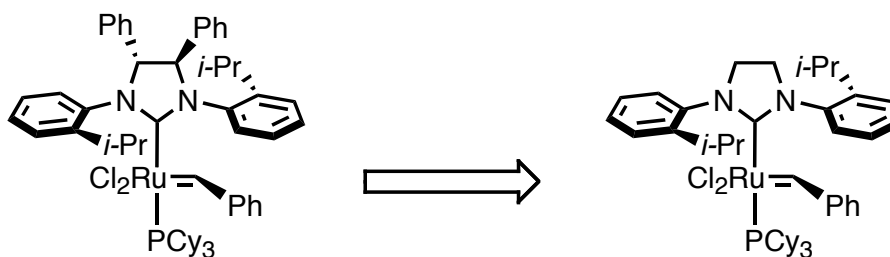
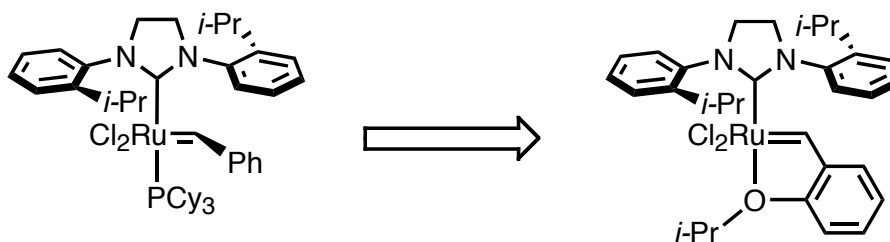


Further Catalyst Development

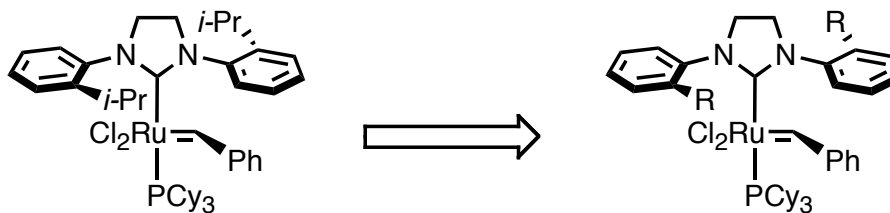
- Will achiral analogs of mono-ortho-substituted catalysts be stable?



- Will phosphine-free analogs be more stable?

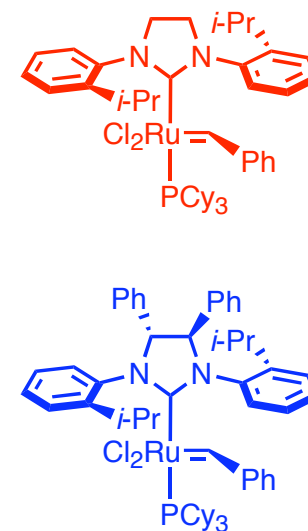
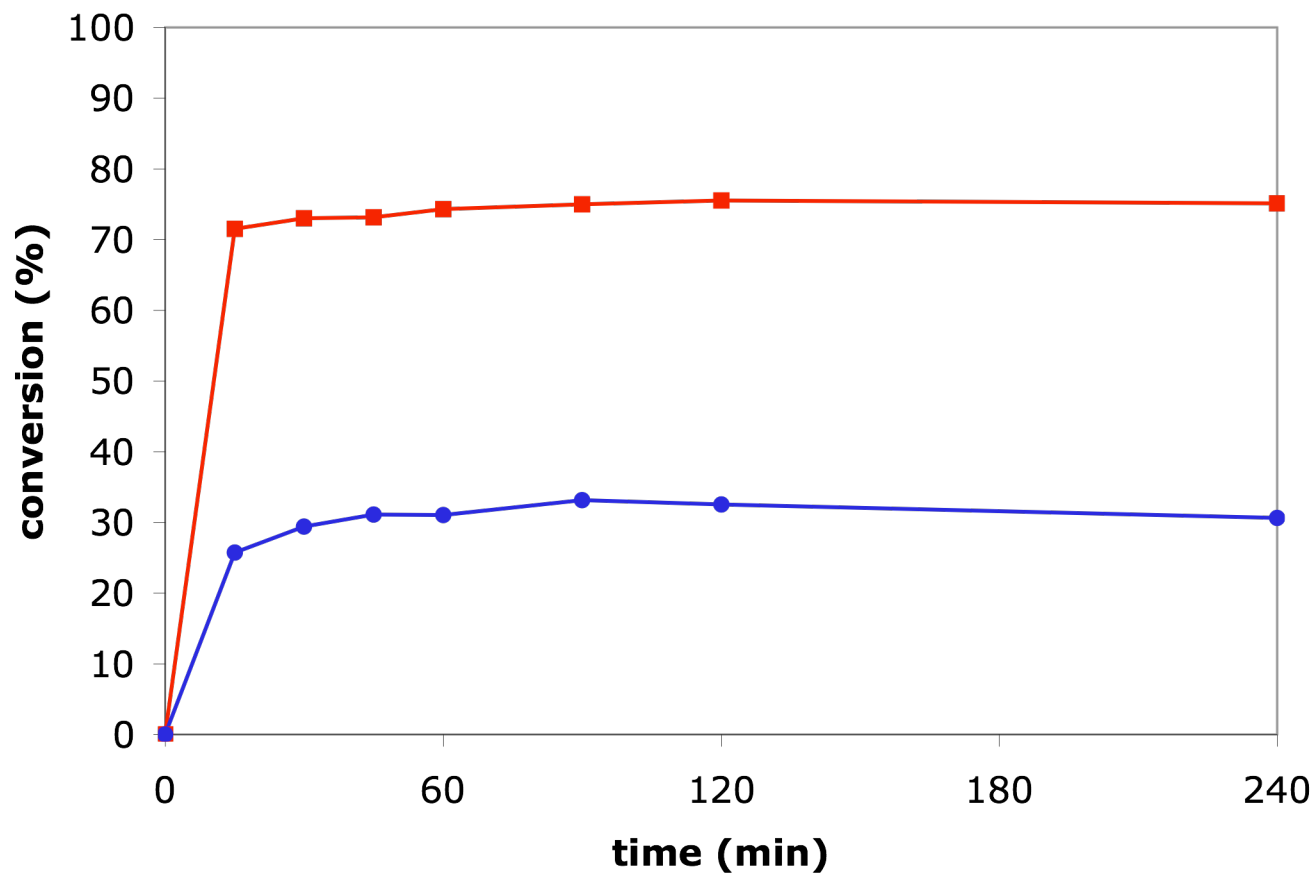
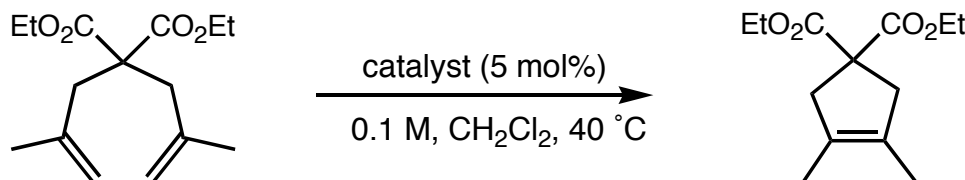


- What effect does the nature of the ortho substituent have?



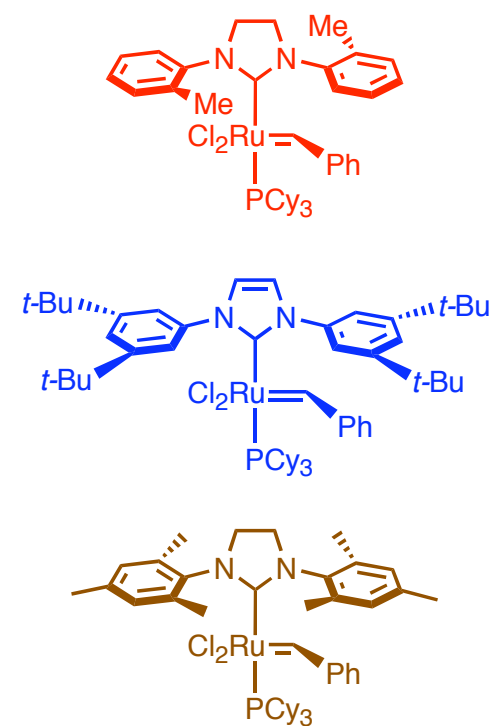
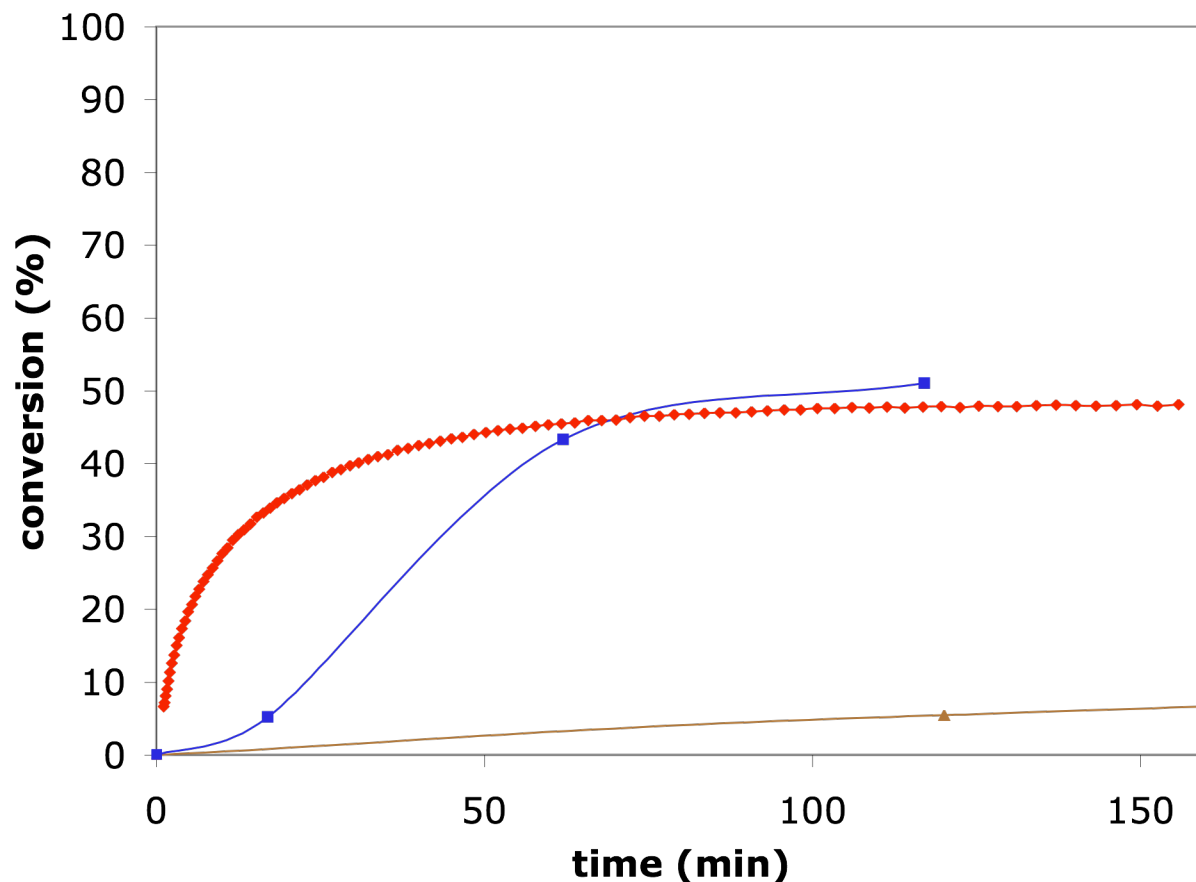
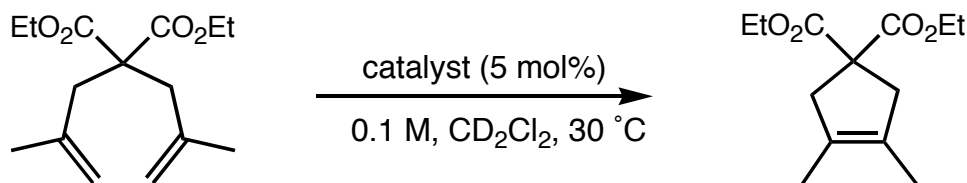
o-Me-PCy₃ Catalyst: Effect of NHC Backbone Substitution

- Removing the *trans*-diphenyl substituents improves catalyst performance for the formation of tetrasubstituted olefins by RCM.



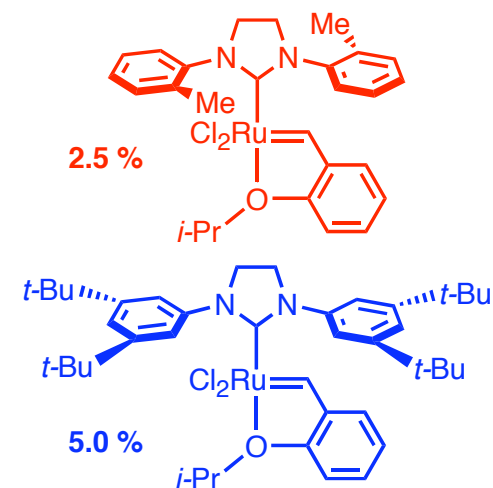
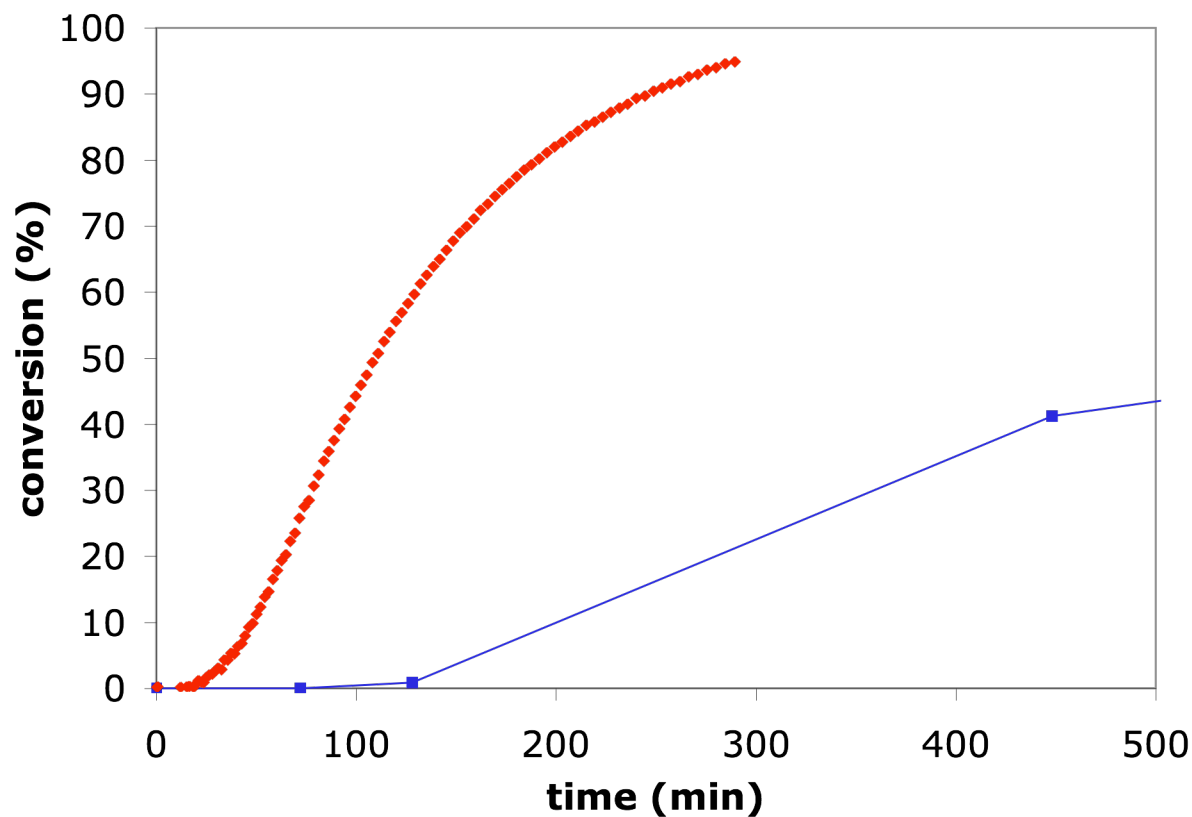
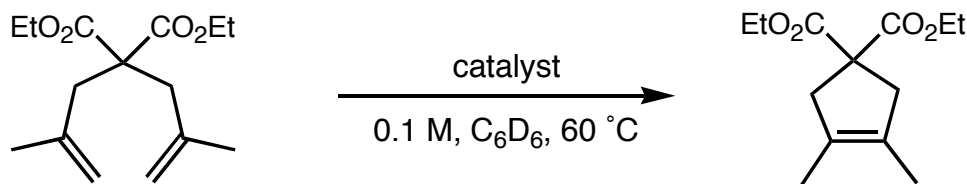
o-Me-PCy₃ Catalyst: RCM to form a Tetrasubstituted Olefin

- Removing one ortho methyl group leads to fast catalyst turnover, but stability limits overall conversion.



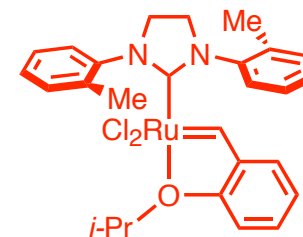
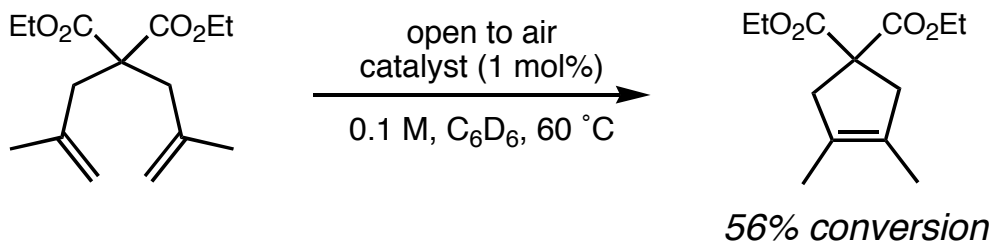
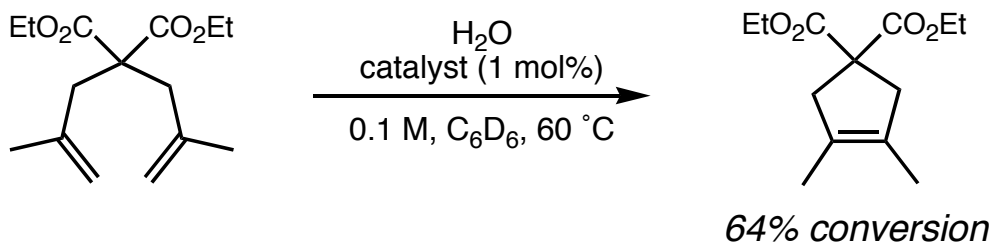
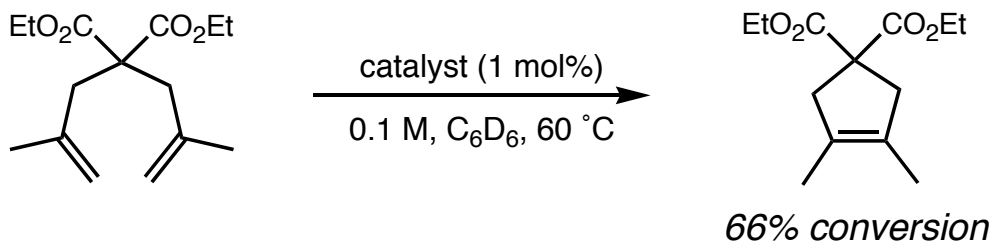
o-Me-Ether Catalyst: Kinetics of 4-sub RCM at 2.5 mol%

- Kinetics reveal fast ring-formation, without sacrificing catalyst stability (even without removing ethylene).



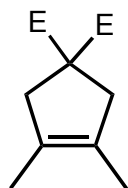
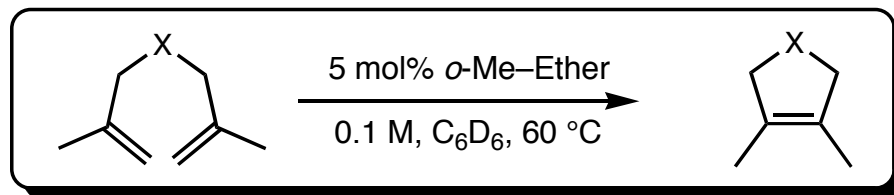
o-Me-Ether Catalyst: Tolerance to Air and Moisture

- o*-Me-Ether exhibits no increased sensitivity to air or moisture as compared to other Grubbs-Hoveyda catalysts.



o-Me–Ether Catalyst: Scope of Tetrasubstituted Olefin RCM

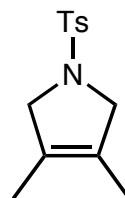
- A variety of tetrasubstituted olefins are readily formed via RCM using the *o*-Me–Ether catalyst.



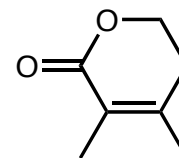
100%, <1 h



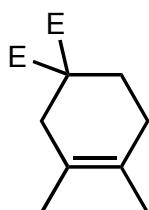
100%, <1 h



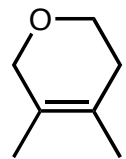
100%, <1 h



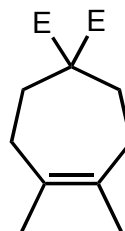
no reaction



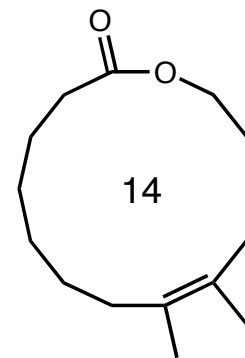
100%, <1 h



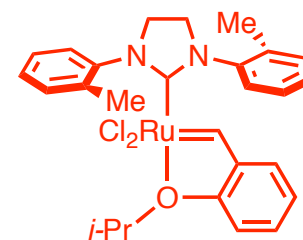
72%, 2 h
88%, 11 h



45%, 2 h
62%, 11 h
87% 18h (open system)

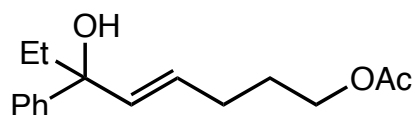
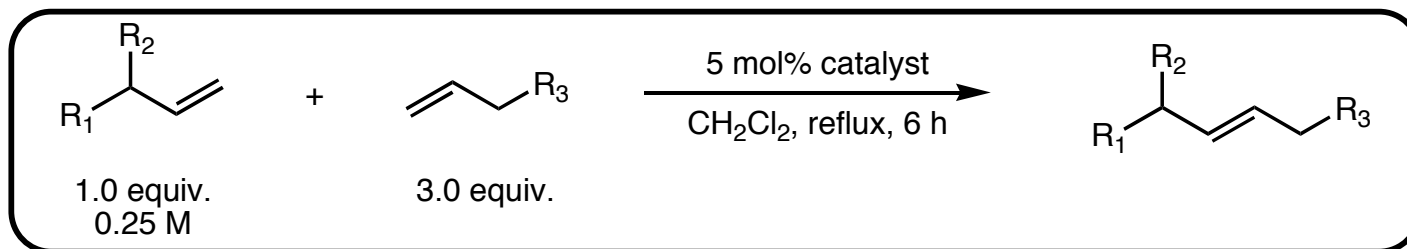


no reaction

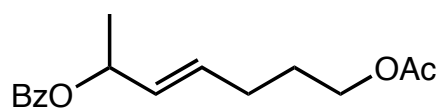


Improved Efficiency in Cross Metathesis

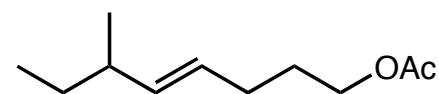
- The formation of sterically-hindered olefins by cross metathesis can be a challenge for current catalysts.



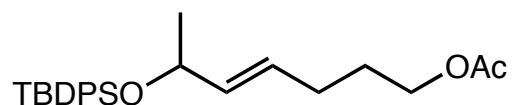
89% yield
70% yield



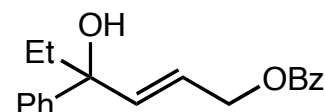
93% yield
81% yield



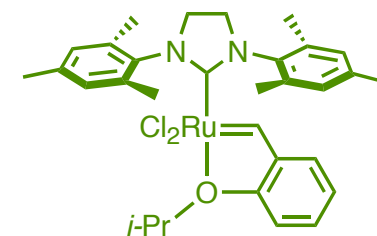
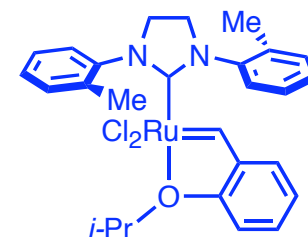
98% yield
85% yield



91% yield
68% yield



98% yield
81% yield



w/ Chris Douglas