

Synthesis and Structure of an Aluminium-Nitrogen Heteronorborene with Bulky *t*-Butyl Substituents and the Crystal Structure of Tri(*t*-butyl)aluminium

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Z. Naturforsch. **59b**, 269 – 273 (2004); received December 23, 2003

The reaction of bis(lithiomethyl-methylamino)methane with di*t*-butylaluminium chloride leads to the formation of 3,3,6,6-tetra-*t*-butyl-1,4-dimethyl-3,6-dialumina-1,4-diaza-norborene by simultaneous formation of two metal-carbon and two metal nitrogen bonds accompanied by two ring closure reactions. The compound was identified by an NMR analysis (^1H , ^{13}C , ^{27}Al) and by determination of its crystal structure. Despite the high steric demand of the *t*-butyl groups, the norbornane-basket structure is favoured over potential isomers containing three-membered rings and over polymeric aggregation. The crystal structure of tri(*t*-butyl)aluminium has been determined. *t*-Bu₃Al crystallizes as a monomer, with the molecules interconnected by weak secondary Al...C contacts (2.95 Å) leading to a slight deviation of the AlC₃ units from a planar coordination geometry at the Al atoms.

Key words: Aluminium, Tri(*t*-butyl)aluminium, Heterocycles, Donor-Acceptor Bonds,
Crystal Structure