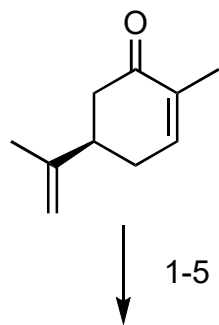
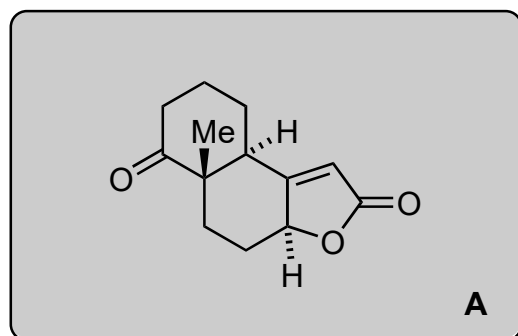


## The Total Synthesis of (+)-Shearilicine

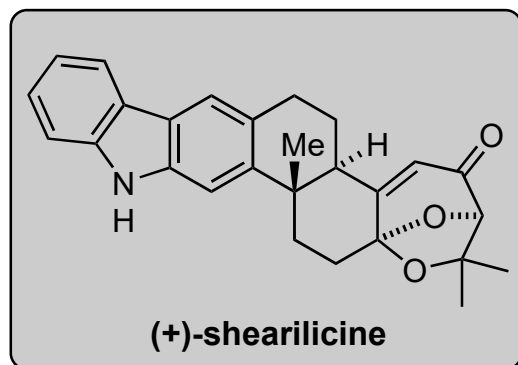
Daria E. Kim, Yingchuan Zhu, Shingo Harada, Isaiah Aguilar, Abbigayle E. Cuomo, Minghao Wang, and Timothy R. Newhouse.  
*J. Am. Chem. Soc.* **2023**, *145*, 8, 4394–4399.



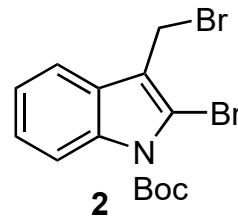
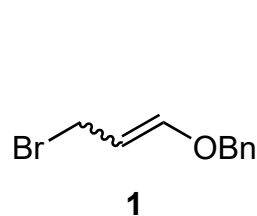
1-5



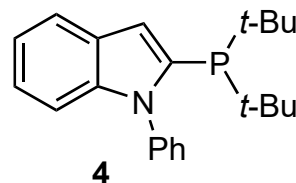
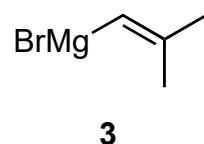
6-11



- 1) TMS acetylene, *n*-BuLi, CuI•DMS, TMSOTf
- 2) **1**, Pd(PPh<sub>3</sub>)<sub>4</sub> then substrate, MeLi, HMPA
- 3) CsF
- 4) Mo(CO)<sub>6</sub>
- 5) O<sub>3</sub>, MeOH, FeSO<sub>4</sub>•7H<sub>2</sub>O, PhSH



- 6) Zn(TMP)<sub>2</sub>, HMPA then **2**, TBAI
- 7) **3**, Sc(OTf)<sub>3</sub> then TsOH
- 8) *t*-AmOK, PPh<sub>3</sub>CH<sub>3</sub>I
- 9) Pd(OAc)<sub>2</sub>, AgBF<sub>4</sub>, **4**
- 10) K<sub>2</sub>OsO<sub>4</sub>•2H<sub>2</sub>O, NMO, (DHQD)<sub>2</sub>PHAL
- 11) TsOH, CuSO<sub>4</sub>



Step 1: Name the starting material

(*R*)-carvone

Step 2: Name of the reaction

Tsuji-Trost allylation

Step 3: Hint - double deprotection

Step 4: Name of the reaction

hetero-Pauson-Khand

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

Heck cross-coupling

Step 10: Name the reaction

Sharpless asymmetric dihydroxylation

## Hydrodealkenylation mechanism

