Metal-organic motif found using ligand L and silver salts


**Keywords:** Coordination Polymers, Silver salts, X-ray diffraction.

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**The Crystal Structure of a Mixed-Metal Basic Trifluoroacetate of Aluminium and Zinc: [AlZn(µ-3-O)(O2CCF3)]4.** Georgi Ganchev, Walter Frank, *Institut für Anorganische und Strukturchemie II, Heinrich-Heine Universität Düsseldorf, Germany*

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M₄X₄ molecular cages where M is a metal and X is an element of group 15, 16 or 17 are quite common [1, 2]. All these cages have the cube geometry as found in the well known Fe₅S₅ ferredoxins [3]. Here we report on the synthesis and the crystal structure of [AlZn(µ-3-O)(O2CCF3)]₄ (1). This exceptional compound was discovered during a study on the thermal behaviour of aluminiumtris(trifluoroacetate). Crystals were obtained by the thermolysis of Al(O2CCF3)₃ in the presence of zinc powder. The reaction was carried out at 200–220 °C under static vacuum. 1 crystallizes in the monoclinic space group P2₁/c with lattice parameters of a = 19.906(4) Å, b = 14.490(3) Å, c = 18.384(4) Å and β = 98.02(3)° and with Z = 8. In the crystal each of the Al₄ tetrahedrons is capped by a zinc atom resulting in Al₅Zn pyramids that contain an oxygen atom. All of the 12 Al-Zn edges are bridged by trifluoroacetate ligands. The aluminium atoms have an octahedral coordination. Two of the four zinc atoms have tetrahedral and the other two have trigonal bipyramidal coordination. Due to secondary Zn-O interactions compound 1 is a chain polymer. On the molecular level the structure of 1 has a close relationship to the structure of spinel. Indicative for this similarity is the M₄O₄ core, the presence of di- and tri-positive metal cations and the equal mode of coordination of the atoms in both structures.


**Keywords:** aluminium compounds, single-crystal X-ray diffraction, thermal behaviour