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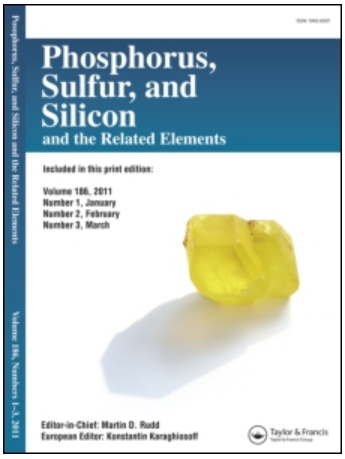

Phosphorus, Sulfur, and Silicon and the Related Elements
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

Phosphavinylidene-Carbenoids [P]=C(Li)X (X = Br, Cl, F): Structure and Dynamics

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To cite this Article Baumgartner, T. , Gudat, D. , Nieger, M. and Niecke, E.(1999) 'Phosphavinylidene-Carbenoids [P]=C(Li)X (X = Br, Cl, F): Structure and Dynamics', Phosphorus, Sulfur, and Silicon and the Related Elements, 147: 1, 25
To link to this Article: DOI: 10.1080/10426509908053493
URL: http://dx.doi.org/10.1080/10426509908053493

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Phosphorus, Sulfur and Silicon, 1999, Vol. 147, pp. 25-25
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Phosphavinylidene-Carbenoids [P]=C(Li)X (X = Br, Cl, F): Structure and Dynamics

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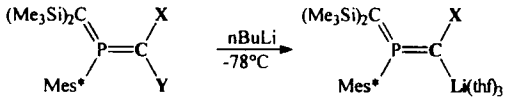
The extraordinary reactivity of carbenoids towards electrophilic as well as nucleophilic reagents awards them for a central importance in organic chemistry. Their unusual bonding situation has been the subject of several theoretical studies[1]. Having shown in previous reports[2] that phosphoranyl carbenoids are significantly stabilized by incorporation of the carbenoid center in delocalized π-systems, we succeeded in isolating the first stable bromo, chloro and fluoro-lithio carbenoids **2a-c.**



1a,b,c **2a,b,c**

a: X = Br; Y = Br
b: X = Cl; Y = Cl
c: X = F; Y = Cl

Carbenoids **2a-c** were fully characterized including multinuclear NMR-studies and X-ray analyses. They show an increased thermal stability up to -10 °C due to the incorporation into the bis(ylene)phosphorane system. To our best knowledge **2a** represents the first stable crystalline lithio-bromo-carbenoid and **2c** the first ever fully characterized lithio-fluoro-carbenoid. The isolation of the latter had been considered impossible for a long time due to the very high tendency to extrude LiF to give the corresponding carbene.

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