Two New Copper (II) Complexes with the Same NNO Donor Schiff Base Ligand: A Monomer and a Dimer

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Two new copper(II) complexes, $[(CuL)_2(\mu_{1,1}\text{-}N_3)_2]\cdot 2H_2O$ (**1**) and $[Cu(HL)(2,2'\text{-bipy})(CH_3COO)]\cdot ClO_4\cdot H_2O$ (**2**), have been synthesized using the tridentate NNO Schiffbase ligand 2-[(2-aminoethylimino)methyl]-6-methoxyphenol (HL). They have been characterized by elemental analysis, IR spectroscopy, thermal analysis, and single-crystal X-ray analysis. The copper environment is distorted square pyramidal in complex **1**: two nitrogen atoms and one oxygen atom from the ligands and two nitrogen atoms from two azido ligands build the coordination polyhedron around the copper atom. The Cu–N_{azide}–Cu angle in complex **1** is 85.6°. This is unusually small in comparison with the same angle in other end-on doubly azido-bridged dimers. Complex **2** is mononuclear with the Cu atom having a slightly distorted octahedral geometry. Magnetic measurements of **1** have been performed in the temperature range from 2 to 300 K. The experimental data indicate an antiferromagnetic exchange interaction between copper(II) ions bridged by the azido ligand. The best-fit parameters for complex **1** are $g = 2.18$ and $J = -1.31$ cm^{-1}.

Key words: Asymmetric Azide Bridge, Copper(II) Complex, Schiff Base, Magnetic Properties