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CATALYSIS PREPARATION

5750458

Combustion catalysts containing binary oxides and processes using the same

Kennelly Teresa; Hochmuth John K; Chou Ting; Farrauto Robert J Belle Mead, NJ, United States

A catalyst composition containing one or more binary oxides of palladium and rare earth metal such as Ce, La, Nd, Pr and/or Sm. The catalyst composition is used for the catalytic combustion of gaseous combustion mixtures of oxygen and carbonaceous fuels such as methane, e.g., a natural gas/air combustion mixture. Specific preferred binary oxides may be, for example, $M_2O_3 \cdot PdO$ (e.g., $La_2O_3 \cdot PdO$) or $2M_2O_3 \cdot PdO$, wherein in each case M is La, Nd or Sm. A process of combusting gaseous carbonaceous fuels includes contacting a catalyst as described above under combustion conditions, e.g., 925°C to 1650°C and 1 to 20 atmospheres pressure, to carry out sustained combustion of the combustion mixture, including catalytically supported thermal combustion. Regeneration of over-temperated $M_2O_3 \cdot PdO$ catalyst is also provided for.

5750459

Sol-gel process for obtaining pure and mixed oxide zirconia spheres, microspheres and washcoats, useful as catalysts or catalyst supports

Marella Marcell; Meregalli Letizia; Tomaselli Michele Venice, Italy assigned to Enirisorse SpA

This invention relates to a process for obtaining pure or mixed oxide zirconia spheres, microspheres or washcoats consisting of: preparing a zirconium solution in water at a concentration, formally expressed as ZrO_2 , equal or lower than 400 g/l, starting from a basic zirconium carbonate added with conc. nitric acid up to a molar ratio $(NO_3^-)/(Zr_4^+)$ between 0.8 and 1.1, and eventually preparing one or more solutions of the other oxides when necessary; preparing a sol of zirconium, eventually mixed to other metals, by a thickening agent and, in the case of spheres and microspheres, of a surface active agent too; dripping the sol into an alkaline gelation bath for obtaining gel spheres or microspheres, or sucking the sol into the honeycomb channels in order to obtain the washcoats, with subsequent

gelation with gaseous ammonia; ageing the so obtained gel; rinsing with water down to pH = 9–10, only in the case of gel spheres or microspheres; drying and calcining.

5753581

Method of associating precious metals with specific oxides in mixed oxide systems for use as catalysts

Beckmeyer Richard Frederick; Shunkwiler Jeffrey Alan; La Barge William John Clarkston, MI, United States assigned to General Motor Corporation

This invention provides a very low cost effective method to alter the association of precious metal catalysts with specific support oxides in mixed oxide systems. The invention includes two discoveries: (1) that the isoelectric points for the three normally-used gasoline catalyst components are significantly different and the surface charges present have significant magnitude to promote attraction and repulsion of ions or charged radicals; and (2) amine-chloride or amine-nitrate salts both dissociate into positively charged precious metal radicals and are stable over a very wide pH range. The pH of the impregnation solution is controlled such that the surface charge of the oxide is opposite to the charge on the precious metal radical if the metal is to be supported on that oxide, and to control the pH such that all charges on the oxide to be avoided are the same as the precious metal radical.

5753583

Supported palladium catalyst

Heineke Daniel; Flick Klemens; Wumlsch Martin Ludwigshafen, Germany assigned to BASF Aktiengesellschaft

A supported palladium catalyst having a palladium content of from 0.001 to 2 wt.% in which palladium is present, substantially in the absence of promotor metal, in the form of a layer having a thickness of less than 5000 nm forming a shell around the support, in which the palladium is applied in the form of a sol to a support by impregnation, or by spraying on to a heated support, and the use of said catalyst for the hydrogenation of acetylenes and dienes.

5759942**Ion exchange resin catalyst for the synthesis of bisphenols and the process for preparing the same**

Tan Qiu; Jin Zuqua; Jiang Hongshou; Liu Zongzhang; He Bingjun Tianjin, China assigned to China Petro-Chemical Corporation; Tianjin University

An ion exchange resin catalyst containing sulfonated styrene-divinylbenzene copolymer, a porous structure with micropore area and transfer pass networks, the transfer pass network is composed of main pass networks and branch pass networks, in non-swollen state, the pore size of the main pass network is 9×10^3 – 38×10^3 nanometer and the pore size of the branch pass network is 20–150 nanometer, the pore size of the micropore area pass is 5–20 nm, wherein the pore capacity of the micropore pass with the pore size of 5–10.4 nm is more than 50% of the total pore capacity of the micropore area, and the ratio of the pore capacity of the micropore area to that of the transfer network area is 0.25–1.1. The catalyst is useful to condense phenols with ketones.

5759944**Catalyst material**

Buchanan Jeffrey S; Potter Robert; Ralph Thomas R Mount Laurel, NJ, United States assigned to Johnson Matthey Public Limited Company

An electrocatalyst material for use in an acid electrolyte environment, comprising platinum or a platinum alloy supported on a conductive support, and gold, gives unexpectedly improved performance over similar electrocatalysts without gold.

5759945**Preparation of titanium-containing catalysts using titanasiloxane polymers**

Carroll Kevin M; Han Yuan-Zhan; Morales Edric Havertown, PA, United States assigned to Arco Chemical Technology L P

A heterogeneous catalyst suitable for use in an olefin epoxidation reaction is obtained using a titanasiloxane polymer as a source of titanium. The titanasiloxane is combined with an inorganic siliceous solid such as

silica or a siliceous sol gel to form a catalyst precursor composition. Calcination yields the active titanium-containing catalyst.

5759946**Catalysts for oxidative dehydrogenation of hydrocarbons**

Hoang Mahn; Pratt Kerry; Mathews Josep South Clayton, Australia assigned to Commonwealth Scientific and Industrial Research Organisation; Monash University

A catalyst for the oxidative dehydrogenation of hydrocarbons which includes a chromium oxide supported on a lanthanide carbonate, and a process for producing the catalyst; the catalyst is useful in a process for the oxidative dehydrogenation of hydrocarbons.

5759947**Bifunctional catalyst containing multimetal oxides**

Zhou Hongxing Beijing, China

A bifunctional catalyst containing multimetal oxides, and a method for preparing the same, includes a support of a moulded mixture of silica and alumina in a weight ratio of 1:1.2–2.5, and upon the support is deposited 3–30% by weight of metal oxides based on the total weight of the catalyst. The metal elements of the metal oxides are at least two selected from transition metal of period 4 of the periodic table and lanthanide. The metal oxides of the catalyst exist in the state of non-composite oxides.

5759949**Supported cold-complex oxidation catalyst**

Grigorova Bojidara; Palazov Atanas; Mellor John; Tumilty James Anthony Jude; Gafin Anthony Harol Hyde Park Sandton, Transvaal, South Africa

A catalyst for use in an oxidation reaction comprises a porous alumina support having captured thereon a complex comprising gold, a transition metal selected from cobalt and manganese, and the alumina, the concentration of gold on the support being less than 2% by mass of the catalyst, and the atomic ratio of gold to transition metal being in the range 1:30 to 1:200. The oxidation reaction may be the oxidation of carbon monoxide or a hydrocarbon.

CATALYST REGENERATION

5753575

Method for regenerating a hydrogen fluoride and sulfone alkylation catalyst

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

Disclosed is an alkylation process which utilizes a mixture of sulfone and hydrogen fluoride as an alkylation catalyst. The process provides for the regeneration of an alkylation catalyst having ASO therein by separating HF from the ASO and sulfone components. The ASO and sulfone are thereafter separated to provide sulfone which is substantially free of ASO.

5756413

Process for recovering cobalt carbonyl catalysts used in the preparation of N-acyl-alpha-amino acid derivatives by amidocarbonylation

Bogdanovic Sandra; Geissler Holger; Raab Klaus; Beller Matthias; Fischer Hartmut Frankfurt, Germany assigned to Hoechst Aktiengesellschaft

The present invention relates to a process for recovering the cobalt carbonyl catalyst used, in which a water-soluble cobalt salt is first prepared by addition of acid and this is subsequently precipitated as cobalt hydroxide. This cobalt hydroxide is then reacted with the N-acyl-alpha-amino acid derivative for whose preparation the cobalt carbonyl catalyst is intended, and the resulting cobalt-containing melt is converted into the cobalt carbonyl catalyst in the presence of a mixture of carbon monoxide and hydrogen.

5756414

Method of regenerating deactivated catalyst

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

The present invention is a process for regenerating deactivated catalyst or redispersing catalytic metal in a fresh catalyst comprising at least one Group VIII catalytic metal, zeolite, an inert binder. The process comprises coke burn, hydrogen reduction, catalyst condi-

tioning, oxychlorination, low pressure stripping, and low pressure final hydrogen reduction.

5756837

Method of recycling a catalyst in a reaction involving the direct oxidation of cyclohexane into adipic acid

Costantini Michel; Fache Eric; Nivert Daniel Lyons, France assigned to Rhone-Poulenc Fiber and Resin Intermediates

PCT No. PCT/FR95/00944 Sec. 371 Date Feb. 26, 1997 Sec. 102(e) Date Feb. 26, 1997 PCT Filed Jul. 13, 1995 PCT Pub. No. WO96/03365 PCT Pub. Date Feb. 8, 1996. A process for recycling a catalyst containing cobalt including treating a reaction mixture obtained during the direct oxidation of cyclohexane to adipic acid by extracting at least some of the glutaric acid and succinic acid which are formed in the reaction.

5759229

Method for recovering cobalt /manganese /bromine values from residue containing used catalyst

Feitler David Shaker Heights, OH, United States

A process for recovering valuable components of a residue from a stream of used catalyst, discharged from a plant for the liquid-phase, homogeneously catalyzed oxidation of alkylaromatic compounds under pressure, to produce polycarboxylic aromatic acids. The residue containing mainly cobalt (Co) and manganese (Mn) compounds is injected into a molten metal bath in combination with enough oxygen gas to convert essentially all carbon in the residue mainly to CO. The residue may also be sludge from a pond in which the residue is stored. The Co content of the molten metal is determined by how much of the Mn in the residue is to be rejected from the molten metal. The Mn rejected is distributed between a slag overlying the molten metal and the effluent which leaves the bath. In the slag, the Mn is trapped as manganese oxide (MnO); in the effluent Mn leaves as manganese dibromide (MnBr₂). The alloy recovered is atomized to form a powder metal which is then reacted with acetic acid and hydrogen bromide to form the corresponding salts. Mn and bromine (Br) values from the slag and from the effluent are also recovered. Substantially pure Co may be recovered and exported, particularly if earthy residue from a sludge pond is processed to benefit the environment.

5759937**Method for regeneration of a hydrogen fluoride alkylation catalyst containing sulfone, water, and ASO**

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

Disclosed is an alkylation process which utilizes a mixture of sulfone and hydrogen fluoride as an alkylation catalyst. The process provides for the removal of ASO and water from the alkylation catalyst that accumulates therein while minimizing the loss of sulfone and HF with the ASO and water removed.

REFINERY TECHNOLOGIES**5750455****Catalytic composition and process for the alkylation of aliphatic hydrocarbons**

Chauvin Yves; Hirschauer Andracu e Olivier Hacu elgra ene Le Peco, France assigned to Institut Francais Du Petrole

The invention concerns a catalytic composition resulting from mixing at least one aluminum halide, at least one quaternary ammonium halide and/or at least one amine halohydrate and at least one cuprous compound, preferable a halide. The invention also concerns a process for the alkylation of isoparaffins by olefins with that composition.

5750457**Solid acid catalyst for paraffin conversion and process for paraffin conversion using the same**

Na Kyutae; Okuhara Toshi; Misono Makoto Mitaka, Japan assigned to Nippon Oil Company Ltd

A solid acid catalyst for paraffin conversion which consists of an acid salt of a heteropoly acid being represented by the following general formula: (*See Patent for Tabular Presentation*) PS wherein A represents one ion selected from the group consisting of alkali metal ion and ammonium ion; Y represents at least one atom selected from the group consisting of W and Mo; x represents a number of 2.2 to 2.8, and a metal Group VIII, wherein the acid salt of heteropoly acid has been impregnated in the metal of Group VIII, and paraffin conversion process using the same.

5753584**Catalyst system for selective hydrogenation of heteroaromatic sulfur-containing and nitrogen-containing compounds**

Paez Daniel E; Andriollo Antid; Sanchez-Delgado Roberto A; Valencia Norma del V; Galiasso Roberto; Lopez Francisco Miranda, Venezuela assigned to Intevep SA

A catalyst system for selective hydrogenation of sulfur-containing and nitrogen-containing compounds of a heteroaromatic organic phase includes a mixture of a noble metal selected from Group VIII of the Periodic Table of Elements and a water-soluble ligand. A process for preparing the catalyst system and hydrogenation process using the catalyst system are also provided.

5755956**Stable, high-yield reforming catalyst**

Galperin Leonid; Bogdan Paula L; Boldingh Edwin Paul Chicago, IL, United States assigned to UOP

A reforming process, selective for the dehydrocyclization of paraffins to aromatics, is effected using a catalyst containing multiple Group VIII (8-10) noble metals having different gradients within the catalyst and a nonacidic large-pore molecular sieve. The use of this bed of catalyst results in greater selectivity of conversion of paraffins to aromatics and improved catalyst stability, particularly in the presence of small amounts of sulfur.

5756420**Supported hydroconversion catalyst and process of preparation thereof**

Wittenbrink Robert J; Ryan Daniel F; Baird William C; Riley Kenneth L; Johnson Jack W Baton Rouge, LA, United States assigned to Exxon Research and Engineering Company

Hydroconversion of paraffin containing hydrocarbon feeds is effected over a supported Group VIII and Group VI metal containing catalyst also containing a hydrocracking suppressant such as a Group IB metal, wherein the catalyst is preferably prepared by fixing the Group IB metal on to the support prior to incorporating the Group VI metal on to the support.

5759950**Catalyst supported with noble metal(s) for the isomerization of alkylaromatics**

Gui Shouxi; Hao Yuzhi; Zhou Lizhi; Jing Zhenhu; Qiao Yingbi; Gu Haohui; Li Yanqing; Cheng Baoyu; Wang Jinshu Beijing, China assigned to China Petrochemical Corporation; Research Institute of Petroleum Processing Sinop

A catalyst supported with noble metal(s) for the isomerization of alkylaromatics consists of (1) 0.1–0.4 wt.% of Pt or (2) 0.1–0.4 wt.% of Pt or 0.2–0.8 wt.% of Pd, 0.01–0.20 wt.% of Re and 0.05–0.50 wt.% of Sn as active component, and 10–60 wt.% of a zeolite with MOR structure, 0–15 wt.% of ZSM-5 zeolite and 40–80 wt.% of alumina as support.

5759951**Hydrogenation demetalization catalyst and preparation thereof**

Zhao Yushen; Wang Jiahua; Wang Zhiwu; Liu Xilai; Shao Jingchun; Chen Xiaojing; Li Wei; Wang Shaowu Liaoning, China assigned to Fushun Research Institute of Petroleum and Petrochemicals; China Petro-Chemical Corporation

Disclosed is a hydrogenation demetalization catalyst with a stabilized alkali metal, having (a) an alumina carrier, (b) 0.01–10.2% by weight of an alkali metal, (c) 0–3.0% by weight of a Group VIB element, and (d) 0–3.0% by weight of a Group VIII element of the periodic table of elements, with a pore volume of 0.4–1.3 ml/g, a surface area of 100–230 m²/g, comprising a nonmetallic element selected from the group consisting of P, Si, B and F with the atomic ratio of said nonmetallic element to said alkali metal being 0.5–40.0. Also disclosed is a process for preparing the same.

NATURAL GAS AND SYNGAS CONVERSION**5750821****Method for oxidative coupling of methane comprising catalytic cracking**

Inomata Makoto; Katagiri Tsutomu; Imura Kozo; Sun Erli Yokohama, Japan assigned to Japan National Oil Corporation; Sekiyushigen Kaihatsu Kabushiki Kaisha-Cosmo Research Institute

The following steps are conducted for producing a hydrocarbon having a carbon number of at least 2: a

coupling step, in which a coupling feed gas containing methane and a gas containing oxygen are supplied to a conveying catalyst bed which is formed by an ascending stream which contains a catalyst, and then methane and oxygen are allowed to react so as to produce a coupling product gas; a catalyst separation step for separating the catalyst from the coupling product gas; and a catalyst feedback step for feeding back the thus-separated catalyst to the coupling step. Accordingly, the reaction system does not accumulate excessive heat, the combustion reaction as a side reaction is hindered, and the selectivity of the coupling reaction is enhanced. In addition, the yield of the hydrocarbon having a carbon number of at least 2 is improved.

5752995**Catalyst and process for the production of hydrogen and/or methane**

Kang Chia-Chen Ch Princeton, NJ, United States

A rare earth oxide stabilized, cobalt promoted nickel catalyst supported on refractory material, and a process employing said catalyst for the production of hydrogen-containing gases, such as synthesis gas, reducing gas or town's gas, or for the production of methane-enriched gases, such as pipe-line gas at low steam-to-carbon ratio not above 3.5 from various hydrocarbon feedstocks.

5753716**Use of aluminum phosphate as the dehydration catalyst in single step dimethyl ether process**

Peng Xiang-Dong; Parris Gene E; Toseland Bernard A; Battavio Paula Allentown, PA, United States assigned to Air Products and Chemicals Inc

The present invention pertains to a process for the coproduction of methanol and dimethyl ether (DME) directly from a synthesis gas in a single step (hereafter, the single step DME process). In this process, the synthesis gas comprising hydrogen and carbon oxides is contacted with a dual catalyst system comprising a physical mixture of a methanol synthesis catalyst and a methanol dehydration catalyst. The present invention is an improvement to this process for providing an active and stable catalyst system. The improvement comprises the use of an aluminum phosphate based catalyst as the methanol dehydration catalyst. Due to its moderate acidity, such a catalyst avoids the coke formation and catalyst interaction problems associated with the con-

ventional dual catalyst systems taught for the single step DME process.

5756419

Process for the conversion of synthesis gas in the presence of a catalyst comprising cobalt and additional elements

Chaumette Patrick; Didillon Blaise Bougival, France assigned to Institut Francais du Petrole

The invention concerns the preparation of a catalyst comprising a support containing at least one oxide of the element Si, Al, Ti, Zr, Sn, Zn, Mg or Ln (where Ln is a rare earth), cobalt, at least one element A selected from the group formed by ruthenium, platinum, palladium and uranium, and at least one element B selected from the group formed by molybdenum and tungsten, characterized in that it comprises at least the following successive steps: (1) formation of a precursor comprising at least cobalt and at least a portion of the support; (2) at least partial reduction of the precursor in the presence of at least one reducing compound; and (3) deposition of any part of compound present in the catalyst and not present in the precursor on the reduced precursor. The invention also concerns the use of the catalyst in a process for the synthesis of C5 + hydrocarbons from synthesis gas.

5756421

Composite catalysts containing transitional and alkaline earth metal oxides useful for oxidative conversion of methane (or natural gas) to carbon monoxide and hydrogen (or synthesis gas)

Choudhary Vasant R; Rajput Amarjeet M; Sansare Subhash D; Prabhakar Bathula; Mamman Ajit S Maharashtra, India assigned to Council of Scientific and Industrial Research

The invention relates to a process for the preparation of novel composite catalysts useful for the oxidative conversion of methane to synthesis gas. The catalysts are represented by the formula: TmAO_n, wherein T is a transition metal or metals, m is equal to the T/A mole ratio and is from 0.01 to 100, A is an alkaline earth metal or metals, O is oxygen and n is the number of oxygen atoms needed to form a catalyst composite wherein each element of the composite has a complete set of valence electrons. The process includes mixing compounds containing the transition metal or metals in

finely ground form with the compounds containing the alkaline earth metals or metals in finely ground form in a T/A mole ratio of about 0.01 to about 100, heating the mixture to dryness at a temperature of about 80° to 250°C, decomposing the dried mixture at a temperature of about 400° to 1200°C, powdering the decomposed mixture and forming catalyst pellets thus formed at a temperature of about 400° to 1500°C

CHEMICALS

5750456

Catalyst composition for preparing polyketones

Dossett Stephen John Aldershot, United Kingdom assigned to BP Chemicals Limited

A catalyst composition suitable for use in a process for the preparation of polyketones comprising a group VIII metal complex of a phosphonite of formula (I) (*See Patent for Tabular Presentation*) PS where R1 and R2 are independently a halide or a hydrocarbyl. R3 is an optionally substituted hydrocarbyl E is boron, aluminium or gallium. Preferred compositions are (F₂B(OPPh₂)₂PdCl)₂ and (F₂B(OPPh₂)₂Pd(NCPh)₂)⁺(BF₄)⁻.

5750751

Glycol co-esters of drying-oil fatty acids and vinyl carboxylic acids made via biphasic catalysis and resulting products

Saam John C Midland, MI, United States assigned to Michigan Molecular Institute

Glycol co-esters of drying-oil fatty acids and polymerizable unsaturated carboxylic acids are formed by a novel bi-phase catalysis in liquid-liquid or liquid-solid dispersions. The co-esters form directly from drying-oil acids and partial glycol esters of vinylic carboxylic acids, or vice versa. Complete removal of the by-produced water by distillation is unnecessary and the commonly encountered side reactions of direct esterification are suppressed since reaction temperatures can be as low as ambient. The expensive acid chlorides or anhydrides combined with acid acceptors, previously used to prepare such co-esters, are circumvented along with the by-produced hydrochlorides or carboxylates which must be recovered and disposed in an environmentally acceptable way. The co-esters formed here are useful in free radical copolymerizations that provide novel film-

forming polymers capable of cross-linking when dried in air. They can be formed in bulk, solution or as latexes. When the carbinol-bearing structure of the co-ester is polymeric, novel polymers are produced having both pendant polymerizable vinyl carboxylate and drying-oil structures that rapidly air-cure at ambient temperature.

5750759

Continuous catalytic process for preparation of organic carbonates

Hagen Gary P; Spangler Michael J West Chicago, IL, United States assigned to Amoco Corporation

A process of contacting a feedstream containing dioxygen, carbon monoxide, ether, and alkanol, which can be vaporized under conditions of reaction, with a blend of catalysts which are heterogeneous to the feedstream, under conditions of reaction sufficient to form a mixture containing at least one higher molecular weight oxygenated organic compound is described. In another aspect, this invention relates to a blend of catalysts consisting of at least one molecular sieve, natural or synthetic, which has been found useful for hydrocarbon conversion reactions and a catalyst comprising a metal halide or a mixed metal halide supported on active carbon, which is effective in catalyzing direct formation of organic carbonates.

5750768

Method of manufacturing alpha-oxocarboxylate and catalyst adopted in the method

Arita Yoshitaka; Ohta Akihiko; Hasebe Ren; Saito Noboru Suita, Japan assigned to Nippon Shokubai Co Ltd

A method of manufacturing alpha-oxocarboxylate includes the steps of: (i) carrying out a vapor phase oxidation of 1,2-diol of formula (1) in a primary reaction vessel, (ii) introducing a resulting gaseous alpha-oxoaldehyde and/or alpha-hydroxyaldehyde in a secondary reaction vessel together with alcohol or olefin which is converted into a gas form in a vaporizing chamber, and (iii) carrying out an oxidative esterification of the gaseous alpha-oxoaldehyde and/or alpha-hydroxyaldehyde molecular oxygen in a presence of inorganic oxide containing phosphorus as a catalyst in the secondary reaction vessel, (*See Patent for Chemical Structure*) (1) (R is a hydrogen atom or an organic

residue). The described method permits alpha-oxocarboxylate to be manufactured economically and effectively in practically one step using inexpensive 1,2-diol such as ethylene glycol or propylene glycol.

5750790

Reductive amination catalysts

King Stephen Wayne Scott Depot, WV, United States assigned to Union Carbide Chemicals and Plastics Technology Corporation

The present invention relates to improved reductive amination catalysts useful in the production of alkyl-eneamine compositions having lower levels of cyclic components. Although typical reductive amination catalysts contain nickel or nickel-rhenium on carriers such as alumina, silica, silica-alumina and silica-titania, it has been discovered that by using carriers selected from the transitional aluminas, improvements are obtained in both selectivity to acyclic products and in activity of the catalysts.

5750806

Preparation of alkenes by partial hydrogenation of alkynes over fixed-bed palladium catalysts

Bruml ocker Franz Josef; Stroezel Manfred; Rheude Udo Ludwigshafen, Germany assigned to BASF Aktiengesellschaft

Alkenes are prepared by partial hydrogenation of alkynes in the liquid phase over palladium catalysts by a process which comprises A. using a fixed-bed catalyst which is obtainable by heating the preferably metallic carrier in the air, cooling, coating under reduced pressure with metallic palladium, suitable molding and processing to a monolithic catalyst elements and B. adding from 10 to 180 ppm of CO to the hydrogen used for the hydrogenation.

5756833

Catalytic purification and recovery of dicarboxylic aromatic acids

Rosen Bruce I; Bartos Thomas M Morton Grove, IL, United States assigned to Amoco Corporation

Processes using a titanium dioxide-supported purification catalyst are disclosed for purification of rela-

tively impure dicarboxylic aromatic acid produced by liquid-phase oxidation of a suitable benzene or naphthalene having two oxidizable ring substituents, and/or by recovery from polyester resin comprising repeating units of the dicarboxylic aromatic acid residue and repeating units of dihydric alcohol residue. Purification comprises passing an aqueous solution of dicarboxylic aromatic acid with small amounts of organic impurities consisting of oxygen-containing aromatic co-products of oxidation and/or other organic components, through a particulate bed of purification catalyst comprising a noble metal on a titanium dioxide support under conditions suitable for decarbonylation of organic impurities. Generally, at least one weight percent of the titanium dioxide support is in the rutile crystalline phase. Optionally, effluent aqueous solution from the bed containing noble metal on the titanium dioxide support is passed through a subsequent particulate bed of another purification catalyst in the presence of a molecular hydrogen-containing gas. Hydrogenation of the aqueous solution subsequent to decarbonylation further reduces organic impurities in dicarboxylic aromatic acid recovered by crystallization and separation from the aqueous solution. The invention provides improved processes for preparation of purified terephthalic acid wherein purified terephthalic acid product is recovered from its mother liquor while maintaining temperatures within a range downward from about 100°C to about 25°C and pressures near or at atmospheric pressure.

5760284

Process and catalyst for carbonylating olefins

Zoeller Joseph Robert Kingsport, TN, United States assigned to Eastman Chemical Company

Disclosed is an improved catalyst system and process for preparing aliphatic carbonyl compounds such as aliphatic carboxylic acids, alkyl esters of aliphatic carboxylic acids and anhydrides of aliphatic carboxylic acids by carbonylating olefins in the presence of a catalyst system comprising (1) a first component selected from at least one Group 6 metal, i.e., chromium, molybdenum, and/or tungsten and (2) a second component selected from at least one of certain halides and tertiary and quaternary compounds of a Group 15 element, i.e., nitrogen, phosphorus and/or arsenic, and (3) as a third component, a polar, aprotic solvent. The process employing the improved catalyst system is carried out under carbonylating conditions of pressure

and temperature discussed herein. The process constitutes and improvement over known processes since it can be carried out at moderate carbonylation conditions without the necessity of using an expensive noble metal catalyst, volatile, toxic materials such as nickel tetracarbonyl, formic acid or a formate ester. Further, the addition of a polar, aprotic solvent to the catalyst system significantly increases, or accelerates, the rate at which the carbonylation takes place.

FINE CHEMICALS

5750649

Process for producing amides using catalytic amounts of an N-hydroxy compound

Hohler Markus; Vogt Peter Mohlin, Switzerland assigned to Hoffmann-La Roche Inc

A process is disclosed for the manufacture of amides, including peptides, in which a carboxylic acid is reacted with a primary or secondary amine in the presence of a carbodiimide and a catalytic amount of N-hydroxy compound.

5750741

Preparation of oxirane compounds with titanasilsesquioxane catalysts

Crocker Mark; Herold Rudolf Henri Max Amsterdam, Netherlands assigned to Shell Oil Company

A process for the preparation of an oxirane compound by reacting an olefinically unsaturated hydrocarbon with an organic hydroperoxide, in the presence of a catalyst comprising a titanasilsesquioxane of the general formula $TiLR_7Si_7O_{12}$ and the structural formula (*See Patent for Chemical Structure*) wherein R is chosen from the group of cyclopentyl, cyclohexyl and cycloheptyl and L is chosen from the group of alkyl, cycloalkyl, alkylaryl, alkoxy, aryloxy, siloxy, amido and OH.

5756778

Process for preparing an epoxide using a structured catalyst including microporous oxides of silicon, aluminum and titanium

Thiele Georg; Roland Eckehart Hanau, Germany assigned to Degussa Aktiengesellschaft

A catalyst includes or consists essentially of the oxides of silicon, aluminum and titanium, characterized

in that the catalyst particles are built up from a core with the composition $(\text{SiO}_2)_x(\text{AlO}_2)_y\text{My}$, wherein $x/y = 10$ to infinity and M double bond H, Na, K, NH_4 , or NR_4 , wherein R is a C1-8-alkyl, and a shell with the composition $(\text{SiO}_2)_n(\text{TiO}_2)_m$, wherein $n/m = 12$ to 1000. Both the core and the shell have a crystal structure of MFI or MEL. The catalyst can be prepared by preparing a synthesis gel for the preparation of a titanium silicalite, thereafter introducing an aluminosilicate of the MFI or MEL structural type into this synthesis gel, and working up the synthesis gel in a known manner to obtain the product.

5760265

Process for preparation of an ester utilizing an esterifying catalyst

Takahara Ichiro; Kadobayashi Masumi; Kaminaka Noriaki Osaka, Japan assigned to Matsumoto Yushi Seiyaku Co Ltd

The present invention provides a process for preparation of an ester comprising reacting a carboxylic acid and an alcohol in the presence of an esterific catalyst comprising at least one compound selected from the group consisting of halides, nitrates, carboxylates, alcohols and acetylacetonate complexes of metals of the titanium group. According to the present process, substantially equal equivalent of the alcohol and the acid can be reacted completely. In addition, the present invention further provides a purification process to eliminate the catalyst from homogeneous reaction system completely.

ORGANOMETALLIC/HOMOGENEOUS CATALYSIS

5756838

Method of asymmetrically synthesizing optically active compounds using supported phase chiral sulfonated binap catalyst

Davis Mark E; Wan Kam To Pasadena, CA, United States assigned to California Institute of Technology

The present invention relates to water soluble chiral sulfonated 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl and its use as organometallic catalysts for asymmetric synthesis of optically active compounds. Asymmetric reactions of the present invention include those reactions in which organometallic catalysts are commonly used. Such reactions include, but are not limited to,

reduction and isomerization reactions on unsaturated substrates and carbon-carbon bond forming reactions. Examples of such reactions include, but are not limited to, hydrogenation, hydroboration, hydrosilylation, hydride reduction, hydroformylation, alkylation, allylic alkylation, arylation, alkenylation, epoxidation, hydrocyanation, disilylation, cyclization and isomerization reactions. The catalysts of the present invention provide the advantage of functioning in the presence of water without loss in enantioselectivity relative to the nonsulfonated BINAP catalyst in an organic solvent. As a result, the catalysts of the present invention may be employed in water, water miscible solvents, in aqueous-organic two phase solvent systems and in supported aqueous phase catalysts in organic solvents without loss in enantioselectivity. Further, the catalysts of the present invention may also be effectively employed in highly polar solvents such as primary alcohols and ethylene glycol. The present invention also relates to a method for conducting asymmetric reactions on prochiral unsaturated bonds contained within a compound using the water soluble chiral sulfonated 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl organometallic catalysts of the present invention.

POLYMER CATALYSIS

5750454

Catalyst composition and process for the production of olefinic polymers

Shimizu Hiroyuk; Sano Akira; Matsuura Kazuo Kawasaki, Japan assigned to Nippon Oil Co Ltd

A catalyst comprises a composition resulting from mutual contact of the following Components (A), (B), (C) and (D): said Component (A) being a reaction product resulting from mutual contact of components (a), (b) and (c); said component (a) being represented by the formula (*See Patent for Tabular Presentation*) PS wherein R1 and R2 each are a C1-C24 hydrocarbon moieties, X1 is a hydrogen atom or a halogen atom, Me1 is titanium, zirconium or hafnium, p and q are $0 < \text{or} = p < \text{or} = 4$, $0 < \text{or} = q < \text{or} = 4$ and $0 < \text{or} = p + q < \text{or} = 4$, said component (b) being represented by the formula (*See Patent for Tabular Presentation*) PS wherein R3 and R4 each are a C1-C24 hydrocarbon moieties, X2 is a hydrogen atom or a halogen atom, Me2 is an element of Groups I to III in the Periodic Table, z is a valence of Me2, and m and n are $0 < \text{or} = m < \text{or} = z$, $0 < \text{or} = n < \text{or} = z$ and

$0 < m + n < \text{ or } = z$, and said component (c) being an organocyclic compound having two or more conjugated double bonds; said Component (B) being a modified organoaluminum compound having Al-O-Al bonds; said Component (C) being an organocyclic compound having two or more conjugated double bonds; and said Component (D) being an inorganic carrier or particulate polymer carrier. The disclosed catalyst find extensive use in the manufacture of olefinic polymers having a relatively high molecular weight and a relatively wide molecular weight distribution as well as olefinic copolymers having a relatively narrow composition distribution.

5750635

Thermally stable polyesters formed utilizing anti-mony Compounds as catalysts

Brink Andrew Edwin; Pruett Wayne Payton; Cherry Clinton; Shackelford Kay Hunt Kingsport, TN, United States

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.

5753577

Olefin polymerization catalyst based on organo-metallic complexes and process for production of polyolefins using the catalyst

Hamura Satoshi; Yoshida Toru; Sato Morihiko Mie ken, Japan assigned to Tosoh Corporation

A novel class of olefin polymerization catalyst system based on specific organo-transition metal compounds and which are effective for controlling in particular the width and mode of the molecular weight distri-

bution of the resulting polyolefins, and processes of olefin polymerization using the novel catalyst systems are disclosed.

5753578

Metallocene catalyst for the (co)polymerization of alpha-olefins

Santi Roberto; Borsotti Giampier; Proto Antonio; Gila Liliana; Bujadoux Karel Novara, Italy assigned to Enichem SpA

A catalyst active in the (co)polymerization of alpha-olefins is obtained by putting the following components in contact with each other: (i) a bridged bis-metallocene derivative of a metal M selected from titanium, zirconium or hafnium, wherein the divalent bridge has a rigid structure linked to two eta5-cyclopentadienyl ring with two methylene groups having a distance from each other of less than 3.5 #521; +RE + P1 (ii) a co-catalyst consisting of an organic derivative of a metal M + 40 + 0 selected from boron, aluminium, gallium and tin. +RE + PA Such a catalyst allows high polymerization rates to be reached and is particularly suitable for high temperature polymerization process and co-polymerization of ethylene with other +60 -olefins. +RE + RE. + RERE + RE + RERE + RE + REins. +

5753721

Process for the photo-polymerisation of cyclic olefins using a thermostable molybdenum or tungsten catalyst

Hafner Andreas; van der Schaaf Paul A; Muml uhlebach Andreas Laupen, Switzerland assigned to Ciba Specialty Chemicals Corporation

PCT No. PCT/EP94/03673 Sec. 371 Date May 16, 1996 Sec. 102(e) Date May 16, 1996PCT Filed Nov. 8, 1994 PCT Pub. No. WO95/14051 PCT Pub. Date May 26, 1995. A process for photocatalytic polymerisation of a cyclic olefin or of at least two different cyclic olefins in the presence of a metal compound as catalyst, which process comprises carrying out a photochemically induced ring-opening metathesis polymerisation in the presence of a catalytic amount of at least one thermostable molybdenum (VI) or tungsten (VI) compound which contains at least two methyl groups or two monosubstituted methyl groups lacking beta-hydrogen atoms in the substituent and which are bonded to the metal atom. The process may be carried out by first

irradiating and terminating the polymerisation by heating. The process is suitable for fabricating moulded articles, coatings and relief images.

5753785

Production of e-b copolymers with a single metallocene catalyst and a single monomer

Reddy Baireddy Raghava; Shamshoum Edwar S; Lopez Margarito Baytown, TX, United States assigned to Fina Technology Inc

A process of polymerizing ethylene with a catalyst using a single metallocene catalyst comprising a bridged metallocene compound having two cyclopentadienyl rings, one substituted with a bulky group in a distal position and one substituted such that a fused ring, substituted or unsubstituted, is formed, which produces a copolymer of ethylene. The metallocene catalyst promotes simultaneous oligomerization of a fraction of ethylene to form a comonomer in situ and copolymerization of the remaining ethylene and the comonomer to form a copolymer.

5753786

Process for transitioning between incompatible polymerization catalysts

Agapiou Agapios Kyriacos; Muhle Michael Elroy; Renola Gary Thomas Humble, TX, United States assigned to Exxon Chemical Patents Inc

This invention relates to a process for transitioning between incompatible polymerization catalyst systems. Particularly, the invention relates to a process for transitioning from an olefin polymerization reaction utilizing a traditional Ziegler-Natta catalyst system to a metallocene-olefin polymerization reaction.

5756416

Catalyst composition having improved comonomer reactivity

Wasserman Eric Paul; Kao Sun Chue; Karol Frederick John Hopewell, NJ, United States assigned to Union Carbide Chemicals and Plastics Technology Corporation

A catalyst composition comprising (A) an aluminosilicate-impregnated support prepared by contacting an aluminosilicate with an inert carrier material and heating to a temperature of at least about 80°C; (B) a metallocene of the formula: (*See Patent for Tabular Presentation*) PS wherein M is a metal from groups IIIB to VIII of

the Periodic Table; each L and L' is independently a cycloalkadienyl group bonded to M; each Y is independently hydrogen, an aryl, alkyl, alkenyl, alkylaryl, or arylalkyl radical having 1-20 carbon atoms, a hydrocarboxy radical having from 1-20 carbon atoms, a halogen, RCO₂-, or R₂N-, wherein R is a hydrocarbyl group containing 1 to about 20 carbon atoms; n and m are each 0, 1, 2, 3, or 4; y is 0, 1, or 2; x is 1, 2, 3, or 4; and x - y > or = 1; C) a bulky aluminum alkyl of the formula: (*See Patent for Tabular Presentation*) PS wherein R1 is a hydrocarbyl group having 1 to 12 carbon atoms; x is an integer from 0 to 2; R2 is a hydrocarbyl group of the formula -(CH₂)_y-R₃, wherein y is an integer from 1 to 8; and R3 is a saturated or unsaturated hydrocarbyl group having 3 to 12 carbon atoms containing at least one ring, and D) methylaluminumoxane is provided. The catalyst composition may be used to prepare olefin polymers having increased short chain branching frequency.

5756417

Catalyst compositions

De Boer Eric Johannes Maria; De Boer Henricus Jacobus Robert; Heeres Hero Ja Amsterdam, Netherlands assigned to Union Carbide Chemicals and Plastics Technology Corporation

Catalyst compositions for the oligomerization or polymerization of olefinically unsaturated hydrocarbons, comprising a heterocyclopentadienyl of the general formula (*See Patent for Tabular Presentation*) PS wherein A is a Group V element and each R, which is connected to a carbon of the heterocyclopentadienyl ring, can be the same or different and is chosen from hydrogen or an organic substituent (optionally containing one or more heteroatoms), in complex with a Group IV or V metal, and the process of oligomerization or polymerization olefinically unsaturated hydrocarbons in the presence of such catalyst compositions.

5756608

Polymerization process using metallocene complexes in the catalyst system

Langhauser Franz; Fischer David; Kerth Jumlung; Schweier Gumlung; Brintzinger Hans-Herbert; Barsties Elke; Roell Werner Durkheim, Germany assigned to BASF Aktiengesellschaft

A process for polymerizing C₂-C₁₀-alk-1-enes in the presence of a metallocene complex of the formula I

(*See Patent for Chemical Structure*) I where the substituent groups have the meanings described in the specification.

5756610

Titanium (III) bases and beta-diketonate coordinated catalyst composition for preparing high-syndiotactic polystyrene and processes using the same
Tsai Jing-Cheng; Liu Kuang Kai; Peng Shu-Ling; Wang Shian-Jy Hsinchu, China (Taiwan) assigned to Industrial Technology Research Institute

A novel titanium (III)-based beta-diketonate-coordinated compound is disclosed for catalyzing the polymerization reaction of syndiotactic polystyrenes. The titanium (III)-based compound is represented by the following formula 1: (*See Patent for Chemical Structure*) (Formula 1) wherein X is a C1–C12 alkoxy or amine group, or a halogen atom; R is a C1–C12 alkyl, aryl, or alkylsilane group. Preferably, X is N(SiMe₃)₂- or OMe-, and R is phenyl, methyl, or t-butyl. The titanium (III)-based compounds are prepared by reacting titanium trichloride with diketone and tetrahydrofuran to form an intermediate product, then reacting the intermediate product Ti(AcAc)Cl₂(THF)₂ with either aminosilane or alcohol.

5756611

Alpha-olefin polymerization catalysts

Eherton Bradley P; Krishnamurti Ramesh; Tyrell John A; Nagy Sandor Houston, TX, United States assigned to Lyondell Petrochemical Company

A catalyst useful in the polymerization of alpha-olefins comprises the reaction product of an alcohol having the general formula (*See Patent for Chemical Structure*) with an organometallic compound having the general formula (*See Patent for Tabular Presentation*) PS wherein Q is –COR₁₂, –CR'R''(OR₁₂) and –CR'R''N(R'')₂; wherein each R' is independently selected from H and R, R is a C1 to C12 alkyl group or a C6 to C24 aryl group, R₁₂ is R or a radical of the formula –(CH₂)_w–O–(CH₂)_y H, w and y being independently selected from 1 to 4; L is a pi-bonded ligand selected from (i) a cyclopentadienyl or substituted cyclopentadienyl ring; (ii) a boraaryl ring; (iii) a 1,2-azaborolanyl ring; or (iv) a 5-membered heterocyclic ring; M is a Group 3 to 7 metal of the Periodic Table; v is the valence of M; and each X is independently

selected from halogen or a C1–C6 alkyl group or a C6–C24 aryl group.

5756613

Catalyst support and catalyst for the polymerization of alpha-olefins; processes for obtaining them and polymerization of alpha-olefins in presence of the catalyst

Costa Jean-Louis; Laurent Vincent; Francois Philippe; Vercammen Dirk Grimbergen, Belgium assigned to Solvay Polyolefins Europe - Belgium (Sociacu etacu e Anonyme)

Catalyst support containing an alpha-olefin polymer which is in the form of particles of mean size from 5 to 350 μm in which the pore volume generated by the pores of radius from 1,000 to 75,000 Å is at least 0.2 cm³ + HU 3 + L/g. + RE + PA Catalyst usable for the polymerization of + 60 -olefins, including a compound containing at least one transition metal belonging to groups IIIb, IVb, IVb and VIb of the Periodic Table, bound in or on this support. + R

5756614

Polypropylene and other olefin polymer thermoplastic elastomers, novel catalyst for preparing the same and method of preparation

Chien James C W; Rausch Marvin D Amherst, MA, United States assigned to Academy of Applied Science

A thermoplastic elastomeric polypropylene (and other olefin homopolymerized polymers) using a novel catalyst with a single monomer olefin, and method of preparing the same to produce a chain of alternating stereo regular crystallizable segments and stereo-irregular non-crystallizable polymerized segments, the former acting as physical crosslinks between the non-crystallizable segments to form a thermoplastic elastomeric material having good elastomeric properties.

5756616

Process for the production of polyolefins and a catalyst for carrying out the process

Luft Gerhar; Batarseh Brigitte; Dorn Maximilian Muhltal, Germany assigned to Peroxid-Chemie GmbH

PCT No. PCT/EP95/00381 Sec. 371 Date Aug. 5, 1996 Sec. 102(e) Date Aug. 5, 1996 PCT Filed Feb. 2, 1995 PCT Pub. No. WO95/21200 PCT Pub. Date Aug. 10, 1995. For the production of polyolefins by poly-

merization of alpha-olefins in the presence of a peroxide catalyst a catalyst system is used as the catalyst which is composed of the components (A) and (B) in which: (A) denotes at least one compound selected from the group of organoaluminium compounds of formula AlR_3 in which R represents an alkyl, alkenyl, aryl or cycloalkyl group; and (B) denotes at least one organic peroxide.

5759940

Components and catalysts for the polymerization of olefins

Sacchetti Mari; Pasquali Stefano; Govoni Gabriele Ferrara, Italy assigned to Montell Technology Company BV

The present invention relates to components of catalysts for the polymerization of olefins comprising the product that can be obtained by bringing a compound of a transition metal M, containing at least one M- π bond, into contact with an olefinic prepolymer obtained by polymerization of one or more olefins with a coordination catalyst comprising a compound of Ti or V supported on a magnesium halide.

ENVIRONMENTAL CATALYSIS

5750460

Catalyst and process for its production

Hartweg Martin; Heinau Martina; Seibold Andrea; Walz Leonhard; Fetzer Thomas; Morsbach Bernd; Buechele Wolfgang Erbach, Germany assigned to Daimler-Benz AG; BASF Aktiengesellschaft

A catalyst and a process for producing the catalyst are provided. For the catalytic reduction of NO_x and for the oxidation of hydrocarbons, the catalyst contains a spinel containing the metals copper, zinc and aluminum.

5753580

Exhaust emission control catalyst comprising cerium

Hayashi Tadayoshi; Kikuchi Shinichi Saitama, Japan assigned to Honda Giken Kogyo Kabushiki Kaisha

A bottom washcoat layer 2 and a top washcoat layer 3 including alumina (Al_2O_3) are sequentially laminated onto the surface of a monolith carrier 1. Cerium, zirconium and palladium are carried in the bottom washcoat layer 2, and platinum, rhodium, barium and cerium are carried in the top washcoat layer 3. The cerium content

in the top washcoat layer 3 is set smaller than that in the bottom washcoat layer 2. This causes the hydrocarbon conversion performance of rhodium and the nitrogen conversion performance of platinum in the top washcoat layer 3 to be balanced properly, while maintaining the hydrocarbon conversion performance of palladium in the bottom washcoat layer, thereby providing an improved exhaust gas purification performance as a whole. In addition, platinum and palladium carried in separate washcoat layers make it possible to inhibit the formation of a platinum-palladium alloy under high temperature conditions to prevent a reduction in exhaust gas purification effect. Further, the heat deterioration of cerium can be inhibited by zirconium, and the alumina surface area can be stabilized by barium, thereby providing an improved durability of the catalyst under high temperature conditions.

5753582

V/Mo/W catalysts for the selective reduction of nitrogen oxides

Garcin Eric; Luck Francis; Surantyn Raymond Lyons, France assigned to Rhone-Poulenc Chimie

Impure gas streams containing contaminating amounts of NO_x , e.g., automotive exhaust fumes and industrial waste gases, are purified by contacting same, in the presence of ammonia, at an elevated temperature, with a catalyst composition which comprises an inorganic oxide support substrate having a catalytically effective amount of a metal oxide active phase deposited thereon, such support substrate comprising at least one alumina, aluminate, titanium dioxide and/or zirconium dioxide and such catalytically active phase comprising at least one vanadium oxide and/or molybdenum oxide and/or tungsten oxide, the surface of the support substrate being chemically bonded to the metals V and/or Mo and/or W and the catalyst being devoid of V_2O_3 and/or MoO_3 and/or WO_3 crystalline phases, and thereby selectively reducing such NO_x values while minimizing the formation of N_2O .

5755977

Continuous catalytic oxidation PROCESS

Gurol Mirat; Lin Shu-Sung Philadelphia, PA, United States assigned to Drexel University

A contaminated fluid such as water or a gas stream containing at least one organic contaminant is contacted in a continuous process with a particulate geothite

catalyst in a reactor in the presence of hydrogen peroxide or ozone or both to decompose the organic contaminants.

5759504**Method for treating organohalogen compounds with catalyst**

Kanno Shuichi; Kawagoshi Hiroshi; Kato Akira; Arato Toshiaki; Yamashita Hisao; Azuhata Shigeru; Tamata Shin Hitachi, Japan assigned to Hitachi Ltd

A treating method for decomposing organohalogen compounds such as chlorofluorocarbons (CFC),

trichloroethylene, methyl bromide, halon, and the like, effectively, with a high activity of catalyst is provided. Organohalogen compounds are decomposed by contacting at a temperature in a range of 200°–500°C with catalyst which comprises titania and tungsten oxide by an atomic ratio of Ti and W in a range from 20 mol.% to 95 mol.% Ti and from 5 mol.% to 80 mol.% W, and at least surface of the titania is covered with porous layer of tungsten oxide. In accordance with the present invention, organic compounds containing any of fluorine, chlorine, and bromine can be decomposed with a high efficiency, and the activity of the catalyst can be maintained for a long time.