

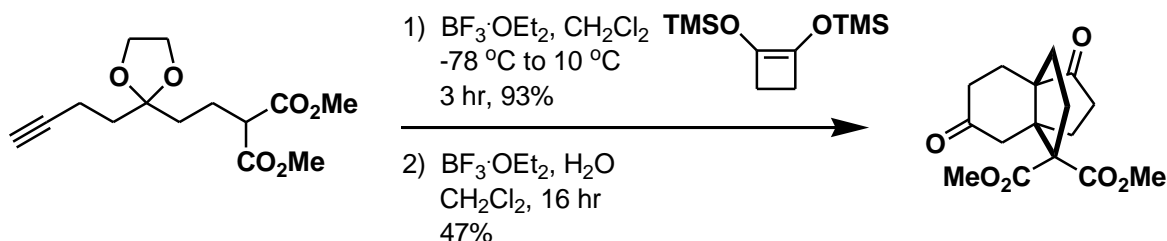


## CHEM 8410\_6410\_4410 – Organic Synthesis

THE UNIVERSITY OF  
**TOLEDO**  
1872

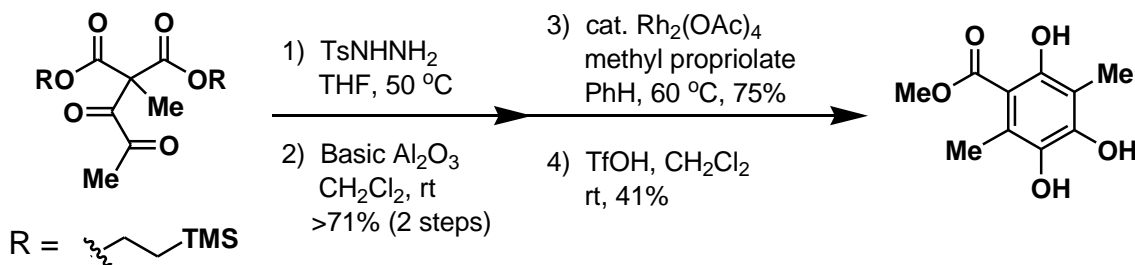
**Problem Set 3:** This problem set is now available at ([www.blackboard.utdl.edu](http://www.blackboard.utdl.edu)). It will be due in class 28 days (03/20/18) from today (02/20/18). Grades will be administered as follows: 10 (exceptional effort), 8 (complete), 5 (incomplete or inadequate effort), 2 (poor effort), 0 (nonexistent). **No late problem sets will be accepted.**

1. **Problem:** The following Lewis acid mediated cyclization occurs in two steps as noted below. With your current understanding of mechanisms, please provide in great detail all of the steps that occur in this transformation while including a rational for stereochemical outcomes.



Curran, D. P. *et al.*, *JOC* **1995**, 60, 345.

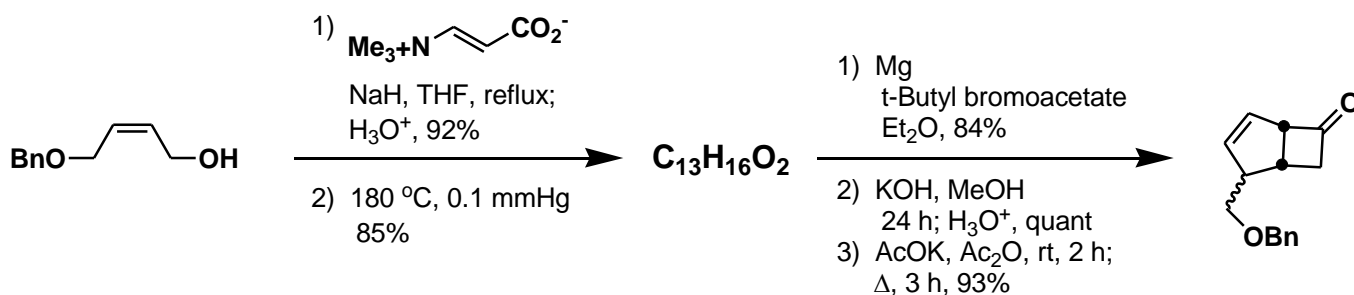
2. **Problem:** The following dehydrative aromatization of a disubstituted malonic ester proves that energy as well as LeChatlier's Principle plays pivotal roles in bond formation. Please explain the driving force behind this important transformation leading to a tri-ol substituted benzoic ester. Provide the mechanism as well. Refer to Grossman for Rh cat reactions.



Wood, J. L. *et al.*, *JACS*, **2001**, 123, 2097.



3. **Problem:** Provide the structure of the intermediate ( $C_{13}H_{16}O_2$ ) as well as the mechanism for this transformation.



Rosini, G. *et al.*, *Org. Lett.*, **2000**, 2, 4145.