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Title:	Synthesis of Bicyclic (alkyl)(amino)carbene Complexes of Mn(II), Mn(0), Zn(II), Ir(I) and Au(I)
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Abstract:	Examples of metal complexes in low-valent states have been usually stabilized by carbene ligands. Additionally, these low-valent complexes also exhibit coordinative unsaturation/ low coordination numbers of the central metal species. The interest in low coordinated transition metal species in their low-valent state is due to their interesting magnetic properties and possibilities for newer chemical reactions. The carbenes that have been exploited for this purpose include N-heterocyclic carbenes (NHCs) and cyclic(alkyl)(amino)carbenes (CAACs). A new form of NHCs and CAACs named as bicyclic(alkyl)(amino)carbene (BICAAC) was discovered by Bertrand in 2017, and have been found superior to both NHC and CAAC in terms of its improved ambiphilic nature. The present work discusses syntheses, crystal structures, and characterization of BICAAC complexes of manganese, gold, iridium, and zinc. The reaction of MnBr 2 with BICAAC gave [(BICAAC)MnBr 2] adduct and further reduction of this adduct with KC 8 obtained zero valent [(BICAAC) 2 Mn] complex. In the reaction of (Me 2 S)AuCl with BICAAC the ionic Au(I) complex, [(BICAAC) 2 Au] + [AuCl 2] - was obtained. In the reaction of BICAAC with [Ir(COD)Cl] 2 the complex, [(BICAAC)Ir(COD)Cl] was obtained. The reaction of BICAAC with 1:1 molar ratio of ZnCl 2 /ZnI 2 produced, [(BICAAC)ZnCl 2]/ [(BICAAC)ZnI 2] 2 complexes.
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