Journal of Fluorine Chemistry 129 (2008) 455–458

Contents lists available at ScienceDirect

Journal of Fluorine Chemistry

journal homepage: www.elsevier.com/locate/fluor

Graphical Abstracts/J. Fluorine Chem. 129 (2008) 455–458

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Polyvalent perfluoroorgano- and selected polyfluoroorgano-halogen(III and V) compounds

Hermann-Josef Frohn[a], Markus E. Hirschberg[a], André Wenda[a], Vadim V. Bardin[b]

[a]*Inorganic Chemistry, University of Duisburg-Essen, Lotharstr. 1, D-47048 Duisburg, Germany*
[b]*N.N. Vorozhtsov Novosibirsk Institute of Organic Chemistry, SB RAS, Acad. Lavrentjev Ave. 9, 630090 Novosibirsk, Russia*

Preparations, transformations, use as reagents, applications, NMR spectroscopic properties, and structural characteristics of polyvalent perfluoroorgano-iodine and -bromine(III and V) compounds are reviewed.

Alk_FIX_2
X = F, Cl, OR, OAc, ONO_2, $OS(O)_2F$, OCl, $OTeF_5$

$[Alk_F(Ph)I]Y$

Alk_FIX_4
X = F, 2 X = O

$C_6F_5IF_2 \rightarrow [(C_6F_5)_2I][BF_4]$

$C_6F_5IF_4 \rightarrow [(C_6F_5)_2IF_2][BF_4]$

$C_6F_5BrF_2 \rightarrow [(C_6F_5)_2Br][BF_4]$

$C_6F_5BrF_4$

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Fluoride-catalyzed hydroalkoxylation of hexafluoropropene with 2,2,2-trifluoroethanol

Debby Natalia[a], Dinh Quan Nguyen[a], Ji Hee Oh[a], Honggon Kim[a], Hyunjoo Lee[a], Hoon Sik Kim[b]

[a]*Energy & Environment Research Division, Korea Institute of Science and Technology, 39-1 Hawolgok-dong, Sungbuk-gu, Seoul 136-791, Republic of Korea*
[b]*Department of Chemistry and Research Institute of Basic Sciences, Kyung Hee University, 1 Hoegi-dong, Dongdaemoon-gu, Seoul 130-701, Republic of Korea*

Mechanistic investigation was conducted for the synthesis of $CF_3CHFCF_2OCH_2CF_3$ from the hydroalkoxylation of hexafluoropropene and 2,2,2-trifluoroethanol in the presence of an alkali metal fluoride (MF).

$$CF_3CH_2OH \xrightarrow{MF} CF_3CH_2O\text{—}H\text{- - -}F\text{—}M \xrightarrow{CF_3CF{=}CF_2} CF_3CHFCF_2OCH_2CF_3 + MF$$

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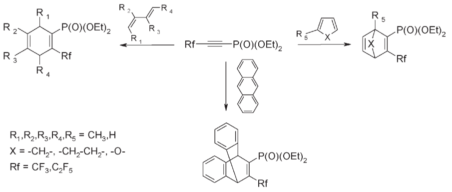
Perfluoroacetylenephosphonates in Diels–Alder reactions: Synthesis of perfluoroalkylated heterocyclic and carbocyclic phosphonates

Sergey N. Tverdomed[a], Gerd-Volker Roeschenthaler[b], Nataliya Kalinovich[b], Enno Lork[b], Alla V. Dogadina[a], Boris I. Ionin[a]

[a]*Department of Organic Chemistry, St. Petersburg State Institute of Technology (Technical University), Moskovskii pr. 26, St. Petersburg 190013, Russia*
[b]*Institute for Inorganic and Physical Chemistry, The University of Bremen, Leobener Str, Bremen D-28334, Germany*



doi:10.1016/S0022-1139(08)00134-6

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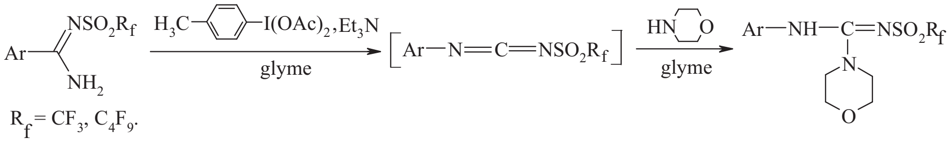
N-Perfluoroalkylsulfonylimido derivatives of arenecarboxylic acid amides and their oxidative aza Hofmann rearrangement

Lev M. Yagupolskii, Irina I. Maletina,
Liubov V. Sokolenko, Yurii G. Vlasenko,
Sergey A. Buth

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



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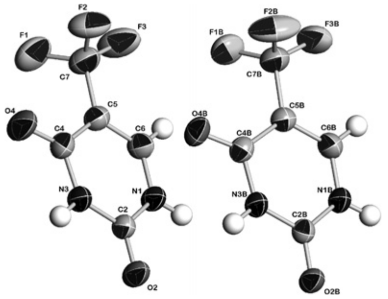
Crystal and molecular structure of 5-trifluorothymine, a metabolite from human urine: Role of fluorine in stacking and hydrogen bonded interactions

Manju Rajeswaran[a], Thamarapu Srikrishnan[b]

[a]*Kodak Research Laboratories, Eastman Kodak Company, Rochester, NY 14650, USA*
[b]*Department of Cancer Biology, Roswell Park Cancer Institute, Buffalo, NY 14263, USA*

5-Trifluorothymine [$5F_3T$] is a metabolite found in human urine. It could also be synthesized by cyclizing the ureidoamides to 5-trifluoromethyl-5,6-dihydrouracil by reflexing in hydrochloric acid. The crystal structure of $5F_3T$ reveals an extensive network of linear molecule connected by dimeric NH⋯O bonds stacked on top of each other stabilized by non-bonded interactions involving fluorine atoms, which do not take part in the hydrogen bonding network.



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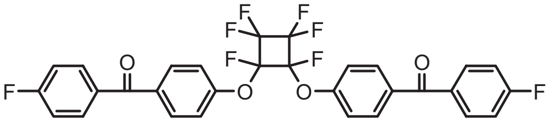
Novel fluorinated poly(aryl ether)s derived from 1,2-bis(4-(4-fluorobenzoyl)phenoxy)-hexafluorocyclobutane

You Zhou[a], Feng-Ling Qing[ab]

[a]*College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, 2999 North Renmin Lu, Shanghai 201620, China*
[b]*Key Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 354 Fenglin Lu, Shanghai 200032, China*


6

Two novel poly(aryl ether)s were prepared from 1,2-bis(4-(4-fluorobenzoyl)-phenoxy)-hexafluorocyclobutane **6** and aromatic bisphenols by the aromatic nucleophilic substitution reaction.

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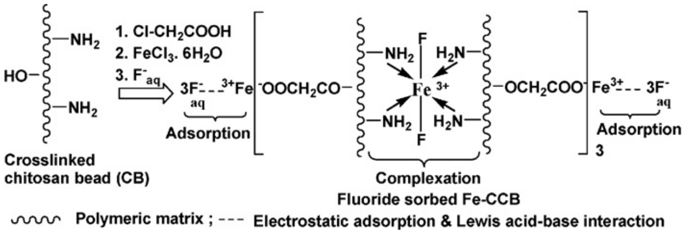
Selective sorption of fluoride using Fe(III) loaded carboxylated chitosan beads

Natrayasamy Viswanathan, S. Meenakshi

Department of Chemistry, Gandhigram Rural University, Gandhigram 624 302, Tamil Nadu, India

Fe(III) loaded carboxylated chitosan beads (Fe-CCB) possesses higher defluoridation capacity than the raw chitosan beads. The fluoride selectivity of Fe-CCB is mainly due to the simultaneous process of both adsorption and complexation. This is a new dimension in the field of fluoride removal.



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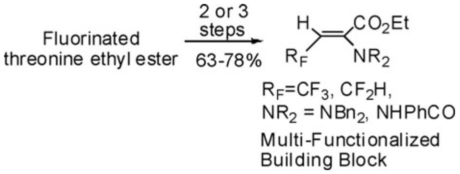
Fluoroalkyl substituted (*Z*)-dehydro α-amino ester as a building block for the fluorine-containing cyclopropyl α-amino esters and dihydrooxazole

Wen Wan[a], Yinghong Gao[a], Haizhen Jiang[a], Jian Hao[ab]

[a]*Department of Chemistry, Shanghai University, Shanghai 200444, China*
[b]*Key Laboratory of Organofluorine Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai 200032, China*



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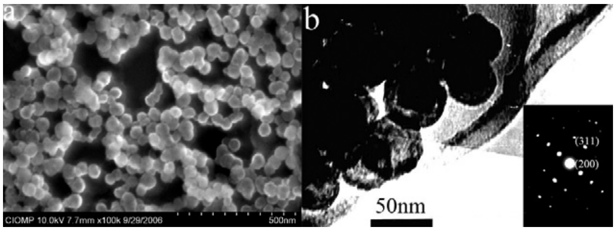
Preparation and optical properties of SrF_2:Eu^{3+} nanospheres

Ye Jin[ab], Weiping Qin[c], Jisen Zhang[a]

[a]*Key Laboratory of Excited State Processes, Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Science, Changchun 130033, China*
[b]*Graduate School of Chinese Academy of Science, Beijing 100039, China*
[c]*State Key Laboratory of Integrated Optoelectronics, College of Electronic Science & Engineering, Jilin University, 2699 Qianjin Street, Changchun 130012, China*



(a) Scanning electron microscopy (SEM) image of SrF_2:Eu^{3+} nanospheres; (b) transmission electron microscopy (TEM) image of SrF_2:Eu^{3+} nanospheres; inset: select area electron diffractions (SAEDs) recorded on individual nanospheres.

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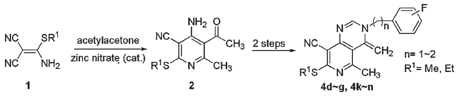
Facile synthesis and biological activities of novel fluorine-containing pyrido[4,3-*d*]pyrimidines

Wenyan Mo, Guihong Liao, Tao Wang, Hongwu He

Key Laboratory of Pesticide & Chemical Biology, Ministry of Education, Institute of Pesticide Chemistry, Central China Normal University, Wuhan, Hubei 430079, PR China



Fourteen novel 3-substituted-5-methyl-4-methylene-7-alkylsulfanyl-3,4-dihydro-pyrido[4,3-*d*]pyrimidine-8-carbonitriles **4a–n** were synthesized *via* a facile regioselective cyclization process. The structures of compounds **4a–n** were confirmed by IR, ^1H NMR, MS and elemental analysis. Some compounds possess good herbicidal activity, especially when the fluorine atom was introduced to the *para* position of substituents on pyrimidine ring. And some compounds show moderate fungicidal activities as well, and the introduction of fluorine has negative effect on the antifungal activities.

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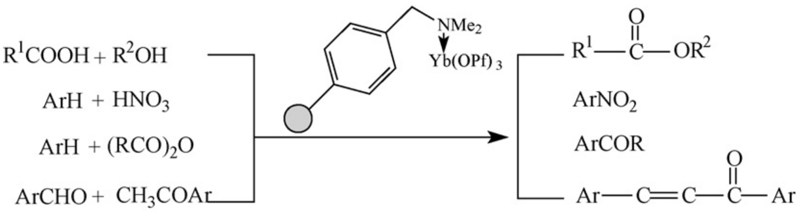
Polymer-supported ytterbium perfluorooctanesulfonate [Yb(OPf)$_3$]: A recyclable catalyst for organic reactions

Wen-Bin Yi, Chun Cai

Chemical Engineering College, Nanjing University of Science & Technology, Nanjing 210094, China



Amberlyst A-21 polymer-supported fluorous ytterbium [Yb(OPf)$_3$] catalyses the highly efficient nitration, esterification, Fridel-Crafts acylation, and aldol condensation. The catalyst can be recovered by simple filtration and used again without a significant loss of catalytic activity. The protocol avoids the use of fluorous solvents during the reaction or workup, which are expensive and can leach in small amounts.

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Atomic fluorine in cobalt trifluoride thermolysis

Miroslav S. Leskiv[a], Norbert S. Chilingarov[a], Julietta V. Rau[ab], Daniela Ferro[b], Sergey V. Abramov[a], Felix M. Spiridonov[a], Lev N. Sidorov[a]

[a]*Chemistry Department of M.V. Lomonosov Moscow State University, 119992 Moscow, Russia*
[b]*CNR Istituto per lo Studio dei Materiali Nanostrutturati, Piazzale Aldo Moro 5 – 00185 Roma, Italy*

Partial pressures *P*(F) and *P*(F_2) are measured at CoF_3(s) thermal decomposition. It was ascertained that *P*(F) is considerably increased by adding small amount of Ni(s) or CoF_2(s) to CoF_3(s), and the equilibrium between F and F_2 is not attained at high rate of CoF_3(s) thermolysis.

$$CoF_3(s) \rightarrow CoF_2(s) + F(g)$$

System	P(F)/ atm (T= 733 K)
CoF_3(s)	2.1×10^{-7}
CoF_3(s)–Ni(s)	4.5×10^{-6}
CoF_3(s)–CoF_2(s)	3.1×10^{-6}

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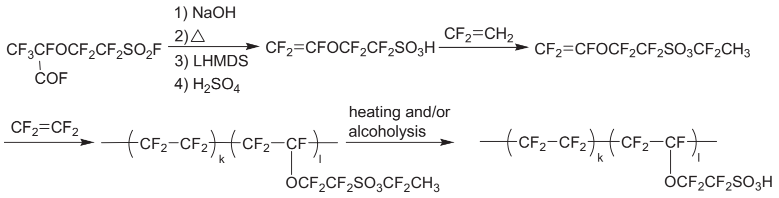
Synthesis of difluoroethyl perfluorosulfonate monomer and its application

Oliver Gronwald[a], Nobuyuki Uematsu[b], Nobuto Hoshi[b], Masanori Ikeda[b], Jun-ichi Yamaki[c]

[a]*Sartorius Stedim Biotech GmbH, August-Spindler-Straße 11, D-37079 Göttingen, Germany*
[b]*Central R&D Laboratories, New Business Development, Asahi Kasei Corporation, Samejima 2-1, Fuji, Shizuoka 416-8501, Japan*
[c]*Institute for Materials Chemistry and Engineering, Kyushu University, Kasuga Koen 6-1, Kasuga, Fukuoka 816-8580, Japan*

The novel difluoroethyl perfluorosulfonate monomer and its application are described.



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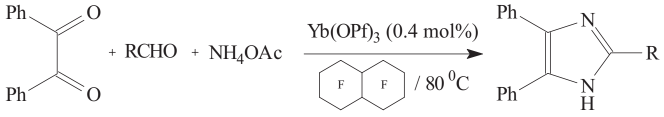
Ytterbium perfluorooctanesulfonate as an efficient and recoverable catalyst for the synthesis of trisubstituted imidazoles

Ming-Gui Shen, Chun Cai, Wen-Bin Yi

Chemical Engineering College, Nanjing University of Science & Technology, Nanjing 210094, China



Synthesis of trisubstituted imidazoles was successfully accomplished using rare earth(III) perfluorooctanesulfonates ($RE(OPf)_3$, RE = Sc, Y, La–Lu) as catalysts in fluorous solvents. Ytterbium perfluorooctanesulfonates ($Yb(OPf)_3$) catalyze the high efficient synthesis of trisubstituted imidazoles in fluorous solvents. By simple separation, fluorous phase containing only catalyst can be reused several times.