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**5723630****PROCESS FOR PREPARING  
FLUORINATED BETA-SULTONES**

Cheburkov Yuri; Lamanna William M  
Woodbury, MN, UNITED STATES assigned to  
Minnesota Mining and Manufacturing Company

A process allows the preparation of a fluorinated  
beta-sultone by reacting a fluorinated olefin with  
oleum.

**5725802****PREPARATION OF ULTRAFINE  
PARTICLES FROM WATER-IN-OIL  
MICROEMULSIONS**

Chittofrati Alba; Boselli Viviana Milan, ITALY  
assigned to Ausimont S p A

Process for preparing ultrafine inorganic particles  
of size lower than 50 nm, preferably lower than 10,  
with narrow size distribution, of metals, oxides,  
sulphides, carbonates by starting from  
microemulsions of water in a fluorinated oil,  
preferably a perfluoropolyether oil, containing  
metal ions in the aqueous phase and by reacting  
them with a reactant which is gaseous, or vapour,  
in the reaction conditions, for obtaining the above  
indicated compounds.

**5726209****LIQUID FLUOROCARBON EMULSION AS  
A VASCULAR NITRIC OXIDE  
RESERVOIR**

Flaim Stephen; Riess Jean G San Diego, CA,  
UNITED STATES assigned to Alliance  
Pharmaceutical Corp

Biocompatible fluorocarbon emulsions are utilized  
to inhibit the removal of endogenously produced

nitric oxide from the bloodstream, and to thereby  
inhibit vascular stenosis, vasoconstriction, and any  
other physiological condition or disorder arising in  
whole or in part from a deficiency of endogenous  
nitric oxide.

**5726337****FLUORINATED ALKYLTHIOCYANATE  
PROCESS**

Jacobson Stephen Ernest Princeton Junction, NJ,  
UNITED STATES assigned to E I du Pont de  
Nemours and Company

A process for the preparation of a thiocyanate of  
Formula II (\*See Patent for Tabular Presentation\*)  
PS wherein Rf is a C2-C20 perfluoroalkyl radical,  
or a C5-C38 perfluoroalkyl radical having at least  
one ether oxygen atom; n is 1 to 3; m is 0 or 1; A  
is O, S, CO<sub>2</sub>, N(R<sub>1</sub>)R<sub>2</sub>, CON(R<sub>1</sub>)R<sub>2</sub>, SO<sub>2</sub>N(R<sub>1</sub>R<sub>2</sub>)  
or (OCH<sub>2</sub>CHR<sub>3</sub>)<sub>a</sub>O; wherein a is 3 to about 15; R<sub>1</sub>  
is H or alkyl radical of 1 to about 4 carbon atoms;  
R<sub>2</sub> is C<sub>1</sub>-C<sub>12</sub> alkylene; and R<sub>3</sub> is H or CH<sub>2</sub>Cl;  
said process comprising reacting a fluorinated  
iodide of Formula I (\*See Patent for Tabular  
Presentation\*) PS wherein Rf, A, m and n are as  
defined above, with a thiocyanate salt M+(SCN)-  
wherein M is sodium or potassium, in the presence  
of a catalyst comprising a quaternary ammonium  
salt of formula (R<sub>4</sub>)<sub>3</sub>(R<sub>5</sub>)N<sup>+</sup>Y<sup>-</sup> wherein R<sub>4</sub> is  
butyl; R<sub>5</sub> is methyl or butyl; and Y is Cl, Br, I, or  
HSO<sub>4</sub>; to yield the fluorinated thiocyanate of  
Formula II as defined above is disclosed.

**5728311****TIRE CURE BLADDERS CONTAINING  
POLYTETRAFLUOROETHYLENE  
POWDER AND USE THEREOF**

Patitsas George Philemo; Sandstrom Paul Harry;  
Apticar Samson Samuel; Kansupada Bharat  
Kanchanlal Kent, OH, UNITED STATES  
assigned to The Goodyear Tire & Rubber  
Company

Expandable bladders for use in curing presses for hydrocarbon rubbers, such as pneumatic tires, are a crosslinked elastomer composition comprising isobutylene repeat units and including a fluorinated ethylene polymer added in particulate form and thereafter dispersed throughout the bladder. These fluorinated ethylene polymer may or may not form fibers. The bladders may further comprise graphite. A preferred isobutylene elastomer is a brominated copolymer of from 80 to 99 weight percent isobutylene and from 1 to 20 weight percent paramethylstyrene. The bladders have enhanced lubricity, reduced adhesion to cured tire innerliners, better resistance to cracking during flexing, and have lower tension set than similar compositions without fluorinated ethylene polymers. The above enhancements allow hydrocarbon rubbers such as tires to be molded with fewer defects caused by abraded or deformed bladders. They also enhance the useful life of the bladder reducing the cost of tire curing.

**5728901**

**NITRATION PROCESS WHICH EMPLOYS  
WATER TOLERANT LEWIS ACID  
CATALYSTS**

Ramprasad Dorai; Waller Francis Joseph; Barrett Anthony Gerard; Braddock David Christopher Allentown, PA, UNITED STATES assigned to Air Products and Chemicals Inc

A process for preparing a nitrated arene which comprises reacting an arene and nitric acid in the presence of a water tolerant Lewis acid catalyst under process conditions sufficient to form the nitrated arene and recovering the nitrated arene. Suitable Lewis acid catalysts are represented by the formula  $Mn(A1)_x(A2)_{n-x}$  wherein M is selected from the group consisting of La, Pr, Nd, Sm, Eu, Gd, Dy, Ho, Er, Tm, Yb, Sc, Hf, Lu and Li; A1 and A2 are independently selected from a perfluoroalkylsulfonate, a fluorosulfonate, a hexafluorophosphate or a nitrate; n is the common oxidation state of M and x is 1, 2, 3 or 4 with the

proviso that x is never greater than n. The catalysts of the process are isolatable from water and can be recycled for subsequent process cycles.

**5728904**

**PROCESS FOR THE PREPARATION OF  
1,1,1,3,3-PENTAFLUOROPROPANE**

Van Der Puy Michael; Eibeck Richard E; Ellis Lois A S; Madhavan G V Bindu Erie, NY, UNITED STATES assigned to AlliedSignal Inc

This invention is related to the preparation of hydrofluorocarbons (HFCs). Specifically, it relates to the manufacture of 1,1,1,3,3-pentafluoropropane,  $CF_3CH_2CF_2H$  (HFC-245fa) by the steps comprising (1) the formation of  $CCl_3CH_2CCl_3$  by the reaction of  $CCl_4$  with vinylidene chloride; (2) the conversion of  $CCl_3CH_2CCl_3$  to  $CF_3CH_2CF_2Cl$  by reaction with HF in the presence of a fluorination catalyst, selected from  $TiCl_4$ ,  $SnCl_4$  or mixtures thereof; and (3) reduction of  $CF_3CH_2CF_2Cl$  to  $CF_3CH_2CF_2H$ .

**5730874**

**EXTRACTION OF METALS USING  
SUPERCRITICAL FLUID AND CHELATE  
FORMING LEGAND**

Wai Chien M; Laintz Kenneth E Moscow, ID, UNITED STATES assigned to Idaho Research Foundation Inc

A method of extracting metalloids and metal species from a solid or liquid material by exposing the material to a supercritical fluid solvent containing a chelating agent is described. The chelating agent forms chelates that are soluble in the supercritical fluid to allow removal of the species from the material. In preferred embodiments, the extraction solvent is supercritical carbon dioxide and the chelating agent is a fluorinated beta-diketone. In especially preferred embodiments the extraction

solvent is supercritical carbon dioxide, and the chelating agent comprises a fluorinated beta-diketone and a trialkyl phosphate, or a fluorinated beta-diketone and a trialkylphosphine oxide. Although a trialkyl phosphate can extract lanthanides and actinides from acidic solutions, a binary mixture comprising a fluorinated beta-diketone and a trialkyl phosphate or a trialkylphosphine oxide tends to enhance the extraction efficiencies for actinides and lanthanides. The method provides an environmentally benign process for removing contaminants from industrial waste without using acids or biologically harmful solvents. The method is particularly useful for extracting actinides and lanthanides from acidic solutions. The chelate and supercritical fluid can be regenerated, and the contaminant species recovered, to provide an economic, efficient process.

**5731481****PROCESS FOR THE MANUFACTURE OF  
1,1,1,2-TETRAFLUOROETHANE**

Cheminal Bernard; Lacroix Eric; Lantz Andre  
Brignais, FRANCE assigned to Societe Atochem

The invention relates to the manufacture of 1,1,1,2-tetrafluoroethane (F134a) by gas-phase catalytic fluorination of 1-chloro-2,2,2-trifluoroethane (F133a). A mixed catalyst is employed, composed of nickel and chromium oxides, halides and/or oxyhalides deposited on a support consisting of aluminium fluoride or of a mixture of aluminium fluoride and alumina. This mixed catalyst makes it possible to obtain an excellent selectivity for F134a with a high production efficiency.



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