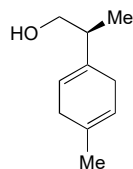


propose a retrosynthetic approach to obtain this compound: pay attention to the stereochemistry!



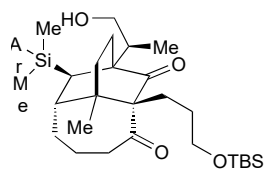
1) *t*BuOK, MeOH

1) pyridine, then
TfOH +
EtOOC-CH=CH-Si(Me)₂-Ph
2) Et₂AlCl

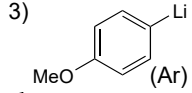
1) LiAlH₄
2) Ph₃P/I₂ imidazole *name?*
3) NaCN
4) DIBAL
5) NaBH₄

explain the *exo* selectivity

1) *m*CPBA
2) *p*TSA
3) DMP

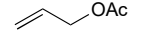


1) 9-BBN, then H₂O₂
explain mechanism
2) TBSCl
3)



1) MeOH, H⁺
2) Ph₃P/I₂
3) LDA

1) LDA, MeCHO
2) DMP
3) Pd cat., NaH



name and mechanism of the last step?

1) SmI₂
2) TBSCl

1) Phth, DEAD/PPh₃
2) KHMDS, PhNTf₂
3) Pd cat., CO, (CH₂=CH)₄Sn (*name?*)

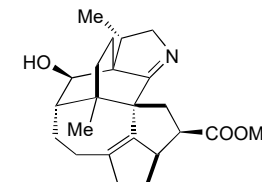
1) HBF₄ (*name?*)
2) KF, *m*CPBA (*name?*)
3) TESCl
4) MOMBr

1) IBX
2) Bn₂NH/TFA, 50°C
3) MnO₂, NaCN
MeOH

who developed this oxidation?

who developed this alternative to the Crabtree?

1) H₂, [(cod)(py)(PCy)₃]IrBARF
2) NH₂NH₂
3) NH₄Cl, EtOH 70°C
4) Ph₂BBr



(-)-Calyciphylline N
Amos B. Smith III and coworkers
J. Am. Chem. Soc. **2014**, 136, 870.
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