Structural and spectroscopic parameters of distortion in $[Cu(bpy)_2(O_2SO_2)]{\cdot}CH_3OH$ and $[Cu(bpy)_3][SO_4]{\cdot}7.5H_2O$: synthesis, crystal structure, spectroscopic and magnetic properties.

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Streszczenie

A copper(II) sulfate complex of formula [Cu(bpy)2(O2SO2)]CH3OH (1) (bpy = 2,20-bipyridine) was pre-pared and characterized by X-ray diffraction, spectroscopic methods (FIR, IR, NIR–Vis–UV, EPR) and mag-netic measurement. The S–O distances in the chelating SO42entity give the value of the geometricdistortion parameterDr= 0.022. The EPRgparameters are temperature dependent and indicated the flux-ional model of the [Cu(N,N0)2OO] chromophore withdx2y2ground state. The electronic spectrum of1exhibits the maxima at 9740 and 14 630 cm1. The very weak antiferromagnetic interaction betweencopper centers in the crystal lattice was observed.In [Cu(bpy)3][SO4]7.5H2O(2) crystal the distance values in [Cu(bpy)3]2+cations result inT= 0.958 andthe value ofDrof the non-coordinate SO42tetrahedron is 0.095. The value ofTfor [CuN6](2) suggests thefluxional character of Jahn–Teller (JT) distortion supported by the EPR studies. The electronic spectrumshows two separated bands at 6900 and 14 400 cm1.

Słowa kluczowe

Sulfate(VI) and copper(II) complexes, Geometric distortion, X-ray differaction, Spectroscopic methods (FIR-IR, NIR–Vis–UVand EPR), magnetic properties

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