
Transition-Metal Catalyzed Carbon–Heteroatom Bond Formation

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The utilization of transition metal catalysts has substantially expanded the scope of carbon–carbon and carbon–heteroatom bond forming reactions in organic chemistry. Arylamines and amides are important classes of organic compound because they have versatile applications in medicinal chemistry, organic synthesis and materials science. Our laboratory has explored various carbon–heteroatom bond forming reactions using late transition metal catalysts. In this process, a carbon–carbon single bond is catalytically activated to form a new carbon–heteroatom bond. In addition, we examined carbon–nitrogen bond-forming reactions, which are preceded by the activation of inert carbon–oxygen bonds. These catalytic reactions occur under mild reaction conditions and the products are synthesized from common and readily available precursors. To elucidate the reaction mechanisms and energetics, DFT calculations have been conducted. In this presentation, the scope and utility of these catalytic transformations will be discussed.

Biography:

Dr. Hee Yeon Cho is an Assistant Professor in the Department of Chemistry and Biochemistry at Loyola University Chicago. Professor Cho received a Ph.D. in organic chemistry from Boston College (2013). After postdoctoral training at the University of California at Berkeley exploring organometallic chemistry, she joined the faculty of Loyola University Chicago in 2015. Her research group is currently focused on the development of novel organic and organometallic reactions, the mechanistic studies of these new reactions and the applications of the methods in medicinal and material chemistry.