

## A Monatomic Silicon Complex Coordinated by Two Different Silylene Ligands and Ligand Exchange Reactions at the Monatomic Silicon Center

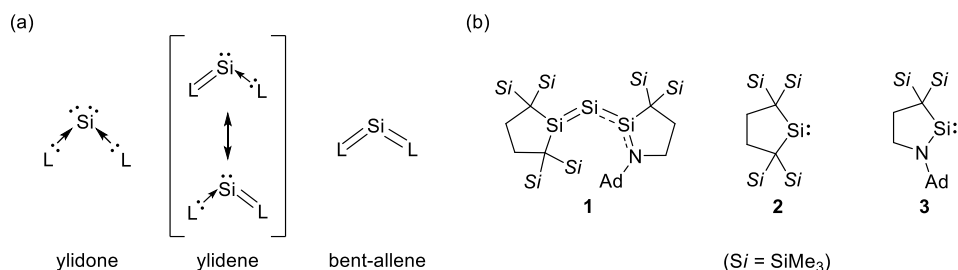
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Ligand exchange reaction is one of the basic reactions of transition metal complexes alongside oxidative addition and reductive elimination. While such reactions have long been understood to occur only at transition metal centers, recently, low-valent main-group element species have also been demonstrated to show similar reactivities.<sup>1</sup> Nevertheless, reports of ligand exchange reactions at low-valent main-group element centers are yet scarce.

Silylones, compounds with a monatomic silicon coordinated by two-electron donor ligands, have emerged as one of the new classes of low-valent silicon species (Chart a).<sup>2</sup> Although several silylones have been synthesized and their electronic properties and reactivities were investigated, ligand exchange at the monatomic silicon center remained elusive. Herein, we report that incorporating two different silylene ligands, cyclic dialkylsilylene **2**<sup>3</sup> and cyclic (alkyl)(amino)silylene **3**<sup>4</sup> to a silicon atom (silylone **1**) enables the labilization of silylene **3** leading to ligand exchange reactions.

Chart.



1) T. Chu, G. I. Nikonov, *Chem. Rev.* **2018**, *118*, 3608–3680. 2) P. K. Majhi, T. Sasamori, *Chem. Eur. J.* **2018**, *24*, 9441–9455; S. Yao, Y. Xiong, M. Driess, *Acc. Chem. Res.* **2017**, *50*, 2026–2037. 3) M. Kira, S. Ishida, T. Iwamoto, C. Kabuto, *J. Am. Chem. Soc.* **1999**, *121*, 9722–9723. 4) T. Kosai, S. Ishida, T. Iwamoto, *Angew. Chem. Int. Ed.* **2016**, *55*, 15554–15558.