

## Pyrazolyl cyclophosphazenes as ligands towards transition metals

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Unlike the binary inorganic heterocyclic ring systems,  $S_4N_4$  and  $Se_4N_4$  which fragment upon interaction with transition metals P-N heterocycles such as cyclophosphazenes are quite robust and retain ring integrity even after metal coordination. Further, the excellent stereo and regio control exhibited in the nucleophilic substitution reactions of  $N_3P_3Cl_6$  and  $N_4P_4Cl_8$  allows the design of a variety of new ligand systems varying in the disposition and number of coordination sites. In this presentation transition metal interactions with two pyrazolyl cyclophosphazenes, *hexakis*-(3,5-dimethylpyrazolyl)cyclotriphosphazene,  $N_3P_3(3,5-Pz)_6$ , (HPCTP) and 2,2-diphenyl-4,4,6,6-tetrakis(3,5-dimethylpyrazolyl)cyclotriphosphazene,  $N_3P_3Ph_2(3,5-Pz)_4$ , (TPCTP) are described. Both HPCTP and TPCTP form 1:1 coordination complexes with  $CuCl_2$  and  $NiCl_2$ . Coordination to the metal is through an unusual capping  $N_3$  mode: via two non-geminal pyrazolyl pyridinic nitrogen atoms and one cyclophosphazene ring nitrogen atom. HPCTP can also function as an unusual bridging-cum-chelating ligand and forms both homodinuclear and heterodinuclear complexes. The X-ray structural details, spectroscopy and electrochemistry of these derivatives are presented.

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