1/17/12

Wrong configuration

D

\[
\text{OH} \quad \rightarrow \quad \text{N}_3
\]

D

\[
\text{SOCl}_2 \quad \rightarrow \quad \text{Cl} \quad \rightarrow \quad \text{Na}_3 \rightarrow \quad \text{N}_3
\]

D

\[
\text{TsCl} \quad \rightarrow \quad \text{OTs} \quad \rightarrow \quad \text{N}_3
\]

\[
\text{OH} \quad \rightarrow \quad \text{Cl}
\]

\[
\text{SOCl}_2 \quad \rightarrow \quad \text{BH}_3 \cdot \text{THF}
\]

\[
\text{OH} \quad \rightarrow \quad \text{H}_2\text{O}_2 \cdot 1\text{OH}^{-}
\]

\[
\text{OTs} \quad \rightarrow \quad \text{OH}
\]

2° alcohol \rightarrow \text{Ketone}  \quad  1° alcohol \quad \text{aldehyde} \quad \text{Carboxylic acid}

Selective oxidation of 1° alcohols

PCC = \text{potassium pyridinium chlorochromate}

\[
\text{Pyridine} \quad \text{H}^+ \quad \rightarrow \quad \text{pyridinium ion}
\]

\[
\text{Cl}^{-} \quad \text{CR} \rightarrow \text{Cl}^{-}
\]

chlorochromate
Chromium being reduced

\[ \text{chromate ester} \]

PCC can be used in anhydrous conditions to make an aldehyde.

*If there is any water around, "over" oxidation will occur.

\[ \text{hydrate} \]
Formation of a hydrate is often thermodynamically unfavorable. However, the formation is a reversible equilibrium process, and if it can happen (if water is present), it will happen, even if only a trace of hydrate forms at any one time. Once the hydrate forms (even briefly), it can become oxidized, which is why oxidation of 10 alcohols can lead to the formation of carboxylic acids.

\[
\text{PCC} \quad \overset{\text{Pyridine}}{\longrightarrow} \quad \overset{\text{LH}}{\text{}}
\]

\[
\text{H}_2\text{O} \quad \overset{\text{H}_2\text{O}}{\longrightarrow} \quad \overset{\text{H}_2\text{O}}{\text{}}
\]

\[\text{Can't exist; } 5\text{ bonds to carbon} \]

\[\text{no carboxylic acid} \]

\[\text{NR} \]

\[\text{Can't exist; } 5\text{ bonds to carbon} \]

\[\text{no carboxylic acid} \]

\[\text{NR} \]