Reactivity of Amidinato Disilylenes towards Small Molecules and Dinitrogen Model Compounds

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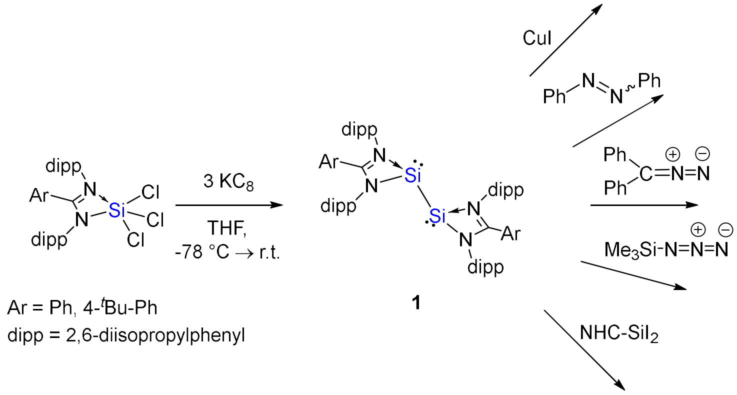
Low-valent silicon(II) compounds known as silylenes, the heavier analogue to carbenes, are indispensable functional groups in organosilicon chemistry.[1] The presence of a lone pair of electrons residing at silicon makes silylenes powerful σ-donors. They can directly activate small molecules[2] and form catalytically active transition metal complexes[3]. Our group has shown that chelating bis-silylenes, two silylenes connected by an organic linker, extend the reactivity scope of silylenes in small molecule activation and grants access to zero-valent mono- and diatomic entities due to the potential cooperativity of the two Si(II) atoms.[4] Recent developments show the value of using dinitrogen model compounds such as diazobenzene to understand the N=N bond cleavage and eventually how to activate dinitrogen.[5]

The reactivity of disilylenes, silylenes connected by a Si–Si bond, with amidinato ligands first prepared by Sen et al.[6] and extended by Jones et al.,[7,8] is far less explored. Its reactivity towards CO, CO_2, N_2O and acetylenes was studied.[7,9]

With the aim to extend the reactivity scope of disilylenes, the amidinato disilylene **1** substituted with aromatic groups was synthesized. **1** was then reacted with various dinitrogen model compounds and small molecules, e.g. NHC-SiI_2, CuI, cis-/trans-diazobenzene, diphenylmethylene azide and trimethylsilyl azide. The respective results will be presented.



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