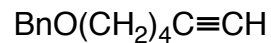
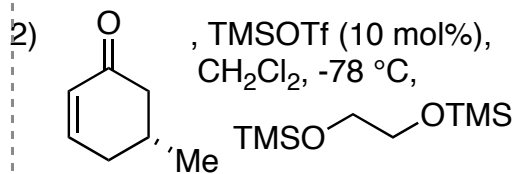


## Enantioselective Total Syntheses of Nankakurines A and B

B. L. Nilsson, L. E. Overman, J. Read de Alaniz, J. M. Rohde *J. Am. Chem. Soc.* **2008**, *130*, 11297-11299.



1) Grubbs II (5 mol%),  
ethylene (300 psi),  $\text{CH}_2\text{Cl}_2$



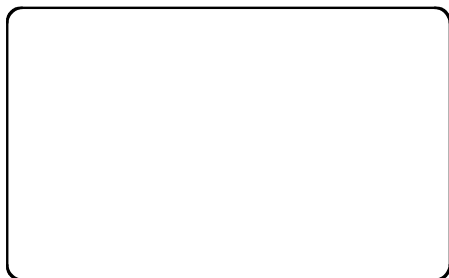
3)  $\text{FeCl}_3/\text{SiO}_2$ , acetone

4) i.  $\text{H}_2\text{NNHCOPh}$ , MeOH

ii.  $\text{NaCNBH}_3$ , MeOH, HCl

*What kind of compound class does  
the product belong to?*

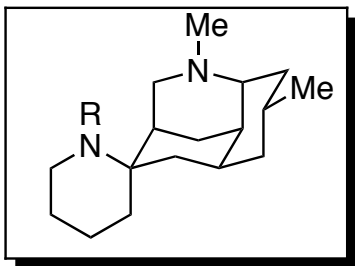
5



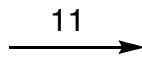
6-8



9,10



nankakurine A: R = H



5)  $(\text{CH}_2\text{O})_n$ , 4 Å mol. sieves,  
 $(i\text{-Pr})_2\text{NEt}$ , PhMe, 115 °C

6) i.  $\text{SmI}_2$ , THF-MeOH  
ii. 37% aq. formaldehyde,  
 $\text{NaCNBH}_3$ , MeOH, HCl  
7)  $\text{H}_2$ , 10 mol%  $\text{Pd}(\text{OH})_2$ , HCl,  
MeOH  
8)  $\text{AlH}_3$ , THF

9)  $\text{MsCl}$ ,  $\text{Et}_3\text{N}$ ,  $\text{CH}_2\text{Cl}_2$ , -40 °C  
10)  $\text{H}_2$ , 10 mol% of Pd/C, HCl,  
MeOH

11) 37% aq. formaldehyde,  
 $\text{NaCNBH}_3$ , MeOH, HCl

nankakurine B: R = Me

*Name this key step!*

*What kind of compound class does  
the product belong to?*