Synthesis, Properties and Crystal Structure of a Novel Ni(II) Complex Derived from a 4-Heterocyclic Acylpyrazolone

Yong-Jie Ding, Chun-Xiang Zhao, Chao-Yu Pei, and Guo-Xuan Wen
Department of Chemistry, Zhoukou Normal University, Zhoukou 466001, P.R. China
Reprint requests to Dr. Yongjie Ding. Fax: 86-394-8178253. E-mail: yongjieding@163.com

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The new 4-acylpyrazolone 1-(4-chlorophenyl)-3-phenyl-4-thenoyl-1H-pyrazol-5-ol (HCPTP) and its Ni(II) complex \([\text{Ni(CPTP)}_2(\text{C}_2\text{H}_5\text{OH})_2](\text{C}_2\text{H}_5\text{OH})_2\) were synthesized. The ligand and the complex were characterized by elemental analyses, IR and UV/Vis spectroscopy, thermal analyses, and single-crystal X-ray diffraction. Crystals of HCPTP are monoclinic, space group \(P2_1/c\) with \(Z = 4\) while \([\text{Ni(CPTP)}_2(\text{C}_2\text{H}_5\text{OH})_2](\text{C}_2\text{H}_5\text{OH})_2\) belongs to the triclinic system, space group \(P\bar{1}\) with \(Z = 2\). The complex has a six-coordinated Ni(II) center in a distorted octahedral configuration with two ethanol ligands in cis position. These octahedral units are connected through hydrogen bonds via the coordinated and uncoordinated ethanol molecules.

Key words: Acylpyrazolone, Nickel Complex, Crystal Structure, Spectral Characterization