Synthesis, properties and crystal structures of ionic $[Al_2(\mu,\eta^2\text{-thffo})_2(EtOH)_4Cl_2]Cl_2$, $[Al_3(\mu,\eta^2\text{-thffo})_4Cl_4][AlEtCl_3]$ and tetranuclear $[Al_4(\mu,\eta^2\text{-thffo})_4(\mu\text{-OEt})_2Cl_6]$ (thffo = $OCH_2CH(CH_2)_3O$) compounds.

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Streszczenie

The bis-*μ*-(2-tetrahydrofuryloxo-*O*,*O*')tetraethanoldichlorodialuminium(III) dichlorate $[Al_2(\mu,\eta^2\text{-thffo})_2(EtOH)_4Cl_2]Cl_2$ (**1**), tetra-*μ*-(2-tetrahydrofuryloxo-*O*,*O*')tetrachlorotrialuminium(III) trichloroethylo aluminate(III) dichloromethane(1/1), $[Al_3(\mu,\eta^2\text{thffo})_4Cl_4][AlEtCl_3]\cdot CH_2Cl_2$ (**2**) salts are synthesized in direct reaction of $AlCl_3(THF)_2$ with Nathffo and $AlEtCl_2$ with thffo in THF or benzene, respectively. The addition of $AlCl_3(THF)_2$ to the $Mg(thffo)_2$ results in the formation of tetrakis-*μ*-(2-tetrahydrofuryloxo-*O*,*O*')di-*μ*-ethoxo-hexachlorotetraaluminium(III) tetrahydrofuran (1/1) $[Al_4(\mu,\eta^2\text{-thffo})_4(\mu\text{-OEt})_2Cl_6]\cdot THF$ (**3**) species. Compound **1** crystallized in the space group $P2_1/n$, with a=8.615(2), b=16.445(3), c=10.052(2) Å and β=90.53(3)°. Compound **2** belongs to the $C2/c$ space group with a=32.046(5), b=14.255(3), c=15.443(3) Å and β=123.85(3)°. Crystals of **3** are triclinic, space group P, a=10.365(2), b=10.854(2), c=11.880(3) Å and α=70.40(2), β=65.19(2), γ=80.18(2)°. The centrosymmetric cation of the salt **1**, in the crystalline state is a dimer composed of two octahedra related by a crystallographic inversion centre and sharing an edge. The $[Al_3(\mu,\eta^2\text{-thffo})_4Cl_4]^+$ cation of the species **2** is a centrosymmetrical with an aluminium–oxygen framework, which consists of the central octahedral atom linked to two five-coordinate aluminium sites by *μ*-alkoxo bridges. The structure o f **3** includes two five-coordinate and two six-coordinate Al atoms linked by *μ*-alkoxo bridges to form tetranuclear chains with a symmetry center.

Słowa kluczowe

Aluminium(III), Alumoxanes, Alkoxides, Crystal structure, Chelate