

Diphenylphosphino(phenylthio)methane as a monodentate or bidentate chelate ligand in rhodium, iridium and ruthenium complexes, crystal structure of $[(\eta^5\text{-C}_5\text{Me}_5)\text{IrCl}(\eta^2\text{-Ph}_2\text{PCH}_2\text{SPh-P,S})]\text{BF}_4 \cdot \text{Me}_2\text{CO}$

Valderrama, Mauricio

Contreras, Raul

Boys, Daphne

Reactions of complexes $[(\eta^5\text{-C}_5\text{Me}_5)\text{MCl}_2]_2$ ($\text{M} = \text{Rh}, \text{Ir}$) and $[(\eta^6\text{-MeC}_6\text{H}_4\text{Pri})\text{RuCl}_2]_2$ with the ligand $\text{Ph}_2\text{PCH}_2\text{SPh}$ in acetone solution led to neutral complexes with the general formula $[(\text{ring})\text{MCl}_2(\eta^1\text{-Ph}_2\text{PCH}_2\text{SPh-P})]$ (1-3). These compounds react with thallium tetrafluoroborate in acetone solution to yield new cationic complexes in which the ligand is acting in its chelate P,S-donor fashion, $[(\text{ring})\text{MCl}(\eta^2\text{-Ph}_2\text{PCH}_2\text{SPh-P,S})]\text{BF}_4$ (4-6). When the removal of the chloride ligand in complexes 1-3 was carried out in the presence of a stoichiometric amount of $\text{Ph}_2\text{PCH}_2\text{SPh}$, cationic compounds containing two P-donor monodentate ligands of the type $[(\eta^5\text{-C}_5\text{Me}_5)\text{MCl}(\eta^1\text{-Ph}_2\text{PCH}_2\text{SPh-P})_2]\text{BF}_4$ (7 and 8) were obtained. The structure of the iridium derivative $[(\eta^5\text{-C}_5\text{Me}_5)\text{IrCl}(\eta^2\text{-Ph}_2\text{PCH}_2\text{SPh-P,S})]\text{BF}_4 \cdot \text{Me}_2\text{CO}$ has been determined by single-crystal X-ray diffraction methods. The complex cation contains a C_5Me_5 group occupying three coordination positions of a distorted octahedral iridium centre, a bidentate chelate P,S