Synthesis and Structure of the 1:1 Adducts of Copper (I) Halides with Bis-(benzophenone) Ethylenediimine

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The steric, electronic, and conformational effects imparted by the coordinated ligands play an important role in modifying the properties of the prepared metal complexes [1].

Reaction of copper (I) halides, CuX, with nitrogen-based ligands yields adducts, $CuLX_n$. The number of ligands bound to the monovalent copper (I) seems to be influenced greatly by both the chemical nature and geometry of the ligand L and the type of halogen, X, used [2].

1:1 adducts of bis-(benzophenone) ethylenediimine (bz_2en) with CuX (X= Cl, Br, I) [$Cu_2X_2(C_{56}H_{48}N_4)$], have been synthesized and the structures of the solid complexes established by single-crystal X-ray diffraction. The adducts, surprisingly, are ionic. The chloro and bromo complexes crystallize in the monoclinic crystal system with space group C2/c, but the iodo complex crystallizes in the monoclinic crystal system with space group $P2_1/c$. The complexes are very stable towards atmospheric oxygen in the solid sate.

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