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## CYCLOOLIGOMERIZATION OF ALKYNLPHOSPHAZENES

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**Abstract** The cyclooligomerization of the alkynyl function in alkynylphosphazenes with various organometallic catalysts has been studied. The cyclization of  $N_3P_3F_5(C\equiv CPh)$  with  $Fe_2(CO)_9$  yields a variety of products including the cyclo-dimer, 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 alkynylphosphazenes have been investigated.