

REACTION OF POLYFLUOROAROMATIC COMPOUNDS WITH NUCLEOPHILES
IN THE PRESENCE OF ALKALI METAL FLUORIDES IN GRAPHITE

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The reaction of polyfluoroaromatic compounds with nucleophilic reagents is catalyzed by alkali metal fluorides [1, 2]. The use of alkali metal fluorides in graphite for this purpose has not been described.

We have shown that alkali metal fluorides in graphite are efficient catalysts for several S_NAr reactions. For example, the reaction of equimolar amounts of pentafluoropyridine with pentafluorophenol in the presence of CsF in graphite gave 4-pentafluorophenoxy-2,3,5,6-tetrafluoropyridine in 71% yield and small amounts (1-3%) of 2,4-bis, 2,6-bis, and 2,4,6-trispentafluorophenoxy-substituted tri- and difluoropyridines. The reaction does not proceed in the absence of catalyst. Relative to catalytic efficiency in this reaction, the free alkali metal fluorides and their preparations in graphite are similar. The activity of these preparations increases in a series analogous to that found for the free fluorides: NaF < KF < RbF < CsF.

The reaction of octafluorotoluene with excess piperidine leads to a high yield of 1-trifluoromethyl-4N-piperidino-2,3,5,6-tetrafluorobenzene [3]. The yield of this product in the reaction of equimolar amounts of the same compounds without solvent at 20°C over 1 h does not exceed 60%. The addition of KF in graphite as a base leads to a quantitative yield of this product. In contrast to alkali metal fluorides, their preparations in graphite may be used at least three times in these reactions.

LITERATURE CITED

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