

Answer on Question #62707 - Chemistry - Organic Chemistry

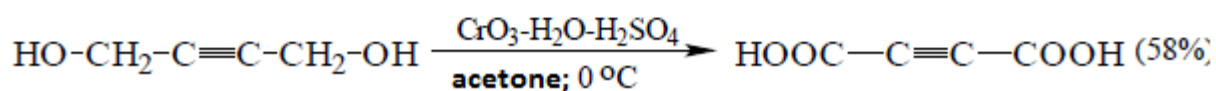
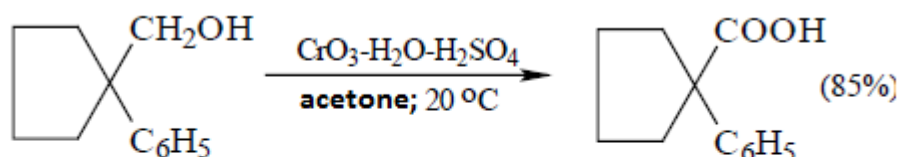
Task:

How would you convert the following?:

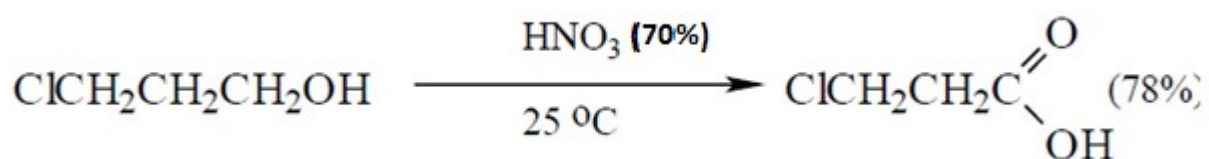
- i) Alcohol to carboxylic acid
- ii) Aldehyde to carboxylic acid

Solution:

1) Primary alcohols are oxidized with Jones reagent (solution strictly calculated amount of CrO_3 in aqueous sulfuric acid) to carboxylic acids:

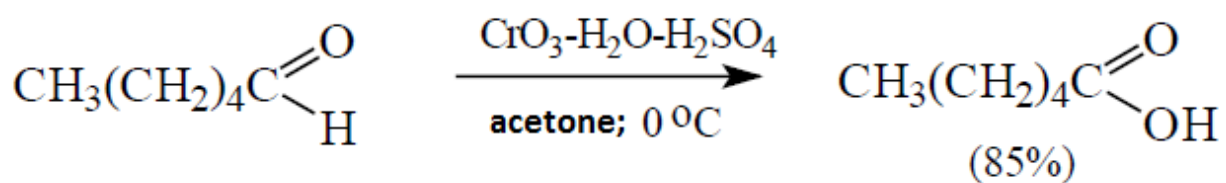


In very rare cases, nitric acid is used as a cheap oxidant. In this case both primary and secondary alcohols are oxidized to carboxylic acids:



2) The aldehydes are readily oxidized to carboxylic acids by the action of a wide variety of oxidizing agents.

Best results are obtained by Jones reagent. In this case, the oxidation is carried out at 0-20 °C during a very short time, and carboxylic acids yields exceed 80%:



An ideal selective oxidizing agent is an aqueous-alcoholic ammonia solution of silver oxide (Tollens reagent). This reagent does not affect the carbon-carbon double or triple bond, hydroxyl group of alcohols, etc.:

