Functionalization of Multiple C–H Bonds: A Sustainable Paradigm for Building Complex Molecular Framework

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In the fortress of synthetic chemistry, the transition-metal-catalyzed C–H functionalization method has come up as an efficient, economical, and straight-forward. Multiple C–H bond functionalizations rapidly introduce various functionalities on the molecular framework and consequently fabricate complex molecular entities.\(^1\) Herein, a one-pot, unsymmetrical multiple C–H functionalizations involving intramolecular C–C and intermolecular C–C/C–N bond formations of arenes is discussed under the single set of catalytic condition.\(^2,3\) The construction of structurally complex π-conjugated heteroarene-fused polycyclic amide skeletons via the formation of multiple C–C and C–N bonds in a single operation is also enumerated.\(^4\) Peripheral decorated unique pyrano-isoquinoline framework is fabricated via the double annulation of MPS-bearing amides.\(^4\) Furthermore, sequential C(sp\(^3\))-H functionalization methods is also demonstrated accessing highly functionalized quaternary carbon bearing carboxylic acids.\(^1\)

Multiple functionalization for sp\(^3\) C–H & sp\(^2\) C–H bonds

References