

Synthesis and Reactivity of Novel Zinc Complexes and their Reactivity Towards Primary Phosphines

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New zinc complexes of chelating monoanionic *N*-donors and neutral diphosphine ligands were synthesized by reaction of diethylzinc with 1,3-diketimine, diazabutadiene, and diphosphine ligand precursors. These complexes were reacted with primary phosphines in an attempt to solicit phosphine dehydrocoupling reactivity. In most cases, insoluble zinc-containing precipitates were formed and ancillary ligands were lost. For the most sterically encumbered complex, (^{Dipp}L)ZnEt (**3**, ^{Dipp}L = [(2,6-ⁱPrC₆H₃)NC(CH₃)₂CH⁻], a product assigned as the zinc-phosphide (^{Dipp}L)ZnPHPh (**6**) was observed but could not be isolated as a pure compound. A novel, less bulky β-diketimate complex (^{Tol}L)ZnEt (**2**, ^{Tol}L = [(*p*-CH₃C₆H₄)NC(CH₃)₂CH⁻] was reacted with primary phosphines to give a precipitate and the bis(β-diketimate)zinc complex (^{Tol}L)₂Zn (**5**), an apparent product of comproportionation. (^{Mes}AI)ZnEt (**1**, ^{Mes}AI = MesNC(Me)(Et)C(Me)=NMe), [dmpe]ZnEt₂ (**4**, dmpe = 1,2-bis(dimethylphosphino)ethane), **5**, and **2** were structurally characterized.

