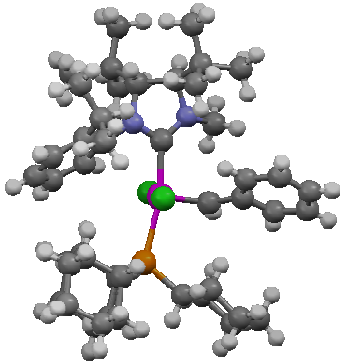
A HIGHLY ACTIVE Ru-BASED CATALYST FOR ENANTIOSELECTIVE OLEFIN METATHESIS.

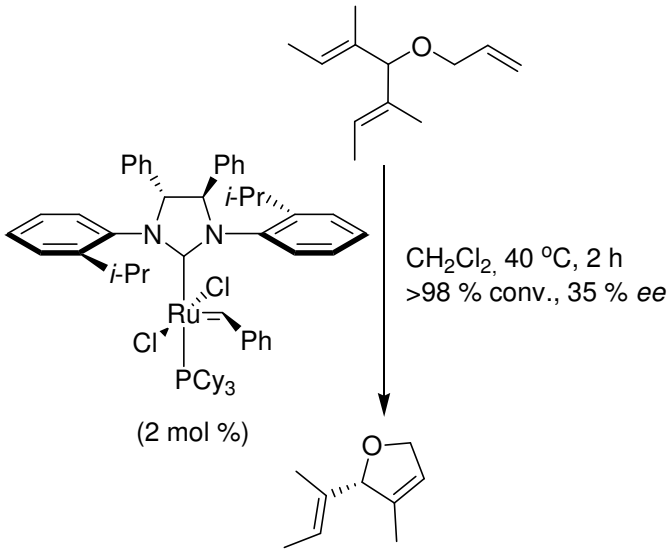


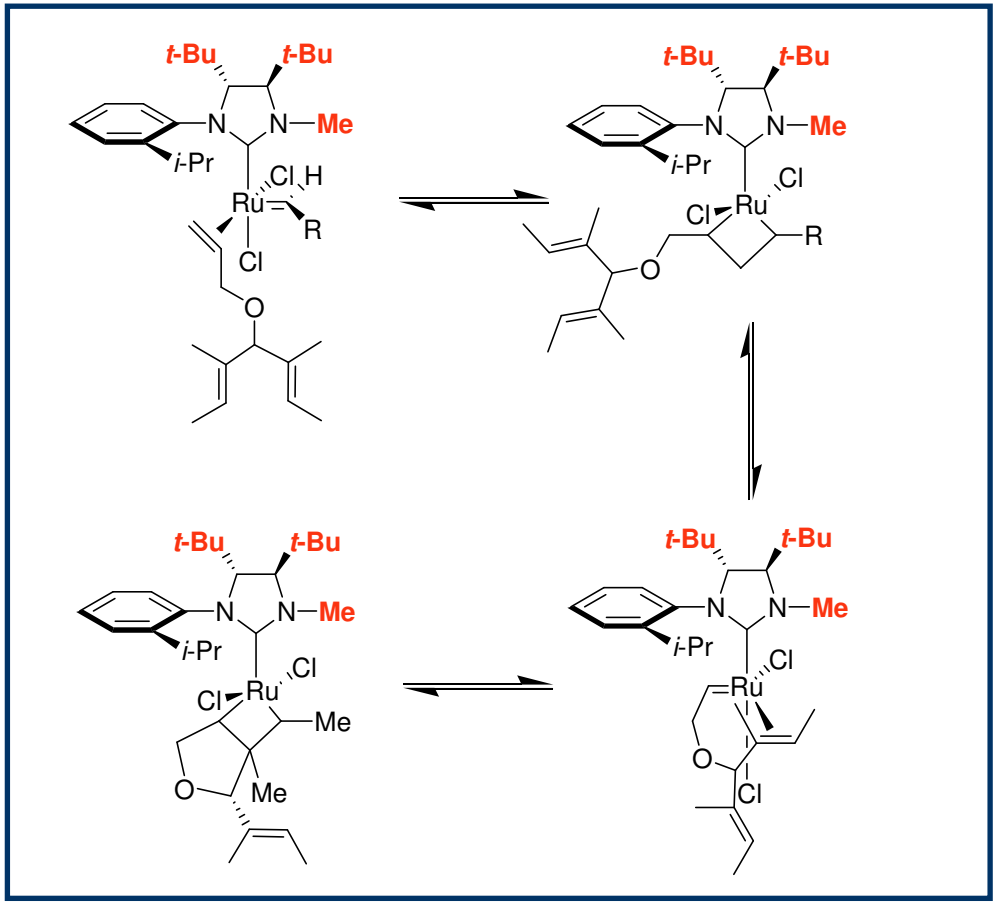
Shawn K. Collins*, Pierre-André Fournier, Marion Bédard, Jolaine Savoie, and Alain Grandbois.

ISOM XVII international symposium on olefin metathesis

Université de Montréal

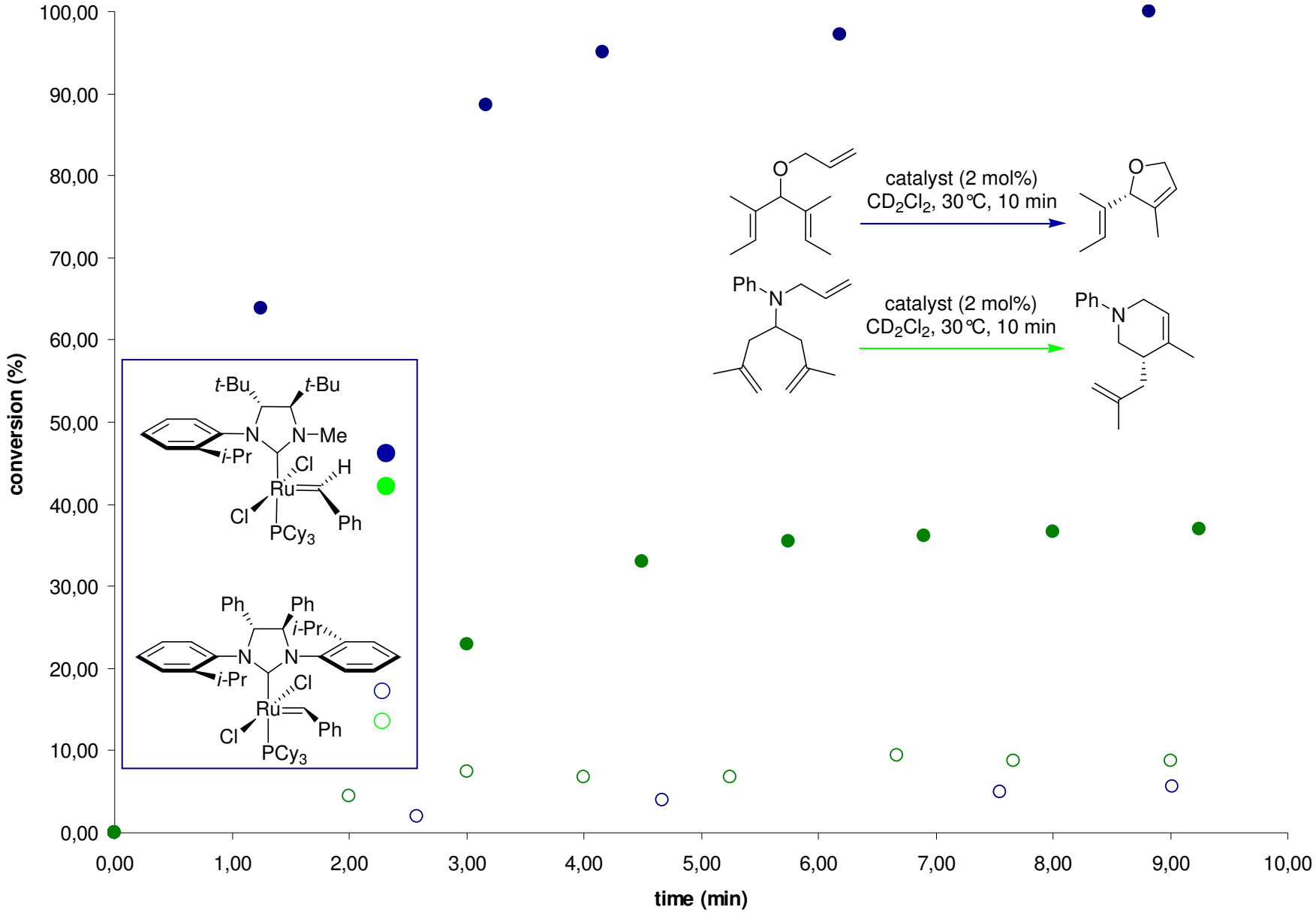
CATALYST DESIGN.



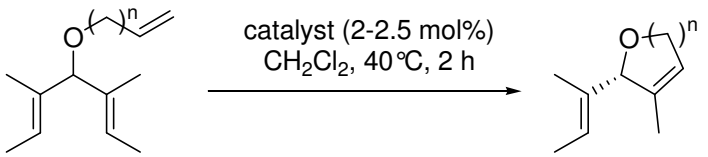


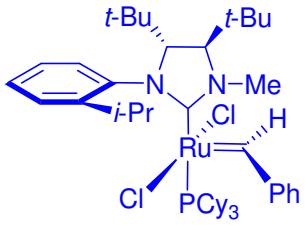
For first Ru-based ARCM see: Seiders, T. J.; Ward, D. W.; Grubbs, R. H. *Org. Lett*. **2001**, *3*, 3225-3228.

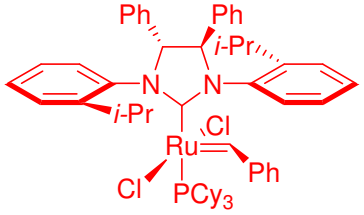
ARCM USING CHIRAL C_1-SYMMETRIC CATALYST: RATE STUDIES.

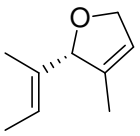


ARCM USING CHIRAL C_1-SYMMETRIC CATALYST: PRELIMINARY RESULTS.



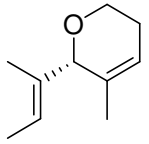






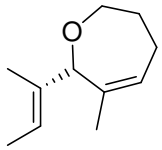
82% *ee*, >98% conv.

35% *ee*, >98% conv.



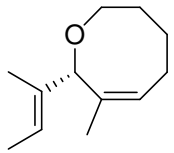
26% *ee*, >98% conv.

90% *ee*, >98% conv. (+NaI)



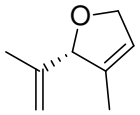
60% *ee*, >98% conv.

76% *ee*, 93% conv.



>95% *ee*, <5% conv.

85% *ee*, ~2% conv. (+NaI)

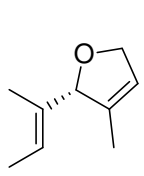


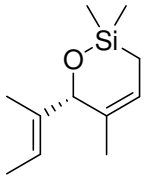
33% *ee*, >98% conv.

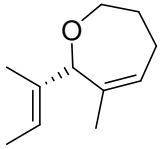
23% *ee*, >98% conv.

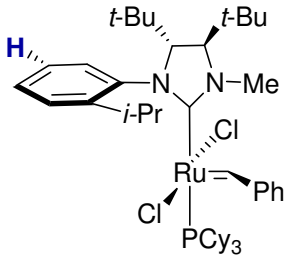
Fournier, P.-A.; Collins, S. K. *Organometallics* **2007**, 26, 2945-2949.

CHIRAL C_1-SYMMETRIC CATALYSTS: ARYL MODIFICATION.









35% *ee*, >98% conv

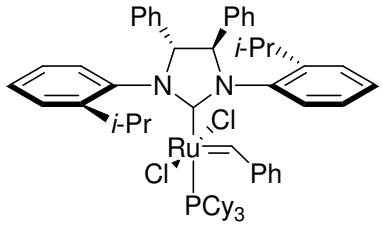
82% *ee*, >98% conv.

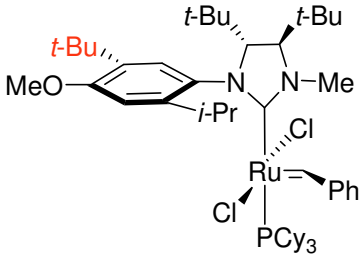
83% *ee*, >98% conv.

6% *ee*, >98% conv.

85% *ee*, 5% conv. (NaI)

60% *ee*, >98% conv.





30% *ee*, >98% conv

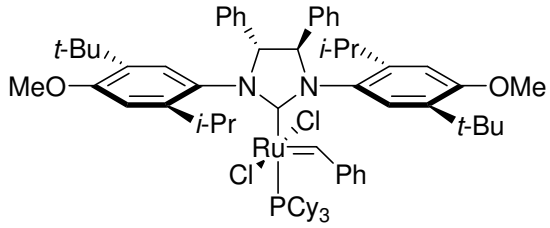
82% *ee*, >98% conv.

75% *ee*, >98% conv.

94% *ee*, >98% conv.

76% *ee*, 93% conv.

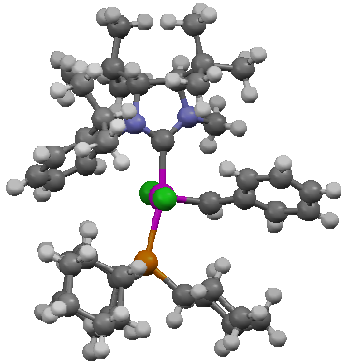
86% *ee*, >98% conv.



All desymmetrizations performed with catalysts having C_1-symmetric NHCs are complete in under 5 mins.

For pioneering work with C_2-symmetric NHCs see: (a) Funk, T. W.; Berlin, J. M.; Grubbs, R. H. *J. Am. Chem. Soc.* **2006**, *128*, 1840-1846. (b) Berlin, J. M.; Goldberg, S. D.; Grubbs, R. H. *Angew. Chem., Int Ed.* **2006**, *45*, 7591-7595.

CHIRAL C_1-SYMMETRIC CATALYSTS: CONCLUSIONS.



Chiral Ru-based catalysts bearing C_1-symmetric NHC ligands can produce highly active and selective catalysts for desymmetrization reactions without the use of additives.

The use of a di-*t*-Bu backbone in the NHC unit can help afford high ee's without the use of additives.

The effect of NHC rotation, in addition to the role of the *N*-alkyl substituent on enantioselective processes, is under study.