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SYNTHESIS OF 2,2,2-TRIFLUOROETHYLATED AROMATIC COMPOUNDS FROM AROMATIC AMINES

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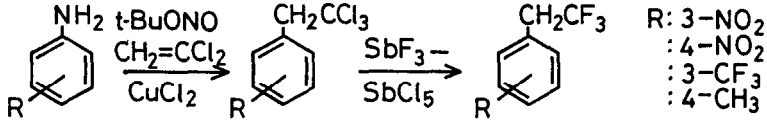
Our efforts are directed to develop new methods for the synthesis of trifluoromethylated compounds. In the previous papers,[1] we synthesized aromatic trifluoromethyl compounds by the reaction of aryl halides with trifluoromethyl iodide and copper powder,[2] and 3,3,3-trifluoropropyl compounds by the Friedel-Crafts reaction of aromatic compounds with trifluoropropene.[3] These two types of compounds have very interesting characteristics.[1] Then, we were interested in the character of trifluoroethyl compounds. However, there had been no convenient procedure for the synthesis of this type of compound. We tried to develop a new method for the synthesis of trifluoroethyl compounds. Namely, we started from aromatic amines, which were diazotized and treated with 1,1-dichloroethene in the presence of cupric chloride. In this case, the yield of the trichloroethyl compounds was very low. This was improved by using t-butyl nitrite as a diazotizing reagent in acetonitrile. The fluorinations of the trichloroethyl compounds were more difficult than the fluorination of trichloromethyl aromatic compounds. They were fluorinated successfully by antimony trifluoride in the presence of antimony pentachloride to give the variety of objective compounds. Using a solvent such as methylene chloride improved the yield of the trifluoroethyl compounds remarkably in some cases.



1 I. Kumadaki, A review in Yakugaku Zasshi, **105**, 713 (1986).
2 Y. Kobayashi, I. Kumadaki, Tetrahedron Lett., 1969, 4095.
3 Y. Kobayashi, et al., Chem. Pharm. Bull., 32, 4382 (1984).