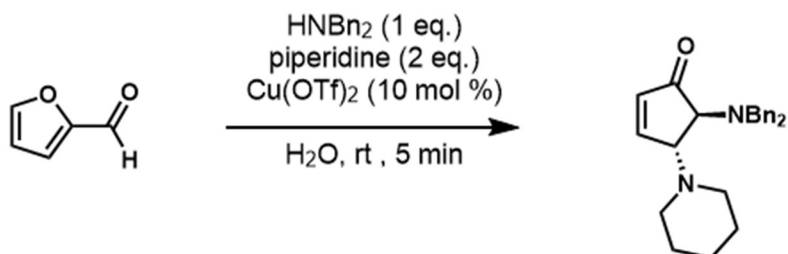


Problem Session

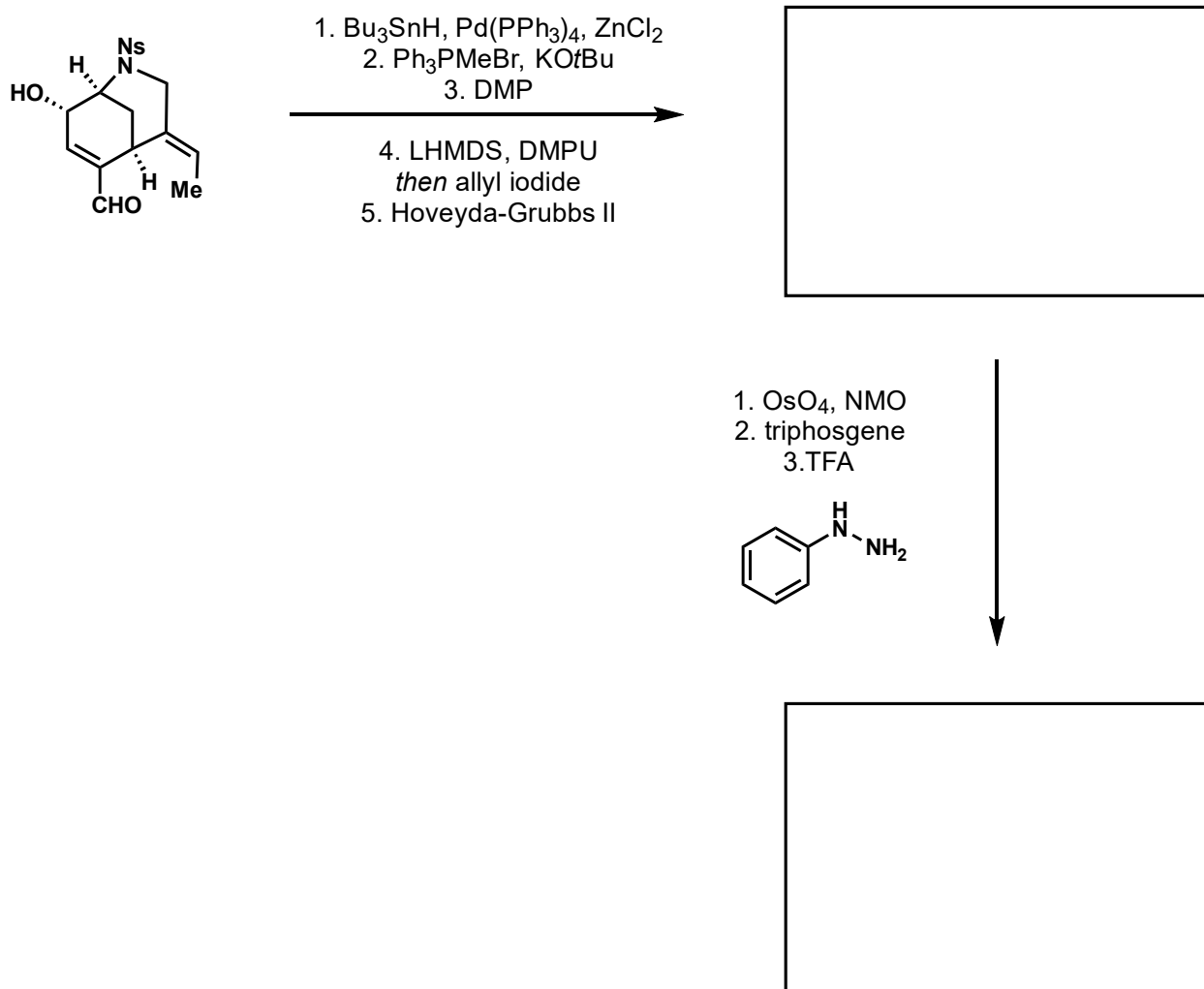
06/20/23

Sam He and Shutian Jiang

1. Provide a mechanism for the following transformation. (*Org. Lett.* **2023**, *25*, 4188-4192).



2. Fill in the boxes with the products of the reaction sequences shown below (*J. Am. Chem. Soc.* **2014**, *136*, 4504-4507).

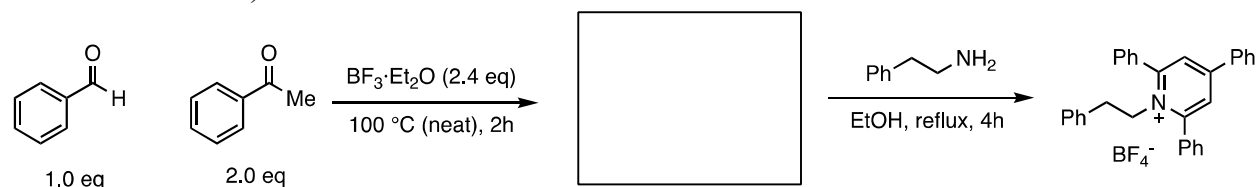


3. The Li group have leveraged the power of “5+2” type cycloadditions in many of their creative synthetic designs. Please give the mechanism for the following one-pot transformation from their synthesis of (-)-colchicine. What is the name of the first step reaction?



Li, C. *et al*, *Chem. Sci.* **2017**, *8*, 4961-4966

4. The pyridinium salts illustrated below are excellent precursors to alkyl radicals and are generally very easy to synthesize. Can you give the reaction mechanisms for the two-step transformation below if we were to make these salts from scratch? (Don't worry too much about the BF_4^- counterion)



For Undergraduates: Greetings from UCLA

5. Please give the mechanism of the following transformation. What is the name of the reactive intermediate generated? What would happen if we were to use azides (R-N_3) as the other reactant in place of the furan?

