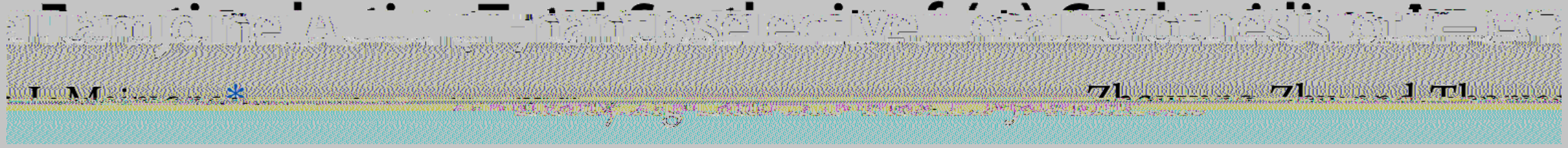
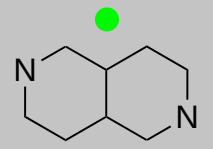
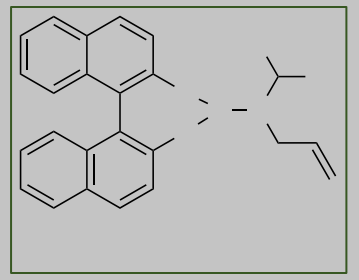




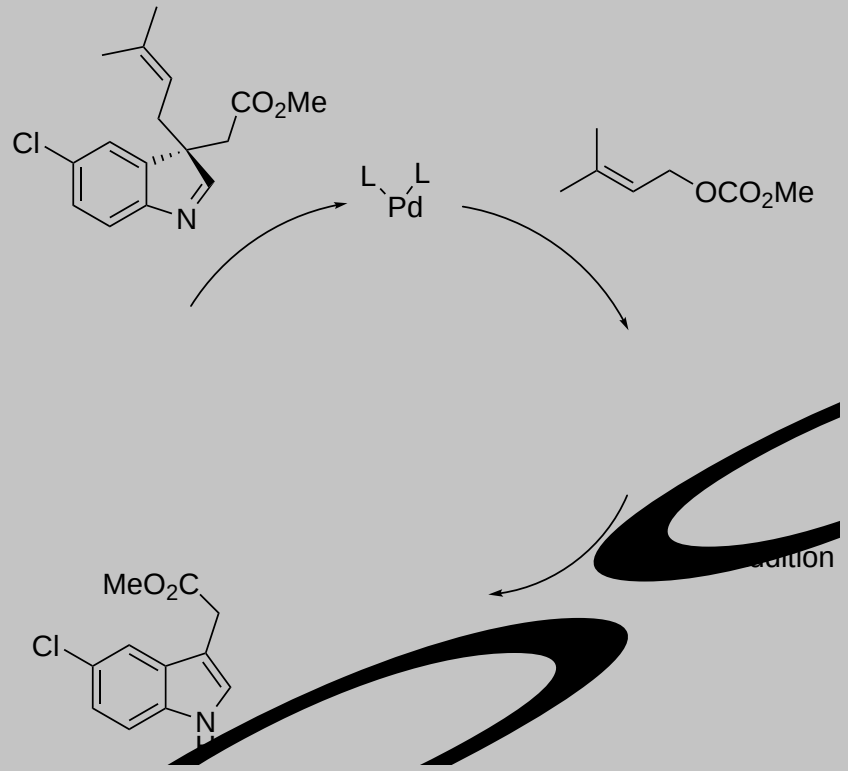
! "#$%&' ()! "$)&' *)+"# , &-)./) 0 &1 , # ' 2)

3456 7)8948 : ;8944<

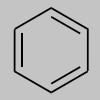
! "##"$%&' ()*$"+ ,
-)+%-"(
. ' /0 1 (02%34%5657

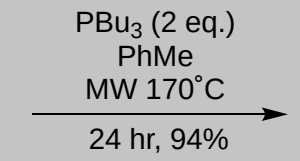


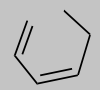
! "#$%&'#$! () *+,&'-. *

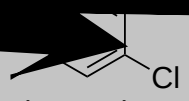

CO2Me
Cl
N
L
L
Pd
OCO2Me
MeO2C
Cl
N

! "#$‰# *' $"‰(#$"$‰#*) –

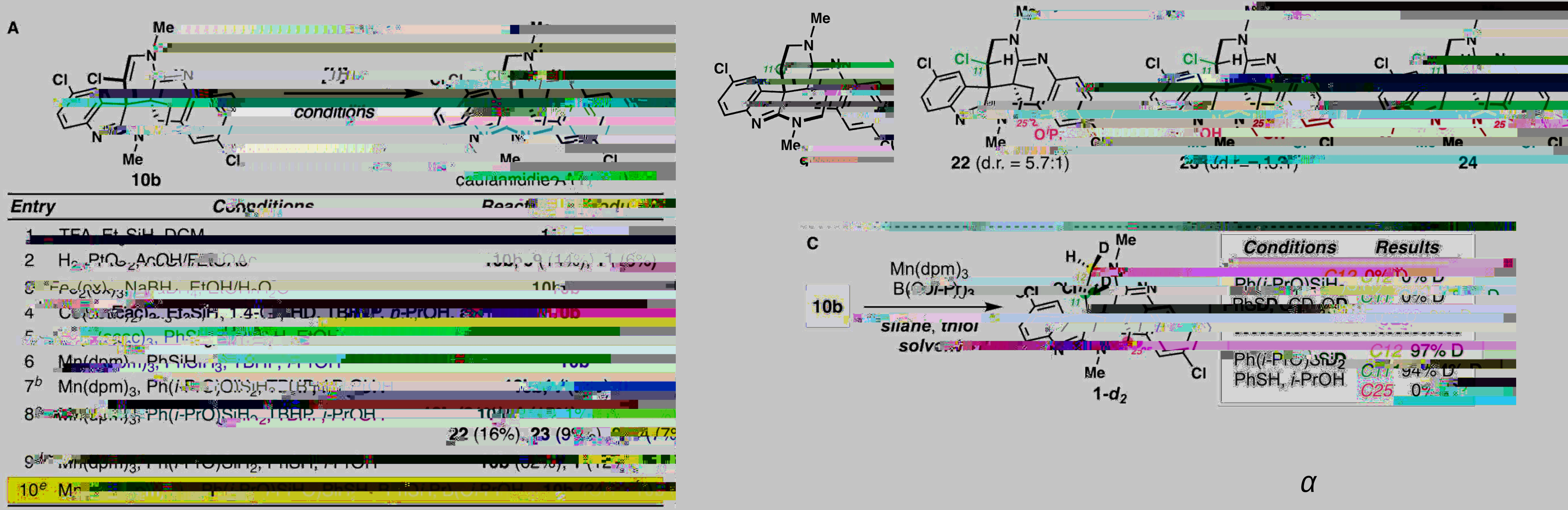



PBu3 (2 eq.)
PhMe
MW 170˚C
24 hr, 94%

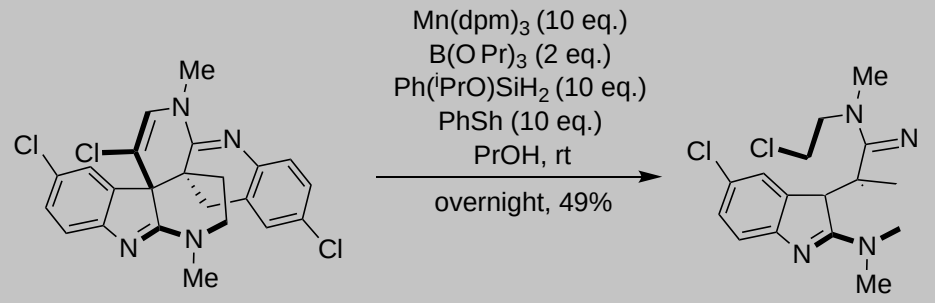


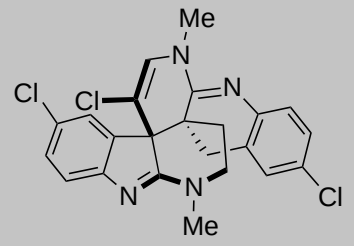


(1.1 eq.)
4 hr, 54%


A
10b
conditions
caulamidine A
Entry
Conditions
22 (d.r. = 5.7:1)
24
C
Mn(dpm)3
10b
1-d2
Conditions
Results
PhSH, i-PrOH
C12 97% D
C25

α


Mn(dpm)3 (10 eq.)
B(OiPr)3 (2 eq.)
Ph(iPrO)SiH2 (10 eq.)
PhSh (10 eq.)
PrOH, rt
overnight, 49%
Me
N
N
Cl
Cl
N
N
Me
Cl
Me
N
N
Cl
Cl
N
N
Me



$Mn(dpm)_3$ (10 eq.)
$B(O^iPr)_3$ (2 eq.)
$Ph(^iPrO)SiH_2$