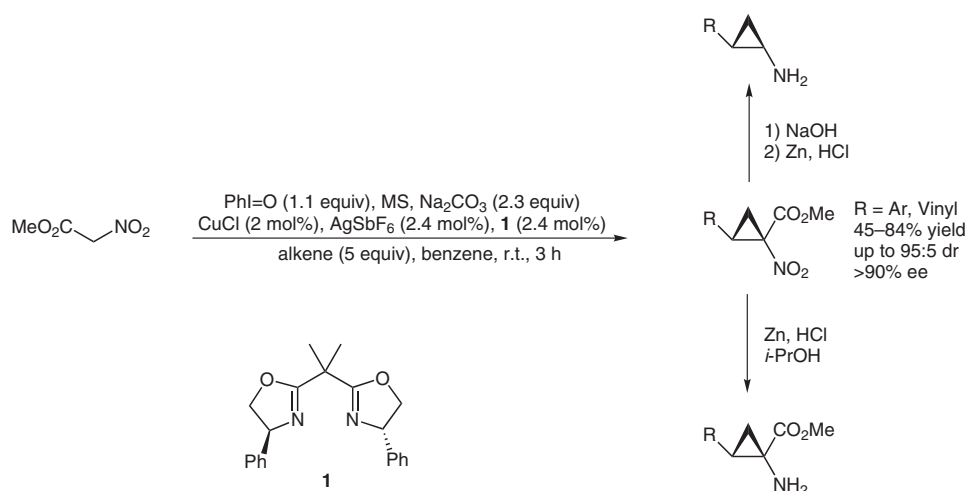


Cyclopropane α -Amino Acids via Catalytic Asymmetric Cyclopropanation of Alkenes



Significance: The authors report a nice procedure for the highly diastereoselective and enantioselective cyclopropanation of alkenes with a copper catalyst. Cyclopropane-containing molecules are found in useful natural and unnatural molecules. The authors used iodosobenzene as a reagent to form phenyl iodonium ylides; molecular sieves were used for water scavenging, sodium carbonate as an additive and benzene was the solvent found to be optimal for the reaction. The Cu(I) is important to reach high yields and selectivities, with the SbF₆⁻ counteranion being ideal for desired reactivity. Many various conjugated alkenes gave good yields with excellent selectivity.

Comment: Although many enantioselective cyclopropanations are available, both diastereoselective and enantioselective reactions are not very common. The authors provide a nicely optimized protocol for the cyclopropanation of alkenes to give cyclopropane α -amino acid derivatives and show conversion of these adducts into the free amine as well as a convenient decarboxylation method. The success of methyl nitroacetate, which contains two electron-withdrawing groups, represents an important and rare example where this type of system is capable to provide high selectivity.