

Tetrakis(triphenylphosphine oxide)lithium Di(iodo)aurate(I)

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The title compound, $[(\text{Ph}_3\text{PO})_4\text{Li}]^+ \text{AuI}_2^-$, crystallized from a reaction mixture obtained from $\text{Ph}_3\text{PAuC}\equiv\text{CPh}$, LiMe and MeI (molar ratio 1 : 1 : 2) in diethylether upon subsequent oxidation in air. The triclinic crystals, space group $P\bar{1}$, are isomorphous with those of the corresponding di(bromo)cuprate(I). The gold atoms of the two independent $[\text{AuI}_2]^-$ anions reside on centers of inversion and have no close interanionic contacts. The structure of the complete $[(\text{Ph}_3\text{PO})_4\text{Li}]^+$ cation does not approach any standard symmetry (*e. g.*, S_4 or D_{2d}). Its conformation is similar to that reported for the isomorphous reference compound with the anion CuBr_2^- , but different from that in the bromide·acetonitrile, Li-phthalocyaninate or iodide·triphenylphosphine oxide salts, suggesting that the relative orientation of the four Ph_3PO molecules at the Li^+ center is flexible and co-determined by the packing in the crystals. Even the O_4Li core units are affected by the variations in the mode of attachment of the Ph_3PO ligands, and their distortions are significant as shown by the ranges of Li-O distances and O-Li-O angles, which are small in the title compound, but spread from 1.886(5) to 1.953(9) Å and from 105.1(4) to 111.8(4)°, respectively, when taking into account all known salts with the $[(\text{Ph}_3\text{PO})_4\text{Li}]^+$ cation.

Key words: Lithium Coordination, Triphenylphosphine Oxide Ligand, Di(iodo)aurate(I) Anion, Conformation