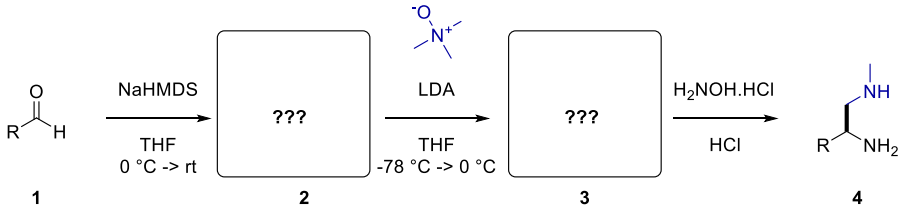
Synthesis Workshop

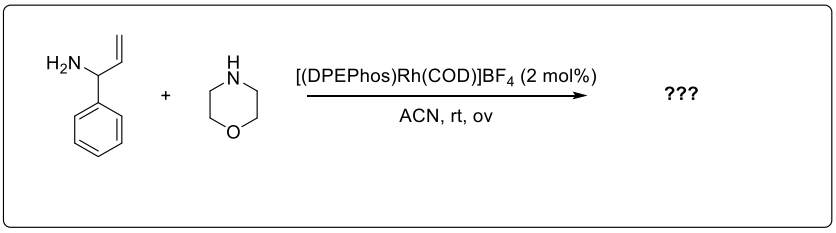
[3 + 2] Cycloadditions of Tertiary Amine N-Oxides and Silyl Imines as an Innovative Route to 1,2-Diamines

Problem set

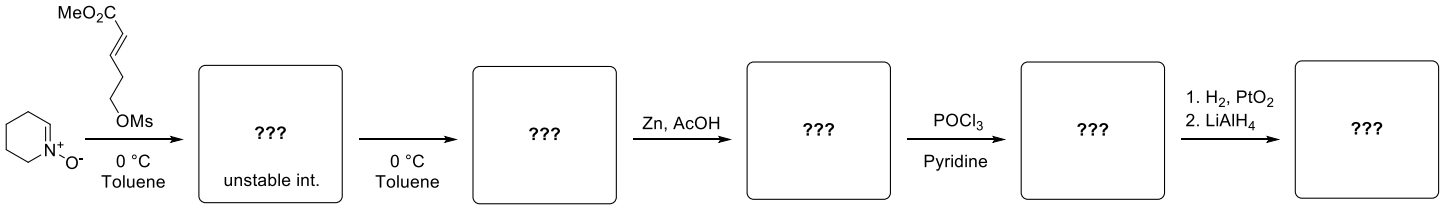
1. Based on the starting material **1** and product **4** propose a structure for intermediates **2** and **3**. Draw the mechanism to go from intermediate **2** to intermediate **3**.



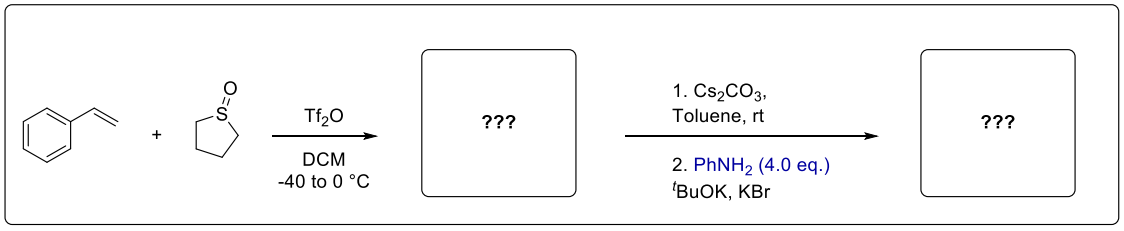
2. Based on the conditions shown draw the structure of the product and propose a catalytic cycle. Based on the catalytic cycle explain the diastereoselectivity of the product.



3. Draw the structures of the intermediates and final natural product.



4. Propose a structure for both the intermediate and final product. Propose a mechanism for the last step and propose a drawback of this methodology.



5. Propose a cycloaddition strategy from indole **2**, via a reactive intermediate, to obtain the *N*-methylated 1,3-aminoalcohol **5** an important precursor in the total synthesis of Chanoclavine I.

Created by Thomas Verheyen, Ph.D.

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