

Transition metal vinylidene mediated catalysis for use in organic synthesis

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Transition metal vinylidene is organometallic complexes derived from alkynes that are isomeric to more well-known pi- and sigma-alkyne complexes. Our laboratory has been engaged in the development of C-C bond-forming methods that make use of alkynes via mechanisms involving a transition metal vinylidene species as a catalytic intermediate. A wide range of new reactions has been developed, which include enyne cycloisomerizations, and various tandem processes effecting hydrative, alkylative, and carboxylative cyclizations. Recently, in a departure from these C-C bond forming cyclization processes, our explorations have been focused on the oxygen-transfer to

the metal-bound unsaturated carbene. This approach has led to the discovery of the alkyne oxygenative additions that occur through the intermediacy of a metallocetene arising from oxidation of the metal vinylidene. Discussed in this presentation will be the design, implementation and mechanistic studies of the oxygenative transition metal vinylidene-mediated catalytic reactions.

Biography

Chulbom Lee has completed his PhD from Stanford University and Postdoctoral studies from Memorial Sloan-Kettering Cancer Center. He is currently working as a Professor of Chemistry at Seoul National University, while serving as Chair of the International Affairs Committee of the Korean Chemical Society. He has published more than 50 papers in the areas of natural product total synthesis and transition metal mediated catalysis, and has been serving as an Editorial Board Member of Chemical Reviews and Organic Chemistry Frontiers.

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