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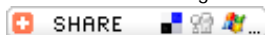
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Research Title : Attachment of the new bulky ligand (Me<sub>3</sub>Si)<sub>2</sub>(Me<sub>2</sub>NMe<sub>2</sub>Si)C to Li, Hg, Al, Ga, and Sn. Crystal structures of [Li{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}(THF)<sub>2</sub>], [Hg{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}<sub>2</sub>], [Al{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}X-2] (X = Cl, Ph), and [Ga{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}Cl-2]  
Attachment of the new bulky ligand (Me<sub>3</sub>Si)<sub>2</sub>(Me<sub>2</sub>NMe<sub>2</sub>Si)C to Li, Hg, Al, Ga, and Sn. Crystal structures of [Li{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}(THF)<sub>2</sub>], [Hg{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}<sub>2</sub>], [Al{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}X-2] (X = Cl, Ph), and [Ga{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}Cl-2]

Descriptipn : The organolithium reagent [Li{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)(THF)<sub>2</sub>]<sub>2</sub> (1) is readily obtained by reaction of the chloride (Me<sub>3</sub>Si)<sub>2</sub>(Me<sub>2</sub>NMe<sub>2</sub>Si)CCl with LiBu in THF (tetrahydrofuran) at low temperature. Reactions of 1 with HgBr<sub>2</sub>, AlCl<sub>3</sub>, GaCl<sub>3</sub>, and SnCl<sub>4</sub> give [Hg{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}<sub>2</sub>]<sub>2</sub> (2), [Al{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}Cl-2]<sub>3</sub> (3), Ga{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}Cl-2 (5), and [Sn{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}Cl-3]<sub>6</sub> (6), respectively, and treatment of 3 with LiPh gives [Al{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>NMe<sub>2</sub>)}Ph-2]<sub>4</sub> (4). Crystal structure determinations have shown that there is intramolecular coordination of the N atom to the metal M, with formation of a planar four-membered C-Si-N-M ring, in 1, 3, 4, and 5 (but not 2). Engagement of the lone pair on N in coordination with Al in 3 results in an exceptionally long Si-N bond length of 1.875(2) Angstrom, some 0.16 Angstrom longer than that in 2 and in simple silylamines generally; the Si-N bond is possibly shorter in 4 (1.851(2) Angstrom) and 5 (1.858(4) Angstrom), and is markedly so in 1 (1.796(4) Angstrom), but still notably long. The lengths of the N-metal bonds in these compounds are similar to those between alkylamines and the metals in coordination compounds, indicating that at least in these systems the N atoms in the silylamines coordinate as strongly as those in the organic amines. Reaction of 6 with MeOH occurs exclusively at the Si-N bond to give [Sn{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>OMe)}Cl-3], that of 2 with ICl or CF<sub>3</sub>CO<sub>2</sub>H gives [Hg{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>Cl)}<sub>2</sub>]<sub>2</sub> and [Hg{C(SiMe<sub>3</sub>)<sub>2</sub>(SiMe<sub>2</sub>O<sub>2</sub>CCF<sub>3</sub>)}<sub>2</sub>]<sub>2</sub>, respectively, and that of 1 with ICH<sub>2</sub>CH<sub>2</sub>I gives the iodide (Me<sub>3</sub>Si)<sub>2</sub>(Me<sub>2</sub>NMe<sub>2</sub>Si)Cl.

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