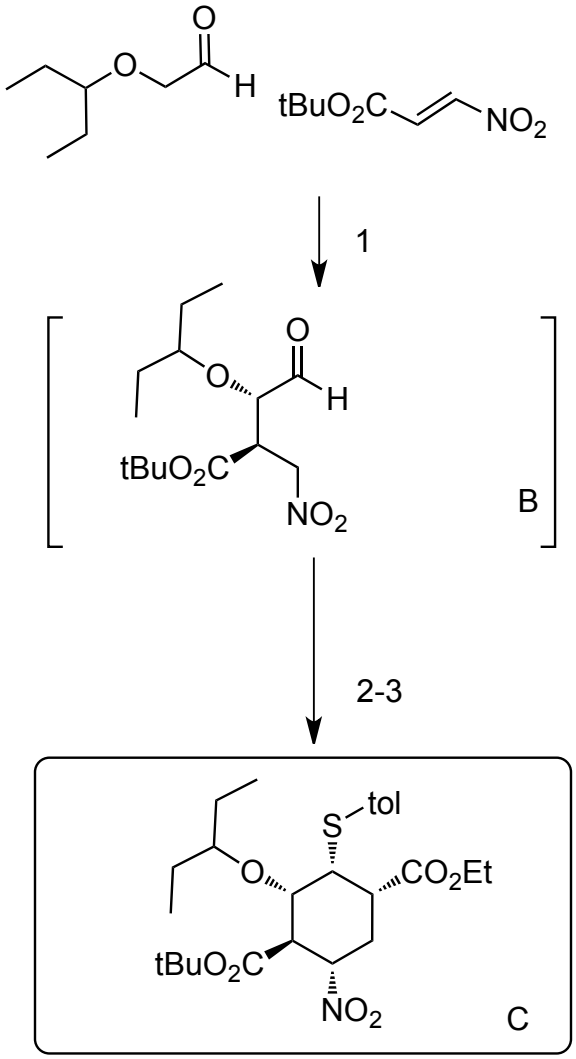
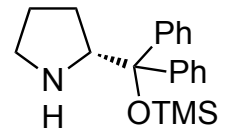
Synthesis Challenge #8 AG Wegner

T. Mukaiyama, H. Ishikawa, H. Koshino, Y. Hayashi, *Chem. Eur. J.* **2013**, *ASAP*, DOI: 10.1002/chem.201302371
05.12.2013



1) **I** (1 mol%), $ClCH_2CO_2H$ (20 mol%), Toluene

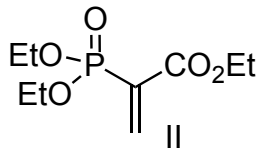
2) **II**, $CsCO_3$
3) TolSH



I

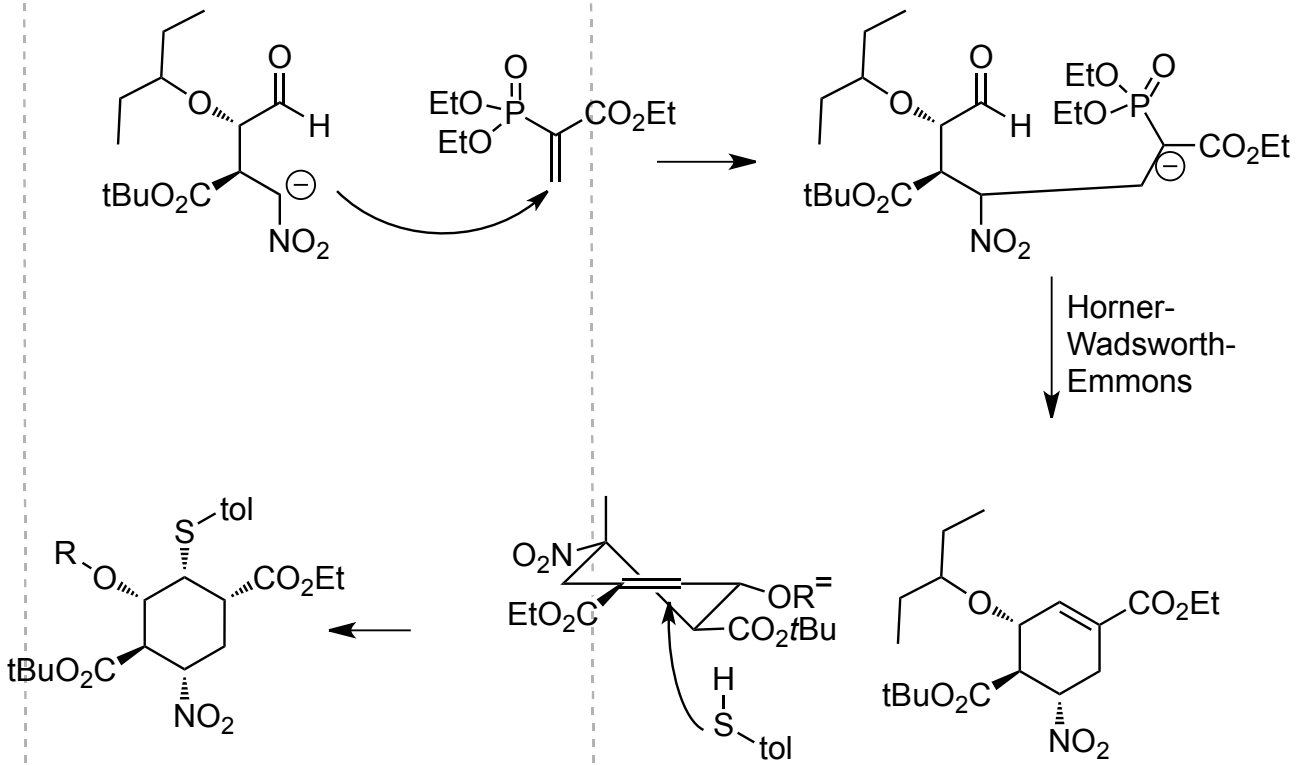
Please, provide a detailed mechanism for step 1).

Michael addition of enamine derived from catyalyst **I** and the aldehyde and the nitroolefine.

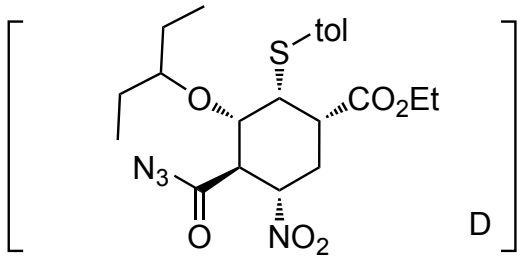


II

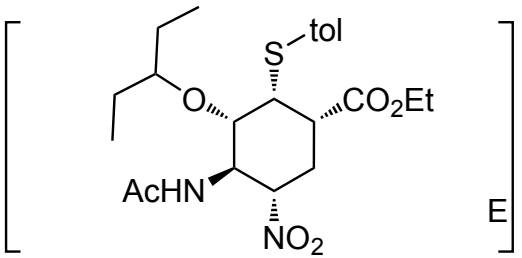
Please, provide a detailed mechanism for step 2) & 3).


Horner-
Wadsworth-
Emmons

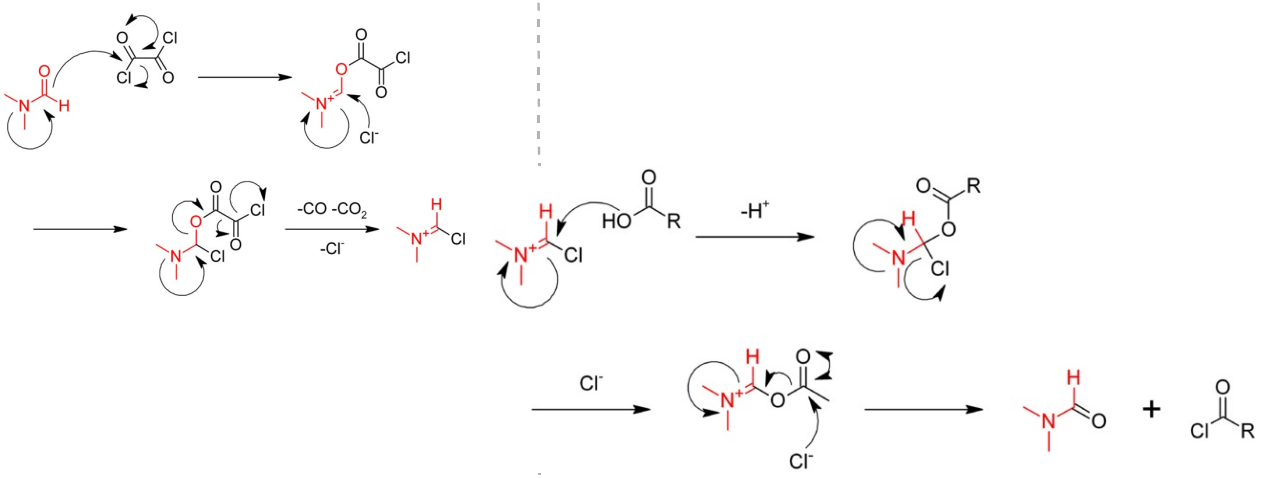
4-6



7



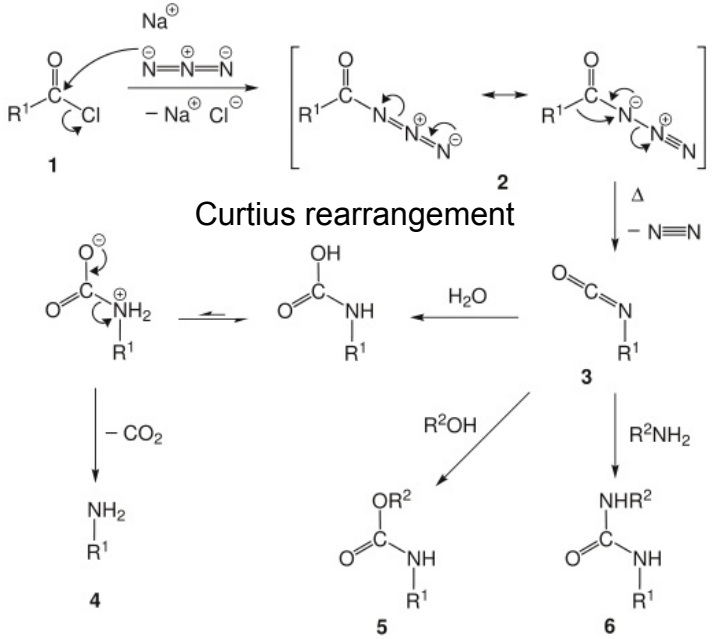
4) TFA, Toluene
5) $(COCl)_2$, DMF (cat)
6) $TMSN_3$, pyridine



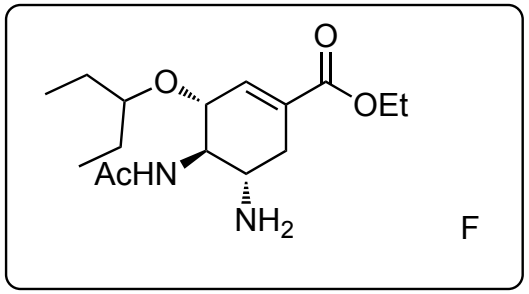
7) AcOH, Ac_2O

Please, provide a detailed mechanism for step 5)

Please, provide mechanism for step 7)



8-9



F

8) Zn, TMSCl, EtOH, 70ºC, 2h;
NH_3, 0ºC, 10 min
9) K_2CO_3

Please, provide mechanism for step 9)

retro-Michael of toluenethiolgroup