Synthesis and Characterization of [3]Ferrocenophane-derived *P, P*-Chelate Ligand Gold Complexes Featuring an Aurophilic Interaction

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Dedicated to Professor Hubert Schmidbaur on the occasion of his 75th birthday

The *P,P*-chelate ligand (*rac*)-**4** was prepared starting from the α-dimethylamino-[3]ferrocenophane by a series of directed *ortho*-lithiation, phosphination with $ClPPh_2$ and substituent exchange using HP^iPr_2. Treatment with two molar equivalents of $(Me_2S)AuCl$ subsequently gave the corresponding $\kappa P, \kappa P(AuCl)_2$ complex (*rac*)-**9**. In similar sequences the α-PCy_2/*o*-PPh_2 ligands (S,S,S_{pl})-**2** and the "substituent-invertomer" (R,R,R_{pl})-**3** (α-PPh_2/*o*-PCy_2) were prepared. Treatment with $(Me_2S)AuCl$ in a 1 : 2 ratio gave the chelate ligand-$(AuCl)_2$ complexes (S,S,S_{pl})-**8** and (R,R,R_{pl})-**11**, respectively. The ligand (*rac*)-**4** and the gold complexes **8**, **9** and **11** were characterized by X-ray diffraction. All three show an intramolecular Au $\cdots$ Au interaction.

Key words: Ferrocene, *P,P*-Chelate Ligands, Gold, Aurophilic Interaction