

REVERSIBLE P–P BOND CLEAVAGE OF METAL COORDINATED DIPHOSPHANES

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Unlike tertiary phosphines, the coordination chemistry of diphosphanes bearing a P–P single bond has been very poorly studied [1,2]. Herein a novel class of readily accessible diphosphanes, based on a rigid bicyclic framework (Figure 1), will be presented. Furthermore, it will be shown these air stable ligands represent an excellent scaffold for supporting a range of metal fragments [3,4]. A unique feature of this work is the reversible nature by which the P–P bond can be cleaved and reformed within a bridging heterodinuclear complex. The unusual reactivity of such compounds towards C–C bond formation across both PC₂C₂N five-membered rings will also be demonstrated.

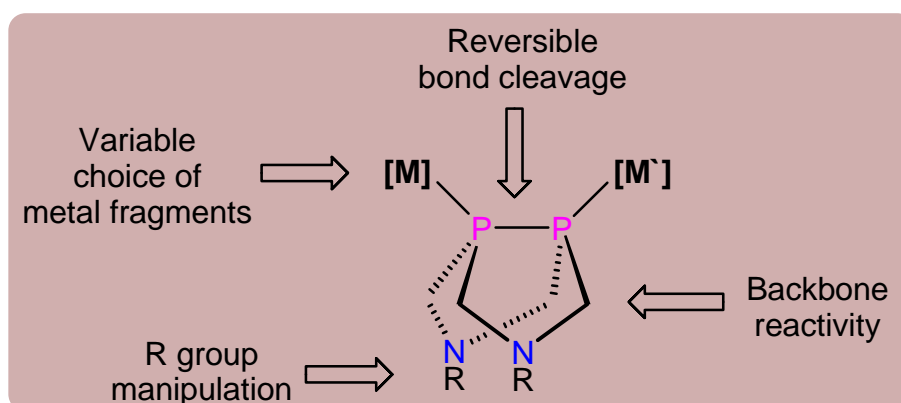


Figure 1

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- [1] For example, see: (a) Molitor, S.; Mahler, C.; Gessner, V. H. *New J. Chem.* 2016, 40, 6467–6474. (b) Tofan, D.; Cummins, C. C. *Chem. Sci.* 2012, 3, 2474–2478.
- [2] Edgar, M.; Elsegood, M. R. J.; Liu, P.; Miles, C. R.; Smith, M. B.; Wu, S. *Eur. J. Inorg. Chem.* 2022, e202200017.
- [3] Coles, S. J.; Horton, P. N.; Kimber, P.; Klooster, W. T.; Liu, P.; Plasser, F.; Smith, M. B.; Tizzard, G. *J. Chem. Commun.* 2022, 58, 5598–5601.
- [4] Coles, S. J.; Elsegood, M. R. J.; Horton, P. N.; Klooster, W. T.; Lastra-Calvo, N.; Liu, P.; Smith, M. B.; Tizzard, G. J. Manuscript in preparation.