

m41.p03

A New Azelato Barium(II) Coordination Polymer Containing Chains of Water Molecules

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Keywords: barium, azelaic acid, crystal structure

The synthesis and characterization of α,ω -dicarboxylate complexes have attracted considerable attention during the past decade, due not only to their fascinating structures[1], but also to their potential practical applications in a wide number of fields [2].

So far, extensive work has been carried out for carboxylate complexes and most of the reported studies have focused on coordination frameworks with transition metal salts.

The present work is a continuation of earlier studies of alkaline-earth metals (ω -dicarboxylates complexes[3]. To our knowledge, the number of structural studies of azelate compounds remains limited [4] and no structural characterization of alkaline-earth azelate have been reported. In this sense, a new aqua azelato Ba(II) complex $(\text{Ba}(\text{C}_9\text{H}_{14}\text{O}_4)(\text{H}_2\text{O}))_n$ was prepared and structurally characterized.

It has monoclinic symmetry, space group C2/m with $a = 8.8108(6) \text{ \AA}$, $b = 30.0831(6) \text{ \AA}$, $c = 4.9205(5) \text{ \AA}$, $\beta = 116.572(2)^\circ$, $V = 1166.45(9) \text{ \AA}^3$ and $Z = 8$. The final R and Rw are respectively 0.025 and 0.050.

The barium atoms are eight coordinated with an O_8 donor set: six from six azelato ligands and two from water molecules with Ba-O distances in the range 2.729(4) - 2.920(3) \AA . The coordination geometry around the barium atom can be best described as a distorted square antiprism.

The compound shows a layered structure consisting of inorganic barium-oxygen polyhedra layers and organic moieties. The inorganic barium-oxygen layers are generated from Ba_2O_{16} units which share corners and edges with neighbours to form chains along the [100] and [001] directions, respectively. The Ba ...Ba distances across these chains are 4.920(2) and 4.497(2) \AA .

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Structural and magnetic characteristics of the $\text{Er}_2\text{Cu}_2\text{In}_1$

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Keywords: intermetallic compounds structure, X-ray crystal structure determination, magnetic properties

Single crystal of $\text{Er}_2\text{Cu}_2\text{In}_1$ was obtained by arc melting stoichiometric amounts of constituent elements and annealing at 700°C in evacuated quartz tube[1]. The crystal structure of the new obtained intermetallic was determined using single crystal X-ray diffraction data. This ternary was found to crystallise in the tetragonal (P4/mbm) ordered version of the U_3Si_2 - type[2], with erbium and indium atoms occupying the uranium sites and the copper occupying the silicon positions. The magnetic susceptibility measurements, carried out in a superconducting quantum interference device (SQUID) magnetometer revealed ferro-magnetic ordering at low temperature ($T_c = 40\text{K}$).

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