

VISIBLE LIGHT INDUCED OXIDATIVE ADDITION OF ARYL IODIDE TO GALLYLENE BEARING A PHENALENYL BASED LIGAND

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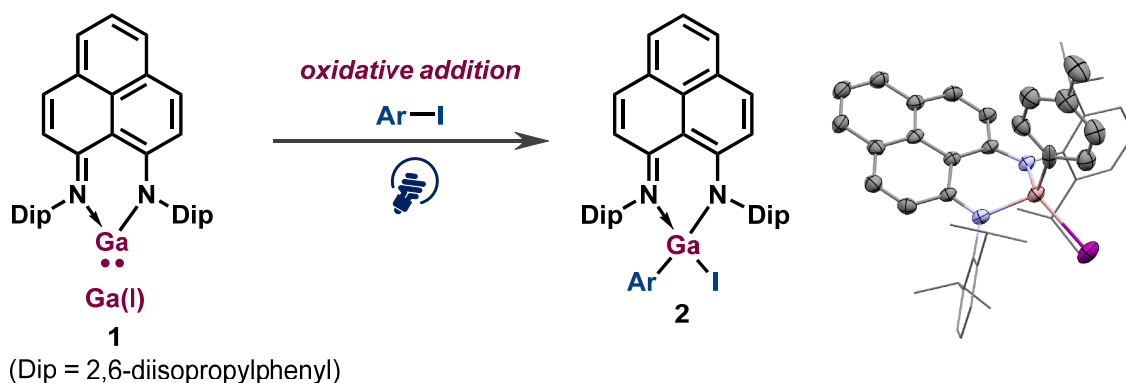
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In recent years, main-group compounds that can promote oxidative addition have attracted considerable attention. While oxidative addition on the group 14 and group 15 elements have been reported, examples involving group 13 elements remain largely limited to aryl fluorides [1–3]. Recently, our group reported that Ga(III) complexes bearing a phenalenyl-based bidentate ligand undergo visible-light-induced reductive elimination and insertion reactions [4]. Herein, we report that a Ga(I) complex **1** reacts with aryl iodides under visible-light irradiation to afford the corresponding oxidative adduct **2**. This represents the first example of oxidative addition of an aryl iodide to a Group 13 complex. Mechanistic studies suggest that photo-induced disproportionation of **1** involves in this transformation.



[1] Selected example for 14 group elements: M. C. Misra, M. Onyszchuk, R. S. Rowe, P. P. Power, M. J. Slade, *J. Organomet. Chem.* **1987**, 330, 31.

[2] Selected example for 15 group elements: M. Mato, P. C. Bruzzese, F. Takahashi, M. Leutzsch, E. J. Reijerse, A. Schnegg, J. Cornella, *J. Am. Chem. Soc.* **2023**, 145, 18742.

[3] Selected example for 13 group elements: T. Chu, Y. Boyko, I. Korobkov, G. I. Nikonov, *Organometallics* 2015, 34, 5363.

[4] (a) T. Kodama, N. Mukai, M. Tobisu, *Inorg. Chem.* **2023**, 62, 6554. (b) N. Mukai, T. Kodama, M. Tobisu, *J. Am. Chem. Soc.* **2025**, 147, 45432.