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Synthesis of Cyclophosphazenes with P-C_{AR} Bonds for Supramolecular Chemistry

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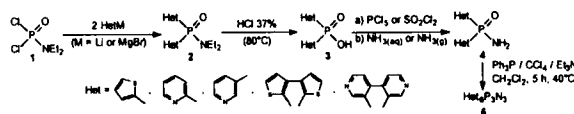
Synthesis of Cyclophosphazenes with P-C_{AR} Bonds for Supramolecular Chemistry

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We describe the synthesis of new cyclotriphosphazenes in which the phosphorus substituents are either free-rotating or rigid planar heterocyclic groups, through phosphorus-carbon bonds.

N,N-diethyl-phosphinamides **1** are used as starting materials for the multistep synthesis of new cyclotriphosphazenes **5** bearing either 2-thienyl, 2-pyridyl, 3-pyridyl, 3,3'-bithienyl-2,2'-ylenyl and 4,4'-bipyridyl-3,3'-ylenyl substituents.



Het	2	3	4	Het ₃ P ₃ N ₃
	2a ^{III}	3a ^{III}	4a	5a
	(76%)	(91%)	(57%)	(32%)
	2b	3b	4b	5b
	(38%)	(82%)	(62%)	(56%)
	2c	3c	4c	5c
	(30%)	(72%)	(38%)	(6%)
	2d	3d	4d	5d
	(a)	(91%)	(46%)	(5%)
	2e	3e	4e	—
	(30%)	(91%)	(90%)	

a) 57% from Cl₃PNEt₂

Preliminary experiments of coordination with transition metals have been successfully carried out.

These compounds could be used as supramolecular precursors through their coordination with transition metals.

X-rays diffraction patterns are showing that such compounds adopt the "paddle wheel" conformation, facilitating the uptake of small molecules into their crystal lattice. ^[2]

References

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- [2] C. Combes-Chamalet, H.J. Cristau, M. McPartlin, F. Plénat, I.J. Scowen, T. Woodroffe, *J. Chem. Soc., Perkin Trans. 2*, 1997, 15-18.