

THE SYNTHESIS OF DIFLUOROAMINO(DIFLUORO)ACETONITRILE, *syn*-FLUORO(FLUOROIMINO)ACETONITRILE, *syn*-3,3,3-TRIFLUORO-2-(FLUOROIMINO)PROPANENITRILE, AND THEIR REACTIONS WITH CHLORINE FLUORIDE. THE SYNTHESIS OF SOME NEW PERFLUORINATED DIAZINES

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Tetrafluorohydrazine, when added to the olefins  $CF_2=CH_2$ ,  $CFH=CH_2$ , and  $CF_3CH=CH_2$  in the presence of KF, gave difluoroamino(difluoro)acetonitrile,  $F_2NCF_2CN$ , *syn*-fluoro(fluoroimino)acetonitrile,  $FC(=NF)CN$ , and *syn*-3,3,3-trifluoro-2-(fluoroimino)propanenitrile,  $CF_3C(=NF)CN$ , respectively. Reaction of chlorine fluoride with these compounds led to N,N-dichloro-N',N'-1,1,2,2-hexafluoro-1,2-ethanediamine,  $F_2NCF_2CF_2NCl_2$ , N,N,N'-trichloro-N',1,1,2,2-pentafluoro-1,2-ethanediamine,  $ClFNCF_2CF_2NCl_2$ , N,N-dichloro-1,1,3,3,3-pentafluoro-2-(fluoroimino)propanamine,  $CF_3C(=NF)CF_2NCl_2$ , and N,N,N'-trichloro-N',1,1,2,3,3,3-heptafluoro-1,2-propanediamine,  $CF_3CF(NClF)CF_2NCl_2$ , respectively. Photolysis of the chloroamine compounds,  $F_2NCF_2CF_2NCl_2$ ,  $CF_3(=NF)CF_2NCl_2$ ,  $ClFNCF_2CF_2NCl_2$ , and  $CF_3CF(NClF)CF_2NCl_2$  gave the azo derivatives 1,1'-azobis(N,N,1,1,2,2-hexafluoro-2-ethanamine),  $F_2NCF_2CF_2N=NCF_2CF_2NF_2$ , 1,1'-azobis(N,1,1,3,3,3-hexafluoro-2-propanimine),  $CF_3C(=NF)CF_2N=NCF_2C(=NF)CF_3$ , 2,2'-azobis(N-chloro-N,1,1,2,2-pentafluoroethanamine),  $ClFNCF_2CF_2N=NCF_2CF_2NClF$ , and 1,1'-azobis(N-chloro-N,1,1,2,3,3,3-heptafluoro-2-propanamine),  $CF_3CF(NClF)CF_2N=NCF_2(NClF)CFCF_3$ , respectively.