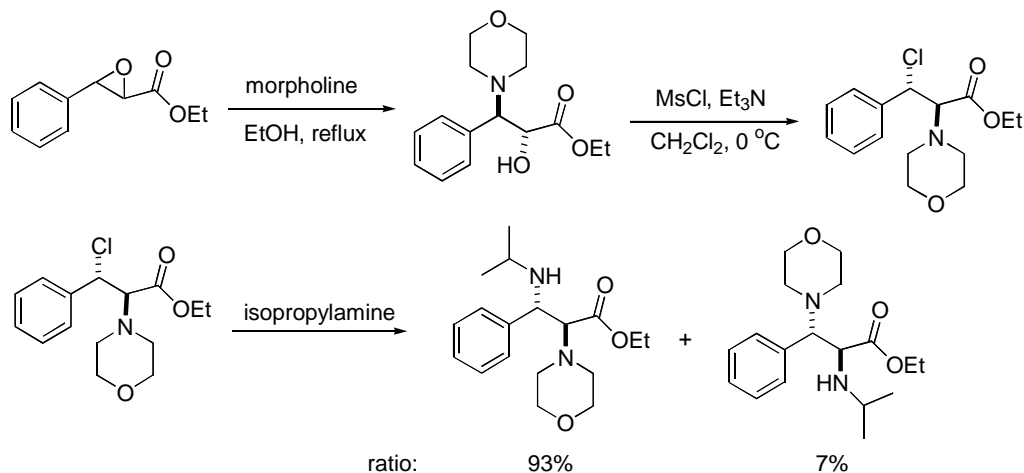
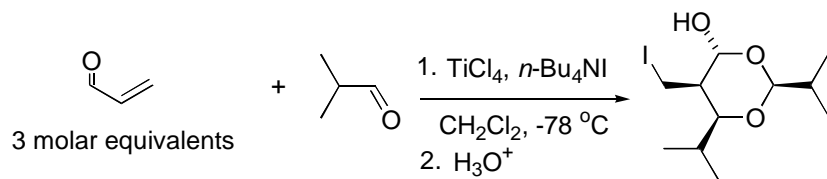


1. Shown below is a recently-reported synthesis of α , β -diaminoesters that is highly regiospecific and that provides a mixture of diastereomers that have an *anti* (*erythro*) relationship. Predict the product(s) and provide reasonable mechanisms for the example of this procedure that is illustrated below. Pay close attention to the stereochemical outcomes of your mechanistic steps.



(OVER)

2. Shown below is an example of a recently-discovered procedure in which a cyclic acetal/hemiacetal is produced by reaction of an aldehyde with acrolein by a two-step sequence. Provide a reasonable mechanism for the transformation.



3. Shown below is a recently-reported example of a hetero-aldol-Tischenko reaction. Provide a reasonable mechanism for the transformation.

