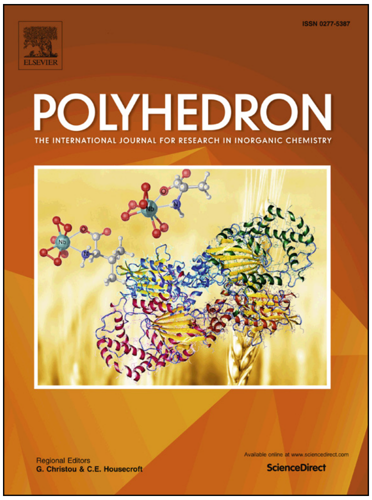

Novel cobalt(II) coordination complexes based on 3,4,5-trifluorobenzeneseleninic acid and different N-donor ligands

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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 by 3,4,5-trifluorobenzeneseleninic acid (L) and different N-donor ligands, namely, $[Co(4,4'\text{-bpy})(L)_2]_n$ (**1**), $[Co(2,2'\text{-bpy})(L)_2]_n$ (**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 $\pi\cdots\pi$ 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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