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Graphical Abstracts/J. Fluorine Chem. 131 (2010) 115–121

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Asymmetric synthesis of fluorine-containing amines, amino alcohols, α- and β-amino acids mediated by chiral sulfinyl group

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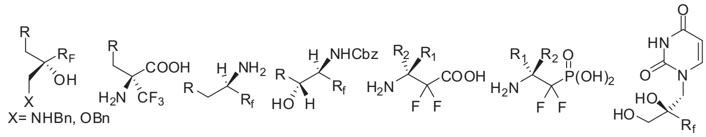

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New trends in the chemistry of α-fluorinated ethers, thioethers, amines and phosphines

Baptiste Manteau[a], Sergiy Pazenok[b], Jean-Pierre Vors[c], Frédéric R. Leroux[a]

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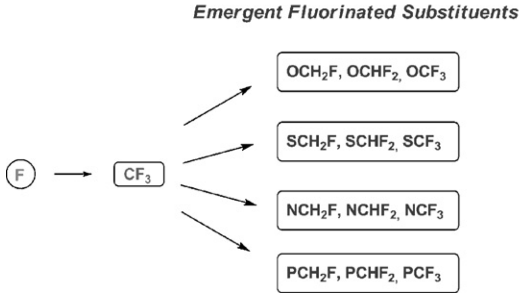
[c]*Bayer CropScience SA, Centre de Recherches de La Dargoire, 14-20 Rue Pierre Baizet, F-69009 Lyon, France*

Synthesis of α-fluorinated ethers, thioethers, amines and phosphines as emergent fluorinated substituents.



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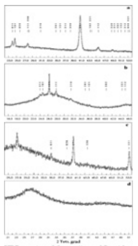
Fluorides of some s-, p-, d-, and f-metals as prospective materials for interference optics: Present status and development

V.F. Zinchenko

Chemistry of Functional Inorganic Materials, A.V. Bogatsky Physico-Chemical Institute of the NAS of Ukraine, 86 Lustdorfska Doroga, 65080 Odessa, Ukraine

Materials with low refractive indices based on fluorides of some s-, p-, d- and f-metals for interference optics were examined.


XRD spectra of the coatings of fluorides: gradual amorphization

doi:10.1016/S0022-1139(10)00018-7

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Synthesis of the first representative of dicarbothiacyanine dyes with completely fluorinated polymethine chain

Lev M. Yagupolskii, Oksana I. Chernega, Nataliya V. Kondratenko, Alexander N. Chernega, Yurii. G. Vlasenko, Ruslan V. Nedelkov, Yurii L. Yagupolskii

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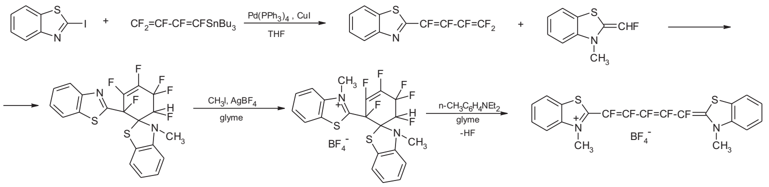

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Asymmetric induction in thia-Diels-Alder reactions of chiral polyfluoroalkylthionocarboxylates

Vadim M. Timoshenko[a], Sergiy A. Siry[a], Alexander B. Rozhenko[ab], Yuriy G. Shermolovich[a]

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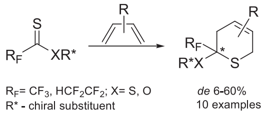
An access to stereochemically elaborate 2-polyfluoroalkyl-3,6-dihydro-2*H*-thiopyrans is studied using substrate-controlled diastereoselective reactions.



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On the reactions of trifluorovinylsilanes with aromatic ketones – Expected and some unexpected results

N.V. Kirij[a], D.A. Dontsova[a], N.V. Pavlenko[a], Yu.L. Yagupolskii[a], W. Tyrra[b], D. Naumann[b]

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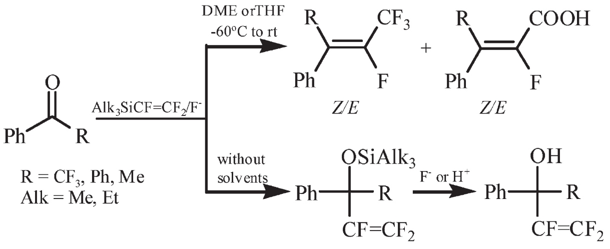

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Reaction of enamines with trifluoromethyl containing carbonyl reagents

Dmitriy A. Sibgatulin[a], Tatyana E. Shubina[bc], Aleksandr N. Kostyuk[a], Dmitriy M. Volochnyuk[a], Reinhard Schmutzler[d], Peter G. Jones[d], Aleksandr M. Pinchuk[a]

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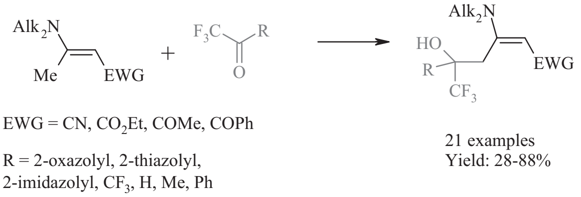
[d]*Institute of Inorganic and Analytical Chemistry, Technical University of Braunschweig, Hagenring 30, 38106 Braunschweig, Germany*



The reaction of linear push–pull enamines bearing a methyl group at the α-position with a set of trifluoromethylated carbonyl compounds was investigated. It has been found that the reaction proceeds at the methyl group of the enamines. The first computational study of the reaction between push–pull enamines and strong electrophilic reagents was reported. Out of three pathways considered DFT and MP2 calculations support ene-mechanism previously suggested based on experimental results only.

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A deeper insight into direct trifluoromethoxylation with trifluoromethyl triflate

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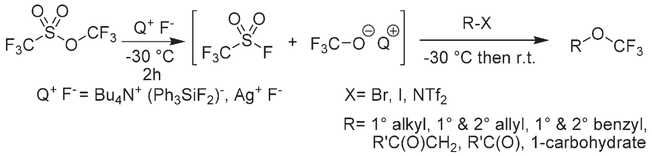
[g]*Bayer CropScience AG, Product Technology, Process Research, Building 6550, Alfred-Nobel-Str. 50, 40789 Monheim am Rhein, Germany*



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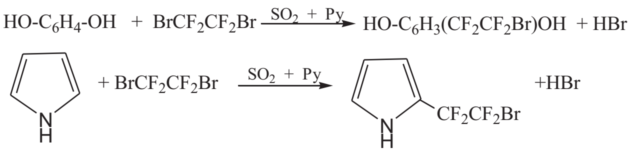
Activation of free-radical polyfluoroalkylation of organic substrates with freon $BrCF_2CF_2Br$ using a system of organic base-electron transfer mediator

Vyacheslav G. Koshechko, Lydiya A. Kiprianova, Ludmyla I. Kalinina

L.V. Pisarzhevsky Institute of Physical Chemistry of the National Academy of Sciences of Ukraine, Pr. Nauky 31, Kiev 01039, Ukraine



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The solid complex $Zn(CF_3)Br{\cdot}2DMF$ as an alternative reagent for the preparation of both, trifluoromethyl and pentafluoroethyl copper, $CuCF_3$ and CuC_2F_5

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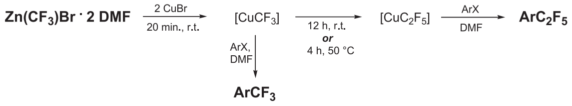

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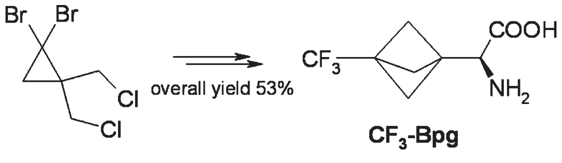
An optimized protocol for the multigram synthesis of 3-(trifluoromethyl)bicyclo[1.1.1]pent-1-ylglycine (CF_3-Bpg)

Pavel K. Mykhailiuk[ab], Nataliia M. Voievoda[ab], Sergii Afonin[c], Anne S. Ulrich[cd], Igor V. Komarov[ab]

[a]*Department of Chemistry, Kyiv National Taras Shevchenko University, Vul. Volodymyrska 64, 01033 Kyiv, Ukraine*
[b]*Enamine Ltd., Vul. Oleksandra Matrosova 23, 01103 Kyiv, Ukraine*
[c]*Karlsruhe Institute of Technology (KIT), Forschungszentrum Karlsruhe, Institut für Biologische Grenzflächen, POB 3640, 76021 Karlsruhe, Germany*
[d]*KIT, Universität Karlsruhe, Institut für Organische Chemie, Fritz-Haber-Weg 6, 76133 Karlsruhe, Germany*



An optimized procedure for the multigram synthesis of 3-(trifluoromethyl)bicyclo[1.1.1]pent-1-ylglycine (CF_3-Bpg) has been developed. The overall yield of the synthesis for the optimized up-scaling was increased from 35% to 53%. Moreover, conditions for separating the key isomeric aminonitriles **7** and **8** by crystallization were found, which greatly facilitated the isolation of **8** on a multigram scale. Following this optimized protocol, 100 g of optically pure CF_3-Bpg have been synthesized.

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1-Amino-3,3-difluorocyclobutanecarboxylic acid

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[b]*Enamine Ltd., Oleksandra Matrosova Street, 23, Kyiv 01103, Ukraine*

A new fluorinated analogue of 1-aminocyclobutane-1-carboxylate (ACBC) – 1-amino-3,3-difluorocyclobutanecarboxylic acid – has been synthesized in six steps from acetone. The key step of the synthesis is a transformation of a ketone group into the CF2-group using morpholino-sulphur trifluoride.

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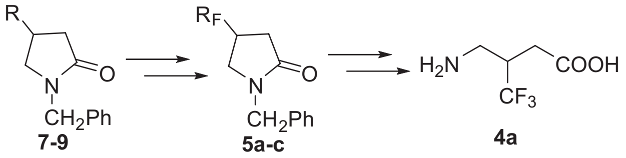
Synthesis of new β-trifluoromethyl containing GABA and β-fluoromethyl containing *N*-benzylpyrrolidinones

Igor I. Gerus, Roman V. Mironets, Elena N. Shaitanova,
Valery P. Kukhar

Department of Fine Organic Synthesis, Institute of Bioorganic Chemistry and Petrochemistry NUAS, Murmanskaya Str. 1, Kiev 02094, Ukraine

A series of 3-(mono-, di-, trifluoro)methyl containing *N*-benzylpyrrolidinones **5a–c** was synthesized by deoxyfluorination reactions. New β-trifluoromethyl containing GABA **4a** was obtained by two different ways.



R = COOH (**7**), CH_2OH (**8**), CH(O) (**9**)

$R_F = CF_3$ (a), CHF_2 (b), CH_2F (c)

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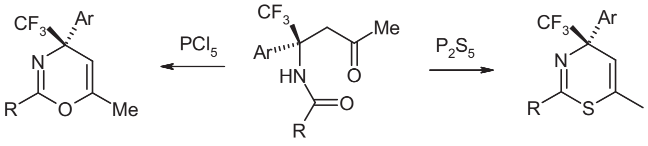
Optically active 4-aryl-4-trifluoromethyl-4H-1,3-oxa(thia)zines

Mykhaylo V. Vovk, Nataliya M. Golovach, Volodymyr A. Sukach

Institute of Organic Chemistry, National Academy of Sciences of Ukraine, Murmans'ka 5, Kyiv 02094, Ukraine

Synthesis of chiral 4-trifluoromethyl-4H-1,3-oxazines and 4-trifluoromethyl-4H-1,3-thiazines from enantiomerically enriched N-acyl derivatives of 4-amino-4-aryl-5,5,5-trifluoropentan-2-ones is described.



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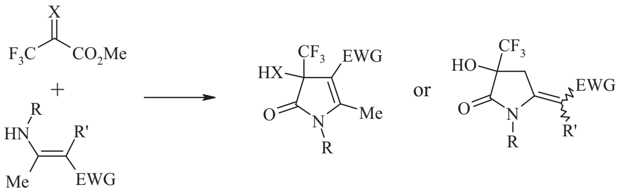
Convenient synthesis of trifluoromethylated 2-pyrrolidone and 2-pyrrolone derivatives

Dmitriy A. Sibgatulin, Alexander N. Kostyuk, Dmitriy M. Volochnyuk, Eduard B. Rusanov, Alexander N. Chernega

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

The reaction of a set of enamines with methyl trifluoropyruvate and its imine was investigated. As a result, a simple procedure for the synthesis of trifluoromethylated 2-pyrrolidone and 2-pyrrolone derivatives has been developed.



X = O, NCO_2Et; EWG = CN, CO_2Et, COMe; R = H, Me

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The aza Arndt–Eistert reaction based on *N*-trifluoromethylsulfonylarenecarboximidoyl chlorides

Lev M. Yagupolskii[a], Irina I. Maletina[a], Liubov V. Sokolenko[a],
Yurii G. Vlasenko[a], Maria V. Drozdova[b], Vitaliy V. Polovinko[c]

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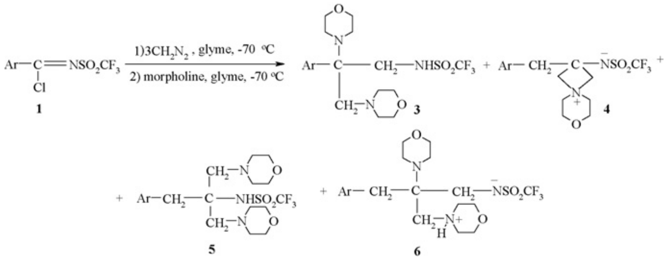

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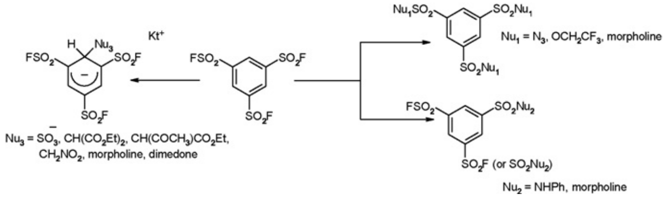
Reactions of 1,3,5-tris(fluorosulfonyl)benzene with some nucleophilic reagents

Oksana M. Kamoshenkova, Vladimir N. Boiko

Institute of Organic Chemistry, National Academy of Sciences of Ukraine, Murmanskaya St. 5, 02094 Kyiv, Ukraine



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Halogen migration vs. hydrogen halogenide elimination in reactions of 1-chloro-2,2,2-trifluoroethansulfonyl chloride and 1,2,2,2-tetrafluoroethansulfonyl fluoride with amines: theoretical and experimental investigation

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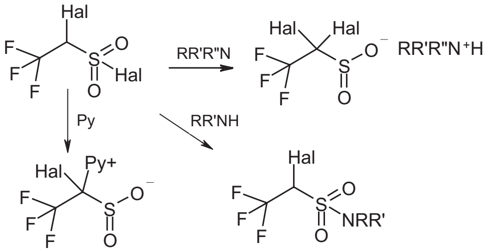
[b]*University of Bielefeld, Universitätstr. 25, 33615, Bielefeld, Germany*

Conversation pathways of 1-chloro-2,2,2-trifluoroethansulfonyl chloride and 1,2,2,2-tetrafluoroethansulfonyl fluoride in the presence of amines have been investigated experimentally and using quantum chemistry (B3LYP and MP2) methods.



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Biomimetic reductive amination under the continuous-flow reaction conditions

Vadim A. Soloshonok[abc], Hector T. Catt[ab], Taizo Ono[ab]

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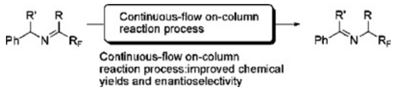
[b]*National Institute of Advanced Industrial Science and Technology (AIST), 2266 Anagahora, Shimoshidami, Moriyama-ku, Nagoya, Aichi 463-8560, Japan*
[c]*Department of Chemistry and Biochemistry, University of Oklahoma, Norman, OK 73019, United States*



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Self-disproportionation of enantiomers of 3,3,3-trifluorolactic acid amides via sublimation

Manabu Yasumoto[a], Hisanori Ueki[b], Vadim A. Soloshonok[cd]

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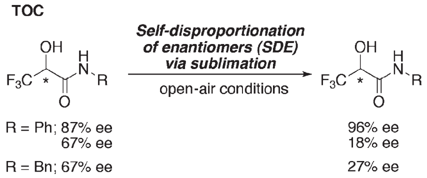
[b]*International Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), 1-1, Namiki, Tsukuba, Ibaraki 305-0044, Japan*
[c]*Institute of Bioorganic Chemistry and Petrochemistry, National Academy of Sciences of the Ukraine, Murmanska Street, Kyiv 94 02660, Ukraine*
[d]*Department of Chemistry and Biochemistry, University of Oklahoma, Norman, OK 73019, USA*



N-Phenyl- and *N*-benzyl-3,3,3-trifluorolactic acid amides were found to strongly exhibit the phenomenon of self-disproportionation of enantiomers (SDE) via sublimation. The results described in this paper support the hypothesis that compounds containing –CF_3 group directly bonded to a stereogenic carbon center can induce an SDE effect.

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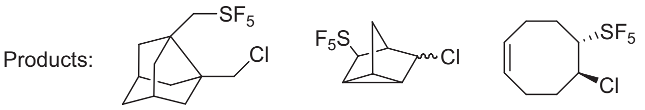
The reactions of 3,7-dimethylenebicyclo[3.3.1]nonane, norbornadiene and *cis*,*cis*-1,5-cyclooctadiene with pentafluoro-λ^6-sulfanyl chloride

Maxim V. Ponomarenko[a], Yurii A. Serguchev[a], Gerd-Volker Röschenthaler[b]

[a]*Institute of Organic Chemistry, National Academy of Sciences of Ukraine, 5 Murmanskaya Str., 02094 Kiev, Ukraine*
[b]*School of Engineering and Science, Jacobs University Bremen gGmbH, Campus Ring 1, 28759 Bremen, Germany*

Radical reactions of the non-conjugated cyclic dienes with SF_5Cl were described.



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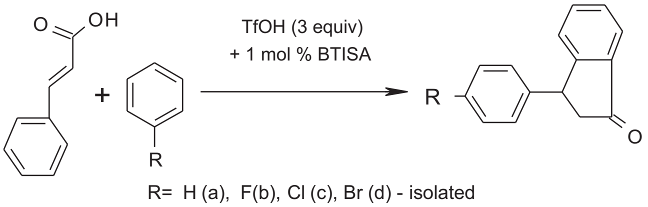
BTISA-catalyzed Friedel–Crafts bimolecular cyclization of cinnamic acid under superelectrophilic solvation conditions

Anna G. Posternak, Romute Yu. Garlyauskayte, Lev M. Yagupolskii

Institute of Organic Chemistry, National Academy of Sciences of Ukraine, 5 Murmanskaya Str., UA-02094, Kiev, Ukraine



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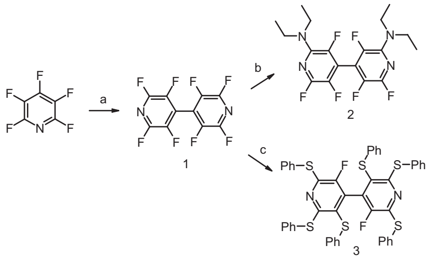
Octafluoro-4,4′-bipyridine and its derivatives: Synthesis, molecular and crystal structure

Alexey V. Gutov, Eduard B. Rusanov, Alexey B. Ryabitskii, Alexander N. Chernega

Institute of Organic Chemistry NAS Ukraine, Murmanska st. 5, 02660 Kyiv -94, Ukraine

Octafluoro-4,4′-bipyridine is a quite electron deficient system inert to alkylation and sensitive to the nucleophilic attack. Depending on the reaction conditions and reagents used the products could be obtained in which two and six fluorine atoms are substituted by nucleophiles. Peculiarities of fluorine-containing bipyridine structures have been determined.



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Phase transformations in LnF_3–(Ln, Zr)–ZrF_4 systems, where Ln = Sm, Eu, Tm, Yb

N.M. Kompanichenko[a], A.O. Omel'chuk[a], O.P. Ivanenko[a], V.F. Zinchenko[b]

[a]*V.I. Vernadskii Institute of General and Inorganic Chemistry of the Ukrainian NAS, Prospect Palladina 32/34, 03680 Kiev 142, Ukraine*
[b]*A.V. Bogatsky Physico–Chemical Institute NASU, 86, Lyustdorfska Doroga Street, 65080 Odesa, Ukraine*

The investigation of phase transformations in LnF_3–(Ln, Zr)–ZrF_4 systems (where Ln = Sm, Eu, Tm, Yb) in the temperature range 700–900 °C have been studied. It has been shown that on contact interaction between LnF_3 and lanthanide, nonstoichiometric compounds of lanthanides in lower oxidation states, LnF_{2+x}, are formed.