Synthesis, spectroscopy and magnetism of fluoridoborate transition metal complexes with aminoflavone ligand (3-af). X-ray crystal structure of $[Cu(BF_4)_2(3\text{-af})_2]$ and $[Zn(BF_4)(3\text{-af})_2](BF_4)\cdot CH_3C(O)OEt$.

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The compounds of general formula $M(BF_4)_2(3\text{-af})_2\ 3H_2O$ where M = Ni(II), Co(II) and $Cu(BF_4)_2(3\text{-af})_2$, $[Zn(BF_4)(3\text{-af})_2](BF_4)\cdot CH_3C(O)OEt$ with 3-aminoflavone (3-af) have been synthesized and characterized. The crystal structure of copper and zinc complexes has been determined by X-ray diffraction method. The complexes have been characterized by infrared, ligand field spectra and magnetic measurements. These mononuclear complexes are tetragonal, [4+2] coordinated (Cu, Ni and Co) and penta-coordinated (Zn). The ligand acts as *N*,*O*-chelate. The results of the magnetic studies of complexes in 1.8–300 K range indicate a very weak intermolecular interaction between magnetic centers. The magnetic behavior of cobalt and nickel complexes indicates an important orbital contribution via spin–orbit coupling. From X-ray powder-diffraction patterns, the complexes of Ni(II) (**2**) and Co(II) (**3**) were found not to be isomorphous.

Słowa kluczowe

Flavonoids, Transition metal complexes, spectroscopy, Magnetism, x-ray crystallography

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