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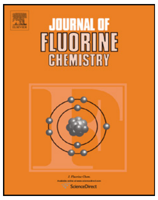

Graphical Abstracts/J. Fluorine Chem. 179 (2015) vii–xiv

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J. Fluorine Chem., 179 (2015) 3

Chemically oxidative fluorination with fluoride ions

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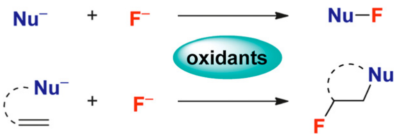

● Challenges and advantages associated with chemically oxidative fluorination are discussed. ● The recent developments on chemically oxidative fluorination are presented. ● Applications of chemically oxidative fluorination on ^{18}F labeling are highlighted.

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Review of recent advances in C—F bond activation of aliphatic fluorides

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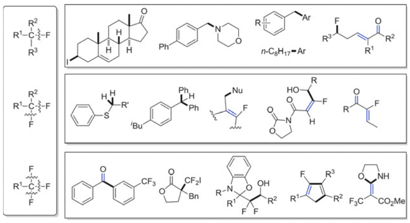

● This review covers compounds with a C–F bond, CF_2 or CF_3. ● Various organic compounds are synthesized through C–F bond activation. ● Aliphatic fluorides could be activated by Lewis acid, Brønsted superacids or hydrogen bonding. ● The cleavage of C–F bond could be mediated by transition-metal or rare earth metal. ● Dehydrofluorination by a base or S_N2' displacement by a nucleophile could be a method for leaving of a fluoride.

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Synthesis and functionalization of (*Z*)-1,2-difluoro-1-tri-*n*-butylstannyl-1,4-pentadiene

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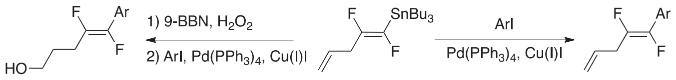

- Coupling **2** with substituted aryl iodides/P(PPh_3)$_4$/Cu(I)I gave the arylated products. - Coupling **2** with vinyl iodides stereospecifically gave the trienyl products. - Hydroboration/oxidation of **2** gave the corresponding (Z)-$HOCH_2CH_2CH_2CF{=}CFSn(n\text{-}Bu)_3$. - Coupling **11** with substituted aryl halides gave the difunctionalized olefin.

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Reactions of 1-fluoroalkyl triflates with nucleophiles and bases

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- A series of 1-fluoroalkyl triflates are prepared and their reactions with a large variety of nucleophiles described.
- The preparation and isolation of a series of 1-fluoroalkyl triflates from aldehydes is described.
- 1-Fluoroalkyl triflates are highly reactive with nucleophiles.
- Reactions of 1-fluoroalkyl triflates with a series of nucleophiles are described.
- 1-Fluoro-*n*-alkyl triflates do not undergo elimination reactions.

$$n\text{-Octyl—CHF(OTf)} \xrightarrow[\text{solvent, rt, 17 h}]{X^- \text{ or } X:} n\text{-Octyl—CHFX}$$

$$X = {}^-CN,\ {}^-N_3,\ {}^-OAc,\ Ph_3P,\ \text{benzimidazole, halide, etc.}$$

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Metal free electrophilic fluoro-cyclization of unsaturated *N*-hydroxy- and N-acetoxyamides with N–F reagents

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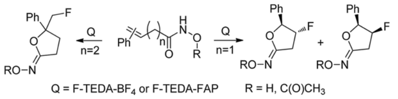

- Metal-free electrophilic fluoro-cyclizations of the unsaturated *N*-hydroxy- and *N*-acetoxyamides leads to cyclic imidates.
- The stereoselectivity of fluoro-cyclization depends on the fluorinating reagent and solvent.
- F-TEDA-FAP provides better stereoselectivity.

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Synthesis of trifluoromethyl ethers and difluoro(methylthio)methyl ethers by the reaction of dithiocarbonates with IF_5-pyridine-HF

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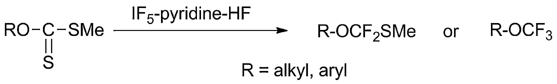
- Difluoro(methylthio)methyl ether of phenol and alcohol was synthesized.
- A stable fluorination reagent, IF_5-pyridine-HF, was used for the reaction.
- Trifluoromethyl ether was also synthesized from the dithiocarbonate.
- IF_5-pyridine-HF and Et_3N-6HF were used for the synthesis of trifluoromethyl ether.



$$RO\text{–}\underset{\underset{S}{\|}}{C}\text{–}SMe \xrightarrow{IF_5\text{-pyridine-HF}} R\text{-}OCF_2SMe \ \text{ or } \ R\text{-}OCF_3$$

R = alkyl, aryl