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CATALYSIS FOR CHEMICALS AND COMMODITIES

5773525

Process of oxyalkylation employing solid, heterogeneous oxyalkylation catalysts

Pazos Josac e F., Havertown, PA, USA Arco Chemical Technology

Oligomeric polyoxyalkylene polyethers are prepared by oxyalkylating a low molecular weight hydroxyl-functional starter molecule with one or more alkylene oxides in the presence of a solid, heterogeneous magnesium oxide catalyst. The catalyst is readily and rapidly removed by simple filtration to yield a polyether with minimal metal ion content suitable for use directly or as a starter molecule for further double metal cyanide complex catalyzed oxyalkylation.

5773548

Catalyst for preparing organosiloxanes or polyorganosiloxanes

Schickmann Harald; Lehnert Robert; Wendt Heinz-Di-ete; Rautschek Holger; Roesler Harald; Srebny Hans-Guenthe, Meissen, Germany Huels Silicone

PCT No. PCT/EP94/02032 Sec. 371 Date Jan. 11, 1996 Sec. 102(e) Date Jan. 11, 1996 PCT Filed Jun. 22, 1994 PCT Pub. No. WO95/01983 PCT Pub. Date Jan. 19, 1995. The invention relates to a catalyst for preparing organosiloxanes and polyorganosiloxanes which are obtained primarily by polycondensation processes. The catalyst of the invention is a reaction product of phosphonitrilic chloride with a compound of the general formula $(R_3SiO(R_2SiO)_m)_3P$ double bond O (I), where R are, independently of one another, identical or different, unsaturated and/or saturated monovalent hydrocarbon radicals having from one to six carbon atoms or hydrogen, with the proviso that only one hydrogen atom is bound to each silicon atom and m has a value between 0 and 1000. Volatile chlorine-containing silicon compounds formed during the reaction can, if required, be completely or partially removed.

5773642

Process for the preparation of carboxylic acids or the corresponding esters in the presence of a soluble catalyst based on iridium and iodides

Denis Philippe; Nobel Dominique; Perron Robert; Perrona Philippe; Schwartz Jouml e Decines, France Acetex Chimie

PCT No. PCT/FR95/00625 Sec. 371 Date May 14, 1997 Sec. 102(e) Date May 14, 1997 PCT Filed May 15, 1995 PCT Pub. No. WO95/31426 PCT Pub. Date Nov. 23, 1995. Preparation of carboxylic acids or corresponding esters by reacting an alcohol with carbon monoxide in the presence of an iridium catalyst and a halogen promoter. The reaction involves a reaction mixture composed of more than 0% to 10% water, more than 0% to 10% halogen promoter, 2% to 40% of an ester corresponding to the reaction of alcohol with the acid, soluble iodides in an amount such that the atomic ratio of iodides to iridium varies between more than 0 and 10, the carboxylic acid being used as the reaction solvent.

5773665

Hydroformylation process with separation and recycle of active rhodium catalyst

Silverman Gary Stephen; Mercado Pau Chaddsford, PA, USA ELF Atochem North America

Active Rhodium catalyst and impurities are separated from a hydroformylation process stream containing both active and inactive organo-rhodium catalyst by binding active catalyst and impurities to an acidic ion exchange resin containing an acidic group. The purified hydroformylation stream can be returned to the hydroformylation reactor. All or a portion of inactive rhodium can be reactivated before recycling purified hydroformylation process stream to the reactor. During regeneration of the resin, a neutral solvent is used first to remove impurities which are discarded, then an acidic solvent is used to remove active organic rhodium catalyst from the resin. Such active catalyst can be rehydrided and returned to the hydroformylation reactor. An ion exchange resin having at least one acid group disposed on a silica backbone and an active organo-rhodium complex from a hydroformylation process stream bound to the resin can be produced.

5777156**Carrier catalyst, process for the production thereof for the preparation of vinyl acetate**

Abel Roland; Wumler Karl-Fred, Oberhausen, Germany Hoechst

The invention relates to Pd/K/Au, Pd/K/Ba or Pd/K/Cd supported catalysts built up in the form of an outer layer, the production thereof and the use thereof for preparing vinylacetate from ethylene, acetic acid and oxygen in the gas phase. The specified catalysts are produced by impregnating the support particles with a solution of salts of the corresponding elements and then drying them, with the dynamic viscosity of the solution being at least 0.003 Pa s and the solution volume in impregnation being more than 80% of the pore volume of the support particles and the duration of the impregnation and also the time until commencement of the drying being selected so as to be sufficiently short for, after completion of the drying, the specified metal salts to be present in an outer layer of from 5% to 80% of the pore volume of the support particles.

5777166**Process for the catalytic hydrogenation of nitriles to amines in the presence of a catalyst of doped raney nickel type**

Cordier Georges; Fouilloux Pierre; Laurain Nathalie; Spindler Jean-Francis, Francheville, France Rhone-Poulenc Chimie

PCT No. PCT/FR94/01478 Sec. 371 Date Nov. 25, 1996 Sec. 102(e) Date Nov. 25, 1996 PCT Filed Dec. 16, 1994 PCT Pub. No. WO95/18090 PCT Pub. Date Jul. 6, 1995. The present invention relates to the field of the catalytic reduction of nitriles to amines by use of Raney catalysts doped with one or a number of additional metal elements chosen from the elements of group IVb of the periodic classification. More precisely, it relates to a process for the hydrogenation of nitriles to amines, characterized in that it essentially consists: in selecting a liquid reaction medium which dissolves the nitrile substrate to be hydrogenated, in using at least one inorganic alkali metal or alkaline-earth metal hydroxide base, and in adopting a catalyst whose doping element/Ni ratio by weight is between 0.05 and 10%. More specific application to the hydrogenation of dinitriles to diamines or to aminonitriles.

5777182**Cobalt-catalyzed process for preparing 1,3-propanediol**

Shell Oil

1,3-propanediol is prepared in a process which involves hydroformylating ethylene oxide: (a) in an essentially non-water-miscible solvent in the presence of a non-ligated cobalt catalyst and a catalyst promoter at a temperature within the range of about 50°C–100°C. and a pressure within the range of about 500 to about 5000 psi g, to produce an intermediate product mixture comprising less than about 15 wt.% 3-hydroxypropanal; (b) adding an aqueous liquid and extracting at a temperature less than about 100°C. the 3-hydroxypropanal to provide an aqueous phase comprising 3-hydroxypropanal in greater concentration than the concentration of 3-hydroxypropanal in said intermediate product mixture, and an organic phase comprising the cobalt catalyst; (c) separating the aqueous phase from the organic phase; (d) hydrogenating the 3-hydroxypropanal to provide a hydrogenation product mixture comprising 1,3-propanediol; and (e) recovering 1,3-propanediol from said hydrogenation product mixture. The process enables the production of 1,3-propanediol in high yields and selectivity without the use of a phosphine ligand-modified cobalt catalyst.

5780655**Epoxidation process using a phosphate-stabilized peroxotungstate compound as catalyst**

Shum Wilfred Po-sum, West Chester, PA, USA ARCO Chemical Technology

Olefins are selectively converted to epoxides using hydrogen peroxide as oxidant in a single liquid phase reaction system characterized by a liquid phase comprised predominantly of an organic solvent. The reaction is catalyzed by a compound comprised of a phosphate-stabilized peroxotungstate species having a W:P atomic ratio of 2:1.

5780656**Ethylene oxide catalyst and process**

Rizkalla Nabil; Klein Rita; Milne Stephen, Riverdale, NJ, USA Scientific Design

A silver catalyst for ethylene oxidation to ethylene oxide is provided containing a promoter combination consisting of an alkali metal component, a sulfur component, and a fluorine component, the catalyst being essentially free of rhenium and transition metal components.

5780657

Propylene epoxidation using chloride-containing silver catalysts

Cooker Bernard; Gaffney Anne M.; Jewson Jennifer D.; Onimus Wilson, Malvern, PA, USA assigned to Arco Chemical Technology

Direct oxidation of propylene to propylene oxide is accomplished using alkaline earth metal compound-supported silver catalysts containing an inorganic chloride promoter and a potassium promoter derived from a potassium salt containing a nitrogen oxyanion or precursor thereof.

5789334

Microparticle catalysts for hydrosilylation reactions and thermosetting silicone compositions containing said catalyst

Nakanishi Junji; Saruyama Toshio; Togashi Atsushi, Chiba Prefecture, Japan Dow Corning Toray Silicone

A microparticle catalyst for hydrosilylation reactions which contains microparticles of an average particle diameter of 0.1 to 20 μm made of a metallic catalyst for hydrosilylation reactions; a disiloxane having the general formula $(\text{R}_1\text{R}_2\text{ArSi})_2\text{O}$, wherein, R_1 is an alkenyl group, R_2 is a monovalent hydrocarbon group and Ar is an aryl group; and a resin having a glass transition temperature of 40–200°C. and thermosetting silicone composition containing the microparticle catalyst.

5792722

Catalysts for the production of maleic anhydride by the oxidation of butane

Haddad Muin; Meyers Bernard L.; Taheri Hassa; Wolfe Philip, Naperville, IL, USA-4bAmoco

A catalyst for the production of maleic anhydride by oxidation of butane and a process for the production of a catalyst using phosphoric acid and glycol ether solvents.

ENVIRONMENTAL CATALYSIS

5783515

Catalyst for treating exhaust gases containing dioxines, production process for the catalyst and method of treating the exhaust gases

Sakurai Toshihiko; Iwasaki Toshihiko; Shibuya Eiichi, Tokyo, Japan NE Chemcat; NKK Corporati

A catalyst including a first catalyst ingredient which is at least one element selected from a group consisting of Pt, Pd and Ir, or oxides thereof; and further able to include at least one element selected from a group consisting of Au, Ag, Cu, Fe, Sb, Se, Te and Ta, or oxides thereof, as a second catalyst ingredient, carried on at least one of a silica-boria-alumina composite oxide or a zeolite with a silica-to-alumina molar ratio of more than 30, in amounts of from 0.1 to 10 g of the first catalyst ingredient and from 0.01 to 5 g of the second catalyst ingredient based on 1 l of the catalyst with the second to first catalyst ingredient weight ratio being less than one. The catalyst is used for treating exhaust gases by bringing the exhaust gases containing HCl and dioxines into contact with the catalyst to thereby eliminate the HCl and dioxines from the exhaust gases by oxidative decomposition while suppressing the subsequent formation of dioxines from precursors for the dioxines present in the exhaust gases.

5785886

Bleaching compositions containing imine hydrogen peroxide and a transition metal catalyst

Kerschner Judith Lynne; Madison Stephen Alan; Chin Quee-Smith Catherine, Victoria, Ridgewood, NJ, USA(AS)Lever Brothers Division of Conopco

A bleach system is described that includes a peroxy-compound which is hydrogen peroxide or an inorganic substance that generates hydrogen peroxide in water, a C1–C30 imine and a transition metal catalyst.

Use of the transition metal catalyst promotes the interaction of the hydrogen peroxide and imine thereby enhancing bleach performance.

5785937

Method for the catalytic conversion of nitrogen oxides present in the exhaust gas of an internal-combustion engine

Neufert Ronald; Mathes Wieland; Schobert-Schaefer Dagmar; Hofmann Lothar, Michelau, Germany Siemens

A method is provided in which the reducing agent, during the starting phase of the internal-combustion engine and during operation with decreasing and, if appropriate, virtually constant exhaust gas temperature, is fed superstoichiometrically in relation to the nitrogen oxide concentration, while taking into account the temperature-dependent storage capacity of a denitration catalytic converter for the reducing agent. The reducing agent is otherwise fed substoichiometrically. In this manner, the catalytic converter is kept at all times at a preferred charge level, so that on one hand it is possible to provide sufficient stored reducing agent for the catalytic conversion and on the other hand it is possible to still have a reducing agent buffer available which avoids slip of the reducing agent. The invention can be used in all internal-combustion engines operated with air excess, such as diesel engines and lean-burn engines.

5788821

Copper-based oxidation catalyst and its application

Itabashi Takeyuki; Kinosaki Fujiko; Takahashi Akio; Akaoshi Haruo, Hitachi, Japan Hitachi

A copper-based oxidation catalyst comprising a substrate of copper or copper alloy and regions of a metal composed mainly of a group VIII element in close contact with the substrate, the surface of the substrate being partly exposed to the outside, has a high catalytic activity on the carbonyl oxidation reaction and is effective as a catalyst for electroless plating, a fuel cell electrode material, a catalyst for treating waste water or waste liquor or an oxidation reaction catalyst.

5788936

Catalyst system for converting emissions of a lean-burn engine

Subramanian Somasundaram; Kudla Robert J.; Chattha Mohinder S., Melvindale, MI, USA Ford Global Technologies

A catalyst system for attaining high conversions of NO, HC, and CO in a fuel-lean emission flow (i.e., containing SO₂, H₂O, H₂, and considerable excess oxygen), the system comprising: (a) a first stage reducing catalyst for treating the nitric oxide emissions, the catalyst containing highly acidic gamma alumina (i.e., with a pH pzc of less than three); (b) means for injecting gaseous or liquid reductants into the emission stream prior to entering said first stage catalyst, said first stage catalyst temperature being selected to be in the range of 550–650°C.; and (c) an oxidation catalyst effective for treating the effluent from the first stage catalyst. Another aspect of this invention is a method of treating the exhaust gas from a fuel-lean emission flow from a fossil-fueled internal combustion engine having a redox ratio of 0.02–0.09, the method comprising: (a) injecting a gaseous or liquid HC or oxygenated HC reductant into the emission stream at a location where the stream is within the temperature range of 550–650°C.; (b) immediately exposing the injected stream to a first stage catalyst containing acidic gamma alumina with a pH pzc of less than three; and (c) exposing the effluent from the first stage catalyst to an oxidation catalyst that is effective in ensuring that the NO, HC, and CO in the emissions are each converted to at least 80%.

5789339

Catalyst for oxidizing oxygen-containing organic compounds in waste gas

Ziebarth Michael S.; Libanati Cristia; Uberoi Mohit, Columbia, MD, USA(AS)WR Grace and Co-Conn

The present invention generally relates to supported perovskites and their use for low temperature oxidation of volatile oxygen-containing organic compounds, particularly alcohols. The present invention further relates to the use of supported perovskites to reduce the amount

of oxygen-containing organic compounds present in waste gases produced by processes such as baking or brewing.

5789638

Hydrogenation of unsaturated polymers using monocyclopentadienyl group IV metal catalysts

Hahn Stephen F.; Wilson David R., Sanford, MI, USA
The Dow Chemical

Organic compounds are hydrogenated in the presence of certain monocyclopentadienyl Group IV metal compounds. These titanium compounds are effective hydrogenation catalysts for polymers containing ethylenic unsaturation. They further provide for selective hydrogenation of ethylenic unsaturation sites in the presence of aromatic groups.

CATALYSIS FOR FINE AND SPECIALTY CHEMICALS

5789530

Catalyzed synthesis of aramid from carbon monoxide, aromatic dichlorides, and diamines

Sen Ayusman; Kim Jang Sub State College, PA, USA(AS)The Penn State Research Foundation

The synthesis of an aramid by the catalyzed reaction of carbon monoxide, an aromatic dichloride, such as 1,4-dichlorobenzene, and a diamine, such as 1,4-diaminobenzene, is disclosed. The reaction may be catalyzed by palladium (II) and palladium (0)-containing catalysts with chelating trialkyl phosphines, such as bis(diisopropylphosphino)-propane.

5792839

Catalytic method of forming a glycosidic linkage

Kahne Daniel Evan, Princeton, NJ, USA assigned to Trustees of Princeton University

The invention relates to methods that permit the rapid construction of oligosaccharides and other glycoconjugates. Methods for forming multiple glycosidic linkages in solution in a single step are disclosed. The invention takes advantage of the discovery that the

relative reactivity of glycoside residues containing anomeric sulfoxides and nucleophilic functional groups can be controlled. In another aspect of the invention, the reactivity of activated anomeric sugar sulfoxides is utilized in a solid phase method for the formation of glycosidic linkages. The methods disclosed may be applied to the preparation of specific oligosaccharides and other glycoconjugates, as well as to the preparation of glycosidic libraries comprising mixtures of various oligosaccharides, including glycoconjugates, which can be screened for biological activity.

5792875

Catalytic production of butyrolactone or tetrahydrofuran

Chaudhari Raghunath Vitthal; Vaidya Subhash Hari, Maharashtra, India(AS)Council of Scientific and Industrial Research

A process for the preparation of supported bimetallic catalyst useful for the hydrogenation of esters of dicarboxylic acids, which comprises impregnating activated alumina powder with transition metal by contacting the said solid alumina powder with an aqueous solution of a salt of a transition metal, treating the said transition metal salt impregnated alumina powder with an aqueous solution of a salt of group (IV) metal in acidic medium so as to have ratio of transition metal to group (IV) A metal in the range of 1:5 to 1:20, further treating the bimetallic impregnated alumina powder with an alkali solution followed by a solution of boron containing compound, finally washing and drying the resultant supported catalyst.

5792878

Process for preparing chiral epoxides using chiral manganese triazanone complexes as oxidation catalysts

Beller Matthias; Tafesh Ahmed; Fischer Richard Walter; Scharbert Bernd, Idstein, Germany(AS) assigned to Hoechst

A process for preparing chiral epoxides using chiral manganese triazanone complexes as oxidation catalysts. These catalysts have the general formula (*See Patent for Tabular Presentation*) PS

POLYMERISATION CATALYSIS**5773539****Catalytic component based on vanadium and its use in the preparation of EP(D)M**

Tanaglia Tiziano; Previati Silvia; Abis Luigi; Gila Liliana, Bologna, Italy Enichem Elastomeri

Catalytic component for the (co)polymerization of alpha-olefins consisting of the compound having the general formula VL_3 , wherein V is trivalent vanadium and L is a ligand selected from those having general formula (I): (*See Patent for Chemical Structure*) wherein R is selected from H and C1–C20 monofunctional hydrocarbyl radicals; n is an integer between 2 and 13 excluding 4 and 5.

5776851**Metallocenes, process for their preparation and their use as catalysts**

Kumlbauer Frank; Aulbach Michael; Bachmann Bernd; Spaleck Walter; Winter Andreas, Oberursel, Germany Targor

The present invention relates to a polynuclear metallocene compound of the formula I (*See Patent for Chemical Structure*) (I) a process for their preparation and their use as a catalyst for olefin polymerization.

5777050**Process for polymerizing ethylene in the presence of a catalyst composition**

Friederichs Nicolaas H.; van Beek Johannes A.M.; Postema Rutgerus A.J.; Hahnrahts Joseph A.J., Brunssum, Netherlands(AS)DSM

A process is disclosed for the homopolymerization of ethylene or copolymerization of ethylene with one or more alpha-olefins with 3–12 carbon atoms and optionally one or more non-conjugated dienes in solution in the presence of a catalyst system containing a catalyst A and a cocatalyst B, of which catalyst A is obtained by reacting, under inert conditions, the following components: (a) one or more organomagnesium compounds with alkyl and/or alkoxy groups bonded to the magnesium, (b) one or more chlorine-containing organoaluminum compounds and/or boron compounds, (c) one

or more oxygen-containing compounds, (d) one or more transition metal compounds with alkyl, alkoxy and/or halogenide groups bonded to the transition metal; in the order (a), (b), (c), (d), or (a), (b), (d), (c), or (a), (b) and a reaction product of (c) and (d) = (e), wherein the atomic ratio of aluminum and/or boron of (b) to magnesium of (a) is between 2 and 15, the atomic ratio of magnesium of (a) to transition metal from (d) or (e) is between 3 and 100, the atomic ratio of oxygen from (c) or (e) to the magnesium of (a) is between 0.1 and 5, and/or washing the catalyst A. One or more organoaluminum compounds and/or boron compounds can be used as cocatalyst B.

5777120**Cationic aluminum alkyl complexes incorporating amidinate ligands as polymerization catalysts**

Jordan Richard F.; Coles Martyn, Iowa City, IA, USA(AS)University of Iowa Research Foundation

Aluminum amidinate compounds of the formula (*See Patent for Chemical Structure*) wherein R , R_2 , and R_3 are selected from the group consisting of C1 to C50 alkyl, aryl, and silyl groups, X is an anionic ligand, preferably a hydrocarbyl, $n = 0$ or 1, L, if present, is a labile Lewis base ligand, preferably having an oxygen, nitrogen, or phosphorus atom donating a lone pair of electrons to the aluminum center, and A^- is an anion which balances the charge of the aluminum cation and only weakly if at all coordinates to the aluminum center and preferably contains boron, are disclosed. These compounds are useful as olefin polymerization catalysts without the need for cocatalysts or transition metal species.

5777177**Preparation of double metal cyanide-catalyzed polyols by continuous addition of starter**

Pazos Josac e F, Havertown, PA, USA Arco Chemical Technology

Double metal cyanide-catalyzed polyols are made by an improved process in which a starter is continuously added during polymerization of the epoxide. The process includes a continuously added starter (Sc), and optionally, an initially charged starter (Si). The continuously added starter comprises at least about two equivalent percent of the total starter used. The process en-

ables the use of water and low molecular weight polyol starters in DMC-catalyzed polyol synthesis. In addition, the process gives polyether polyols having reduced levels of high molecular weight polyol tail, which can adversely affect polyurethane foam processing.

5780378

Solid titanium catalyst component for olefin polymerization, process for preparing the same, catalyst for olefin polymerization and process for olefin polymerization

Toida Tetsuya; Shinozaki Tetsunori; Kioka Mamoru, Kuga gun, Japan Mitsui Petrochemical Industries

A solid titanium catalyst component comprising (a) magnesium, (b) titanium, (c) a halogen, (d) a polyether, (e) a hydrocarbon and (f) an electron donor other than the polyether (d) as essential components is provided. Also a process for preparing a solid titanium catalyst component for olefin polymerization, comprising the steps of contacting a halogenated magnesium compound with a compound selected from the group consisting of an alcohol, an ether and an ester in a hydrocarbon solvent to obtain a magnesium compound solution, contacting the magnesium compound solution with a polyether and contacting the resultant solution with a liquid titanium compound is provided. Further, a catalyst for olefin polymerization comprising the above-mentioned solid titanium catalyst component, an organoaluminum compound catalyst component and an electron donor, and a process for polymerizing an olefin using the catalyst for olefin polymerization are also disclosed. By the use of the catalyst for olefin polymerization, an olefin (co)polymer having uniform particle size, less dust quantity, high bulk density and high stereoregularity can be obtained with excellent polymerization activity.

5780379

Process for the stereospecific polymerization of alpha-olefins and catalyst system which can be employed for this polymerization

Fiasse Paul Brussels, Belgium Solvay Polyolefins Europe–Belgium (Sociacu etacu e Anonyme)

Process for the polymerization of alpha-olefins, which is carried out in the presence of a catalyst system comprising: (1) a solid based on completed titanium trichloride; (2) an organometallic compound of metals

of groups IA, IIA, IIB and IIIB of the Periodic Table, and (3) an electron-donor organic compound, the solid (1) based on complexed titanium trichloride having been preactivated by being brought into contact with a preactivator comprising the product of reaction of a trialkylaluminum or alkylaluminum chloride compound (a) and of a compound (b) chosen from hydroxyaromatic compounds whose hydroxyl group is sterically hindered, then isolating the predetermined solid (1) from the medium in which it was found. This process enables propylene to be polymerized with an improved stereospecificity without any significant decrease in catalyst activity.

5780562

Olefin polymerization catalyst and polyolefin

Shimizu Hiroyuki; Sano Akira; Matsuura Kazuo; Washio Yuuji, Tokyo, Japan Nippon Oil; Mizusawa Industri

A novel olefin polymerization catalyst is obtained by contacting the following components (1) to (5) with one another: (1) a compound represented by the general formula $\text{Me}_1\text{R}_1\text{p}(\text{OR}_2)_q\text{X}_{14-p-q}$, (2) a compound represented by the general formula $\text{Me}_2\text{R}_3\text{m}(\text{OR}_4)_n\text{X}_2\text{z-m-n}$, (3) an organocyclic compound having conjugated double bonds; (4) a modified organoaluminum compound having Al–O–Al bond(s); and (5) a silicon oxide and/or an aluminum oxide both having characteristic average particle diameter, specific surface area, volume of pores ranging in pore radius from 18 to 1000 Å, apparent specific gravity not lower than 0.32, and proportion of 50 μm or smaller particles.

5780575

Thermally stable polyesters formed utilizing antimony compound as catalysts

Brink Andrew Edwin; Pruettt Wayne Payton; Cherry Clinton; Shackelford Kay Hunt, Kingsport, TN, USA assigned to Eastman Chemical

This invention relates to a thermally stable polyester, comprising: a polyester resin prepared by adding a dicarboxylic acid to a glycol compound, said dicarboxylic acid selected from the group consisting of aliphatic dicarboxylic acids having a total of from 3 to 16 carbon atoms, alicyclic dicarboxylic acids having 7 to 12 carbon atoms, aromatic dicarboxylic acids containing a total of from 8 to 16 carbon atoms, and

combinations thereof, and wherein said glycol is selected from the group consisting of glycols having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof, said polyester resin having been prepared in the presence of a catalyst system consisting essentially of one or more antimony compounds which is not reacted with alpha-hydroxy carboxylic acids, alpha, beta-dicarboxylic acids or derivatives thereof.

5783512

Catalyst component dispersion comprising an ionic compound and solid addition polymerization catalysts containing the same

Jacobsen Grant B.; Stevens Theo J.P.; Loix Pierre H.H., Houston, TX, USA The Dow Chemical

A non-supported solid catalyst comprising (a) an ionic compound comprising (a.1) a cation and (a.2) an anion having up to 100 nonhydrogen atoms and said anion containing at least one substituent comprising an active hydrogen moiety, (b) a transition metal compound, and (c) an organometal compound wherein the metal is selected from the Groups 1–14 of the Periodic Table of the Elements; a supported solid catalyst comprising (a), (b), (c), and (d) a support material, obtainable by combining components (a), (b), (c), and (d) in any order, and wherein during at least one step in the preparation of the solid catalyst, component (a) dissolved in a diluent in which (a) is soluble, is converted into solid form; a method for preparing the solid catalysts; and a process of polymerization using these solid catalysts.

5786402

Production of polyurethane foams in the presence of aminoalkyl- or aminophenylimidazoles as catalyst, and the use of these catalysts for the preparation of polyisocyanate polyaddition products

Bruchmann Bernd; Zschiesche Ruth; Lutter Heinz-Dieter; Spang Claudia; Hinz Werner, Ludwigshafen, Germany BASF

The invention relates to a process for the production of (flexible) polyurethane foams having reduced odor and reduced fogging values by reacting (a) modified or unmodified organic polyisocyanates with (b) relatively high-molecular-weight polyhydroxyl compounds and, if

desired, (c) low-molecular-weight chain extenders and/or crosslinking agents, in the presence of (d) blowing agents, (e) catalysts from the group consisting of aminoalkyl- and aminophenylimidazoles of the formula (*See Patent for Chemical Structure*) (I) $R_3R_2NNR_4XNYZ$ (II) and, if desired, (f) additives, and to the use of the aminoalkyl- and aminophenylimidazoles of the formula (I) and/or (II) as catalysts for the preparation of polyisocyanate polyaddition products.

5786432

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

Kumml uber Frank; Bachmann Bernd; Spaleck Walter; Winter Andreas; Rohrman Juml urgen, Oberursel, Germany-Targor

Metalloenes 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, M_1 is Zr or Hf, R_1 and R_2 are halogen or alkyl, R_3 is alkyl, R_4 to R_{12} are alkyl or hydrogen and R_{13} 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°C and 80°C. In addition, reactor deposits are avoided by means of supported catalyst systems.

5786495

Bridged bis-fluorenyl metallocenes, process for the preparation thereof and use thereof in catalysts for the polymerization of olefins

Resconi Luigi; Jones Robert L., Ferrara, Italy assigned to Montell Technology

Metallocene compounds of a Group 4 or 5 metal having two fluorenyl ligands bridged with a single

silicon or germanium atom, said atom having two substituent groups containing a total of at least four carbon atoms, are useful as catalyst components for the polymerization of olefins. Particularly, it is possible to prepare high molecular weight atactic polypropylene with improved yields with respect to the known catalysts.

5786504

Polymerization catalyst promoter

Nudenberg Walter; McGeary Catherine Ann; Feng Xu Wu; O'Shea Francis Xavier, Newton, CT, USA assigned to Uniroyal Chemical

Compounds of the formula: (* See Patent for Chemical Structure *) wherein n is 1, 2, 3, or 4; X₁ and X₂ are each, independently, chlorine or bromine; A is O or S; R₁ is hydrogen or C1–C16 alkyl; R₂ is C1–C16 alkyl, C6–C16 aryl, C1–C4 alkylidene, or CH₂OR₅; R₃ is hydrogen, chlorine, bromine, or OR₆; R₄ is C₁–C16 alkyl, C7–C16 aralkyl, C2–C16 alkenyl, or C6–C18 aryl; R₅ is hydrogen, C1–C16 alkyl, C7–C16 aralkyl, C2–C16 alkenyl, or C6–C18 aryl; and R₆ is hydrogen or C1–C16 alkyl. These compounds by themselves and in combination with certain halo-but-2-enoic acids and esters are useful as catalyst promoters in ethylene polymerization processes.

5789332

Fluidized bed gas phase process of preparing a supported metallocene catalyst

Kutschera Dirk; Rieger Rainer, Dortmund, Germany Witco

The present invention is directed to a gas phase process of preparing a supported metallocene catalyst wherein an alkylaluminum compound, water, a metallocene and, optionally, an olefin are metered into a fluidized bed reactor containing a fluidized bed of an inert support material in the presence of a gas stream.

5789626

Highly active double metal cyanide catalysts

Le-Khac Bi, West Chester, PA, USA(AS)Arco Chemical Technology

Highly active double metal cyanide (DMC) catalysts are disclosed. The catalysts comprise a DMC complex,

and organic complexing agent, and from about 5 to about 80 wt.%, based on the amount of catalyst, of a polyether having a number average molecular weight less than about 500. The catalysts polymerize propylene oxide at a rate in excess of about 1 kg PO/g Co/min. at 100 ppm catalyst, based on the weight of finished polyether, at 105°C. The catalysts, which are easy to prepare, give polyether polyols with exceptionally low unsaturation levels.

5789634

Coupling reactions of 2-substituted, 7-haloindenes with aryl substituents to produce metallocene catalyst intermediates

Sullivan Jeffrey M.; Barnes Hamlin H., Longmont, CO, USA Boulder Scientific

Novel 2-substituted 7-haloindenes and methods for synthesizing such indenes are described. The 2-substituted 7-haloindenes may be coupled with any aryl group to produce a metallocene catalyst intermediate.

CATALYST PREPARATION

5780563

Supported lewis acid catalysts derived from superacids useful for hydrocarbon conversion reactions

Chen Frank Joung-yei; Guyot Alain; Hamaide Thierry; Le Deore Christophe, Edison, NJ, USA(AS)Exxon Chemical Patents

A supported Lewis acid catalyst system for catalyzing hydrocarbon conversion reactions including cationic polymerization, alkylation, isomerization and cracking reactions is disclosed, wherein the catalyst system comprises an inorganic oxide support having immobilized thereon a least one strong Lewis acid comprising at least one metal salt of a strong Bronsted acid wherein the metal is selected from the group consisting of aluminum, boron gallium, antimony, tantalum, niobium, yttrium, cobalt, nickel, iron, tin, zinc, magnesium barium strontium, calcium, tungsten, molybdenum and the metals of the lanthanide series and wherein the strong Bronsted acid is selected from the group consisting of mineral and organic acids stronger than 100% sulfuric acid.

5780584**Highly active double metal cyanide complex catalysts**

Le-Khac Bi; Hinney Harry; Bowman Paul, West Chester, PA, USA Arco Chemical Technology

Highly active double metal cyanide (DMC) complex catalysts and methods for making them are disclosed. The catalysts contain less than about 0.2 mol of metal salt per mole of DMC compound in the catalyst, and unlike other highly active DMC catalysts, are substantially crystalline. Polyether polyols made from the catalysts have low unsaturation and are useful for making many types of polyurethane products.

5780664**Amoxidation catalyst composition**

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PCT No. PCT/JP94/01356 Sec. 371 Date Sep. 12, 1996 Sec. 102(e) Date Sep. 12, 1996 PCT Filed Aug. 16, 1993 PCT Pub. No. WO95/05241 PCT Pub. Date Feb. 23, 1995. Disclosed is an amoxidation catalyst composition for use in producing acrylonitrile from propylene, or methacrylonitrile from isobutylene, by amoxidation of the propylene or of the isobutylene, comprising an oxide catalyst and a silica carrier having the oxide catalyst supported thereon, wherein the silica carrier is present in an amount of from 40 to 60% by weight, based on the total weight of the oxide catalyst and the silica carrier. The oxide catalyst comprises oxides of molybdenum, bismuth, iron, and component A which is at least one element selected from potassium, rubidium and cesium, wherein bismuth, iron and component A are, respectively, present in amounts of from 0.1 to 6, from 0.1 to 8 and from 0.01 to 0.5 in terms of atomic ratios relative to twelve atoms of molybdenum. The amoxidation catalyst composition is prepared by providing a slurry comprised of a silica sol and sources of component metallic elements of the oxide catalyst, and spray-drying the slurry, followed by calcination, wherein the silica sol has an aluminum content of 0.04 or less in terms of an atomic ratio relative to 100 atoms of silicon. By use of the catalyst composition of the present invention, the selectivity for

acrylonitrile or methacrylonitrile can be significantly improved.

5780674**Sulfonated phosphines, processes for their preparation, and use thereof as constituents of catalyst systems**

Albanese Guido; Manetsberger Rainer; Herrmann Wolfgang, Munchen, Germany-Hoechst

Sulfonated phosphines of the formula (*See Patent for Chemical Structure*) in which R is cyclohexyl or alkyl having 1 to 4 carbon atoms, M is hydrogen, alkyl substituted ammonium, aryl substituted-ammonium, monovalent metal, or the chemical equivalent of a polyvalent metal, x is 1, 2, or 3 and n is 0 or 1. These compounds are obtained by sulfonation of the non-sulfonated parent substances with oleum or an anhydrous mixture of sulfuric acid and orthoboric acid.

5783513**Process for making double metal cyanide catalysts**

Combs Georg; Hinney Harry R.; Bowman Paul T., Downingtown, PA, USA ARCO Chemical Technology

A process for making substantially non-crystalline double metal cyanide (DMC) catalysts having improved activity and performance is disclosed. The process comprises using a metal salt having an alkalinity within the range of about 0.2 to about 2.0 wt.% as metal oxide based on the amount of metal salt to prepare the catalyst. Surprisingly, important polyol properties such as viscosity and unsaturation improve when the alkalinity of the metal salt used to make the DMC catalyst is properly controlled. The process allows catalyst producers to enjoy the benefits of substantially non-crystalline DMC catalysts even when relatively inexpensive, technical-grade metal salts are used to make the catalyst.

5783514**Shell catalyst, a process for its production and its use**

Schick Klaus-Peter; Carduck Franz-Josef; Goebel Gerd; Rollberg Hans-Georg, Haan, Germany assigned to Henkel Kommanditgesellschaft auf Aktien

PCT No. PCT/EP93/00643 Sec. 371 Date Sep. 26, 1994 Sec. 102(e) Date Sep. 26, 1994 PCT Filed Mar. 18, 1993 PCT Pub. No. WO93/18856 PCT Pub. Date Sep. 30, 1993. The invention is an improved palladium-containing catalyst and process for preparing the catalyst. The catalyst is prepared by impregnating a dry activated carbon with a pH above 8 with a solution of palladium salt, separating the aqueous phase from the impregnated activated carbon when the aqueous phase has reached a pH of at least 1 and reducing the palladium which is supported on the activated carbon.

5783726

Process for the preparation of vinyl acetate catalyst
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The Standard Oil

A process of producing a fluid bed oxacylation catalyst for olefins and diolefins having the following formula Pd–M–A where M = Au, Cd, Bi, Cu, Mn, Fe, Co, Ce, U and mixtures thereof, A = an alkali metal or mixture thereof, and M is present in the range of from 0 to 5 wt.%, comprising milling a fixed bed oxacylation catalyst precursor comprising Pd–M on a fixed support with a fluid bed catalyst aqueous binder material to form a uniform aqueous slurry, drying the aqueous slurry to remove the water to form microspheroidal particles of solid fluid bed catalyst precursor, impregnating the microspheroidal particles with a solution of alkali metal salt to form the fluid bed catalyst. The catalyst is particularly useful in the manufacture of vinyl acetate from ethylene, acetic acid and oxygen.

5786026

Method for producing composite catalytic molding
Seko Hideo; Isomura Akihito, Hashima, Japan Aisin Seiki Kabushiki Kaisha

A method for producing a composite catalytic molding containing metallic platinum and metallic ruthenium comprising depositing metallic platinum on a surface of a conductive molding containing conductive material and water repellent material by applying a platinum compound solution on said surface and subjecting said

platinum compound to deoxidation, followed by depositing metallic ruthenium on a surface of said conductive molding by applying a ruthenium compound solution on said surface and subjecting said ruthenium compound to deoxidation.

5786290

Catalyst and process for preparing long chain alkylaromatic compounds

Colombo Giovanni; Amarilli Stefan; Kiricsi Imre; Perego Carlo, Inveruno, Italy Enichem Augusta

A catalyst is disclosed which comprises a clay belonging to the family of smectites, containing multi-metal pillars, together with a process which uses such a catalyst for the alkylation of aromatic hydrocarbons by means of long chain linear olefins. The resulting alkylaromatic compounds are useful for preparing biodegradable synthetic detergents.

5786291

Engineered catalyst systems and methods for their production and use

Specia Anthony; Brinen Jeffrey L.; McAlpin James J., Kingwood, TX, USA Exxon Chemical Patents

This invention relates to supported metallocene catalyst systems and to methods for their production and use. Specifically, this invention relates to supported catalyst systems having unique, predetermined properties resulting from the designed distribution of catalyst components within and upon porous support particles. The designed distribution of catalyst components is obtained through sequential deposition of catalyst components with intervening removal of solvent.

5786293

Process for presulfiding hydrocarbon processing catalysts

Lockemeyer John Robert, Sugar Land, TX, USA Shell Oil

The present invention relates to a process for presulfiding hydrocarbon processing catalysts by impregnat-

ing the catalyst with an inorganic polysulfide solution such that at least a portion of said sulfide or sulfur is incorporated in the pores of said catalyst, and thereafter heating the sulfur-incorporated catalyst under non-oxidizing conditions to fix the incorporated sulfur onto the catalyst.

5786294

Crystalline mesoporous zirconia catalysts having stable tetragonal pore wall structure

Sachtler Wolfgang M.H.; Huang Yin-Yan, Evanston, IL, USA Northwestern University

Methods for the preparation of new sulfated mesoporous zirconia materials/catalysts with crystalline pore walls of predominantly tetragonal crystal structure, characterized by nitrogen physisorption measurement, X-ray diffraction, transmission electron microscopy and catalytic tests using *n*-butane isomerization to *iso*-butane and alkylation of 1-naphthol with 4-*tert*-butylstyrene as probe reactions. Sulfate deposition is preferred for the transformation of a mesoporous precursor with amorphous pore walls into a material with crystalline pore walls maintaining the mesoporous characteristics.

5789331

Method for partially dealuminating a zeolite catalyst

Tsunoda Takashi; Kiyama Kazuyoshi; Kawase Masatsug, Kurashiki, Japan assigned to Sanyo Petrochemical

A method for partially dealuminating a zeolite catalyst by steaming, which comprises feeding steam to and flowing the steam through a reactor containing a catalyst bed of a zeolite catalyst to contact the zeolite catalyst with the steam for 0.1 to 50 h under temperature distribution conditions which satisfies the following requirements (1) and (2): (1) $500^{\circ}\text{C} < \text{or} = T_0 < \text{or} = T < \text{or} = T_2 < \text{or} = 700^{\circ}\text{C}$. wherein T_0 is the temperature ($^{\circ}\text{C}$.) of the fed steam; T_2 is the maximum temperature ($^{\circ}\text{C}$.) of the catalyst bed; and T is the average temperature ($^{\circ}\text{C}$.) of the catalyst bed, which is defined by the formula: (*See Patent for Mathematical Equation*) wherein T_i is the time average temperature ($^{\circ}\text{C}$.) of the i -th block of n equal length blocks of the

catalyst bed, which are arranged along the direction of steam flow; and (2) $\text{cv}(T) * 1000 < \text{or} = 10$ wherein $\text{cv}(T)$ is the coefficient of variation of the time average temperature, which is represented by the formula: $\text{cv}(T) = s(T)/T$, wherein $s(T)$ is the standard deviation of the time average temperature, which is obtained from $s(T)_2$ which is the variance of the time average temperature and defined by the formula: (*See Patent for Mathematical Equation*) wherein T and T_i are as defined above. By the method of the present invention, there can be obtained a zeolite catalyst having a uniform activity which can be stably maintained in a subsequent reaction using the steamed zeolite catalyst for a long period of time.

5789333

Catalyst system comprising a first catalyst system tethered to a supported catalyst

Angelici Robert J; Gao Hanrong, Ames, IA, USA assigned to Iowa State University Research Foundation

The present invention provides new catalyst formats which comprise a supported catalyst tethered to a second and different catalyst by a suitable tethering ligand. A preferred system comprises a heterogeneous supported metal catalyst tethered to a homogeneous catalyst. This combination of homogeneous and heterogeneous catalysts has a sufficient lifetime and unusually high catalytic activity in arene hydrogenations, and potentially many other reactions as well, including, but not limited to hydroformylation, hydrosilation, olefin oxidation, isomerization, hydrocyanation, olefin metathesis, olefin polymerization, carbonylation, enantioselective catalysis and photoduplication. These catalysts are easily separated from the products, and can be reused repeatedly, making these systems very economical.

5792719

Supported catalyst for gas-phase oxidation reactions

Eberle Hans-Juergen; Wagner Werner; Grundei Franz; Liebisch Erich, Munich, Germany Consortium Fur Elektrochemische Industrie

The invention relates to a supported catalyst for gas-phase reactions having an inert support body and a surface coating comprising (a) at least 5% by weight of silicon carbide, (b) from 5 to 90% by weight, calculated as oxide, of one or more titanium dioxide or zirconium oxide components or mixtures thereof, (c) from 1 to 50% by weight, calculated as V_2O_5 , of one or more vanadium oxide components, (d) from 0 to 10% by weight, calculated as oxide, of one or more compounds of elements of the 1st and 5th main groups of the Periodic Table, and also a process for its preparation and its use.

REFINERY CATALYSIS AND CATALYTIC PROCESSES

5773679

Performance enhancement of zeolite catalysts with water cofeed

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Mobil Oil

A process for shape-selective hydrocarbon conversion that involves initially contacting a feed stream which includes an alkylaromatic compound and a co-feed of water, under conversion conditions with a catalytic molecular sieve. Preferably, the catalytic molecular sieve has been modified by being *ex situ* selectivated with a silicon compound. After an effective amount of time, the water co-feed is omitted from the feed stream and the hydrocarbon conversion process is continued. Optionally, the catalytic molecular sieve can also be *in situ* trim-selectivated.

5774381

Modeling and simulation of catalytic cracking

Meier Paul F., Bartlesville, OK, USA

A kinetic model for a catalytic cracking riser reactor is stored in a computer for simulating a hydrocarbon cracking reaction. The stored model describes a reactants, an intermediate, and a product species, which are lumped according to boiling range. Reaction rate constants for cracking the individual components of the lumping scheme are functions of a statistical technique

known as principal components, which are in turn linear combinations of bulk properties characterizing both catalyst and oil and are based on historical operating data for the riser reaction.

5776852

Zeolite catalyst composition comprising tungsten carbide and process therefor and therewith

Wu An-hsiang; Drake Charles A., Bartlesville, OK, USA
Phillips Petroleum

A catalyst composition, a process for producing the composition and a process for transalkylation of C9 + aromatic compounds to C6 to C8 aromatic hydrocarbons are disclosed. The composition comprises a zeolite and tungsten wherein tungsten is preferably present as tungsten carbide which is impregnated on the zeolite. A preferred process for producing the catalyst composition which comprises: (1) contacting a zeolite with an effective amount of an acid under a condition sufficient to produce an acid-leached zeolite; and (2) impregnating acid-leached zeolite with an effective amount of tungsten-containing compound under a condition sufficient to effect the production of a tungsten carbide-promoted zeolite. The transalkylation process comprises contacting, in the presence of the catalyst composition, a fluid which comprises a C9 + aromatic compound with a hydrogen-containing fluid under a condition sufficient to effect the conversion of a C9 + aromatic compound to a C6 to C8 aromatic hydrocarbon.

5780689

Superacidic catalysts for the synthesis of methyl-*tert*-butyl ether (MTBE)

Mao Raymond, Le Van Saint, Laurent, Canada Societe
Quebecoise D'Initiatives Petrolieres

In accordance with the present invention, there is now provided a novel selective catalyst useful for the synthesis of methyl-*tert*-butyl ether (MTBE) or ethyl-*tert*-butyl ether (ETBE) prepared by reacting isobutene with methanol or ethanol, respectively. More specifically, the catalyst of the present invention comprises from about 0.5 to about 7% by weight of triflic acid (trifluoro-methanesulfonic acid, CF_3SO_3H , hereafter referred to as TFA) incorporated onto an acid form Y zeolite.

5780698**Olefin oligomerization catalyst and process employing and preparing same**

Baralt Eduardo J.; Carney Michael J.; Cole Jana B., Kingwood, TX, USA Chevron Chemical

According to the present invention, a catalyst is provided which is represented by the formula $(RC(YR')_2)_2CrX$, wherein R and R' are individually selected from the group consisting of carbyl and carbylsilyl groups; Y is N, C or P; and X is a halogen, halogen alkyl, Si, alkylsilyl or a carbyl group. Also provided is a process for preparing the catalyst and an oligomerization process employing the catalyst. The process produces linear alpha-olefins with low amounts of polymer, vinylidene and isomerized olefins.

5780700**Catalytic oxidative dehydrogenation of alkylaromatics and paraffins**

Hagemeyer Alfred; Lautensack Thomas; Watzenberger Otto; Deimling Axel, Ludwigshafen, Germany BASF

A process for the preparation of olefinically unsaturated compounds by catalytic oxidation, i.e., oxidative dehydrogenation by transferring oxygen from a previously oxidized oxygen carrier acting as catalyst, in the absence of molecular oxygen, the catalyst being regenerated after exhaustion, wherein, during the operating phase of the catalyst (oxidation/dehydration partial step), the residence time, space velocity and/or temperature of the reactants in the reactor is/are adjusted, i.e., controlled, continuously or in discrete steps, in a manner appropriate to the momentary state of activity of the redox catalyst by adjusting-continuously or stepwise-the residence time of the reactants in the freshly regenerated catalyst (i.e., at the commencement of the reaction) to a shorter time, and/or the temperature to a lower value, than the corresponding parameter(s) in the partially reduced catalyst.

5783607**Process for converting synthesis gas in the presence of a catalyst based on cobalt and titanium**

Chaumette Patric; Clause Olivier; Azib Hedi, Bougival, France Institut Francais du Petrole; AGIP Petroli

The invention concerns the preparation of a catalyst comprising a support comprising at least one oxide of the element Si, Al, Ti, Zr, Sn, Zn, Mg or Ln (where Ln is a rare earth), cobalt, titanium, at least one element A selected from the group formed by copper, ruthenium, platinum, palladium, scandium and yttrium, and characterized in that it comprises at least the following successive steps: (1) forming a precursor comprising at least cobalt, element A and the support; (2) at least partial reduction of said precursor in the presence of at least one reducing compound; and (3) depositing titanium on the reduced precursor. The invention also concerns the catalyst which can be produced using this process and the use of the catalyst in a process for synthesizing $C_5 +$ hydrocarbons from synthesis gas.

5788834**Catalytic cracking process with Y zeolite catalyst comprising silica binder containing silica gel**

Lapinski Mark P., Baton Rouge, LA, USA Exxon Research and Engineering(AU)

A catalytic cracking catalyst and catalytic cracking process for cracking the $650^\circ F.$ + portion in a heavy feed to lighter products. The catalytic cracking catalyst contains a Y zeolite in a silica binder that is substantially free of catalytically active alumina. The silica binder contains silica gel as a component.

5789335**Supported Lewis acid catalysts for hydrocarbon conversion reactions**

Chen Frank Joung-ye; Le Deore Christophe; Guyot Alain; Lenack Alain Louis Pierre; Stanat Jon Edmon, Edison, NJ, USA Exxon Chemical Patents

A supported Lewis acid catalyst, which comprises an inorganic oxide substrate having immobilized thereon at least one Lewis acid and a modifying agent containing at least one functional moiety capable of reacting with surface hydroxyl groups originally present on said substrate and which is effective as a catalyst for hydrocarbon conversion reactions including cationic polymerization, alkylation, isomerization and cracking reactions is disclosed.

5789637**Process for the hydrogenation of aromatic compounds comprising chlorine injection, using catalysts based on a noble metal**

Mignard Samuel; Harle Virginie France; Kasztelan Slavik; Marchal-George Nathalie, Chatou, France Institut Francais du Petrole

The invention concerns a process for the hydrogenation of aromatic compounds contained in feeds with an initial boiling point of more than 100°C. and which contain at least 10% by weight of aromatic compounds. It consists of introducing chlorine in a concentration of 0.5–500 ppm by weight with respect to the feed at a temperature of between 200°C. and 450°C., a pressure in the range 1 MPa to 25 MPa, an HSV of between 0.1 h⁻¹ and 10 h⁻¹ and a volume ratio of hydrogen to feed of 100–2000. The catalyst used is a noble metal type and contains less than 1% of at least one halogen. Preferably, the catalyst is fluorinated or chlorinated.

5789641**Process for dismutation and/or transalkylation of alkylaromatic hydrocarbons in the presence of two zeolitic catalysts**

Alario Fabio; Benazzi Eric Neuilly sur Seine, France Institut Francais du Petrole

The invention concerns the dismutation of alkylaromatic hydrocarbons, preferably the dismutation of toluene to produce benzene and xylenes, and/or the transalkylation of alkylaromatic hydrocarbons, preferably the transalkylation of toluene and trimethylbenzenes to produce xylenes, in a reaction zone comprising at least two catalytic beds each comprising a different catalyst, one of the catalysts containing at least one zeolite with mordenite type structure, at least partially in its acid form, and the other catalyst containing at least one zeolite with mazzite type structure, at least partially in its acid form, each catalyst containing at least one matrix and, optionally, at least one element selected from the group formed by groups IB and VIII of the periodic classification of the elements.

5789642**Hydrocarbon conversion catalyst composition and processes therefor and therewith**

Wu An-hsiang; Drake Charles A., Bartlesville, OK, USA Phillips Petroleum

A catalyst composition and a process for hydrodealkylating a C₉ + aromatic compound to a C₆ to C₈ aromatic hydrocarbon are disclosed. The composition comprises an alumina, molybdenum oxide, and zinc oxide. The process comprises contacting a fluid which comprises a C₉ + aromatic compound with the catalyst composition under a condition sufficient to effect the conversion of a C₉ + aromatic compound to a C₆ to C₈ aromatic hydrocarbon. Also disclosed is a process for producing the composition which comprises: (1) contacting an alumina, which can be optionally calcined before being contacted, with a molybdenum compound and zinc compound in a liquid medium under a condition sufficient to incorporate the molybdenum compound and zinc compound into the alumina to form a modified alumina wherein the volume of the liquid medium is larger than the bulk volume of alumina; (2) removing the excess liquid medium; (3) drying the modified alumina; and (4) calcining the modified alumina to a Mo/Zn-promoted alumina under a condition sufficient to effect the conversion of the molybdenum compound and zinc compound to corresponding oxides.

5789645**Isomerization catalyst and process**

Cox William, Houston, TX, USA Amoco

PCT No. PCT/US95/15223 Sec. 371 Date Oct. 10, 1996 Sec. 102(e) Date Oct. 10, 1996 PCT Filed Nov. 20, 1995 PCT Pub. No. WO96/16006 PCT Pub. Date May 30, 1996. A catalyst composition effective for isomerizing alpha-olefin to internal olefin and a process for conducting such isomerization using the catalyst composition are described. The catalyst comprises the combination of an alkyl aluminum alkoxide and a cobalt salt of an organic carboxylic acid or reduced form of such cobalt salt wherein the number of alkoxide groups in the alkyl aluminum alkoxide is sufficiently greater than one and sufficiently less than three per

aluminum atom to provide an active catalyst for catalyzing such isomerization. Typically the alkyl aluminum alkoxide has the formula $R_3nAl(OR_4)_p$ where R_3 and R_4 are the same or different and are alkyl, n is from 0.75 to 1.85, p is from 1.15 to 2.25 and the sum of n and p is 3. The isomerization process using such

catalysts proceeds rapidly and requires no addition of hydrogen to enhance the reaction. Failure to achieve the proper balance between alkoxide and alkyl groups on the alkyl aluminum alkoxide results in an inactive catalyst or a catalyst that is only minimally effective even at high temperatures.