HOPE COLLEGE CHEMISTRY SEMINAR

Discovery and Application of Nickel-Catalyzed Coupling Processes

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Abstract

This presentation will describe the evolution of our program in organonickel chemistry, with an emphasis on several recently discovered multicomponent couplings and cycloadditions. By using a simple set of commercially available reagents (aldehydes, enals, and alkynes), a broad array of catalytic transformations is enabled by careful choice of catalyst structure and additives. By controlling the redox characteristics of the reactions to include reductive, oxidative, or redox isomerization processes, many structural motifs may be accessed from a common set of starting materials. Applications in the synthesis and derivatization of complex structures, including site-selective glycosylation of polyfunctional molecules, will be described.

Biography

John Montgomery was born in 1965 in Concord, N.C. He studied chemistry at the University of North Carolina in 1987 under the direction of Profs. Joe Templeton and Maurice Brookhart where his undergraduate research experience sparked his interest in organometallic chemistry. He received his Ph.D. at Colorado State University in 1991 under the direction of Prof. Louis Hegedus, and he was an American Cancer Society Postdoctoral Fellow at the University of California at Irvine from 1991 - 1993 with Prof. Larry Overman. In 1993, he began his independent career at Wayne State University, and he moved to the University of Michigan at Ann Arbor in 2005. He has received a number of awards including a Pfizer Michigan Green Chemistry Award (2007), ACS Arthur C. Cope Scholar Award (2001), Johnson and Johnson Focused Giving Grant (2001), Camille Dreyfus Teacher Scholar Award (1998), National Science Foundation CAREER Award (1996), and 3M Corporation New Faculty Award (1996). He has published 63 scientific papers and presented 190 invited lectures at various universities, companies, and national and international meetings.