



JOURNAL OF MOLECULAR CATALYSIS A: CHEMICAL

PatentsALERT

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CATALYST PREPARATION AND REGENERATION

05902556

05/06/96

11/05/99

Catalytic gas sensor

A catalytic detector for a flammable gas comprises a substrate and a sensing structure suspended from the substrate. The sensing structure has a combined heating element and temperature sensing element in the form of a layer-deposited electrically conductive track terminating in at least two electrically conductive bridging leads. A catalytic bead is deposited over the temperature sensing element and that portion of the substrate which is directly beneath the sensing structure is etched away so as to isolate thermally the sensing structure with the temperature sensing structure being supported by the bridging leads. The electrically conductive track is sandwiched between a substrate adhesion layer for facilitating adhesion of the conductive track and a superstrate diffusion barrier layer. The invention extends to a method of manufacturing a gas detector and a sensing structure.

Van De Vyver, James Edward; Brodalka, Marysia; Howden, Michael George; Leith, Ian Robert; Pennefather, Rosalyn Claire; Wallis, Jeremy Rex.

Lynnwood Manor, Arcadia, Lyttelton Manor, Lynnwood, Lonehill, Moreleta Park, ZA.

Assigned to Microchip (Proprietary).

F01N3/10.

05905056

12/12/96

18/05/99

Catalyst and a method for its production and use of same

A catalyst and a method for producing the catalyst for catalytic reduction of NO_x and oxidation of hydrocarbons. The catalyst comprises a zinc, copper and aluminum spinel to which, at least one element selected from palladium, platinum, rhodium, ruthenium, osmium, iridium, rhenium, and/or rare earth metals, such as lanthanum and cerium, vanadium, titanium, niobium, molybdenum, tungsten, and/or salts thereof and/or oxides thereof has been added.

Hartweg, Martin; Seibold, Andrea; Walz, Leonhard; Fetzner, Thomas; Morsbach, Bernd.

Erbach, Blaustein, Rastatt, Speyer, Ludwigshafen, DE.

Assigned to Daimler-Benz Aktiengesellschaft.

B01J23/00;8/02;8/00.

05906953

09/05/97

25/05/99

Catalyst rejuvenation process

A process and apparatus for rejuvenating particulate used catalysts in a single rejuvenation vessel and providing a rejuvenated catalyst material having properties that result in activity substantially equal to new catalyst. The pressurizable vertically oriented vessel has inlet and outlet openings for the catalyst and washing liquids, and is arranged to facilitate successive solvent liquid washing, water washings, and acid treatment steps for the used particulate catalyst provided in a bed in the vessel's conical-shaped lower portion which contains catalyst rotary stirring means. After rejuvenation of the used catalyst, it is withdrawn from the vessel's conical-shaped lower portion downwardly through a central withdrawal conduit and control valve for further processing. The water-soluble solvent and acid treatment liquids can be usually recovered by distillation for reuse in the catalyst rejuvenation process. The solvent-washed and acid-treated catalyst is separately heated and oxidized to remove carbon deposits and provide a completely rejuvenated catalyst material.

Duddy, John E.; Abrams, Lawrence M.; Hildebrandt, Steven J.

Bensalem, Cherry Hill, Kendall Park, NJ, USA.

Assigned to HRI.

B01J 3860 B01J 3852 B01J 2034.

05906957

10/09/96

25/05/99

Solid aliphatic alkylation catalyst

The invention concerns a catalyst comprising a porous organic or inorganic support and at least one active phase comprising at least one acid selected from acids with formula R-SO₃H, where R is fluorine or an alkyl group or a fluorinated alkyl group, and at least

one weakly basic aprotic organic solvent; the support having been impregnated with the active phase, the catalyst being such that it is essentially constituted by particles with an average diameter in the range 0.1 to 150 μm , and being such that before impregnation with the active phase, the support has a total pore volume in the range 0.5 to 6 cm^3/g . The invention also concerns the use of the catalyst for aliphatic alkylation.

Benazzi, Eric; Joly, Jean-Francois.
Montesson, Lyons, FR.
Assigned to Institut Francais du Petrole.
B01J 2702 B01J 2706 B01J 2108 C07C 258.

05908803
09/04/97
01/06/99

Process for isolation of a catalyst containing palladium

The present invention relates to the isolation of a palladium-based catalyst from a mixture in which it is dissolved. More specifically, the invention relates to the isolation of a palladium-based catalyst from a mixture originating from the reaction of hydroxycarbonylation of butadiene to pentenoic acids. Therefore, it consists of a process for the isolation of at least a portion of the palladium dissolved in a solution also containing at least 3-pentenoic acid, characterized in that the said solution is acidified and stirred with an aqueous solution of hydrochloric acid, so as to obtain two liquid phases including an aqueous phase containing at least a portion of the palladium.

Leconte, Philippe; Patois, Carl.
Mezzieu, Lyons, FR.
Assigned to Rhone-Poulenc Fiber and Resin Intermediates.
B01J 2034 C07C 5114 C07C 5702.

05908807
24/03/98
01/06/99

Isobutanol synthesis catalyst

The invention relates to a catalyst for conversion of methanol, ethanol alone, or in combination with *n*-pro-

panol 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 at.% (on a metals basis only) zirconium, from about 21 to about 31 at.% manganese, and from about 5 to about 9 at.% zinc, and less than about 1 at.% alkali; a second phase of zirconium-doped hetaerolite particles containing from about 65 to about 69 at.% manganese, from about 31 to about 35 at.% zinc, from about 0.5 to about 5 at.% zirconium, and optionally a trace at.% of alkali; and a third phase containing from about 29 to about 55 at.% manganese, from about 13 to about 55 at.% zinc, and from about 13 to about 35 at.% zirconium. The first phase mixed oxide crystallites have a zirconium oxide-like structure that has a particle size of at least about 40 to about 100 \AA , wherein the second phase particles have a particle size of about 200 to greater than about 2000 \AA , and the third phase has a particle size of about 1000 to greater than 4000 \AA .

Vanderspurt, Thomas Henry; Greaney, Mark Alan; Leta, Daniel Paul; Koveal, Russell John; Disko, Mark Michael; Klaus, Angela V.; Behal, Sutinder K.; Harris, Robert B.

Delaware Township, Upper Black Eddy, Flemington, Baton Rouge, High Bridge, Highland Park, Somerville, Billings, MO, US.

Assigned to Exxon Research and Engineering.
B01J 2106 B01J 2334.

05908993
23/07/97
01/06/99

Apparatus for measuring total surface area of a portion of catalytic metal particles

According to the present invention, there is a provided apparatus for measuring the total surface area of a portion of catalytic metal particles carried on the surfaces of pores in a carrier of a catalyst, comprising a device for supplying the pores with a first gas under a predetermined pressure to mask the surfaces of the catalytic metal particles carried on a first portion of the surfaces of the said pores, in which the first portion has a radius less than a radius determined by the predetermined pressure of the said first gas and a device for

supplying the said pores with a second gas, which is to be adsorbed on the surfaces of the said catalytic metal particles carried on a second portion of the surfaces of the said pores, in which the second portion has a radius equal to or greater than the radius determined by the predetermined pressure, and is not masked by the said first gas. Also included is a processor for calculating the total surface area of the said catalytic metal particles carried on the said second portion of the surfaces of the said pores by an amount which is adsorbed on the said surfaces of the said catalytic metal particles.

Takeshima, Shinichi; Tanaka, Toshiaki.
Susono, Numazu, JP.
Assigned to Toyota Jidosha Kabushiki Kaisha.
G01N 1500.

05910373

13/06/97

08/06/99

Metal containing E-coat catalysts optionally with tin catalysts

The invention comprises a curable composition comprising: (i) a blocked reactive component wherein the blocked reactive component is a blocked isocyanate or a blocked isothiocyanate; (ii) a functional compound reactive with the blocked reactive component, the functional compound containing reactive hydrogen; (iii) a catalyst for promoting the reaction of the reactive component with the blocked functional compound, wherein the said catalyst is based on the reaction product of manganese, cobalt, nickel, copper, zinc, germanium, antimony, or bismuth, or the oxides thereof with a mercaptan or an organic acid, wherein said organic acid is hexanoic, oxalic, adipic, lactic, tartaric, salicylic, thioglycolic, succinic, or mercapto succinic acid, or the reaction product of copper or germanium, or the oxides thereof with a lower aliphatic acid. The manganese, cobalt, nickel, copper, zinc, germanium, antimony, or bismuth catalysts can be used in conjunction with other compounds to promote the reaction, especially compounds based on tin, preferably organotin compounds. Water-soluble catalysts are preferred. The coating composition can be electrocoated on a conductive substrate and cured.

Bossert, Emily C.; Cannon, Kevin; Honnick, William D.; Ranbom, Wayne.

Wayne, Hatboro, Exton, Hopewell, NJ, US.
Assigned to Elf Atochem North America.
B05D 104.

05912203

31/12/97

15/06/99

Process to synthesize a linear phosphonitrilic chloride catalyst

The present invention relates to a process for the synthesis of a linear phosphonitrilic chloride (LPNC) catalyst solution. The process involves mixing phosphorus pentachloride with a suitable silazane in a methylene chloride medium. The methylene chloride is then replaced with a siloxane medium followed by heating this mixture to form a LPNC catalyst solution.

Burkus, Frank Steven II; White, Michael Lee.
Troy, Pittsburgh, PA, US.
Assigned to General Electric.
B01J 2724 B01J 2714 B01J 2710.

05912376

27/10/97

15/06/99

Process for the preparation of catalysts

A process for the preparation of a metal carbene, in which a metal salt is first reacted in the presence of a base and a secondary or tertiary alcohol with a tertiary phosphine or phosphite or a ditertiary diphosphine or diphosphite, and then reacted in the presence of an acid with an alkyne and, if desired, an alkene.

Van Der Schaaf, Paul Adriaan; Kolly, Roman; Hafner, Andreas; Muhlebach, Andreas.
Fribourg, Zumholz, Laupen, Belfaux, CH.
Assigned to Ciba Specialty Chemicals.
C07F 1500 C07F 902.

ENVIRONMENTAL CATALYSIS

05906958

11/10/96

25/05/99

Catalyst for purifying automobile exhausts and method of manufacturing the catalyst

A catalyst for purifying exhaust gases of an automobile engine including a carrier co-precipitated with a

material absorbing oxides of nitrogen (NO_x) and an active noble metal wherein the material absorbing oxides of nitrogen is at least one of barium manganese oxide (BaMnO_3) and calcium manganese oxide (CaMnO_3). The carrier co-precipitated with BaMnO_3 or CaMnO_3 shows superior capacity for absorbing oxides of nitrogen. Consequently, a catalyst according to the present invention can effectively purify engine exhaust, even in a lean burn environment.

Park, Sang-cheol; Pak, Chan-ho.
Seoul, KR.
Assigned to Samsung Electro-Mechanics.
B01J 2332.

05906959

19 / 07 / 96

25 / 05 / 99

Catalyst for purifying exhaust gas

This invention relates to a catalyst for purifying an exhaust gas using a complex oxide having good heat-resistant and a purification performance which does not undergo degradation, particularly in a lean atmosphere at a high temperature of about 1000°C , by using the complex oxide containing platinum and at least one member of element selected from the group from an alkaline earth metal element and the Group IIIA element and, furthermore, by using at least one member of platinum complex oxides selected from the group of those Pt complex oxides expressed by the chemical structural formulas X_4PtO_6 ($\text{X} = \text{Ca}, \text{Sr}, \text{Ba}, \text{Mg}$), $\text{X}'_2\text{Pt}_2\text{O}_7$ ($\text{X}' = \text{Sc}, \text{La}, \text{Pr}$), $\text{SrX}''\text{PtO}_6$ ($\text{X}'' = \text{Co}, \text{Ni}, \text{Cu}$), Ba_2ZPtO_6 ($\text{Z} = \text{Pr}, \text{Ce}$) and $\text{Ba}_8\text{Y}_3\text{Pt}_4\text{O}_{17.5}$.

Yamasita, Koiti; Murachi, Mikio; Sugiyama, Masahiko.
Susono, Toyota, Mishima, JP.
Assigned to Toyota Jidosha Kabushiki Kaisha.
B01J 2358.

05908806

16 / 05 / 97

01 / 06 / 99

Copper-silver zeolite catalysts

A catalyst for the removal of carbon monoxide, hydrocarbons, and nitrogen oxides in an exhaust gas

made by a process comprising: (a) preparing a suspension comprising a liquid, a zeolite, a weak base, and salts of copper and silver, the said zeolite being crystalline and having a Si/Al atomic ratio between about 5 and about 100, a pore size between about 0.5 and about 1.3 nm, essentially no octahedral aluminum detectable by ^{27}Al NMR spectroscopy and a sodium ion exchange capacity, with regard to total aluminum content, greater than 75%, and wherein said suspension contains sufficient amounts of said copper and silver salts to result in a copper content in said catalyst, when finished, between about 0.5 and about 12 wt.% and a silver content between about 0.25 and about 20 wt.%; (b) adding a sufficient amount of a strong base to raise the pH of the suspension to between about 7 and about 9, thereby creating a metal-containing zeolite support in said suspension; (c) separating the support from the said liquid; (d) dispersing the said support on a substrate; and (e) drying and calcining the product of step (d).

Kharas, Karl C.
Tulsa, OK, US.
Assigned to ASEC Manufacturing.
B01J 2906.

05910466

Catalyst for purifying exhaust gas

The present invention relates to a catalyst for purifying an exhaust gas, and in particular provides a catalyst for purifying an exhaust gas using a complex oxide, which is not deteriorated in its purifying performance even in a lean atmosphere containing sulfur dioxide SO_2 at temperatures as high as at least 1000°C , comprising at least one of the noble metals and one or at least two elements selected from the group consisting of alkaline earth metals and Group IIIA elements, and at least one member selected from the group consisting of iron, nickel, and cobalt is supported in the surface portion of the catalyst, the catalyst further comprising, as a constituent element of the complex oxide, at least one element selected from the group consisting of iron, nickel, and cobalt.

Yamashita, Koichi; Murachi, Mikio.
Susono, Toyota, JP.
Assigned to Toyota Jidosha Kabushiki Kaisha.
C01B 1716 C01G 4502 C01G 4902 B01J 2358.

05911961**Catalyst for purification of diesel engine exhaust gas**

A catalyst for the purification of diesel engine exhaust gas is disclosed which excels in the ability to remove by combustion unburned hydrocarbons and carbon monoxide as well as minute carbon particles in a wide temperature range from a low temperature zone upward. This catalyst for the purification of diesel engine exhaust gas comprises by having a three-dimensional structure coated with (A) a platinum and/or palladium-carrying refractory inorganic oxide powder obtained by depositing platinum and/or palladium and the catalytically active oxide of at least one metal selected from the group consisting of tungsten, antimony, molybdenum, nickel, vanadium, manganese, iron, bismuth, cobalt, zinc, and alkaline earth metals on (a) a first refractory inorganic oxide powder and (B) a catalyst composition formed of (b) a second refractory inorganic oxide powder and having the platinum and/or palladium contained therein in an amount in the range from 5% to 50% by weight, based on the amount of (a) the first refractory inorganic oxide powder.

Horiuchi, Makoto; Yokomizo, Tomohiro.
Hyogo, JP.
Assigned to ICT.
B01J 802.

05911964**13/12/95****15/06/99****Method for reducing carbon dioxide using a catalyst for reduction of carbon dioxide**

A catalyst for the reduction of carbon dioxide which comprises employing a catalyst which contains at least one transition metal selected from the group consisting of Group VIII (e.g., Ni, Fe, Co, Ru, Rh) and Group VIa (e.g., Mo, W) in the Periodic Table on zinc oxide alone or on a composite containing zinc oxide and at least one metal oxide of a metal selected from the group consisting of Group IIIb (e.g., Al, Ga) and Group IVa (e.g., Ti, Zr) in the Periodic Table.

Iwanami, Hikoichi; Yoshizawa, Takashi; Suzuki, Takashi.
Saitama, JP.
Assigned to Cosmo Research Institute, Cosmo Oil.
C10B 3118.

05912198**01/08/96****15/06/99****Staged catalytic ammonia decomposition in integrated gasification combined cycle systems**

The ammonia content of fuel gas in an IGCC power generation system is reduced through ammonia decomposition, thereby reducing the NO_x emissions from the plant. The power generation system includes a gasifier, a gas turbine, and at least one catalytic reactor arranged between the gasifier and the gas turbine. The catalytic reactor may be either a three-stage or two-stage device. The three-stage reactor includes a first catalyst that promotes water-gas-shift, a second catalyst that promotes CO methanation, and a third catalyst that promotes ammonia decomposition. The two-stage reactor includes a first catalyst that promotes water-gas-shift and CO methanation, and a second catalyst that promotes ammonia decomposition. The plural catalytic stages may be disposed in a single vessel or successively disposed in individual vessels, and the catalysts may be in pelletized form or coated on honeycomb structures. Alternatively, fluidized bed reactors may be used. The reactions are carried out either adiabatically or non-adiabatically. Heat from the water-gas-shift and CO methanation reactions may be used to generate steam, which can be injected downstream or sent to a steam turbine. Preferably, a second catalytic reactor is provided in parallel with the first reactor so that the two reactors can alternately receive fuel gas from the gasifier.

Feitelberg, Alan S.; Ayala, Raul Eduardo; Hung, Stephen Lan-Sun; Najewicz, David Joseph.
Clifton Park, Waterford, NY, US.
Assigned to General Electric.
C10J 120.

CATALYSIS FOR CHEMICALS AND FINE CHEMICALS**05902904****21/08/98****11/05/99****Method for preparation of tertiary phosphines via nickel-catalyzed cross-coupling**

The invention is an improved method for the preparation of tertiary phosphines by way of cross-coupling

of aryl, alkenyl, cycloalkenyl or aralkyl halides or aryl, alkenyl, cycloalkenyl or aralkyl sulfonate esters with chlorophosphines in the presence of a catalyst and a reductant. The general reaction scheme is shown below: ##STR1## wherein R¹ is aryl, alkenyl, cycloalkenyl or aralkyl, any of which may be substituted by one or more of the following: alkyl, aryl, aralkyl, alkoxy, alkanoyl, chloro, fluoro, alkoxy carbonyl, cyano, trifluoromethyl, cycloalkyl, or CONR⁴R⁵ wherein R⁴ and R⁵ are independently hydrogen, alkyl, aryl or aralkyl; R² and R³ are independently aryl, alkyl, aralkyl, any of which may be substituted by one or more of the following: alkyl, aryl, aralkyl, alkoxy, alkanoyl, chloro, fluoro, alkoxy carbonyl, cyano, trifluoromethyl, cycloalkyl or CONR⁴R⁵ wherein R⁴ and R⁵ are independently hydrogen, alkyl, aryl or aralkyl; and *n* is 2 where R¹ is a difunctional moiety and 1 for any other R¹; and X is Cl, Br, I, or OSO₂Y; wherein Y is alkyl, trihalomethyl, phenyl, halophenyl, or alkylphenyl.

Laneman, Scott A.; Ager, David J.; Eisenstadt, Amihia.

Vernon Hills, Hoffman Estate, Ramat-Hasharon IL, IL.

Assigned to Monsanto.
C07F9/50.

05902918

13/03/97

11/05/99

Catalyst and catalytic oxidative dehydrogenation of alkylaromatics and paraffins

Alkenylaromatics are produced by catalytic oxidative dehydrogenation of alkylaromatics employing a redox catalyst which is bismuth oxide, in combination with an additive compound of an alkali metal and/or an alkaline earth metal, on a titanium dioxide carrier. In a first reaction step, an alkylaromatic starting material is oxidatively dehydrogenated with the redox catalyst in the absence of molecular oxygen with attending reduction of the redox catalyst. In a second reaction step, the reduced redox catalyst is reoxidized with an oxygen-containing gas.

Hagemeyer, Alfred; Lauth, Gunter; Lautensack, Thomas; Deimling, Axel.

Ludwigshafen, Lubeck, Ludwigshafen, Neustadt, DE.

Assigned to BASF Aktiengesellschaft.
C07C5/367.

05905051

04/06/97

18/05/99

Hydrotreating catalyst composition and processes therefor and therewith

A catalyst system and a process for converting a hydrocarbon stream such as, for example, a C₉+ aromatic compound to C₆ to C₈ aromatic hydrocarbons such as xylenes are disclosed. The catalyst system comprises a first catalyst composition and a second catalyst composition wherein said catalyst system is not a physical mixture of the said first catalyst composition and the said second catalyst composition, the said first catalyst is a metal-promoted, alumina- or silica-bound beta zeolite, and the said second catalyst composition is a ZSM-5 zeolite having incorporated therein an activity promoter selected from the group consisting of silicon, phosphorus, sulfur, and combinations of two or more thereof. The process comprises contacting a hydrocarbon stream with the catalyst system under a condition sufficient to effect the conversion of a hydrocarbon to a C₆ to C₈ aromatic hydrocarbon.

Wu, An-hsiang; Drake, Charles A.

Bartlesville, Nowata, OK, US.

B01J29/04;29/06;21/00;21/16.

05905052

30/07/97

18/05/99

Vanadyl pyrophosphate oxidation catalyst precursors

Vanadyl pyrophosphate oxidation catalyst precursors comprise vanadium phosphate esters of the formula O)_z) wherein, R is an alkyl group capable of bonding, through oxygen to phosphorus to form a phosphate ester; *x* is 0 to about 0.5; *y* is 0-1.0; *z* is 0-1.25; and *y* + *z* is 0-1.25, are particularly useful for the selective oxidation of butane to maleic anhydride and readily thermally decompose to form the vanadyl pyrophosphate oxidation catalysts.

Horowitz, Harold Saul; McCarron, Eugene Michael III.

Wilmington, Greenville, DE, US.
Assigned to EI du Pont de Nemours and Company.
B01J27/198.

05905053
02/09/97
18/05/99

Ethylene oxide catalyst

A silver catalyst for ethylene oxidation to ethylene oxide is provided containing a promoter combination consisting of an alkali metal component, a sulfur component, a fluorine component, and a pnictogen component from the group phosphorus, bismuth and antimony; the catalyst is essentially free of rhenium and transition metal components.

Rizkalla, Nabil; Klein, Rita; Milne, Stephen Bruce.
Riverdale, Westwood, Wayne, NJ, US.
Assigned to Scientific Design.
B01J27/02;27/14;27/06;23/48.

05905054
19/11/96
18/05/99

Catalysts for the oxichlorination of ethylene, method for preparing them, and oxichlorination method using the same

Catalysts for the oxichlorination of ethylene to 1,2-dichlorethane, comprising copper chloride as a main component, in the form of hollow cylindrical granules having at least three through holes, obtained by compression forming by using, for lubrication, a lubricant placed on the walls of the forming chamber and on the plungers of the mold.

Cavalli, Luigi; Rubini, Carlo.
Novara, San Fermo della Battaglia, IT.
Assigned to Montecatini Tecnologie
B01J35/10;37/00;23/28.

05905055
31/10/96
18/05/99

Heterogeneous metathesis catalyst

The invention relates to a heterogeneous metathesis catalyst containing a support, a metal compound chosen

from the group consisting of tungsten, rhenium and molybdenum, and a promoter, the promoter consisting of a niobium compound. The catalyst according to the invention has a high activity at low temperatures. The invention also relates to a process for the metathesis of olefins.

Verdonck, Ludo C.G.C.; Verpoort, Francis W.C.; Bossuyt, Antoine R.J.
Nazareth, Lichtervelde, Harelbeke, BE.
Assigned to DSM.
B01J23/16;31/00.

05905161
05/08/96
18/05/99

Regeneration of catalyst used in the preparation of 3,4-epoxy-1-butene

Process for regenerating a silver catalyst deactivated by coking during the gas phase epoxidation of 1,3-butadiene by reacting the coked catalyst with a gas mixture containing at least 5% by volume of water vapor and up to 95% by volume of oxygen at temperatures from 100°C to 500°C.

Boeck, Stefan; Herzog, Klaus; Fischer, Rolf; Vogel, Herbert; Fischer, Martin.
Ludwigshafen, Heidelberg, DE.
Assigned to BASF Aktiengesellschaft.
C07D301/10;303/04.

05905180
30/09/96
18/05/99

Catalytic oxidative dehydrogenation process and catalyst

A process for the production of a mono-olefin from a gaseous paraffinic hydrocarbon having at least two carbon atoms or mixtures thereof comprising reacting said hydrocarbons and molecular oxygen in the presence of a platinum catalyst. The catalyst consists essentially of platinum modified with Sn or Cu and supported on a ceramic monolith.

Yokoyama, Chikafumi; Bharadwaj, Sameer S.; Schmidt, Lanny D.

Tokyo, Minneapolis MN, JP.
Assigned to Regents of the University of Minnesota.
C07C5/327;5/333.

05907025
27/05/97
25/05/99

Method for conducting Lewis acid-catalyzed reactions

Esterification reactions conducted in the presence of Lewis acids, including the reactions between aromatic carboxylic acids and alcohols and between epoxides and carboxylic acids, may be conducted with the use as the catalyst of a hexaalkylguanidinium or α,ω -bis(pentaalkylguanidinium)alkane salt such as hexaethylguanidinium chloride or bromide.

Brunelle, Daniel Joseph.
Burnt Hills, NY, US.
Assigned to General Electric.
C08G 6382.

05907051
23/12/93
25/05/99

Catalyst and method for producing carbonic diesters

A method of producing a carbonic diester involves allowing alcohol to react with carbon monoxide and oxygen in the presence of a supported catalyst wherein the support is an activated carbon obtained from a vegetable or polymeric raw material, a support having an aluminum content of up to 2% by weight, or a support having sulfur content of up to 1% by weight.

Matsuda, Hirokazu; Oda, Shingo; Ohno, Mitsuru.
Himeji, JP.
Assigned to Daicel Chemical Industries.
C07C 6996.

05907056
27/05/98
25/05/99

Catalysts for the oxidation of ethane to acetic acid, processes of making the same and processes of using the same

An oxide catalyst comprising the elements Mo, V and Nb with small amounts of phosphorus, boron,

hafnium, Te and/or As. The modified catalyst provides both higher selectivity and yield of acetic acid in the low temperature oxidation of ethane with molecular oxygen-containing gas. A process for the higher selective production of acetic acid is by catalytic oxidation of ethane with oxygen in the presence of the improved catalyst.

Karim, Khalid; Al-Hazmi, Mohammed H.; Mamedov, Edouard.
Burnage, Riyadh, Baku, AZ.
Assigned to Saudi Basic Industries.
C07C 5116 C07C 51215 C07C 51235.

05908589
08/12/97
01/06/99

Methods for separating catalyst from oxidation mixtures containing dibasic acids

This invention relates to methods and reactor devices for controlling the oxidation of hydrocarbons to dibasic acids, in the presence of a catalyst and a monobasic acid, by removing the catalyst from the reaction mixture, outside the oxidation zone, after the oxidation has taken place at least partially. Initially, the catalyst is partially precipitated and removed by reducing the water level in the reaction mixture and/or subjecting the reaction mixture to a temperature, at which or over which catalyst precipitates. After the initial partial precipitation of the catalyst, the mother liquor remaining is subjected to a thermal treatment during which at least the major part of the monobasic acid is removed leaving behind molten dibasic acids, in which the remaining catalyst precipitates substantially in its totality, and it is removed. The precipitated catalyst in the two precipitation stages may be recycled in miscellaneous ways. From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

DeCoster, David C.; Vassiliou, Eustathios; Dassel, Mark W.; Rostami, Ader M.; Dudgeon, Douglas J.
Buckley, Newark, Indianola, Bainbridge Island, Bainbridge Island, WA, US.

Assigned to Twenty-First Century Research
D01D 102 D01D 508 D01F 1300.

05908805
27/12/96
01/06/99

Preparation of transition metal/phosphine catalysts by hydrogen reduction

Transition metal (0) or (1)/phosphine catalysts suited, e.g., for the hydrocyanation of ethylenically unsaturated compounds, are produced by reducing, via hydrogenation, aqueous solutions containing at least one transition metal compound and at least one monodentate or bidentate water-soluble phosphine, advantageously at least one phosphine having one of the following formulae (I) and/or (II): $(Ar_2)_h(Q_1)_i(Q_2)_j(II)$. In formulas (I) and (II), Ar1, Ar2 and Ar3 may be identical or different and are each an aryl radical or a substituted aryl radical. Q1, Q2 and Q3 may be identical or different and are each an alkyl radical, a cycloalkyl radical, a substituted alkyl radical, or a substituted cycloalkyl radical.

Huser, Marc; Perron, Robert.
Villeurbanne, Charly, FR.
Assigned to R.P. Fiber and Resin Intermediates.
B01J 2034 B01J 3810 B01J 3868 B01J 3100.

05908915
06/10/97
01/06/99

Copolyetherimides and phase catalyzed method for their preparation

Copolyetherimides are prepared by the reaction of an alkali metal salt of a dihydroxyaromatic compound with a bis(substituted phthalimide) and a third compound which may be a substituted aromatic ketone or sulfone or a macrocyclic polycarbonate or polyarylate oligomer. The reaction takes place in the presence of a solvent and a phase transfer catalyst having high thermal stability, such as a hexaalkylguanidinium halide. Random or block copolymers may be obtained, depending on the reaction conditions.

Brunelle; Daniel Joseph, Burnt Hills, NY, US.
Assigned to General Electric
C08G 802 C08G 7300 C08G 6926 C08G 7500;188;
351;352;229.

05908942
26/08/96
01/06/99

Epoxidation of butadiene using cesium fluoride promoted silver catalyst with enhanced thermal stability under reaction conditions

Disclosed is a process for the selective epoxidation of olefins, including diolefins, having more than two carbon atoms by the catalytic oxidation of such an olefin in the presence of a supported, fluorine-promoted, silver catalyst.

Oltean, George Leslie; Monnier, John Robert.
Rochester, Kingsport, TN, US.
Assigned to Eastman Chemical.
C07D30110.

05908951
14/09/98
01/06/99

Hydrosilylation catalyst and hydrosilylation method

A catalyst enables hydrosilylation of aliphatically unsaturated carbon-carbon bonds by silicon-bonded hydrogen to be conducted rapidly in water. The catalyst provides a rapid method of carrying out hydrosilylation in water. An emulsion form of catalyst includes a dispersion in water of liquid catalyst, the main component of which is a platinum and alkenylsiloxane complex. The volumetric average particle size of liquid catalyst dispersed is less than or equal to 1 μ m. Hydrosilylation of an aliphatically unsaturated carbon-carbon bond by silicon-bonded hydrogen is carried out in water using the catalyst.

Kobayashi, Kazuo; Morita, Yoshitsugu.
Chiba Prefecture, JP.
Assigned to Dow Corning Toray Silicone.
C07F 0708 B01J 3102.

05910465
12/03/96
08/06/99

Process for the preparation of a highly active and selective ammoxidation catalyst and its use in preparing heteroaromatic nitriles

This invention relates to a process for the preparation of highly active and selective ammoxidation cata-

lyst of formula $(VO)_2P_2O_7$, TiO_2 or $(VO)_2P_2O_7$, Al_2O_3 , which process comprises refluxing a vanadium source in the presence of alcohols; adding a source of phosphorus to form vanadyl pyrophosphate hydrate $(VO)_2H_4P_2O_9$ or $(VO)_2P_2O_7 \cdot 7.2H_2O$; physical mixing of $(VO)_2H_4P_2O_9$ with oxides selected from titania or alumina, and heating the resultant mixture in the presence of air at a temperature in the range 300–600°C for a period of 1 to 10 h; and the use of the said ammoxidation catalyst in the preparation of heteroaromatic nitriles.

Rao, Panja Kanta; Rao, Kamaraju Seetha Rama; Rao, Vattikonda Venkata; Narayana, Kalavaru Venkata; Venugopal, Akula; Rao, Alla Venkata Rama; Subrahmanyam, Machiraju.

Hyderabad, IN.

Assigned to Council of Scientific and Industrial Research.

B01J 27198 B01J 27192 B01J 27182.

05910608

04/06/97

08/06/99

Catalyst consisting of a hollow cylindrical carrier having a catalytically active oxide material applied to the outer surface of the carrier, and process for using said catalyst

A coated catalyst which consists of a hollow cylindrical carrier and a catalytically active oxide material applied to the outer surface of the carrier, the applied catalytically active oxide material being applied in a coat thickness from 10 to 1000 μm , and having a specific catalytic surface area from 20 to 30 m^2/g and an abrasion of < 10%, preferably < 5%, particularly preferably < 0.5% by weight in the turntable abrasion test. The catalyst is useful in the preparation of acrylic acid by the gas phase oxidation of acroleins.

Tenten, Andreas; Weidlich, Peter; Linden, Gerd.

Maikammer, Mannheim, Heidelberg, DE.

Assigned to BASF Aktiengesellschaft.

C07C 51235 C01G 3902.

05910613

06/05/98

08/06/99

Method of production of aromatic aldehydes catalyzed by triflic acid

A process for producing aromatic aldehydes by carbonylation of an arene in the presence of triflic acid

catalyst is described by reacting an arene, such as toluene, with carbon monoxide in the presence of triflic acid (as a catalyst), for a reaction time less than 90 min, at a carbon monoxide partial pressure of about 700–2000 psig, at a temperature of about 0–50°C to produce an aromatic aldehyde such as tolualdehyde and by-products, the by-products being less than 5% by weight based on the total reaction products. The mole ratio of triflic acid to arene is between about 0.8 and 20, with the reaction having an isomer selectivity greater than 95% by weight for the para isomer aldehyde, and showing substantially no meta isomer.

Schiraldi, David Anthony; Kenvin, Jeffrey Charles. Charlotte, Alpharetta, GA, US.

Assigned to HNA Holdings.

C07C 4500.

05912375

09/06/97

15/06/99

Hydrogenation catalyst, process for the preparation thereof and hydrogenation process

Reaction products of an iridium (III) salt or a hydrate thereof, a diphosphine having secondary phosphine groups and a metal or ammonium chloride, bromide or iodide are excellent hydrogenation catalysts for ketimine. Using chiral diphosphines and prochiral ketimines, diastereoisomeric secondary amines are obtained in high optical yields.

Spindler, Felix; Pittelkow, Ulrich.

Starrkirch-Wil, Rheinfelden, DE.

Assigned to Novartis.

C07F 724 C07F 1500.

05912394

09/10/98

15/06/99

Catalyst for the dehydrogenation of C_6 – C_{15} paraffins and to a process for making such catalysts

A catalyst for the dehydrogenation of C_6 – C_{15} paraffins is disclosed. The catalyst contains, on support, at least one platinum group component, at least one promoter component from the group tin, germanium and lead, and at least one additional modifier. The additional modifier contains at least one alkaline earth metal. The stability of the catalyst is essentially higher than that achieved by conventional use of an alkali metal.

Rotgerink, Hans Lansink; Tacke, Thomas; Brand, Reinhold; Panster, Peter.

Glattbach, Friedrichsdorf, Gelnhausen, Rodenbach, DE.

Assigned to Degussa-Huels Aktiengesellschaft.
C07C 5327 C07C 5333.

POLYMERISATION CATALYSIS

05902764

04/05/93

11/05/99

Catalyst system for the polymerization of olefins; process for this polymerization and polymers thus obtained

Catalyst systems comprising, on the one hand, a catalytic solid based on complexed titanium trichloride and, on the other hand, a nonhalogenated organoaluminium activator. When employed in gas phase olefin polymerization processes, these catalyst systems make it possible to manufacture a wide range of homopolymers and copolymers (random and block) with an isotacticity index which can be adjusted to very low values and with excellent pourability, even in the case of copolymers of high comonomer content. In the absence of transfer agents, they also make it possible to synthesize polymers of very high molecular masses, with an increased activity. These polymerization processes yield particularly advantageous results in the case of propylene.

Costa, Jean-Louis; Pamart, Sabine.
Grimbergen, Mons, BE.

Assigned to Solvay Polyolefins Europe-Belgium (Societe Anonyme).
C08F4/655.

05902765

14/02/97

11/05/99

Solid catalyst components for olefin polymerization

Solid catalyst components for olefin polymerization which comprise a solid carrier components comprising a solid substance having the general formula wherein X is a halogen atom, E is a monoether compound and n is 0.01 ~ 4, at least a portion of said E being replaced by an electron donative compound different from the said monoether compound (E), and a titanium compound

and these catalyst components can produce an olefin polymer having a high stereoregularity in a high polymer yield per unit of a catalyst component in olefin polymerization.

Takahashi, Hirotooshi; Kuroda, Yasushi; Fushimi, Masaki; Inazawa, Shintaro.

Ohita, Kawasaki, JP.

Assigned to Japan Polyolefins.
C08F4/654;4/649.

05902766

21/09/95

11/05/99

Alumoxanes, catalysts utilizing alumoxanes and polymers therefrom

A catalyst which exhibits superior control of product particle size in the insertion polymerization of α -olefins is described as transition metal compounds which associate with non-coordinating alumoxane anions which are dispersed throughout the interior of a silica support in the form of particles which are less than or equal to about 50 Å (5 nm) in diameter. This catalyst is capable of gas phase (e.g., heterogeneous) polymerization of propylene into product granules with a high degree of control over granule particle size distribution and bulk density.

Butler, Jeffrey Harold; Burkhardt, Terry John.
Baytown, Kingwood, TX, US.
Assigned to Exxon Chemical Patents.
C08F4/42.

05902835

28/05/98

11/05/99

Group IVB metal blowing catalyst compositions for the production of polyurethane foams

An improved method of preparing polyurethane foam by reacting an organic polyisocyanate with a polyol in the presence of water and a combination of a gelling catalyst and a blowing catalyst, in which the blowing catalyst is a compound represented by the following formulae: wherein M is titanium, zirconium, or hafnium; n ranges from 1 to 20; and each of L^1 , L^2 , L^3 , and L^4 is the same or different ligand selected from the following groups: (1) oxygen, sulfur and nitrogen; (2) an alcoholate, phenolate, glycolate, thiolate, carboxylate, dithio-

carbamate, aminate, aminoalcoholate, phosphate, phosphonate, pyrophosphate, sulfonate, or silylamide any of which contains from 1 to 20 carbon atoms and, optionally, contains one or more functional groups, or oxygen, sulfur, nitrogen, or phosphorus-containing; (3) a chelating ligand, such as, various non-fluorine containing and non-sterically hindered β -diketones, triethanolamine, salicylaldehyde, and salicylamide.

Meier, Ingrid Kristine; Listemann, Mark Leo; Kimmock, Michael John.

Asbury, Kutztown, PA, US.

Assigned to Air Products and Chemicals.

C08G18/22.

05902866

13/11/96

11/05/99

Azaboroliny metal complexes as olefin polymerization catalysts

Disclosed is a catalyst having the general formula where L is a ligand having the formula L' is L, Cp, Cp*, indenyl fluorenyl, NR₂, OR, or halogen, L can be bridged to L; X is halogen, NR₂, OR, or alkyl from C₁ to C₁₂, M is zirconium or hafnium, R is alkyl from C₁ to C₁₂ or aryl from C₆ to C₁₂, R₁ is R, alkaryl from C₆ to C₁₂, aralkyl from C₆ to C₁₂, hydrogen, or Si(R)₃, R₂ is R₁, halogen, COR, COOR, SOR, or SOOR, R₃ is R₂, OR, N(R)₂, SR, or a fused ring system, Cp is cyclopentadienyl, Cp* is pentamethylcyclopentadienyl, n is 0 to 3, and L_B is an optional Lewis base. Also disclosed is a method of making a poly- α -olefin comprising polymerizing an α -olefin monomer using a catalyst such as that described above where M can be titanium, zirconium, or hafnium.

Nagy, Sandor; Krishnamurti, Ramesh; Etherton, Bradley P.

Grand Island, Williamsville, Houston, TX, US.

Assigned to Equistar Chemicals, L.P.

C08F4/16;10/00.

05902871

13/02/98

11/05/99

Catalyst for low temperature cure of blocked isocyanates

The present invention comprises a curable composition comprising: (i) a blocked reactive component com-

prising a blocked isocyanate or a blocked isothiocyanate; (ii) a functional compound containing reactive hydrogen; (iii) a triorganotin catalyst for promoting the reaction of the blocked reactive component with the functional compound. The composition may also be admixed with water. The invention also relates to a method for curing a blocked isocyanate or blocked isothiocyanate at a temperature below about 150°C which comprises combining a triorganotin compound with the blocked reactive component and functional compound and heating at a temperature less than about 150°C to obtain a cured urethane or thiourethane.

Bossert, Emily Carol; Ransom, Wayne; Larkin, William Albert.

Wayne, Hopewell, Avon by the Sea, NJ, US.

Assigned to Elf Atochem North America.

C08G18/08.

05902873

17/10/97

11/05/99

Catalyst composition for the preparation of polyesters, and related processes

A catalyst composition for use in the preparation of a polyester or copolyester is disclosed. The catalyst composition comprises the combination of (a) a titanium-based compound or zirconium-based compound, and (b) a lanthanide series compound or hafnium. Various titanium-based compounds and lanthanide-based compounds are described. Moreover, in some embodiments, the catalyst composition may further comprise a phosphate-forming compound. Another aspect of this invention is an improved method for preparing polyester based, for example, on the two-stage process of ester interchange and polycondensation. The method is carried out in the presence of the catalyst composition described above.

Banach, Timothy Edward; Pilati, Francesco; Colonna, Martino; Fiorini, Maurizio; Berti, Corrado; Toselli, Maurizio; Messori, Massimo; Marianucci, Elisabetta.

Scotia, Bologna, Bologna, Bazzano, Lugo, Monte S. Pietro, Modena, Bologna, NY, IT.

Assigned to General Electric.

C08G63/78.

05902916
25/04/97
11/05/99

Process for reacting an organic compound in the presence of a ruthenium catalyst formed in situ

A process for reacting an organic compound in the presence of a catalyst, wherein the catalyst comprises a homogeneous ruthenium compound or a mixture of two or more thereof deposited in situ on a support.

Ruhl, Thomas; Breitscheidel, Boris; Brocker, Franz Josef; Reif, Wolfgang; Henkelmann, Jochem; Brauch, Karl Heinz; Henne, Andreas.

Frankenthal, Limburgerhof, Ludwigshafen, Frankenthal, Mannheim, Lampertheim, Neustadt, DE.

Assigned to BASF Aktiengesellschaft.
 C07C5/10.

05905050
30/11/93
18/05/99

Method for preparing active carrier particles of equal size for a polymerization catalyst

The active carrier particles of even size of the polymerization catalyst are prepared so that a melt of a complex composition is provided having the formula (I) in which ROH depicts an aliphatic alcohol, R is a C₁-C₆ alkyl, ED depicts an electron donor, *n* is 1 to 6 and *m* is 0 to 1; the melt provided is fed to a nozzle; the melt is sprayed from the nozzle to the spraying area, in which it is divided into fine melt droplets and possibly partly solidifies; the possibly partly solidified melt particles are transferred to a cooled crystallization area, where they crystallize to solid carrier particles; and the solid carrier particles are recovered. The melt mentioned is sprayed through a nozzle, which is rotated or which has attached to it a member that rotates and throws melt outwards from the rotating center to the spraying area.

Koshinen, Jukka; Louhelainen, Jarmo.
 Espoo, Helsinki, FI.
 Assigned to Borealis Holding.
 B01J35/08.

05905126
08/10/97
18/05/99

Process and catalyst for producing styrenic polymer

There is disclosed a process for producing a styrenic polymer which comprises polymerizing at least one

styrenic monomer by the use of a polymerization catalyst comprising in combination (A) at least one transition metal compounds, (B) an aluminoxane, (C) a coordination complex compound comprising a cation and an anion in which a plurality of radicals are bonded to a metal and (D) an organoaluminum compound. The above process is capable of producing a styrenic polymer which has high degree of syndiotactic configuration and a wide range of molecular weight distribution and is minimized in residual metallic components at a low production cost with a high efficiency.

Tomotsu, Norio; Takeuchi, Mizutomo.
 Ichihara, JP.
 Assigned to Idemitsu Kosan.
 C08F4/642;12/08.

05905136
19/06/97
18/05/99

Polycondensation catalyzers for the synthesis of polyethylene terephthalate

The subject is a class of catalyzers to be used in the stage of polycondensation of the synthesis of poly(ethylene terephthalate), consisting of metal and non-metal derivatives in composition with sulfonic acids mixed with titanium compounds so that the final polymer contains a sulfur quantity of 5-60 ppm and a quantity of metals between 2 and 100 ppm.

Po, Riccardo; Pelosini, Luigi.
 Livorno, Fontaneto D'Agogna, IT.
 Assigned to Montefibre, Inca International.
 C08G63/78.

05906955
16/12/97
25/05/99

Catalyst for polymerization of an olefin, and method for producing an olefin polymer

A catalyst for polymerization of an olefin, which comprises (a) a transition metal compound of the following formulae (1), (2) and/or (3): wherein each of M¹, M² and M³ is a titanium atom, a zirconium atom

or a hafnium atom, each of Cp¹, Cp², Cp³, Cp⁴ and Cp⁵ is a cyclopentadienyl group, an indenyl group, a fluorenyl group or a substitution product thereof, R¹ is a hydrogen atom, a C₁₋₂₀ hydrocarbon group or a C₁₋₂₀ alkylsilyl group, each of X¹, X², X³, X⁴, X⁵ and X⁶ is a hydrogen atom or a C₁₋₂₀ hydrocarbon group, Z¹ is a C₁₋₂₀ hydrocarbon group, a silicon-containing C₁₋₂₀ hydrocarbon group or a C₁₋₂₀ alkylsilanediyl group, which serves to connect Cp³ and Cp⁴, Z² is a C₁₋₂₀ hydrocarbon group, a silicon-containing C₁₋₂₀ hydrocarbon group or a C₁₋₂₀ alkylsilanediyl group, which serves to connect Cp⁵ and J, J is an element of Group 15 or 16 of the Periodic Table, *a* is a coordination number of J, L is a Lewis base, and *b* is the number of the Lewis base L, provided $0 \leq b \leq 3$, and (b) a modified clay obtained by treating clay or clay mineral with a compound containing an element of Group 15 or 16 of the Periodic Table.

Hamura, Satoshi; Yasuda, Hisami; Yoshida, Toru; Sato, Morihiko.

Yokkaichi, Mie-gun, Yokkaichi, JP.

Assigned to Tosoh.

B01J 3100 C07F 1700 C08F 402.

05908903

20 / 12 / 96

01 / 06 / 99

Metalocene catalyst systems containing Lewis bases

Catalyst systems which are suitable for polymerizing olefinically unsaturated compounds comprise as active constituents (A) a metallocene complex of the metals of the fourth, fifth or sixth transition group of the Periodic Table of the Elements, (B) a compound forming metallocenium ions and (C) a sterically hindered, organic Lewis base.

Rosch, Joachim.

Ludwigshafen, DE.

Assigned to BASF Aktiengesellschaft.

C08F 4642.

05908904

17 / 04 / 97

01 / 06 / 99

Catalyst its production and its use for the gas-phase polymerization of conjugated dienes

Catalysts consisting of (A) an alcoholate of the rare earths, a carboxylate of the rare earths, a complex

compound of the rare earths with diketones and/or an addition compound of the halides of the rare earths with an oxygen or nitrogen donor compound; (B) an aluminium trialkyl, a dialkyl aluminium hydride and/or an alumoxane; (C) another Lewis acid; and (D) an inert, particulate inorganic solid with a specific surface of greater than 10 m²/g (BET) and a pore volume of 0.3 to 15 ml/g are eminently suitable for the polymerization of conjugated dienes, more particularly butadiene, in the gas phase.

Sylvester, Gerd; Vernaleken, Hugo.

Leverkusen, Krefeld, DE.

Assigned to Bayer.

C08F 234 C08F 452.

05910463

14 / 07 / 97

08 / 06 / 99

Catalyst supports, supported metallocene catalysts and their use for the preparation of polyolefins

Process for preparing a catalyst support, in which a hydrophilic, macroporous, finely divided aluminum oxide, silicon oxide, titanium oxide or zirconium oxide or a mixture or mixed oxide thereof is dried at 110°C to 800°C, then reacted with an aluminoxane and subsequently with polyfunctional organic cross-linkers. In a further step, the catalyst support can be mixed with a reaction product of metallocenes and activators, giving a supported metallocene catalyst that is used, in particular, for the polymerization of olefins.

Ernst, Eberhard; Reussner, Jens; Neissl, Wolfgang.

Katsdorf, Traun, Lichtenberg, AT.

Assigned to Borealis.

C08F 402.

05910464

07 / 01 / 98

08 / 06 / 99

Catalysts for the polymerization of olefins

A catalyst for the polymerization of olefins comprises the product obtained by contacting: (A) a titanium, zirconium or hafnium mono- or bis-cyclopentadienyl compound, this latter optionally containing a bridging group which links the two cyclopentadienyl compounds; (B) an alkyl aluminium wherein at least one alkyl is different from a straight alkyl; and (C)

water. The molar ratio aluminium/water is higher than 1:1 and lower than 100:1.

Resconi, Luigi; Galimberti, Maurizio; Piemontesi, Fabrizio; Guglielmi, Floriano; Albizzati, Enrico.

Ferrara, Milan, Borgosesia, Ferrara, Arona, IT.

Assigned to Montell Technology.

C08F 464 C08F 442.

05910566

26/01/98

08/06/99

Living polymer hydrogenation catalyst and process for hydrogenating polymers with the catalyst

This invention is to provide a process for the hydrogenation of conjugated diene polymer in an inert organic solvent, said polymer being obtained by polymerization or copolymerization of a conjugated diene, which comprise effecting selective hydrogenation of unsaturated double bonds in the conjugated diene units of said conjugated diene polymer in the presence of catalyst represented by the following formula (I) wherein Cp is cyclopentadienyl (C₅H₅); X₁ and X₂ are each independently a halogen atom, such as, chlorine or bromine; Y is carbon or nitrogen atom; and R₁, R₂ and R₃ are each independently hydrogen atom or C₁-C₄ lower alkyls.

Ko, Young Hoon; Kim, Jae Yun; Hwang, Jin Man. Taejeon, Taejeon, KR.

Assigned to Korea Kumho Petrochemical.

B01J 3100 B01J 2724 B01J 2300.

05912202

10/01/97

15/06/99

Olefin polymerization catalyst composition having increased activity

A method for preparing an activated catalyst composition comprising a single site catalyst precursor and an activating cocatalyst, which comprises contacting outside of a polymerization reactor a single site catalyst precursor with an activating cocatalyst before, during, or after contacting the single site catalyst precursor with a weakly coordinating electron donor such as 1-hexene.

Oskam, John Henry; Peterson, Thomas Henry; Schreck, David James; Sishta, Purna Chand; Wenzel, Timothy Todd; Whiteker, Gregory Todd; Williams, Clark Curtis.

Somerset, Charleston, Cross Lanes, Whitehouse, WV, US.

Assigned to Union Carbide Chemicals and Plastics Technology.

C08F 464.

05912311

26/06/97

15/06/99

Olefin polymerization method comprising allyl-cycloalkadienyl dianions as catalyst precursors

A catalyst precursor of the formula wherein: L is a cycloalkadienyl ligand; W, X, Y, and Z are independently hydrogen, a hydrocarbyl group containing 1 to 20 carbon atoms, or a silyl group, and may be connected to L through a bridging group comprising at least two Group IVA atoms; with the proviso that one of X, Y, and Z is a negative charge stabilizing group selected from the group consisting of Group IVA trialkyl groups, aryl groups, heteroaromatic groups, ethylenically unsaturated hydrocarbon groups, acetylenically unsaturated hydrocarbon groups, ketonic groups, and aromatic organometallic moieties, is provided. When combined with a compound comprising a metal from Groups IIIB to VIII or the Lanthanide series of the Periodic Table of elements and an activating cocatalyst, the catalyst precursor is useful for the polymerization of olefins.

Murray, Rex Eugene.

Cross Lanes, WV, US.

Assigned to Univation Technologies LLC.

C08F 444.

REFINERY CATALYSIS

05902767

18/11/98

11/05/99

Catalyst having an acidic solid oxide component and a group IB metal or metal oxide component

This invention is directed to a catalyst that comprises (i) an acidic solid oxide component comprising an oxide of a Group IVB metal modified with an anion or oxyanion of a Group VIB metal, and (ii) a Group IB metal or metal oxide component. This catalyst may be used, for example, to isomerize paraffins.

Kresge, Charles Theodore; Chang, Clarence D.; Santiesteban, Jose Guadalupe; Shihabi, David S.; Stevenson, Scott Andrew; Vartuli, James C.

West Chester, Princeton, Allentown, Pennington, Langhorne, PA, US.

Assigned to Mobil Oil.

B01J23/00;23/58;23/72.

05902919

02/06/98

11/05/99

Supported Lewis acid catalyst polymerization process

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.

Chen, Frank Joung-yei; Le Deore, Christophe; Guyot, Alain; Lenack, Alain Louis Pierre; Stanat, Jon Edmond.

Edison, Lyons, Rouen, Westfield, NJ, FR.

Assigned to Exxon Chemical Patents.

C07C2/02.

05904837

03/10/97

18/05/99

Process for fluid catalytic cracking of oils

A process for the fluid catalytic cracking of oils, wherein an oil is brought into contact with catalyst particles using a fluid catalytic cracking reactor under the following conditions: (a) a reaction zone outlet temperature of 580°C to 630°C, catalyst/oil ratio of 15 to 50 wt/wt, contact time of 0.1 to 3.0 s; (b) a catalyst-concentrated phase temperature in the regenerating zone of 670°C to 800°C; and (c) a temperature of regenerated catalyst to be forwarded into the reaction zone of 610°C to 665°C, thereby producing light fraction olefins. The process increases the cracking rate of heavy fractions of oils while producing a lessened amount of dry gases generated by the overcracking of light fractions to obtain light fraction olefins in a high yield.

Fujiyama, Yuichiro.

Yokohama, JP.

Assigned to Nippon Oil Company Petroleum Energy Center.

C10G11/00.

05905051

04/06/97

18/05/99

Hydrotreating catalyst composition and processes therefor and therewith

A catalyst system and a process for converting a hydrocarbon stream such as, for example, a C₉ + aromatic compound to C₆ to C₈ aromatic hydrocarbons such as xylenes are disclosed. The catalyst system comprises a first catalyst composition and a second catalyst composition wherein the said catalyst system is not a physical mixture of the said first catalyst composition and the said second catalyst composition, the said first catalyst is a metal-promoted, alumina-or silica-bound beta zeolite, and the said second catalyst composition is a ZSM-5 zeolite having incorporated therein an activity promoter selected from the group consisting of silicon, phosphorus, sulfur, and combinations of two or more thereof. The process comprises contacting a hydrocarbon stream with the catalyst system under a condition sufficient to effect the conversion of the hydrocarbon to a C₆ to C₈ aromatic hydrocarbon.

Wu, An-hsiang; Drake, Charles A.

Bartlesville, Nowata, OK, US.

B01J29/04;29/06;21/00;21/16.

05905094

21/10/97

18/05/99

Slurry hydrocarbon synthesis with reduced catalyst attrition and deactivation

A slurry hydrocarbon synthesis process with reduced catalyst attrition is achieved by injecting a synthesis gas comprising a mixture of H₂ and CO up into the reactive slurry with a gas distribution grid having gas injectors horizontally arrayed across, and vertically extending through, an otherwise gas and liquid impervious plate. The injectors have a throat with a gas pressure reducing orifice at one end, which is the bottom and gas entrance end, and the other end opening into an open cone in which the uprising gas contacts the slurry. Flow divert-

ing means in the injectors prevents slurry from entering the throat and being attrited. The gas injectors do not protrude above the top surface of the plate and flat space is eliminated by means such as angular fillers, to prevent solids accumulation top of the tray.

Chang, Min; Coulaloglou, Constantine A.; Hsu, Edward C.; Pedrick, Larry E.

Warren, Mendham, Bridgewater, Houston, TX, US.
Assigned to Exxon Research and Engineering.
C07C27/00.

05905179

14/10/98

18/05/99

Hydrocarbon conversion catalyst composition and processes therefor and therewith

A catalyst composition, a process for producing the composition, and a hydrotreating process for converting a hydrocarbon stream such as, for example, gasoline, to olefins and C₆ to C₈ aromatic hydrocarbons such as toluene and xylenes are disclosed. The catalyst composition comprises a zeolite, a clay, and optionally a coke suppressor and/or an activity promoter. The process for producing the composition comprises the steps: (1) optionally contacting a zeolite with steam whereby a steamed zeolite is formed; (2) optionally contacting a zeolite or the steamed zeolite with an acid to produce an acid-leached zeolite; (3) combining a zeolite, which can also be the steamed zeolite or the acid-leached zeolite, with a clay under a condition sufficient to bind the clay to the zeolite to produce a clay-bound zeolite; and (4) calcining the clay-bound zeolite to produce a calcined clay-bound zeolite. The hydrotreating process comprises contacting a hydrocarbon stream with the catalyst composition under a condition sufficient to effect the conversion of a hydrocarbon to an olefin and a C₆ to C₈ aromatic hydrocarbon.

Drake, Charles A.; Wu, An-hsiang.
Nowata, Bartlesville, OK, US.
Assigned to Phillips Petroleum.
C07C15/00;4/12.

05907074

13/01/97

25/05/99

Catalyst composition and processes therefor and therewith

A catalyst composition and a process for hydrodealkylating a C₉ + aromatic compound such as, for

example, 1,2,4-trimethylbenzene to a C₆ to C₈ aromatic hydrocarbon such as a xylene are disclosed. The composition comprises a zeolite, a metal oxide, and an activity modifier selected from the group consisting of silicon oxides, sulfur oxides, phosphorus oxides, boron oxides, magnesium oxides, tin oxides, titanium oxides, zirconium oxides, germanium oxides, indium oxides, lanthanum oxides, cesium oxides, and combinations of any two or more thereof. The process comprises contacting a fluid that 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.

Wu, An-hsiang; Drake, Charles A.
Bartlesville, Nowata, OK, US.
Assigned to Phillips Petroleum.
C07C 418.

05908547

15/07/93

01/06/99

Yttrium containing zeolite Y cracking catalyst

There is provided a catalyst comprising yttrium containing zeolite Y. The zeolite Y is essentially free of rare earth ions. There is also provided a method for making this catalyst. There is further provided a process for using this catalyst for cracking gas oils. It has been discovered that when yttrium is incorporated into this zeolite Y, and when this catalyst is used to crack gas oils, these results improved gasoline selectivity and reduced dry gas make.

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C10G 1102.

05908967

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Catalyst based on a mordenite zeolite modified with cerium, and its use in the isomerization of an aromatic C₈ cut

The invention concerns a process for the isomerization of an aromatic C₈ cut using a catalyst containing mordenite, cerium and at least one metal from group VIII. It also concerns a catalyst containing 2–98% by weight of mordenite, 7–40% by weight of cerium, and

0.01–3% by weight of at least one metal from group VIII, the cerium being deposited on the mordenite, and the percentages being with respect to the weight of catalyst.

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C07C 525 C10G 3509 C10G 35095.

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Difunctional catalyst effective in wax hydroisomerization and process for preparing it

Process for the hydroisomerization of *n*-paraffins in the presence of a difunctional catalyst which comprises: (a) a porous crystalline material isostructural with beta-zeolite selected from boro–silicate (BOR–B) and boro–alumino–silicate (Al–BOR–B) in which the molar $\text{SiO}_2/\text{Al}_2\text{O}_3$ ratio is higher than 300:1; (b) one or more metal(s) belonging to Group VIIIA, selected from platinum and palladium, in an amount comprised within the range from 0.05% to 5% by weight.

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C07C 513.

05910240
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FCC unit catalyst stripper

An improved stripper section design is provided for use in fluid catalytic cracking (FCC) units. The stripper section contains means for imparting rotational movement to the FCC cracking catalyst as it traverses the

stripping section. In one embodiment the stripper section contains at least one rotation vane that is preferably disposed on the surface of a stripper section tray. The rotation vane provides angular, rotational movement to the cracking catalyst as it traverses the stripper section. Vertical movement is imparted to the cracking catalyst due to gravity and radial movement is imparted to the catalyst due to the slanted nature of the tray. Through the use of the rotation vanes the contact between the catalyst particles and the stripping steam is increased, thereby improving the overall efficiency of the FCC operation.

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C10G 3500.

05910241
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Catalyst and hydrotreating process

Catalyst comprising a porous inorganic refractory oxide wherein the catalyst has: (a) a total pore volume in the range from 0.2 to 0.5 ml/g, (b) a macroporosity of at least 0.1 ml/g, (c) a microporosity of at least 0.05 ml/g, and (d) a surface area of at least 5 m²/g. Process for reducing the amount of solid contaminants and the amount or dissolved metallic contaminants, wherein a hydrocarbon oil containing such contaminants is contacted with hydrogen under hydrotreating conditions in the presence of the above catalyst.

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C10G 1700 C10G 4504.