Coordination properties of ethyl bis(pyridin-2-ylmethyl)phosphate ligand with copper and zinc chloride : X-ray crystal structure of Cu(II) complex.

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Streszczenie

A new ethyl bis(pyridin-2-ylmethyl)phosphate (2-bis(pm)Ope) ligand has been synthesized and used for synthesis of copper(II) and zinc(II) complexes of the formula [MCl_2(2-bis(pm)Ope)] [M = Cu(II), Zn(II)]. Despite having the same general formula, Cu(II) and Zn(II) complexes are not isostructural. The Zn(II) complex is four coordinated (MCl_2N_2) forming probably tetrahedral structure whereas the Cu(II) complex of distorted square pyramidal geometry is five coordinated (MCl_2ON_2). The later compound not only coordinates by two nitrogen atoms of pyridine rings but also by the oxygen atom of pyridin-2-ylmethoxyl residue. The compound (2-bis(pm)Ope) has been obtained as the product of diethyl (pyridin-2-ylmethyl)phosphate's (2-pmOpe) transestrification. The compounds have been identified and characterized by IR, far-IR, ^{1}H NMR, ^{31}P NMR and elemental analyses. The crystal structure of copper(II) complex i.e. [$CuCl_2$(2-bis(pm)Ope)] has been determined by the X-ray diffraction method. The low temperature magnetic study reveals significant antiferromagnetic interaction between copper centers through the H-bond system.

Słowa kluczowe

Phosphate esters, Transestrification, Copper(II) complex, Zinc(II) complex, Magnetism

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