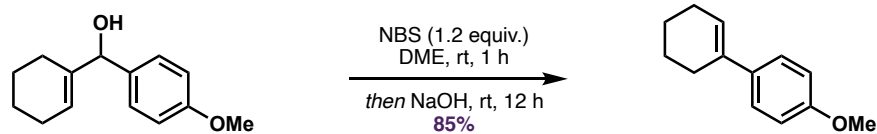


1. Propose a mechanism for the following transformation.

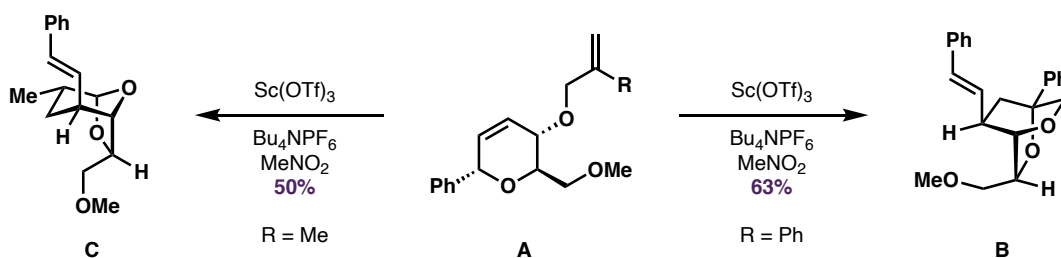


J. Org. Chem. **2008**, *73*, 7797–7799

Difficulty:



2. When cyclic ether **A** is treated with $\text{Sc}(\text{OTf})_3$ and Bu_4NPF_6 as an activator, dioxabicyclo[2.2.2]octane **B** or dioxabicyclo[3.2.1]octane **C** form depending on the identity of the allyl ether substituent in the starting material. Provide a mechanism that accounts for the formation of both **B** and **C**.

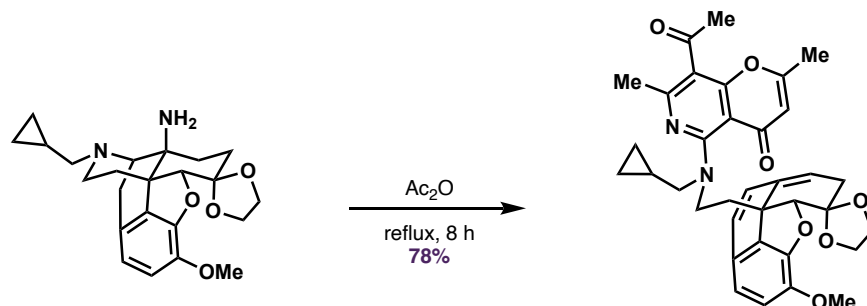


Org. Lett. **2010**, *12*, 3222–3225

Difficulty:



3. Propose a mechanism for the following transformation.



Org. Lett. **2023**, ASAPs

Difficulty:

