A novel binuclear Mn(III) tridentate Schiff base complex \([\text{C}_2\text{H}_2\text{Cl}_2\text{Mn}_2\text{N}_2\text{O}_5]\) (I) has been synthesized and its crystal structure has been determined by single crystal X-ray diffraction analysis. Structural analysis shows that the Schiff base ligand of this dimeric Mn(III) complex coordinates toward one Manganese atom in a tridentate mode and each Mn atom is six-coordinated. Magnetic susceptibilities for (I) in the solid state have been measured over the temperature range 2-350 K as a function of temperature and the magnetic parameters have been determined with fitting procedure. Magnetic measurements on (I) reveal the presence of antiferromagnetic spin-exchange interactions between the manganese(III) ions.

**Keywords:** ONO donors, Binuclear Mn (III) complexes, X-ray crystallography, Magnetic exchange

**FA4-MS34-P36**

The hexadecaiodide ion \(\text{I}_{16}^{2-}\). Synthesis and crystal structure of \([\text{Na}(15\text{c}5)2]\text{I}_{16}\), Christof Fiolka, Gerd Meyer, Department für Chemie, Universität zu Köln, Germany
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The hexadecaiodide ion is one of the most iodine rich polyiodide described in the literature. The tendency to decompose and to emit iodine is large and, therefore, hexadecaiodides are rather elusive. However, bulky cations with a low and shielded charge are able to stabilize even such a large polyiodide anion [1]. Two heptaiodide ions are linked by an iodine molecule to form the hexadecaiodide in [Na(15c5)]2I16 (I). The crystal structure of I contains the dimeric in-cavity-complex \([\text{Na}(15\text{c}5)2]\text{I}_{16}\). The sodium atoms Na1 and Na2 are located 62 pm above the average plane through the oxygen atoms of the crown ether ligand. Both complex sodium ions dimerize through the \(\mu\)-bridging oxygen atoms O101 and O204 of the crown ether (d(Na1-Na2) = 342.9(9) pm; see Fig. 1, left). The charge-compensating hexadecaiodide I16 in I is built up by two pyramidal heptaiodide ions, which are linked to each other through the terminal iodine atoms I113 and I213 by the iodine molecule I241-I242 resulting in the configuration \(\{\text{I}_{12}\text{I}_{13}\}\) (d(I113-I242) = 348(1), d(I213-I241) = 347(1) pm). The heptaiodide ions themselves are made up by one asymmetric almost linear triiodide anion (d(I111-I112-I113) = 296.3(9), 286.8(9), d(I211-I212-I213) = 295.5(8), 287.2(8) pm) connected to two iodine molecules with the configuration \(\{\text{I}_{2}\text{I}_{3}\}\). In the crystal structure, the hexadecaiodide ions form chains along the \(a\)-axis (d(I113-I112) = 346(2), d(I213-I222) = 342(2) pm; see Fig. 1, right).

**Fig. 1.** The dimeric in-cavity-complex \([\text{Na}(15\text{c}5)2]\text{I}_{16}\) (top) and the anionic \(\text{I}_{16}^{2-}\) chain (bottom).


**Keywords:** Polyiodides, Crown Ether, Crystal Structure

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Two novel scandium croconate and mixed croconate-oxalate complexes, Celeste Bernini, Natalia Snejko, Marta Iglesias, Enrique Gutierrez-Puebla, M Angeles Monge, Instituto de Ciencia de Materiales de Madrid, CSIC, Spain, a Area de Quimica General e Inorganica, Universidad Nacional de San Luis, Argentina.
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Polynuclear complexes feature a fascinating variety of unusual symmetries and structural patterns [1]. On the other hand, the synthesis of inorganic clusters continues attracting considerable attention, due to the interesting properties of the metallic aggregates [2]. The control of the lanthanide ions hydrolysis in presence of appropriate ligands appears as a common strategy to obtain the hydroxo REE clusters [3].

It is a known fact that the Sc(III) ion is a good Lewis acid and is currently used to prepare stable complexes and MOFs, because such compounds find application in heterogeneous and homogeneous catalysis [4]. The croconate, a cyclic oxocarbon dianion, is a member of the (CnOn)\(^2\) series composed by the delitate, square, croconate and rhodizonate anions, with \(n = 3-6\), respectively. Some of these oxocarbon anions can suffer oxidation. Such process has been observed for squarate oxidized into oxalate in lanthanide oxalate-squarate compounds [5], and in calcium croconate-oxalate complexes [6]. With this in mind, we set the challenge of controlling the synthesis conditions in order to obtain compounds with croconate as the only ligand and another that contain the croconate and the oxalate ions in the same framework. Here we present two Sc(III) complexes based in croconate and mixed croconate-oxalate ligands, with formulas \([\text{Sc}(\text{C}_5\text{O}_5\text{S})\text{O}(\text{OH})\text{C}_2\text{H}_2\text{O}_6\text{O})\). Figure 1a, and