



PHILADELPHIA ORGANIC CHEMISTS' CLUB

- DATE:** Thursday, February 23rd, 2006; 6:00 pm dinner, 8:00 pm seminar
- PLACE:** Carolyn Hoff Lynch Room, located on the 1st floor (around the corner from the business office), New Chemistry Building, University of Pennsylvania, 34th and Spruce Streets, Philadelphia, PA
- SPEAKER:** Dr. Chulbom Lee Assistant Professor of Chemistry Princeton University
- BIOGRAPHY:** Chulbom Lee was born in South Korea and received his B.S./M.S. degree in Chemistry in 1990 from Seoul National University, where his advisor was Professor Eun Lee. Following a year of military service in the Republic of Korea Army, he proceeded to Stanford University in 1992 and obtained his Ph.D. in Chemistry under the direction of Professor Barry M. Trost in 1998, with a thesis on asymmetric allylic alkylation of geminal dicarboxylates and total syntheses of sphingofungins E and F. He then moved to Memorial Sloan-Kettering Cancer Center in New York and worked on the chemical synthesis and biological evaluation of epothilone anticancer agents as a U.S. Army Breast Cancer Research Postdoctoral Fellow with Professor Samuel J. Danishefsky. In 2001, he joined the faculty of the Department of Chemistry at Princeton University. His research is focused on the development of novel reactions and strategies for chemical synthesis. In particular, his group has been engaged in the design, implementation and mechanistic elucidation of new chemical reactions that occur through transition metal-mediated catalysis. His research is also concerned with the synthesis of natural products possessing complex molecular architecture and significant biological activities.
- TITLE:** Formation of C-O and C-C Bonds via Transition Metal-Mediated Catalysis
- DINNER:** The meeting will be preceded by cocktails (cash bar) at 5:30 pm followed by a dinner at 6:00 pm at La Terrasse 3432 Sansom St. Phila, 19104. Reservations should be made by email: emichelotti@locuspharma.com or phone: (215)-358-2026 to Enrique Michelotti before 5:00 pm, Monday February 20, 2006. Please pay the \$45.00 for dinner when you attend. Thank you.

Formation of C-O and C-C Bonds via Transition Metal-Mediated Catalysis

Chulbom Lee

The first part of the seminar concerns recent studies in our laboratories that have shown the feasibility of allylic etherification of aliphatic alcohols under the catalysis of transition metal complexes. The use of zinc alkoxides as nucleophiles has proved both crucial and effective in promoting the chemoselective addition of oxygen nucleophiles to π -allylmetal species. Examples will be given on how the chemistry can be applied to the synthesis of α,α' -chiral ethers that constitute key subunits of many natural products and to the stereoselective construction of glycosidic linkages with the anomeric configuration controlled by the catalyst.

The presentation will also describe a new strategy for catalytic alkyne activation. In contrast to traditional alkyne functionalization methods which rely on an alkynylation or 1,2-vicinal addition, our approach utilizes the chemistry of transition metal vinylidene complexes in order to effect a 1,1-geminal functionalization of alkynes. Exploring the chemical reactivity of metal-complexed unsaturated carbene species, we have developed several new C-C bond-forming cyclization reactions of broad utility in the syntheses of various carbo- and heterocyclic compounds. The mechanistic investigations and synthetic potential of these processes will be discussed.