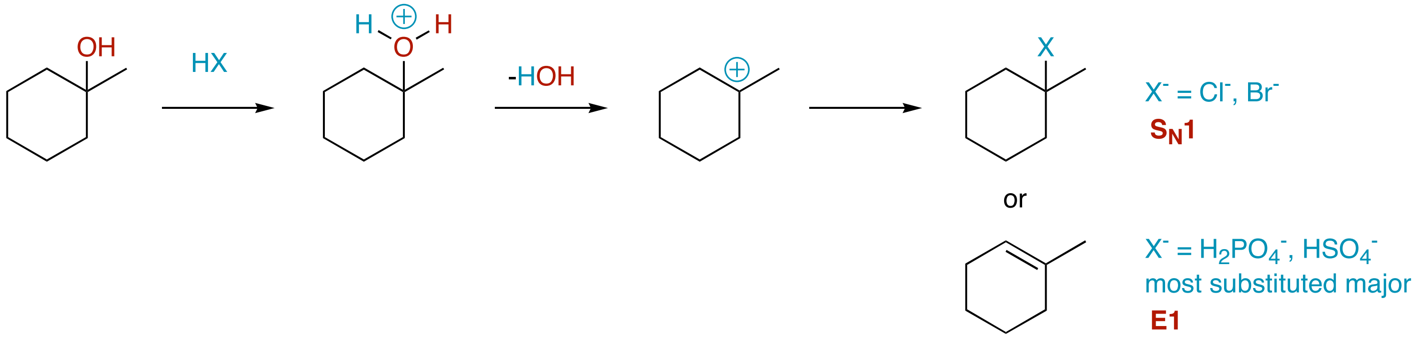
Chem 342

Lecture Summary 18
March 01, 2004

Chapter 17 - Alcohols and Phenols

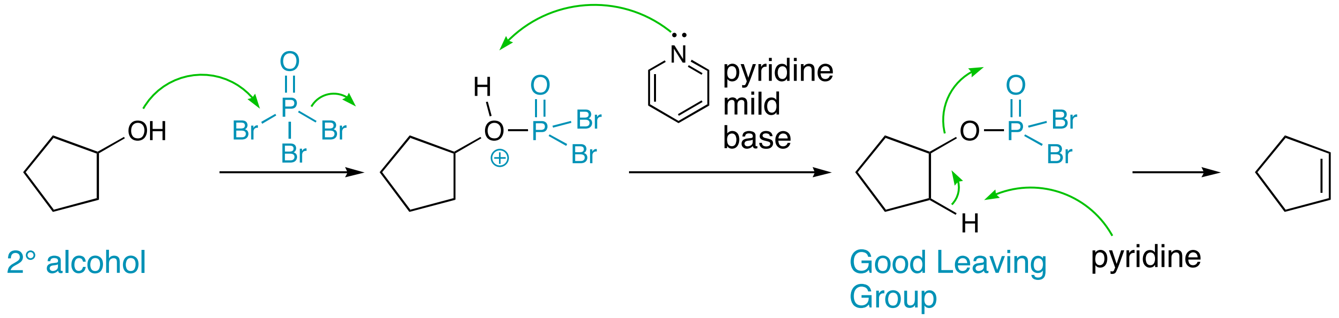
Reactions of Alcohols

Tertiary alcohols can undergo E1-elimination or S_N1 substitution in acidic conditions. Protonation of the alcohol makes the OH into a good leaving group. Depending on the counterion, the intermediate carbocation can undergo addition (chloride or bromide) or elimination (phosphate or sulfate).

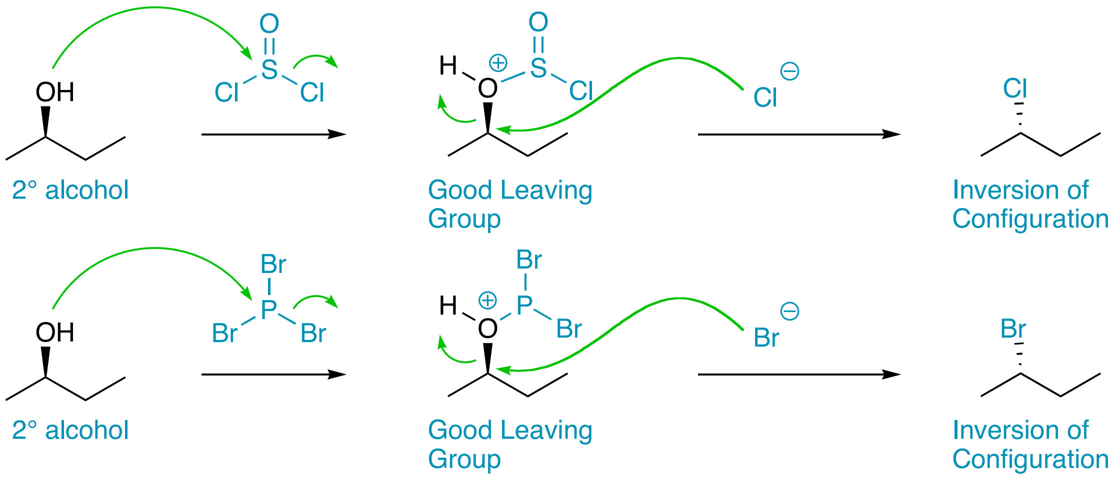


Secondary, and particularly, primary alcohols require E2 or S_N2 reactions and there are several reagents that have been developed to convert alcohols into alkenes or alkyl halides.

$POBr_3$ Promoted Dehydration - E2 elimination



Electrophile Promoted Substitution - S_N2 - 1° and 2° Alcohols



Making alkyl halides by these methods results in inversion of the configuration - thus if you do subsequent S_N2 chemistry on it, the stereochemistry is inverted back to the original alcohol stereochemistry. If the other stereoisomer is desired, a tosylate derivative can be prepared from the alcohol. Making a tosylate does not change the original C-O bond so there is no change in stereochemistry in the first step.