



## Polyhedron

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# Butyl metal aryloxides, arylamides, and sulphur and phosphorus analogues—II. Synthesis and characterization of novel bulky alkoxides and aryloxides of aluminium; X-ray structure of $[\text{Al}(\mu\text{-OCH}_2\text{Ar})\text{Me}_2]_2$ ( $\text{Ar} = \text{C}_6\text{H}_2\text{Bu}_3^t\text{-2,4,6}$ ) $\star$

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## Abstract

The alkoxide, (2,4,6-tri-*t*-butylbenzoxo)dimethylaluminium,  $[\text{Al}(\mu\text{-OCH}_2\text{Ar})\text{-Me}_2]_2$  ( $\text{Ar} = \text{C}_6\text{H}_2\text{Bu}_3^t\text{-2,4,6}$ ), (**1**), has been prepared from the corresponding benzyl alcohol  $\text{ArCH}_2\text{OH}$  and trimethylaluminium in  $\text{C}_6\text{H}_{14}$  at *ca* 25°C. Even using an excess of the alcohol, only one of the methyl groups of  $\text{AlMe}_3$  was replaceable under these conditions. By contrast, using the bulky phenol  $\text{Ar}'\text{OH}$  ( $\text{Ar}' = \text{C}_6\text{H}_3\text{Bu}_2^t\text{-2,6}$ ) and an excess of  $\text{AlMe}_3$  yielded the bis-aryloxide, bis-[2,6-di(*t*-butyl)phenoxo]methylaluminium,  $\text{AlMe}(\text{OAr}')_2$  ( $\text{Ar}' = \text{C}_6\text{H}_3\text{Bu}_2^t\text{-2,6}$ ), (**2**). The less hindered phenol  $\text{Ar}''\text{OH}$  ( $\text{Ar}'' = \text{C}_6\text{H}_3\text{Bu}_2^t\text{-2,4}$ ) and an excess of  $\text{AlMe}_3$  gave the expected aryloxide, (2,4-di-*t*-butylphenoxo)dimethylaluminium,  $\text{AlMe}_2(\text{OAr}'')$  ( $\text{Ar}'' = \text{C}_6\text{H}_3\text{Bu}_2^t\text{-2,4}$ ) (**3**). Compounds **1–3** have been characterized spectroscopically and in the case of the crystalline alkoxide **1**, also by X-ray crystallography; some selected geometric parameters are:  $\text{Al}\square\text{O}$  1.841(3) and 1.858(2),  $\text{Al}\square\text{Al}$  1.939(5) and 1.959(6),  $\text{Al}\square\text{Al}'$  2.84,  $\text{O}\square\text{O}$  2.37 Å;  $\text{O}\square\text{Al}\square\text{O}'$  79.8(1),  $\text{Al}\square\text{O}\square\text{Al}'$  100.2(1)°. Complex **1** has the structure  $[\text{AlMe}_2(\mu\text{-OCH}_2\text{Ar})]_2$ , both as the solid and at 30°C in  $\text{C}_6\text{D}_6$  solution. Less complete data on the aryloxides **2** and **3** suggest that the former is a monomer, whereas the latter is a dimer, probably by virtue of  $\text{OAr}''$ -bridging.



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\* For part I, see ref. 1a.

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