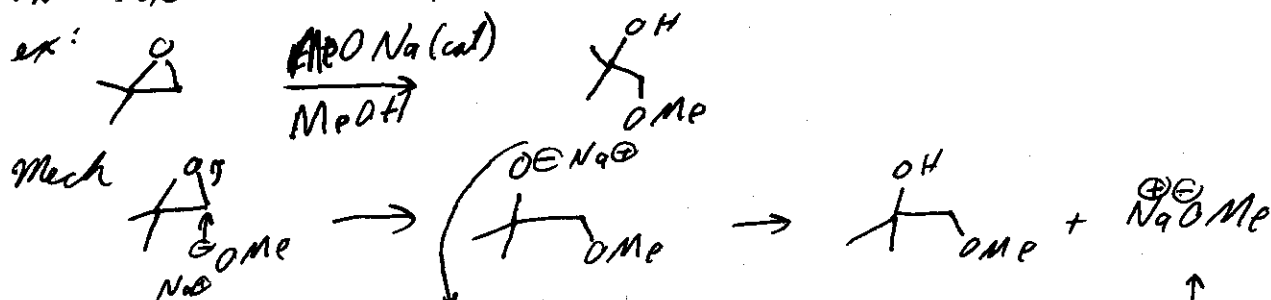


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Recall: Rings of epoxide w/ Nu

Ring strain leads to unusual reactivity (relative to other ethers)

1) S_N2 rxns w/ alkoxides (& comparable Nu)

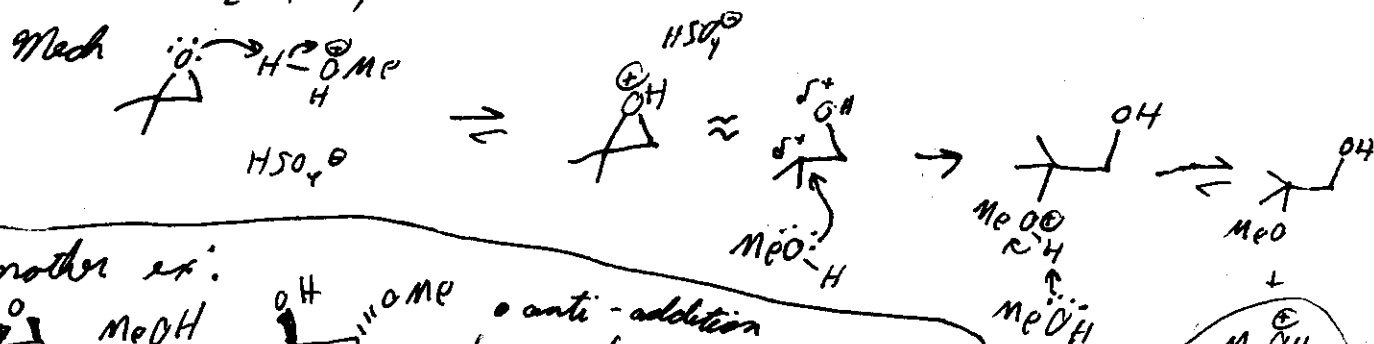
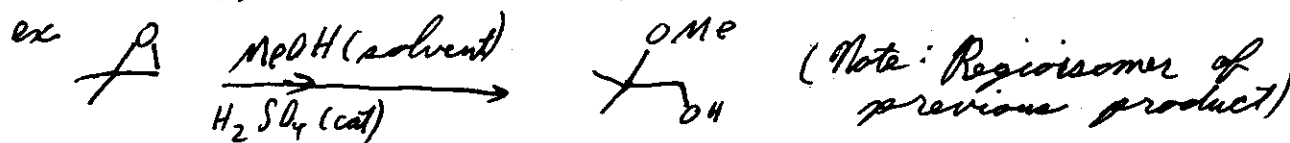


- Note: LG is " RO^- " (o of epoxide)
 • possible only because ring strain is released

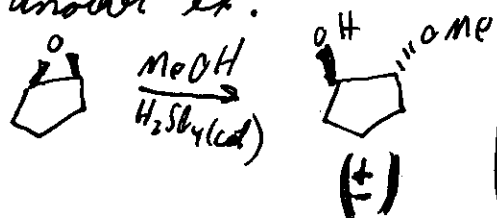
regenerated
 $\Rightarrow$ catalyst

- Regioselectivity: steric repulsion ~~leads~~ leads MeO^- to attack preferentially to less substituted C of epoxide

2) Acid-catalyzed ring opening



another ex:



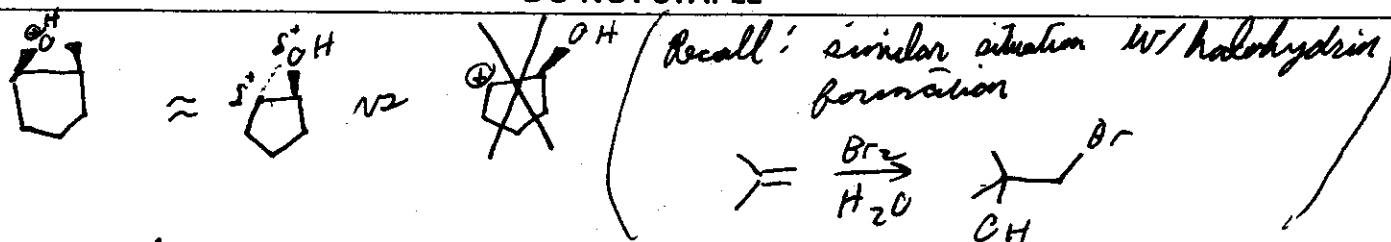
• anti-addition



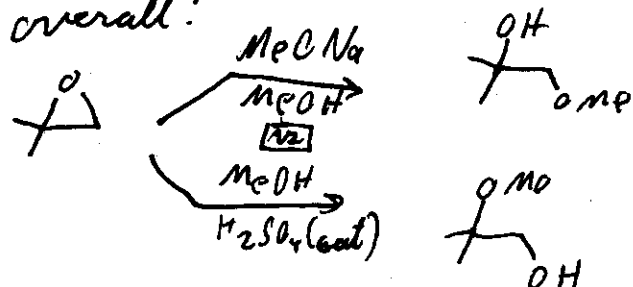
regenerated
 $\Rightarrow$ catalyst

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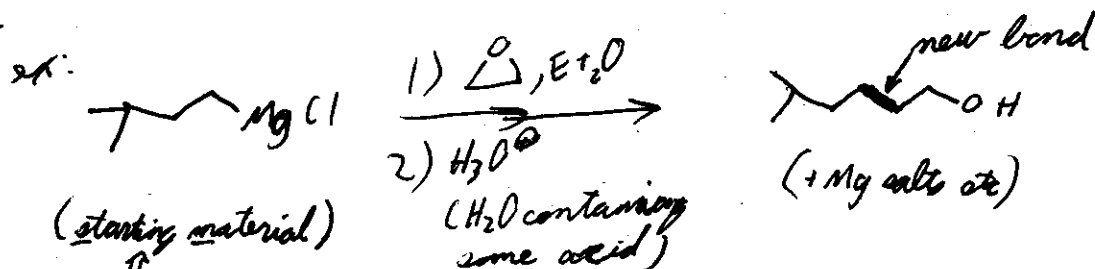
DO NOT STAPLE



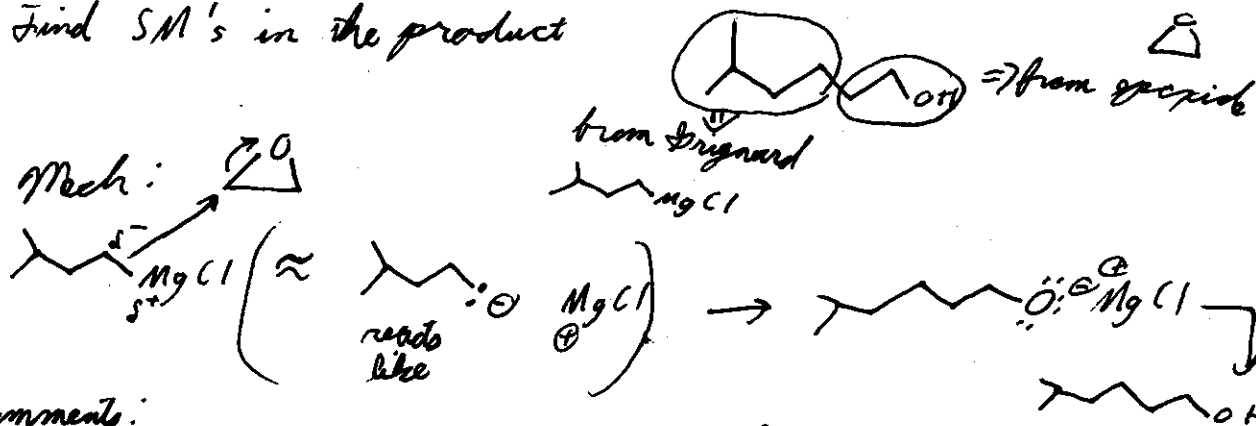
overall:



3) Organometallic reagents + ring opening of epoxide
 (Recall: $\text{C}^{\ominus} - \text{M}^{\oplus}$ carbanion like reactivity)



Find SM's in the product

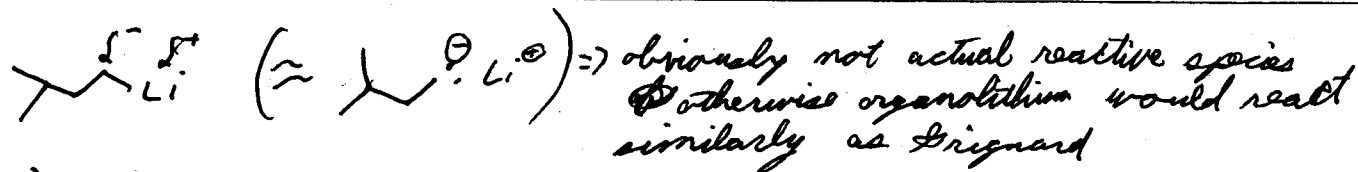


Comments:

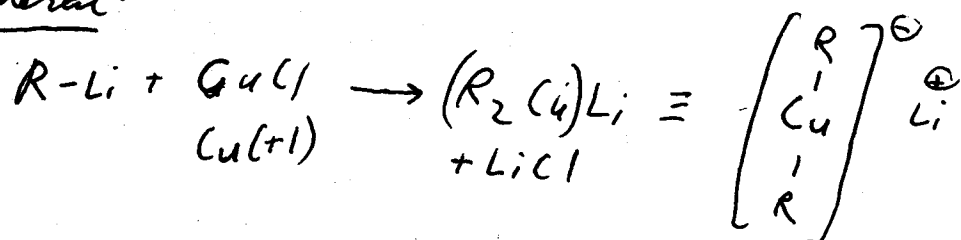
- 1) Mechanism is much more complex in reality. Another Mg acts as a Lewis acid to activate the epoxide (see text)
- 2) Organolithium reagents are not effective for this reaction

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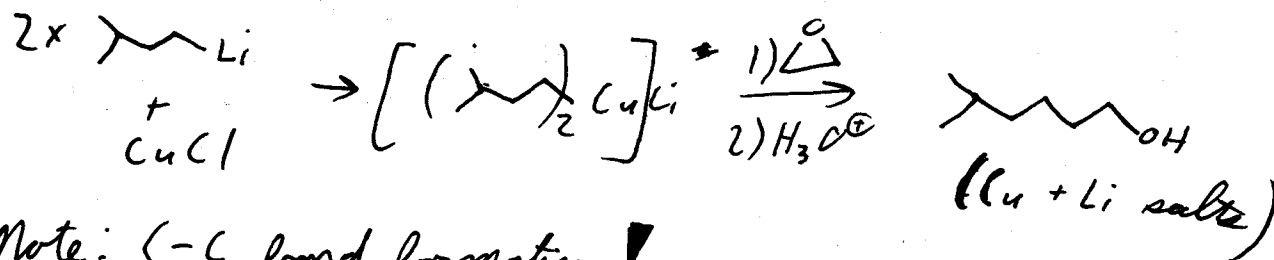
DO NOT STAPLE



iii) However, organocuprate reagents are effective
In general:



Thus,



Note: C-C bond formation!