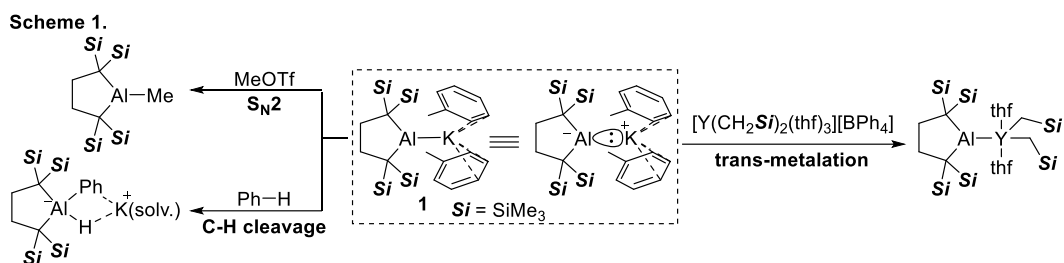


Reactivity of Alkyl-Substituted Al Anion

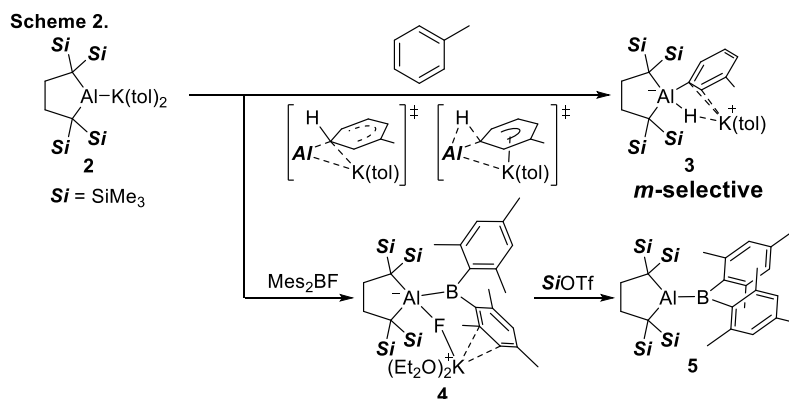
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Neutral three-coordinate Al compounds possess a Lewis acidity due to its vacant 3p-orbital. Recently, several anionic Al compounds possessing a Lewis basicity have been reported.¹ These compounds have strong basicity due to the lone-pair on the most electropositive Al element in the p-block. We recently reported dialkyl-Al anion **1** without stabilization by heteroatoms and its high basicity and nucleophilicity (Scheme 1).²⁻³



In this study, we report two characteristic reactions of **2**. One is meta-selective C-H bond cleavage of toluene through a H-eliminating S_NAr reaction.⁴ The detailed reaction mechanism for the present S_NAr reaction toward toluene, which was investigated with kinetic-isotope-effect and DFT calculations, will be presented. The other one is synthesis of the first example of non-stabilized alumaborane **5** via nucleophilic aluminium of fluoroborane and defluorination. The photophysical properties of **5** and its reactivity toward small molecules will be presented.



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