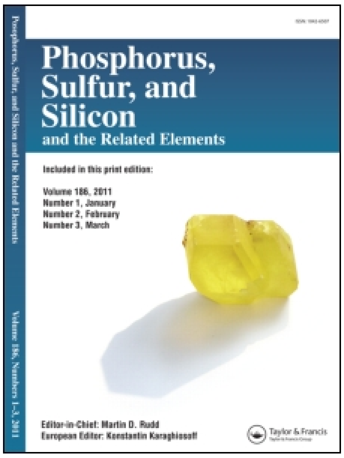

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Cyclooligiomerization of Alkynlphosphazenes

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CYCLOOLIGIOMERIZATION OF ALKYNLPHOSPHAZENES

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Abstract The cyclooligiomerization of the alkynl function in alkynlphosphazenes with various organometallic catalysts has been studied. The cyclization of $N_3P_3F_5(C{\equiv}CPh)$ with $Fe_2(CO)_q$ yields a variety of products including the cyclodimer, cyclopentadienone and a unique cyclotrimer all coordinated to the $Fe(CO)_3$ moiety. The cyclotrimerization of $N_3P_3F_5(C{\equiv}CPh)$ with $CO_2(CO)_8$ affords a dimetallated asymmetric hexasubstituted benzene derivative, $C_6(C_6H_5)_3(N_3P_3F_5)_3$. Due to the sterically hindered nature of the molecule, rotamers derived from restricted rotation about the phosphazene-central arene bond have been observed. Their intratransformations have been examined by VT ^{19}F-NMR. Reactions involving $CpCo(CO)_2$ lead to cyclodimer, cyclotrimer and cyclopentadienone products each coordinated to a CpCo fragment. Other organometallic catalysts capable of tetramerizing and polymerizing alkynlphosphazenes have been investigated.