

Cobalt-Catalyzed Difunctionalization of Styrenes Enabled by Ligand Relay Catalysis

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Abstract

Here, we report a cobalt-catalyzed sequential dehydrogenative Heck silylation/hydroamination of styrenes with hydrosilane and diazo compound to access 1-amino-2-silyl compounds with excellent regioselectivity. This difunctionalization reaction could undergo smoothly using 1 mol% catalyst loading with good functional group tolerance. Not only di- and tri-substituted hydrosilanes, but also alkoxysilane are suitable, which does explore the scope of the family of 1-amino-2-silyl compounds. The ligand relay phenomenon between neutral tridentate NNN ligand and anionic NNN ligand is observed for the first time via absorption spectra analysis in this one-pot, two-step transformations. The primary mechanism has been proposed based on the control experiments.

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