An Asymmetric Salen-type Bisoxime Ligand and Its Supramolecular Copper(II) Complex: Synthesis, Crystal Structure and Spectral Properties

Wen-Kui Dong[a], Yin-Xia Sun[a], Si-Jia Xing[a], Yuan Wang[a], and Xiong-Hou Gao[b]

[a] School of Chemical and Biological Engineering, Lanzhou Jiaotong University, Lanzhou 730070, P. R. China
[b] Lanzhou Petrochemical Research Center, PetroChina, Lanzhou 730060, P. R. China

Reprint requests to Prof. Wen-Kui Dong. E-mail: dongwk@126.com

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A supramolecular Cu(II) complex [CuL(H_2O)] with an asymmetric salen-type bisoxime ligand (H_2L = 4-nitro-6′-methoxy-2,2′-[ethylenediyldioxybis(nitrilomethylidyne)]diphenol) has been synthesized and characterized by elemental analysis, IR and UV/Vis spectroscopy, TG-DTA analysis, and molar conductance measurements. The crystal structure of the Cu(II) complex has been determined by single-crystal X-ray diffraction. The Cu(II) atom is penta-coodinated by N_2O_2 donor atoms from the asymmetic salen-type bisoxime L^{2-} unit and one oxygen atom from the coordinated water molecule, resulting in an almost regular square-pyramidal geometry. With the help of intermolecular O–H···O, C–H···O hydrogen bonding and $\pi\cdots\pi$ stacking interactions, a self-assembled 3D supramolecular structure is formed.

Key words: Asymmetric Salen-type Bisoxime Ligand, Cu(II) Complex, Synthesis, Crystal Structure