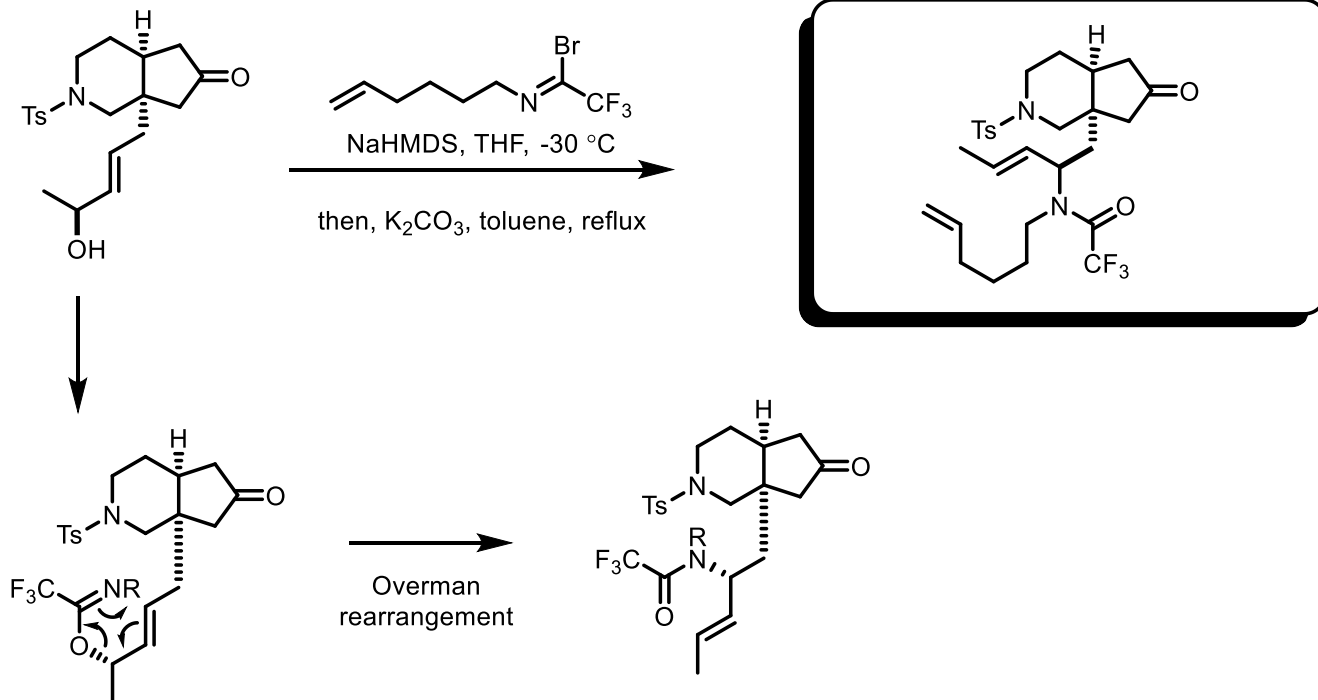
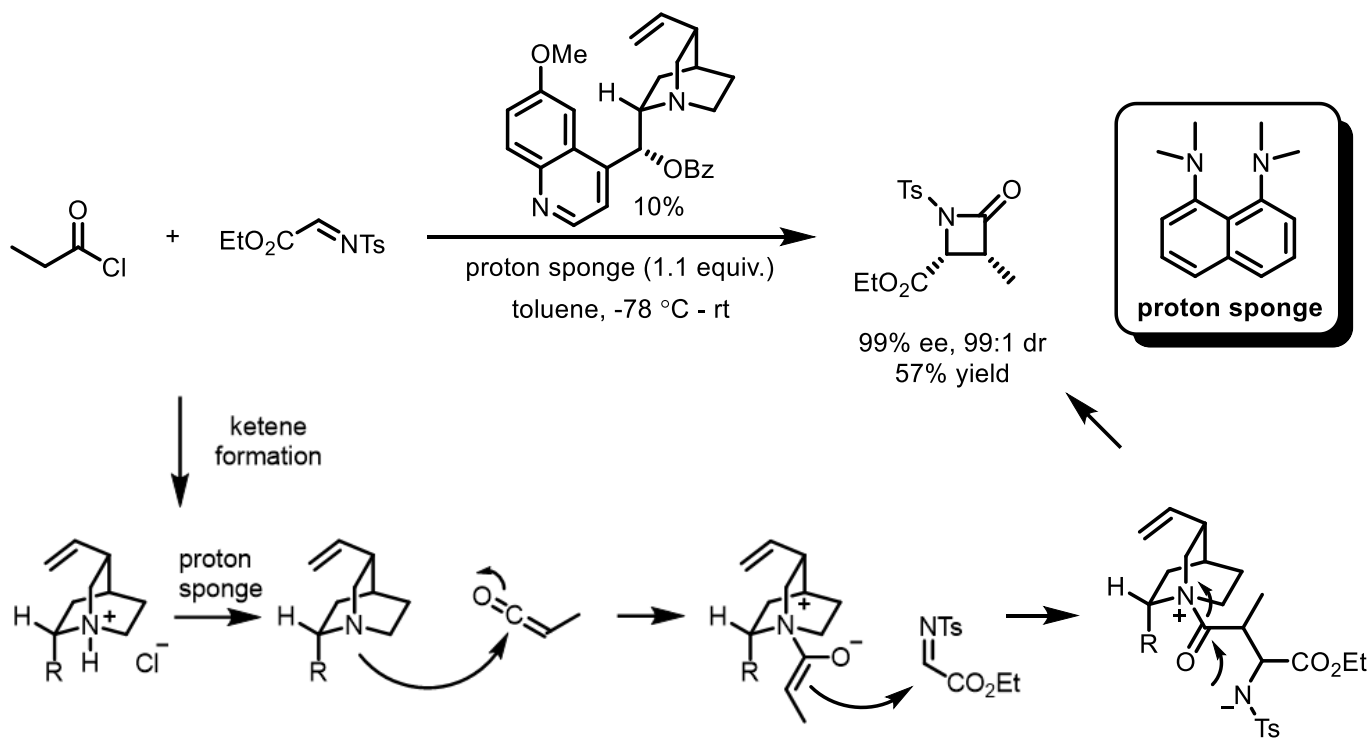


1. Provide the product and a mechanism for the named rearrangement.



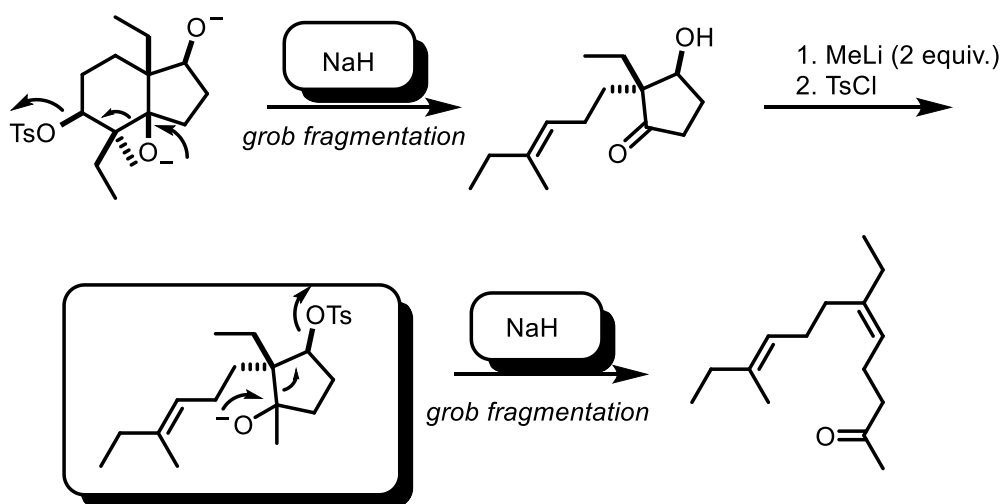
Clark, J.S. *Angew. Chem., Int. Ed.* **2016**, 55, 1–5

2. Provide a mechanism for the following transformation.



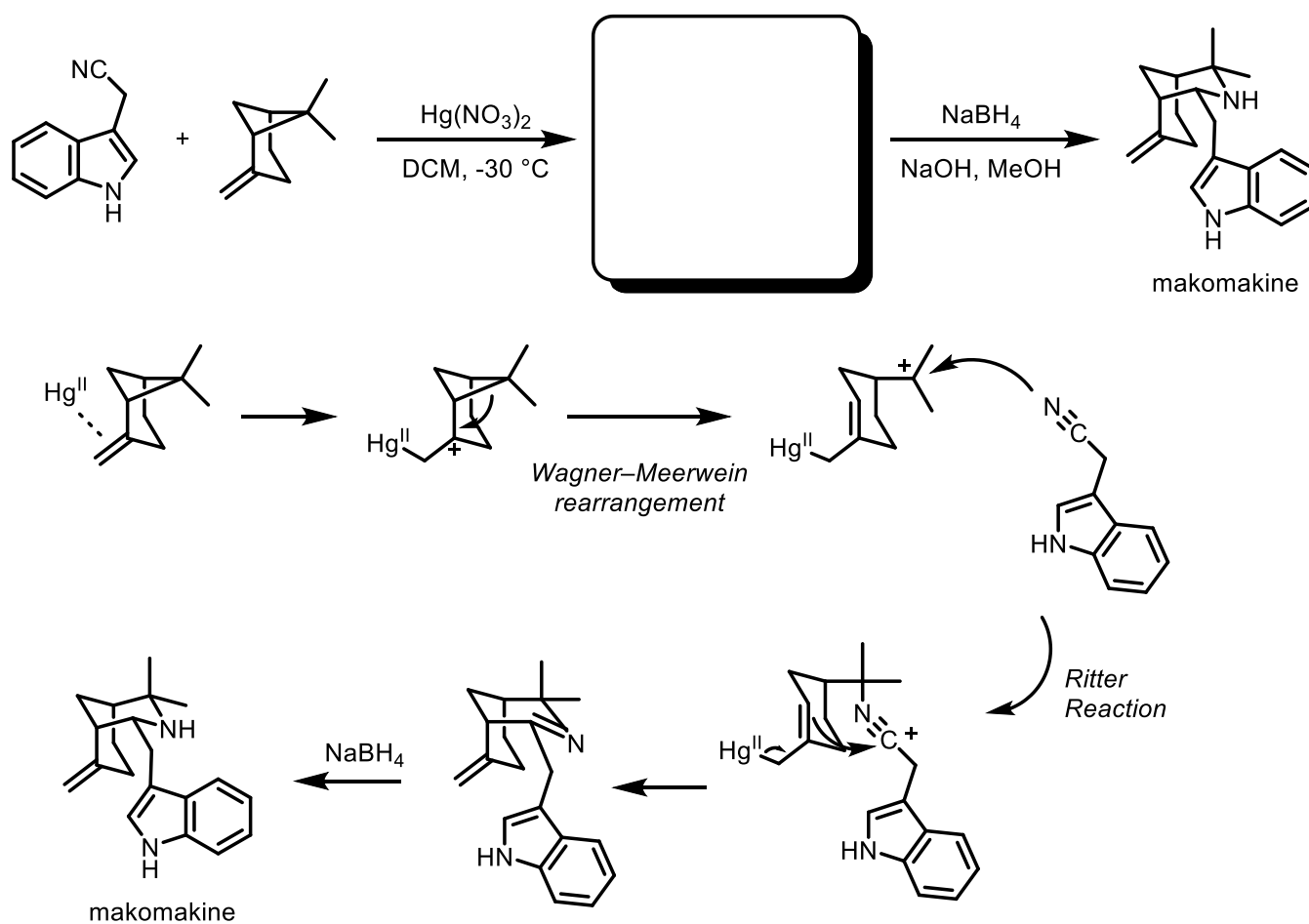
Lectka, T. *JACS.* **2000**, 122, 7831–7832

3. Provide the *simple* reagent needed for the following transformation. Propose a mechanism for the fragmentations.



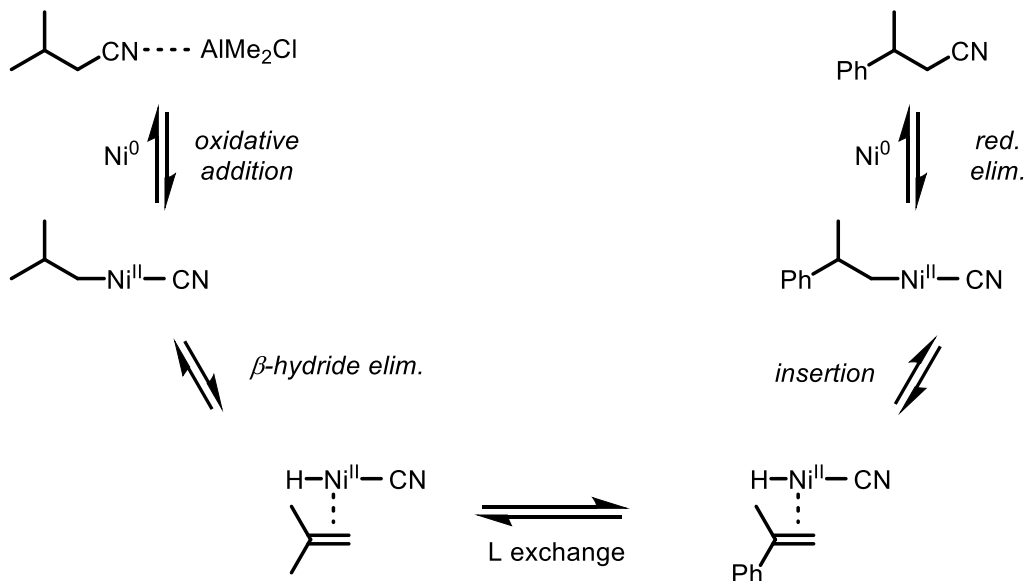
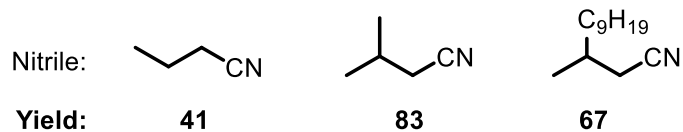
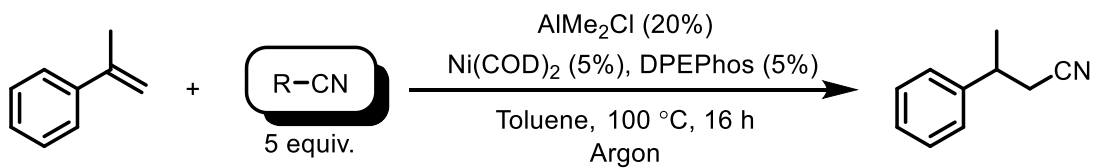
Edwards, J.A. *JACS*, **1968**, 90, 6224–6225

4. Provide a mechanism for this concise synthesis of makomakine.



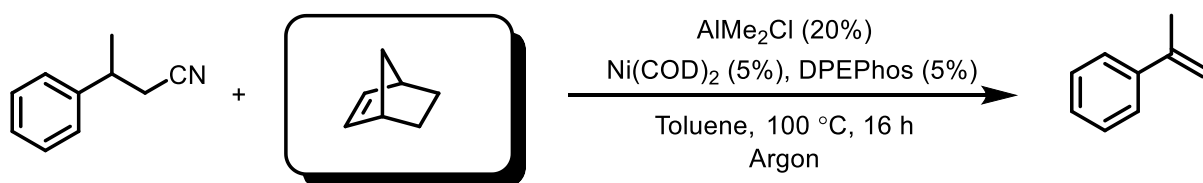
Stevens, R.V. *J. Chem. Soc., Chem. Commun.*, **1983**, 384–386

5. Propose a mechanism for the following transformation. Provide a rationale for the observed trend in yield.



Yield determined by thermodynamics. Formation of disubstituted alkene more favorable to monosubstituted. Formation of volatile alkenes push equilibrium towards product.

How would you achieve the reverse reaction?



Use a strained alkene to drive the reaction. e.g. Norbornene or Norbornadiene.