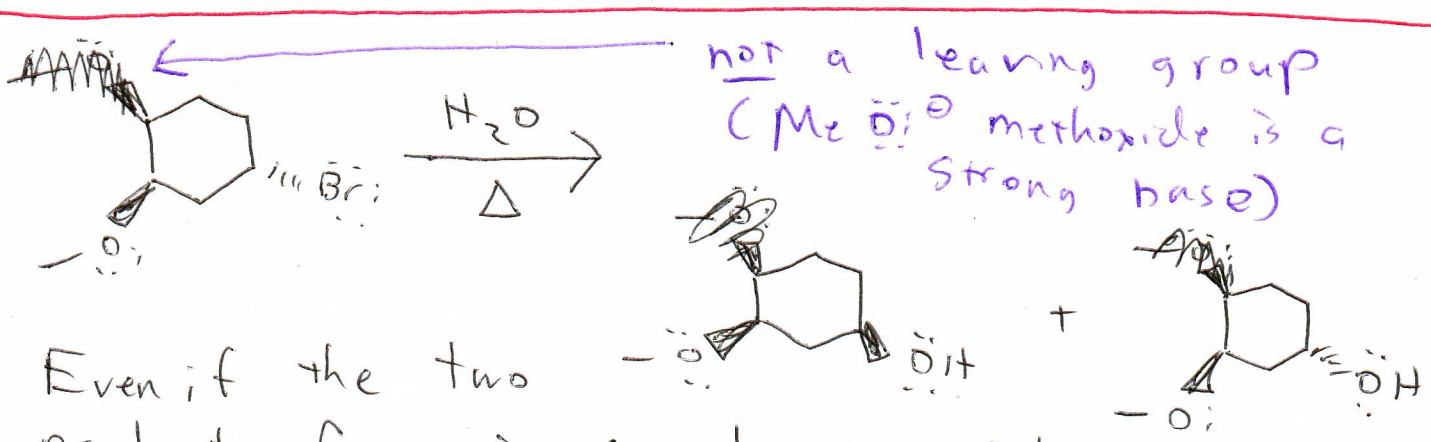
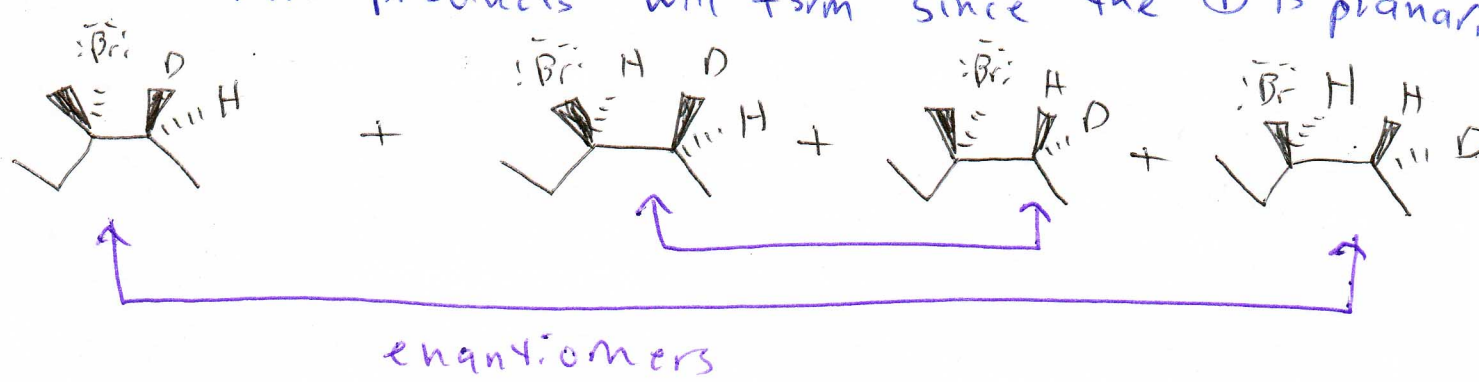
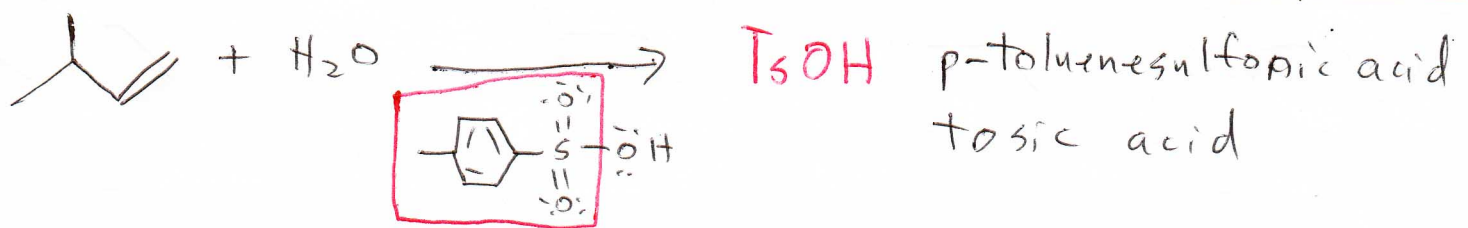


two intermediates form due to the alkene being planar; from each intermediate, two products will form since the \oplus is planar,

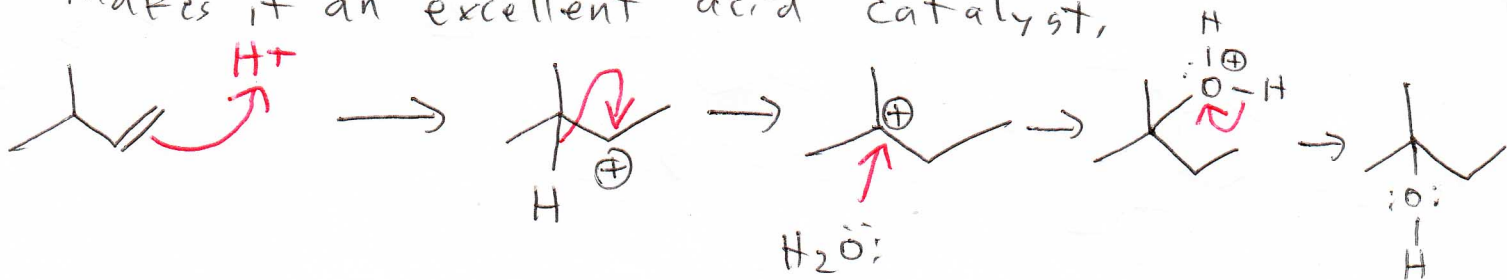


Even if the two products form in equal quantities, the mixture will still be optically active since it is a mixture of diastereomers and not enantiomers (one stereocenter is not canceled out),

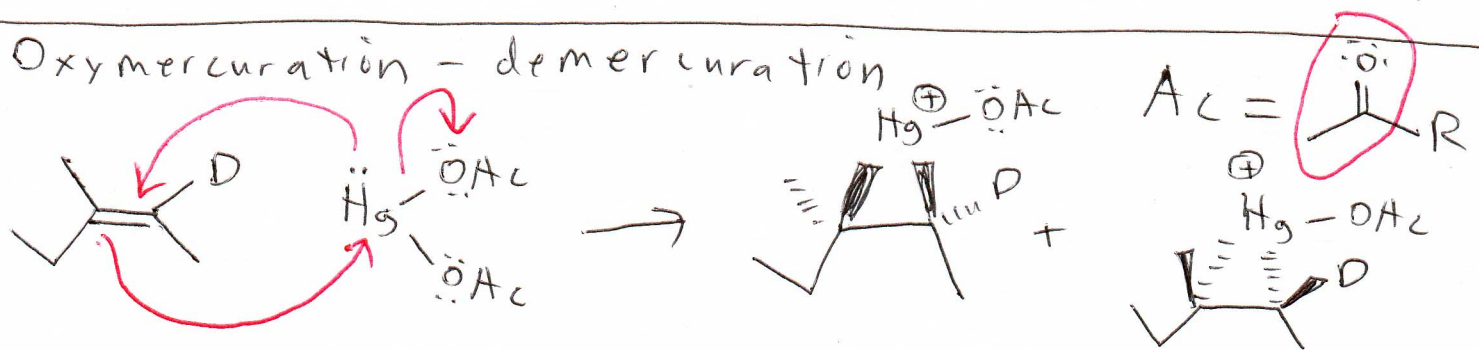
1. utility : alkene \rightarrow alkyl halide
alcohol / ether
2. reagents : strong acid or
weak nucleophile w/ strong acid catalyst
3. conditions : no light
4. mechanism - cationic + stepwise
5. stereochemistry : mixture of 4 diastereomers
neither syn nor anti addition
6. regiochemistry - Markovnikov addition
 \rightarrow substitution will occur @ the most
substituted carbon (3° vs 2° vs 1°)
 \rightarrow carbocation rearrangement possible



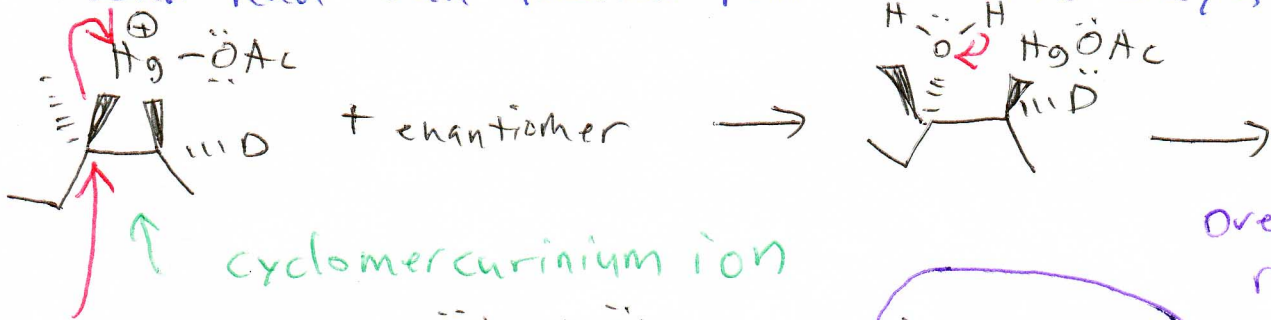
Tosic acid is an inexpensive, easily-handled organic-soluble solid that is a strong acid and has a conjugate base that is non-nucleophilic, which makes it an excellent acid catalyst.



Oxymercuration - demercuration

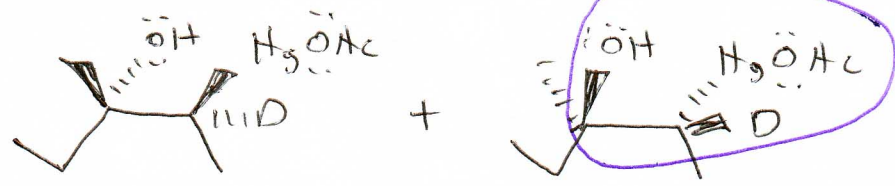


The initial step of this reaction occurs as syn addition (both new connections to where the double bond had been located point the same way),



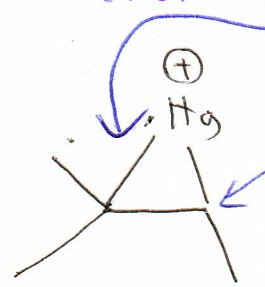
$H_2O:$

cyclomercurinium ion



Overall, this rxn occurs w/ anti addition *

* The ring does not open until the nucleophile attacks the ring. Additionally, there is no carbocation rearrangement since a carbocation never forms,



the bond to the 3° position is longer and weaker than the bond to the secondary position because the potential formation of a carbocation is more favorable at the 3° vs 2° position.

Sodium borohydride

