The Synthesis, Characterization and Structural Analysis of a Co(III) Complex of 1,10-Phenanthroline and Perfluorosebacic Acid, $[Co(HL)(phen)_2(H_2O)]L\cdot H_2O$

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The hexacoordinated mononuclear Co(III) complex **1**, $[Co(HL)(phen)_2(H_2O)]L\cdot H_2O$, with the mixed ligands (H_2L = $HO_2C(CF_2)_8CO_2H$ and 1,10-phenantroline) has been synthesized and characterized by elemental analysis, IR and UV/vis spectroscopy, magnetic susceptibility, TG analysis and X-ray diffraction techniques. The Co(III) atom is coordinated asymmetrically by two bidentate 1,10 phenanthroline ligands, one hydrogencarboxylate ligand, $(O_2C(CF_2)_8CO_2H)^-$, and one water molecule. In the crystal structure, there are also dicarboxylate anions and one water molecule attached through hydrogen bonds. Intermolecular π-π interactions between the adjacent phenanthroline ligands also support the packing of the components.

Key words: Cobalt(III) Complex, Hydrogen Bonding, π-π Interactions, Perfluorosebacic Acid, 1,10-Phenanthroline