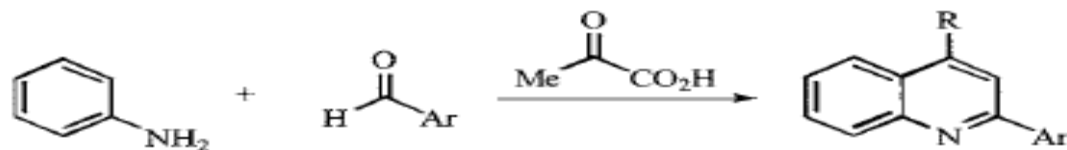
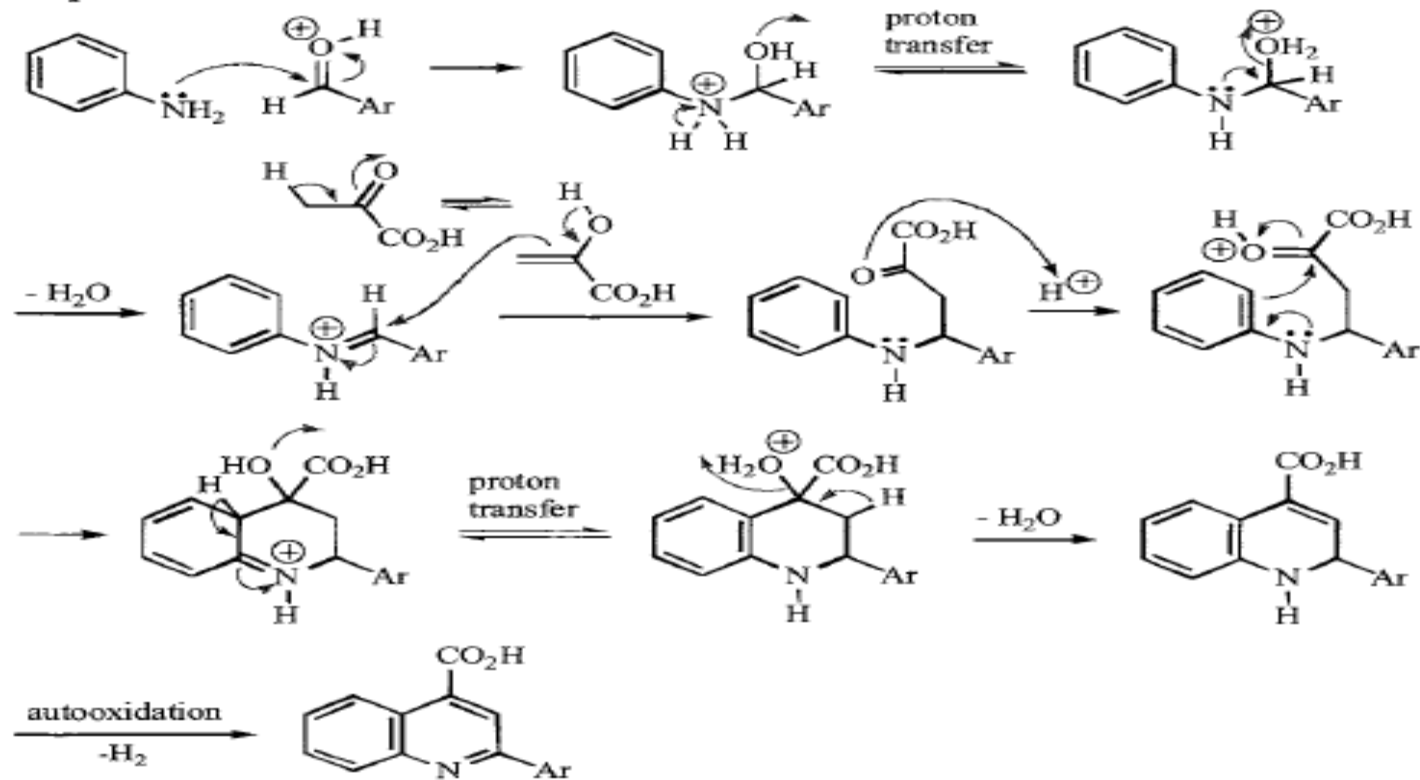


## Doebner Reaction (Beyer Synthesis, Beyer Method for Quinolines)

The Reaction:



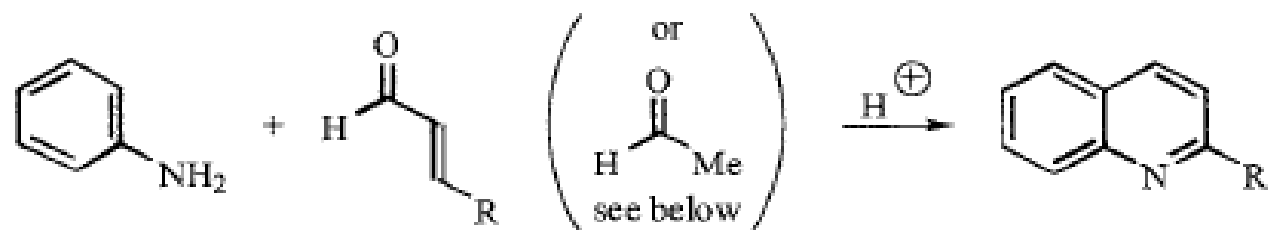
Proposed Mechanism:



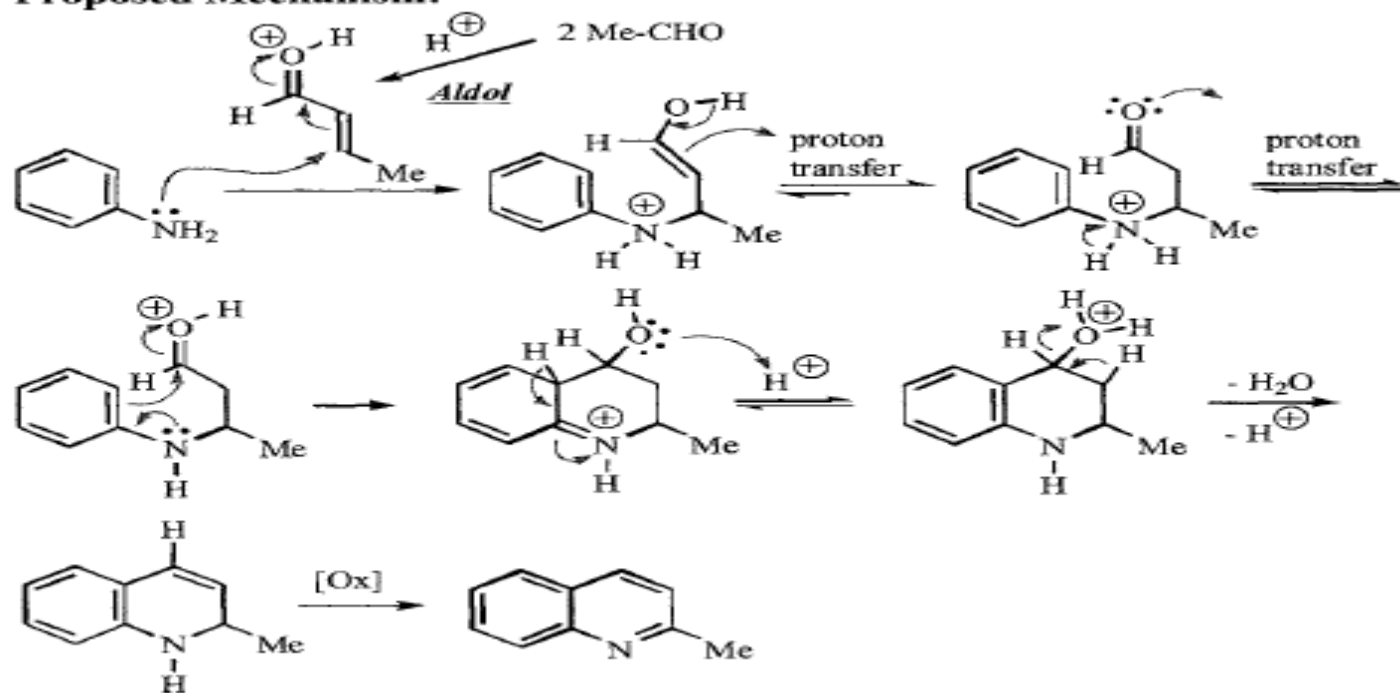
## Notes:

### Doebner-von Miller Reaction

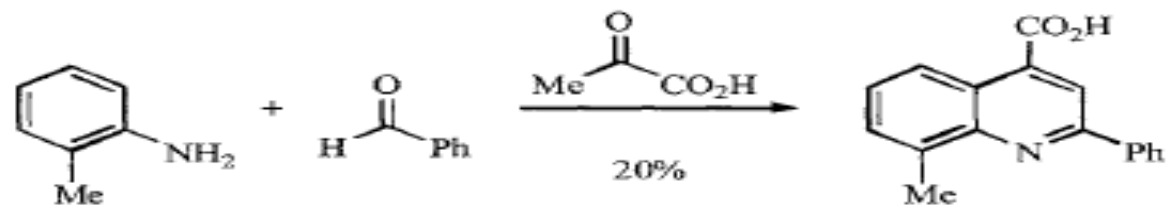
The Reaction: V. K. Ahluwalia, R. K. Parashar, *Organic Reaction Mechanisms*, Alpha Science International Ltd., Pangbourne, U.K., 2002, p. 314



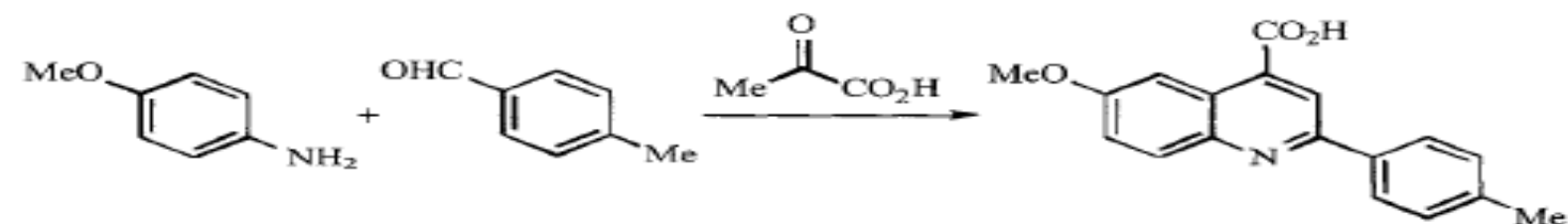
### Proposed Mechanism:



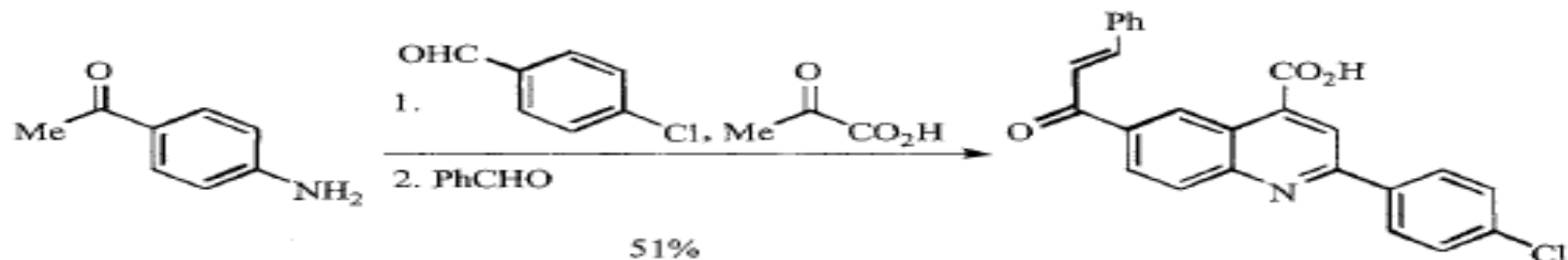
## Examples:



G. J. Atwell, B. C. Baguley, W. A. Denny, *Journal of Medicinal Chemistry* **1989**, 32, 396



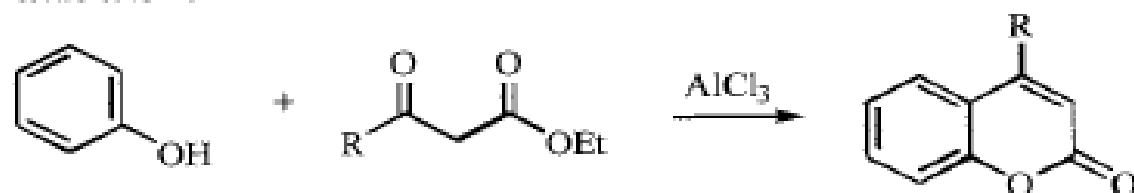
G. A. Epling, K. Y. Lin *Journal of Heterocyclic Chemistry* **1987**, 24, 853 (AN 1998: 55860)  
See also: G. SA. Epling, A. A. Provatias, *Chemical Communications* **2002**, 1036



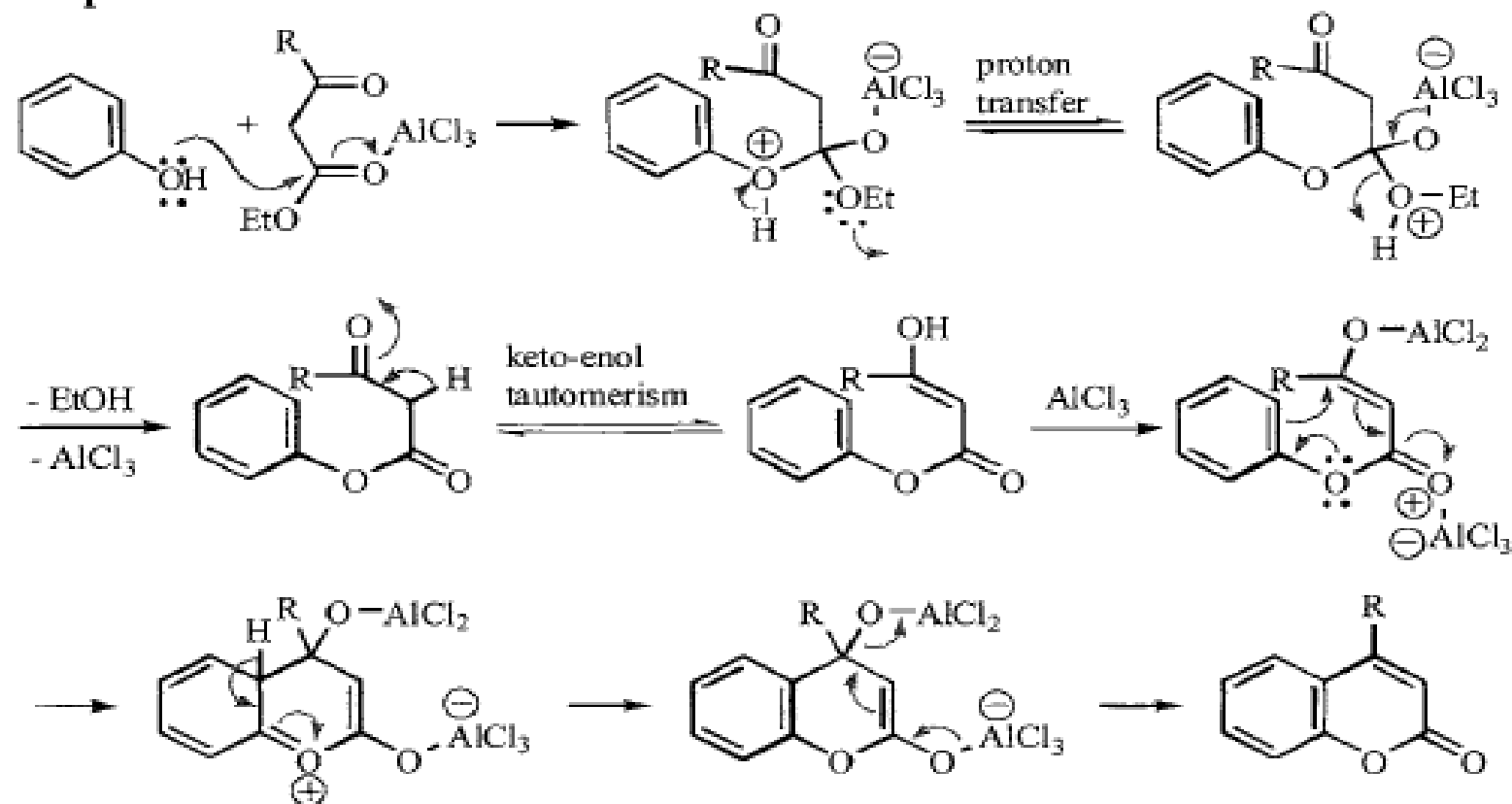
D. J. Bhatt, G. C. Kamdar, A. R. Parikh *Journal of the Indian Chemical Society* **1984**, 61, 816 (AN 1985:453938)

# Pechmann Condensation

## The Reaction:



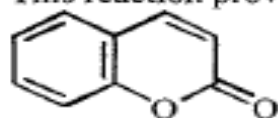
## Proposed Mechanism:



## Notes:

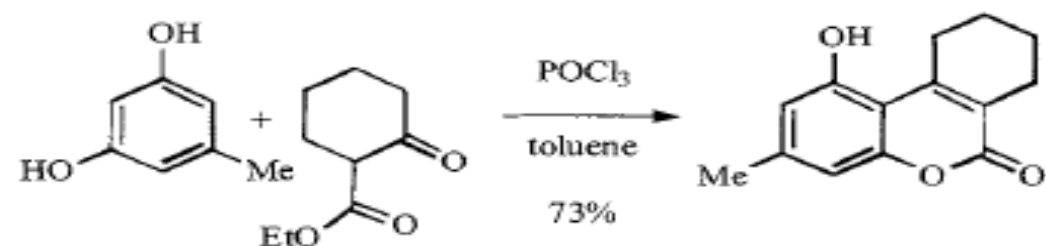
S. Sethna, R. Phadke, *Organic Reactions*, 7, 1

This reaction provides a simple entry into the *coumarins*:

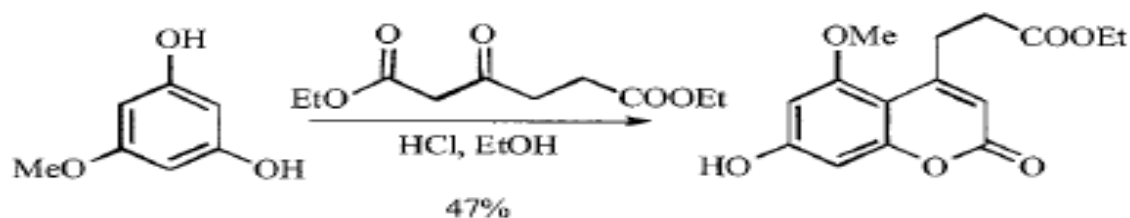


Many catalysts can be used, including sulfuric acid, aluminum chloride, phosphorous pentoxide, etc.

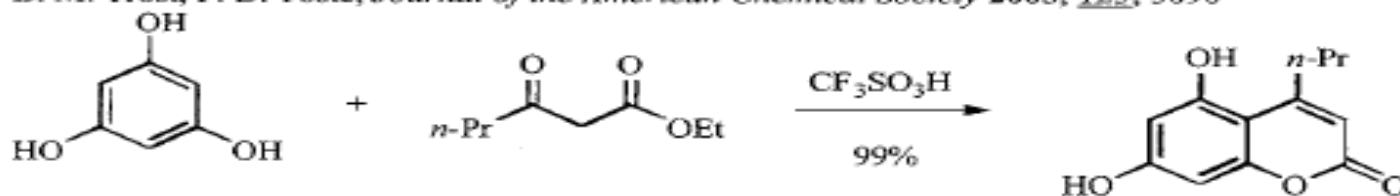
## Examples:



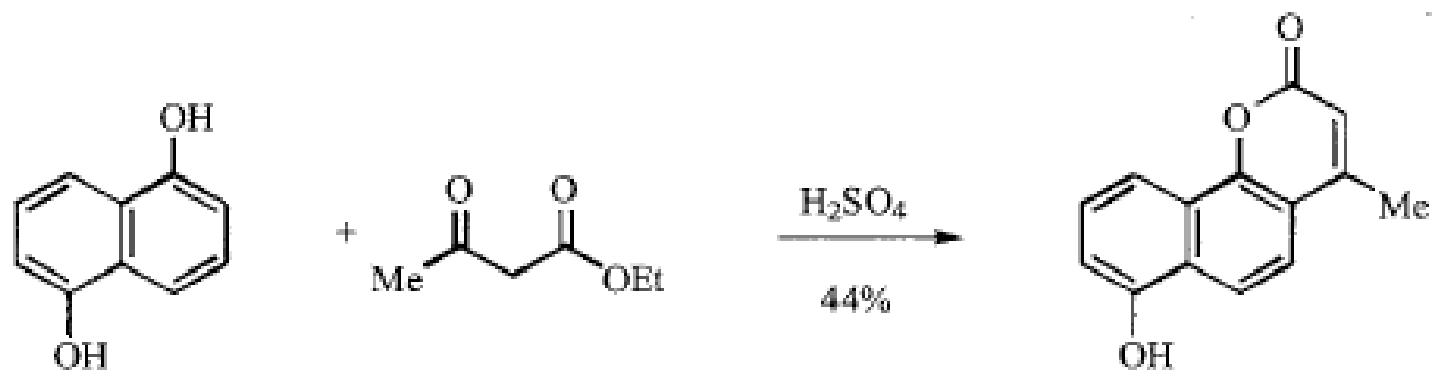
P. Selle's, U. Mueller, *Organic Letters* 2004, 6, 277



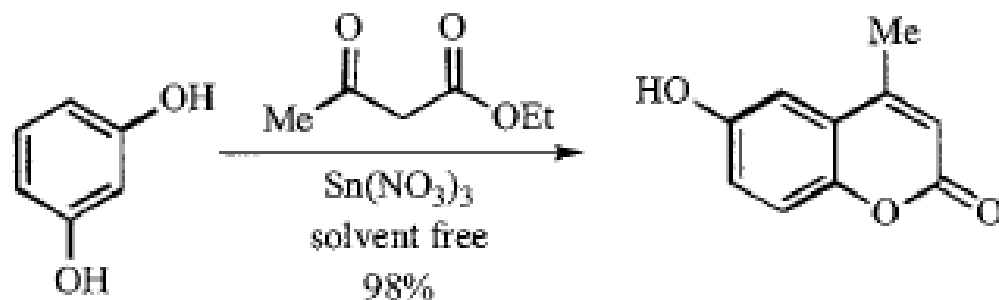
B. M. Trost, F. D. Toste, *Journal of the American Chemical Society* 2003, 125, 3090



B. Chenera, M. L. West, J. A. Finkelstein, G. B. Dreyer, *Journal of Organic Chemistry*, 1993, 58, 5605



W. Adam, X. Qian, C. R. Shah-Moeller, *Journal of Organic Chemistry* 1993, 58, 3769

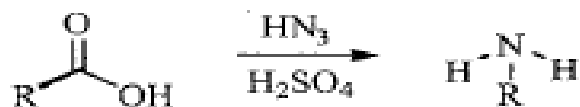


S. S. Bahekara, D. B. Shindeb, *Tetrahedron Letters* 2004, 45, 7999

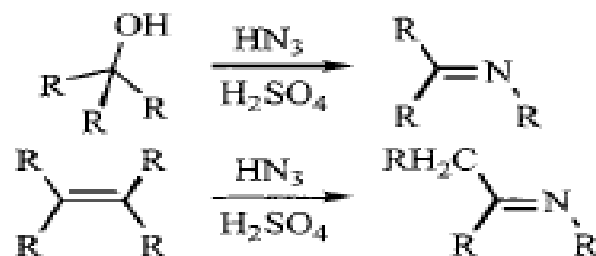
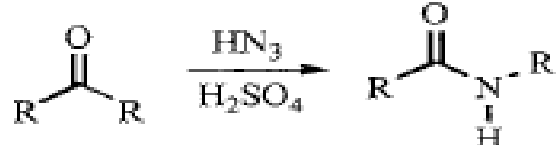
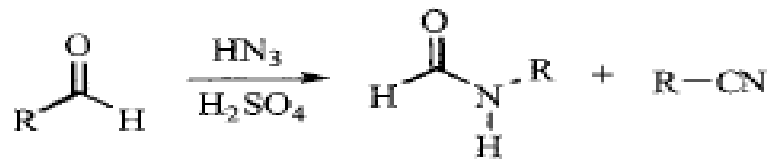
The use of indium(III) can do the same reaction: D. S. Bose, A. P. Rudradas, M. H. Babu, *Tetrahedron Letters* 2002, 43, 9195.

# Schmidt Rearrangement, Schmidt Reaction

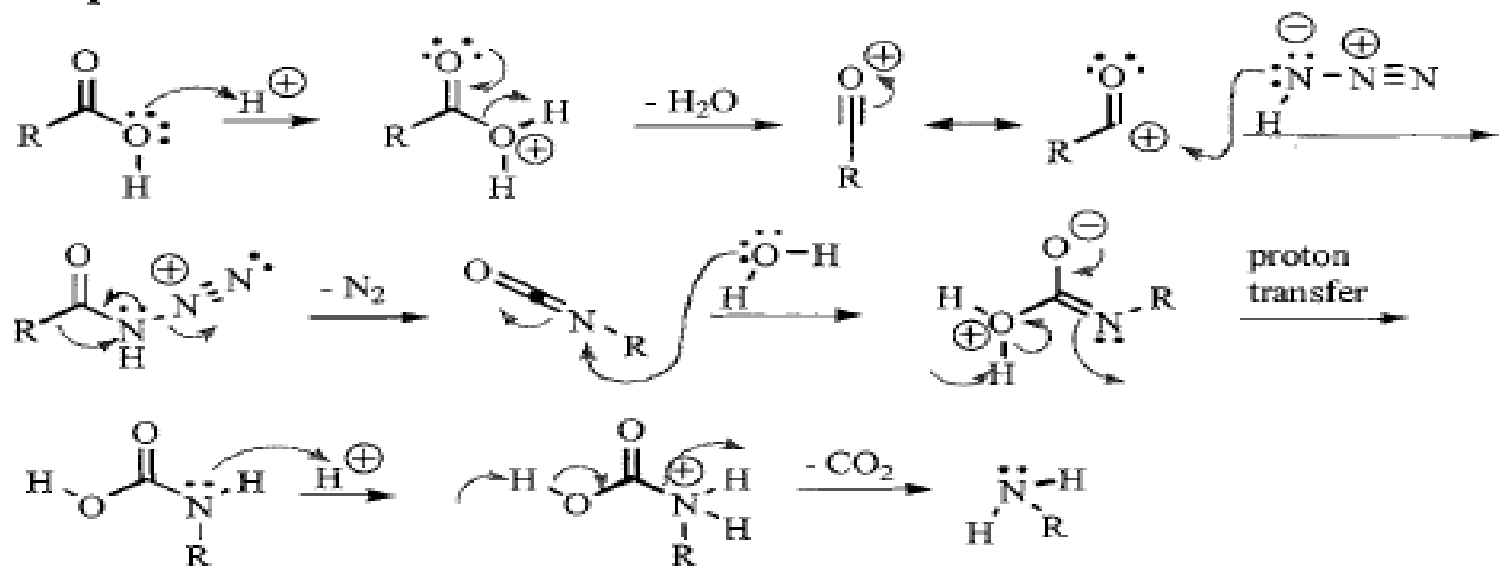
## The Reaction:

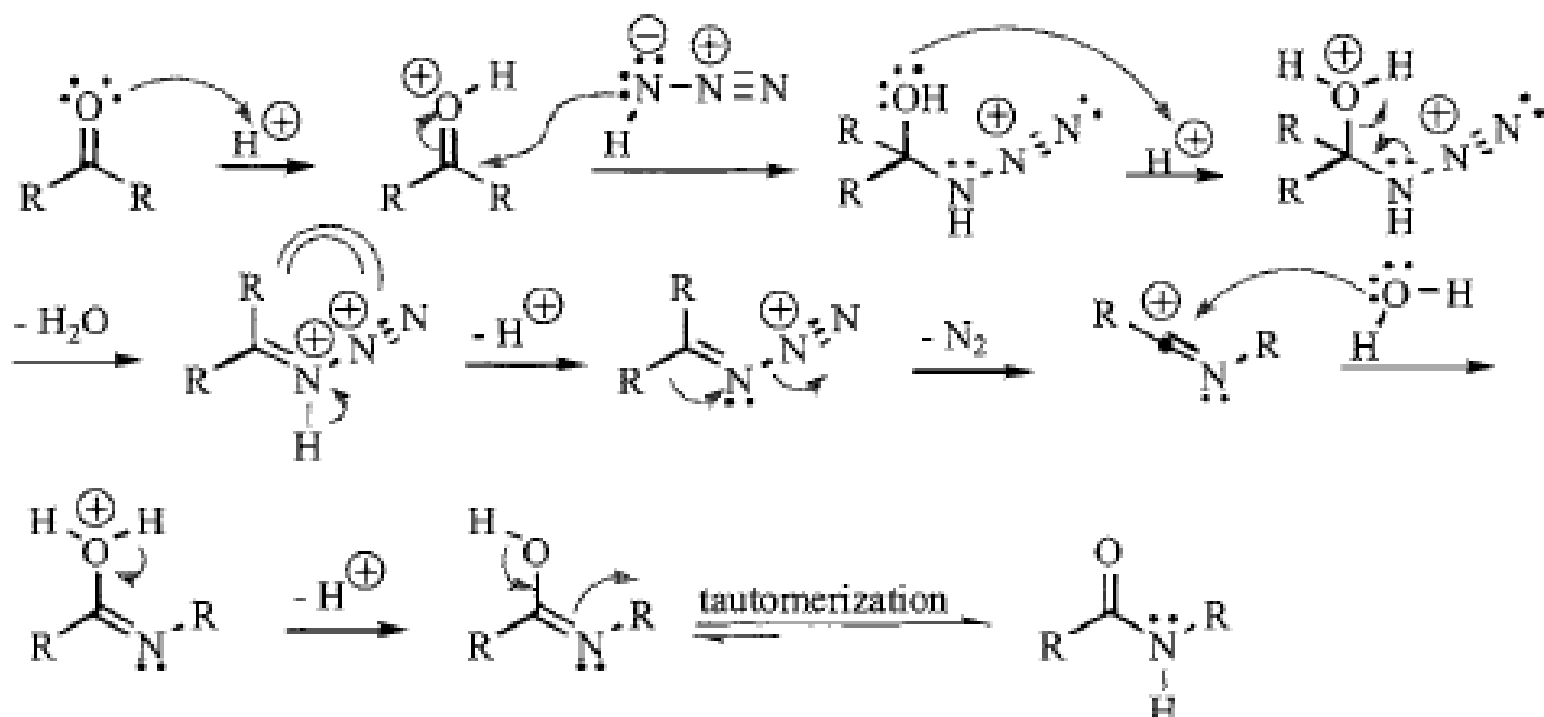


## Also classified as Schmidt Reactions:



## Proposed Mechanism:





### Notes:

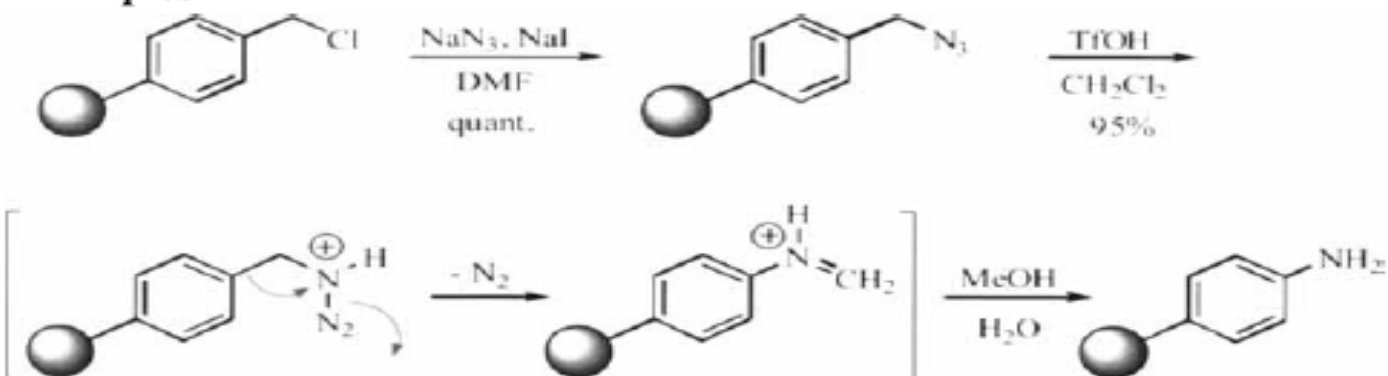
M. B. Smith, J. March in *March's Advanced Organic Chemistry*, 5<sup>th</sup> ed., John Wiley and Sons, Inc., New York, 2001, pp. 413-415; T. Laue, A. Plagens, *Named Organic Reactions*, John Wiley and Sons, Inc., New York, 1998, pp. 239-241; H. Wolff, *Organic Reactions* 3, 8

Loss of water will generally favor the less-hindered intermediate.

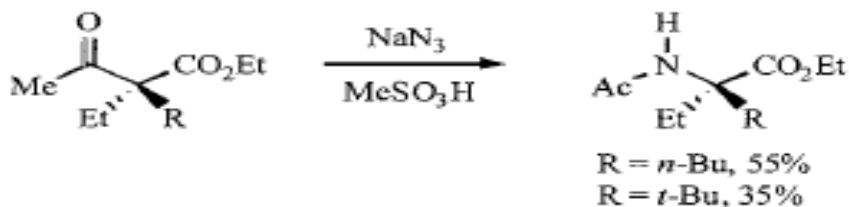


As with the *Curtius*, *Hofmann* and *Lossen Rearrangements*, there is a common isocyanate intermediate.

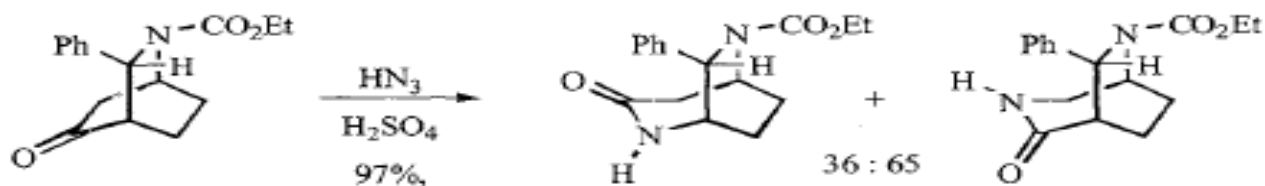
**Examples:**



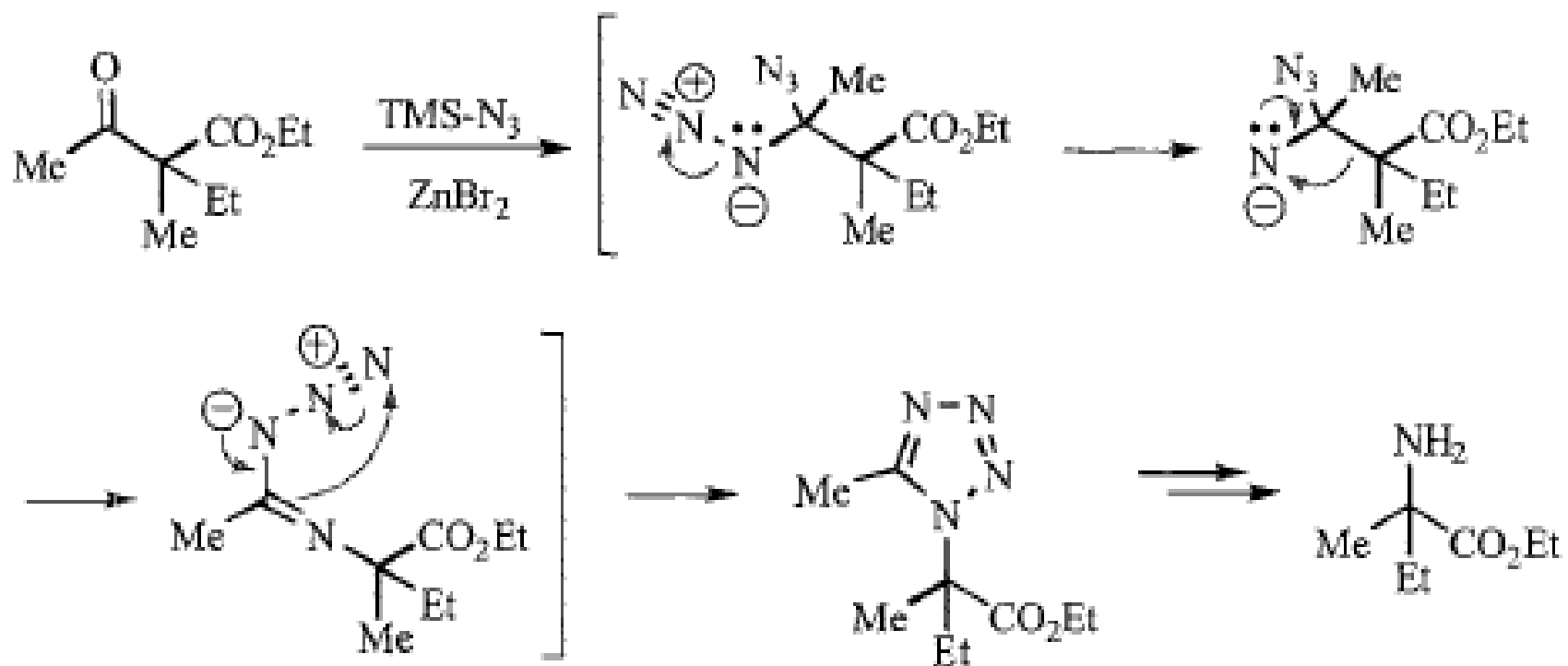
S. Arseniyadis, A. Wagner, C. Mioskowski, *Tetrahedron Letters* **2004**, 45, 2251



M. Tanaka, M. Oba, K. Tamai, H. Suemune, *Journal of Organic Chemistry* **2001**, 66, 2667



G. R. Krow, S. W. Szczepanski, J. Y. Kim, N. Liu, A. Sheikh, Y. Xiao, J. Yuan, *Journal of Organic Chemistry* **1999**, 64, 1254



H.-J. Cristau, X. Marat, J.-P. Vors, J.-L. Pirat, *Tetrahedron Letters* 2003, 44, 3179