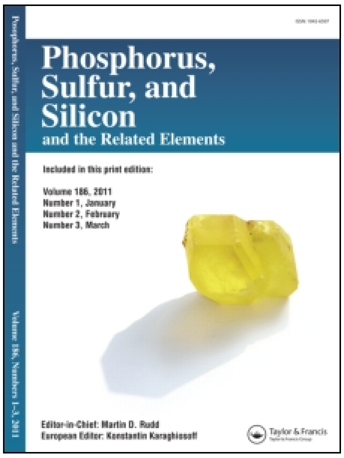

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Polycondensation of $(NPCl_2)_3$ with Bifunctional Reagents

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POLYCONDENSATION OF $(NPCl_2)_3$ WITH BIFUNCTIONAL REAGENTS

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Abstract The reaction of hexachlorocyclotriphosphazene and hydroquinone in the two-phase solvent system tetrahydrofuran/ aqueous NaCl-NaOH solution leads in the beginning of the polycondensation to a mixture of oligomers with formula $N_3P_3Cl_5$-[p-OC_6H_4O)-$N_3P_3Cl_4$]$_n$-(p-OC_6H_4O)-$N_3P_3Cl_5$. The first compound (n=0) in this series could be isolated in a pure state. Two others have been identified by spectroscopic methods. As expected, the addition of a phase-transfer catalyst (Bu_4NBr) accelerates the polymerization reaction. In addition to the oligomers mentioned before two isomers with formula $N_3P_3Cl_4$-(p-OC_6H_4O)$_2$-$N_3P_3Cl_4$ were formed in the reaction mixture together with large amounts of polymeric material. One of these isomers was obtained as a pure compound in a very low yield. The X-ray crystal structures of $N_3P_3Cl_5$-(p-OC_6H_4O)-$N_3P_3Cl_5$ and $N_3P_3Cl_4$-(p-OC_6H_4O)$_2$-$N_3P_3Cl_4$ will be compared. The structural data in combination with ^{31}P NMR data of various reaction mixtures provide some clues for the structure of the polymers, formed ultimately. The reaction pathway during the polycondensation will be discussed and compared with that of the polycondensation of $(NPCl_2)_3$ with p-phenylenediamine.