

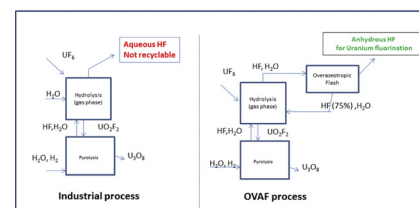
Graphical Abstracts/J. Fluorine Chem. 185 (2016) v–x

Recycling hydrofluoric acid in the nuclear industry: The OverAzeotropic Flash process (OVAF)

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- A flow-sheet is proposed to recycle fluorine in the uranium enrichment process.
- It avoids handling large azeotropic flows of corrosive hydrofluoric acid.
- The proposed recycling loop is highly stable to potential fluctuations.

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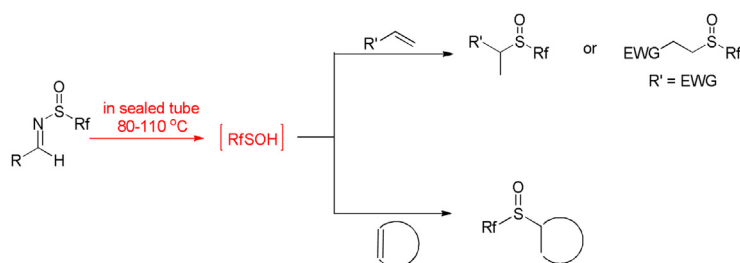


The addition of polyfluoroalkanesulfenic acids to alkenes

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- In the addition of polyfluoroalkanesulfenic acids to various carbon–carbon double bonds has been investigated.
- Both Markovnikov adduct and anti-Markovnikov adduct could be obtained with different alkenes.
- The excellent regioselectivity was obtained.



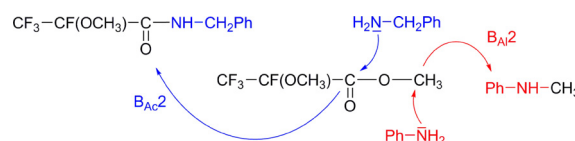
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Methyl fluoroalkanoate as methyl-transferring reagent. Unexpected participation of B_{Al}2 (S_N2) mechanism in the reaction of methyl 2,3,3,3-tetrafluoro-2-methoxypropanoate with amines

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- Methyl 2,3,3,3-tetrafluoro-2-methoxypropanoate reacts with amines either via B_{Al}2 to amides or via B_{Al}2 to N-methylamines.
- The reaction pathway depends on the amine nature and the reaction condition.
- 2,3,3,3-Tetrafluoro-2-methoxypropanoate behaves as a leaving group.

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Electrochemical oxidation of graphite in aqueous hydrofluoric acid solution at high current densities

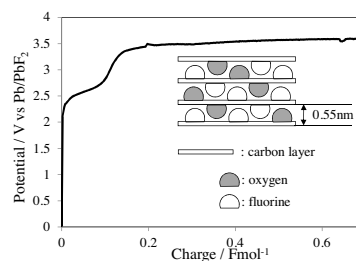
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● Electrochemical oxidation of graphite was performed at high current densities in 47% HF aqueous solution. ● Covalent C—F bonding formed above 2.4 V vs Pb/PbF₂. ● Stage 1 type oxygenated fluorine-graphite intercalation compound with an interlayer spacing of 0.55 nm was obtained. ● This material showed a high capacity of 550 mAh/g as a cathode of lithium primary battery.

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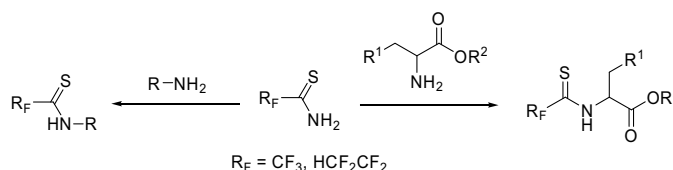
Primary polyfluoroalkanethioamides as mild thioacylating reagents for alkyl amines and α -amino acid esters

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● Transamidation reactions of primary polyfluoroalkanethioamides with alkyl amines and α -amino acid esters were studied. ● Synthesis of new 3,3,4,4-tetrafluoropyrrolidine-2,5-dithione was performed. ● The synthesis method of new fluorinated *N*-thioacyl derivatives of α -amino acids esters was proposed.



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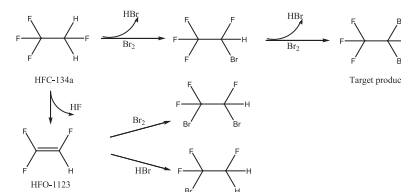
Theoretical and experimental studies for preparing 1, 1-dibromo-1,2,2,2-tetrafluoroethane on gas-phase bromination of 1,1,1,2-tetrafluoroethane

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● 1, 1-dibromotetrafluoroethane was first synthesized from gas-phase bromination of HFC-134a comprehensively. ● The impact of reaction conditions in gas-phase bromination of HFC-134a has been developed. ● The possible reaction pathways were proposed and were verified using the density functional theory. ● This process provided a potential method to prepare CF₃CFBr₂.



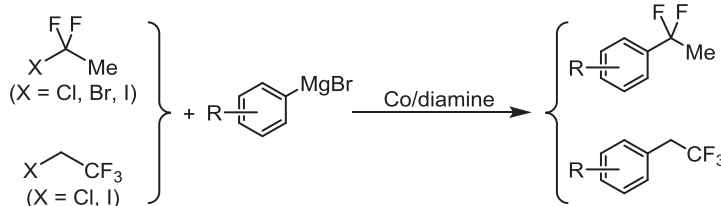
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Cobalt/diamine-catalyzed 1,1-difluoroethylation and 2,2,2-trifluoroethylation of aryl Grignard reagents with corresponding fluoroalkyl halides

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● 1,1-Difluoroethylation and 2,2,2-trifluoroethylation of ArMgBr proceeded smoothly. ● Co/diamine-catalyst showed the satisfactory activity in this reaction. ● The choice of diamine ligand and solvent are very important for excellent yields.



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