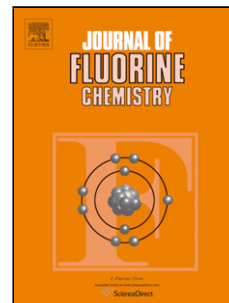


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Formation of polyfluorofluorenes in the reactions of perfluoro-1,1-diphenylalkanes with antimony pentafluoride

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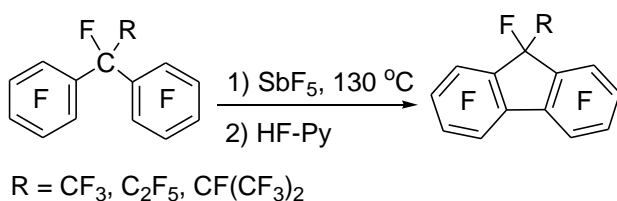
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Graphical abstract



Highlights

- Synthesis and reactions of perfluoro-1,1-diphenylalkanes with antimony pentafluoride.
- Cationic cyclization of perfluoro-1,1-diphenylalkanes into fluorenes.
- Perfluorinated 9-methyl-, 9-ethyl-, 9-isopropylfluorenes were obtained.

Abstract

Perfluoro-1,1-diphenylethane heated with SbF₅ at 130 °C with further treatment of the reaction mixture with HF-pyridine and then with water, gave perfluorinated 9-methylfluorene and 9-methyl-1,2,3,4-tetrahydrofluorene. Perfluoro-1,1-diphenylpropane under similar conditions formed perfluoro-9-ethylfluorene and perfluoro-9,9-dimethyl-1,2,3,4-tetrahydrofluorene. When perfluoroisobutylbenzene was heated with pentafluorobenzene in SbF₅ medium at 130 °C, with further treatment of the reaction mixture with HF-pyridine and then with water, perfluoro-9-isopropylfluorene was obtained. Perfluorodiphenylmethane heated with SbF₅, after treatment of the reaction mixture with water, gave perfluorobenzophenone; perfluorofluorene or its derivatives were not found in the mixture.

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