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Novel Synthetic Method of Fluorophosphoranes by Fluoride Ion Abstraction from Tetrafluoroborate

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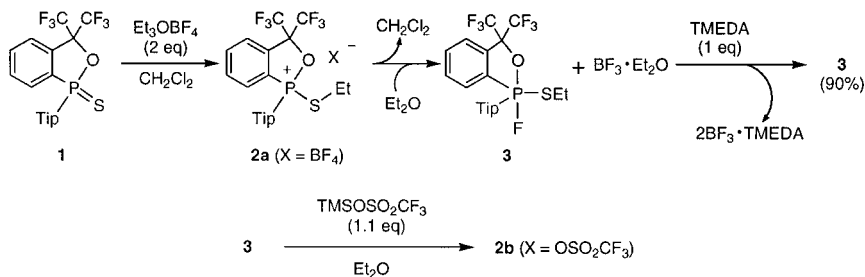
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NOVEL SYNTHETIC METHOD OF FLUOROPHOSPHORANES BY FLUORIDE ION ABSTRACTION FROM TETRAFLUOROBORATE

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Mainly, there has been two typical methods to synthesize fluorophosphoranes: oxidative fluorination of trivalent phosphorous compounds and halogen exchange of halophosphoranes. We now report a novel synthetic method of fluorophosphoranes by fluoride ion abstraction of a phosphonium salt. Reaction of thiophosphinate **1** with triethyloxonium tetrafluoroborate in CH_2Cl_2 at 50°C resulted in formation of phosphonium salt **2a**. After the solvent was exchanged to ether, **2a** was quantitatively converted into (ethylthio)fluorophosphorane **3** by fluoride ion abstraction from its counter anion. Compound **3** was isolated as a colorless crystal after removal of trifluoroborane etherate by addition of TMEDA to the reaction mixture and its structure was determined by x-ray crystallographic analysis. Defluorination of **3** with trimethylsilyl trifluoromethanesulfonate was easily accomplished to give phosphonium salt **2b**.



SCHEME 1

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