Title:	Synthesis, spectral, thermal and structural characterization of a hexanuclear copper(I) cluster and a cobalt(III) complex of 1-ethyl-3-phenyl-thiourea
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Abstract:	1-Ethyl-3-phenyl-thiourea (Heptu, 1) forms a hexanuclear complex, [Cu6(eptu)6] (2), and a mononuclear complex, [Co(eptu)3] (3), which have been characterized with the aid of elemental analyses, IR, magnetic susceptibility and single crystal X-ray diffraction data. The ligand (1) and [Co(eptu)3] (3) crystallize in the triclinic system whereas [Cu6(eptu)6] (2) crystallizes in the monoclinic system, with the respective space groups $P1^{-}$, P21/c and $P1^{-}$. The unit cell of complex 2 consists of two identical units, each containing three interacting Cu(I) ions. Out of which Cu1 and Cu2 are tetrahedrally bonded by two sulfur atoms, one nitrogen and one Cu3 ion, whereas each Cu3 ion is bridged between Cu1 and Cu2 and bonded to two sulfur and one nitrogen, having a trigonal bipyramidal geometry. Thus Cu1 and Cu2 have coordination number of four, while Cu3 is five coordinate. The ligand acts as uninegative tridentate in complex 2, bonding through the thioamide nitrogen and sulfur atoms, and bridging between two copper centers, whereas the ligand acts as uninegative chelating N,S bidentate in complex 3, forming three four-membered CNSCo chelate rings. The crystal structures of the ligand and complexes are stabilized by various types of inter and intramolecular hydrogen bonding, providing supramolecular frameworks. The course of the thermal degradation of complex 2 has been investigated by TG-DTA
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