Synthesis and crystal structure of bis{2-((E)-1-(methoxyimino)ethyl)phenyl}imino)methyl)phenolato-$\kappa^2N,O$}cobalt(II), $\text{C}_{40}\text{H}_{46}\text{CoN}_{4}\text{O}_{4}$

1 Source of material

The synthesis of the title complex was prepared using a similar method previously reported [4, 5], and its ligand has been synthesized and reported previously [6]. A methanol solution (2 mL) of the cobalt acetate tetrahydrate (49.8 mg, 0.2 mmol) was added dropwise to a dichloromethane solution (2 mL) of organic ligand (named (E)-1-(4-(E)-3-(tert-butyl)-2-hydroxybenzylidene)amino)phenyl)ethan-1-one O-methyl oxime) (129.8 mg, 0.4 mmol). The mixture was kept stirring at room temperature for 1 h and then filtered. After the solvent in the filtrate slowly evaporates in a quiet environment for 22 days, several dark red block crystals were obtained.

2 Experimental details

Hydrogen atoms were placed in their geometrically idealized positions and constrained to ride on their parent atoms.

3 Comment

The development of synthetic routes and strategies for Schiff base ligands and their transition metal complexes have potential application value due to their excellent performance in luminescent [7], bioscience [8], magnetic material...
We report in this article that a new cobalt (II) complex (Figure). In the title complex, Co1 is in N2O2 coordination environment and shows a high degree of distortion from the ideal square planar geometry. The coordination sphere of Co1 is completed by two nitrogen atoms from the two N-S bonded ligands and two oxygen atoms from the two carboxylate groups. The bond distances and bond angles are in the ranges typically observed for such Co(II) complexes, with slight variations due to the coordination environment and the presence of the nitrogen atom.

[9] and supramolecular structure construction [10, 11] and so on. Schiff base ligands can form stable mononuclear, binuclear, and multinuclear complexes with transition metal ions [12–14].

We report in this article that a new cobalt (II) complex has been prepared. The single crystal structure of the title complex has been characterized by X-ray crystallography (cf. the figure). In the title complex, Co1 is in N2O2 coordination environment and displays a four-coordinated tetrahedral geometry by two oxygen atoms (O1 and O3) and two nitrogen atoms (N1 and N3) from different ligands. The
Co1–N1 bond length is 1.989(3) Å and the Co1–N3 is 1.980(3) Å. The Co1–O1 bond length is 1.897(2) Å and the Co1–O3 is 1.896(2) Å. The angle of O1–Co1–N1 is 94.11(10)°, O3–Co1–N1 is 114.64(11)°, O1–Co1–N3 is 114.64(11)° and O1–Co1–O3 is 121.10(10)°, respectively. All bond lengths and bond angles are within the normal ranges [14].

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References