DESCRIPTION

Until recently the low-coordinate compounds of the heavier elements of group 14 were known only as transient, unstable species which were difficult to isolate. However recent developments have led to the stabilisation of these compounds and today heavier group 14 element cations, radicals, anions, carbene analogues, alkene and alkyne analogues and aromatics have all been prepared as highly reactive, stable, fully characterizable and readily available organometallic reagents.

Organometallic Compounds of Low-Coordinate Si, Ge, Sn and Pb describes the chemistry of this exciting new class of organometallics, with an emphasis on their major similarities and differences with the analogous species in organic chemistry. Topics covered include the synthesis, structure, reactions and synthetic applications of:

- Si-, Ge-, Sn and Pb-centered cations, radicals and anions
- heavy analogues of carbenes: silylenes, germlylenes, stannylenes and plumbylenes
- heavy analogues of alkenes: disilenes, digermenes, distannenes, diplumbenes
- heavy analogues of alkynes: disilynes, digermynes, distannynes, diplumbynes, and their valence isomers
- heteronuclear derivatives: silenes, germenes, stannenes, silagermenes, silastannenes, germastannenes
- heavy analogues of alkenes of the type: $\text{E}_{14}=\text{E}_{13}$, $\text{E}_{14}=\text{E}_{15}$, $\text{E}_{14}=\text{E}_{16}$ [where $\text{E}_{13}$, $\text{E}_{14}$, $\text{E}_{15}$ and $\text{E}_{16}$ are elements of the groups 13, 14, 15 and 16]
• cyclic compounds (three-, four-, five-, and six-membered rings)

• heavy analogues of 1,3-dienes, allenes and other cumulenes

• heavy analogues of aromatic compounds; including a comparison between organometallic and organic aromaticity

*Organometallic Compounds of Low-Coordinate Si, Ge, Sn and Pb* is an essential guide to this emerging class of organometallic reagents for researchers and students in main group, organometallic, synthetic and silicon chemistry

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Vladimir Ya. Lee has worked at the Korea Institute of Science and Technology (Korea), at the Université Paul Sabatier (France), and, since 1998, at the University of Tsukuba (Japan). His research interests lie in the field of highly reactive species: carbene analogues, cations, free radicals, anions, multiply bonded compounds and small rings.

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Akira Sekiguchi is Professor of Organic Chemistry at the University of Tsukuba. He received the Japan IBM Science Award in 1996, the Divisional Award of the Chemical Society of Japan (Organic Chemistry) in 1997, and the Alexander von Humboldt Research Award in 2004. His research interests are organosilicon and organolithium chemistry, organogermanium chemistry, and reactive intermediates. In 2006 he received the Kipping Award, the most important prize in the field of silicon chemistry.

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