"New Frontiers in the Metal-Metal Bonding and Reactivity of Early/Late Heterobimetallic Complexes"

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Bridging phosphinoamide ligands have been used to investigate early/late heterobimetallic complexes. The metal-metal interactions in these compounds provide a unique method for tuning redox potentials and promoting multielectron bond activation processes. For example, a representative tris(phosphinoamide)-supported Zr/Co complex was shown to undergo two-electron reduction at a potential 1 V more positive than a monometallic Co tris(phosphine) analogue. Once reduced by two electrons, the resulting coordinatively unsaturated Zr/Co complexes have been shown to undergo one-, two-, and four-electron transfer processes, activating a wide variety of sigma bonds (e.g. O-H, N-H, C-X) and pi bonds (e.g. the C=O bond in CO$_2$ or ketones). The unique reactivity of heterobimetallic complexes has been applied to several catalytic processes, including Kumada cross-coupling and the hydrosilylation of ketones and aldehydes, and it has been demonstrated that both metal centers play a crucial role in catalysis. An expanded series of heterobimetallic compounds has been synthesized, uncovering metal-metal multiple bonds and unique reactivity patterns across a variety of different metal-metal combinations.

For additional information, visit her [website](#).

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