

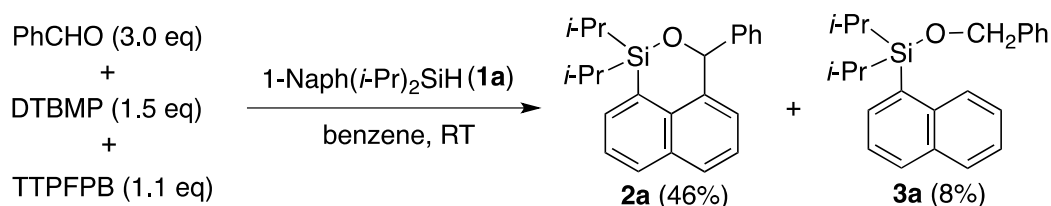
## Synthesis of Silacyclic Compounds Utilizing Aldehydes Activated by Silyl Cations

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We have reported the synthesis of silacyclic compounds by intramolecular Friedel-Crafts reactions of alkynes and alkenes activated by in-situ generated silyl cations from dialkylbenzylsilanes and diisopropyl-1-naphthylsilane.<sup>[1,2]</sup> We have also reported an intramolecular version of reactions using alkynes, namely, intramolecular chain hydrosilylation of alkynylarylsilanes using a silyl cation as a chain carrier.<sup>[3,4]</sup> In this contribution, we wish to report the synthesis of silacyclic compounds by intermolecular reactions using aldehydes instead of alkynes and alkenes as multiply bonded compounds.<sup>[4]</sup>



**Scheme 1.** The synthesis of silacyclic compound **2a**.

Diisopropyl-1-naphthylsilane (**1a**) was added to a solution of benzaldehyde, 2,6-di-*t*-butyl-4-methylpyridine (DTBMP) and Ph<sub>3</sub>CB(C<sub>6</sub>F<sub>5</sub>)<sub>4</sub> (TTPFPB) in benzene at room temperature under stirring. After usual work-up, the target silacyclic compound **2a** was obtained together with benzyl diisopropyl-1-naphthylsilyl ether (**3a**), which is a hydrosilylation product of the carbonyl group (Scheme 1). On the other hand, the reaction using benzyldiisopropylsilane (**1b**) gave mainly benzyl benzyldiisopropylsilyl ether (**3b**). Substituent effects of *p*-substituted benzaldehydes on the present reaction as well as the reactions using other carbonyl compounds will also be presented.

[1] H. Arii, T. Kurihara, K. Mochida, T. Kawashima, *Chem. Commun.* **2014**, 50, 6649-6652.

[2] H. Arii, Y. Yano, K. Nakabayashi, S. Yamaguchi, M. Yamamura, K. Mochida, T. Kawashima, *J. Org. Chem.* **2016**, 81, 6314-6319.

[3] H. Arii, K. Nakabayashi, K. Mochida, T. Kawashima, *Molecules* **2016**, 21, 999.

[4] H. Arii, K. Nakabayashi, K. Mochida, T. Kawashima, *Synthesis* **2017**, 49, 4599-460.