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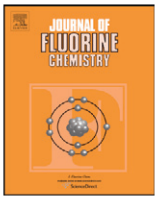


Graphical Abstracts/J. Fluorine Chem. 140 (2012) 1–6

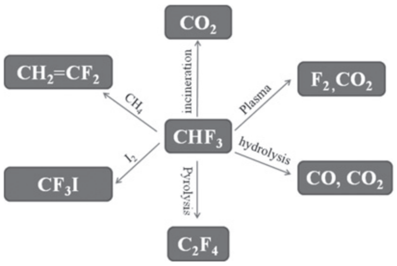
Treatment of the potent greenhouse gas, CHF_3—An overview

J. Fluorine Chem., 140 (2012) 7

Wenfeng Han, Ying Li, Haodong Tang, Huazhang Liu

Institute of Catalysis, Zhejiang University of Technology, Hangzhou 310014, Zhejiang, PR China

► CHF_3 can be incinerated with LNG at 1473 K. ► CHF_3 can be decomposed to CO_2 via plasma or hydrolysis. ► CHF_3 can be converted to TFE via pyrolysis. ► CHF_3 can be the source material for the production of VDF and CF_3I.

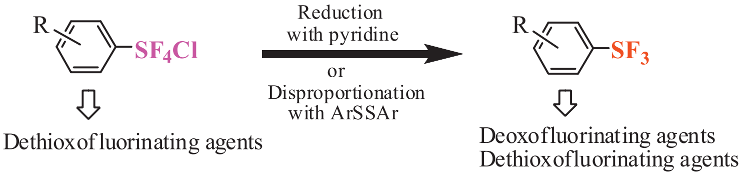


Arylsulfur chlorotetrafluorides as useful fluorinating agents: Deoxo- and dethioxo-fluorinations

J. Fluorine Chem., 140 (2012) 17

Teruo Umemoto, Rajendra P. Singh

IM&T Research, Inc.[2], 6860 N. Broadway, Suite B, Denver, CO 80221, USA



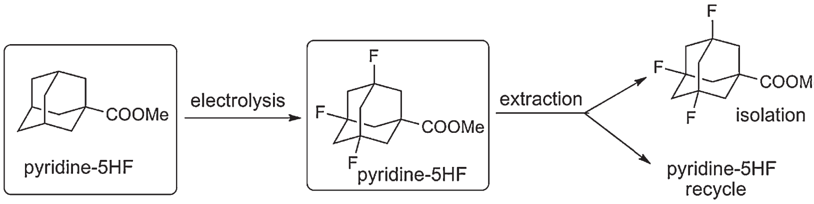
► The *in situ* preparation of arylsulfur trifluorides was developed. ► Arylsulfur chlorotetrafluorides were reduced to arylsulfur trifluorides. ► Disproportionation of arylsulfur chlorotetrafluorides formed arylsulfur trifluorides. ► Arylsulfur trifluorides are versatile deoxo- and dethioxo-fluorinating agents. ► Arylsulfur chlorotetrafluorides are excellent dethioxofluorinating agents.

Electrochemical synthesis of methyl-3,5,7-trifluoroadamantane-1-carboxylate under recycling use of ionic liquid media

J. Fluorine Chem., 140 (2012) 28

Miki Monoi, Shoji Hara

Graduate School of Engineering, Hokkaido University, Sapporo 060-8628, Japan



► Methyl-3,5,7-trifluoroadamantane-1-carboxylate was electrochemically prepared in pyridine–5HF. ► The product was extracted from pyridine–5HF without aqueous work-up. ► Recovered pyridine–5HF is recyclable. ► Only HF and electricity were consumed.

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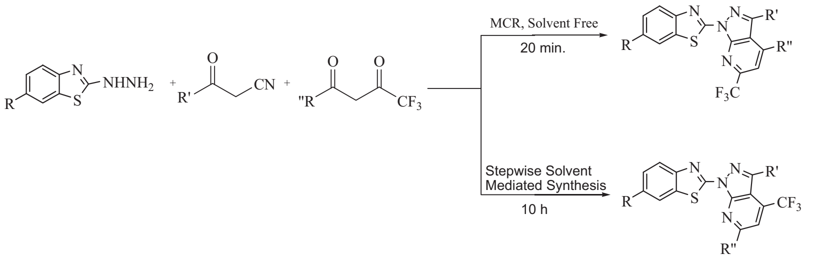
Multi-component solvent-free versus stepwise solvent mediated reactions: Regiospecific formation of 6-trifluoromethyl and 4-trifluoromethyl-1*H*-pyrazolo[3,4-*b*]pyridines

Ranjana Aggarwal[a], Virender Kumar[a], Anshul Bansal[a], Dionisia Sanz[b], Rosa M. Claramunt[b]

[a]*Department of Chemistry, Kurukshetra University, Kurukshetra 136119, Haryana, India*

[b]*Departamento de Química Orgánica y Bioorgánica, Facultad de Ciencias, UNED, Senda del Rey 9, E-28040 Madrid, Spain*



► Regiospecific synthesis of 6-trifluoromethyl-1*H*-pyrazolo[3,4-*b*]pyridines by MCR method under solvent-free conditions. ► Synthesis of regioisomeric, 4-trifluoromethyl-1*H*-pyrazolo[3,4-*b*]pyridines using a multistep solvent mediated process. ► MCR method was found to be more convenient than the classical stepwise solvent mediated process. ► Concluding proofs of structures were obtained by 2D NMR (^{1}H-^{1}H) gs-COSY, (^{1}H-^{13}C) gs-HMQC and (^{1}H-^{13}C) gs-HMBC experiments.

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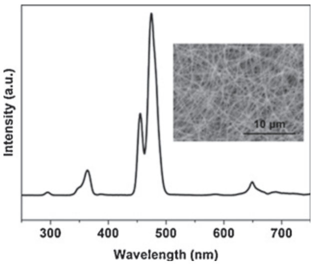
Synthesis and upconversion properties of Ln^{3+} doped YOF nanofibers

Renyuan Yang, Guanshi Qin, Dan Zhao, Kezhi Zheng, Weiping Qin

State Key Laboratory on Integrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, Changchun 130012, PR China



► YOF nanofibers have been prepared via electrospinning. ► The calcinated fibers keep morphology of fiber and are packed with fine grains. ► With the excitation from 980 nm, YOF:Yb^{3+},Tm^{3+} and YOF:Yb^{3+},Er^{3+} nanofibers emit blue and red upconversion fluorescence, respectively.

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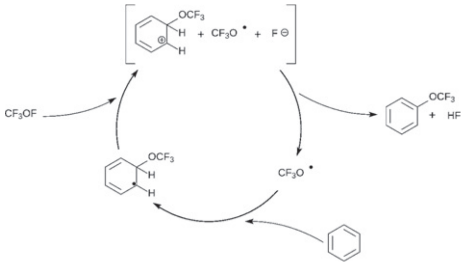
Direct trifluoro-methoxylation of aromatics with perfluoro-methyl-hypofluorite

Francesco Venturini[a], Walter Navarrini[ab], Antonino Famulari[a], Maurizio Sansotera[a], Patrizia Dardani[c], Vito Tortelli[c]

[a]*Dipartimento di Chimica, Materiali e Ingegneria Chimica "Giulio Natta", Politecnico di Milano, Via Luigi Mancinelli, 7, 20133 Milan, Italy*

[b]*Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali, Via G. Giusti, 9, 50121 Firenze, Italy*

[c]*Solvay Specialty Polymers Italy, R&D Center, Viale Lombardia 20, 20021 Bollate (Milano), Italy*



► Bind, in one synthetic step, the trifluoro-methoxy group to a mono-substituted aromatic substrate. ► In the experimental condition adopted the free radical process is favored against the electrophilic addition. ► Rearomatization is a very efficient propagation reaction. ► The olefin-induced radical mechanism increases the production of trifluoromethoxy radicals and hence the amount of aromatic ether.

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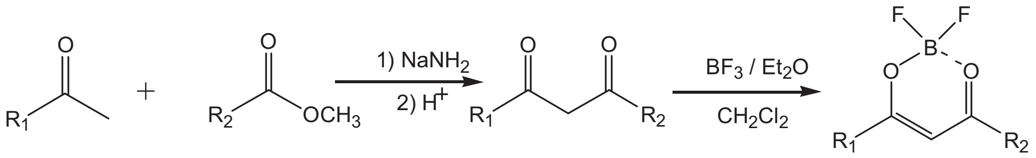
Preparation and spectroscopic properties of some new diaroylmethanatoboron difluoride derivatives

Dun-Jia Wang, Ben-Po Xu,
Xian-Hong Wei, Jing Zheng

Hubei Key Laboratory of Pollutant and Reuse Technology, College of Chemistry and Environmental Engineering, Hubei Normal University, Huangshi 435002, PR China



► Preparation and characterization of the diaroylmethanes and their BF_2 complexes. ► Spectroscopic investigations of the diaroylmethanatoboron difluoride compounds. ► Strong fluorescence of BF_2 complexes in the 400–500 nm range.

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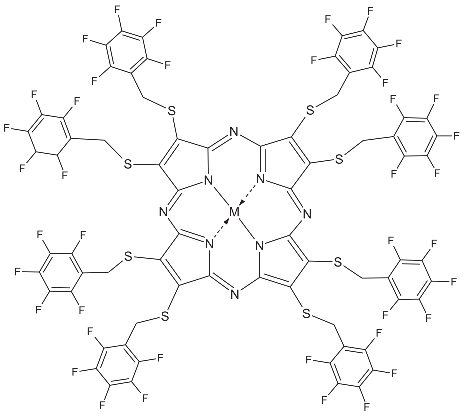
Synthesis and characterization of novel polyfluorinated porphyrazines

Neriman Ağgün, Ergün Gonca

Department of Chemistry, Fatih University, TR34500 B. Cekmece, Istanbul, Turkey

► New polyfluorinated porphyrazine molecules are synthesized. ► Solubility of metallo porphyrazines in common solvents is enhanced. ► No new Q band absorptions are observed in the aggregation study. ► The presence of an electron donating group causes a bathochromic shift on Q bands.



M = Mg (**3**); 2H (**4**); Cu (**5**); Zn (**6**); Co (**7**).

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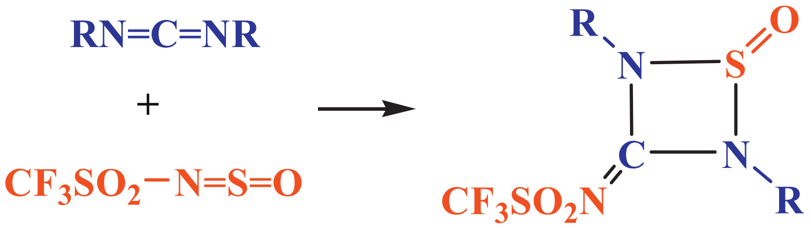
Reaction of N-sulfinyltrifluoromethanesulfonamide with carbodiimides: Formation of N-trifluoromethanesulfonyl-2,4-dialkyl-1,2,4-thiadiazetidin-3-imine 1-oxides

Bagrat A. Shainyan, Ljudmila L. Tolstikova

A.E. Favorsky Irkutsk Institute of Chemistry, Siberian Division of Russian Academy of Sciences, 1 Favorsky Street 664033, Irkutsk, Russia



► Condensation of N-sulfinyltriflamide with N,N′-dialkylcarbodiimides was studied. ► The products were shown to have the structure of symmetrically substituted N-triflyl-2,4-dialkyl-1,2,4-thiadiazetidin-3-imine 1-oxides. ► The mechanism including [2π + 2π] cycloaddition and the ring opening – ring closure of the intermediate cycloadducts was proposed.

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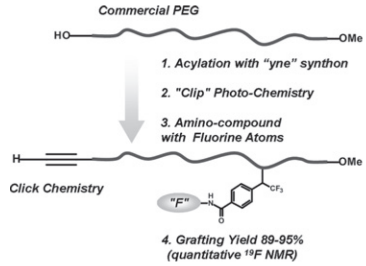
Clickable PEG conjugate obtained by “clip” photochemistry: Synthesis and characterization by quantitative ^{19}F NMR

Vincent Pourcelle[a], Cécile S. Le Duff[a], Hélène Freichels[b], Christine Jérôme[b], Jacqueline Marchand-Brynaert[a]

[a]*Institut de la Matière Condensée et des Nanosciences (IMCN), Université catholique de Louvain, Bâtiment Lavoisier, Place Louis Pasteur L4.01.02, B-1348 Louvain-la-Neuve, Belgium*

[b]*Center for Education and Research on Macromolecules (CERM), University of Liège, Sart-Tilman B6, B-4000 Liège, Belgium*



► Grafting of NHS esters on alkyne terminated PEG with trifluoromethylphenyl diazirine. ► Preservation of the alkyne function during chemical derivatizations. ► Easy conjugation of fluorinated probe and peptidomimetic on PEG. ► Development, validation and application of a quantitative ^{19}F NMR protocol.

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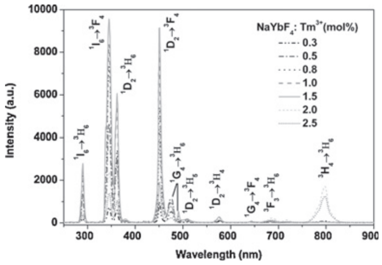
Synthesis and upconversion luminescence properties study of $NaYbF_4$:Tm^{3+} crystals with different dopant concentration

Tao Jiang, Weiye Song, Shusen Liu, Weiping Qin

State Key Laboratory on Integrated Optoelectronics, College of Electronic Science & Engineering, Jilin University, Changchun 130012, PR China



► Tm^{3+} doped $NaYbF_4$ crystals emitted intense UV UC and weak visible UC emissions. ► The affect of Na^{+} cation on the morphologies was discussed. ► The appropriate Tm^{3+} concentration for the strongest UV UC emissions was found.

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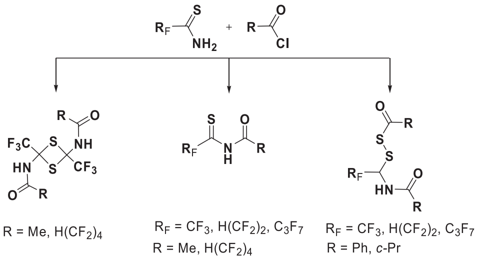
Acylation of primary polyfluoroalkanethioamides

Sergiy S. Mykhaylychenko, Nadiia V. Pikun, Yuriy G. Shermolovich

Institute of Organic Chemistry, National Academy of Sciences of Ukraine, 5, Murmanska, 02094 Kiev, Ukraine



► A facile preparation of new *NH*-acyl derivatives of polyfluoroalkanethioamides. ► Trifluoromethyl-substituted 1,3-dithiethanes were obtained. ► *NH*-acyl polyfluoroalkanethioamides readily reacted with 2,3-dimethylbutadiene.

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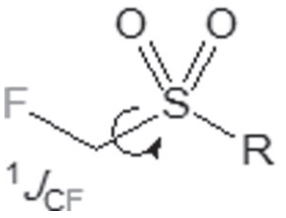
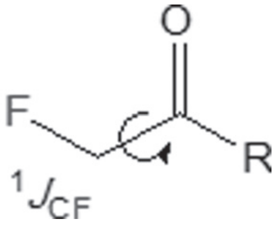
Density functional study of the one-bond CF coupling constant in α-fluorocarbonyl and α-fluorosulfonyl compounds

Matheus P. Freitas[a], Michael Bühl[b]

[a]*Department of Chemistry, Federal University of Lavras, CP 3037, 37200-000 Lavras, MG, Brazil*

[b]*EastChem School of Chemistry, University of St Andrews, North Haugh, St Andrews, Fife KY16 9ST, UK*





► DFT calculations were used to study the angular dependence of $^{1}J_{CF}$ in model compounds. ► $^{1}J_{CF}$ in α-fluorocarbonyl compounds is described by dipolar interactions. ► $^{1}J_{CF}$ is also dependent on hyperconjugation in α-fluorosulfonyl models.

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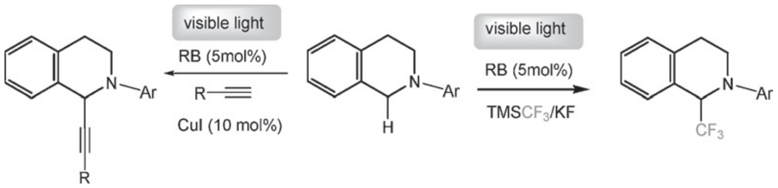
Selective trifluoromethylation and alkynylation of tetrahydroisoquinolines using visible light irradiation by Rose Bengal

Weijun Fu[a], Wenbo Guo[a], Guanglong Zou[b], Chen Xu[a]

[a]*College of Chemistry and Chemical Engineering, Luoyang Normal University, Luoyang 471022, PR China*
[b]*School of Chemistry and Environmental Science, Guizhou University for Nationalities, Guiyang 550025, PR China*



► Rose Bengal catalyzed α-trifluoromethylation and α-alkynylation of tetrahydroisoquinolines under visible light irradiation. ► The reaction via C-H activation. ► The reaction uses air as terminal oxidant under transition-metal-free reaction conditions.

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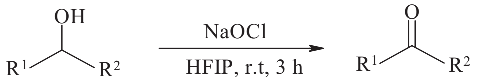
Transition metal-free oxidation of activated alcohols to aldehydes and ketones in 1,1,1,3,3,3-hexafluoro-2-propanol

Samad Khaksar, Saeed Mohammadzadeh Talesh

Department of Chemistry, Ayatollah Amoli Branch, Islamic Azad University, Amol, Iran



► In this study we examine the HFIP as a new recyclable medium. ► Oxidation of various alcohols to their corresponding carbonyl compounds is described in HFIP. ► This method has the ability to tolerate a wide variety of substitutions. ► HFIP was easily recovered.

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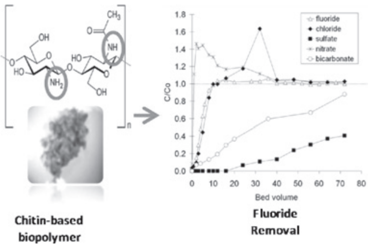
Removal of fluoride from drinking water by a chitin-based biocomposite in fixed-bed columns

Jose L. Davila-Rodriguez, Vladimir A. Escobar-Barrios, Jose R. Rangel-Mendez

División de Ciencias Ambientales, Instituto Potosino de Investigación Científica y Tecnológica A.C. (IPICYT), Camino a la Presa San José 2055, Lomas 4a sección, San Luis Potosí, S.L.P. 78216, Mexico



► A chitin-based biocomposite was studied as fluoride adsorbent in packed columns. ► An empty bed contact time of 20 min was determined as adequate. ► The biocomposite treated about 200 bed volumes of contaminated water. ► The selectivity was determined as follows: $SO_4^{2-} > HCO_3^- > F^- > Cl^- > NO_3^-$. ► 84% of fluoride was chemically desorbed from the fluoride-exhausted material.

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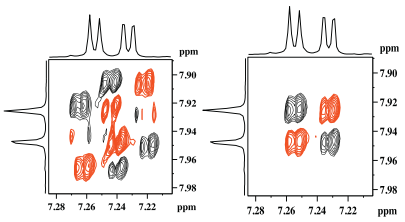
Spectral simplification of proton homonuclear correlation experiments utilizing ω1, ω2 fluorine decoupling

Steve Cheatham

DuPont Crop Protection, Stine-Haskell Research Center, P.O. Box 30, Newark, DE 19714, United States



^{19}F Coupled ^{19}F Decoupled

► We present a procedure for decoupling 19F in both frequency domains, ω1 and ω2. ► Sequences use a 180° pulse on 19F placed in the center of the evolution time. ► This method has significant advantages over continuous broadband decoupling.

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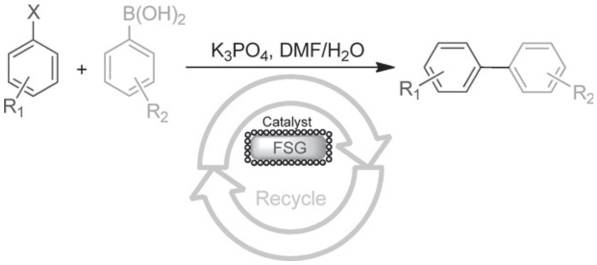
Palladium catalyzed the Suzuki cross-coupling reaction using a fluorous NHC ligand

Li Wan[a], Hong Yu[a], Chun Cai[ab]

[a]*Chemical Engineering College, Nanjing University of Science and Technology, 200 Xiaolingwei, Nanjing 210094, PR China*
[b]*Key Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Lu, Shanghai 200032, PR China*

► A novel fluorous NHC–Pd catalyst prepared by fluorous–fluorous interactions. ► Suzuki reactions were carried out under phosphine-free condition. ► The catalyst could be reused three times without significant loss of activity.



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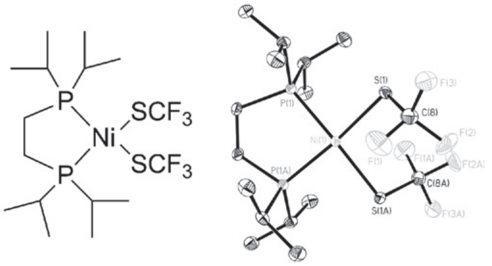
Synthesis and structure of a bis-trifluoromethylthiolate complex of nickel

Cheng-Pan Zhang[a], William W. Brennessel[b], David A. Vicic[a]

[a]*Department of Chemistry, University of Hawaii, 2545 McCarthy Mall, Honolulu, HI 96822, USA*
[b]*The X-ray Crystallographic Facility, Department of Chemistry, University of Rochester, Rochester, NY 14627, USA*



► Reaction of [(dippe)NiI$_2$] with excess [NMe$_4$][SCF$_3$] led to the formation of [(dippe)Ni(SCF$_3$)$_2$]. ► [(dippe)Ni(SCF$_3$)$_2$] has been structurally characterized. ► Density functional theory calculations predict that the highest occupied molecular orbital of [(dippe)Ni(SCF$_3$)$_2$] is sulfur-centered and the lowest unoccupied molecular orbital is nickel-centered. ► Charge distributions on a metal–SCF$_3$ complex are much different than a metal–OCF$_3$ one.

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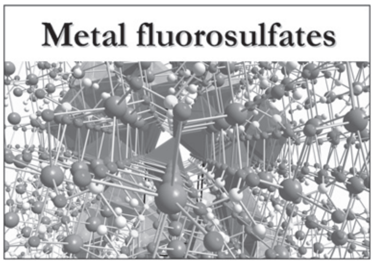
The missing crystal structures of fluorosulfates of monovalent cations: M(I)SO$_3$F, M = Na, Rb and Tl

Tomasz Michałowski[a], Piotr J. Leszczyński[b], Michał Cyrański[a], Łukasz Dobrzycki[a], Armand Budzianowski[b], Wojciech Grochala[ab]

[a]*Faculty of Chemistry, University of Warsaw, Pasteur 1, 02-093 Warsaw, Poland*
[b]*Centre of New Technologies, University of Warsaw, Żwirki i Wigury 93, 02-089 Warsaw, Poland*

► structural characterization of three novel fluorosulfates of monovalent cations. ► Surprising unprecedented structure types detected for Na and Tl derivatives. ► Marked steric effects observed due to the lone pair on Tl(I) cation.



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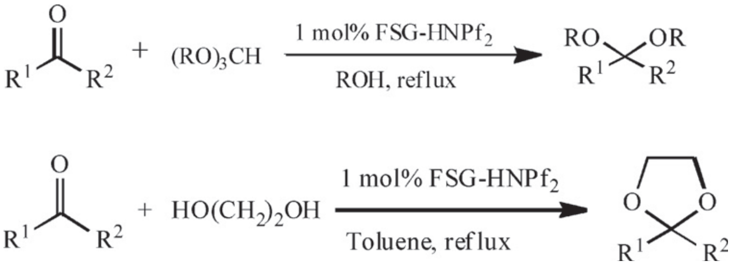
Bis(perfluorooctanesulfonyl)imide supported on fluorous silica gel: Application to protection of carbonyls

Mei Hong, Guomin Xiao

School of Chemistry and Chemical Engineering, Southeast University, Nanjing 211189, People's Republic of China



► Fluorous silica gel supported bis(perfluorooctanesulfonyl) imide was prepared. ► FSG–HNPf$_2$ was characterized by FTIR, pyridine-FTIR and TGA. ► Several carbonyls was converted to acetals and ketals in good to excellent yields using FSG–HNPf$_2$. ► FSG–HNPf$_2$ catalyst can be easily recovered and reused several times without significant loss of activity.