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Synthesis and Property of Low-Coordinated Germanium Species Bearing a Bulky Ferrocenyl Group

<u>Takahiro Sasamori</u>*, Yuko Suzuki, and Norihiro Tokitoh Graduate School of Natural Sciences, Nagoya City University, Yamanohata 1, Mizuho-cho, Mizuho-ku, Nagoya, Aichi 467-8501, JAPAN sasamori@nsc.nagoya-cu.ac.jp, http://www.nsc.nagoya-cu.ac.jp/~sasamori/www/pg36.html

Germylenes (R₂Ge:) and Germylenoids (R₂GeMX; M = alkali metal, X = leaving group) are the germanium analogues of carbenes and carbenoids, which should be of great interest as a unique reactive intermediate. While stable germylenes bearing sterically demanding substituents have been isolated and investigated so far,¹ there has been no example of a stable and isolable germylenoid, because the possible germylenoids would undergo ready MX elimination to give stable germylenes. We have designed and developed a sterically demanding ferrocenyl group, Fc* = 2,5-bis(3,5-di-*t*-butylphenyl)-1-ferrocenyl group,¹ in the expectation of its remarkable stabilizing effects for a low-coordinated heavier group 14 elements. Here, we will report the synthesis, structure, and reactions of the stable bis(ferrocenyl)germylene² and the isolable germylenoid,³ the dichlorolithiogermane bearing a bulky ferrocenyl group.



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