**E2-09: Bis(phosphine)-complexes of an azine monophosphine with platinum**

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Investigation on platinum complexes is of particular interest because some of the phosphine complexes of platinum are used as catalyst whilst the amine complex *cis*-platin is a useful drug for the treatment of cancer. Condensation of the phosphino hydrazone $Z$-$PPh_2CH_2C(Bu^t)=NNH_2$ with 4-nitroacetophenone gave the azine monophosphine $Z,E$-$PPh_2CH_2C(Bu^t)=N\text{-}N=CMe(C_6H_4NO_2\text{-}4)$(**1**). This (P-N)-ligand (L) has 2 nitrogen donors and 1 phosphorus donor, thus it can act as a monodentate ligand through phosphorus or as a bidentate ligand using the P-donor and one of the N-donors, giving 5 or 6-membered chelate rings.

When *trans*-$[PtCl_2(NCMe)_2]$ was treated with 2 equivalents of (**1**) in dichloromethane at 20°C the platinum dichloride complex $[PtCl_2L_2]$(**2**) with *trans*-monodentate phosphines was obtained. When $[PtCl_2(cod)]$(cod=cycloocta-1,5-diene) was treated with 2 equivalents of (**1**) in boiling ethanol the bis(chelate) dication $[Pt(P\text{-}N)_2]^{2+}$ was formed and was isolated as the $PF_6$ salt $[Pt(P\text{-}N)_2][PF_6]_2$(**3**). According to NMR data the $PPh_2$ groups are *cis* to each other in 6-membered chelate rings. Treatment of $[PtCl_2(cod)]$ with 2 equivalents of (**1**) at 20°C in dichloromethane followed by one equivalent of $NH_4PF_6$ in methanol gave the monocationic salt $[PtCl(P\text{-}N)(L)][PF_6]$(**4**) in which one ligand is bidentate and the other is monodentate through P. Treatment of (**4**) with $AgNO_3$ (a well known chloride abstractor) followed by $NH_4PF_6$ gave the bis(chelate) complex $[Pt(P\text{-}N)_2][PF_6]_2$(**5**) containing 5 and 6-membered chelate rings.

In conclusion, this azine monophosphine ligand (**1**) gave bis (phosphine)-complexes in which the ligand is monodentate or bidentate, giving 5 or 6-membered chelate rings.