Zirconium Reagents for Organometallic Synthesis.
Crystal Structures of ZrCl$_4$·2Et$_2$O and (Et$_2$N)ZrCl$_3$·Et$_2$O

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Reaction of 3 equivalents of ZrCl$_4$·2Et$_2$O (1) with 1 equivalent of (Et$_2$N)$_4$Zr in diethyl ether readily affords crystalline (Et$_2$N)ZrCl$_3$·2Et$_2$O (2) in almost quantitative yield. The product was characterised by elemental analysis and by $^1$H, $^{13}$C NMR, and MS techniques. The reactivity of this reagent towards C-H acidic compounds has been studied using cyclopentadiene as a C-H acid. The crystal structures of both 1 and 2 have been determined by X-ray diffractometry. The coordination polyhedra reveal a nearly perfect octahedral geometry with a trans Et$_2$O ligation for 1 and a cis one for 2.