The hexacoordinated mononuclear Co(III) complex 1, [Co(HL)(phen)\(_2\)(H\(_2\)O)]L\(\cdot\)H\(_2\)O, with the mixed ligands (H\(_2\)L = HO\(_2\)C(CF\(_2\)\(_8\))CO\(_2\)H and 1,10-phenanthroline) 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\(_2\)C(CF\(_2\)\(_8\))CO\(_2\))\(^-\), and one water molecule. In the crystal structure, there are also dicarboxylate anions and one water molecule attached through hydrogen bonds. Intermolecular \(\pi-\pi\) interactions between the adjacent phenanthroline ligands also support the packing of the components.

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