Synthesis and X-ray Study of the P_5-polyphosphorus Rhodium Complex [(dppm){$Ph_2PCH_2P(Ph_2)PPPP$}Rh]OTf

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The development of selective procedures for the preparation of organophosphorus compounds directly from P_4 is an important goal in modern phosphorus chemistry. In this respect, particular attention has been devoted to the rationalization of the reactivity patterns ruling the formation of organometallic complexes bearing in their coordination sphere oligophosphorus moieties. The cobalt derivative $[Co\{Ph_2PCH_2P(Ph)_2PPPP(Ph_2)PCH_2PPh_2\}]BF_4$ (**1**) was reported a few years ago from the thermal reaction of P_4, dppm and $[Co(H_2O)_6](BF_4)_2$ in boiling *n*-BuOH.[1,2] The mechanism of this intriguing reaction has not yet been fully understood even if a double nucleophilic attack of the activated P_4 molecule to two PPh_2 ends from two distinct dppm ligands, has been proposed to account for the formation of **1**.

Herein we present an X-ray study of the related rhodium complex **[(dppm){$Ph_2PCH_2P(Ph_2)PPPP$}Rh]OTf** possessing a new pentaphosphorus ligand and discuss about its possible role as model intermediate in the formation of **1**.

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[1] Cecconi F., Ghilardi C.A., Midollini S., Orlandini A., *J. Am. Chem. Soc.*, 1984, **106**, 3667. [2] Cecconi F., Ghilardi C.A., Midollini S., Orlandini A., *Inorg. Chem.*, 1986, **25**, 1766.

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