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Editor's Page

Metallacarborane chemistry has been an active and exciting area of organometallic/inorganic chemistry since the seminal publication on transition-metal dicarbollide complexes by Hawthorne, Young, and Wegner in 1965. Among the research groups active in this area has been that of Narayan Hosmane, first at Southern Methodist University and now at Northern Illinois University, who has over the years contributed very creatively to this field. Our cover molecule introduces the review in this issue by Professor Hosmane and John Maguire, his longtime collaborator, on C_2B_4 carborane–metal chemistry. The cover figure needs an explanation, so that the reader can appreciate what a fascinating molecule it is. It is a tetrahedral tetralanthanacarborane encapsulating an oxide ion. The four lanthanide atoms of the LnC_2B_4 units of the molecule are shown in red, the carbon atoms in black, and the boron atoms in green. At the center of the Ln_4 tetrahedron is the oxide anion, and two chlorine bridges are seen on two of the edges of the tetrahedron. There are trimethylsilyl substituents on the two carbon atoms of each C_2B_4 unit; only the silicon atoms are shown. Six complexes of this type were prepared containing lanthanum, neodymium, gadolinium, terbium, holmium, or lutetium, and there are two sets of such complexes that differ only in how many THF molecules are present: $\{\eta^5\text{-1-Ln(THF)}_n\text{-2,4-(SiMe}_3)_2\text{-2,4-C}_2B_4H_4(\mu\text{-Cl})_2(\mu_4\text{-O})\}\cdot y\text{THF}$ (Ln = La, Gd, Ho, $n = 0, y = 1$; Ln = Nd, Tb, Lu, $n = 1, y = 0$). These complexes were prepared in the laboratories of Professor Hosmane by the reaction of *closo-exo*-5,6-Na(THF)_2-1-Na(THF)_2-2,4-$(\text{SiMe}_3)_2$-2,4-C_2B_4, the trichloride of the respective lanthanide element, and freshly distilled water in a 5:4:1 molar ratio in a cleverly designed synthesis (see *Organometallics* **2004**, *23*, 4621–4629). Added to the fascination of these molecules is the fact that each of the four lanthanide metal atoms interacts with *two* C_2B_4 carborane units—in an η^5 manner with one and in an η^2 mode with the other. The paper cited above is the 30th in a long series of papers on the chemistry of *C*-trimethylsilyl-substituted heterocarboranes, a class of heterocarboranes containing main-group-, transition-, or lanthanide-metal atoms that Professor Hosmane and co-workers have so innovatively and productively investigated for some 20 years. The present review focuses on recent developments in the chemistry of those metallacarboranes containing transition- and lanthanide-metal atoms in the C_2B_4 cage, with less attention given to the longer known and adequately reviewed main-group-metal derivatives. The review, full of fascinating metallacarborane molecules—many, like our cover molecule, marvels of structure and bonding—should be of great interest to our readers.

The cover figure was kindly provided by Professor Hosmane.

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Editor

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