ORGANIC CHEMISTRY 2 LECTURE GUIDE 2019

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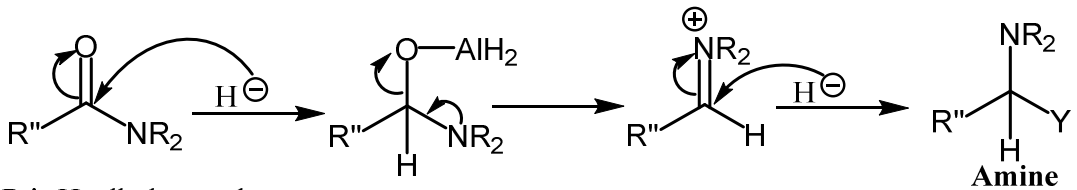
Lesson VI.14. Preparation and Reaction of Nitriles

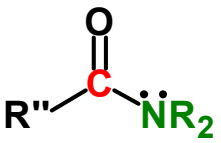
Amines from Amides

Amides react with $LiAlH_4$ to give amines:



R is H, alkyl or aryl groups

Net Reaction:



$LiAlH_4$

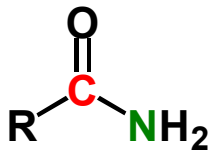
A

Notes

Lesson VI.14. Preparation and Reaction of Nitriles

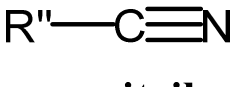
Nitriles from amides, nitrile hydrolysis

Amides can also be dehydrated by reaction with P_2O_5 to give **nitriles:**



$\xrightarrow{P_2O_5}$ **A**

We will not go into the detailed mechanism, but it is worth noting that the nitrile can itself be converted to a carboxylic acid upon hydrolysis:



nitrile

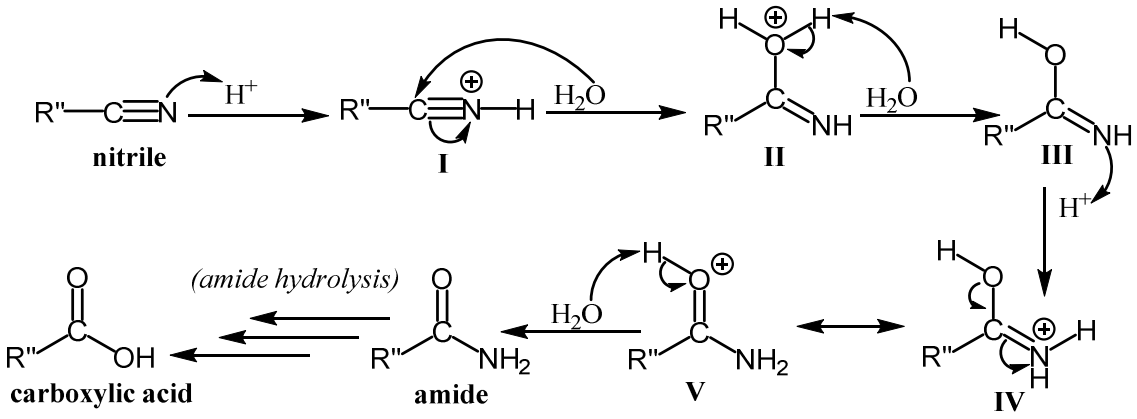
$\xrightarrow[H_2O]{H^+}$ **B**

Notes

Lesson VI.14. Preparation and Reaction of Nitriles

Nitrile hydrolysis mechanism

The mechanism of nitrile hydrolysis begins with nucleophilic addition to the polar CN bond and deprotonation to yield an imine. The imine hydrolysis is the revers of imine formation discussed earlier:



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