

Complexes of Gold(I) with a Chiral Diphosphine Ligand: A Polymer with Both Au \cdots Ag and Ag \cdots Ag Metallophilic Bonds

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Dedicated to Professor Hubert Schmidbaur, the grand master of gold chemistry, on the occasion of his 75th birthday

The chemistry of gold(I) with the ligand binap = 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl is reported. Reaction of $[\text{Au}_2\text{Cl}_2(\mu\text{-binap})]$ with silver trifluoroacetate gave the corresponding complex $[\text{Au}_2(\text{O}_2\text{CCF}_3)_2(\mu\text{-binap})]$, and crystallization in the presence of excess silver trifluoroacetate gave the unusual syndiotactic polymeric complex $[\{\text{Au}_2\text{Ag}_2(\mu\text{-O}_2\text{CCF}_3)_4(\mu\text{-binap})\}_n]$, which contains both Au \cdots Ag and Ag \cdots Ag metallophilic bonds. The trifluoroacetate ligands in $[\text{Au}_2(\text{O}_2\text{CCF}_3)_2(\mu\text{-binap})]$ can be replaced by nitrogen or phosphorus donor ligands to give complexes $[\text{Au}_2(\kappa^1\text{-4,4'}$ -bipyridine) $](\mu\text{-binap})](\text{CF}_3\text{CO}_2)_2$ or *meso*- $[\text{Au}_2(\mu\text{-binap})_2](\text{CF}_3\text{CO}_2)_2$.

Key words: Gold, Diphosphine, Chiral, Auophilic, Polymer