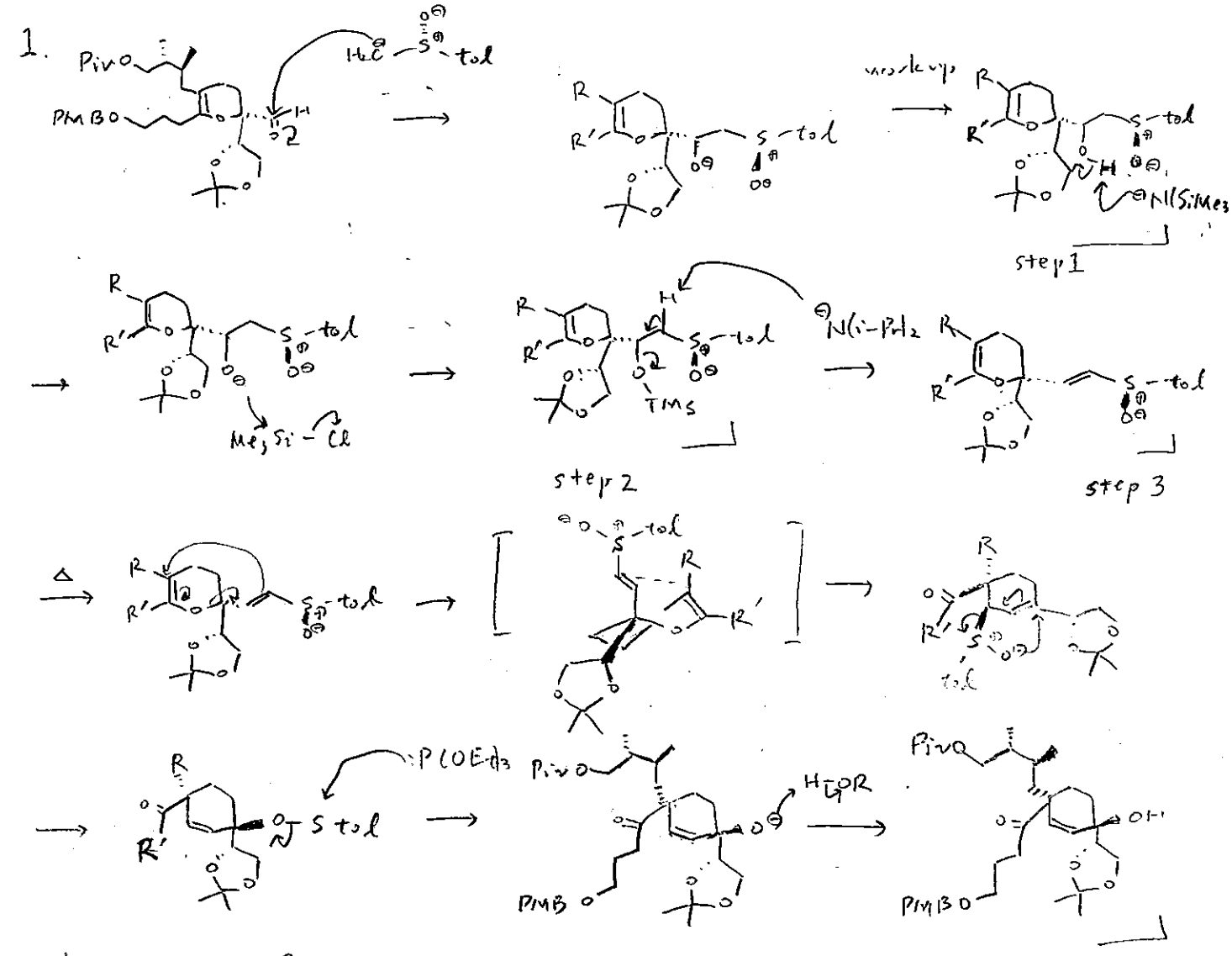
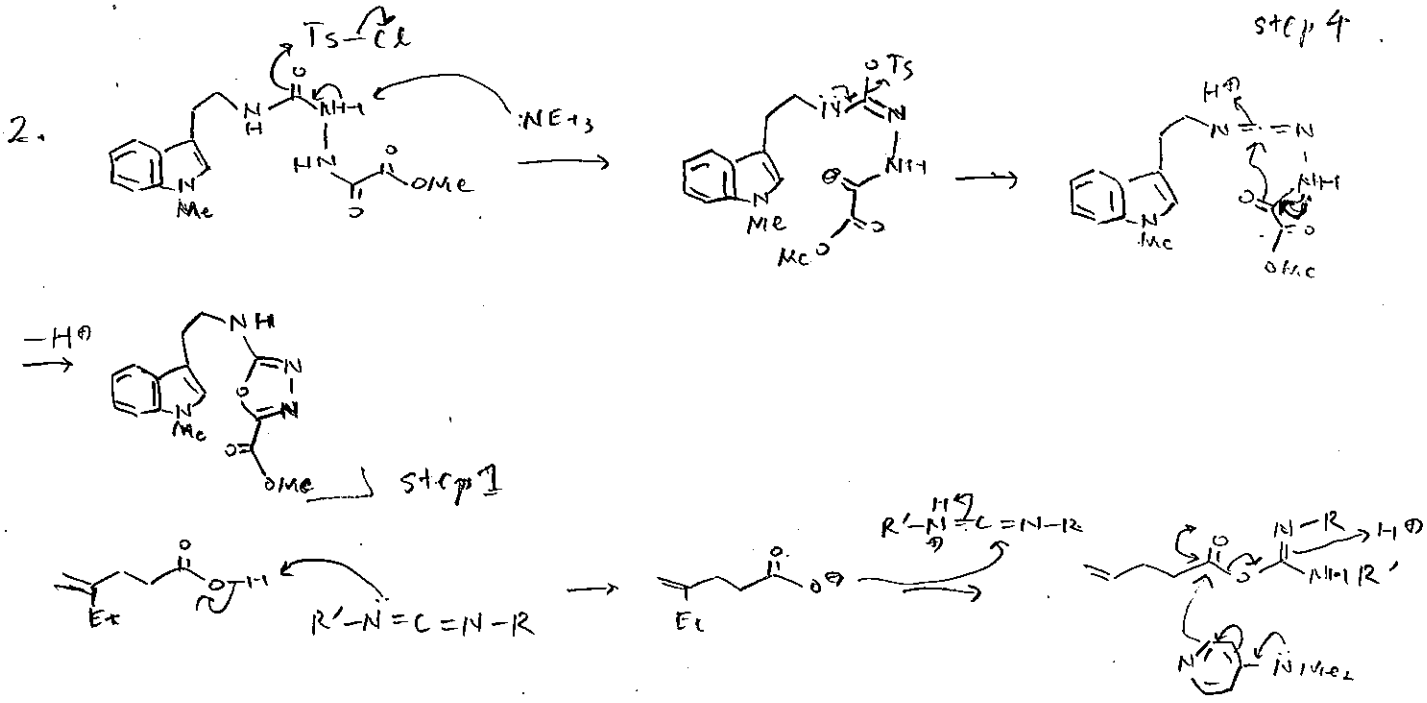
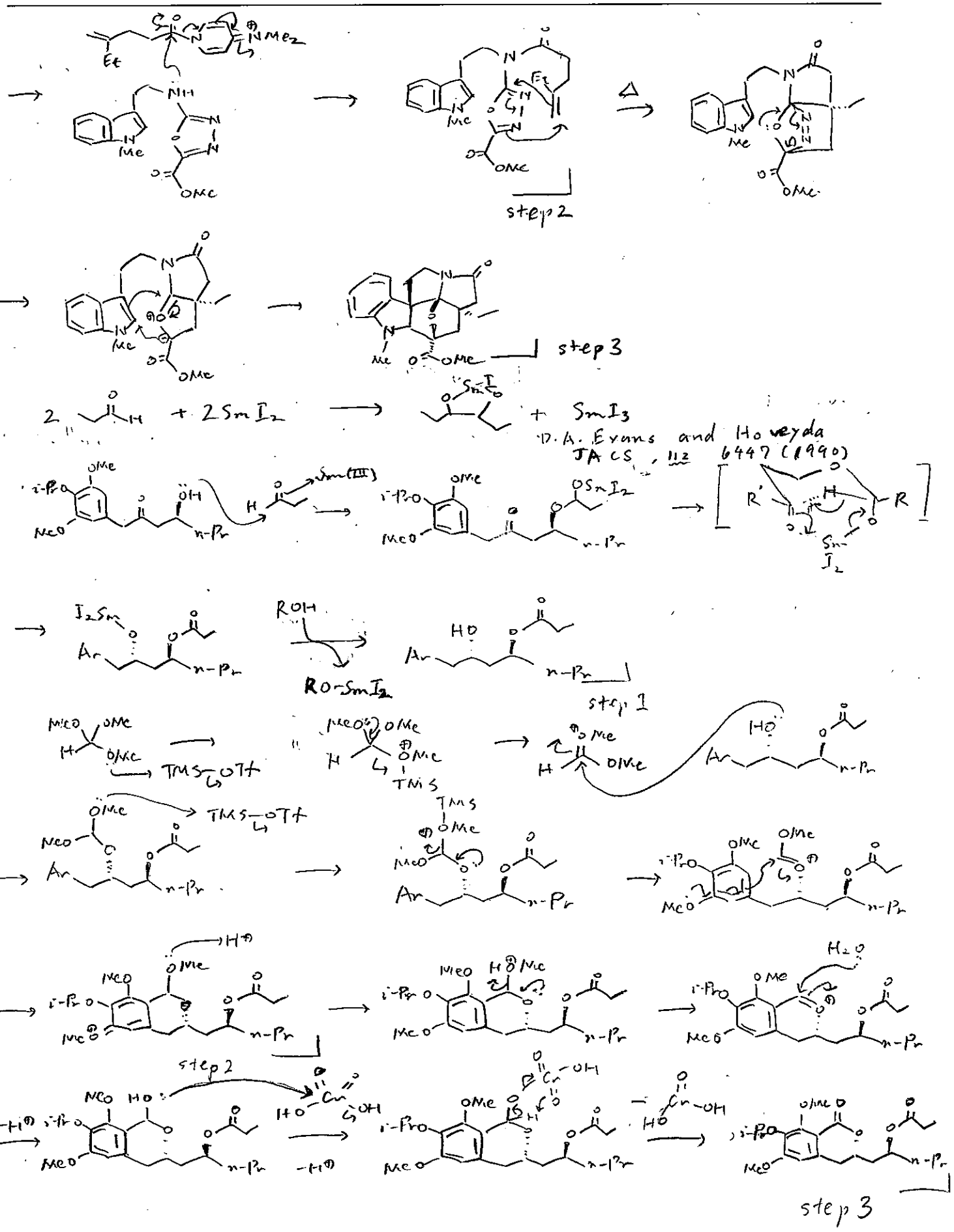
1.

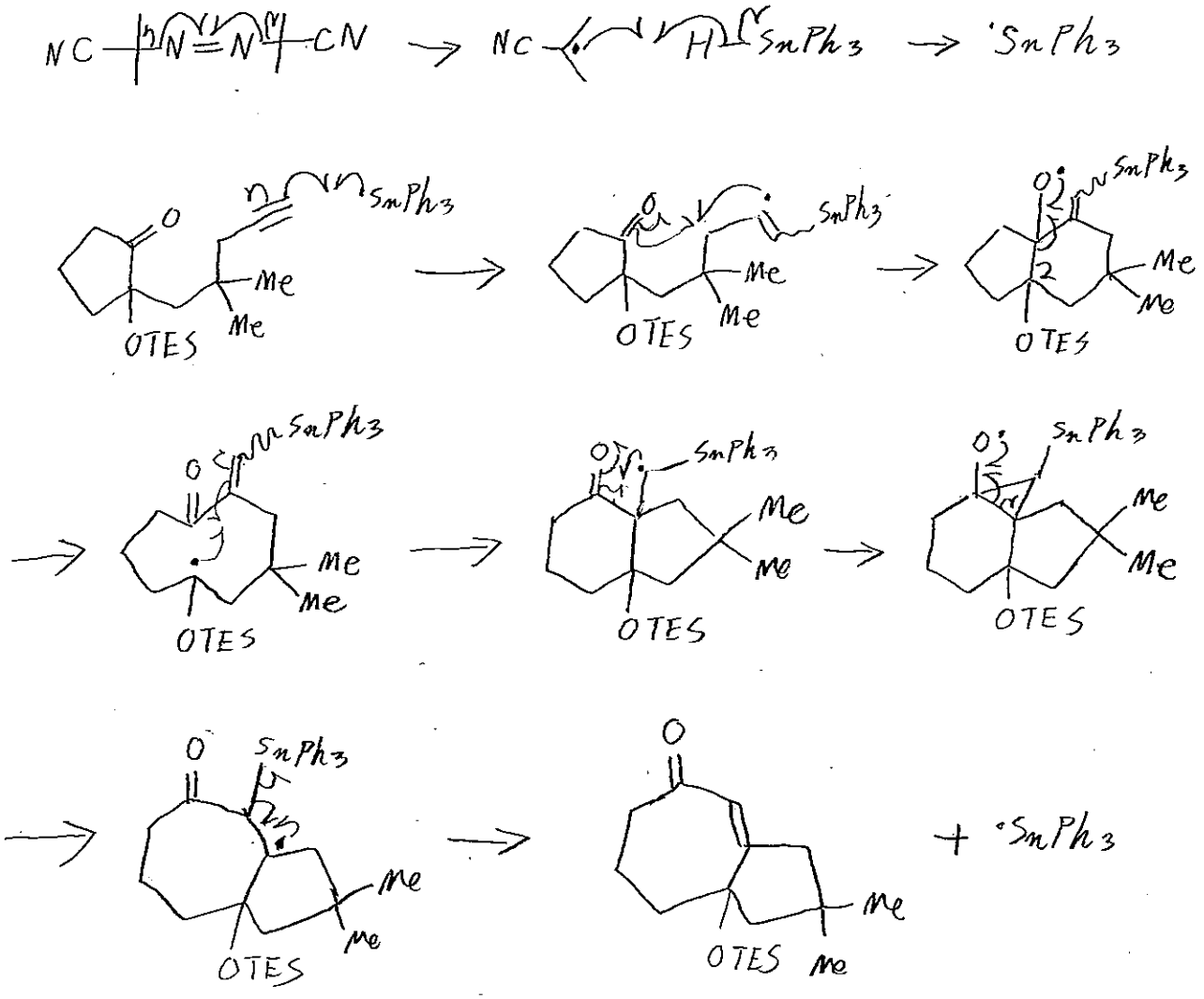

Piv O
PMB O
tol
workup
step 1
Me3Si – Cl
TMS
step 2
step 3
:P(OEt)3
step 4

2.

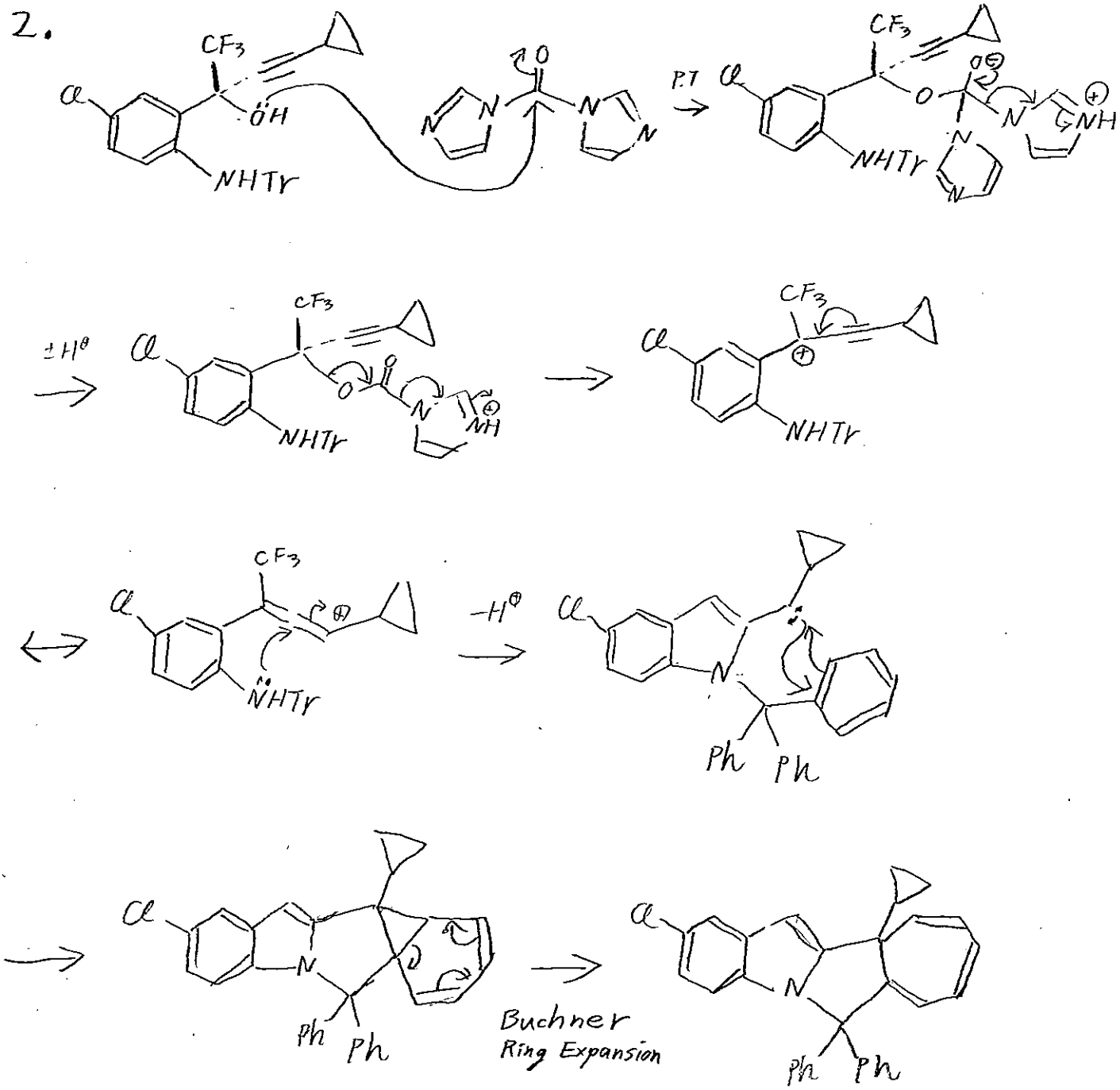
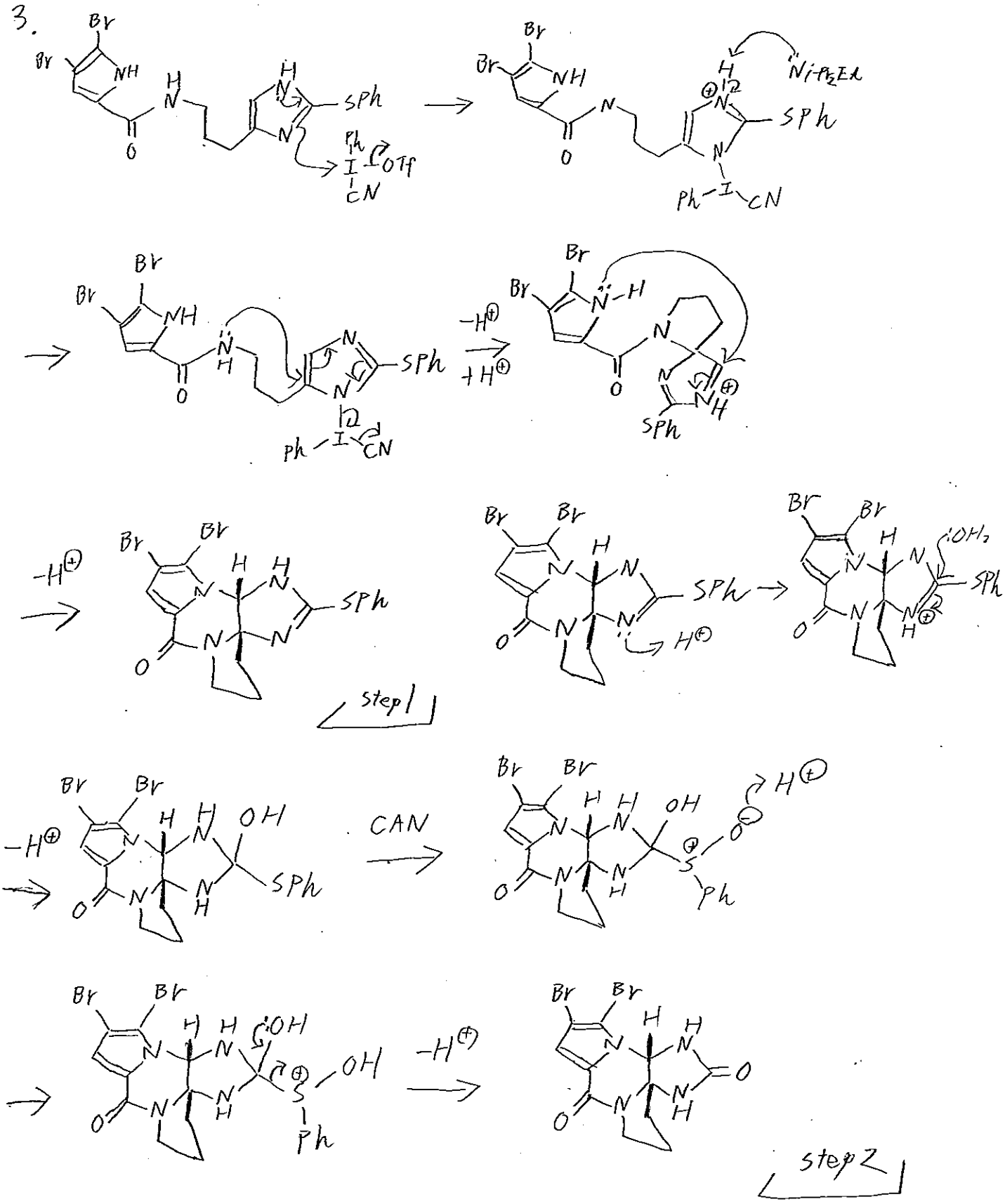

Ts – Cl
:NEt3
Me
OMe
step 1
Et
R'–N=C=N–R


step 2
step 3
3.
2 + 2SmI2 → + SmI3
D. A. Evans and Hoveyda
JACS, 112 6447 (1990)
Sm(III)
ROH
RO-SmI2
step 1
TMS-OTf
step 2
step 3

1.


NC
N
N
CN
NC
H
SnPh3
SnPh3
O
Me
Me
OTES
SnPh3
O
Me
Me
OTES
O
SnPh3
Me
Me
OTES
O
SnPh3
Me
Me
OTES
O
SnPh3
Me
Me
OTES
O
SnPh3
Me
Me
OTES
O
SnPh3
Me
Me
OTES
O
Me
OTES
Me
+ SnPh3

2.



3.