

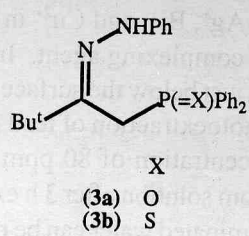
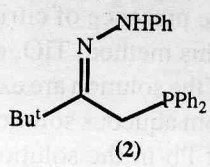
E2-21 Synthesis and chemistry of a novel hydrazone-phosphine

Sarath D Perera

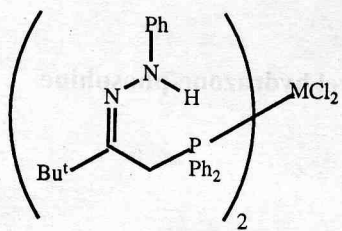
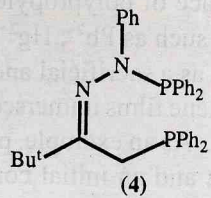
(Open University, Nawala, Nugegoda)

There is an increasing interest in the use of bidentate (P-N) ligands to generate new coordination, organometallic or catalytic chemistry.

The ligand Z-PPh₂CH₂C(Bu^t)=NNMe₂ (**1**) readily formed stable chelates with group 6 metal carbonyls, and also with Pt and Pd. It was of interest to study a related ligand (**2**) in which the donor power of the nitrogen (NHPh) was reduced as the phenyl group on nitrogen is more bulky and electron withdrawing than a methyl or hydrogen. Therefore one can anticipate that the amine nitrogen (NHPh) would be a much poorer donor than the NMe₂ of (**1**). The chemistry of this ligand (**2**) is presented here. The phosphine (**2**) was obtained by treating (**1**) with PhNHNH₂. It was converted into the phosphine oxide (**3a**) and into the phosphine sulphide (**3b**). Deprotonation of (**2**) with nBuLi and treatment of the resultant anion with 1 mole of PPh₂Cl gave the diphosphine (**4**). Treatment of [PdCl₂(NPh)₂] with 2 moles of (**2**) gave the bis(phosphine) complex (**5a**). The molecular structure of (**5a**) was determined and it was found that (i) the geometry at the Pd atom is *cis* (ii) the phosphines are monodentate through P. Treatment of [PtCl₂(cod)] (cod=cycloocta-1,5-diene) with 2 moles of (**2**) gave analogous *cis*-complex (**5b**). In contrast, treatment of [PtCl₂(NCMe)₂] with 2 moles of (**3**) gave the *trans*-complex (**5c**). Dehydrochlorination of (**5b**) or (**5c**) with triethylamine gave the bis(chelate) complex (**6**) containing the deprotonated phosphine ligand in a 6 membered chelate ring. As expected (**1**) prefers to act as a neutral monodentate ligand through only phosphorus.



(3b) O
S



(5a) *cis* Pd
(5b) *cis* Pt
(5c) *trans* Pt

