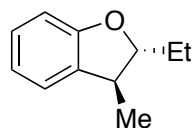
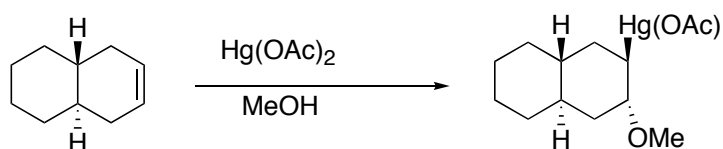


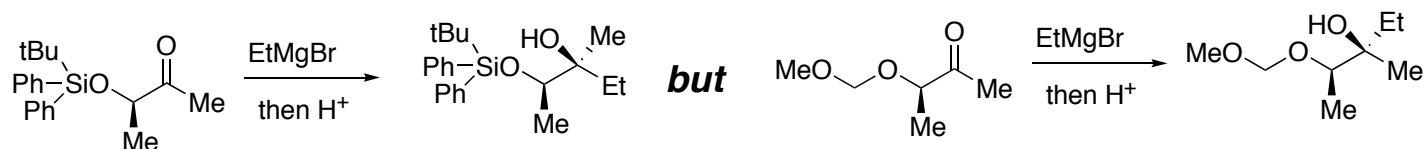
1. Outline a synthesis using any achiral materials that contain 6 carbons or less.



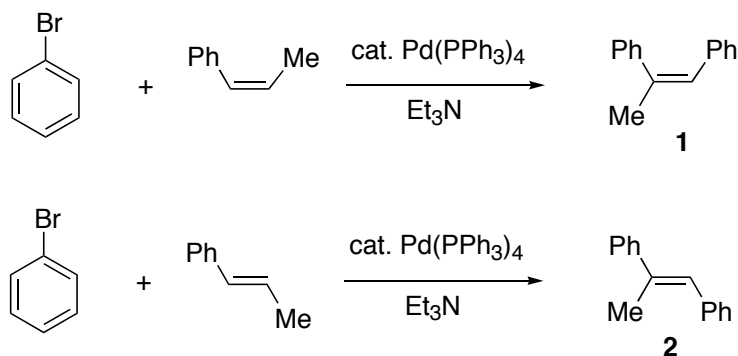
2. Provide a mechanism. Explain why only one diastereomer is expected for the following reaction



3. Propose stereochemical models to explain the following observations



4. Provide a mechanistic rationale that explains why the Heck reactions of (Z)- $\beta$ -methylstyrene and (E)- $\beta$ -methylstyrene are stereospecific, and lead to the exclusive formation of **1** and **2**, respectively.



5. Literature assignment is the same as last week

6. Use Beilstein commander to search the following structure:

