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ENVIRONMENTAL CATALYSIS

5763350

Catalysts for removing sulfur compounds from industrial gases, a process for their production and their use

Immel Otto; Müller Harald, Krefeld, Germany assigned to Bayer Aktiengesellschaft

Catalysts for removing sulfur compounds almost completely from industrial gases are made by impregnating a suitable support with an oxide of at least one element selected from Group VIB of the Periodic System of Elements and at least two other oxides of elements selected from Groups IB, IIB, VIB and VIIB of the Periodic System of Elements. Industrial gases in which sulfur compounds are present are brought into contact with these catalysts under conditions such that the sulfur compounds are converted to elemental sulfur and thus removed from the industrial gas.

5763352 Catalyst composition for the purification of the exhaust of diesel vehicles, catalyst using the same and preparing methods thereof

Jung Hyun-Jong; Ku Bon-Chul; Kim Yong-Woo; Choi Yong-Taek; Lee Ki-Ho; Min Kyeong-Cheo; Um Jae-Woong, Seoul, Korea assigned to Yukong Ltd

The composition based on a discharge from an oil refining plant after a desulfurization of heavy oils in the oil refining plant using a catalyst, comprising: 80% or less of vanadium; 80% or less of molybdenum; 20% or less of nickel; 30% or less of cobalt; 99% or less of alumina; and a trace of the impurities, which is catalytically active to purify the exhaust of diesel vehicles. A filter or a washcoat made of the discharged catalyst composition alone or in combination with ordinary filtering materials or ordinary washcoat materials can be very useful for purification of smoke. In addition, a catalyst in which at least one metal of the platinum group is uniformly impregnated on the filter is quite superior to conventional ones employing alumina or titania as a washcoat in stability to both high temperature and sulfur trioxide.

5770093

Catalyst for treatment of waste water, method for production thereof and method for treatment of waste water therewith

Shiota Yusuke; Ishii Tohru; Mitsui Kiichiro, Hyogo, Japan assigned to Nippon Shokubai Co Ltd

A catalyst for the treatment of a waste water comprises an oxide and/or a composite oxide of manganese, the oxide and/or the composite oxide of at least one metal selected from the group consisting of iron, titanium, and zirconium, and optionally a precious metal. A method for the production of this catalyst is also disclosed. A method for the treatment of a waste water comprises subjecting the waste water to wet oxidation treatment with an oxygen-containing gas by the use of a catalyst under pressure such that the waste water retains the liquid phase thereof.

5772972 Catalyst / hydrocarbon trap hybrid system

Hepburn Jeffrey Scott; Jen Hung-Wen; Gandhi Harendra Sakarlal; Otto Klaus, Dearborn, MI, United States assigned to Ford Global Technologies Inc

The invention is an automotive catalyst system for treating internal combustion engine exhaust gases. The system comprises a hybrid system of hydrocarbon trapping material and palladium based three-way catalyst material, the hydrocarbon trapping material being capable of adsorbing hydrocarbons present in said internal combustion exhaust gases and substantially maintaining adsorbance of the adsorbed hydrocarbons until after the palladium based three-way catalyst material reaches a temperature at which it is capable of oxidizing the hydrocarbons. The palladium based three-way catalyst is carried on a substrate, which may be the trapping material, in an amount of between about 100–500 g palladium/ft³ of substrate.

5776423

Trimetallic zeolite catalyst and method of NOx abatement using the same

Feeley Jennifer; Deeba Michel; Farrauto Robert; Dang Dinh, Clinton, NJ, United States assigned to Engelhard Corporation

A catalytic material useful for the abatement of NOX in a lean environment containing a zeolite material having incorporated therein copper, cobalt and iron as catalytically active species. The catalytically active metals are preferably incorporated into the zeolite by ion exchange and precipitation. The catalytic material may typically contain from about 2.0 to about 8 percent copper, from about 1.0 to about 4.0 percent iron and from about 0.25 to about 4.0 percent cobalt by weight of the catalytic material, i.e., by weight of the zeolite material plus the catalytic metals incorporated therein. Optionally, the catalytic material may be admixed with a binder and applied as an adherent coating onto a carrier to be placed in a gas stream containing the nitrogen oxides.

5779915

Method of removing chlorine and halogen–oxygen compounds from water by catalytic reduction

Becker Arne; Sell Michael; Neuenfeldt Gerhar; Koch Veronika; Schindler Hubert, Hanover, Germany assigned to Solvay Umweltchemie GmbH

PCT No. PCT/EP95/03481 Sec. 371 Date Mar. 7, 1997 Sec. 102(e) Date Mar. 7, 1997 PCT Filed Sep. 5, 1995 PCT Pub. No. WO90/07617 PCT Pub. Date Mar. 14, 1996. The invention concerns a method of removing substances present in water, in particular halogen–oxygen compounds which remain in the water as residues of disinfecting or are formed as by-products of oxidative water treatment. According to the invention, the substances present in water are removed by catalytic reduction in the presence of hydrogen on a supported precious metal catalyst.

CATALYSIS FOR FINE AND SPECIALTY CHEMICALS

5767276

Asymmetric synthesis catalyzed by transition metal complexes with new chiral ligands

Zhang Xumu, State College, PA, United States assigned to The Penn State Research Foundation

A chiral ligand having the following structure: (* See Patent for Chemical Structure*) wherein AR is any aromatic and/or ring structure, and R is selected from

the group consisting of aryl, oxygenated aryl, alkyl, oxygenated alkyl, AR, oxygenated AR and combinations thereof.

5767304

Catalytic asymmetric aminohydroxylation of olefins with carbamates

Sharpless K Barry; Li Guigen, La Jolla, CA, United States assigned to The Scripps Research Institute

beta-Hydroxyamines and beta-hydroxycarbamates are synthesized from olefin substrates by means on a catalyzed asymmetric addition reaction. The addition reaction is catalyzed by osmium and is co-catalyzed by chiral ligands. The chiral ligands, in addition to being co-catalysts with the osmium, also serve to direct the addition reaction regioselectively and enantioselectively. Divalent ligands are preferred over monovalent ligands because of their enhance regio- and enantioselectivity. Carbamates are employed as an oxidant nitrogen source for the production of beta-hydroxy-sulfonamides. Excellent yields and enantiomeric efficiencies are achieved with co-solvents containing a 50/50 (v/v) mixtures of water and organic solvent. The performance of the reaction is further enhanced by omitting the addition silver or mercurial salts conventionally employed in asymmetric aminohydroxylation additions to olefins performed in neat or substantially neat solvents. beta-Hydroxyamines are then obtained by deprotecting the corresponding beta-hydroxycarbamate.

5786514

Process for alkoxyating carbonyl-functionalized phenols using double metal cyanide catalysts

Shen Jianzhong; Ba Sujuan; Braunstein David M; Kesling Haven S West, Chester, PA, United States assigned to Arco Chemical Technology L P

A process for alkoxyating phenols is disclosed. The process comprises reacting a carbonyl-functionalized phenol with an alkylene oxide in the presence of a substantially non-crystalline double metal cyanide (DMC) catalyst. The process offers fast reaction times at low catalyst levels, reduced problems with condensation side reactions, and low-color, low-viscosity, low-polydispersity alkoxyated phenols. The process enables efficient preparation of alkoxyated carbonyl-functionalized phenols that are especially valuable in the surfactant industry.

5786520**O-alkylation of phenolic compounds via rare earth orthophosphate catalysts**

Gilbert Laurent; Janin Marcelle; Le Govic Anne-Marie; Tirel Philippe-Jean, Lyons, France assigned to Rhone-Poulenc Chimie

Carbocyclic/aliphatic ethers, for example anisole, quaiacol, guaethol, p-methoxyphenol and ethylene dioxybenzene, are selectively prepared, in good yield, by reacting a phenolic compound, for example a phenol, hydroquinone, pyrocatechin, naphthol, or the like, with an alcohol, for example methanol, ethanol, isopropanol, ethylene glycol, etc., in gaseous phase, in the presence of a catalytically effective amount of a trivalent rare earth metal orthophosphate, for example a lanthanum, cerium or samarium orthophosphate, optionally doped with an alkali or alkaline earth metal, preferably cesium.

ORGANOMETTALIC/HOMOGENEOUS CATALYSIS**5763672****Catalyst composition**

Cooley Neil Andrew; Kirk Adrian Peter, Teddington, United Kingdom assigned to BP Chemical Limited

Catalyst compositions for preparing polyketones comprising (a) a Group VIII metal compound, containing at least one ligand capable of coordinating to the Group VIII metal, and (b) a boron hydrocarbyl compound are disclosed, in particular catalyst compositions wherein the boron hydrocarbyl compound is a Lewis acid of the formula BXYZ where at least one of X, Y and Z is a monovalent hydrocarbyl group. A preferred catalyst composition comprises a palladium complex and B(C₆F₅)₃.

5763679**Metal–ligand complex catalyzed processes**

Nicholson James Clair; Bryant David Robert; Nelson James Russell, Saint Albans, WV, United States assigned to Union Carbide Chemicals and Plastics Technology Corporation

This invention relates to a process which comprises reacting one or more reactants in the presence of a metal–organopolyphosphite ligand complex catalyst and optionally free organopolyphosphite ligand to produce a reaction product fluid comprising one or more products, wherein said process is conducted at a carbon monoxide partial pressure such that reaction rate increases as carbon monoxide partial pressure decreases and reaction rate decreases as carbon monoxide partial pressure increases and which is sufficient to prevent and/or lessen deactivation of the metal–organopolyphosphite ligand complex catalyst.

5780702**Process for displacing the double bond in olefins using a catalytic composition based on transition metal complexes**

Chauvin Yves; Mussmann Lothar; Olivier Hélène, Le Pecq, France assigned to Institut Francais du Petrole

A catalytic composition comprises at least one quaternary ammonium and/or phosphonium salt in which the anion is preferably selected from the group formed by tetrafluoroborate, tetrachloroborate, hexafluorophosphate, hexafluoroantimonate, hexafluoroarsenate, trifluorosulphonate, fluorosulphonate, tetrachloroaluminate, dichlorocuprate, and trichlorozincate, and at least one complex of a transition metal from groups 8, 9 and 10, i.e., iron, ruthenium, cobalt, rhodium, iridium, nickel, palladium and platinum, is for the displacement of the double bond in olefins.

POLYMERISATION CATALYSIS**5763349****Solid precursor of a catalytic system for the polymerization of olefins, process for its preparation, catalytic system comprising this solid precursor and process for the polymerization of olefins in the presence of this catalytic system**

Zandona Nicola, Waterloo, Belgium assigned to Solvay Polyolefins Europe - Belgium

Solid precursor of a catalytic system for the polymerization of olefins, containing at least one neutral halogenated metallocene derived from a transition metal, the latter being linked to at least one halogen atom, and at least one ionizing agent. Process for the preparation

of this solid precursor, according to which a compound based on the neutral halogenated metallocene is mixed with a compound based on the ionizing agent in a heterogeneous medium. Catalytic system comprising an organometallic compound derived from a metal chosen from groups IA, IIA, IIB, IIIA and IVA of the Periodic Table, and a solid precursor described above. Process for the polymerization of olefins, in which this catalytic system is used.

5763547

Supported catalyst complexes for olefin in polymerization

Kolthammer Brian W S; Tracy John C; Cardwell Robert S; Rosen Robert K, Lake Jackson, TX, United States assigned to The Dow Chemical Company

A supported catalyst composition comprising a complex of a Group 4 metal cyclopentadienyl derivative reacted with silica treated with an aluminoxane demonstrates improved reactivity, especially for incorporating long chain alpha-olefins and also shows improved resistance to catalyst poisoning. The supported catalyst composition is adapted to produce homogeneous polymers, copolymers, terpolymers, etc., for example, homogeneous polyethylene, homogeneous poly(ethylene-oc-tene) copolymers and the like. The invention further includes the process of preparing the supported catalyst compositions and a process for preparing olefinic polymers using these catalyst compositions.

5763549

Cationic metallocene catalysts based on organoaluminum anions

Elder Michael J; Ewen John, Raleigh, NC, United States assigned to Fina Technology Inc

Metallocene catalysts and their preparation and use in the polymerization of olefins. Specifically, the catalysts and processes relate to polymerization of olefins in which an aluminum ionizing agent containing a triphenylcarbenium ion is utilized in preparing the catalyst. The preparation of an olefin polymerization catalyst comprising a metallocene-type catalyst and triphenylcarbenium tetrakis(pentafluorophenyl)aluminate is disclosed.

5767031

Ziegler–Natta catalysts modified with metallocenes

Shamshoum Edwar S; Rauscher David John; Bauch Christopher G, Houston, TX, United States assigned to Fina Technology Inc

This invention relates to a process for making a catalyst in which a metallocene is included in the synthesis of a Ziegler–Natta catalyst and a process for using the catalyst in the polymerization of olefins, specifically, propylene, to produce a polymer product with broad polydispersity. The catalyst may be synthesized by: 1) selecting a solid component comprising a magnesium dialkoxide; 2) adding a chlorinating agent; 3) adding a titanating agent; 4) adding a metallocene prior to step 2), after step 2), prior to step 3) or after step 3) and 5) adding an aluminum alkyl cocatalyst.

5767032

Catalyst for olefin polymerization and a method for the manufacture thereof

Hokkanen Harri; Knuutila Hilkk; Lakomaa Eeva-Liis; Sormunen Pekka, Helsinki, Finland assigned to Borealis A/S

Provided are heterogeneous catalysts for homo- and copolymerization of olefins as well as a method for preparing these catalysts, which comprise at least one metallocene compound of a Group 4A, 5A or 6A (Hubbard) transition metal on a solid inorganic support. The method comprises the steps of vaporizing the metallocene compound, treating the support material with the vaporized metallocene compound at a temperature which is sufficiently high to keep the metallocene compound in the vaporous state, contacting the support material with an amount of the vaporized metallocene compound which is sufficient to allow for a reaction between the metallocene compound and at least a substantial part of the available surface sites capable of reacting therewith, removing the rest of the metallocene compound not bound to the support, and optionally treating the product thus obtained with an activating agent. The catalysts are active even if very low amounts of activator agents, such as alumoxane, are used. Furthermore, the polymerization performance of the catalysts can be regulated during the preparation of the catalysts. Thus, by using different support pretreatment

temperatures, or by using two or more different metallocenes, and by altering the order in which they are added on the support, it is possible to control and regulate the activity of the catalysts and the polymer properties, such as molecular weight and molecular weight distribution.

5767033

Transition metal compound and olefin polymerization catalyst component comprising said compound

Imuta Junichi; Saito Junji; Ueda Takashi; Kiso Yoshihisa; Mizuno Akira; Kawasaki Masaaki, Yamaguchi, Japan assigned to Mitsui Petrochemical Industries Ltd

The novel transition metal compound of the invention is represented by the following formula: (*See Patent for Chemical Structure*) wherein R1 and R2 are each a hydrogen atom or a hydrocarbon group of 1 to 3 carbon atoms; X1 and X2 are each a halogen atom; and Y is a divalent silicon-containing group selected from the group consisting of dimethylsilylene, diphenylsilylene and methylphenylsilylene. The transition metal compound is useful for an olefin polymerization catalyst with which a propylene (co)polymer having specific structure is prepared.

5767034

Olefin polymerization catalyst with additive comprising aluminum–silicon composition, calixarene derivatives or cyclodextrin derivatives

Diaz-Barrios Antonio; Liscano Jose; Trujillo Marianela; Agrifoglio Giuseppe; Matos Jose Orlando, San Antonio, Venezuela assigned to Intevp S A

An olefin polymerization catalyst includes a halogen-containing magnesium compound; a titanium compound; and an additive selected from the group consisting of (a) a mixture of an aluminum alkoxide compound and polydimethylsiloxane, (b) an aluminosiloxane, (c) the reaction product of an aluminum alkyl and a calixarene, (d) the reaction product of an aluminum alkyl and a cyclodextrin, and mixtures of (a)–(d).

5767209

Catalyst compositions and process for preparing polyolefins

McNally John Paul, Berkshire, United Kingdom assigned to BP Chemicals Limited

Catalyst compositions comprising metallocene complexes having Lewis base functionality may be used for the preparation of polyolefins. Preferred complexes are zirconium complexes in which the Lewis base functionality is provided by ether or thioether groups. The catalyst compositions may be supported on inorganic supports or on supports having polymerisation activity eg Ziegler catalysts.

5767211

Synthesis of multi-functional hyperbranched polymers by polymerization of di-or tri-vinyl monomers in the presence of a chain transfer catalyst

Guan Zhibin, Wilmington, DE, United States assigned to E I du Pont de Nemours and Company

This invention concerns the synthesis of multi-functional hyperbranched polymers by free radical polymerization of di- or tri-vinyl monomers in the presence of a chain transfer catalyst and a non-peroxide free radical initiator. The low viscosity and high functionality of these polymers make them useful for automotive coatings and for photopolymerization applications.

5767215

Coarse-grained polyolefin, its production method and a catalyst used in the method

Garoff Thomas; Leinonen Timo; Iiskola Eero, Helsinki, Finland assigned to Borealis Holding A/S

The invention relates to a method for preparing polyolefins. In the polymerization, a procatalyst composition is being used, which has been prepared by contacting MgCl₂, a lower alcohol, a titanium compound and a phthalic acid ester. The polyolefin is given the adequate coarseness by using a procatalyst of the said type, which has been prepared by carrying out a transesterification between the lower alcohol and the phthalic acid ester and by selecting dioctyl phthalate (DOP) as phthalic acid ester.

5770538

Group 4 metal diene complexes and addition polymerization catalysts therefrom

Devore David D; Timmers Francis J; Stevens James; Rosen Robert, Midland, MI, United States assigned to The Dow Chemical Company

Novel Group 4 metal complexes containing one and only one cyclic delocalized, anionic, pi-bonded group wherein the metal is in the +4 formal oxidation state and having a bridged ligand structure, also referred to as constrained geometry complexes and a conjugated diene divalent anionic ligand group; catalytic derivatives of such complexes including novel zwitterionic complexes; and the use thereof as catalysts for polymerizing olefins, diolefins and/or acetylenically unsaturated monomers.

5770664

Catalyst component for producing polyolefin, catalyst for producing polyolefin comprising the catalyst component, and process for producing polyolefin in the presence of the catalyst

Okumura Yoshikuni; Kibino Nobuyuki; Maki Tetsuya; Hori Akihiro; Ishida Kiyotaka; Miyake Shigenobu; Inazawa Shintaro, Oita, Japan assigned to Japan Polyolefins Co Ltd

A catalyst component for producing polyolefin, a catalyst for producing polyolefin using the catalyst component, and a process for producing polyolefin in the presence of the catalyst. The catalyst component comprises a metallocene compound represented by formula (1): (*See Patent for Chemical Structure*) (1) All the symbols in formula (1) are defined in the description.

5770678

Polymerization of, and depolymerization to, cyclic ethers using selected metal compound catalysts

Drysdale Neville Everton; Bockrath Richard Edmund; Herron Norman; Citron Joel David, Newark, DE, United States assigned to E I du Pont de Nemours and Company

A process for polymerizing oxiranes, oxetanes, oxepanes, dioxolanes, trioxanes, and tetrahydrofurans to their respective polymers by contacting them with a selected metal compound is disclosed; and also a process for depolymerizing polytetrahydrofurans to monomeric tetrahydrofurans by contacting the polymer with a selected metal compound at a temperature of about 100 degrees C. to about 250 degrees C. The catalysts may be in solution or part of a heterogeneous

solid, and selected organic compounds are used as accelerators in the polymerizations. The polymeric products, some of which are novel, may be used as polyether monomers for further polymerization, as by reaction with isocyanates to produce polyurethanes, and other useful polymers. Some of the polymeric products are relatively high in molecular weight and are suitable for direct use, for instance as spandex fibers.

5770753

Metallocenes containing aryl-substituted indenyl derivatives as ligands, process for their preparation, and their use as catalysts

Küber Fran; Bachmann Bernd; Spaleck Walter; Winter Andreas; Rohrmann Jürgen, Oberursel, Germany assigned to Targor GmbH

Metallocenes containing aryl-substituted indenyl derivatives as ligands, process for their preparation, and their use as catalysts. A very effective catalyst system for the polymerization or copolymerization of olefins comprises a cocatalyst, preferably an aluminoxane or a supported aluminoxane, and a metallocene of the formula I (*See Patent for Chemical Structure*) (I) in which, in the preferred form, M1 is Zr or Hf, R1 and R2 are halogen or alkyl, R3 is alkyl, R4 to R12 are alkyl or hydrogen and R13 is a (substituted) alkylene or heteroatom bridge. The metallocenes, in particular the zirconocenes, produce polymers of very high molecular weight, in the case of prochiral monomers polymers of very high molecular weight, very high stereotacticity and very high melting point, at high catalyst activities in the industrially particularly interesting temperature range between 50 degrees and 80 degrees C. In addition, reactor deposits are avoided by means of supported catalyst systems.

5773535

Ziegler–natta catalyst systems containing specific organosilicon compounds

Friedrich Holger; Hüffer Stephan; Hingmann Roland Bobenheim, Roxheim, Germany assigned to BASF Aktiengesellschaft

Catalyst systems of the Ziegler–Natta type comprising as active constituents a) a titanium-containing solid component prepared using a titanium compound, a

compound of magnesium, a halogenating agent and an electron donor component, b) an aluminum compound and c) as further electron donor component, an organosilicon compound of the formula (I) (*See Patent for Tabular Presentation*) PS in which R1 is a C1-C10-alkyl radical or a C3-C8-cycloalkyl radical, R2 is a 2,4,4,6, 6-pentamethylheptyl radical and R3 is a C1-C8-alkyl radical, are particularly suitable for the preparation of polymers of C2-C10-alk-1-enes.

5773537

Ziegler–natta catalyst systems containing specific organosilicon compounds

Mueller Patrik; Hungenberg Klaus-Dieter; Kerth Juer-gen; Zolk Ralf, Kaiserslautern, Germany assigned to BASF Aktiengesellschaft

Catalyst systems of the Ziegler–Natta type contain, as active components a) a titanium-containing solid component in whose preparation a titanium compound, a compound of magnesium, a halogenating agent and an electron donor component are used, b) an aluminum compound and c) as a further electron donor component, an organosilicon compound of the formula (I) (*See Patent for Tabular Presentation*) PS where R1 is C1-C10-alkyl or C3-C8-cycloalkyl, excluding sec-butyl, R2 is sec-butyl and R3 is C1-C8-alkyl. The catalyst systems are particularly suitable for the preparation of polymers of C2-C10-alk-1-enes.

CATALYST PREPARATION

5761793

Process for the production of a composite consisting of electrode material, catalyst material and a solid–electrolyte membrane

Bevers Dirk; Wagner Norbert, Boeblingen, Germany assigned to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e V

In order to improve a process for the production of a composite consisting of electrode material, catalyst material and a solid–electrolyte membrane for an electro-chemical cell, in particular a fuel cell, with which solid–electrolyte material is brought into pore-deep contact with the electrode material and the catalyst material by softening it, such that this can be carried out as effectively and inexpensively as possible it is

suggested that a catalytic powder comprising electrode material, catalyst material and the solid–electrolyte material be produced, that a catalytic layer be produced on a carrier from the catalytic powder, that the catalytic layer be heated on a side facing away from the carrier to soften the solid–electrolyte material and that subsequently the catalytic layer be applied under pressure to the solid–electrolyte membrane while the solid–electrolyte material is still softened in order to form a composite.

5767036

Platinum–aluminum alloy catalyst for fuel cells and method of its production and use

Freund Andreas; Lehmann Thomas; Starz Karl-Anton; Heinz Gerhard; Schwarz Robert, Kleinostheim, Germany assigned to Degussa Aktiengesellschaft

A catalyst for use in a fuel cell containing a platinum–aluminum alloy on a conductive carbon carrier, wherein the atomic ratio of platinum to aluminum is from 80:20 to 60:40 and the alloy is present on the carbon carrier in carbided form with the structure of platinum–aluminum carbide Pt₃AlC_{0.5}. Also disclosed are multimetallic alloy catalysts for use as electrode catalysts in fuel cells. Catalysts with high activity and stability are obtained on the basis of carbided platinum–aluminum alloy catalysts by adding alloying elements of the groups VIB, VIIB, VIII and IB of the Periodic Table of Elements.

5767040

Catalyst prepared from nickel-containing hydrotalcite-like precursor compound

Bhattacharyya Alakananda; Chang Wen-Dong; Kleefisch Mark S; Udovich Carl, Wheaton, IL, United States assigned to Amoco Corporation

A method and nickel-containing catalyst are disclosed for preparing synthesis gas by the reforming of a hydrocarbyl compound using an oxygen-containing compound.

5770539

Lewis acid catalysts supported on porous polymer substrate

Chen Frank Joung-Yei; Chung Tze-Chiang; Stanat Jon Edmond; Lee Soon Hong, Edison, NJ, United States assigned to Exxon Chemical Patents Inc

Immobilized Lewis Acid catalyst comprising porous polymer film substrate having at least one Lewis Acid immobilized on pore surfaces thereof, said polymer film substrate prior to having said Lewis Acid immobilized thereon comprising a porous film of functionalized polymer and, optionally, unfunctionalized polymer, said functionalized polymer having within its structure units represented by the formula (*See Patent for Chemical Structure*) and said unfunctionalized polymer having within its structure repeating monomer units represented by the formula (*See Patent for Chemical Structure*) wherein D represents OH, halide, NH₂, NHR₃, OM', or OM''; R₁ represents hydrogen, C₁-C₂₄ alkyl, C₃-C₂₄ cycloalkyl, C₆-C₁₈ aryl or C₇-C₃₀ alkaryl; R₂ represents C₃-C₂₄ alkyl, C₃-C₂₄ cycloalkyl, C₆-C₁₈ aryl or C₇-C₃₀ alkaryl; R₃ represents C₁-C₂₄ alkyl, C₃-C₂₄ cycloalkyl, C₆-C₁₈ aryl or C₇-C₃₀ alkaryl; M' represents alkali metal; M'' represents alkaline-earth metal; and x and y represent the mole % of each respective subunit, the sum of x + y being 100%. The immobilized Lewis Acid catalyst system is useful for carbocationic polymerization of olefin monomer.

5770672

Catalyst for low temperature cure of blocked isocyanates

Gitlitz Melvin H; Seshadri Sri, Berwyn, PA, United States assigned to Elf Atochem North America Inc

The present invention comprises a polystannoxane catalyst, a curable composition containing the catalyst and a method of using the catalyst and curing the composition. The curable composition comprises: (i) a blocked isocyanate; (ii) a functional component containing reactive hydrogen; (iii) a polystannoxane catalyst for promoting the reaction of the blocked isocyanate with the functional component. A co-catalyst may also be employed based on Cu, Zn, Ni, Zr, Ce, Fe, Co, V, Sb and Bi and especially oxides, salts or chelates of said metals. The invention also relates to a method for curing a blocked isocyanate at a low reaction temperature which comprises combining the catalyst with the blocked isocyanate and functional component and heating to a temperature less than about 180 degrees C. to obtain a cured urethane.

5770684

Catalyst compositions

Stewart Nevin John; Dossett Stephen John, Guildford, United Kingdom assigned to BP Chemicals Limited

A catalyst composition prepared by reacting together: (a) a source of a Group VIII metal, (b) a bidentate phosphine ligand having at least two phosphorous atoms joined by a bridging group of the formula -NR₂(CX)NR₂ where X double bond O, S or Se, each R₂ is the same or different and is a hydrogen or hydrocarbonyl group, and (c) a promoter is disclosed. The catalyst composition is used for preparing polyketones.

5773096

Method of catalyst preparation by high-temperature hydrothermal incorporation of noble metals onto surfaces and matrices

Hettiarachchi Samson; Diaz Thomas Pompilio; Weber John Ewing, Menlo Park, CA, United States assigned to General Electric Company

A method of depositing noble metals on surfaces or matrices to manufacture industrial catalysts that can be used in a variety of applications. Such deposition of noble metals can be achieved by treating the surfaces in high-temperature (150 degrees C. or higher) water containing dissolved noble metal ions or its colloidal suspensions. The method consists of the steps of placing the surface of a metal substrate in contact with a volume filled with high-temperature water; injecting a solution of a noble metal compound into the volume for a predetermined duration; and removing the surface of the metal substrate from contact with the high-temperature water after expiration of said predetermined duration. The noble metal compound has the property that it releases species of the noble metal in high-temperature water. These noble metal species deposit on or incorporate in the oxide film on the surface of the metal substrate.

5773382

High performance VPO catalyst and process of preparation thereof

Mitchell Scott F; Keppel Robert A; Mummey Michael J, St Charles, MO, United States assigned to Huntsman Petrochemical Corporation

An activated porous phosphorus/vanadium oxide catalyst adapted for the catalytic oxidation of a hydrocarbon to produce a carboxylic acid anhydride. The catalyst comprises a shaped body having a volume of at least about 0.02 cc, a phosphorus content of between about 1.05 and about 1.20, a B.E.T. surface area of at least about 15 m²/g, an average vanadium oxidation state of between about 4.06 and about 4.3, a total pore volume of at least about 0.15 cc/g, a normalized apparent shaped body density of between about 1.0 and about 2.0 g/cc, and a crush strength of at least about 4 pounds. At least about 20% of the pore volume of the catalyst is constituted of pores having a diameter between about 0.1 and about 3.3 μm, and at least about 40% of the pore volume is constituted of pores having a diameter of less than about 0.1 μm. The catalyst is prepared by mixing a particulate phosphorus/vanadium oxide precursor with a pore modification agent to produce a modified catalyst precursor composition, forming the modified precursor composition into a predetermined shape, and removing the pore modification agent substantially at a temperature below 300 degrees C., preferably using air as a stripping gas.

5773383

Method of making solid acid catalysts with metal cores

Suciu George Dan, Ridgewood, NJ, United States

A method is provided for producing a solid acid catalyst having a structure including a metal core having essentially an entire outer surface covered by a layer of metal oxide including a multitude of active sites provided with Lewis Acidity. The method involves an oxidizing step to form a layer of metal oxide and a halogenating step to produce a metal oxide layer with multiple active sites exhibiting Lewis Acidity.

5779980

Gas sensor having a compounded catalytic structure

Hatfield Thomas N, Mishawaka, IN, United States assigned to CTS Corporation

A gas sensor for detecting the presence of gases in air. In particular, sensors are described that have a compound catalytic support structure and are suitable for sensing hydrocarbons and nitrogen oxides. The de-

vice features a ceramic substrate having a temperature sensitive resistor on one surface. A mixture of ceramic particles and glass powder are applied over the substrate and resistor and fired so that the glass flows and adheres the ceramic particles to the substrate. A catalyst layer of either platinum or rhodium is deposited on the catalyst support and a thermally sensitive resistor element detects reactions of hydrocarbons or nitrogen oxides on the corresponding catalyst. The invention is suitable for sensing gases in the harsh environment of an automobile exhaust system.

5780101

Method for producing encapsulated nanoparticles and carbon nanotubes using catalytic disproportionation of carbon monoxide

Nolan Peter; Cutler Andrew H; Lynch David, Tucson, AZ, United States assigned to Arizona Board of Regents on behalf of the University of Arizona

A method for the production of carbon encapsulated nanoparticles, carbon nanotubes and other closed carbon structures, including contacting a catalyst of a transition metal, or a compound or alloy thereof, with a gas mixture containing carbon monoxide, and an amount of available molecular hydrogen which is insufficient to cause formation of graphite plane edges through capping, at a temperature in the range from 300 degrees–1000 degrees C., to provide closed carbon structures, which are useful in the preparation of thermal composites, reinforcement composites and magnetic particle recording media.

5780381

Cobalt/molybdenum/zirconium catalyst for Fischer-Tropsch synthesis

Wilson Geoffrey Robert; Carr Norman Loren, Kit Tanning, PA, United States assigned to Syncrude Technology Inc

A catalyst for a slurry reactor Fischer–Tropsch conversion process utilizing novel catalysts comprising cobalt promoted with zirconium, molybdenum or zirconium and molybdenum and on a small diameter alumina support. The catalysts have been found to be highly selective for production of liquid hydrocarbons while minimizing production of less desirable oxygen-

containing products such as alcohols. The preferred catalysts contain from about 5% to 35% cobalt and from about 0.1% to 10% zirconium or zirconium and molybdenum. The preferred process is carried out in a one or more slurry bubble column reactor stages in series.

5780383

Solid superacid catalyst comprising group VII metal and having H_0 less than -18

Hollstein Elmer; Wei James T; Hsu Chao-Yang, Wilmington, DE, United States assigned to Sun Company Inc (R & M)

The invention is a solid catalyst having acid strength H_0 less than -18. Such catalysts are characterized by the ability to react with very weak bases, such as butane, at relatively low temperatures, for example temperatures in the range from 20 degrees to 200 degrees C. The catalysts have exceptionally high activity for various hydrocarbon conversion processes, for example, because of their exceptionally high acid strength.

5780384

Hydrated manganese dioxide oxidation catalysts and process of producing same

Tomczak Douglas Charles; Libanati Cristian; Beeckman Jean Willem, Bethesda, MD, United States assigned to Megtec Systems Inc

The present invention generally relates to supported mono charged cation delta manganese dioxide hydrate having a noble metal on the surface thereof, and to the use thereof for low temperature oxidation of volatile organic compounds (VOCs), particularly oxygen-containing VOCs. The present invention further relates to the use of the supported catalysts to reduce the amount of VOCs present in waste gases produced by processes such as baking, brewing, and flexographic printing. Catalysts prepared from the supported manganese-containing catalysts have increased resistance to poisoning in the presence of catalyst contaminants, e.g., sulfur containing compounds.

REFINERY CATALYSIS AND CATALYTIC PROCESSES

5762902

Catalyst comprising a faujasite type zeolite and a ton type zeolite and a process for the hydroconversion of hydrocarbon petroleum feeds

Benazzi Eric; Mignard Samue; George-Marchal Nathalie; Kasztelan Slavik, Montesson, France assigned to Institut Francais du Petrole

The invention concerns a composition comprising at least one matrix, at least one faujasite type zeolite and at least one TON type zeolite. The TON type zeolite can be Nu-10, THETA-1, KZ-2, or ISI-1. The catalyst also contains at least one hydrogenating element from groups VIII and VI. The catalyst is particularly for use for hydrocracking to maximize the yield of middle distillates (kerosine and gas oil).

5763348

Method of regenerating deactivated catalyst

Fung Shun C; Tauster Samuel J; Koo Jay Y, Bridgewater, NJ, United States assigned to Exxon Research and Engineering Company

A deactivated reforming catalyst comprising a type L zeolite containing a Group VIII noble metal may be regenerated and have enhanced dispersion by a method involving contacting the catalyst with oxygen and water at elevated temperatures, contacting the catalyst at elevated temperatures with a source of chlorine such as HCl or Cl₂, and preferably oxygen and water, contacting the catalyst at elevated temperatures with oxygen and optionally water, and contacting the catalyst at elevated temperatures with hydrogen and optionally water to reduce the catalyst. Preferably the noble metal is platinum.

5763351

Fluid fuel reforming ceramic catalysts and their manufacturing methods

Ichimura Shoji, Iwata gun, Japan assigned to Fukuyo Ichimura

A fluid fuel reforming ceramic catalyst comprising a core 2 of a complex oxide ceramic of transition metals, an intermediate layer 3 of an alumina-based silicate ceramic covering the core 2 and an outer layer 4 of a

ceramic containing noble metals prepared by forming the core by firing the complex oxide ceramic of transition metals, coating the intermediate layer of the alumina-based silicate ceramic over the core, and coating the outer layer of the ceramic containing noble metals over the intermediate layer increases the octane number of fluid fuels, enhances their combustion efficiency, and decreases the noxious substances in exhaust gases.

5763720

Transalkylation process for producing aromatic product using a treated zeolite catalyst

Buchanan John; Chester Arthur W; Fung Anthony; Kinn Timothy; Mizrahi Sadi, Hamilton, NJ, United States assigned to Mobil Oil Corporation

A heavy aromatics feed is converted to lighter aromatics products, such as benzene, toluene and xylenes by contacting a C₉ + aromatics fraction and benzene and/or toluene over a catalyst comprising a zeolite, such as ZSM-12, and a hydrogenation component, preferably platinum. The catalyst, complete with hydrogenation component, is treated to reduce aromatics loss. Treatment includes exposure to steam and/or sulfur after incorporation of the hydrogenation component. For additional stability and aromatics retention the steamed and/or sulfur treated catalyst is sulfided by cofeeding a source of sulfur. In a further embodiment of the invention a low hydrogen partial pressure is employed to retain aromatics.

5763725

Process for the production of ethylene by non-catalytic oxidative cracking of ethane or ethane rich C₂-C₄ paraffins

Choudhary Vasant Ramchandr; Rajput Amarjeet Munshiram; Mulla Shafeek Abdul Rashid, Pune, India assigned to Council of Scientific and Industrial Research

An improved process for the production of ethylene by non-catalytic oxidative cracking of ethane or ethane rich C₂-C₄ paraffins with high conversion, selectivity and productivity, operating in a most energy efficient and safe manner requiring little or no external energy, in an empty tubular reactor, wherein the exothermic oxidative conversion of ethane or ethane rich C₂-C₄ paraffins is coupled with the endothermic hydrocarbon

cracking reactions by carrying out both the exothermic and endothermic reactions simultaneously in the reactor so that the heat produced in the exothermic reactions is used instantly in the endothermic reactions and thereby making the overall process mildly exothermic, near thermo-neutral or mildly endothermic, which comprises passing a preheated gaseous feed comprising of ethane or ethane rich C₂-C₄ paraffins, oxygen and steam through an empty tubular reactor operated at the effective temperature, pressure, space velocity and hydrocarbon/O₂ and hydrocarbon/steam mole ratios in the feed, is provided.

5767038

Catalyst for the hydroisomerization of long-chain N-paraffins and process for preparing it

Perego Carlo; Zanibelli Laura; Flego Cristina; Del Bianco Alberto; Bellussi Giuseppe, Milan, Italy assigned to Eniricerche S p A

Disclosed is an active catalyst in the hydroisomerization of waxes (paraffins), which catalyst is constituted by a carrier of acidic nature, of silica-alumina gel, and one or more metals belonging to Group VIII. Also a process for preparing said catalyst is disclosed.

5767335

Method for preventing the accumulation of light ASO in the alkylation catalyst of alkylation process system

Anderson Richard; Hovis Keith W, Bartlesville, OK, United States assigned to Phillips Petroleum Company

Disclosed is an alkylation process which utilizes a mixture of sulfone and hydrogen fluoride as an alkylation catalyst. The process provides for the removal of light ASO from the alkylation catalyst that accumulates therein as a result of the inability to remove the light ASO produced as a by-product of the alkylation reaction.

5770043

Integrated staged catalytic cracking and hydroprocessing process

Ellis Edward S; Gupta Ramesh; Bienstock Martin G, Basking Ridge, NJ, United States assigned to Exxon Research and Engineering Company

Disclosed is a catalytic cracking process which includes more than one catalytic cracking reaction step. The process integrates a hydroprocessing process step between the catalytic cracking reaction steps in order to maximize olefins production, mid-distillate quality and naphtha octane level in the cracked products. Preferably, a first cracked hydrocarbon product is obtained from a first cracking stage and separated into a mid-distillate and gas oil containing fraction having an initial boiling point of at least 300 degrees F., the distillate and gas oil containing fraction is hydroprocessed, and a naphtha fraction and a gas oil containing bottoms fraction of the hydroprocessed material are cracked in a second cracking stage.

5770044**Integrated staged catalytic cracking and hydroprocessing process (JHT-9614)**

Ellis Edward; Gupta Ramesh; Bienstock Martin G, Basking Ridge, NJ, United States assigned to Exxon Research and Engineering Company

Disclosed is a catalytic cracking process which includes more than one catalytic cracking reaction step. The process integrates a hydroprocessing step between the catalytic cracking reaction steps in order to maximize olefins production, distillate quality and octane level of the overall cracked product. Preferably, the hydroprocessing step is included between the reaction stages, and a portion of the hydroprocessed products, i.e., a naphtha and mid distillate fraction, is combined with cracked product for further separation and hydroprocessing. It is also preferred that the first catalytic cracking reaction step be a short contact time reaction step.

5770046**Selective hydrodesulfurization of cracked naphtha using novel catalysts**

Sudhakar Chakka, Fishkill, NY, United States assigned to Texaco Inc

Hydrodesulfurization of cracked naphtha, with minimum attendant hydrogenation of olefins, is effected over a sulfided, carbon supported catalyst bearing (i) at least one non-noble Group VIII metal, (ii) at least one Group VI-B metal, (iii) at least one metal of Group I-A, II-A, III-B, or the lanthanide series of rare earths, and (iv) at least one metal of Group I-B.

5770542**Method for upgrading waxy feeds using a catalyst comprising mixed powered dewaxing catalyst and powdered isomerization catalyst formed into a discrete particle**

Brandes Dee Anne; Zinkie David N; Alward Sandra J, Calgary, Canada assigned to Exxon Research and Engineering Company

It has been discovered that waxy feeds can be upgraded using a catalyst made by combining powdered dewaxing catalyst with powdered isomerization catalyst said mixture of powdered catalysts being formed into a discrete particle.

5773589**Steam reforming catalysts for lower hydrocarbons**

Shoji Kazuo; Mogami Ryuichi; Numaguchi Toru; Matsuhisa Toshio; Yanaru Hideaki; Nishioka Yasuo; Izawa Yasuhiro, Chiba, Japan assigned to Toyo Engineering Corporation; Catalysts and Chemicals Inc Far East]

To provide an improved steam reforming catalyst for lower hydrocarbons which is highly active and has a high crushing strength. An improved steam reforming catalyst for lower hydrocarbons comprising a support constituted of CaO and Al₂O₃ and an active component comprising nickel or a platinum-group metal. The content of CaO is 0.5 to 25 wt% based on the catalyst, and at least part of the CaO forms compounds with the Al₂O₃. The support has a void fraction X of pores with a diameter of 0.5 μm to 20 μm of 0.08 or higher, a void fraction Y of pores with a diameter smaller than 0.5 μm of 0.15 or higher, and a total void fraction Z of 0.23 to 0.8 (provided that Z < or = (X + Y)).

5773678**Use of an omega zeolite based catalyst comprising at least one metal from groups IIa, IVb, IIb or IVa for the dismutation and /or transalkylation of alkylaromatic hydrocarbons**

Benazzi Eric; Alario Fabio, Montesson, France assigned to Institut Francais du Petrole

The invention concerns the use of a catalyst comprising at least one zeolite having a mazzite type structure in its acid form, the catalytic properties of the

catalyst having been modified by depositing, on the external surface of the crystals, at least one metal selected from metals from group IIa of the periodic classification of the elements, such as Be, Mg, Ca, Sr or Ba, group IVb, such as Ti, Zr or Hf, group IIb such as Zn, Cd or Hg and group IVa such as Ge, Sn or Pb, said catalyst also comprising at least one matrix and, optionally at least one element selected from the group formed by IB and VIII of the periodic classification of the elements, for the dismutation of alkylaromatic hydrocarbons, preferably for the dismutation of toluene to produce benzene and xylenes, and/or for the transalkylation of alkylaromatic hydrocarbons, preferably for the transalkylation of toluene and trimethylbenzenes to produce xylenes.

CATALYST REGENERATION

5773606

Catalyst regeneration

Vercauteren Ronny Leontina Marcel; Elseviers Myria, Sint Niklaas, Belgium assigned to Cerestar Holding B V

The present invention relates to the regeneration of a supported molybdenum catalyst which has been used for the epimerisation of a saccharide. The preferred epimerisation is the conversion of glucose to mannose. The catalyst is regenerated by using an oxidising agent such as a peroxide. The regeneration step can be repeated several times. A further extension of the useful lifetime of the catalyst is obtained by including one or more washing steps.

5776848

Molybdenum epoxidation catalyst recovery

Evans Thomas I; Cannon Robert L, Glenmoore, PA, United States assigned to Arco Chemical Technology L P

An aqueous epoxidation process stream containing molybdenum and sodium values is incinerated and an aqueous solution containing molybdenum and sodium is recovered, acidified and reacted with a calcium compound without first adding base to form solid CaMoO_4 which is separated.

5776849

Regeneration of severely deactivated reforming catalysts

Fung Shun Chong; Huang Yao-Jyh Robert; Walsh John Francis; McVicker Gary Brice; Clem Kenneth Ray, Bridgewater, NJ, United States assigned to Exxon Research and Engineering Company

The invention is directed a process for regenerating deactivated reforming catalysts comprising at least one Group VIII metal on zeolite L, preferably wherein the catalysts are extruded using a binder material such as alumina or silica. The process includes: a) coke burn at severe conditions to improve the accessibility of the Group VIII catalytic metal particles by transporting them to the outside of the zeolite microchannels; b) catalytic metal redispersion by wet oxychlorination with elemental chlorine and oxygen; c) stripping with a gas stream comprising oxygen and water at low pressure to remove as much residual chlorine as possible; and d) reduction of catalytic metals with hydrogen at low pressure. The process is particularly effective for recovering activity of catalysts which have been severely deactivated.

CATALYSIS FOR CHEMICALS AND COMMODITIES

5763353

Hydrogenation catalyst precursor, hydrogenation catalyst and production process for alcohols

Kadono Yasuo; Hattori Yasuyuk; Horio Masamitsu; Nakamura Fumihiko, Wakayama, Japan assigned to Kao Corporation

The present invention provides a hydrogenation catalyst precursor which does not bring about a problem of environmental pollution involved in copper–chromium catalysts and has a high activity, a high durability and a high selectivity as compared with those of conventional copper–iron–aluminum catalysts, a hydrogenation catalyst obtained by reducing the same, and a production process for alcohols using the above hydrogenation catalyst. The hydrogenation catalyst precursor described above comprises copper, iron and aluminum and containing as a principal component a compound oxide of copper, iron and aluminum in which an atomic ratio Cu:Fe:Al is 1:(0.02 to 0.4):(1.0 to 4.0) and which has a copper–aluminum spinel structure.

5763630**Propylene oxide process using alkaline earth metal compound-supported silver catalysts**

Kahn Andrew; Gaffney Anne M; Pitchai Rangasamy, Lafayette Hill, PA, United States assigned to ARCO Chemical Technology L P

Propylene is oxidized to propylene oxide in the vapor phase using an oxygen-containing gas and a supported silver catalyst comprising silver and a support comprised in whole or in substantial part of certain alkaline earth metal compounds. The alkaline earth metal compound may, for example, be a calcium compound such as calcium titanate, tribasic calcium phosphate, calcium molybdate, or calcium fluoride, a magnesium compound such as magnesium aluminate, or a strontium compound such as strontium titanate. Such supports provide significantly higher selectivity to the desired epoxide than would be expected from the performance of related materials. Propylene oxide selectivity may be further enhanced through the introduction of nitrogen oxide species such as NO, alkyl halides such as ethyl chloride, and carbon dioxide into the oxygen-containing gas.

5763668**Process for aminating a mixture obtained in cracking a mineral oil fraction with ammonia or a primary or secondary amine over specific heterogeneous catalysts**

Dingerdissen Uwe; Herrmann Jürgen; Eller Karsten, Seeheim Jugendheim, Germany assigned to BASF Aktiengesellschaft

Amines are prepared by reacting a mixture obtained in the cracking of mineral oil fractions with ammonia or a primary or secondary amine of the general formula I (*See Patent for Chemical Structure*) (I) where R1 and R2 are each hydrogen, C1-C20-alkyl, C2-C20-alkenyl, C2-C20-alkynyl, C3-C20-cycloalkyl, C4-C20-alkylcycloalkyl, C4-C20-cycloalkylalkyl, aryl, C7-C20-alkylaryl or C7-C20-aralkyl or together are a saturated or unsaturated C2-C12-alkylene ene chain, at from 200 degrees to 350 degrees C. and from 100 to 300 bar in the presence of a heterogeneous catalys

5763669**Process for the preparation of ruthenium complexes and their in situ use as hydrogenation catalysts**

Beatty Richard Paul; Paciello Rocco Angelo, Newark, DE, United States assigned to E I du Pont de Nemours and Company

This invention relates to a process of preparing a ruthenium complex of the formula $\text{RuH}_2(\text{PR}_3)_2\text{L}_2$ wherein PR3 is an organophosphorus ligand and L is H2 or PR3; a catalyst comprising at least one ruthenium complex having the formula $\text{RuH}_2(\text{PR}_3)\text{L}_3$ wherein L1 is a neutral electron pair donor ligand; a process for preparing the catalyst and its use in situ in the hydrogenation of nitriles.

5763711**Catalyst for the rearrangement of allylic geminal dihalogen compounds**

Ito Larry N, Midland, MI, United States assigned to The Dow Chemical Company

A process for converting 3,3-dichloropropene in an intermediate boiling byproduct stream from a process of making allyl chloride by the chlorination of propylene to cis- or trans-1,3-dichloropropene or a mixture of these, wherein the 3,3-dichloropropene is contacted in the liquid phase with an alumina, silica or zeolite catalyst, characterized in that the alumina, silica or zeolite catalyst is selected to possess a predominance of basic sites as associated with a high alkali or alkaline earth metals content, for increased conversion and productivity and reduced catalyst deactivation rates.

5767039**Process for manufacturing methanol and process for manufacturing catalyst for methanol synthesis**

Yamagishi Ken; Obata Yoriko; Sugano Yuichi, Niigata, Japan assigned to Mitsubishi Gas Chemical Company Inc

A process for manufacturing methanol is herein disclosed which comprises the step of reacting hydrogen with carbon monoxide and/or carbon dioxide in the presence of a synthetic catalyst obtainable by mixing, in a slurry state, (a) a beforehand prepared precipitation slurry of copper and zinc, with (b) an alumina precursor separately prepared from a water-soluble alu-

minum salt and a basic precipitant, to obtain a composition containing copper, zinc and aluminum, and washing, drying and then calcining the composition. A process for manufacturing the above-mentioned catalyst is also disclosed. According to the present invention, methanol can extremely efficiently be manufactured, and the catalyst having a high activity and an excellent heat resistance can also be manufactured.

5767307

Heterogeneous catalyst for the production of ethylidene diacetate from acetic anhydride

Ramprasad Dorai; Waller Francis Joseph, Allentown, PA, United States assigned to Air Products and Chemicals Inc

This invention relates to a process for producing ethylidene diacetate by the reaction of acetic anhydride, acetic acid, hydrogen and carbon monoxide at elevated temperatures and pressures in the presence of an alkyl halide and a heterogeneous, bifunctional catalyst that is stable to hydrogenation and comprises an insoluble polymer having pendant quaternized heteroatoms, some of which heteroatoms are ionically bonded to anionic Group VIII metal complexes, the remainder of the heteroatoms being bonded to iodide. In contrast to prior art processes, no accelerator (promoter) is necessary to achieve the catalytic reaction and the products are easily separated from the catalyst by filtration. The catalyst can be recycled without loss in activity.

5767334

Method for removing catalyst from an oligomer product

Nissfolk Fredrik; Linnaila Raimo; Smeets Ivo; Lehtinen Vesa-Matti Alastalo Kauno; Thierie Filip, Borga, Finland assigned to Neste Alfa Oy

PCT No. PCT/BE95/00061 Sec. 371 Date Apr. 8, 1996 Sec. 102(e) Date Apr. 8, 1996 PCT Filed Jun. 23, 1995 PCT Pub. No. WO96/00201 PCT Pub. Date Jan. 4, 1996. A method for removing catalyst from an olefinic oligomerization product includes the steps of oligomerizing one or more olefins in the presence of a BF₃ cocatalyst complex, and distilling the oligomerization product while separating vaporized BF₃ cocatalyst complex, the distillation step including, simultaneously

to the separation of BF₃ cocatalyst complex, a separation of vaporized unreacted monomer from a bottom product which becomes substantially free from BF₃ cocatalyst complex.

5770541

Isobutanol synthesis catalyst

Vanderspurt Thomas Henry; Greaney Mark Ala; Leta Daniel Paul; Koveal Russell John; Disko Mark Michael; Klaus Angela V; Behal Sutinder K; Harris Robert B, Delaware Township, NJ, United States assigned to Exxon Research and Engineering Company

The invention relates to a catalyst for conversion of methanol, ethanol alone or in combination with n-propanol to isobutanol and the process for making and using the catalyst. The catalyst is a noble metal supported on at least a first phase of mixed oxide crystallites containing from about 60 to about 74 atomic % (on a metals basis only) zirconium, from about 21 to about 31 atomic % manganese and from about 5 to about 9 atomic % zinc, and less than about 1 atomic % alkali, a second phase of zirconium-doped hetaerolite particles containing from about 65 to about 69 atomic % manganese, from about 31 to about 35 atomic % zinc, from about 0.5 to about 5 atomic % zirconium, and optionally a trace atomic % of alkali, and a third phase containing from about 29 to about 55 atomic % manganese, from about 13 to about 55 atomic % zinc and from about 13 to about 35 atomic % zirconium. The first phase mixed oxide crystallites have a zirconium oxide-like structure have a particle size of at least about 40 #521 + 0 to about 100 + 521, wherein the second phase particles have a particle size of about 200 + 521 + 0 to greater than about 2000 + 521, and the third phase has a particle size of about 1000 + 521 + 0 to greater than 4000 + 521. + RE

5770746

Epoxidation process using supported silver catalysts pretreated with organic chloride

Cooker Bernard; Gaffney Anne; Jewson Jennifer D; Kahn Andrew; Pitchai Rangasamy, Malvern, PA, United States assigned to Arco Chemical Technology L P

A propylene epoxidation process wherein a supported silver catalyst is utilized may be operated at high efficiency even in the absence of any organic chloride

in the feedstream, provided the catalyst is first contacted at an elevated temperature with a treatment stream comprised of an organic chloride and molecular oxygen.

5770757**Amoxidation catalysts containing germanium to produce high yields of acrylonitrile**

Drenski Tama Lee; Friedrich Maria Strada; Papparizos Christos; Seely Michael J; Suresh Dev Dhanaraj, Twinsburg, OH, United States assigned to The Standard Oil Company

A catalyst having the atomic ratios set forth in the empirical formula below: (*See Patent for Tabular Presentation*) PS where A = two or more of alkali metals, In and Tl B = one or more of Mg, Mn, Ni, Co, Ca, Fe, Ce, Sm, Cr, Sb, and W; preferably B equals the combination of Fe and at least one element selected from the group consisting of Ni and Co and at least one element selected from the group consisting of Mg, Mn, Ca, Ce, Sn, Cr, Sb, and W C = one or more of Pb, Eu, B, Sn, Te and Cu $a = 0.05$ to 5.0 $b = 5$ to 12 $c = 0$ to 5.0 $d = 0.1$ to 2.0 $e = 0.1$ to 2.0 x = the number of oxygen atoms required to satisfy the valency requirements of the other elements and $b > a + c$.