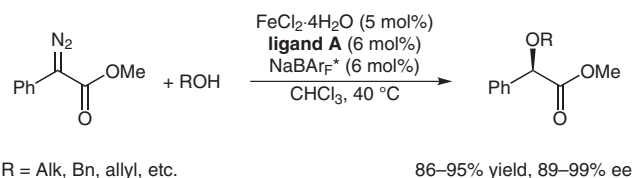
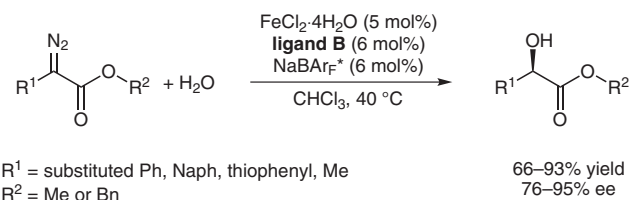
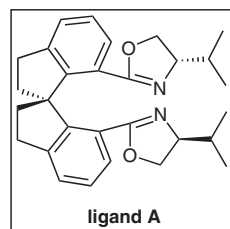


Iron-Catalyzed Asymmetric OH Bond Insertions



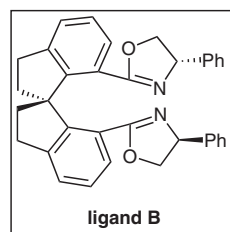
R = Alk, Bn, allyl, etc.

86–95% yield, 89–99% ee



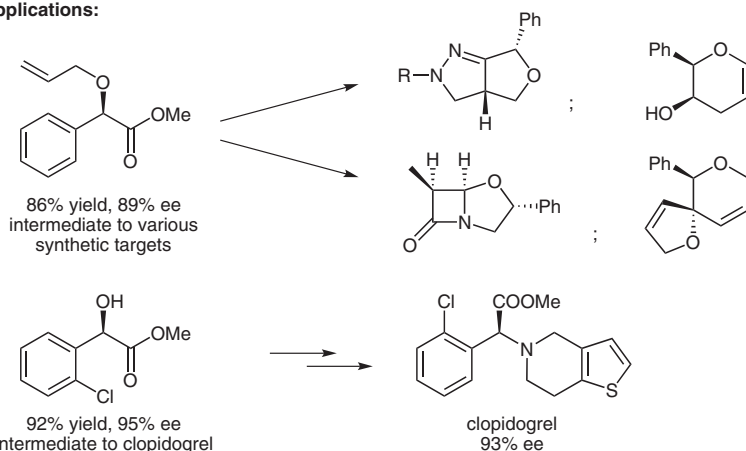
R¹ = substituted Ph, Naph, thiophenyl, Me
R² = Me or Bn

66–93% yield
76–95% ee



*NaBARF = sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate

Selected applications:



Significance: The authors developed a highly efficient iron-catalyzed protocol for the enantioselective carbene OH insertion. The reaction produces various α -alkoxy and α -hydroxyl arylacetates, which are quite useful synthetic intermediates, in very high yield and enantioselectivities.

Comment: This work features not only the high efficiency of iron-catalyzed carbene insertion to alcohol OH bonds, but also the insertion to a water OH bond to generate corresponding chiral α -hydroxyl arylacetates in high yields and enantioselectivities. The results are better than the authors' previous work with copper catalysts (*Angew. Chem. Int. Ed.* **2008**, *47*, 932).