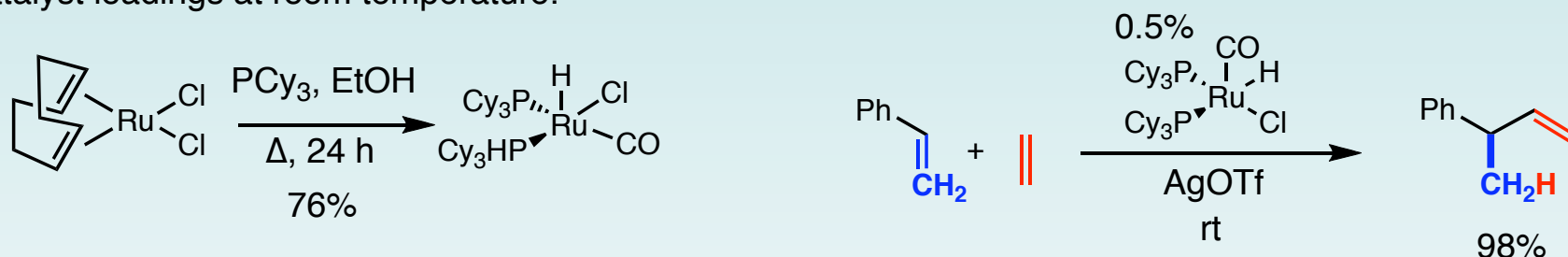


Asymmetric Hydrovinylation and Related Reactions

Brian T. Connell, Department of Chemistry, Texas A&M University, College Station, TX 77843-3255

The goal of this research is to develop new chiral ruthenium catalysts that will mediate the enantioselective functionalization of prochiral olefins. Initial work has been directed toward the development of a catalytic, enantioselective hydrovinylation reaction. We began this process by utilizing a ruthenium hydride complex containing two monodentate phosphine ligands. This complex is easy to synthesize in one step and can be made readily on multigram scale. Even more importantly, this complex was able to effectively catalyze hydrovinylation reactions at low catalyst loadings at room temperature.



We have noted an interesting catalytic profile for these ruthenium-based catalysts, notably that they are more effective at low loadings and low concentrations. This unexpected but beneficial result has helped us investigate even more efficient catalysts.

The introduction of chelating ligands to this ruthenium hydrovinylation catalyst was studied next. The modified catalyst also catalyzes the reaction effectively at room temperature. This is a major step forward towards the next goal of this research, the development of an enantioselective reaction.

