Complexes of heteroscorpionate trispyrazolylborate anionic ligands. Part V. X-ray crystallographic studies of cobalt(II) complexes with hydrobis(3,5-dimethylpyrazolyl)(3,5-diphenylpyrazolyl)borate and hydrobis(3,5-diphenylpyrazolyl)(3,5-dimethylpyrazolyl)borate ligands.

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Streszczenie

Synthesis of poly(pyrazolyl)borate anionic ligands composed of 3,5-dimethyl- and 3,5-diphenylpyrazoles gave two heteroscorpionate tris(pyrazolyl)borate anionic ligands (Tp′): hydrobis(3,5-dimethylpyrazolyl)(3,5-diphenylpyrazolyl)borate and hydrobis(3,5-diphenylpyrazolyl)(3,5-dimethylpyrazolyl)borate, which were converted into high-spin cobalt(II) complexes. The molecular structure of hexacoordinate tetrahydrofuran hydrobis(3,5-dimethylpyrazolyl)(3,5-diphenylpyrazolyl)boratocobalt(II) nitrate and [dihydrobis(3,5-diphenylpyrazolyl)borato][hydrobis(3,5-diphenylpyrazolyl) (3,5-dimethylpyrazolyl)borato]cobalt(II) complexes were established by X-ray crystallography. The Tp′ ligands are κ^3 bound to the central metal ion in both complexes. The coordination sphere is completed with three oxygen donors from the nitrate anion and tetrahydrofuran in the former compound and two nitrogen donors and a boron-attached hydrogen from the dihydrobis(3,5-diphenylpyrazolyl)borate ligand with a 2.035 Å Co□H bond in the latter complex. Heteroscorpionate anionic hydrobis(3,5-dimethylpyrazolyl)(3,5-diphenylpyrazolyl)borate and hydrobis(3,5-diphenylpyrazolyl)(3,5-dimethylpyrazolyl)borate Tp′ ligands form high-spin cobalt(II) complexes of the general formula Tp′CoX (X=NO_3^- and $[H_2B(3,5\text{-diPhpz})2]^-$). Two of the heteroscorpionate complexes containing hexacoordinate cobalt(II) centers were characterized crystallographically: $[HB(3,5\text{-diMepz})_2(3,5\text{-diPhpz})]Co(NO_3)(THF)$ and $[HB(3,5\text{-diPhpz})_2(3,5\text{-diMepz})][H_2B(3,5\text{-diPhpz})_2]Co$. A short B□H···Co agostic contact of 2.035 Å has been found in the latter complex.

Słowa kluczowe

Poly(3-Rpyrazolyl)borate cobalt(II) complexes, Structures, NMR