

Synthesis, Crystal Structure and Thermal Properties of Copper(II) Orotato Complex with 2,2'-Bipyridine

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A mixed-ligand orotato (HOr) complex of Cu(II) with 2,2'-bipyridine (bipy) was synthesized and characterized by elemental analysis, magnetic susceptibility, UV-vis and FT-IR spectroscopy, TG / DTA techniques and X-ray diffraction analysis. X-Ray diffraction analysis has shown that the square-pyramidal five-coordinate copper atom is chelated by the deprotonated N3 pyrimidine atom and the carboxylate oxygen atom of the bidentate orotato dianion, and to the two nitrogen atoms of the 2,2'-bipyridine molecule. A water molecule is attached above the N₃O plane. Thermal analyses showed that the title compound decomposes in two steps over the range 20 – 1000 °C on heating in a static air atmosphere. Intermolecular hydrogen-bonds and π -ring interactions lead to the formation of a three-dimensional network.

Key words: Orotato Complexes, 2,2'-Bipyridine, Spectrothermal Analysis