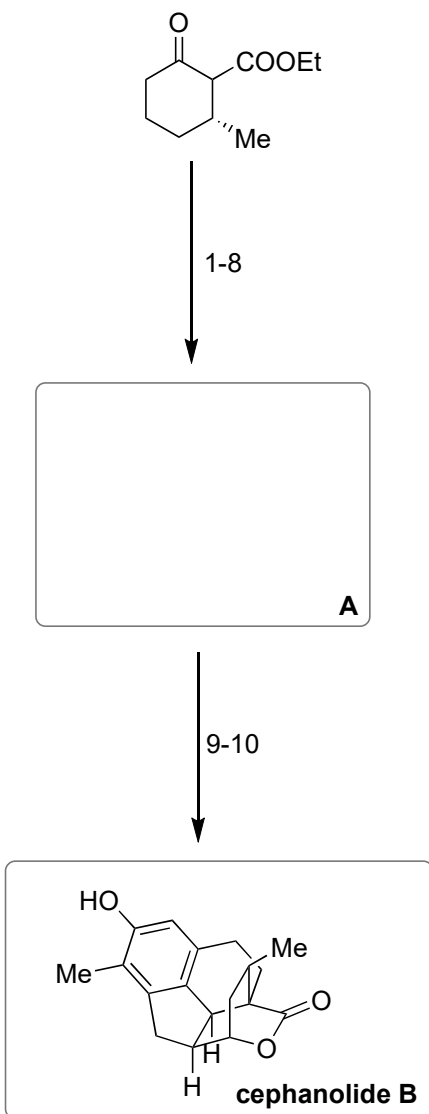
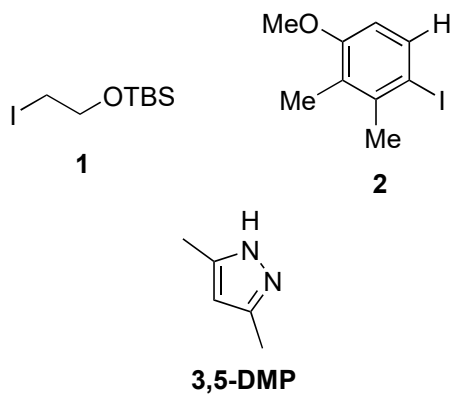


Asymmetric total synthesis of benzenoid cephalotane-type diterpenoids through a cascade C(sp²) & C(sp³)–H activation

X. Li, Z. Lu, S. Liu, M. Sun, S. Duan, Z. Xie, *Nat. Commun.* **2025**, *16*, 4674.



- 1) **1**, Cs₂CO₃
- 2) TsNHNH₂, NaH, MgSO₄, *then* HF (aq.)
- 3) CBr₄, PPh₃, *then* CrO₃, 3,5-DMP
- 4) CeCl₃·7H₂O, NaBH₄
- 5) NaH
- 6) DIBAL-H
- 7) CHCl₃/MeOH
- 8) **2**, PdCl₂ (20 mol%), NBE, Cs₂CO₃, KOPiv



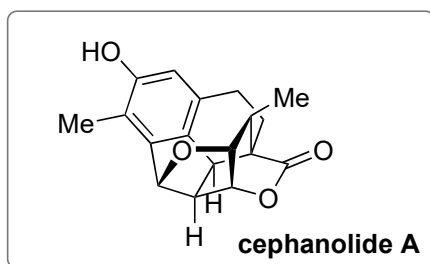
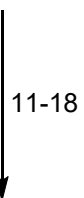
- 9) BF₃·Et₂O, *m*-CPBA, 4Å MS
- 10) BBr₃

2) Name of the reaction:

3) Name of the reaction:

4) Name of the reaction:

A



- 11) 3M HCl
- 12) (COCl)₂, DMSO, Et₃N
- 13) NaClO₂, NaH₂PO₄, 2-methyl-2-butene
- 14) KHMDS, camphorsulfonyl oxaziridine
- 15) NaBH₄, MeOH
- 16) CMPI, Et₃N
- 17) I₂, PIDA, hv
- 18) BBr₃

12) Name of the reaction:

13) Name of the reaction:

16) Name and structure of the reagent CMPI:

17) Name of the reaction: