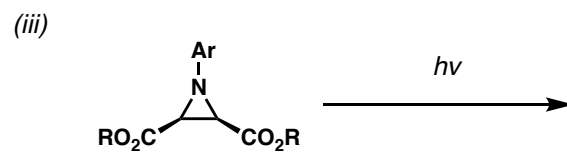
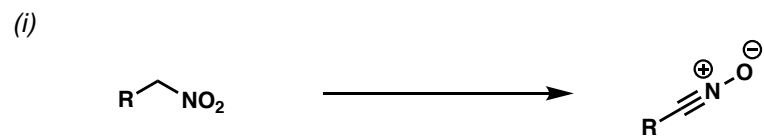


Problem Set

Johanna Masterson and Nicholas Falcone
Sorensen Problem Set Session
August 8th, 2023

Warm-Up: Fill in the starting materials, reagents, or products to complete the schemes below.

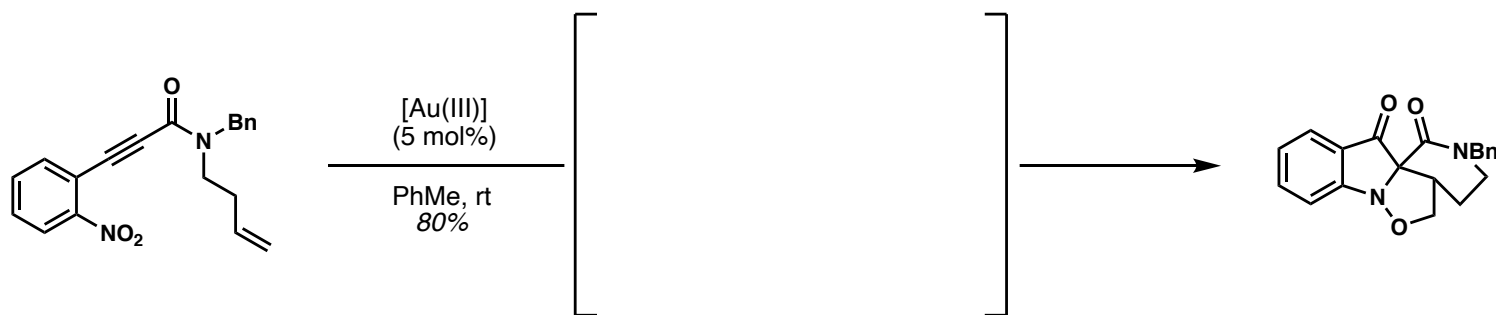


Problem Set

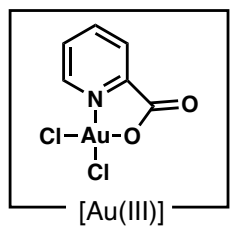
1. Verniest and coworkers developed the following method to synthesize pseudoindoxyls.

(i) Propose a mechanism for the transformation.

(ii) A stable intermediate (detectable by NMR) is formed in the course of the reaction. Provide its structure. What are intermediates of this type called?



Org. Lett., **2015**, 17, 270.



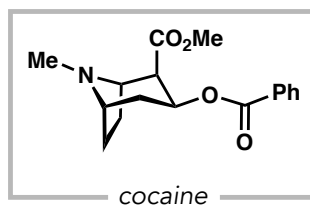
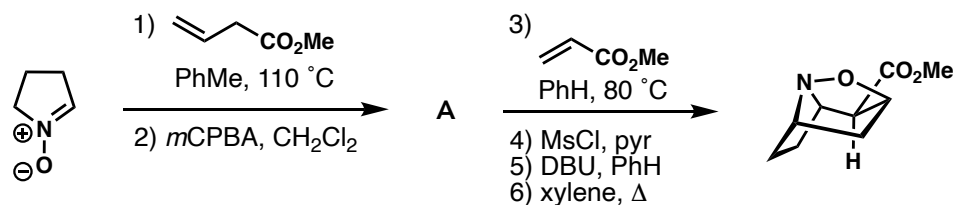
Problem Set

2. Tufariello and coworkers designed the following sequence to assemble the bicyclic tropane core of cocaine.

(i) Follow the sequence shown below and propose the structure of intermediate **A**.

(ii) What is the purpose of step 3? Draw a mechanism for step 6.

(iii) Provide reagents/conditions to convert the intermediate on the right to cocaine. You do not need to show intermediates but clearly enumerate your steps.



J. Am. Chem. Soc. **1978**, 100, 3638.

Problem Set

3. En route to the alkaloid vindorosin, Boger and coworkers used the following transformation to construct the carbon framework and introduce all six stereocenters of the target. Provide a reasonable mechanism for this transformation.

