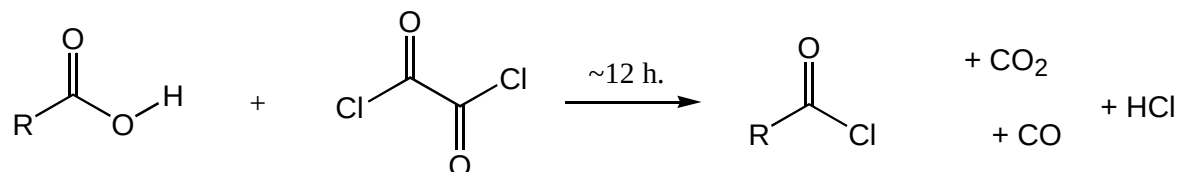
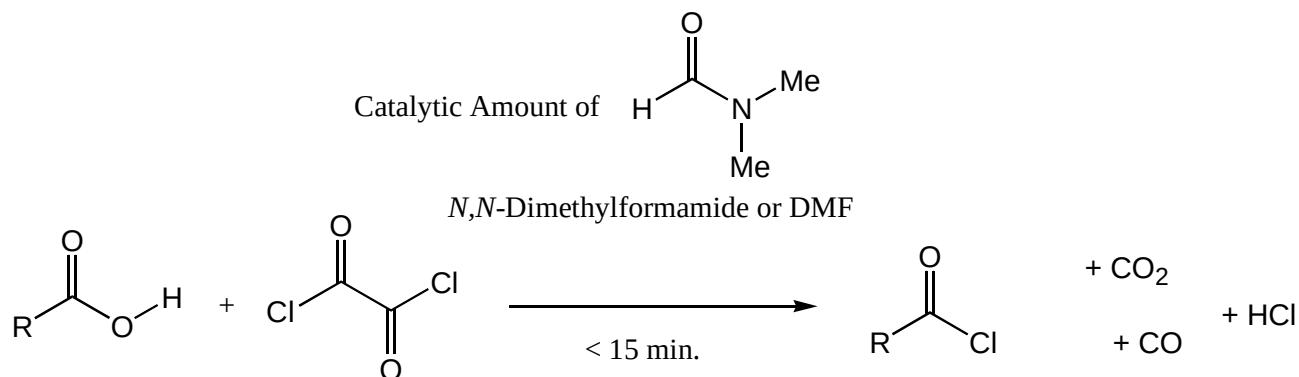


Organic Chemistry c3444y
Problem Set 7 - Carboxylic Acids and Derivatives
Due in class Wed. March 24

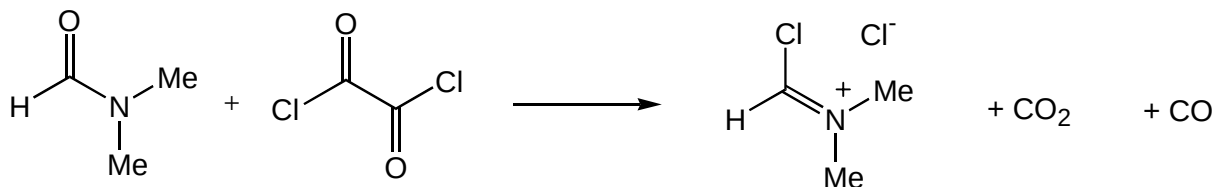
1. We've seen in class the following reaction:



Although this is a nice way to make acid chlorides, the reaction can be rather slow requiring 12 hours or more. It has been found that the addition of a catalytic amount of DMF catalyzes this reaction by several orders of magnitude, such that it will generally be done in less than 15 min.

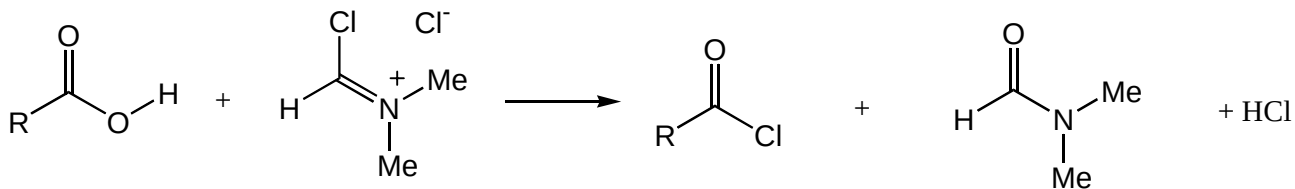


The DMF first reacts with the oxalyl chloride to produce:



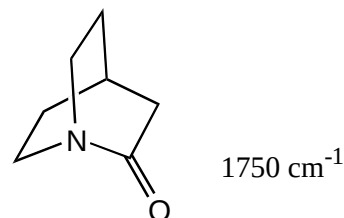
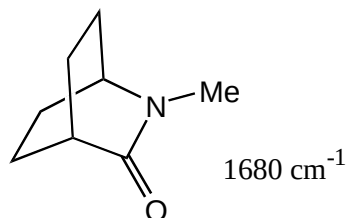
a. Write a plausible mechanism for this transformation.

In the second part of the reaction, the following reaction occurs, and the DMF is regenerated:

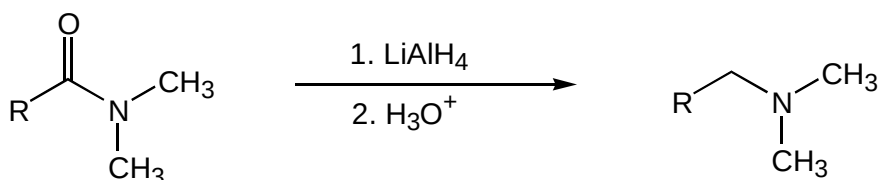


b. Write a plausible mechanism for this transformation.

2. The two amides shown below exhibit very different C=O stretching frequencies in their IR spectra. Explain this difference concisely using clear drawings where appropriate.

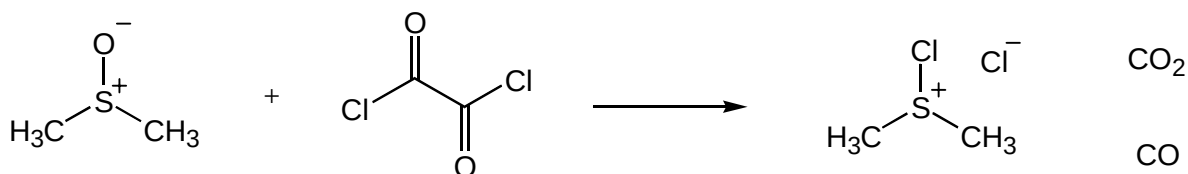


3. When amides are treated with LiAlH_4 , the following surprising reaction takes place:



Provide a mechanism to account for this result.

4. As we said in class, you are now ready for the first part of the Swern oxidation. Provide a mechanism for the following reaction:



Relevant Book Problems: 19.26a,b,c, 19.29, 19.31, 19.35, 20.30a, 20.31, 20.32, 20.39a,d.