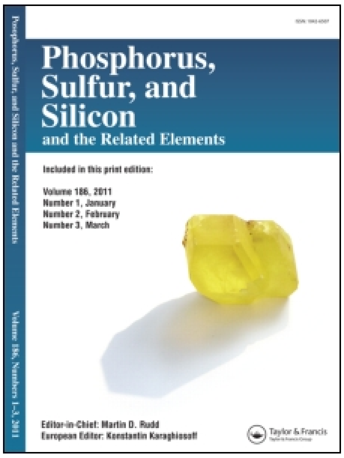

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SIMPLE METHOD FOR THE SYNTHESIS OF STANNOLE DIANION

Masaichi Saito[a]; Ryuta Haga[a]; Michikazu Yoshioka[a]
[a] Saitama University, Saitama, Japan

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SIMPLE METHOD FOR THE SYNTHESIS OF STANNOLE DIANION

Masaichi Saito, Ryuta Haga, and Michikazu Yoshioka
Saitama University, Saitama, Japan

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*Reduction of 1-*t*-butyl-1,2,3,4,5-pentaphenylstannole by lithium gave the stannole dianion. Reduction of the bi(1,1-stannole) having a* t*-butyl group on the tin by lithium also gave the stannole dianion, the formation of which was evidenced by spectral analysis and chemical trapping reaction.*

Keywords: 1-*t*-Butyl-1-phenylstannole; bi(1,1-stannole); reduction; stannole dianion

Recently, much attention has been focused on anions and dianions of siloles and germoles, heavier congeners of cyclopentadienyl anion having aromaticity.[1] In contrast to the well-investigated dianions of siloles and germoles, no report on dianions of stannole had been published before we succeeded in the first synthesis of a stannole dianion by the reduction of a newly synthesized bi(1,1-stannole) having a phenyl group on the tin.[2] Very recently, we have reported that the reduction of hexaphenylstannole **1** also gave the stannole dianion **2** together with phenyl lithium, as evidenced by ^{1}H, ^{13}C, and ^{119}Sn NMR analysis.[3] Reductive elimination of a phenyl group on the tin prompted us to investigate the reduction of other stannoles having an alkyl group on the tin. We report herein the synthesis of stannole dianion **2** from *t*-butyl-substituted stannoles, **3** and **4**.

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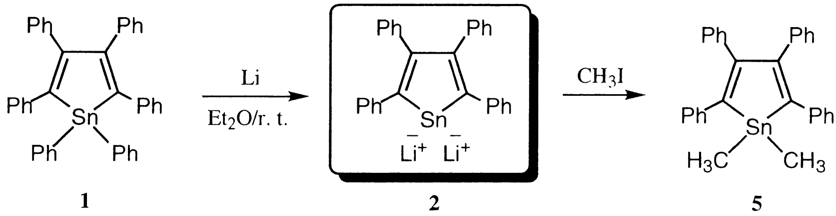
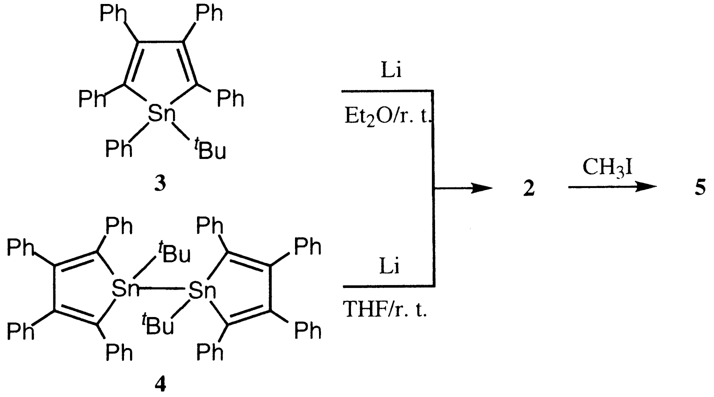
Address correspondence to Masaichi Saito, Department of Chemistry, Faculty of Science, Saitama University, Shimo-okubo, Sakura-ku, Saitama-city, Saitama 338-8570 Japan. E-mail: masaichi@chem.saitama-u.ac.jp



RESULTS AND DISCUSSION

Reaction of 1-*t*-butyl-1,2,3,4,5-phenylstannole (**3**) with lithium in ether gave a deep red solution, suggesting the formation of an anionic species. Treatment of the reaction mixture with methyl iodide gave the 1,1-dimethylstannole **5** in 67% yield. The formation of **5** was reasonably interpreted in term of the formation of stannole dianion **2**. Reductive elimination of a *t*-butyl group on the tin prompted us to investigate the reduction of bi(1,1-stannole) **4**.[4] Reaction of **4** with lithium in THF[*] also gave a deep red solution. The ^{13}C NMR spectrum of the reaction mixture showed the formation of stannole dianion **2**[2] as a main product. Treatment of the resulting solution with methyl iodide gave **5** in 21% yield.



In summary, reductive elimination of a *t*-butyl group of stannoles **3** and **4** gave the stannole dianion **2**.

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[*] Bi(1,1-stannole) **5** is sparingly soluble to ether.

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