Abstract

The present study dealt with the synthesis, characterization and photoluminescence properties of copper(I) complexes and their coordination polymer. The coordinated sequence have described the structural characterization of adducts of stoichiometery in the form of MX:dppx (1:1), [where M = univalent coinage metal (copper(I)), X = iodide (I^-), dppx = bis(diphenylphosphino)alkane]. The coordinated complexes formed by the reaction of copper(I) metal with the bisphosphine ligands including 1,2 -bis(diphenylphosphino) ethane (dppe), 1,3 -bis(diphenylphosphino) propane (dppp), 1,4 -bis(diphenylphosphino) butane (dppb) with equimolar ratio (1:1). These coordinated complexes formed in the presence of solvents such as dichloromethane (CH_2Cl_2), acetonitrile (CH_3CN), methanol (CH_3OH), etc. Metal complex-I [CuI:(dppe)] formed white crystals, complex-II [CuI:(dppp)] formed yellow crystals and complex-III [CuI:(dppb)] formed white crystals. Theses complexes were characterized by using FTIR, NMR, CHNS Elemental analyzer and X-ray crystallographic techeniques. Melting points of these complexes were also observed. The results of these characterization techneques clearly indicates the coordination phenomenon of metal with ligand and XRD structures exhibited isomorphous dimerized form of the complex having monoclinic and triclinic geometry.