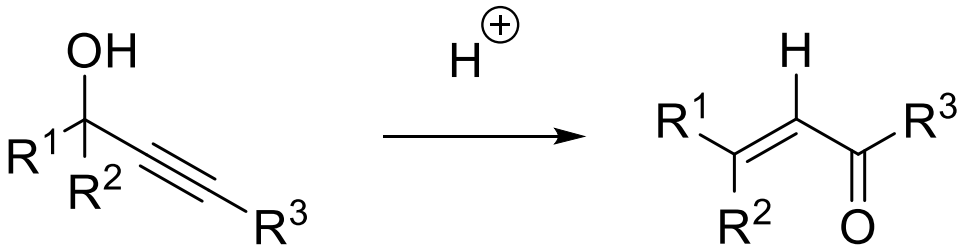
rijksuniversiteit groningen

REACTION OF THE WEEK

MEYER-SCHUSTER REARRANGEMENT:



Paula Ortega Araiztegi

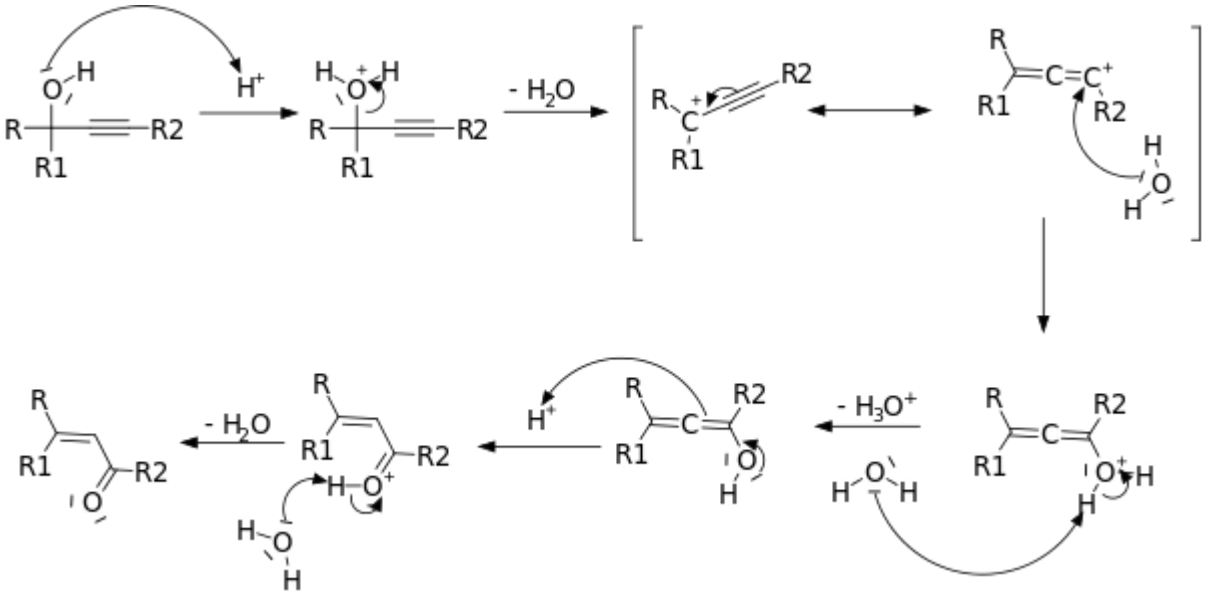
Reaction of the week

2nd of December

MEYER-SCHUSTER REARRANGEMENT

First reported in **1922** by Meyer and Schuster

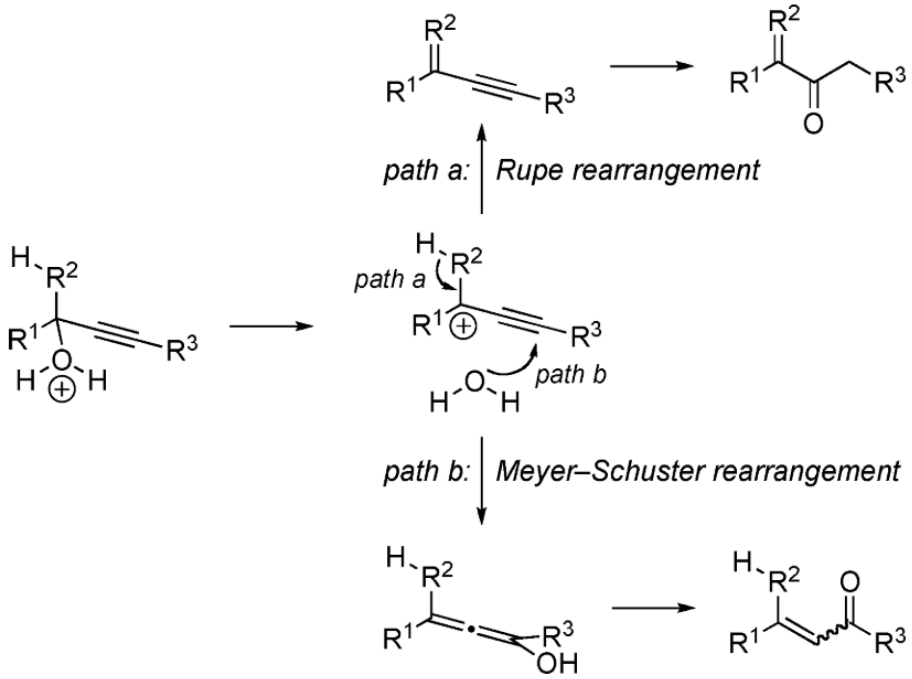
Mechanism



K. H. Meyer, K. Schuster, . *Ber.* **1922**, *55*, 819.

MEYER-SCHUSTER REARRANGEMENT

Competing Rupe rearrangement (β-hydrogen)



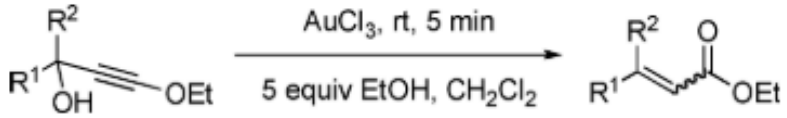
Activation of the acetylene favors Meyer-Schuster pathway:

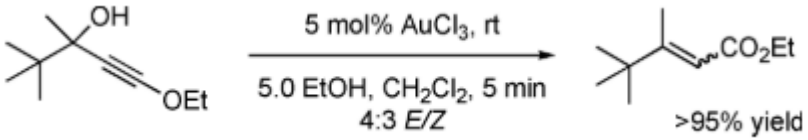
- Soft Lewis acid catalysts
- Electronic activation

D. A. Engel, G. B. Dudley, *Org. Biomol. Chem.*, **2009**, *7*, 4149-4158.

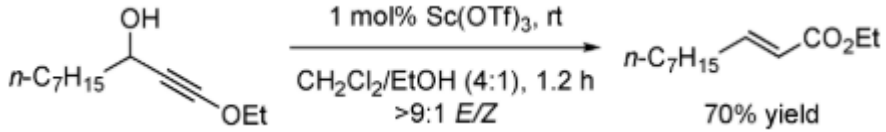
MEYER-SCHUSTER REARRANGEMENT

Gold-catalysed Meyer-Schuster rearrangement

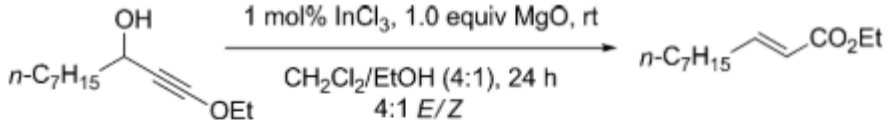


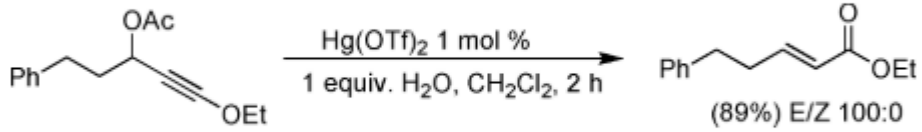


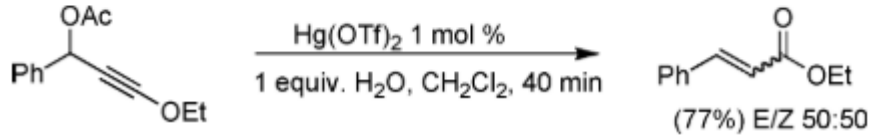
Substitution of expensive gold with Lewis Acid



Other examples:

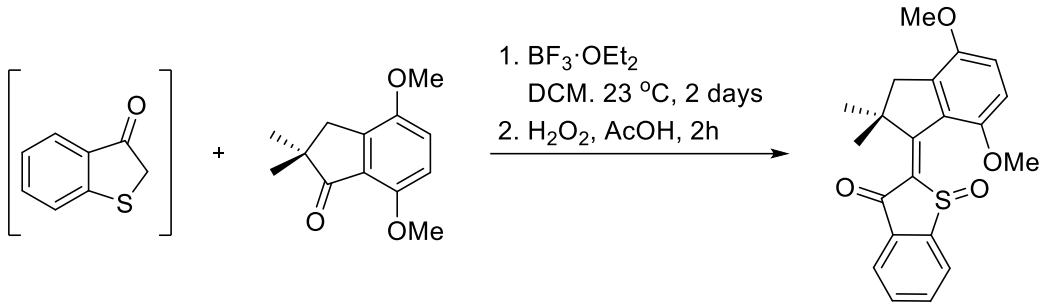






MEYER-SCHUSTER REARRANGEMENT

Synthesis of Hemithioindigo molecular motors[1]

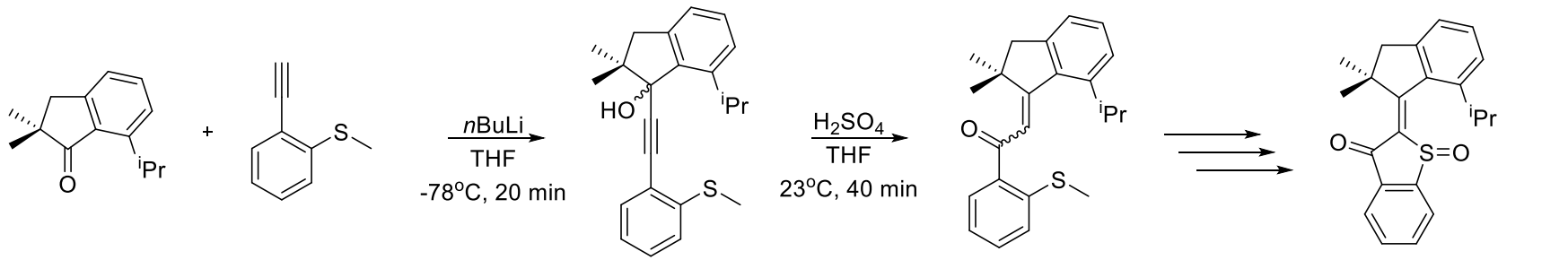


12% Over 2 steps

Advantages:

- Improved yield
- Hindered molecules
- Short reaction time

Novel synthesis applying Meyer-Schuster rearrangement[2]



82% yield

Meyer-Schuster rearrangement

99% yield

Overal yield 5 steps 52%

[1] M. Guentner, M. Schildhauer, S. Thumser, P. Mayer, D. Stepehnson, P. J. Mayer, H. Dube, *Nat Commun*, **2015**, *6*, 8406.
[2] L. A. Huber, K. Hoffmann, S. Thumser, N. Bocher. P. Mayer, H. Dube. *Angew.Chem. Int. Ed.* **2017**, *56*, 14536 -14539.

MEYER-SCHUSTER REARRANGEMENT

THANK YOU FOR YOUR

KIND ATTENTION !!