Partial Reduction of the N–O Functions of Partially Deprotonated Bis(hydroxylamine) Complexes

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The reduction of a partially deprotonated bishydroxylamine complex $\{(^t Bu_2Ga)_2[cyclo\text{-}ON(Me)(CH_2)_2\text{-}(Me)NO][HON(Me)(CH_2)_2(Me)(H)NO]\}$ with a reagent composed of titanium tetrachloride and methyllithium leads to the reduction of one of the N–O groups to an amine function affording the salt $\{(^t Bu_2Ga)[cyclo\text{-}ON(H)(Me)(CH_2)_2NHMe]\}^+$ $\{tBu_2GaCl_2\}^-$. This has been characterised by ^1H and ^{13}C NMR spectroscopy, by elemental analysis and by single crystal X-ray diffraction, showing the neutral amine/hydroxylamine ligand to be present in its tautomeric aminoxide form. The molecules form hexameric cyclic aggregates by N–H···Cl hydrogen bonds.

Key words: Gallium, Hydroxylamine, Aminoxide, N,O-Ligands, Crystal Structure