When SF_5outplays CF_3: effects of pentafluorosulfanyl decorated scorpionates on copper

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Abstract

Polyfluorinated, electron-withdrawing, and sterically demanding supporting ligands are of significant value in chemistry. Here we report the assembly and use of a bis(pyrazolyl)borate, $[Ph_2B(3\text{-}(SF_5)Pz)_2]^-$that combines all such features, and involves underutilized pentafluorosulfanyl substituents. The ethylene and carbonyl chemistry of copper(i) supported by $[Ph_2B(3\text{-}(SF_5)Pz)_2]^-$, a comparison to the trifluoromethylated counterparts involving $[Ph_2B(3\text{-}(CF_3)Pz)_2]^-$, as well as copper catalyzed cyclopropanation of styrene with ethyl diazoacetate and $CF_3CHN_2$are presented. The results from cyclopropanation show that SF_5groups dramatically improved the yields and stereoselectivity compared to the CF_3