Crystal and molecular structures of eight-coordinate (CuN_4O_4) and six-coordinate (CuN_4O_2)Cu(II) complexes with 4-methyl-5-imidazole-carboxaldehyde or 1-benzyl-2-hydroxymethylimidazole, respectively spectroscopic and potentiometric studies.

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Streszczenie

The synthesis and characterisation of two novel Cu(II) eight and six coordinate compounds with the bidentate ligands 4-methyl-5-imidazolecarboxaldehyde (4-Me-5-CHOIm) and 1-benzyl-2-hydroxymethylimidazole (1-Bz-2-CH_2OHIm) are described. Single crystals of [Cu(4-Me-5-CHOIm)$_4$]$(H_2O)_2(NO_3)_2$ (**1**) and [Cu(1-Bz-2-CH_2OHIm)$_4$]$(NO_3)_2$ (**2**) were used in structure determinations. The two compounds both crystallise in the monoclinic space group P$\bar{1}$ with *Z*=2 for (**1**) and *Z*=1 for (**2**). The structural data for (**1**) indicated that Cu(II) ion is involved in a flattened tetrahedron of N(1), N(2), N(3) and N(4) atoms of imidazoles ring as well as in a more distant elongated tetrahedron of four of the *z*-axis oxygen atoms O(1), O(2), O(3), O(4) of aldehyde groups. The coordination scheme of the six-coordinate Cu(II) complex (**2**) is a slightly distorted tetragonal bipyramid and the ligands act as a monodentate and bidentate. Additionally, the coordination processes with Cu(II) were detected and characterised in solution using spectroscopic (EPR and UV–VIS) as wall as potentiometric methods.

Słowa kluczowe

Eight-coordinate copper complex, Bidentate ligands, Crystal structure, EPR spectra, Stability constants

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