



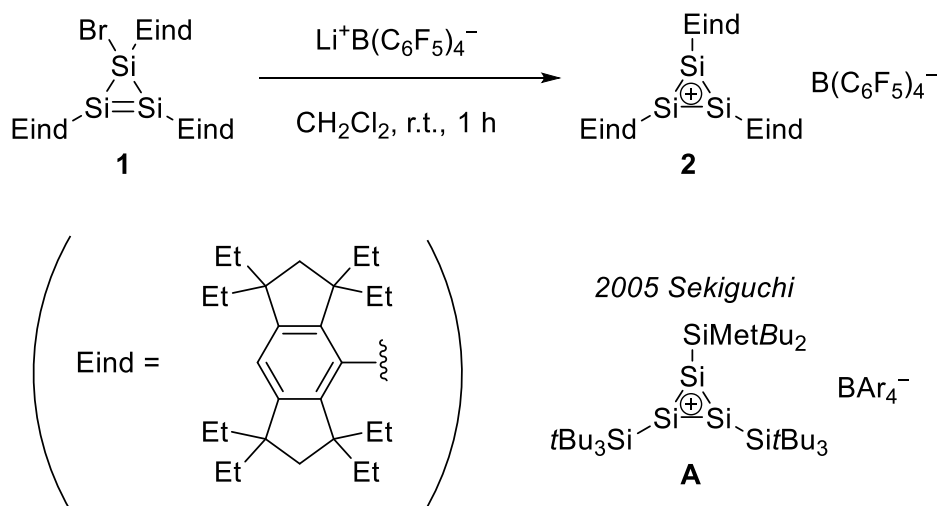
Aryl Cyclotrisilenylium Ion

Kei Ota, Ryoma Ohno and Tsukasa Matsuo

Department of Applied Chemistry, Faculty of Science and Engineering, Kindai University, 3-4-1 Kowakae, Higashi-Osaka, Osaka 577-8502, Japan

Aromaticity is one of the most significant fundamental concepts in many fields of chemistry. To modulate the intrinsic electronic nature of aromatic molecules, partial or full incorporation of heteroatoms into the aromatic skeletons represents a widely used strategy in modern inorganic chemistry. The cyclopropenium ion ($R_3C_3^+$) is the smallest and the most fundamental Hückel $[4n + 2]$ aromatic systems, and its heavier group 14 element containing systems have also been explored.¹ However, the reported cyclotrisilenylium ion ($R_3Si_3^+$) is only limited for the asymmetric silyl substituted systems **A**, probably due to the lack of the proper substituents for the stabilization of the highly reactive silylium moiety.²

In this presentation, we report the synthesis of a triaryl-substituted cyclotrisilenylium ion **2** bearing the sterically demanding Eind groups (Eind = 1,1,3,3,5,5,7,7-octaethyl-*s*-hydrindacen-4-yl) from the reaction of bromocyclotrisilene **1** with lithium tetrakis(pentafluorophenyl)borate $Li^+B(C_6F_5)_4^-$. The three Si atoms in **2** form a nearly equilateral triangle. The structural features associated with computational studies indicate an aromatic nature concomitant with a considerable delocalization of 2π electrons over the Si_3 plane. The details of spectroscopic data, the solid-state molecular structure, and computational studies of **2** will be presented.



References

1. V. Y. Lee, A. Sekiguchi, *Angew. Chem. Int. Ed.* 2007, **46**, 6596-6620.
2. M. Ichinohe, M. Igarashi, K. Sanuki, A. Sekiguchi, *J. Am. Chem. Soc.* 2005, **127**, 9978-9979.