Mesitylene Osmium(II) Complexes Containing the Functional Phosphane \( t\text{BuP(CH}_2\text{CO}_2\text{Me)}_2 \) and Anionic Species Derived Thereof as Bi- and Tridentate Ligands

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The dichloroosmium(II) compound \([(\text{mes})\text{OsCl}_2(L)] \) (2) with \( L = t\text{BuP(CH}_2\text{CO}_2\text{Me)}_2 \) reacts with one or two equivalents of AgPF\(_6\) to give the mono- or dicationic complexes 3 and 4 containing the phosphanediyl diester as a bi- or tridentate chelating ligand. Complex 4 undergoes, in the presence of water, partial hydrolysis to give the difluorophosphatoosmium(II) derivative 5 in quantitative yield. Treatment of 4 with two equivalents of KO\(_2\)Bu affords by deprotonation at both \( \text{CH}_2 \) groups of L the neutral complex 6, in which one PCHCO\(_2\)Me unit of the dianionic ligand \([t\text{BuP(CHCO}_2\text{Me)}_2]^{2-}\) forms a five-membered and the other PCHCO\(_2\)Me unit a three-membered ring with the metal. The reaction of 6 with water leads selectively to the formation of the chelate complex 7 containing the phosphane diylbis(carboxylate) \([t\text{BuP(CH}_2\text{CO}_2\text{)}_2]^{2-}\) as a tripodal ligand.

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