X-ray structure of poly[aquabis(benzimidazole-N^3)copper(II)-μ-*trans*-2-butene-1,4-dicarboxylato-O,O' : O'', O'''] (I) and magnetic and spectroscopic characterization of I and the isostructural copper(II)-μ adipato complex II.

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The title compounds $[Cu(H_2O)(C_7H_6N_2)_2(C_6H_6O_4)]$ (**I**) and isostructural $[Cu(H_2O)(C_7H_6N_2)_2(C_6H_8O_4)]$ (**II**) are the rarely observed seven-coordinate Cu(II) complexes of C_2 elongated square-pyramidal geometry with a double-capped base by two very long Cu□O(carboxylate) bonds. The valences of Cu□N and Cu□O bonds in **I** and **II** have been computed to confirm the assumed Cu(II) coordination number. The hydrogen bond system and Cu⋯Cu intra- and interpolymeric chain spacing in **I** and **II** have been analyzed to explain their magnetic properties. The magnetic susceptibility measurements of **I** and **II** in the range 1.7–300 K suggest weak antiferromagnetic interaction between Cu(II) centres. The EPR and d–d spectra of both complexes have been measured and analyzed.

The single-crystal X-ray structure analysis of**I** shows its isostructurality with the copper(II)-μ-adipato complex **II**. Both structures are the rarely observed seven-coordinate Cu(II) complexes of C_2 elongated square-pyramidal geometry with a double-capped base by two long Cu□O(carboxylate) bonds. The magnetic susceptibility measurements of **I** and **II** suggest weak antiferromagnetic interaction between Cu(II) centers. The EPR and d–d spectra of both complexes have been measured and analyzed.

Słowa kluczowe

Cu(II) stereochemistry, X-ray structures, Magnetism, EPR spectra

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