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Synthesis, Spectroscopic and Thermal Studies of Copper(I) Chlorido Complexes of Thioureas

Authors : Muhammad Mufakkar, Ghulam Hussain Bhatti, Maryem Rana

Abstract : The study of the coordination behavior of thiones is of considerable interest due to the similarity of their binding sites to those in living systems. The complexation of thiones towards Copper(I) has also received considerable attraction in view of their variable bonding modes, structural diversity and promising biological implications. Copper (I) complexes of thioureas of the general formula: CuLCl, CuL2Cl and CuL3Cl [where L= Thiourea and its N- and N, N/- mono and di alkyl and phenyl derivatives] have been prepared using Cu(I)CN in the presence of HCl. The complexes have been characterized by thermal, IR and NMR(1H and 13C) spectroscopy. An upfield shift in 13C NMR and downfield shifts in 1H NMR are consistent with the sulfur coordination to Copper(I). The disappearance of a band around 2200 cm^{-1} in IR and a resonance around 146 ppm in 13C NMR indicates that during the course of reaction the cyanide group of the Copper(I) salt has been replaced by chloride leading to the formation of chlorido complexes.

Keywords : Thiones, complexation, spectra, TGA, thermogram, chemical shifts, deshielding, resonance
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