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Editor's Page

Main-group chemistry has been undergoing something of a well-deserved resurgence in recent years. In the featured review in this issue of *Organometallics*, Professor Robert Mulvey presents fascinating chemistry found with mixed alkali-metal−magnesium and −zinc reagents. The behavior shown by these heterobimetallic composites in deprotonation or nucleophilic addition reactions is synergic and cannot be duplicated by either of the homometallic components acting alone. Indeed, the alkali-metal-mediated magnesiations or zincations are often marked by a reversal of the “normal” reactivity patterns that might be anticipated. Professor Mulvey describes his recent work showing that deprotonations with alkali-metal−magnesium reagents often lead to beautiful “inverse crown” motifs consisting of 8- to 24-membered cationic rings containing C, N, or O atoms connected by the alkali metal and magnesium atoms. The inverse crowns function as hosts to an array of possible Lewis base guests and clearly hold much promise for useful applications. For example, treatment of ferrocene with the synergic sodium−magnesium tris(diisopropylamide) results in a spectacular 16-membered inverse crown host containing a tetrametalated $[Fe(C_5H_3)_2]^{4-}$ core as the guest. The reactions discussed by Professor Mulvey demonstrate clearly that synergic metalations based on mixtures of alkali-metal and magnesium or zinc reagents may be possible even when the basicities of the individual homometallic reagents are inadequate. Mechanistic aspects of the mode of action of these “ate” systems, including the important role of the alkali metal in possible intermediate heterometallic aggegrates, are discussed.

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