroxy- α -diazoesters involves the formation of ethyl diazoacetate in situ and the addition to several aldehydes in a two-step continuous flow microreactor setup.



T. Wirth, *Synlett*, **2014**, 25, 871-875

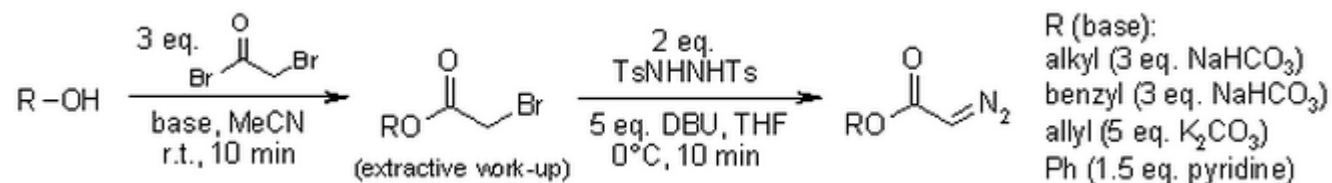
Updated of the Diazo-Transfer Reagent

- The crystalline phosphate salt (ADMP) is a stable and safe reagent. ADMP reacted with 1,3-dicarbonyl compounds under mild conditions to give 2-diazo-1,3-dicarbonyl compounds in high yields, which are easily isolated because the by-products are highly soluble in water.



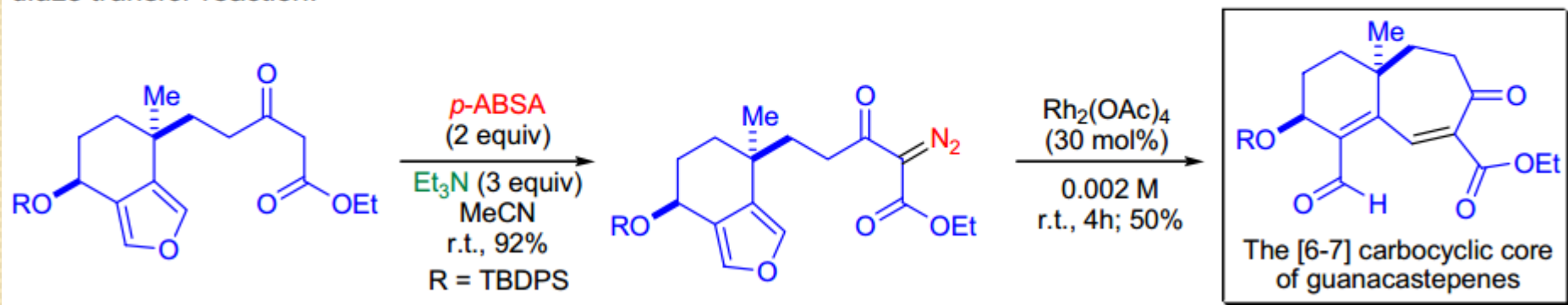
T. Okauchi, *Synthesis*, **2011**, 1037-1044.

- Various diazoacetates were synthesized from the corresponding bromoacetates by treatment with N,N'-ditosylhydrazine in moderate to high yields. Ease of operation with the stable crystalline reagent as well as a short reaction time offer a useful alternative to the conventional methods.



T. Fukuyama, *Org. Lett.*, **2007**, 9, 3195-3197.

The carbocyclic [6-7] core of **guanacastepenes** was prepared by D. Trauner et al. using the intramolecular reaction between carbenoids derived from diazo carbonyl compounds and furans.³⁶ The required diazo carbonyl substrate was synthesized using *p*-acetamidobenzenesulfonyl azide (*p*-ABSA) as the diazo-donor component in the *Regitz diazo transfer* reaction.



N-Alkyl substituted pyridones are known to exhibit both antibacterial and antifungal activity. The pyridone acid **A58365A** is a potent angiotensin-converting enzyme inhibitor and it was synthesized in the laboratory of A. Padwa using a [3+2] cycloaddition of a phenylsulfonyl substituted isomünchone intermediate with methyl vinyl ketone.³⁷ The isomünchone intermediate was generated from the corresponding diazo imide which was prepared *via* a *Regitz diazo transfer* reaction.

