Adducts of the Heavier Group 13 Element Halides with Aminoiminoboranes [1]

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2,2,6,6-Tetramethylpiperidino-tert-butylimino borane, \(1a\), and 2,2,6,6-tetramethyl-piperidino-2,6-diisoproplyphenylimino borane (1b), react with the trichlorides of Al, Ga and In or with AlBr\(_3\) to 1:1 to give the addition products tmp\(=\)B\(=\)N(ECl\(_3\))\(\text{tBu}\) (E = Ga (2a), In (2b)) and tmp \(=\) B \(=\) N(EHal\(_3\))(C\(_6\)H\(_3\),2,6-iPr\(_2\)), (E = Al, Hal = Cl (2c), E = Al, Hal = Br (2d)). E = Ga, Hal = Cl (2e). All these compounds have an allene type structure with short BN bonds as shown by the determination of the crystal structures of 2a, b. NMR data are in accord with this structure. No isomerization to tmp-BHal-NR-EHal\(_2\) has been observed at temperatures up to their melting points.

Key words: ECl\(_3\) Adducts, Aminoiminoborane, NMR Spectra, X-Ray Diffraction