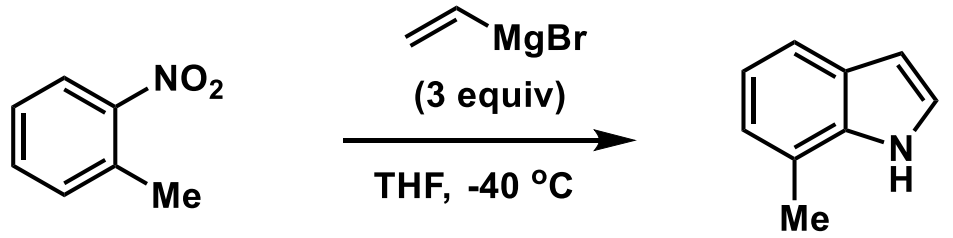
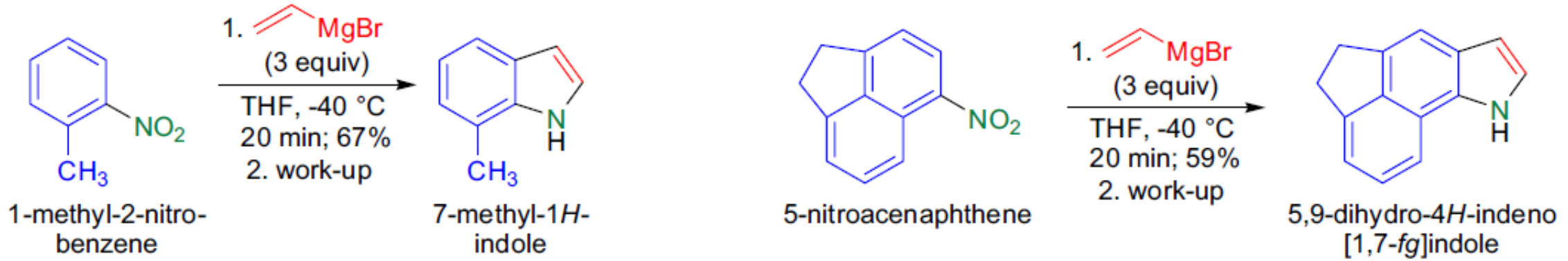
1.

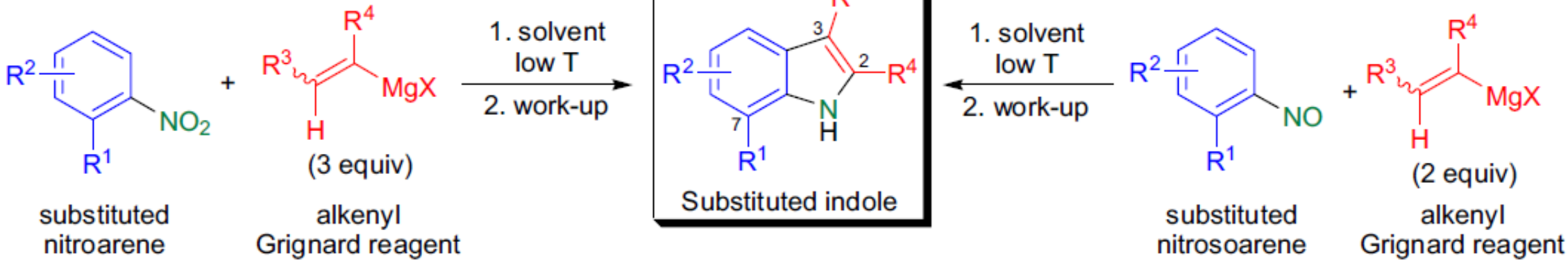


Bartoli indole synthesis

由邻取代硝基苯和乙烯基格氏试剂制备7-取代吲哚的反应。

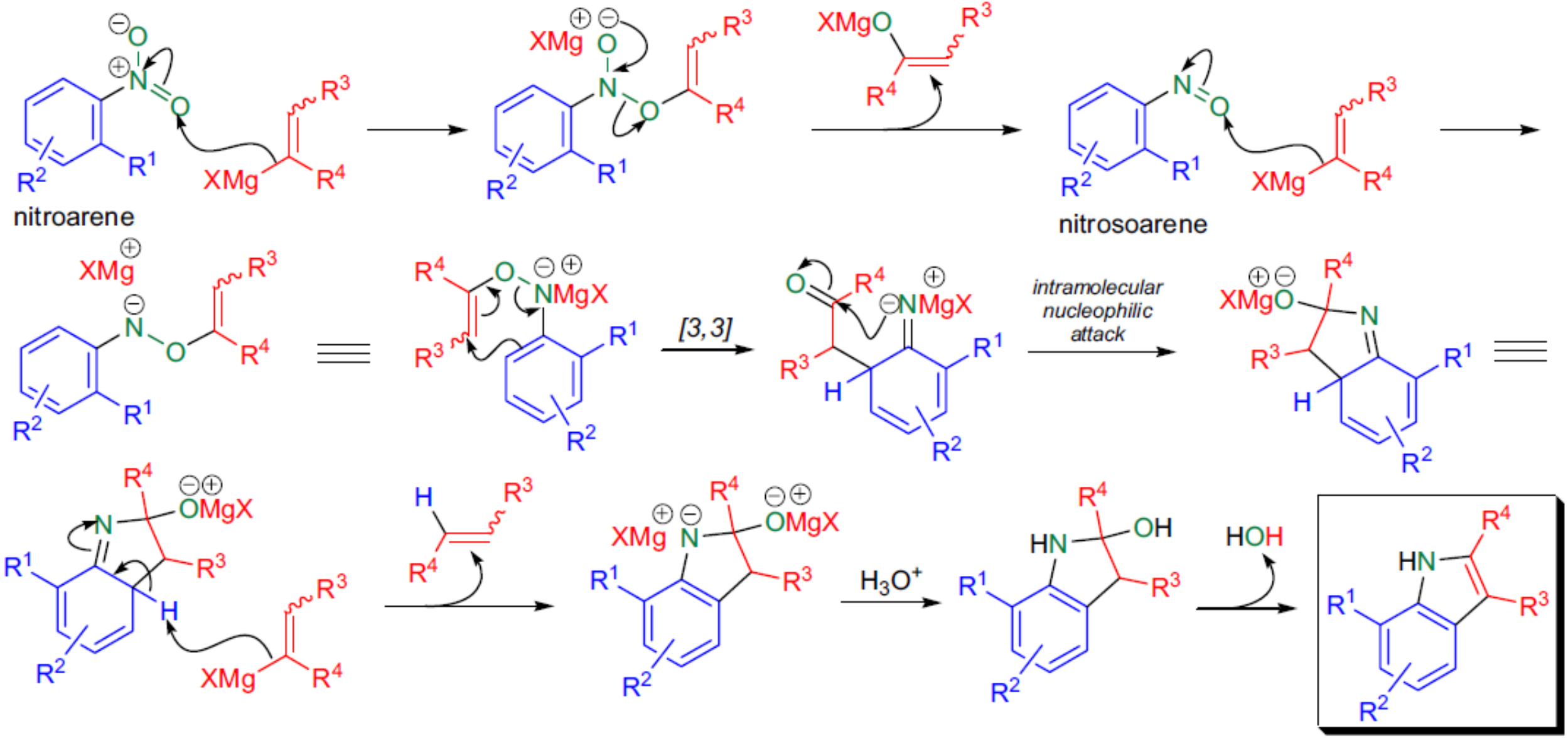


Bartoli indole synthesis:

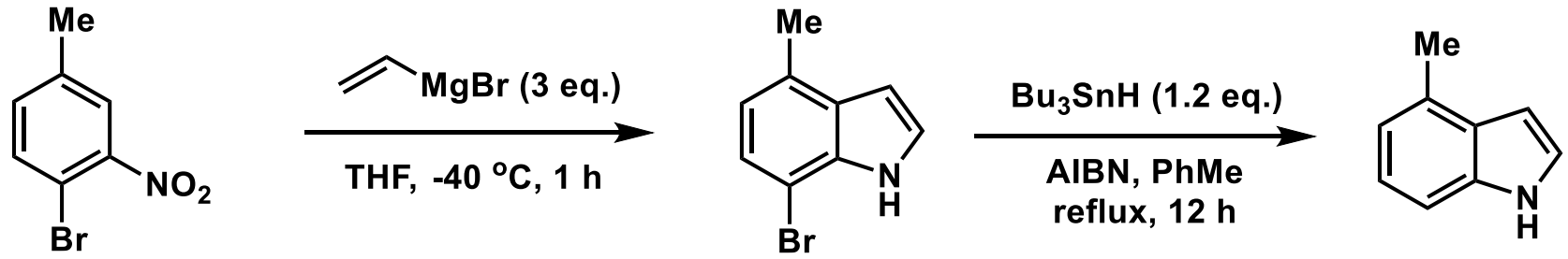


R^1 = Me, alkyl, aryl, F, Cl, Br, I, $OSiR_3$, *O*-benzyl, *O*-*sec*-alkyl, $CH(OR)_2$; R^2 = H, alkyl, aryl, *O*-alkyl, etc.; $R^{3\text{-}4}$ = H, alkyl, aryl, SiR_3

X = Cl, Br, I; solvent: Bu_2O, Et_2O, THF

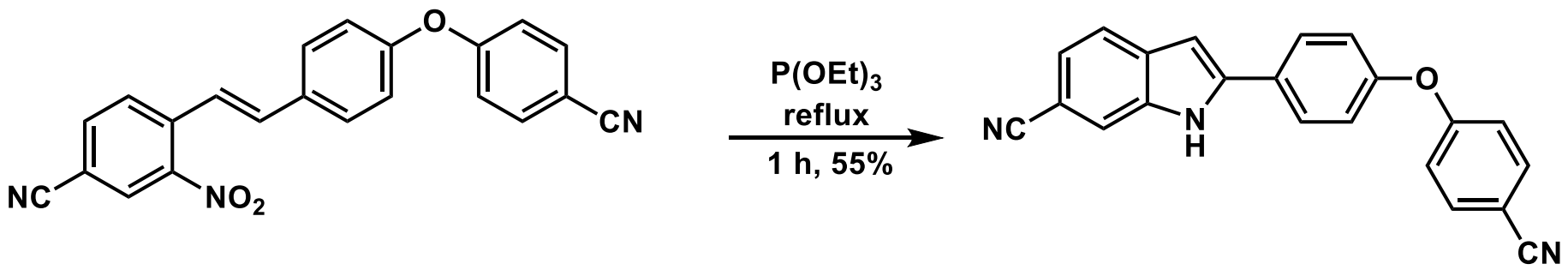

nitroarene
nitrosoarene
[3,3]
intramolecular
nucleophilic
attack
H_3O^+
HOH

Dobbs改良法： **Adrian Dobbs 用邻位的溴作定位基成环，反应后再用偶氮二异丁腈和三丁基锡烷将溴除去，生成 7-位无取代基的吲哚。**



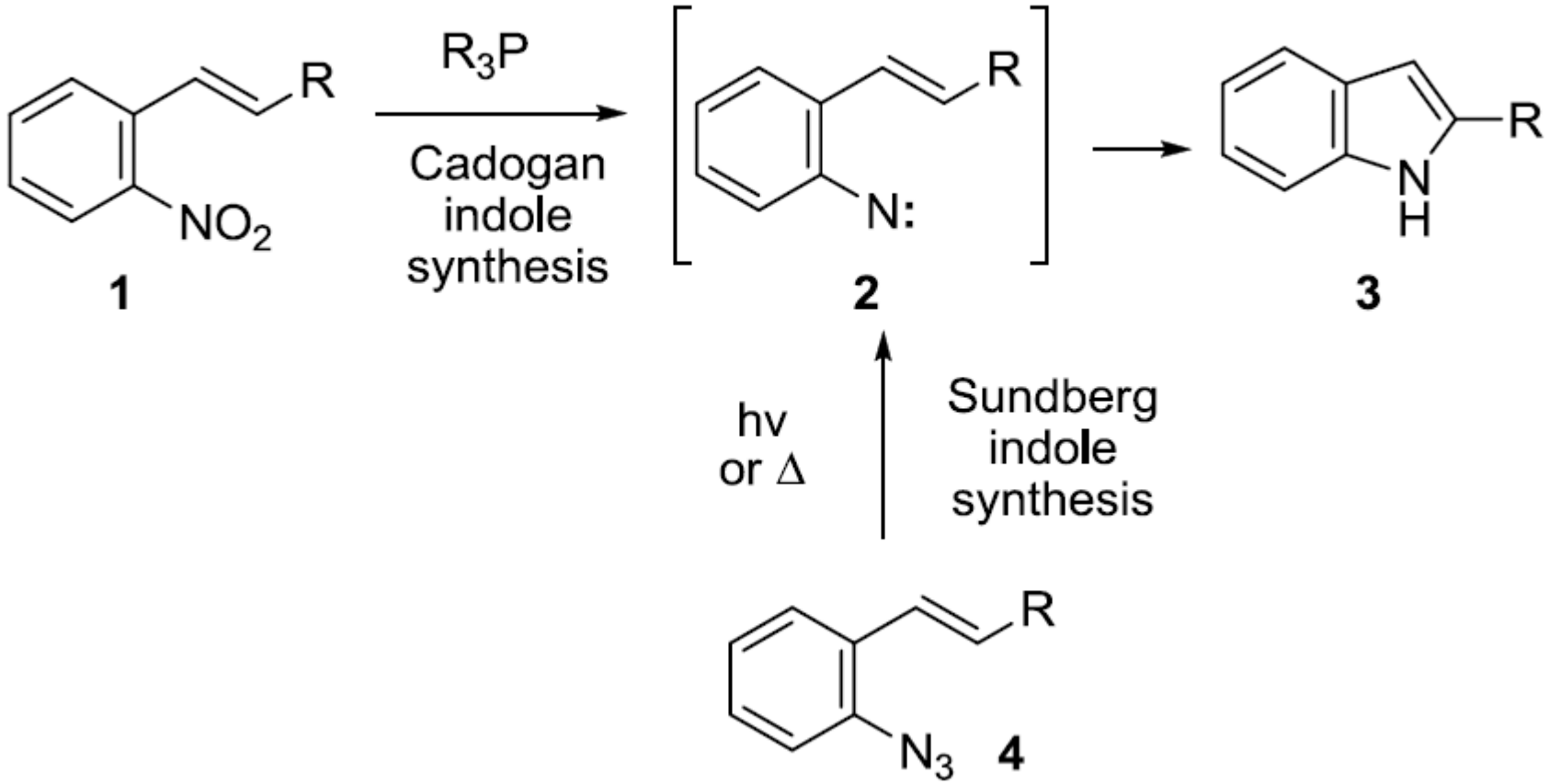
J. Org. Chem. **2001,** *66*, 638-641

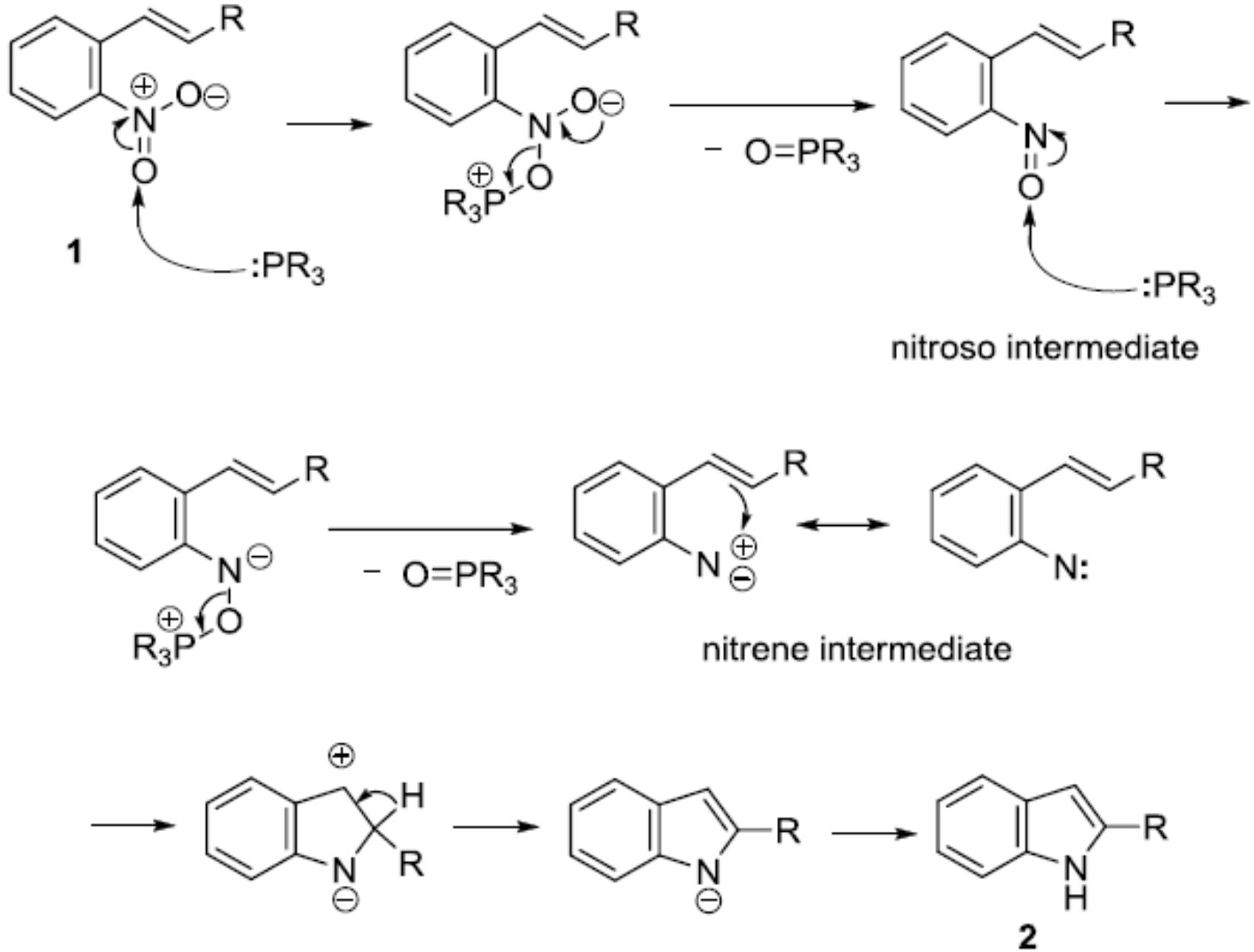
2.



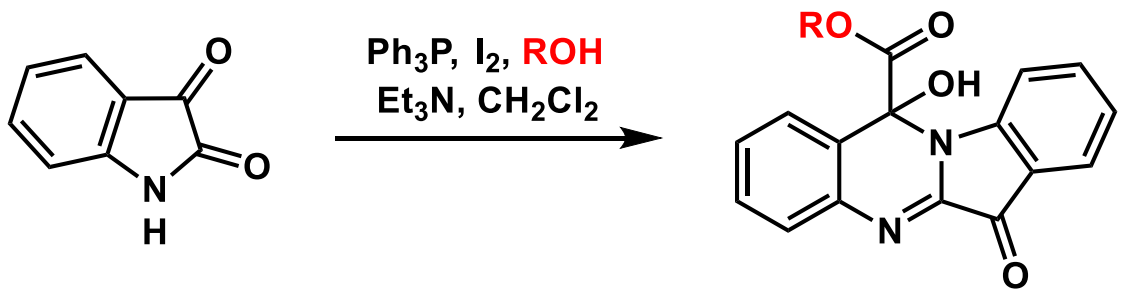
Cadogan–Sundberg indole synthesis

Cadogan反应是指邻硝基苯乙烯1或邻硝基芪类化合物和亚磷酸三酯或三烷基膦反应生成氮宾2，接着环化生成吲哚3的反应。Sundberg 吲哚合成反应则是邻叠氮基苯乙烯4通过氮宾中间体2合成吲哚3的反应。

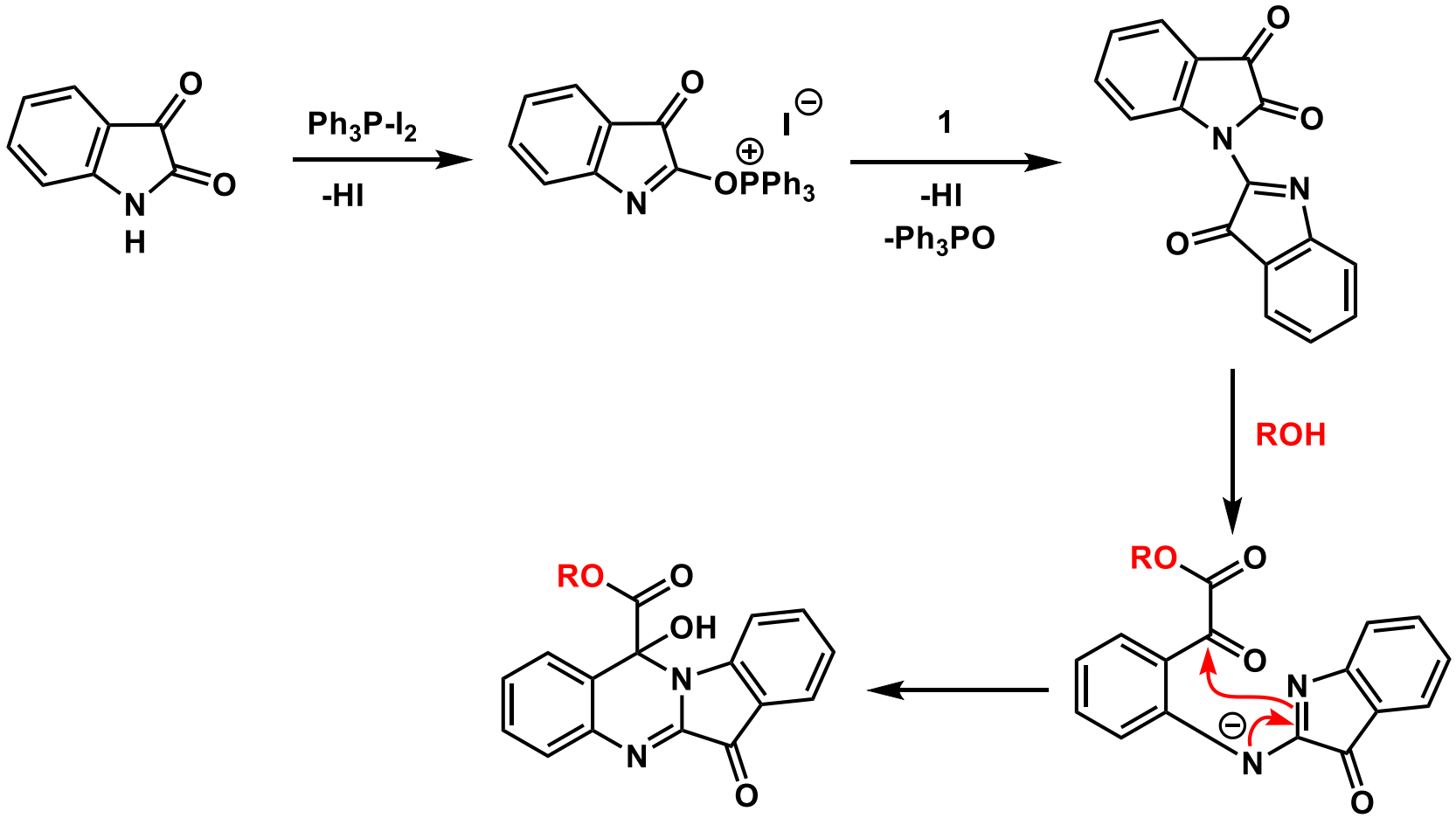



R
O
N
O
1
:PR3
R3P
O
- O=PR3
R
N
O
:PR3
nitroso intermediate
R
N
R3P
O
- O=PR3
R
N
N:
nitrene intermediate
H
R
N
R
N
R
N
H
R
2

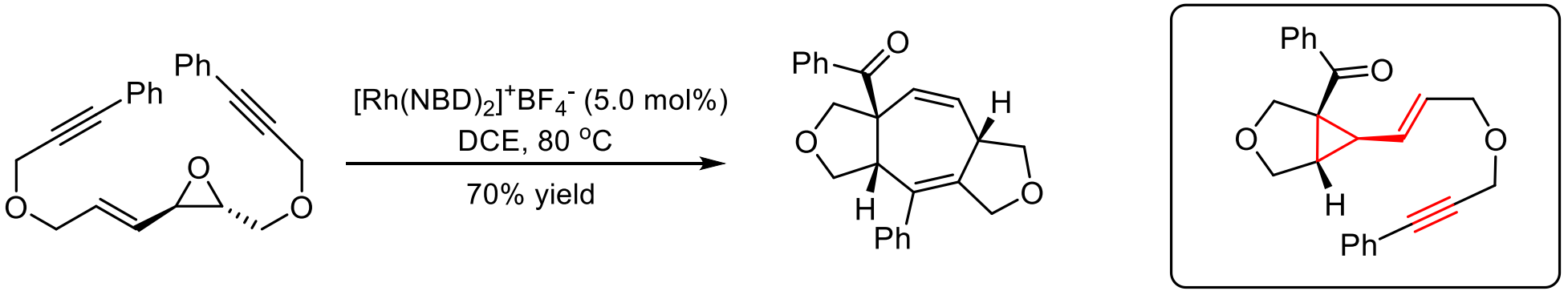
3.



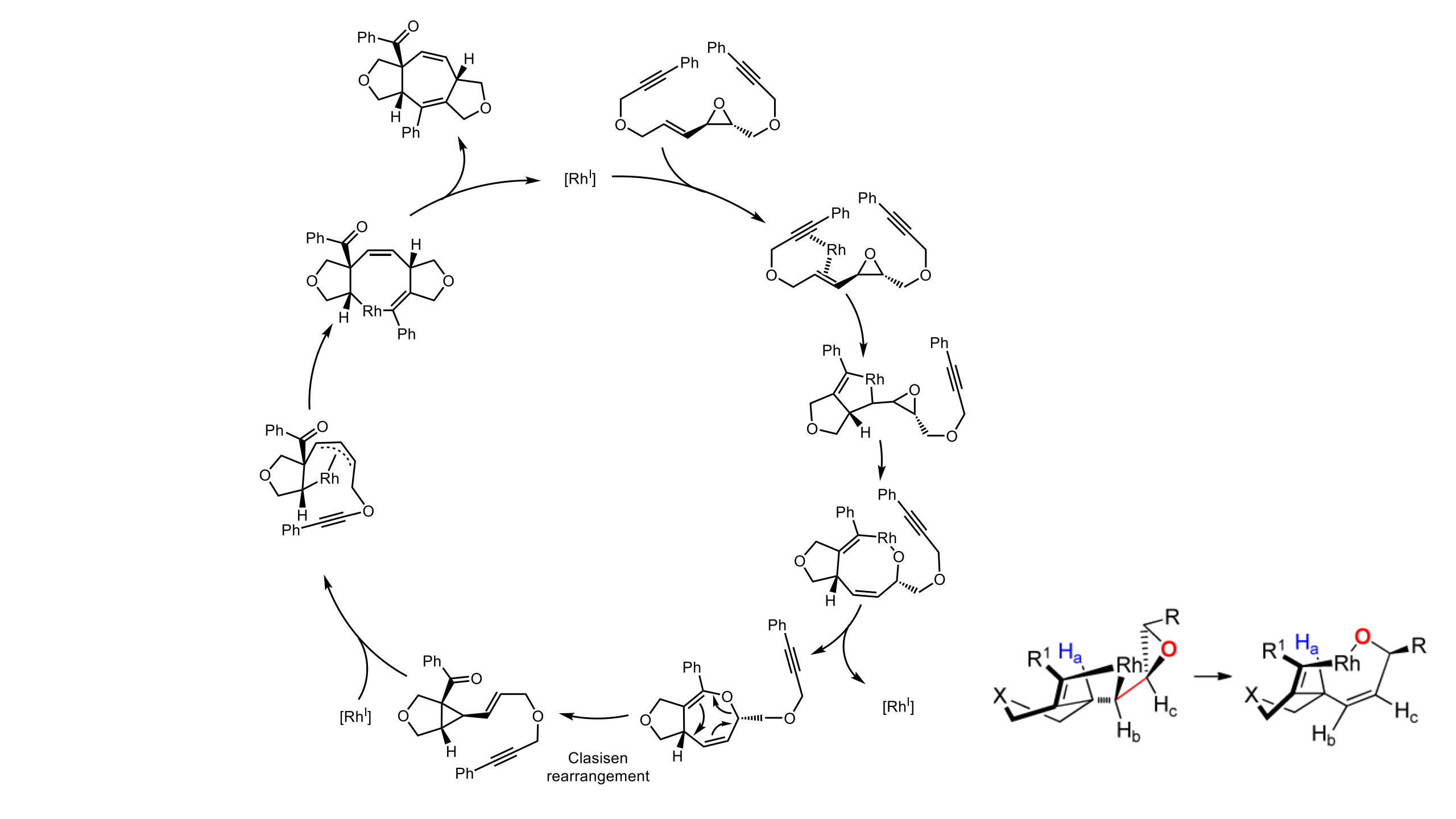
10.1021/acs.joc.0c02403.


Ph3P-I2
-HI
1
-HI
-Ph3PO
ROH
RO
OH

4.



ACS Catal. **2017**, *7*, 1533-1542


[Rh^I]
[Rh^I]
[Rh^I]
Clasisen
rearrangement