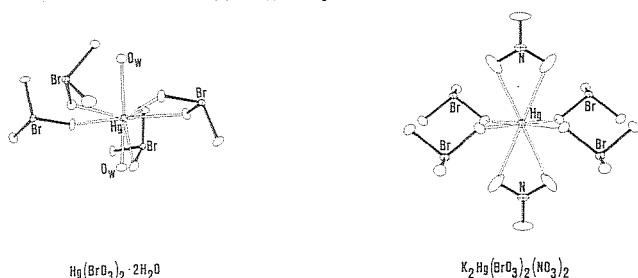


Fig. 1 COORDINATION AROUND Hg IN



There also exist analogous Cd compounds with the compositions $\text{Cd}(\text{BrO}_3)_2 \cdot 2\text{H}_2\text{O}$ (Murty & Murty, *Z. Kristallogr.* (1978) 148, 10) and $\text{K}_2\text{Cd}(\text{BrO}_3)_2(\text{NO}_3)_2$. We have found that $\text{Cd}(\text{BrO}_3)_2 \cdot 2\text{H}_2\text{O}$ is isomorphous with $\text{Hg}(\text{BrO}_3)_2 \cdot 2\text{H}_2\text{O}$ and that $\text{K}_2\text{Cd}(\text{BrO}_3)_2(\text{NO}_3)_2$ has most probably a structure very similar to that of the Hg-compound. The cell dimensions are close to those of $\text{K}_2\text{Hg}(\text{BrO}_3)_2(\text{NO}_3)_2$ but the space group has changed from Pnmm to $\text{P2}_1/\text{n}$.

08.2-27 TRIPOTASSIUM *cis*-DIBROMO (HYDROGENDISULFITE) PLATINATE(II) MONOHYDRATE $\text{K}_3[\text{Pt}(\text{SO}_3)_2\text{H}\text{Br}_2] \cdot \text{H}_2\text{O}$ (I) AND ITS STRUCTURAL RELATIONSHIP TO $\text{K}_3[\text{Pt}(\text{SO}_3)_2\text{H}\text{Cl}_2]$ (II). D.K. Breitung, G. Petrikowski and G. Bauer, Institut für Anorganische Chemie, Universität Erlangen-Nürnberg, Egerlandstr. 1, D-8520 Erlangen, F.R.G.

(I) crystallizes in $\text{P2}_1/\text{c}$ with $a = 8.764(4)$, $b = 6.934(2)$, $c = 21.544(9)$ Å, $\beta = 99.32(4)^\circ$, $Z = 4$. The structure was solved by Patterson and Fourier methods using 1801 unique diffractometer data and refined to $R_w = 0.0288$. In the distorted square-planar anion Pt is surrounded by two S and two Br atoms in *cis* position. Short Pt-S and long Pt-Br bonds (averages 2.244 and 2.488 Å, respectively) suggest a strong trans influence of the sulfite ligand. An extremely short intramolecular hydrogen bond [O...H...O distance 2.380(8) Å] links the sulfite ligands to form a six-membered ring. The anions are arranged in layers, held together mainly by one kind of K^+ ions and H_2O molecules. Linkage of the layers is performed by two further sets of K^+ ions. In the anions of (II), $\text{Cmc}2_1$, $Z = 4$ (Kehr, W.G., Breitung, D.K. and Bauer, G. (1980). *Acta Cryst. B* 36, 2545-2550) and of (I) the Pt-S and hydrogen bonds are very similar. For comparison of the structural arrangements (I) is transformed by 1,0,0; 2,0,1; 0,-1,0 (setting $\text{P2}_1/\text{b}$) and (II) by 1/2, 1/2, 0; 0, 1, 0; 0, 0, 1. Then a' , c' and γ' are almost the same in both structures, with b' (I) about 2.4 times that of (II). Building blocks common to both structures are pairs of anions correlated by 2_1 axes ($\parallel c'$); in (II) these pairs are the translational unit, whereas in (I) pairs of such pairs correlated by inversion centres constitute the translational unit in the layers.

08.2-28 STRUCTURE DETERMINATION OF $\text{Li}_x\text{Pt}_3\text{O}_4$ AND $\text{Co}_x\text{Na}_y\text{Pt}_3\text{O}_4$ BY NEUTRON POWDER DIFFRACTION. By K.B. Schwartz, J.B. Parise, Department of Earth and Space Sciences, SUNY, Stony Brook, New York, USA and R.D. Shannon, Central Research and Development, E.I. du Pont de Nemours and Company, Wilmington, Delaware, USA.

$\text{Li}_x\text{Pt}_3\text{O}_4$, a member of the $\text{Na}_x\text{Pt}_3\text{O}_4$ structural family (Bergner and Kohlhaas, *Z. Anorg. Allg. Chem.* (1973) 401, 15), has been synthesized by solid state reaction of LiF , LiNO_3 and PtO_2 . Refinement of neutron powder diffraction data by profile analysis (Rietveld, *J. Appl. Cryst.* (1969) 2, 65) has determined that $\text{Li}_{0.65}\text{Pt}_3\text{O}_4$ is not isostructural with $\text{Na}_x\text{Pt}_3\text{O}_4$ (space group $\text{Pm}\bar{3}\text{n}$), but belongs to the acentric subgroup P43n . $\text{Li}_{0.65}\text{Pt}_3\text{O}_4$, with unit cell dimension $a = 5.6242$ Å, contains Li in position 2a (0,0,0), Pt in position 6d (1/4, 0, 1/2) and O in position 8e (x,x,x) with $x = 0.2720(3)$. Equivalent isotropic temperature factors for Li, Pt and O are 2.8(4), 0.11(4) and 0.95(4), respectively. The structure is distinguished by distortion of the cubic coordination polyhedron about Li to two interpenetrating tetrahedra with Li-O distances of 2.22 Å and 2.65 Å. Pt coordination remains square-planar with a slight tetrahedral distortion and a Pt-O distance of 2.00 Å. Refinement of scattering power on the Li site yields a Li occupancy of 0.67(5) atoms per formula unit, in close agreement with chemical analysis (0.64(11) by atomic absorption). Final discrepancy factors for this refinement are $R_1 = 3.60$, $R_2 = 11.70$ and $R_3 = 15.94\%$. $\text{Co}_x\text{Na}_y\text{Pt}_3\text{O}_4$, with $x = 0.4$ and $y = 0.1$ as determined by atomic absorption, was synthesized by solid state reaction of CoF_2 , NaF , $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ and PtO_2 . Neutron powder diffraction experiments have indicated the presence of reflections of the type $hhl: l \neq 2n$, in violation of both space groups $\text{Pm}\bar{3}\text{n}$ and P43n . This reduction in symmetry is a result of ordering of Co and Na on distinguishable eight-coordinated sites. $\text{Co}_x\text{Na}_y\text{Pt}_3\text{O}_4$ belongs to a subgroup of $\text{Pm}\bar{3}\text{n}$, either the centric $\text{Pm}\bar{3}$ or the acentric P23 . Both these space groups are characterized by positions at 0,0,0 and 1/2, 1/2, 1/2 unrelated by symmetry, which is compatible with ordering of Co and Na.

08.2-29 PREPARATION, X-RAY STRUCTURE OF THE LINEAR CHAIN MIXED-VALENCE TETRAKIS(DITHIOACETATO)DIPLATINUM IODIDE: $\text{Pt}_2(\text{CH}_3\text{CS}_2)_4\text{I}$. By C. Bellitto, A. Flamini, L. Gastaldi and L. Scaramuzza, C.N.R., Istituto Teoria, Struttura Elettronica Composti di Coordinazione, Area della Ricerca, P.B. 10, Monterotondo Staz. (Roma) Italy.

In the past decade there has been a considerable interest in the chemical and physical properties of highly conducting 1-D systems. (See for ex. "Synthesis and properties of low-dimensional materials", *Ann. N. York, Acad. Scie.* 313 (1978)). In an attempt to synthesize new partially oxidized compounds, we studied the reaction of tetrakis(dithiocarboxylato)diplatinum(II) complexes with halogens (C. Bellitto, A. Flamini, unpublished results). Here we report the reaction of the tetrakis(dithioacetato)diplatinum(II) with iodine, and the crystal and molecular structure of $\text{Pt}_2(\text{CH}_3\text{CS}_2)_4\text{I}$. Direct reaction of equimolecular tetrakis(dithioacetato)diplatinum(II) with iodine, in toluene, gives a dark violet powder of $\text{Pt}_2(\text{CH}_3\text{CS}_2)_4\text{I}$, while the same reaction carried out through a glass frit/polystyrol membrane, gives dark microcrystals of $\text{Pt}_2(\text{CH}_3\text{CS}_2)_4\text{I}$. The latter compound crystallizes in the monoclinic C2/c space group with cell dimension: $a = 16.838(4)$, $b = 8.633(2)$, $c = 13.634(4)$ Å, $\beta = 109.39(5)^\circ$, $Z = 8$. The structure was refined to $R = 0.06$ for 1206 significant reflections. The structure