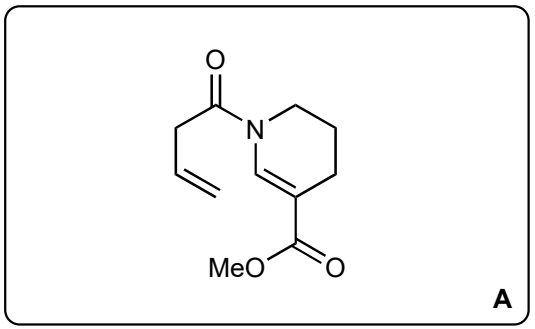
# Synthesis of Aspidodispermine via Pericyclic Framework Reconstruction

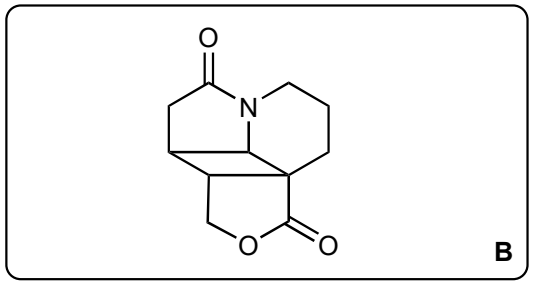
F. Reuß, P. Heretsch *Org. Lett.* **2020**, *22*, 3956–3959.




**A**

1–3

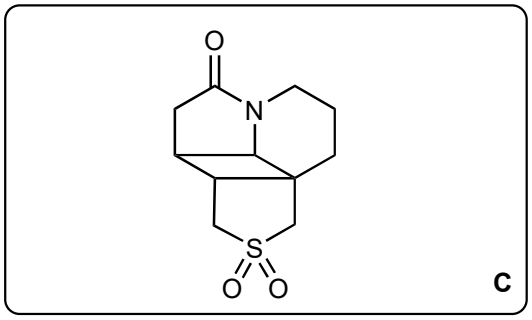
1) Allyl-OH, CuI, **M711**
2) hv, acetone
3) TFA




**B**

4–7

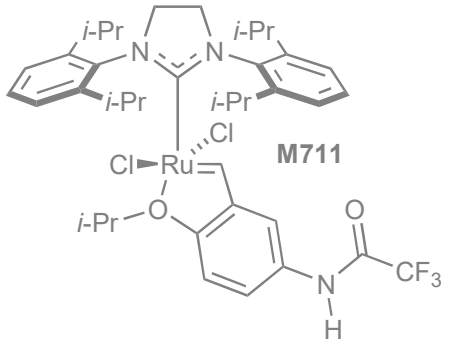
4) $NaBH_4$, NaOMe
5) MsCl, $Et_3N$ (excess)
6) $Na_2S$ (1 equiv)
7) *m*-CPBA (excess)




**C**

Structure of Umicore catalyst **M711**?
(Draw HG-II, change the NHC to SIPr and add a trifluoroacetamide-group *para* to the oxygen bridge)

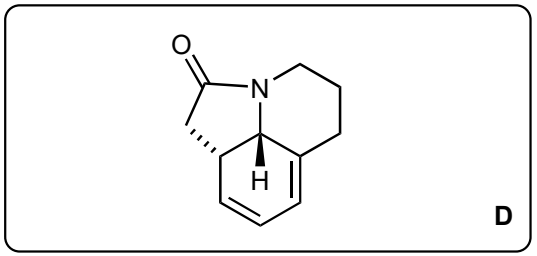
Step 2: Classify this reaction. **[2+2]-cycloaddition**
Role of acetone? **photosensitizer and solvent**




**M711**

8–10

8) $SO_2Cl_2$, pyridine
9) KO*t*Bu
10) PhH, 110 °C

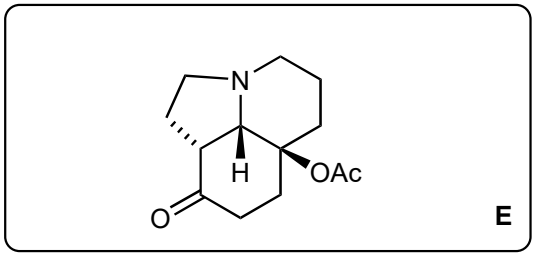



**D**

Step 9: Name the reaction and come up with a mechanism.
**Ramberg-Bäcklund ring-contraction**
Step 10: Classify the reaction.
**[4π]-electrocyclic ring-opening**

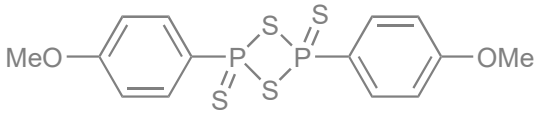
11–14

11) $O_2$, TPP, hv *then* $Et_3N$
12) $Ac_2O$, $Et_3N$, DMAP
13) Lawesson's reagent
14) $NaBH_4$, $NiCl_2$



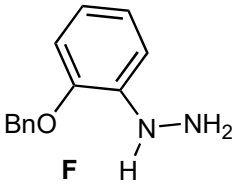

**E**

Step 11: Classify this reaction. **[4+2]-cycloaddition**
What is TPP? **Tetraphenylporphyrin**
Alternatives for TPP? **Methylene Blue, Rose Bengal**
Step 13: Structure of Lawesson's reagent? Alternative? **$P_4S_{10}$**



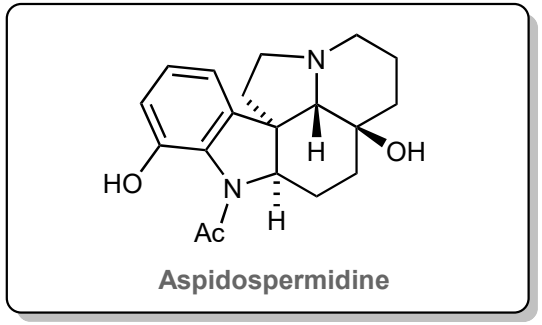

15–19

15) Hydrazine **F** *then* AcOH
16) $NaBH_4$
17) $Ac_2O$, pyridine
18) DIBAL-H
19) $H_2$, Pd/C




**F**

Step 15: Name this reaction .**Fischer Indol Synthesis**
Come up with two other methods to prepare the product of this step. **Bartoli, Gassmann, Larock etc.**




**Aspidospermidine**