1-allyl derivatives: synthesis and crystal structures for $[(NH_2C_5H_4N(C_3H_5))_2Cu_3Cl_3(NO_3)_2]$ and $[C_9H_7N(C_3H_5)Cu(NO_3)_2]$.

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Streszczenie

1-Allyl-4-aminopyridinium chloride reacts with Cu(NO3)2 · 3H2O in an ethanolic solution under the conditions of ac electrochemical synthesis at copper electrodes to form crystals of compound [(NH2C5H4N(C3H5))2Cu3Cl3(NO3)2] (I). The crystals of compound I are monoclinic: space group P21/c, Z = 4, a = 25.770(7), b = 7.230(4), c = 12.505(5) Å, β = 92.58(3)°, V = 2328(2) Å3. The direct interaction of 1-allylquinolinium nitrate with Cu(NO3)2 · 3H2O in a methanolic solution in the presence of metallic copper yields crystals of compound [C9H7N(C3H5)Cu(NO3)2] (II). The crystals of compound II are triclinic: space group P $ \bar 1 $, a = 6.756(3), b = 8.391(4), c = 12.489(5) Å, α = 77.18(3)°, β = 89.48(4)°, γ = 73.32(3)°, V = 662.0(5) Å3. The structure of compound I is built of infinite linear anions: polymeric fragments {(NH2C5H4N(C3H5))2Cu3Cl3(NO3)2}n . Each of two copper atoms (Cu(1) and Cu(2)) π-coordinates the C=C bonds of the allyl groups of the 1-allyl-4-aminopyridinium cations, the oxygen atom of the nitrate ions, and two chlorine atoms. The third copper atom Cu(3) is linearly linked with two chlorine atoms. Particular polymeric fragments are additionally joined by the N-H…O, C-H…O, C-H…Cl hydrogen bonds. The crystal structure of compound II is built-up of the isolated L2Cu2(NO3)4 fragments (L is the 1-allylquinolinium cation). The metal atom is localized in the trigonal pyramidal coordination environment of three oxygen atoms of the nitrate ions and of the C=C bond of the allyl group of the cation. The particular L2Cu2(NO3)4 fragments are additionally joined by the C-H…O hydrogen bonds.