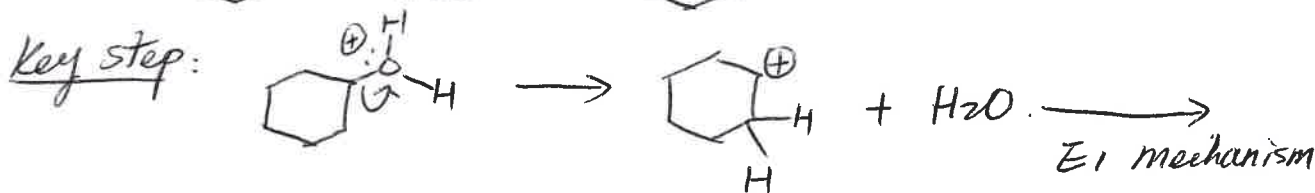
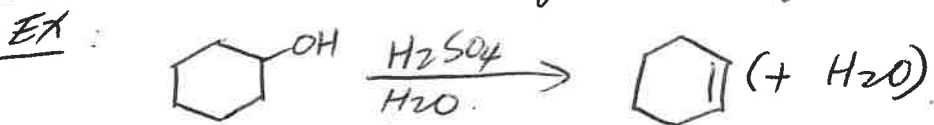


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Recall: Acid catalyzed dehydratⁿ of Alcohols...



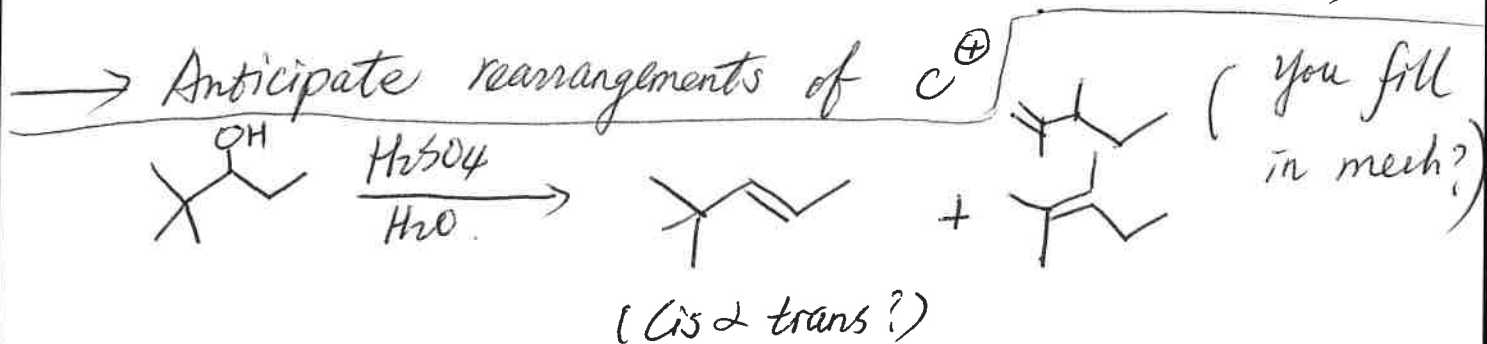
Concept: -OH , a very poor leaving group, is transiently converted to -OH_2^+ , a very good leaving group.

Note: This process is reverse of acid-catalyzed hydration of an alkene

(\therefore Control via Markovnikov).

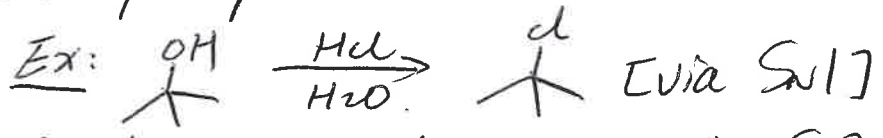
~~At~~ Apply knowledge of carbocations to this type of reaction

\rightarrow 3° alcohols react more readily than 2° (1° not via C^\oplus)

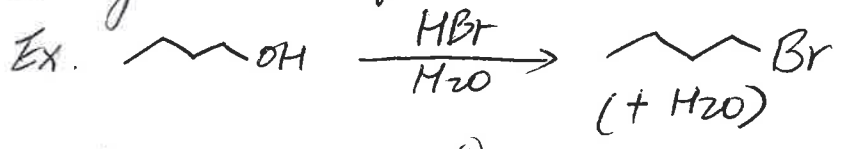


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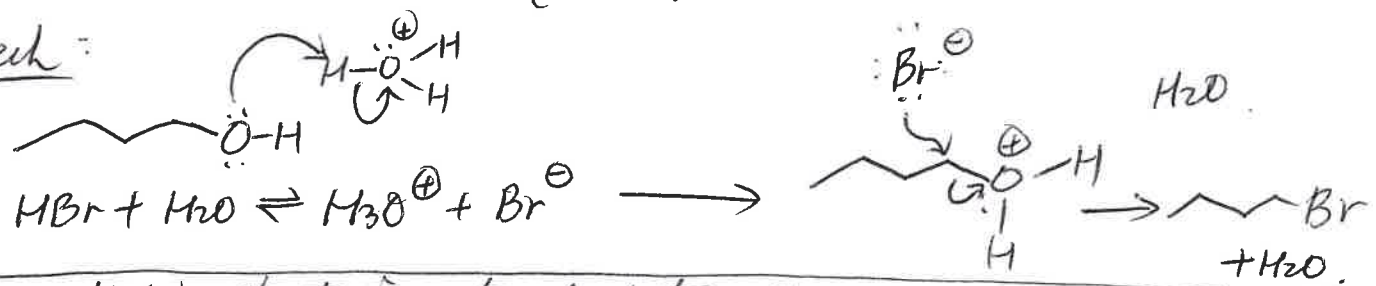
If use HX instead of H₂SO₄, observe alkyl halide products, and perhaps alkenes.



Analogous rxns of 1° ROH, via S_N2.



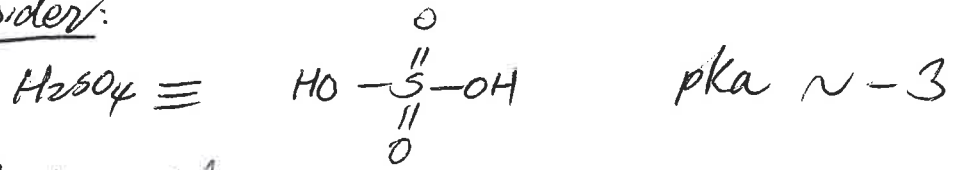
Mech:



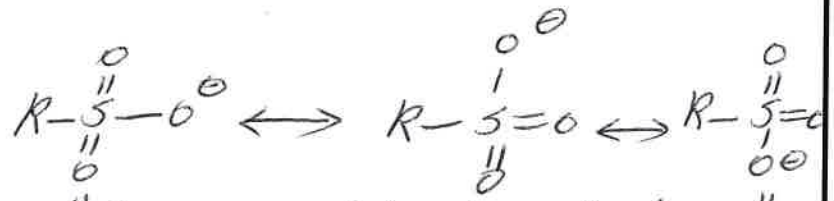
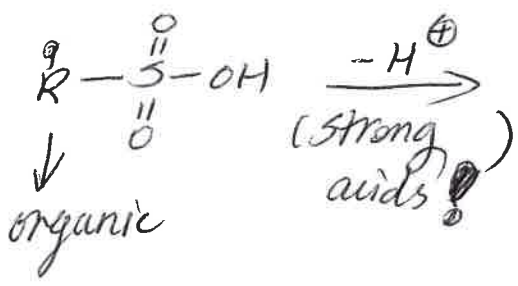
Alternative strategies to convert -OH into a good leaving group? (→ permanent LG)

→ Sulfonate esters.

consider:



Sulfonic acids.

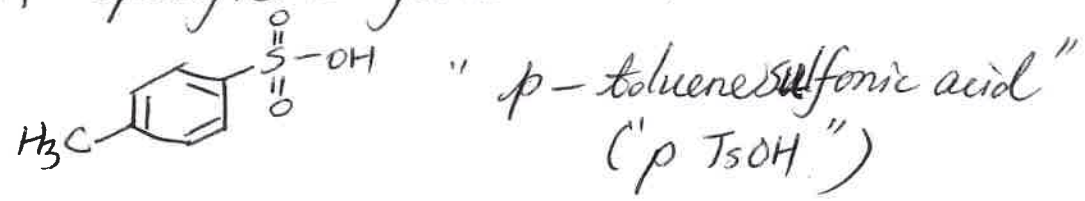


"Resonance delocalization" of e⁻
 Very stable anion, weak base
 ∴ Conj. acid (Sulfonic acid) is a strong acid

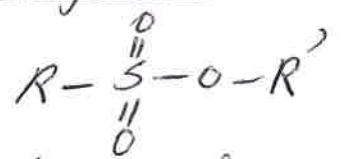
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$\therefore R-\overset{\overset{O}{\parallel}}{S}-O^-$ is a great LG!

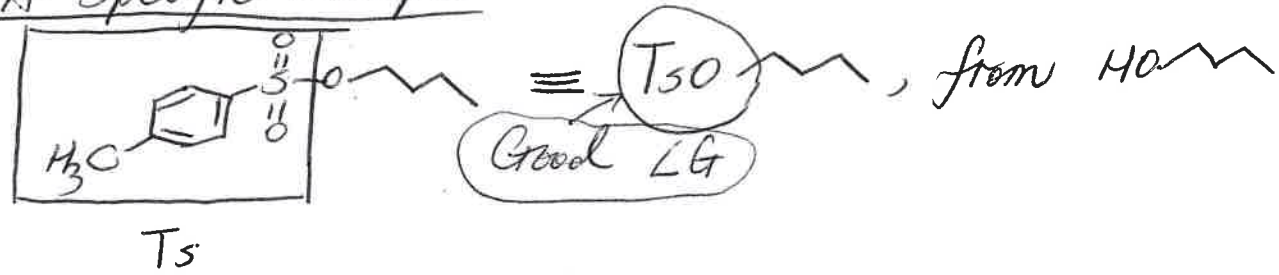
A specific sulfonic acid.



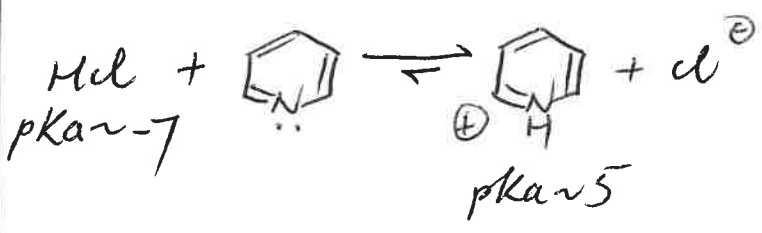
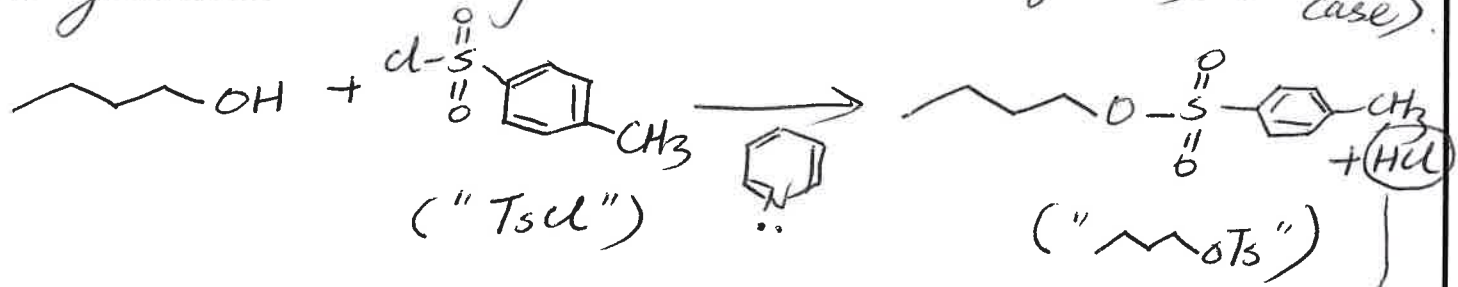
Sulfonate ester



A specific example



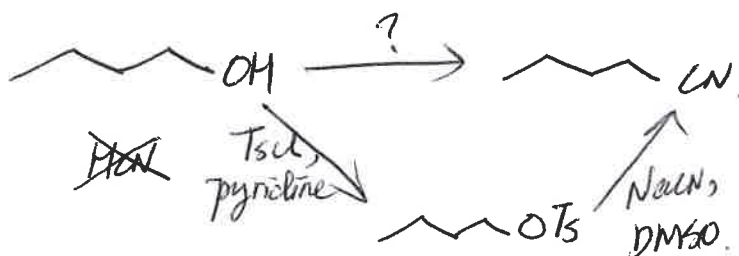
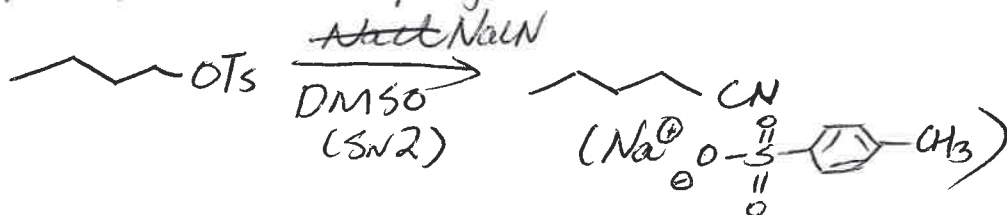
To generate the sulfonate ester ("Tosylate"), in this case,



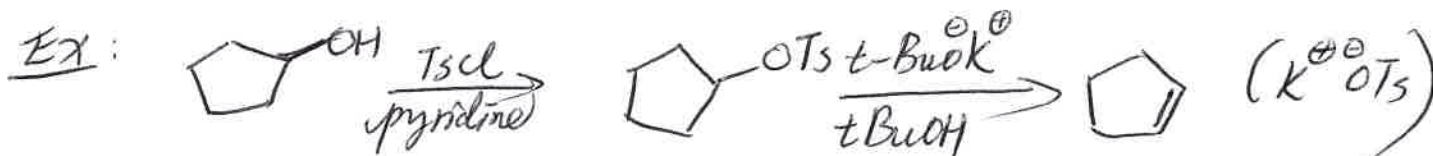
pyridine ("pyridine") neutralizes HCl.

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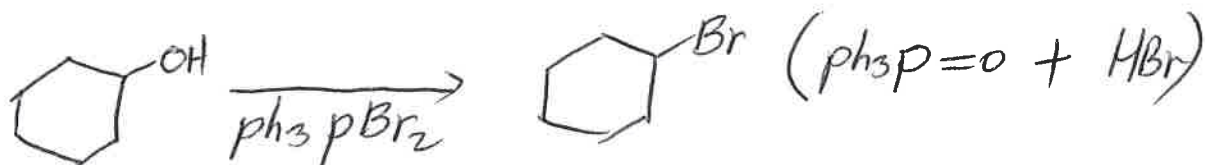
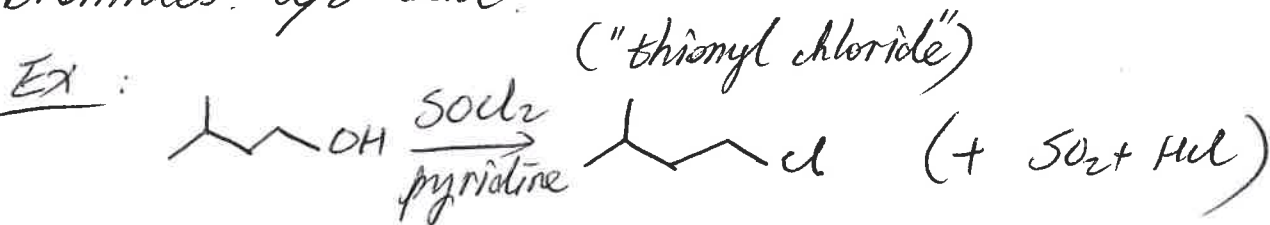
Then, we can perform S_N2 rxn.



Tosylate (& other sulfonate esters) also undergo E_2 rxns.



Special reagents to convert alcohols to alkyl chlorides or bromides, w/o acid.



PP. 474-5. \rightarrow Need for multiple complementary methods of transformⁿ

Course Chem 343 Lecturer Gellman
Day Friday Date 11/13/15
Notes Taken By LL Total # of Pages 5

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Redox (reduction & oxidation) in organic chemistry.
Categories of rxns ...