The Total Synthesis of (+)-ShearilicineThe Total Synthesis of (+)-Shearilicine

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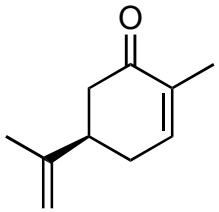

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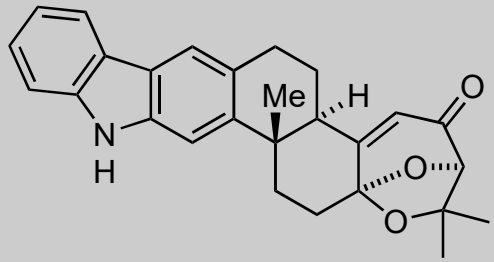

(+)-shearilicine

1) TMS acetylene, *n*-BuLi, CuI•DMS, TMSOTf
2) 1, $Pd(PPh_3)_4$ th*en su*bstrate, MeLi, HMPA
3) CsF
4) $Mo(CO)_6$
5) O_3, MeOH, $FeSO_4{}^{\bullet 7}H_2O$, PhSH

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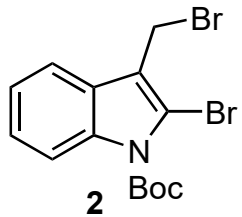

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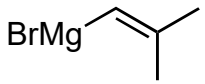
6) $Zn(TMP)_2$, HMPA *then* **2**, TBAI
7) **3**, $Sc(OTf)_3$ *then* TsOH
8) *t*-AmOK, PPh_3CH_3I
9) $Pd(OAc)_2$, $AgBF_4$, **4**
10) $K_2OsO_4{}^{\bullet 2}H2O$, NMO, $(DHQ)_2PHAL$
11) TsOH, $CuSO_4$



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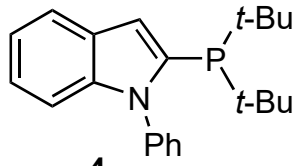

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Step 1: Name the starting material

Step 2: Name of the reaction

Step 3: Hint - double deprotection

Step 4: Name of the reaction

Step 5: Hint - hydrodealkenylation method leading to fragmentation of isobutylene group. Can you propose a mechanism?

Step 7: hint - product undergoes aromatization

Step 9: Name the reaction. Hint - product undergoes aromatization

Step 10: Name the reaction