Functionalization of Inert C-H Bond via Activation – An Emerging Green Concept

During the past decade the metal catalyzed direct functionalization of C-H bond has received tremendous interest in organic synthesis as this process eliminates the prefunctionalization step and thus reduces the number of steps and improves atom economy avoiding loss of functional groups as in usual cross coupling. Usually a hetero-atom containing unit is used in the presence of a transition metal for activation of the C-H bond followed by functionalization. Hence C-H functionalization is primarily based on green concepts.

Recently our group has demonstrated functionalization of C-H bonds in various heterocycles with useful moieties via C-H bond activation. These include nitration of (E)-azoarenes, acylation of azoarenes, tandem ortho-C-H amination/ Ipso C-I cyanation of iodoarenes, remote C-4 etherification of 8-aminoquinoline amides, ortho C(sp²)–H amidation of 8-aminoquinoline benzamidewith acyl azide and olefination of 8-aminoquinoline benzamide. These topics will be discussed.

Selected references