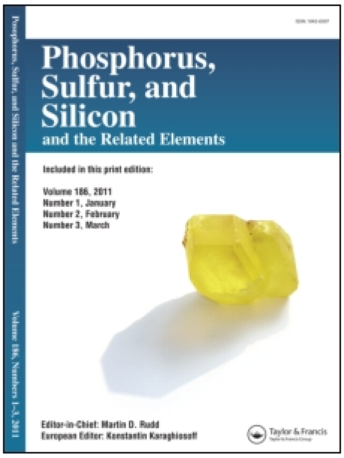


Phosphorus, Sulfur, and Silicon and the Related Elements
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

The Search for the Least-Coordinating Anion

Robert W. Reed[a]; Zuowei Xie[a]; Janet Manning[a]; Rajeev Mathur[a]; Robert Bau[a]; Christopher A. Reed[a]
[a] Chemistry Department, University of Southern California, Los Angeles, California, U.S.A.

To cite this Article Reed, Robert W. , Xie, Zuowei , Manning, Janet , Mathur, Rajeev , Bau, Robert and Reed, Christopher A.(1994) 'The Search for the Least-Coordinating Anion', Phosphorus, Sulfur, and Silicon and the Related Elements, 93: 1, 485

To link to this Article: DOI: 10.1080/10426509408021915

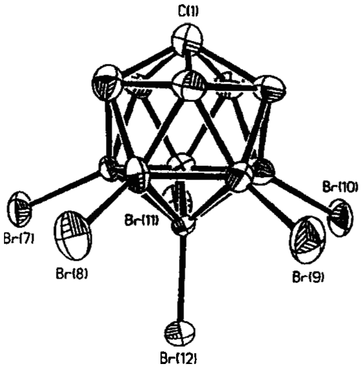
URL: http://dx.doi.org/10.1080/10426509408021915

Phosphorus, Sulfur, and Silicon, 1994, Vol. 93–94, pp. 485
Reprints available directly from the publisher
Photocopying permitted by license only

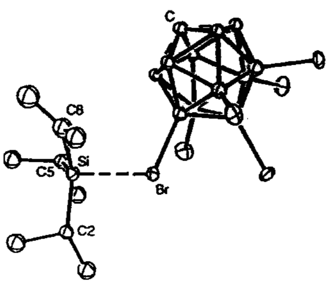
THE SEARCH FOR THE LEAST-COORDINATING ANION: DERIVATIZING THE ICOSAHEDRAL *CLOSO*-CARBORANE ANION $CB_{11}H_{12}^-$.

Robert W. Reed, Zuowei Xie, Janet Manning, Rajeev Mathur, Robert Bau and Christopher A. Reed*, Chemistry Department, University of Southern California, Los Angeles, California, U.S.A., 90089-0744.

The brominated carborane, Br_6-$CB_{11}H_6^-$ (structure 1) is the most recent candidate for the least coordinating anion. It has wide application to the chemistry of reactive cations. The closest approach to date to the long sought silylium ion, R_3Si^+, utilized this anion in the structurally characterized compound (i-$Pr_3Si^{\delta+}$)(Br_6-$CB_{11}H_6^{\delta-}$) [1] (structure 2).



1



2

The success of the 12-vertex carborane cage in producing anions of exceptionally low nucleophilicity and kinetic inertness arises from the strong σ-bonding in the icosahedral framework. Nevertheless, we have been able to develop substitution chemistry of $CB_{11}H_{12}^-$ which enables us to manipulate nucleophilicity and solubility to considerable extent. For example lithiation at carbon and subsequent alkylation affords derivatives of greater solubility while systematic electrophilic halogenation at boron has been achieved to produce most of the mono, di, tri and hexa halogenated species for X=Cl, Br, I.

1. Christopher A. Reed*, Zuowei Xie, Robert Bau, and Alan Benesi. *Science* 262, 402 (1993).