

Binuclear complex of Cu(II) containing chelidamic acid and 2-aminopyrimidine ligands: Synthesis, X-ray crystal structure, magnetic and thermal properties

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A novel binuclear complex of Cu(II) was synthesized and characterized by using elemental analysis, FTIR spectroscopy, TG analysis, magnetic property, and single crystal X-ray structure determination. The chemical formula and space group of the resulting complex is

$[\text{Cu}_2(\text{hypydc})_2(2\text{-apym})(\text{H}_2\text{O})_2] \cdot 2\text{H}_2\text{O}$ (**1**) (hypydc = 4-hydroxypyridine-2,6-dicarboxylate, 2-apym = 2-aminopyrimidine) and $P\bar{1}$ where the final R value is 0.0320 for 3946 reflections collected. One (hypydc)²⁻, one 2-apym, and one water molecule are bounded to each Cu(II), giving a CuN_2O_3 bonded set. The coordination geometry around each Cu(II) centre is distorted square pyramid. N-H...O and O-H...O hydrogen bonds connect the stacks of complex and crystallized water molecules and lead to the consolidation of crystalline network. Different noncovalent interactions such as ion-pairing and hydrogen bonding play essential factors in the construction of extended networks in the crystal systems as can be observed in the title compound. The TG curve shows that complex **1** exhibit three steps of weight loss and is quite thermal stable. Magnetic property study of **1** shows a weak antiferromagnetic behavior, which mainly arises from the antiferromagnetic coupling in one-dimensional $[\text{Cu}(\text{NCN})\text{Cu}]$ chain through 2-apym bridge. Indeed, magnetic property study in variable temperature indicates a weak antiferromagnetic interaction between Cu(II) ions in three-dimensional crystalline network.

