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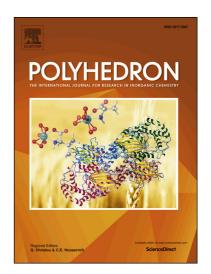
PII: S0277-5387(18)30114-1

DOI: https://doi.org/10.1016/j.poly.2018.03.001

Reference: POLY 13065

To appear in: Polyhedron

Received Date: 11 December 2017
Revised Date: 2 March 2018
Accepted Date: 5 March 2018



Please cite this article as: M. Yan, R-F. Zhang, S-L. Zhang, J. Ru, J-Y. Du, C-L. Ma, Novel cobalt(II) coordination complexes based on 3,4,5-trifluorobenzeneseleninic acid and different N-donor ligands, *Polyhedron* (2018), doi: https://doi.org/10.1016/j.poly.2018.03.001

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Novel cobalt(II) coordination complexes based on 3,4,5-trifluorobenzeneseleninic acid and different N-donor ligands

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Abstract

Three novel cobalt(II) coordination complexes constructed 3,4,5-trifluorobenzeneseleninic acid (L) and different N-donor ligands, namely, $[Co(4,4'-bpy)(L)_2]_n$ (1), $[Co(2,2'-bpy)(L)_2]_n$ (2), $[Co_2(en)_4(L)_2(NO_3)_4] \cdot (CH_3CN)_2$ (3). (4,4'-bpy = 4,4'-bipyridine, 2,2'-bpy = 2,2'-bipyridine, and en = ethylenediamine)have been designed, synthesized and characterized by IR spectroscopy, elemental analysis, single-crystal X-ray diffraction analyses. In the three complexes above, the 3,4,5-trifluorobenzeneseleninic acid ligand adopt anti-anti bridging coordination mode and all the cobalt ions show distorted octahedral configurations. Complex 1 displays a 2D layer structure, which is further connected by $\pi \cdots \pi$ interactions to give rise to a 3D supramolecular structure. The structure of complex 2 exhibits 1D tube-like double chain structure and the neighboring chains are further linked by hydrogen-bonds C-H···F and π ··· π interactions to form a 3D supramolecular structure. However, complex 3 is a monomer which can be connected into a 2D supramolecular layer through the intermolecular C-H···O hydrogen-bonds interaction. In addition, the magnetic properties of complexes 1 and 2 are characterized.

Keywords: cobalt(II) coordination complexes; 3,4,5-trifluorobenzeneseleninic acid; N-donor ligands; X-ray crystallography; Structural characterization

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