

## The coordination chemistry of 2,4,6-oxy functionalised 1,3,5-triphosphinines

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2,4,6-Oxy functionalised 1,3,5-triphosphinines are phosphorus containing heterocyclic ligands that can readily be tuned by changing the substituent on the oxygen centre and coordinated in a  $\eta^6$ -binding mode through the  $\pi$ -system of the ring to form stable metal complexes with different group 6 metals.[1] This type of  $P_3C_3(OR)_3$  ( $R = H, BR_2, SiR_3$ ) ligands act as significantly stronger  $\pi$ -electron acceptors compared to benzene.[2] A series of group 6 metal complexes with various oxy functionalised  $P_3C_3$  rings was synthesised to systematically study the electronic and structural characteristics of this new type of compounds. The  $\pi$ -electron accepting properties of the ligand increases in the following order:  $P_3C_3(OH)_3 < P_3C_3(OSi^tBuPh_2)_3 < P_3C_3(OB(ipc)_2)_3$ . This trend is reflected in X-ray crystallography, IR spectroscopy, and  $^{31}P$ -,  $^{13}C$ - and  $^{183}W$ -NMR spectroscopy. The tunability of these triphosphinine ligands is of interest for the rational design of new catalysts. In addition, the formation of stable  $P_3C_3(OH)_3$  molecules, as  $\eta^6$ -coordinated ligands, offers great potential to use these complexes as building blocks for hydrogen-bonded coordination polymers.

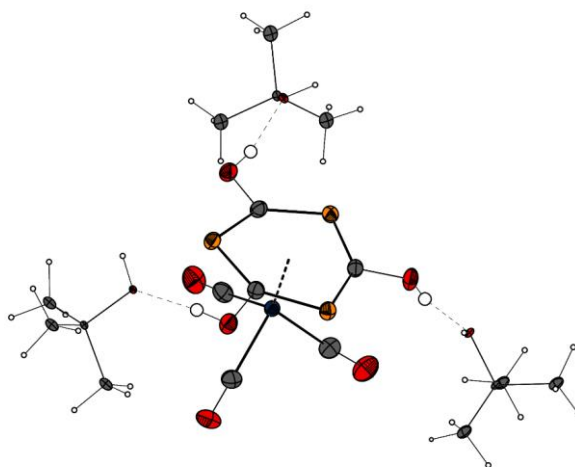


Figure 1: Structure of  $\eta^6$ -coordinated  $P_3C_3OH_3$  molybdenum complex, with tert-butanol as hydrogen bond acceptor.

- [1] Suter, R., Mei, Y., Baker, M., Benkő, Z., Li, Z., Grützmacher, H., *Angew. Chem. Int. Ed.* **2017**, 56 (5), 1356-1360.  
[2] Falconer, R. L., Russell, C. A., *Coord. Chem. Rev.*, **2015**, 297-298, 146-167.