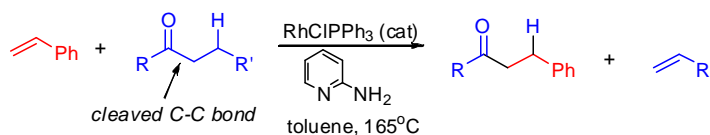


Johnson Group Research

Transition metal catalysis continually revolutionizes the synthesis of complex natural products and potential drug candidates by revealing reaction pathways inaccessible via traditional organic transformations. One area of current interest is the development of methodology for the cleavage and functionalization of carbon-carbon bonds. While carbon-carbon single bonds are inert under a vast majority of standard reaction conditions, certain transition metal complexes promote the activation of these bonds. We are currently investigating the mechanisms of several carbon-carbon bond activation processes:

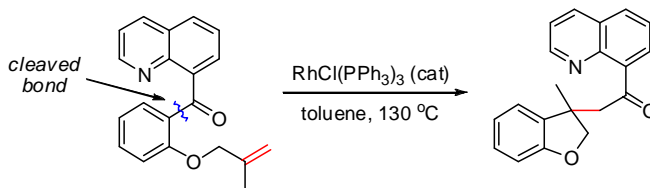
Rhodium-catalyzed activation of ketones via temporary chelation:



Students: Jonathan Parrish (class of 2009) – graduate student at the University of Wisconsin

Alexander Wotal (class of 2009) – graduate student at the University of Rochester

Rhodium-catalyzed carboacylation of quinolinyl ketones:



Students: Breanna Powell (class of 2010) – dental student at the University of Michigan

Timothy Boman (class of 2010) – chemist at Ash Stevens, Inc.

Andrew Franks (class of 2009) – graduate student at Duke University

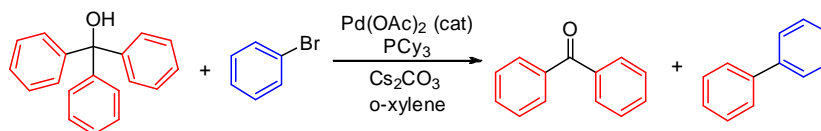
Lauren Moak (class of 2010) – medical student at the University of Michigan

Colin Rathbun (class of 2012)

Patrick Lutz (class of 2012)

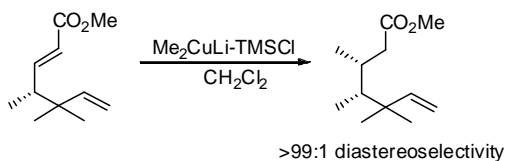
Casey Baxter (class of 2013)

Palladium-catalyzed β -aryl elimination from tertiary alcohols:



Student: Valerie Winton (class of 2011)

The Johnson group is also investigating the influences controlling the diastereoselectivity of Gilman reagent addition to α,β -unsaturated esters. This is being performed through the synthesis of a number of related saturated and unsaturated analogues.

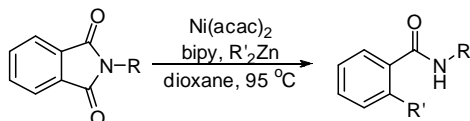


Kuwahara et. al. *J. Org. Chem.* 2008, 73, 6913-5

Student: David Todd (class of 2011)

Thomas Endean (class of 2013)

Additional studies are focusing on the development of new transition metal-catalyzed and -mediated methodology. To date, efforts have included the nickel-mediated decarbonylative addition of diorganozinc reagents to cyclic imides.



Students: Sarah Havlik (class of 2010)

Jessica Simmons (class of 2012)