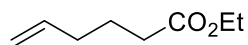


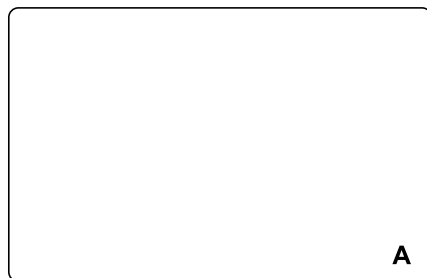
# Total Syntheses of Various Amphilectane and Serrulatane Diterpenoids

X. Yu, F. Su, C. Liu, H. Yuan, S. Zhao, Z. Zhou, T. Quan, and T. Luo\*

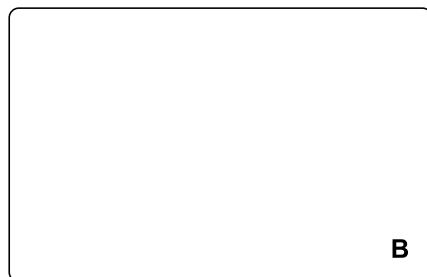
*J. Am. Chem. Soc.* **2016**, *138*, 6261



1–6



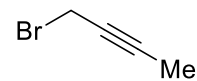
7–10



- 1)  $O_3$ , DMS
- 2)  $Ph_3P=CH-CO_2Et$
- 3)  $MeMgCl$ ,  $CuCl$
- 4)  $NaH$ , **i**
- 5)  $H_2$ ,  $Pd-CaCO_3$ ,  $Pb(OAc)_2$ , quinoline
- 6)  $LiHMDS$ ,  $PhNTf_2$

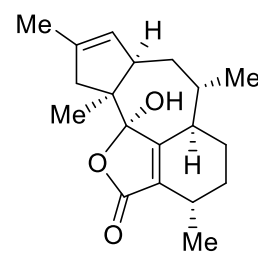
- 7)  $DIBAL-H$
- 8)  $Pd(OAc)_2$ ,  $PPh_3$ ,  $Et_3N$ ,  $CO$
- 9)  $PhCl$ , mW,  $200^\circ C$
- 10)  $DIBAL-H$  then  $HCl$

**i:**

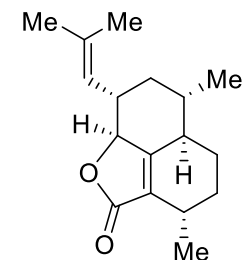


Provide the name of the catalytic system used in step 5

Which reaction takes place in step 9



**Caribenol A**



**Amphilectolide**

11-14

**Caribenol A**

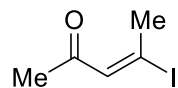


15-18

**Amphilectolide**

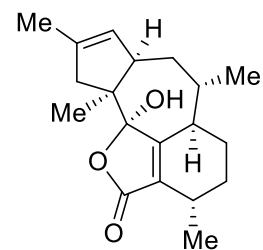
- 11) 9-BBN, ii, Pd(dppf)Cl<sub>2</sub>, AsPh<sub>3</sub>,  
Cs<sub>2</sub>CO<sub>3</sub>  
12) AuCl<sub>3</sub>  
13) TMSCHN<sub>2</sub>, *n*-BuLi  
14) NaClO<sub>2</sub>, NaH<sub>2</sub>PO<sub>4</sub>•2H<sub>2</sub>O

ii:

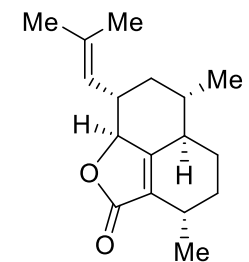


Provide a mechanism for step 13

- 15) 9-BBN, H<sub>2</sub>O<sub>2</sub>  
16) Tf<sub>2</sub>O, 2,6-lutidine  
17) NaClO<sub>2</sub>, NaH<sub>2</sub>PO<sub>4</sub>•2H<sub>2</sub>O  
then TfOH  
18) 1-bromo-2-methylpropene,  
*t*-BuLi, CuI



**Caribenol A**



**Amphilectolide**