IL-27

Synthetic and Reaction-Chemistry of Phosphacarbon-based Organometallics and Ligands

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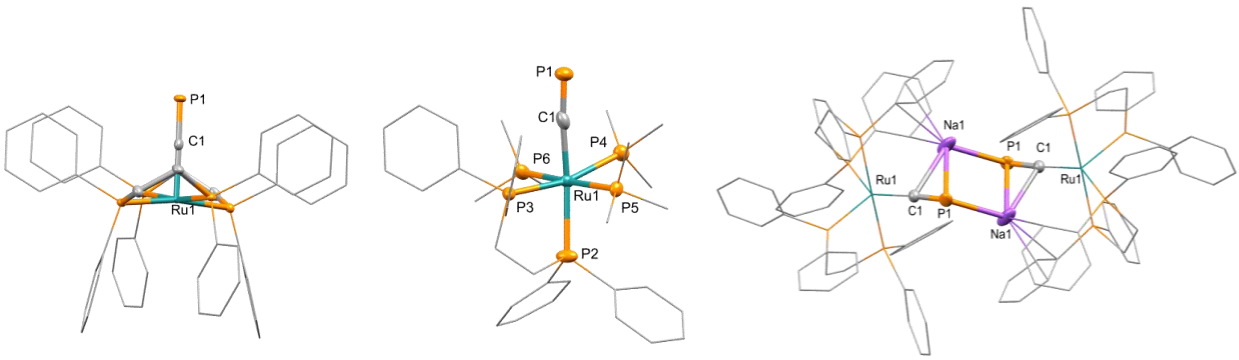
The incorporation of phosphacarbon fragments into organometallic complexes and ligand frameworks is a well-established endeavour, driven by both fundamental curiosity and the capacity of such fragments to influence the chemical and electronic nature of the resulting compounds. Indeed, there is a strong impetus for the selective incorporation of phosphorus into classical carbon-rich complexes and ligands as a means of imparting or enhancing molecular conductivity, or other electro-responsive behaviours. In this context, we have particular interest in exploiting phosphorus and small phosphacarbon fragments as components of extended π-conjugated systems, including organometallic 'molecular wire' analogues and, tangentially, aromatic ligand scaffolds.

Our recent work has been heavily focussed on the incorporation of the cyaphide ('-C≡P') moiety into ruthenium-centred trans-alkynyl conjugates [1] and the pursuit of more readily adaptable synthetic protocols. The latter has led us to isolate the 5-coordinate $[Ru(dppe)_2(C{\equiv}P)]^+$ [2] as a convenient precursor to a multitude of *trans*-substituted derivatives;[3] this has also presented a means of moving away from the privileged '$Ru(dppe)_2$' supporting scaffold via ligand exchange, and led us to investigate the reduction chemistry of the cyaphide-metal unit. In complementary work we have also been exploring macrocyclic ligand scaffolds based upon the diketophosphanyl moiety [4] and hybrid phosphorus-group 13 π-type ligands.[5] Recent results from these and related studies will be discussed.



References

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[6] Pearce, K.G.; Canham, E.P.; Nixon, J.F.; Crossley, I.R. *submitted*