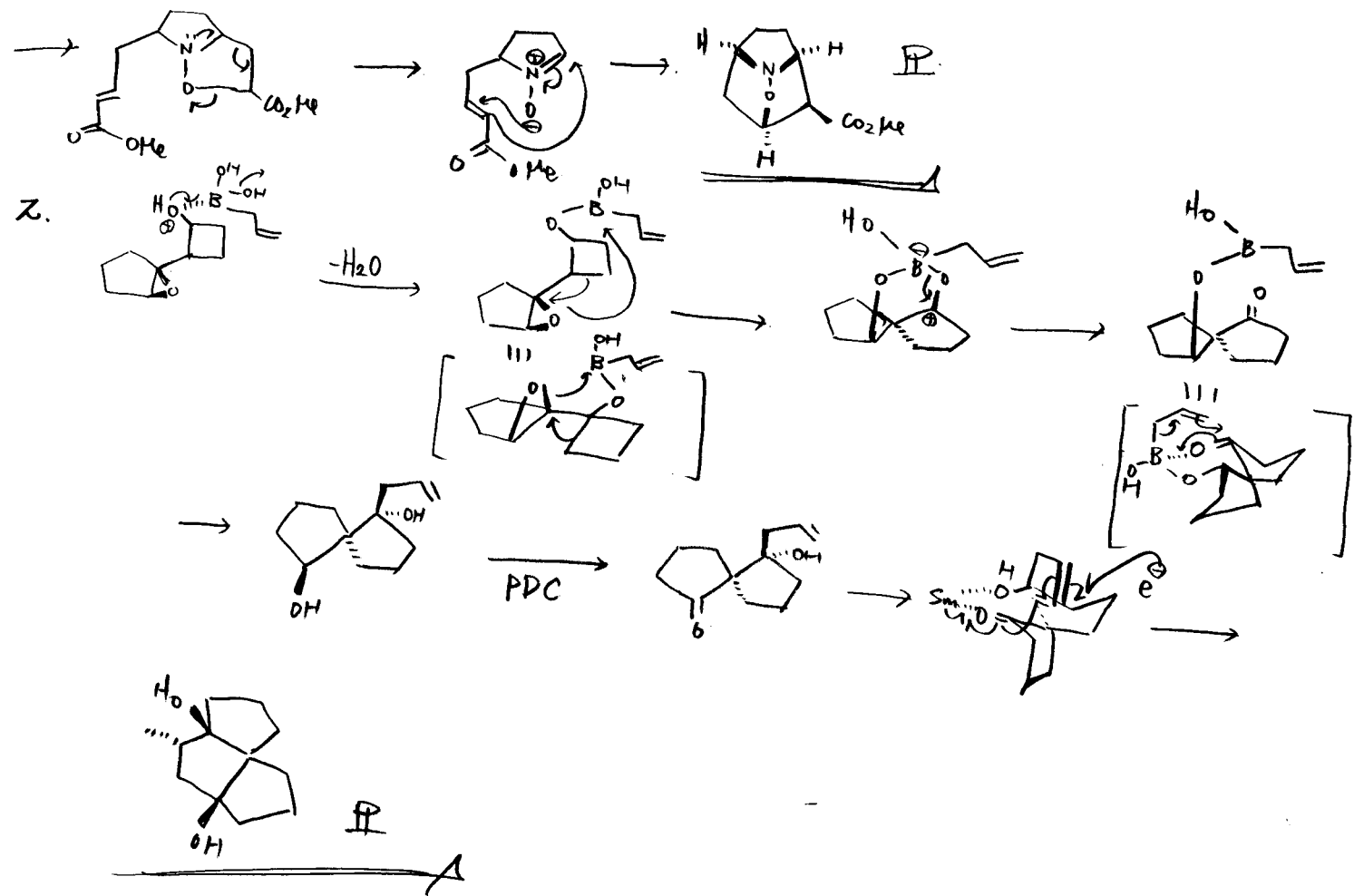
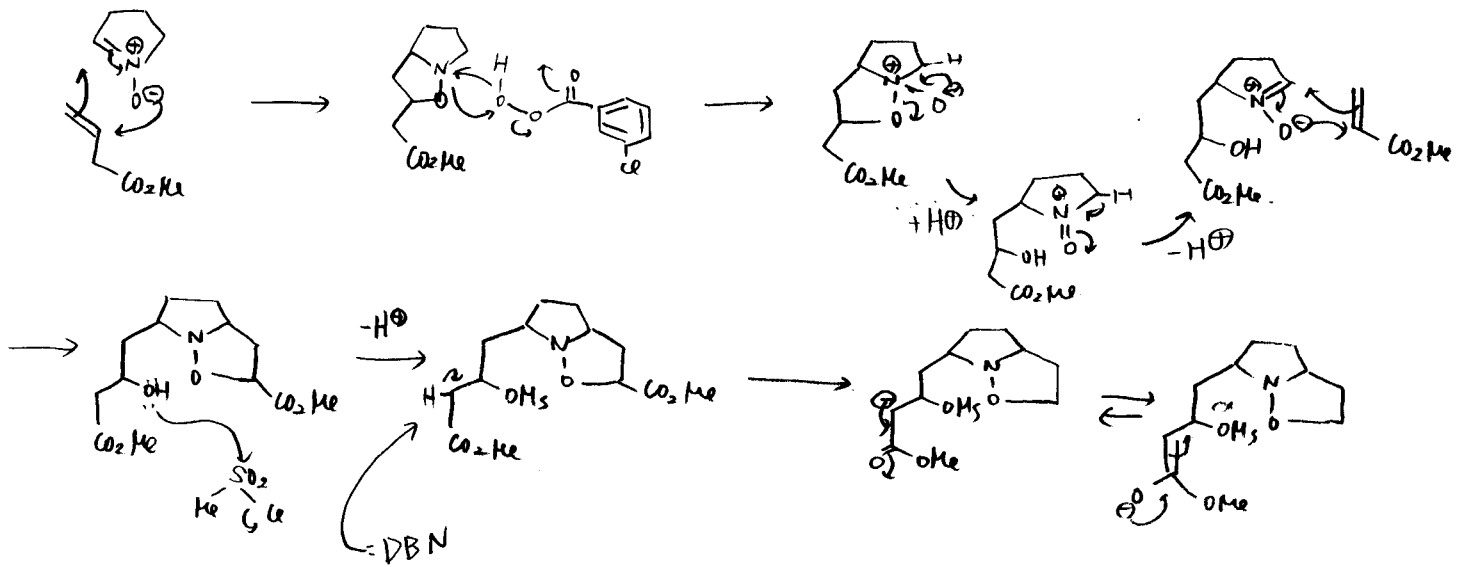
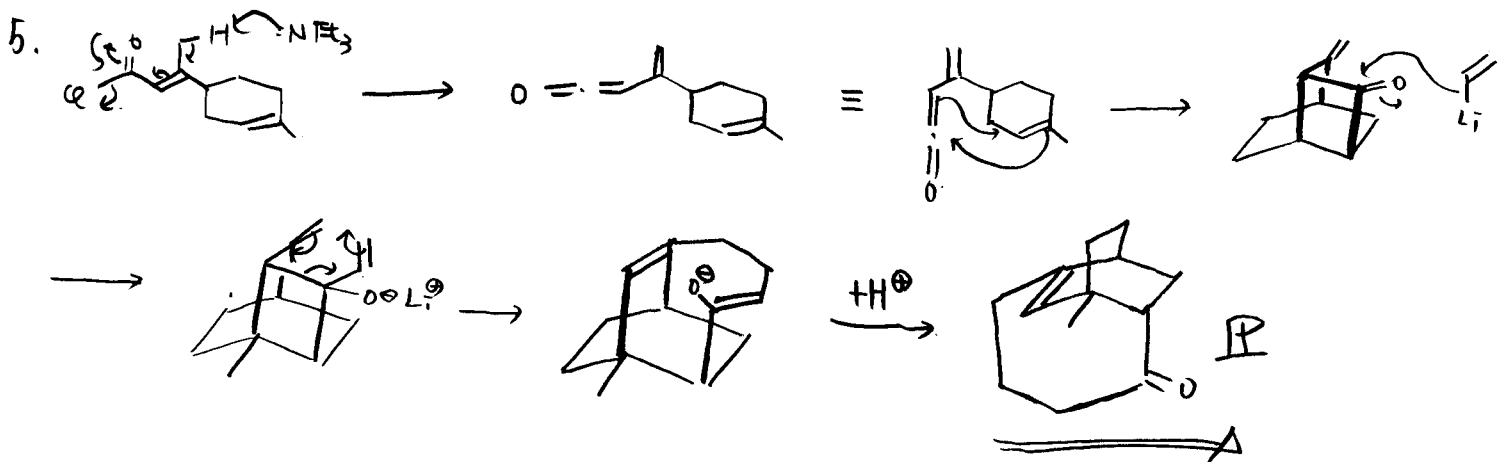
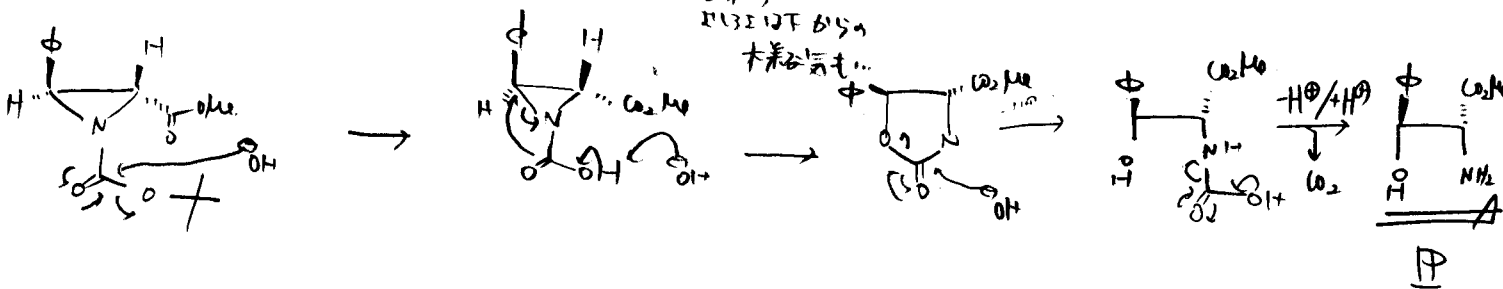
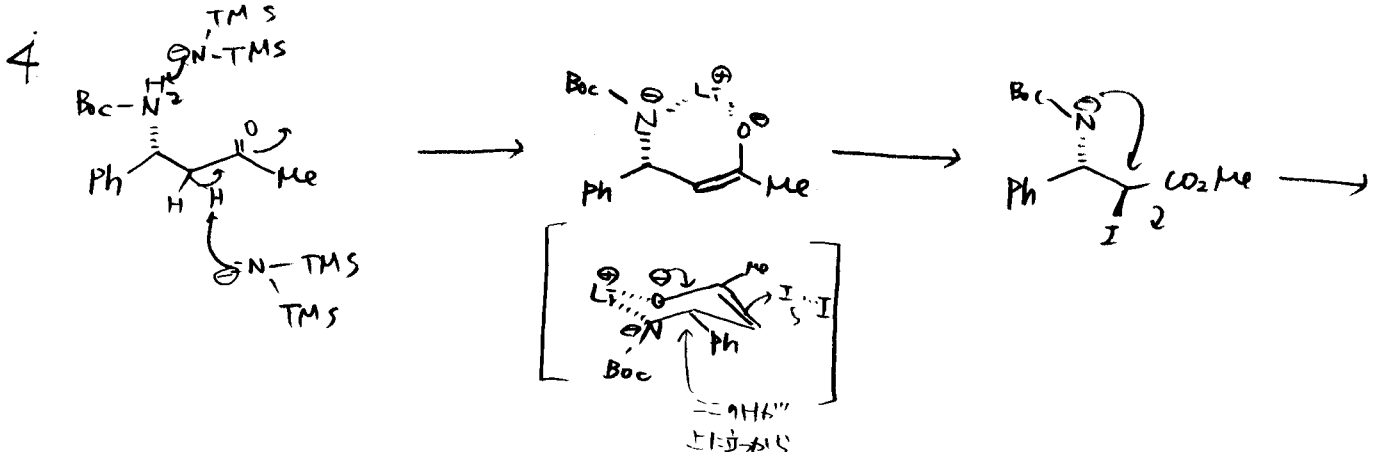
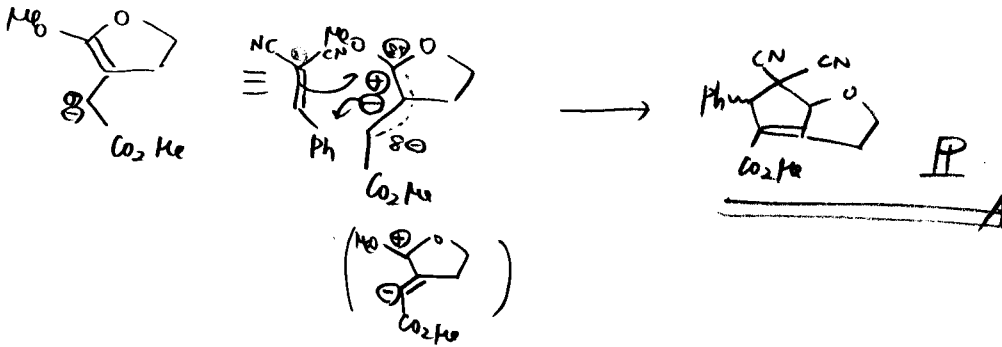
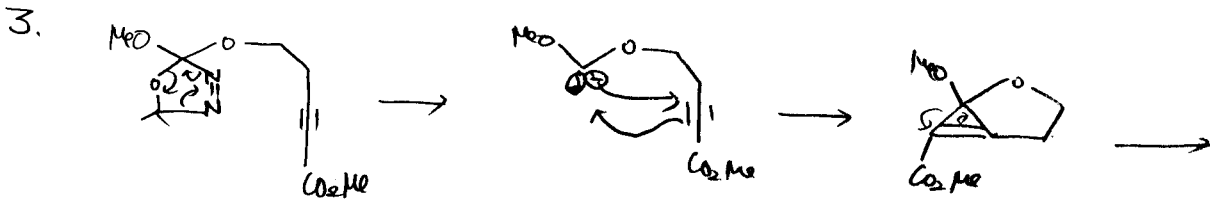
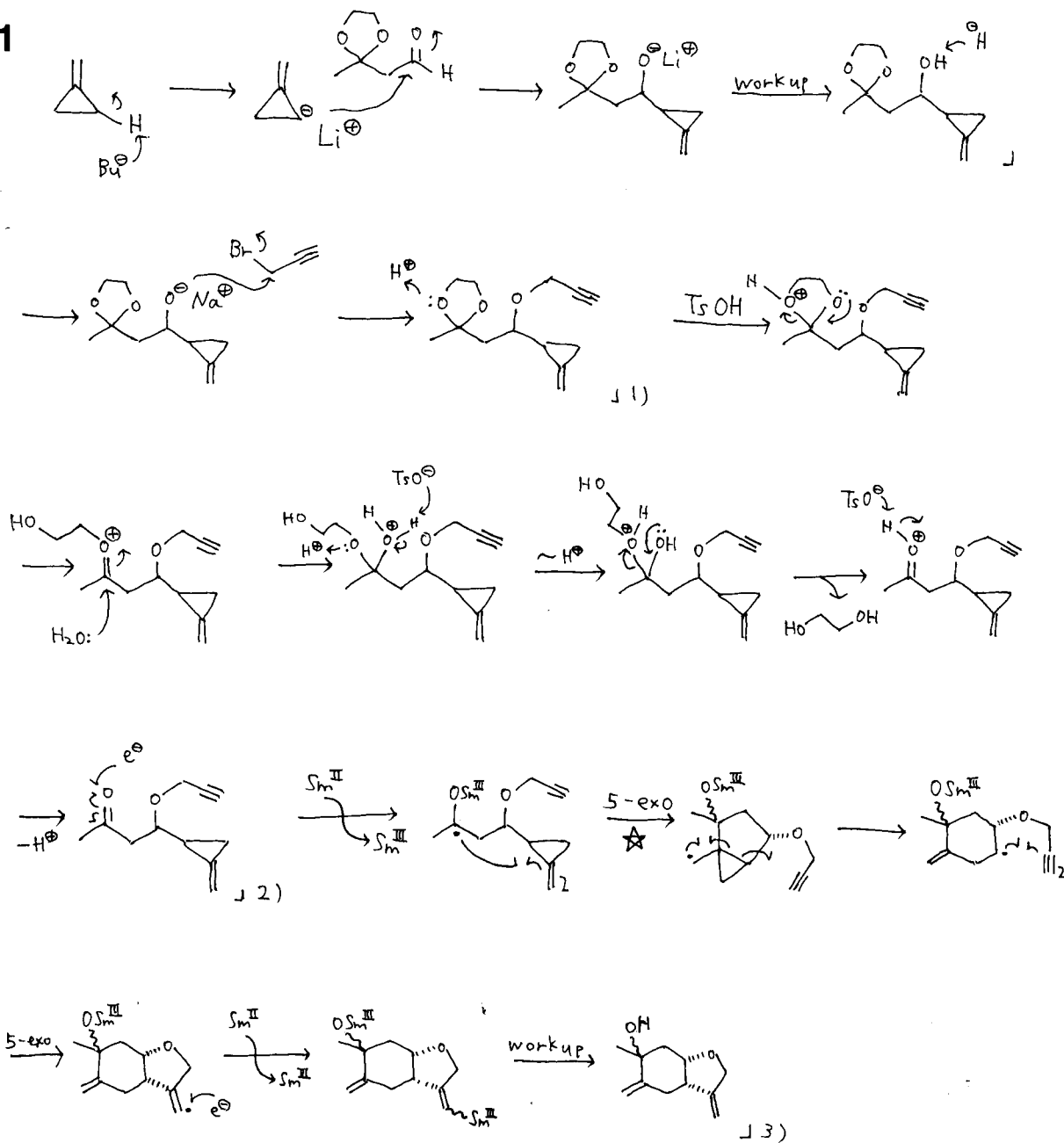


1.

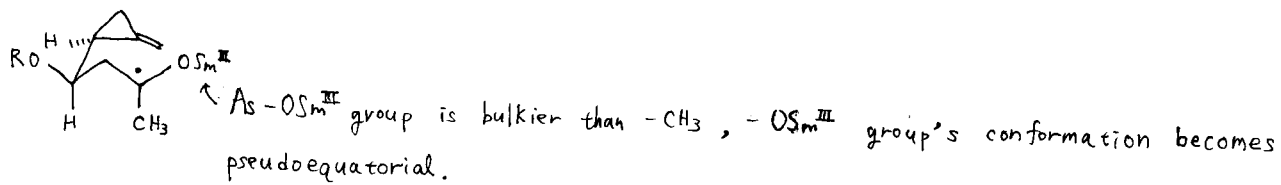


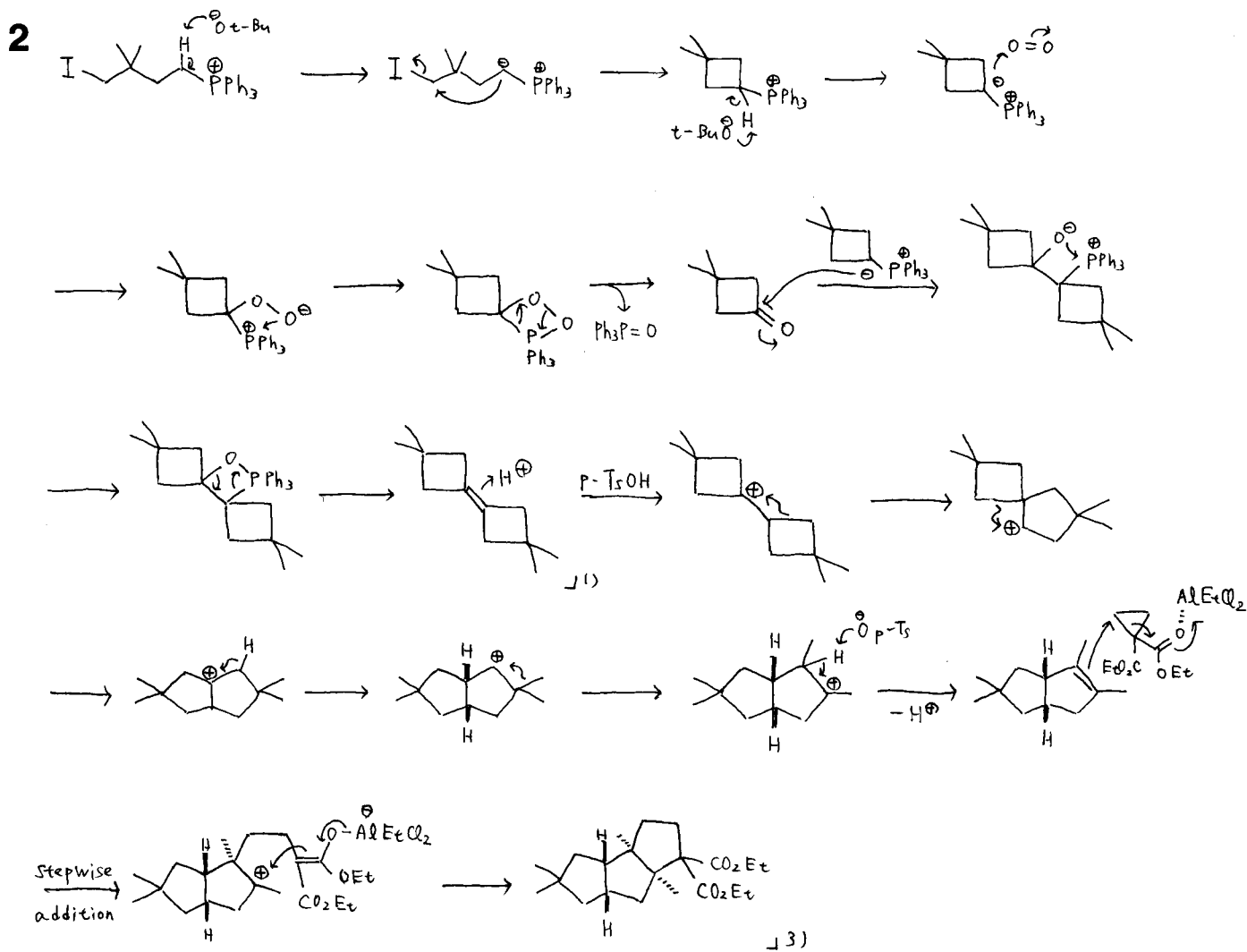


1



Concerning the stereochemistry, the following transition state is proposed at the cyclization reaction (*).

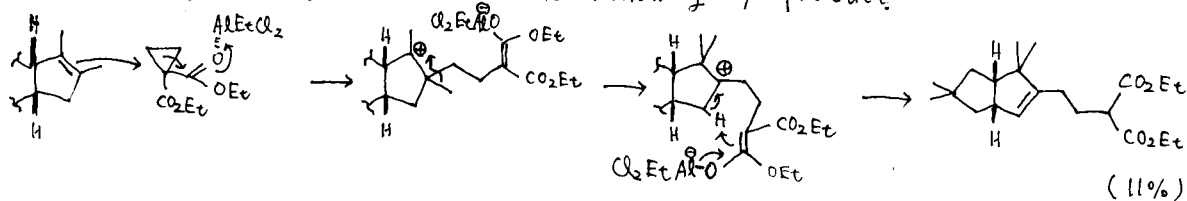




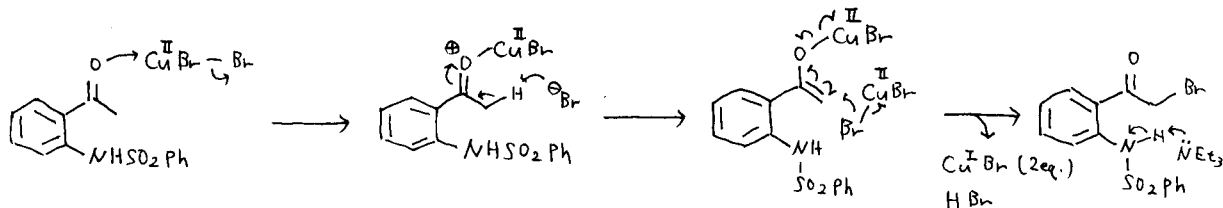
At the addition reaction in 3), due to the resonance $\left(\begin{array}{c} \text{O} \\ \parallel \\ \text{C} \text{---} \text{OEt} \\ \diagup \quad \diagdown \\ \text{C} \text{---} \text{OEt} \end{array} \leftrightarrow \begin{array}{c} \text{O}^- \\ \parallel \\ \text{C} \text{---} \text{OEt} \\ \diagup \quad \diagdown \\ \text{C} \text{---} \text{OEt} \end{array} \right)$,

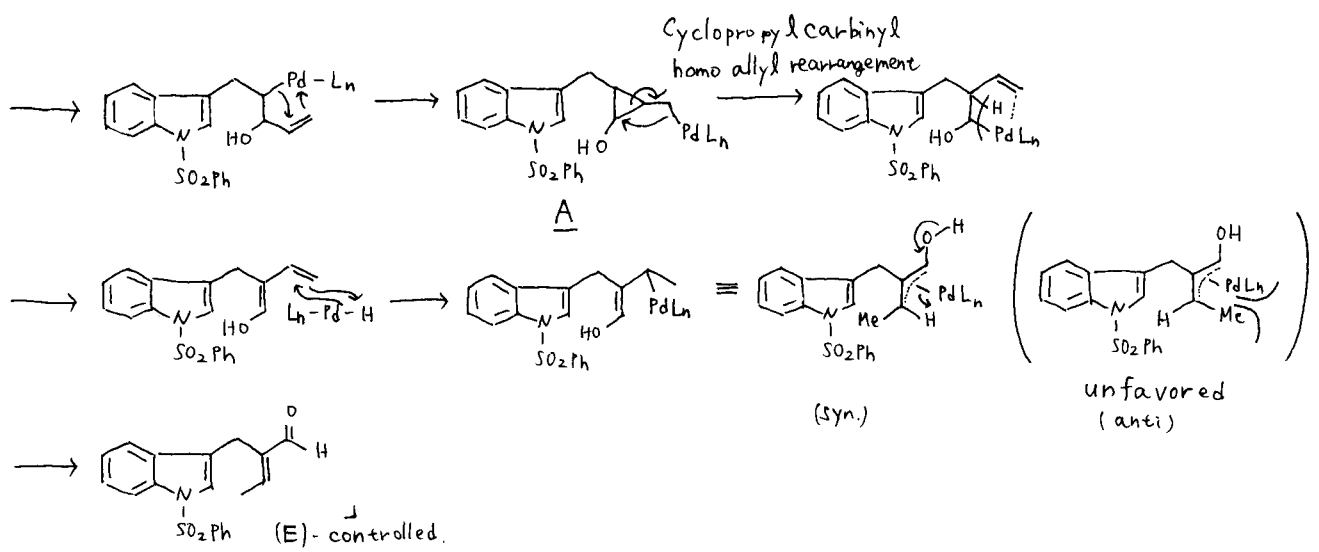
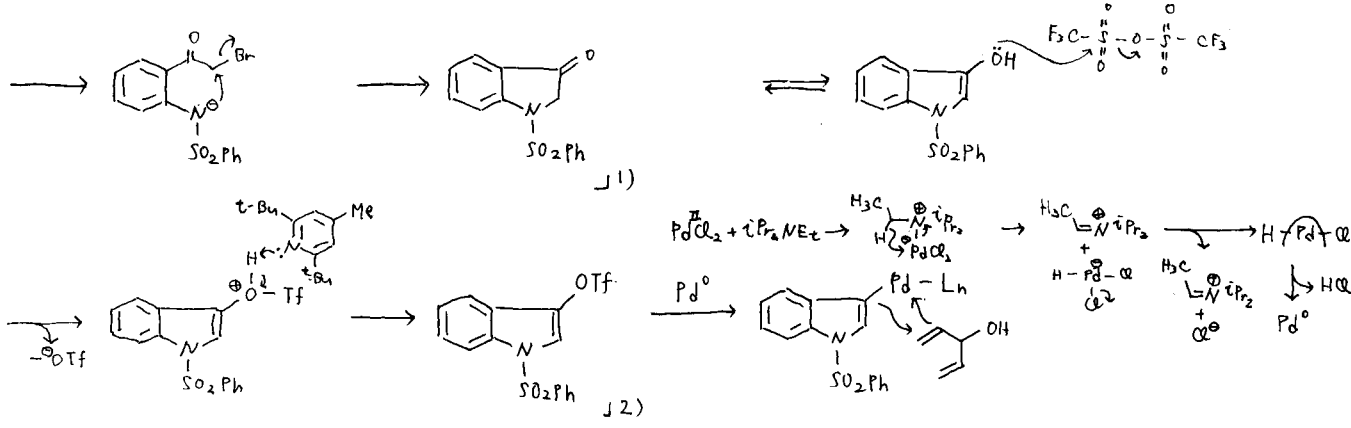
1,3-dipolar addition or stepwise addition mechanism could be proposed.

Yet the former cannot account for the following by-product.

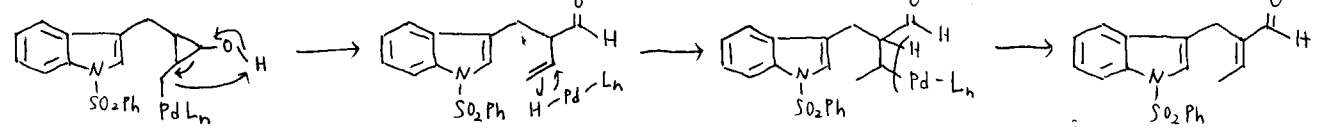


3

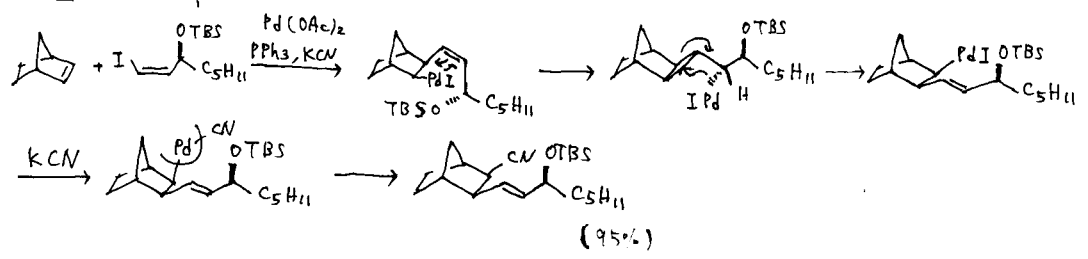




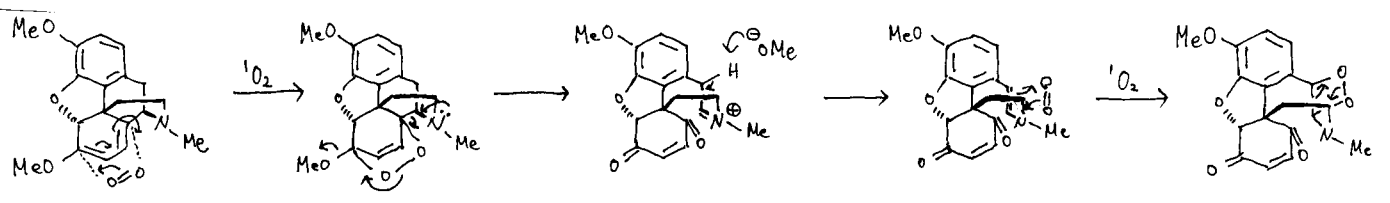
⊙ Another mechanism from the intermediate A can be proposed:

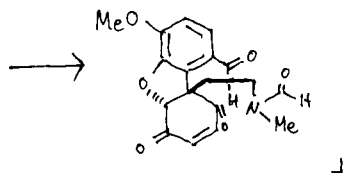


Cyclopropylcarbinyl homoallyl rearrangement generally undergoes without hydroxyl group in A. Example:

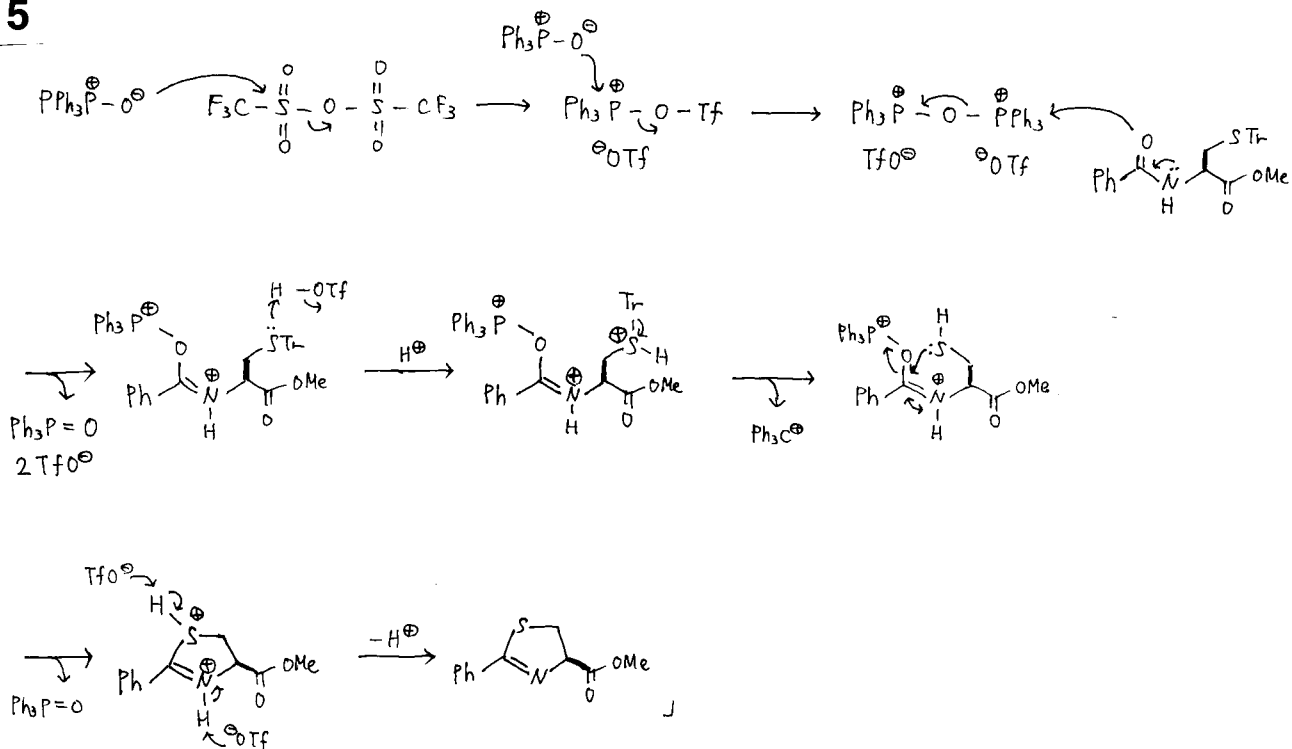


4





5



This reaction do NOT undergo without triphenylphosphine oxide.