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## Phosphorus, Sulfur, and Silicon and the Related Elements

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### A Stepwise Synthesis of Diversified Phosphazene Oligomers

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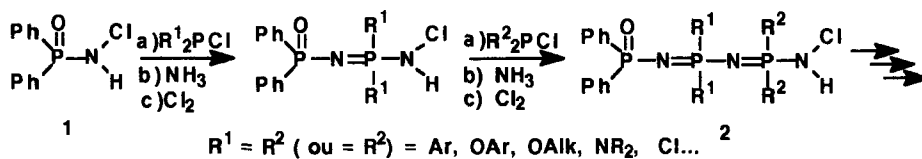
## A STEPWISE SYNTHESIS OF DIVERSIFIED PHOSPHAZENE OLIGOMERS

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**Abstract** A stepwise approach to oligophosphazenes in which substituents at each phosphorus of the backbone can be diversified is described, through new N-chloroaminophosphorus compounds. Heterophosphazenes have also been obtained.

**Key Words:** phosphazene, N-chloroamino phosphorus compound, oligomer.

In the aim to synthesize oligophosphazenes **2** in which substituents at each successive phosphorus of the main chain should be preselected, preventing so the further hazardous distribution which is usually encountered during the thermal copolymerization of monomer precursors (Neilson [1]) or the substitution reactions on high polymeric halophosphazenes (Allcock [2]), we selected a stepwise recurrent strategy, based on the reactivity of N-haloamino<sup>IV</sup>P-phosphorus compounds.



Examples are given, starting from the newly synthesized N-chlorodiphenylphosphinamide **1**, for the obtention of new compounds in which side groups are attached to the second phosphorus either through phosphorus-carbon bonds (P-Ph, P-*p*.Tol, P-*n*.Bu) or *via* oxygen (P-OPh, P-OEt), or nitrogen (P-NMe<sub>2</sub>) linkages. P-Cl compounds have also been obtained. Even more, insertion of arsenic instead of phosphorus in the inorganic backbone is obtained, allowing the access to polymer precursors for specific applications.

## REFERENCES

- (1) R.H. NEILSON and P. WISIAN-NEILSON, *Chem. Rev.*, **88**, 541 (1988).
- (2) H.R. ALLCOCK, J.L. DESORCIE and G.H. RIDING, *Polyhedron*, **6**, 119, (1987).