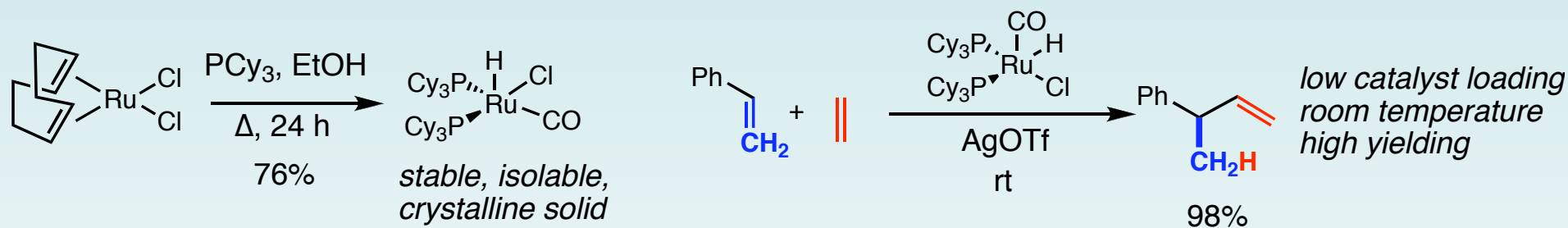


# Asymmetric Hydrovinylation and Related Reactions

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The goal of this research is to develop new chiral ruthenium hydride catalysts that will mediate the functionalization of prochiral olefins. Initial work was directed toward the development of a catalytic hydrovinylation reaction. We began this process by utilizing a stable 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 hydride catalyst was explored next. This chelated catalyst also catalyzes the reaction effectively at room temperature. Enantiopure ligands have been incorporated into the ruthenium complex and are currently under examination.

