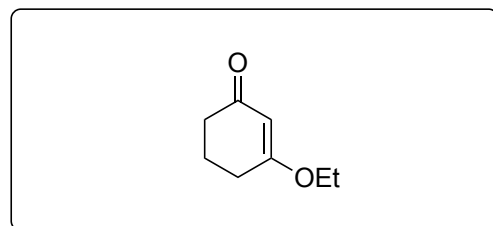


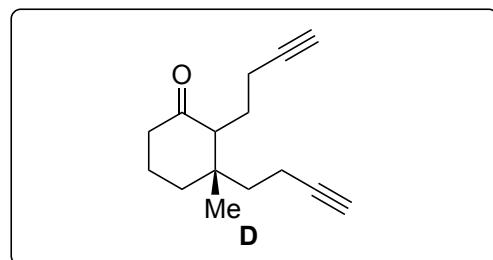
Synthesis of Waihoensene

Yongzheng Qu, Zheyuan Wang, Zhongchao Zhang, Wendou Zhang, Jun Huang and Zhen Yang

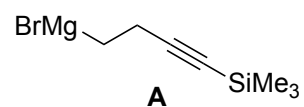
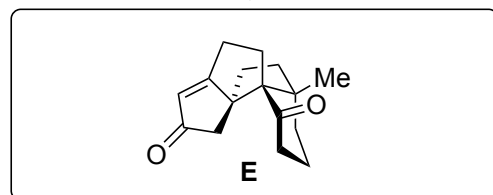
J. Am. Chem. Soc. **2020**, *142*, 6511–6515.



1–6

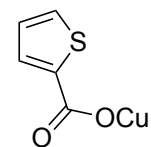


7–8

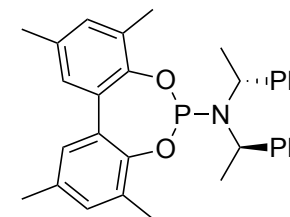


- 1) **A**, then NH_4Cl
- 2) **B**, **C**, AlMe_3 , then **D**
- 3) *m*CPBA
- 4) allyl-SiMe₃, $\text{BF}_3 \cdot \text{OEt}_2$
- 5) O_3 , then PPh_3
- 6) Ohira Bestmann reagent, K_2CO_3

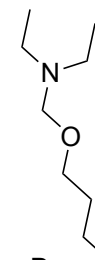
- 7) *t*-BuOK
- 8) $\text{Co}_2(\text{CO})_8$, N_2O



B



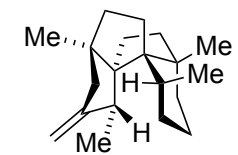
C



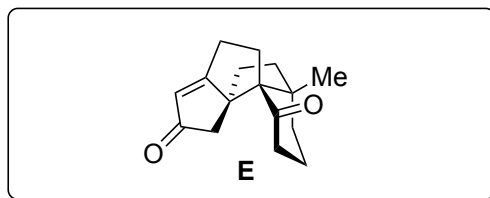
D

- 2) name the functional group in **C**: *phosphoramidite*
- 3) name of reaction? which related reaction? *Cope/Hofmann elimination*
- 4) name of reaction? *Hosomi-Sakurai reaction*
- 6) name of reaction? *Seyferth Gilbert homologization*

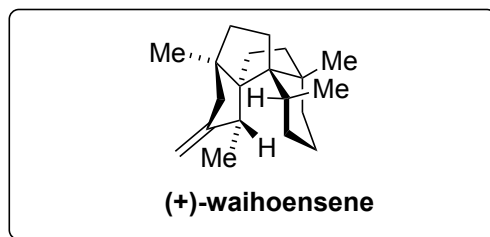
- 7) classify the ring closure according to the Baldwin rules. *5-exo-dig*
- 8) name of reaction? *Pauson-Khand reaction*



(+)-waihoensene



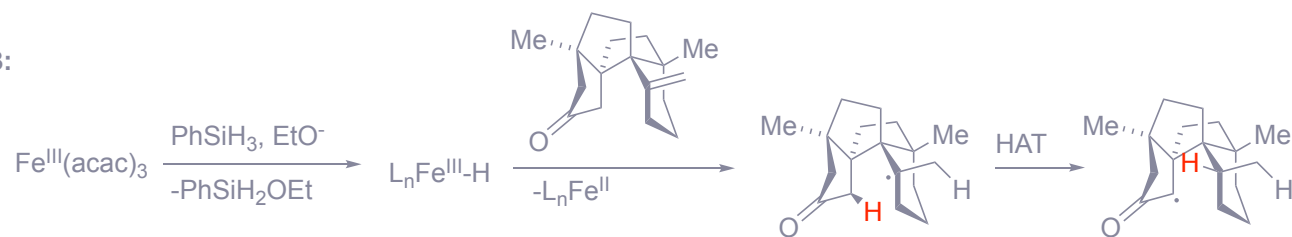
9–15



- 9) ZnMe_2 , LiBr, $\text{Ni}(\text{acac})_2$
- 10) 2-ethyl-2-methyl-1,3-dioxolane, *p*-TsOH
- 11) Ph_3PMeBr , *t*-BuOK
- 12) HCl
- 13) $\text{Fe}(\text{acac})_3$, PhSiH_3 , EtOH
- 14) LiHMDS, MeI
- 15) Ph_3PMeBr , *t*-BuOK

13) explain stereochemical outcome mechanistically
(see below)

step 13:



Distance between **H** and Carbon-centered radical is just 2.4 Å

