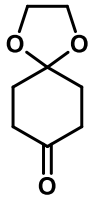
Total Synthesis of himalensine A



1) 1, $NaBH(OAc)_3$, DCE
2) 3 M HCl (aq.), THF
3) TsCl, NEt_3, DMAP, DCM

A

4) 2 (20 mol%), 3 (15 mol%),
$Pd(OAc)_2$, KH_2PO_4, MeOH
85 °C, 24 h

B

5) Crabtree's cat., H_2, DCM
6) $Pd(TFA)_2$, O_2, DMSO, AcOH, 80 °C

C

7) MeLi, CuI, THF
then TMSCl, NEt_3
8) NBS, $NaHCO_3$, THF
9) Li_2CO_3, LiBr,
DMF, 155 °C

D

10) NaHMDS, THF
then NaNap

E

11) 4, EDC, DMAP
12) K_2CO_3, ACN

F

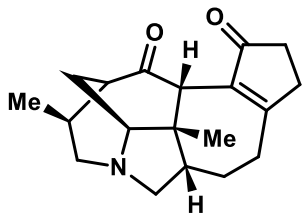
13) KHMDS, 18-c-6, 5, THF
14) 200 °C, 48 h, mesitylene
then HG-II, PhMe, 110 °C

G

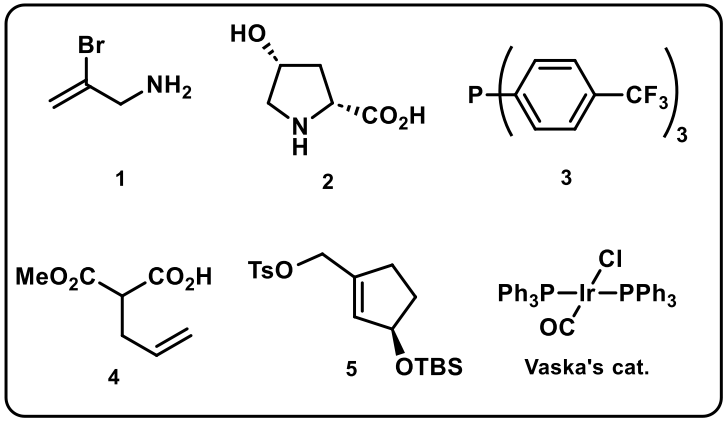
15) LiCl, DMSO, H_2O, 170 °C
16) KF, 4 M H_2SO_4

H

17) AZADO, PIDA, DCM
18) Vaska's cat., TMDS, PhMe
then HCO_2H, MeOH, 60 °C



himalensine A



Please give a reasonable mechanism for step 4. Think about the process - why is this step so elegant and ,,efficient"?
Why is NaHMDS used in step 10?