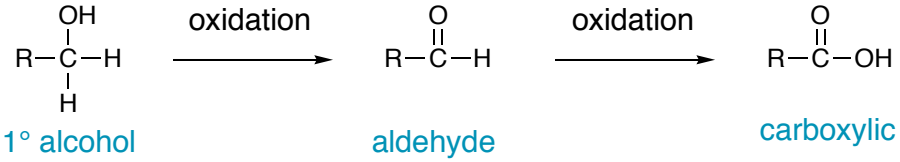
Chapter 17 - Alcohols and Phenols

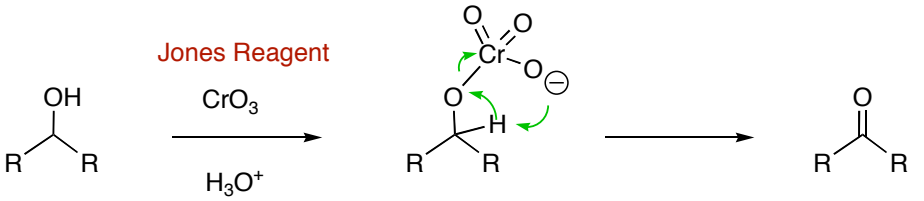
Reactions of Alcohols - Oxidation

Primary and Secondary alcohols can be oxidized to carbonyl compounds. Tertiary alcohols are inert to oxidation. Depending on the oxidizing agent, one can oxidize a primary alcohol to the aldehyde stage, or oxidize fully to the carboxylic acid.

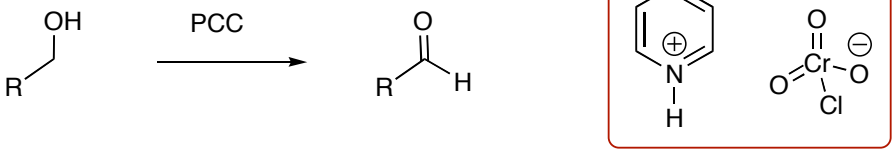


1° alcohol — aldehyde — carboxylic acid

2° alcohol — ketone — 3° alcohol



2° alcohols form ketones
1° alcohols form carboxylic acids



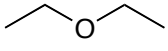
PCC
pyridinium chlorochromate

Stops at the aldehyde stage

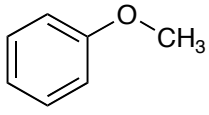
Chapter 18 - Ethers and Epoxides; Thiols and Sulfides

Ethers

Ethers are similar to alcohols but have only carbons bonded to the oxygen. Thus, they are not acidic and are relatively inert. Ethers are commonly used as organic solvents.



diethyl ether

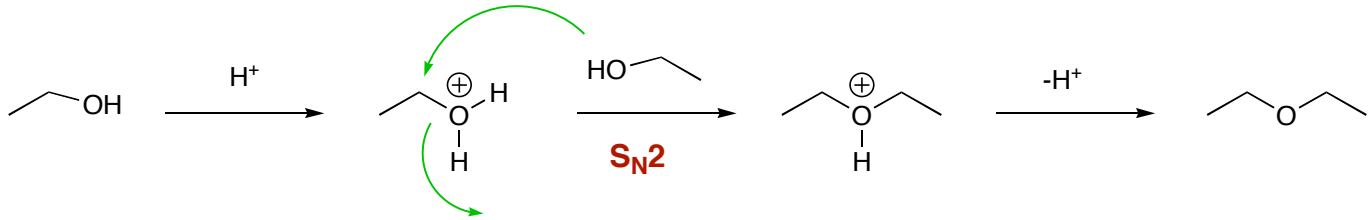


methyl phenyl ether
(methoxybenzene)

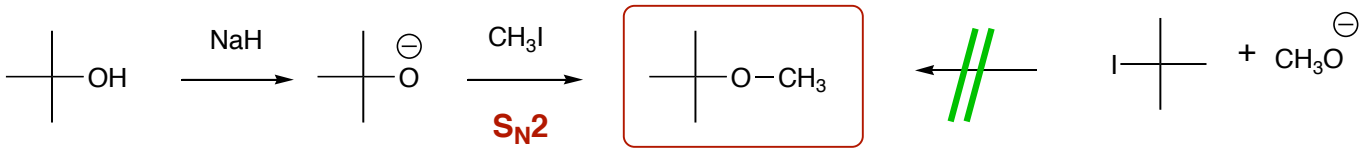
tetrahydrofuran

Preparation of Ethers

Industrially, symmetrical ethers can be prepared from primary alcohols by an acid catalyzed process.



To make unsymmetrical ethers or ethers from secondary or tertiary alcohols, the Williamson Ether Synthesis must be used. Note that the choice of alcohol and alkyl halide is important. Since this involves a S_N2 reaction, the alkyl halide must be unhindered.



Ethers can also be made by oxymercuration reactions.