

A Three - dimensional Network Coordination Adipato-Bridged Barium (II) Polymer

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Keywords: adipate, barium complexes, crystal structure

Metal organic polymers with extended structures are currently of considerable interest owing to their possible applications in catalysis, biology, and medicine....

In this family metal dicarboxylates have been extensively studied.

To our knowledge previous structure determination involving barium α,ω -dicarboxylate complexes are limited to those of barium oxalate [1], barium malonate [2] and barium succinate [3]. At this point, our interest has been extended to study the behaviour of the barium (II) moiety upon lengthening the chain of the dicarboxylic acids.

A new unhydrated barium (II) adipate complex has been synthesized via gel technique route. The complex has been characterized by elemental analysis, IR spectroscopy and single crystal X-ray diffraction technique. It crystallizes in the tetragonal space group P4b2, with $a=8.5059(6)$ Å, $c=10.5228(6)$ Å, $V=761.3$ Å³, $Z=2$. The barium is eight-coordinated, the co-ordination polyhedron around the Ba(II) atom is a slightly distorted dodecahedron formed by eight oxygen atoms belonging to eight equivalent adipate groups. The dicarboxylate ligand is unidentate and coordinate polymerically by its four oxygen atoms, bridging two different barium atoms and leading to a binuclear cage involving eight $\mu-1,3$ oxo-bridges exhibiting eight membered-ring $Ba_2C_2O_4$ forming wide empty channels parallel to the [010] direction. The two-dimensional layered structure is built up from an infinite array of hydrocarbon chains sandwiched BaO_8 polyhedra.

The general structural features are identical to those barium (II) pimelate) [4] and barium (II) suberate) [5].

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