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Graphical Abstracts/J. Fluorine Chem. 128 (2007) 237–241

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Fluoride based electrode materials for advanced energy storage devices

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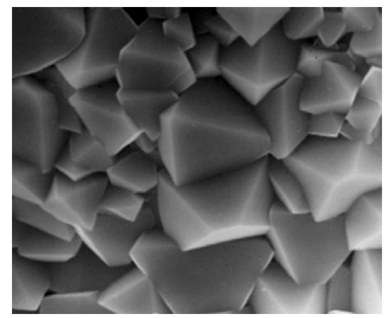
The ever increasing role and role and application of fluoride materials in electrochemical energy storage is reviewed. Specific attention is given unique advantage which fluorine imparts to a wide range of electroactive electrode materials especially within the field of nonaqueous and solid state electrolyte lithium batteries.



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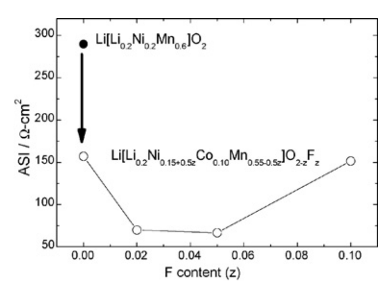
Impacts of fluorine on the electrochemical properties of $Li[Ni_{0.5}Mn_{0.5}]O_2$ and $Li[Li_{0.2}Ni_{0.15}Co_{0.1}Mn_{0.55}]O_2$

K. Amine, Zonghai Chen, S.-H. Kang

Electrochemical Technology Program, Chemical Engineering Division, Argonne National Laboratory, Argonne, IL 60439, USA



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Electrodeposition of fluorine-doped lead dioxide

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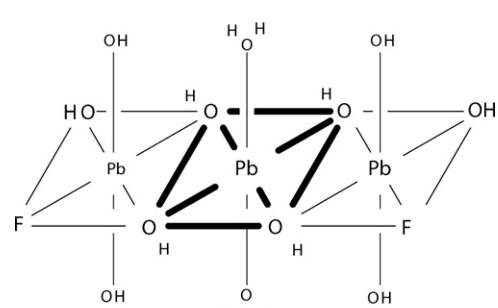
[b]*Université Pierre et Marie Curie-Paris 6, Laboratoire LI2C-Electrolytes et Electrochimie 4, Place Jussieu-75252 Paris Cedex 05, France*

Chemical composition of electrodepositedfluorine-doped lead dioxide:

$Pb^{4+}_{(1-x-y)}Pb^{2+}_{(y)}O^{2}_{(2-4x-2y)}R_{Z}$, $R = F^-; C_4F_9SO_3^-$;Nafion®



doi:10.1016/S0022-1139(07)00047-4

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Surface modification of carbon anodes for secondary lithium battery by fluorination

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First coulombic efficiencies of graphitized petroleum cokes were significantly increased, that is, their irreversible capacities were highly reduced by fluorination.

First coulombic efficiencies (%) for petroleum cokes fluorinated t
EC/DEC at 60 and 150 mA/g

Current density	Fluorination temperature	PC	PC1860	PC2100	PC23
			Petroleum cok		
60 mA/g	Original	72.3	90.2	90.5	71.
	200°C	68.6	87.9	91.7	72
	300°C	47.4	83.3	87.1	84
150 mA/g	Original	-	89.1	88.2	70.
	200°C	-	88.0	89.8	76

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Role of elemental fluorine in nuclear field

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The role of fluorine gas in nuclear field.

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Unique solvent effects on selective electrochemical fluorination of organic compounds

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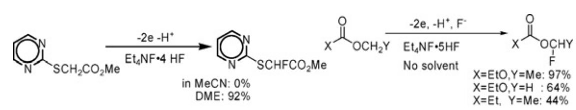

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Structural characteristics of alkylimidazolium-based salts containing fluoroanions

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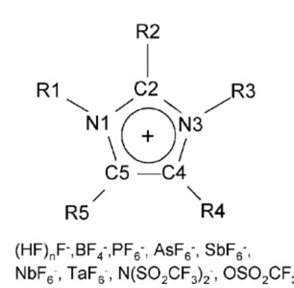
[b]*Graduate School of Energy Science, Kyoto University, Yoshida, Sakyo-ku, Kyoto 606-8501, Japan*

An overview of recent structural studies on alkylimidazolium-based salts containing fluoroanions is presented in this review.



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Graphite intercalation compounds with large fluoroanions

Watcharee Katinonkul, Michael M. Lerner

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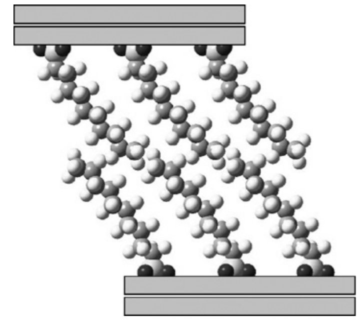
This review describes the syntheses and structures of graphite intercalation compounds with some large fluoroanions, including perfluoroalkylsulfonates and perfluoroalkylborates.



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Synthesis, structure and properties of intercalation compounds containing perfluoroalkyl groups

Yoshiaki Matsuo

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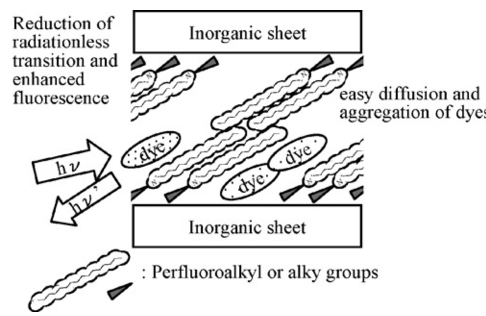
Hydrophobic space between perfluoroalky groups intercalated into layered materials is available for inclusion of organic molecules and photochemical reactions of them.



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Investigation of fluorinated surfaces by means of radio-labelled probe molecules

Mahmood Nickkho-Amiry, John M. Winfield

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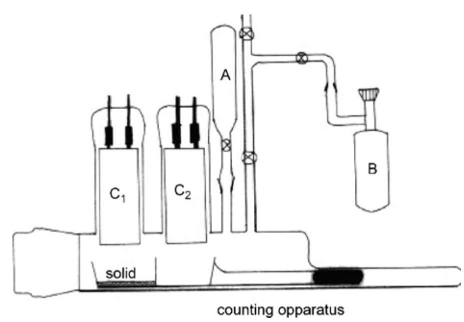
[^{18}F] and [^{36}Cl]-labelling of probe molecules make it possible to investigate interactions and reactions on fluorinated surfaces.



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Non-aqueous sol–gel synthesis of nano-structured metal fluorides

Stephan Rüdiger, Udo Groß, Erhard Kemnitz

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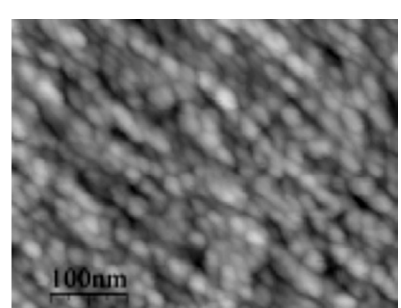
The recently developed non-aqueous sol–gel fluorination is a versatile tool for the preparation of nano-structured metal fluorides of varied compositions, broad range of properties and multiple applications from, e.g., catalysts to optical coatings.



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Fluorine functionalized compounds of group 13 elements

Sanjay Singh, Herbert W. Roesky

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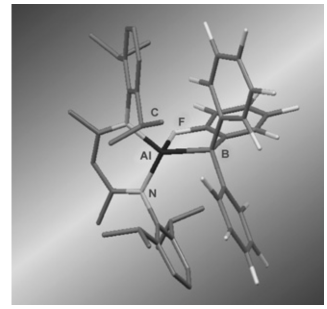
The figure shows the Lewis base–Lewis acid Al compound, $[LAlB(C_6F_5)_3]$ (L = $HC\{(CMe)(2,6\text{-}iPr_2C_6H_3N)\}_2$], with a donor Al → B bond and simultaneously an acceptor Al → F bond. Like the Roman god Janus, who has two faces in opposite directions that symbolizes two different scenarios.



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Modification of surface properties of carbon-based and polymeric materials through fluorination routes: From fundamental research to industrial applications

A. Tressaud[a], E. Durand[a], C. Labrugère[a], A.P. Kharitonov[b], L.N. Kharitonova[b]

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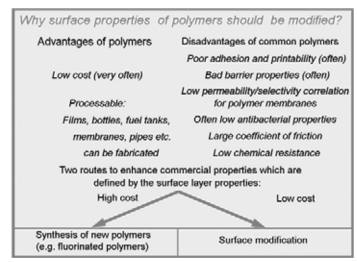
[b]*Institute of Energy Problems of Chemical Physics (Branch) of the Russian Academy of Sciences, Chernogolovka, Moscow Region 142432, Russia*

Treatments involving F_2, fluorinated gases and rf plasma-enhanced fluorination (PEF) constitute exceptional tools for modifying the surface properties of materials. Depending on the type of starting materials and employed techniques, the improved properties may concern wettability, adhesion, chemical stability, barrier properties, biocompatibility, grafting, mechanical behavior. Several examples of surface fluorination will be given on various types of carbon-based materials, elastomers and polymers.



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Syntheses and properties of fluorinated carbon materials

Young-Seak Lee

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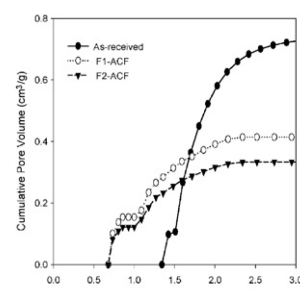
This figure shows the pore size distributions for the fluorinated and the unreacted ACFs. It is found that the total micropore volume of the surface modified ACFs decreased. However, average pore width (W_{AVP}) is not significantly changed by surface modification, although micropore volume is decreased.



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Hydrogen bonded H_3O^+, H_2O, HF, F^- in fluoride metalates (Al, Cr, Fe, Zr, Ta) templated with *tren* (tris-(2-aminoethyl)amine)

Karim Adil[a], Mohamed Ali Saada[a], Amor Ben Ali[a], Monique Body[b], Minh Trung Dang[a], Annie Hémon-Ribaud[a], Marc Leblanc[a], Vincent Maisonneuve[a]

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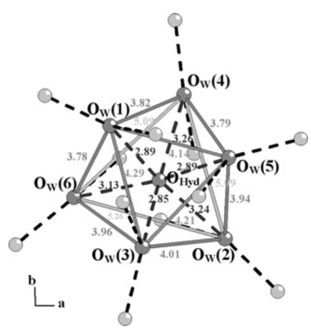
Environment of H_3O^+, H_2O, HF and F^- species in fluoride metalates templated with *tren*.



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Crystalline oxyfluorinated open-framework compounds: Silicates, metal phosphates, metal fluorides and metal-organic frameworks (MOF)

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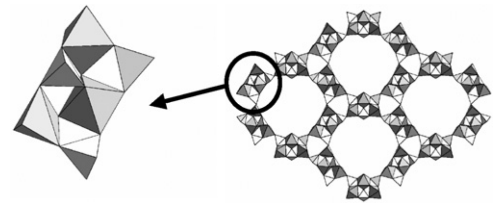
[b]*Institut Universitaire de France, France*



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Hexafluoro-, heptafluoro-, and octafluoro-salts, and $[M_nF_{5n+1}]^-$ (n = 2, 3, 4) polyfluorometallates of singly charged metal cations, Li^+–Cs^+, Cu^+, Ag^+, In^+ and Tl^+

Zoran Mazej[a], Rika Hagiwara[b]

[a]*Department of Inorganic Chemistry and Technology, Jožef Stefan Institute, Jamova 39, SI-1000 Ljubljana, Slovenia*
[b]*Department of Fundamental Energy Science, Kyoto University, Yoshida, Sakyo-ku, Kyoto 606-8501, Japan*

Review of the crystal structures of AMF_6, A_2MF_7, A_3MF_8, AM_2F_{11}, AM_3F_{16} and AM_4F_{21} compounds.

$AF + nMF_5 = AMF_6, A_2MF_7, A_3MF_8, AM_2F_{11}, AM_3F_{16}, AM_4F_{21}$

A = Li, Na, K, Rb, Cs, Cu, Ag, In, Tl
M = P, As, V, Rh, Ru, Au, Pt, Ir, Os, Re, Sb, Mo, W, Nb, Ta, Bi

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Preparation and properties of rare-earth containing oxide fluoride glasses

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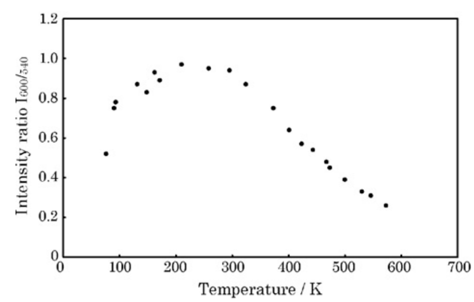
[a]*Graduate School of Engineering, University of Fukui, Bunkyo 3-9-1, Fukui 910-8507, Japan*
[b]*Laboratoire des Oxydes et Fluorures, UMR CNRS 6010, Faculté des Sciences et Techniques, Université du Maine, Avenue Olivier Messiaen, 72085 Le Mans Cedex 09, France*

Temperature dependence of the intensity ratio ($I_{600/540}$) of $20TbF_3$–$20BaF_2$–$10AlF_3$–$50GeO_2$ + 0.05 wt% SmF_3 glass.



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Fluorine insertion reactions into pre-formed metal oxides

Emma E. McCabe, Colin Greaves

School of Chemistry, University of Birmingham, Edgbaston, Birmingham B15 2TT, United Kingdom

This review focuses on some important aspects of research on low temperature fluorine insertion reactions into pre-formed metal oxides and reports some new results on fluorination of Ruddlesden–Popper phases.