

Synthesis, characterization, and single crystal X-ray structure of the 1-furoyl-3-cyclohexylthiourea cadmium chloride complex, Cd[C₄H₃OC(O)NHC(S)NHC₆H₁₁]₄Cl₂

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Cadmium chloride complex of 1-furoyl-3-cyclohexylthiourea (CyTu) was prepared and characterized by elemental analysis, IR, and Raman spectroscopy. The structure of the complex was determined by single crystal X-ray methods (space group *Bbab*, a = 20.918(1), b = 23.532(1), c = 23.571(1)Å, $\alpha = \beta = \gamma$, Z = 8). Each cadmium has distorted octahedral geometry, coordinated by two chlorides and the thiocarbonyl sulfurs from four CyTu molecules. All the spectroscopic data are consistent with coordination of CyTu by sulfur to cadmium.

Keywords: Aroylthiourea; Cadmium(II) complexes; Synthesis; X-ray structure

1. Introduction

The importance of aroylthioureas largely lies in heterocyclic syntheses and interesting biological activities. Aroylthioureas also have applications in metal complexes and molecular electronics [1–6]. Coordination chemistry of such derivatives is more varied than that of simple thiourea and physiochemical properties result in a number of potential technical and analytical applications [7]. Coordination compounds formed by thiourea and Zn(II), Cd(II), and Hg(II) have received renewed attention for their non-linear optical properties [8, 9] and convenient preparation of semiconducting materials based on CdS through thermal decomposition of those complexes [10, 11]. Simple thiourea (H_2N)₂CS is usually a planar ligand, where both S and N are donor sites able to participate in coordination. Substituted-thioureas, however, show a more diverse coordination chemistry because of their conformational isomerism, steric

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