Synthesis Challenge #70

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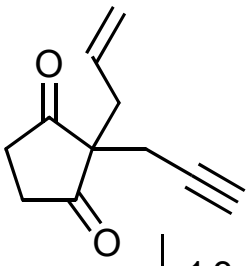


A

1-3

B

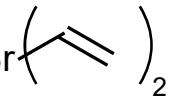
4-5

C

6-9

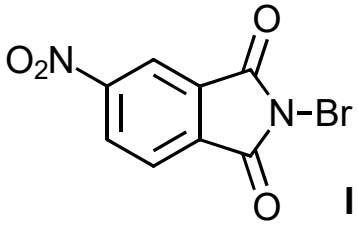
D

1) **I**, $AgNO_3$ (5 mol%), Me_2CO
2) PPh_3AuNTf_2 (4 mol%), H_2O, 1,2-DCE
3) **II** (10 mol%), $PhSiH_3$, butylene oxide, 1,4-dioxane, 150ºC

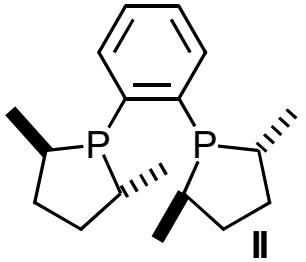
4) (2-thiophene)CuCNLiMgBr 
THF, −78ºC - 50ºC
5) **III** (1 mol%), PhMe, 110ºC

6) K-selectride, THF, −98ºC to −40ºC
7) MeMgCl, THF, 50ºC
8) H_2, Pd/C, EtOH, 25ºC
9) PCC, AcOH, CH_2Cl_2, 25ºC

Please provide a synthesis for A.

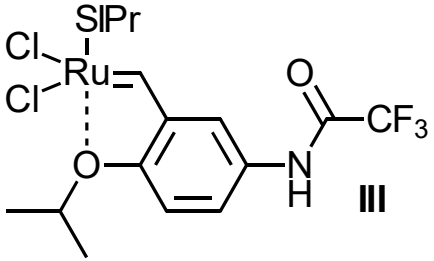


I



II

Tip: Step 3 catalytic Wittig reaction



III

10-12

10) Ac_2O, $(Me_2N)_2CH_2$, DMF, 95ºC
11) NaH, Me_3SOI, DMSO, THF, 0ºC
12) TFAA, H_2O_2, Na_2HPO_4, CH_2Cl_2, –40ºC to 0ºC

E

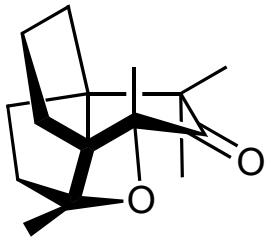
13-15

13) $LiAlH_4$, Et_2O, 0 to 25ºC
14) PtO_2, NaOAc, H_2, AcOH
15) py*SO_3, Et_3N, DMSO, CH_2Cl_2

F

16-18

16) HCO_2H, 25ºC
17) $PhSiH_3$, O_2, $Co(acac)_2$ (30 mol%)
18) BF_3*OEt_2, CH_2Cl_2, 0ºC



Aq. HCl delivers the product from **F** in one step, but with low yield. Give a plausible explanation!