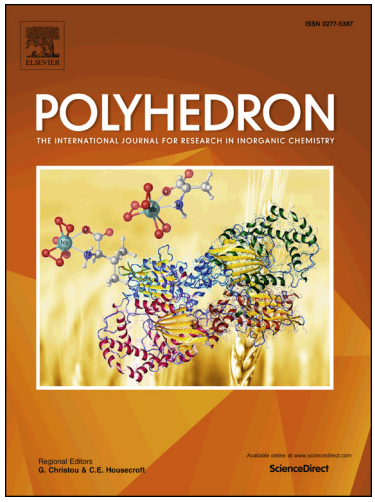

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Effect of differently substituted methoxybenzoates on the supramolecular assemblies of three [Cu(N-*hyden*)$_2$](o-/m-/p-methoxybenzoate)$_2$ complexes: Synthesis, spectroscopic characterization and single crystal structure determination

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Abstract

Three new anhydrous [copper(II)(N-*hyden*)$_2$](o-/m-/p-methoxybenzoate)$_2$ complexes, **1-3**, (where N-*hyden* = N-(hydroxyethyl)ethylenediamine) have been prepared by the dropwise addition of N-*hyden* to the hydrated copper(II) o-/m-/p-methoxybenzoate complexes suspended in a methanol-water (4:1 v/v) mixture, followed by evaporation of the resulting solution at room temperature. They have been characterized by elemental analyses, spectroscopic techniques (FT-IR and UV-Vis), conductance measurements and magnetic susceptibility studies. Single crystal X-ray structure determination showed that complexes **1** and **3** crystallize in the monoclinic system $P2_1/c$, while complex **2** crystallizes in the triclinic system P-1; all in centrosymmetric space groups. The X-ray analysis of complexes **1-3** clearly revealed their ionic structures, consisting of one complex cation, [Cu(N-*hyden*)$_2$]$^{2+}$, and two respective arylbenzoate (o-/m-/p-methoxybenzoate) anions. The Cu(II) center in each complex is octahedrally coordinated with two tridentate N-*hyden* ligands, in which two nitrogen and one oxygen atom of two N-*hyden* ligands are coordinated *trans* geometries. The crystal lattices in complexes **1-3** are stabilized by non-covalent interactions such as N-H…O, O-H…O hydrogen bonding and C-H...π interactions.

Keywords: copper(II); N-(hydroxyethyl)ethylenediamine); second sphere coordination; spectroscopic techniques; X-ray crystallography