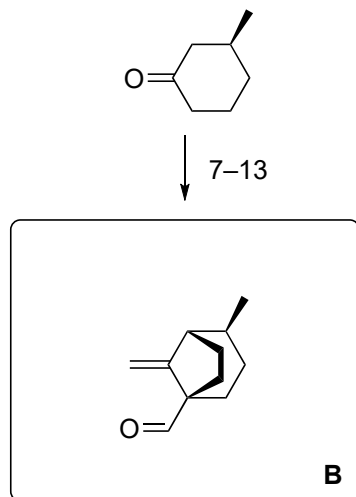
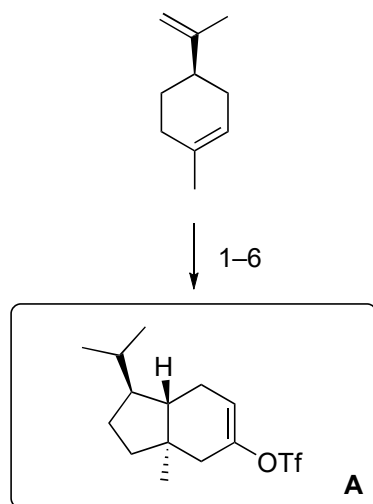
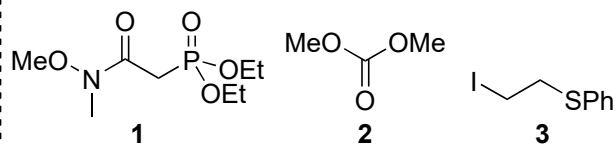


Convergent Total Synthesis of (-)-Calidoustene

W. Yao, Z. Liu, H. Ling, H. Wang, H. Zheng, S. Wang, D. Zhu, S. Zhang, X. Chen, *J. Am. Chem.Soc.* **2025**, X



- 1) H₂, PtO₂
- 2) O₃
- 3) TsOH, MeOH
- 4) **1**, NaH *then* LiMe *then* HCl
- 5) Zr(*n*-PrO)₄, PhMe *then* MeONa
- 6) H₂, Pd/C *then* LiHMDS, PhNTf₂

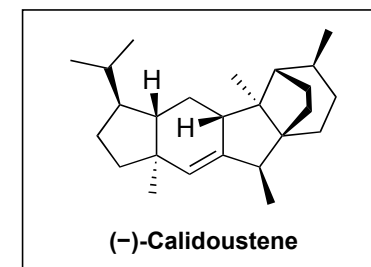


- 7) **2**, NaH
- 8) **3**, Cs₂CO₃
- 9) LiHMDS, PhNTf₂
- 10) LiCl, Pd(PPh₃)₄, TMSCH₂MgCl *then* NaIO₄
- 11) TMSOTf, Et₃N
- 12) Na
- 13) IBX

1) Name of the starting substance: (*R*)-limonene

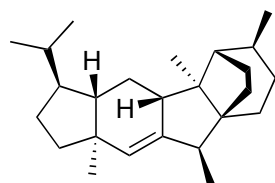
4) Name of the reaction: Horner-Wadsworth-Emmons homologation

10) Name of the reaction: Kumada coupling



A + B

14–21



(-)-Calidoustene

- 14) CrCl_2 , NiCl_2
- 15) IBX
- 16) $\text{Fe}(\text{acac})_3$, PMHS
- 17) $\text{Cu}(\text{OAc})_2$, pby, TEMPO, *m*-CPBA
- 18) *m*-CPBA
- 19) TMSCH_2Li *then* KHMDS
- 20) $\text{NH}_2\text{NH}_2 \cdot \text{H}_2\text{O}$, FeCl_3
- 21) Cp_2TiCl_2 , Zn