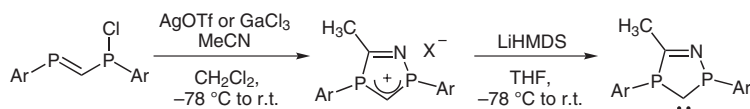


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A Stable P-Heterocyclic Carbene

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A Stable P-Heterocyclic Carbene



Significance: The preparation of the first stable P-heterocyclic carbenes (PHCs) is reported. A formal [3+2] cycloaddition of a diphosphaallylic cation, generated from the corresponding phosphoalkane with a dipolarophile leads to the PHCs in moderate yields. Crystallographic studies reveal that the phosphorus centers deviate only slightly from planarity, suggesting a possible increase in π -donating capability of the phosphorus atoms, thus increasing the ligand's δ -donating ability. Carbonyl stretching frequencies for the *cis*-[RhCl(CO)₂PHC] complex indicate that the metal center is a weaker π -donor compared to that in the analogous NHC complex.

Comment: N-heterocyclic carbenes (NHCs) are now accepted as extremely useful ligands in the field of transition metal catalysis, especially in the very active metathesis chemistry (F. K. Zinn, M. S. Viciu, S. P. Nolan *Annu. Rep. Prog. Chem., Sect. B* **2004**, *100*, 231-249). Their ability to strongly coordinate to metal centers increases resistance of the complex toward air, moisture, and oxidation and avoids the need to use an excess amount of the ligand. As analogues of NHCs, PHCs may prove similarly useful as ligands in catalytic systems requiring the need for electron-rich ligands. In view of the simple synthesis of the reported PHCs, further activity in this area may be anticipated.

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