
Syntheses and structure determinations by single crystal X-ray diffraction techniques have been performed for: [Ru(bis(dipyridyl-6-carboxylate))], [Ru(bis(dipyridyl-6-yl-acetic acid)]PF6, [Ru(terpyridyl)(dipyridyl-6-carboxylate)]Cl3, [Ru(bis(dipyridyl)(2,6-picolinic acid)]PF6, [Ru-Mn complex] 4PF6, 6[Ru-Mn complex] 4PF6.

These investigations are part of a project focused on studies of artificial photosynthesis reactions [1,2]. Experiments performed comprehend the syntheses, structural characterisations by single crystal X-ray diffraction and NMR, UV-vis. techniques [3].

The more recent studies include isotope, X-ray diffraction techniques have been performed for: l-[Ru(bis(dipyridyl-6-carboxylate))], [Ru(bis(dipyridyl-6-yl-acetic acid)]PF6. [Ru(terpyridyl)(dipyridyl-6-carboxylate)]Cl3, [Ru(bis(dipyridyl)(2,6-picolinic acid)]PF6, [Ru-Mn complex] 4PF6. 6[Ru-Mn complex] 4PF6.

Structural diversity in chloromercure(II) salts. Anthony Lindena, Bruce D. Jamesb, John Liesegangc and Nick Genib, aInstitute for Organic Chemistry, University of Zurich, Winterthurerstrasse 190, CH-8037 Zurich, Switzerland; bSchool of Chemistry and cSchool of Physics, La Trobe University, Bundoora, Victoria 3083, Australia.

Chloromercurate complexes are well known for the ability of their anions to exhibit a wide range of geometry, stoichiometry and connectivity. The anions of the salts formed by the addition of 2-, 3- and 4-chloropyridine to HgCl2 in cone. HCl have remarkably different structures. The 2-chloropyridinium salt has the stoichiometry, but the other analogous complexes form stoichiometrically different structures. The anions consist of infinite chains in terms of the bond lengths and angles within the anionic chains Hg2 is tetrahedrally coordinated. Although the 3- and 4-chloropyridinium salts have anions constructed in the same fashion, there is still considerable variation between the two structures in terms of the bond lengths and angles within the anionic chains and distortions of the coordination geometry at each Hg centre. Across the two structures, the long Hg---Cl contacts vary from 2.93 to 3.25 Å. A second preparation of the 3-chloropyridinium salt under similar conditions yielded crystals with distorted HgCl2-dimers linked into chains by a single long Hg---Cl contact.

HgCl3 = HgCl2 + HgCl4 + Cl

HgCl4 = 2HgCl2 + HgCl2


Representative structures of polybutycyclopentadiene dicarboxyl triphenyl phosphineiron have been determined with single crystal X-ray diffraction to see to what extent the structure deformations are caused by the presence of bulky butyl groups on the ring. Revealed in these structures is the common feature of complexes - a square-pyramidal Fe(0) center with one of the CO groups in the apical position and one olefin of diene moiety trans to the second CO, and the other olefin of diene trans to PF3 in the basal plane. The IR data indicates that the increase of butyl substitution on the ring red-shifts the CO stretching frequencies by 4-5 cm\(^{-1}\) per butyl group. With increasing number of butyl substitutions on the ring, the Fe-P bond length increases from 2.211(1) Å in 1Bu, 2.216(1) Å in 1,2,3-3Bu, 2.229(1) Å in 1,2,3,5-4Bu, to 2.236(1) Å in 5Bu where 1Bu = (\(\eta^5\)-exo-BuC5H4)Fe(CO)2PF3, 1,2,3-3Bu = (\(\eta^5\)-exo-1,2,3-Bu3C5H2)Fe(CO)2PF3, 1,2,3,5-4Bu = (\(\eta^5\)-exo-1,2,3,5-Bu4C5H2)Fe(CO)2PF3 and 5Bu = (\(\eta^5\)-exo-5-Bu5C5H2)Fe(CO)2PF3.

Crystal structures of two Cu(II) complexes with tetradeinate Schiff base ligands. By T.H. Lu1, B.H. Chen2, W.T. Huang3, H.H. Yao4, and J.M. Lo2. Department of Physics1 and Department of Nuclear Science2, National Tsing Hua University, Hsinchu, Taiwan 300, ROC.

Transition-metal complexes containing tetradeinate Schiff base ligand have been extensively studied. The magnetic, electronic and electrochemical properties of these complexes depend markedly on different derivatives of Schiff base ligands. Among bridged Schiff base complexes, the imino nitrogen atoms are bound together with polynuclearers which, through variation of their length, allow tuning of geometry around the metal centre. Chromomercurate complexes are well known for the ability of their anions to exhibit a wide range of geometry, stoichiometry and connectivity. The anions of the salts formed by the addition of 2-, 3- and 4-chloropyridine to HgCl2 in cone. HCl have remarkably different structures. The 2-chloropyridinium salt has the stoichiometry, but the other analogous complexes form stoichiometrically different structures. The anions consist of infinite chains in terms of the bond lengths and angles within the anionic chains Hg2 is tetrahedrally coordinated. Although the 3- and 4-chloropyridinium salts have anions constructed in the same fashion, there is still considerable variation between the two structures in terms of the bond lengths and angles within the anionic chains and distortions of the coordination geometry at each Hg centre. Across the two structures, the long Hg---Cl contacts vary from 2.93 to 3.25 Å. A second preparation of the 3-chloropyridinium salt under similar conditions yielded crystals with distorted HgCl2-dimers linked into chains by a single long Hg---Cl contact.