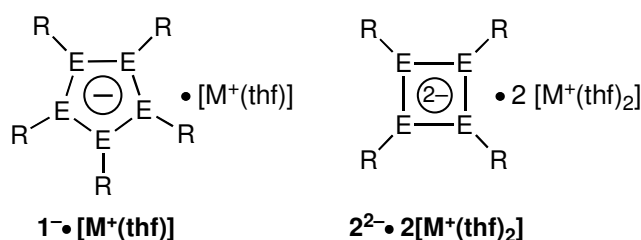


HEAVY ANALOGUES OF THE 6π -ELECTRON CHARGED SYSTEMS: STRUCTURE, BONDING, AROMATICITY, AND APPLICATION AS NOVEL LIGANDS FOR TRANSITION METAL COMPLEXES

The 6π -electron organic aromatics, such as benzene, cyclopentadienide ion and cyclobutadiene dianion derivatives, are commonly used convenient sources of cyclic polyene ligands for a vast number of coordination compounds. The subject of this presentation is the chemistry of a novel class of 6π -electron organometallic aromatics of the heavy group 14 elements,¹ namely, derivatives of the cyclopentadienide ion $1^- \cdot [M^+(\text{thf})]$ and cyclobutadiene dianion $2^{2-} \cdot 2[M^+(\text{thf})_2]$, in which the cyclic carbons are fully (or partially) replaced with heavy tetrrels (Si, Ge).² The important structural peculiarities, degree of aromaticity, and specific reactivity of both $1^- \cdot [M^+(\text{thf})]$ and $2^{2-} \cdot 2[M^+(\text{thf})_2]$ will be discussed, with special attention paid to their reactions with transition metal derivatives producing complexes with new generation ligands featuring rather unusual structural characteristics and bonding situations.^{2,3}



[E = C, Si, Ge; R = H, alkyl, aryl, silyl; M = alkali metal]

¹ Reviews: (a) *Angew. Chem. Int. Ed.*, **2007**, *46*, 6596. (b) *Acc. Chem. Res.* **2007**, *40*, 410. (c) *Chem. Soc. Rev.* **2008**, *37*, 1652.

² Recent papers: *J. Am. Chem. Soc.* **2004**, *126*, 4758; *J. Am. Chem. Soc.* **2005**, *127*, 13142; *J. Am. Chem. Soc.* **2009**, *131*, 6352.

³ Recent papers: *J. Am. Chem. Soc.* **2005**, *127*, 5768; *Angew. Chem. Int. Ed.* **2006**, *45*, 3269; *J. Am. Chem. Soc.* **2007**, *129*, 10340; *Eur. J. Inorg. Chem.* **2007**, 5471; *J. Am. Chem. Soc.* **2009**, *131*, 916; *J. Am. Chem. Soc.* **2009**, *131*, 9902.