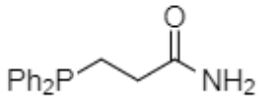
This bachelor thesis describes the synthesis of 3-(diphenylphosphino)propanamide (compound **1**) and subsequent preparation of two palladium(II) complexes with the synthesized phosphinoamide ligand. The coordination behaviour of 3-(diphenyl-phosphino)propanamide is discussed. In complex [PdCl(L^{NC})($Ph_2PCH_2CH_2C(O)NH_2$-κ*P*)] (compound **2**) the phosphinoamide **1** exhibits *P*-monodentate coordination, whereas in the cationic complex [Pd(L^{NC})($Ph_2PCH_2CH_2C(O)NH_2$-κ^2*O*,*P*)]ClO_4 (compound **3**) it binds as a *P*,*O*-chelating bidentate ligand. (L^{NC} = 2-[(dimethylamino-κ*N*)methyl]phenyl-κC^1).



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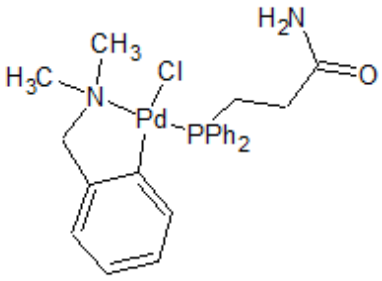

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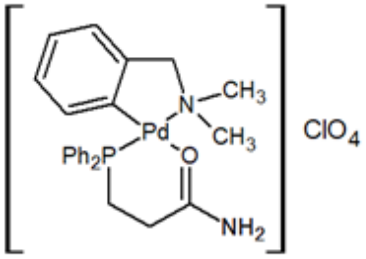

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The ligand was synthesized by base-catalysed addition of diphenylphosphine across the double bond of acrylamide. Both complexes were prepared from [PdCl(L^{NC})]$_2$ as metal precursor. All substances were characterised by common analytical methods, specifically by NMR spectroscopy, mass spectrometry, infrared spectroscopy and elemental analysis. Crystals of both complexes were obtained and their crystal structure was determined using X-ray crystallography.