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*Design and Utility of Nucleophilic
Carbenes for Asymmetric
Umpolung*

Tomislav Rovis
*John K. Stille Professor
Department of Chemistry
Colorado State University
Fort Collins, CO*

4:00 p.m. Monday April 14th, 2014
Bowman-Oddy 1059



Tomislav Rovic

Tomislav Rovic received his Ph.D. degree in Organic Chemistry from the University of Toronto in 1998 under the direction of Prof. Mark Lautens followed by postdoctoral studies under the tutelage of Prof. David A. Evans at Harvard University. He began his academic career at Colorado State University in 2000. He has garnered numerous awards for his research including the Merck Research Laboratories Unrestricted Grant, Glaxo SmithKline Scholar Award, Eli Lilly Grant, Johnson & Johnson Focused Giving Grant, Amgen Young Investigator Award, Boehringer-Ingelheim Research Award and the NSF CAREER Award. In 2005 he became an Alfred P. Sloan Fellow and was promoted as the Monfort Professor of Chemistry. In 2008 he was bestowed with the John K. Stille Chair in Chemistry at Colorado State University. He continued to receive numerous grants and awards including the Herman Frasch Foundation Grant, Roche Excellence in Chemistry Award, and most recently, 2014 Arthur C. Cope Scholar Award. In 2013, he became a Fellow of the American Association for the Advancement of Science. To his credit, there are over 200 publications including articles, patents, edited books, book reviews and encyclopedia contributions.

His research interests include asymmetric catalysis, organometallic chemistry, reaction development and synthesis of biologically important molecules. His work extends into many areas of science particularly in the pharmaceutical arena.

Selected Recent Scientific Contributions

Books

"Asymmetric Benzoin and Stetter Reactions." DiRocco, D. A.; Rovic, T. *Stereoselective Synthesis 2*, **2011**, 835-862.

"Heterocycle Construction via Asymmetric Rhodium Catalyzed Cycloadditions." Oberg, K. M.; Rovic, T. In *Asymmetric Synthesis – The Essentials*, M. Christmann, ed.

“Preparation of Chiral and Achiral Triazolium Salts: Carbene Precursors with Demonstrated Synthetic Utility” Vora, H. U.; Lathrop, S. P.; Reynolds, N. T.; Kerr, M. S.; Read de Alaniz, J.; Rovis, T.; Chennamadhavuni, S.; Davies, H. M. L. *Organic Syntheses* **2010**, *87*, 350-361.

Articles

“Rh(III)-Catalyzed Decarboxylative Coupling of Acrylic Acids with Unsaturated Oxime Esters: Carboxylic Acids Serve as Traceless Activators” Neely, J. M.; Rovis, T. *Journal of the American Chemical Society* **2014**, *136*, 2735-2738.

“Asymmetric N-Heterocyclic Carbene Catalyzed Addition of Enals to Nitroalkenes: Controlling Stereochemistry via the Homoenolate Reactivity Pathway To Access δ -Lactams” White, N. A.; DiRocco, D. A.; Rovis, T. *Journal of the American Chemical Society* **2013**, *135*, 8504-8507.

“A Catalytic Asymmetric Synthesis of Polysubstituted Piperidines Using a Rhodium(I)-Catalyzed [2+2+2] Cycloaddition Employing a Cleavable Tether” Martin, T. J.; Rovis, T. *Angewandte Chemie, International Edition* **2013**, *52*, 5368-5371.

“A Coupling of Benzamides and Donor/Acceptor Diazo Compounds To Form γ -Lactams via Rh(III)-Catalyzed C-H Activation” Hyster, T. K.; Ruhl, K. E.; Rovis, T. *Journal of the American Chemical Society* **2013**, *135*, 5364-5367.

“Perfluorinated Taddol phosphoramidite as an L,Z-ligand on Rh(I) and Co(-I): evidence for bidentate coordination via metal-C6F5 interaction” Dalton, D. M.; Rappe, A. K.; Rovis, T. *Chemical Science* **2013**, *4*, 2062-2070.

“A photoisomerization-coupled asymmetric Stetter reaction: application to the total synthesis of three diastereomers of (-)-cephalimysin A” Lathrop, S. P.; Rovis, T. *Chemical Science* **2013**, *4*, 1668-1673.

“Asymmetric NHC-catalyzed synthesis of α -fluoroamides from readily accessible α -fluoroenals” Wheeler, P.; Vora, H. U.; Rovis, T. *Chemical Science* **2013**, *4*, 1674-1679.

“Rh(III)-Catalyzed Regioselective Synthesis of Pyridines from Alkenes and α,β -Unsaturated Oxime Esters” Neely, J. M.; Rovis, T. *Journal of the American Chemical Society* **2013**, *135*, 66-69.

“N-heterocyclic-carbene-catalyzed asymmetric oxidative hetero-Diels-Alder reactions with simple aliphatic aldehydes” Zhao, X.; Ruhl, K. E.; Rovis, T. *Angewandte Chemie, International Edition* **2012**, *51*, 12330-12333.

“Biotinylated Rh(III) Complexes in Engineered Streptavidin for Accelerated Asymmetric C-H Activation” Hyster, T. K.; Knoerr, L.; Ward, T. R.; Rovis, T. *Science* **2012**, *338*, 500-503.

The Organic Syntheses Lectureship

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