



Journal of Molecular Catalysis A: Chemical 138 (1999) 323–331



# JOURNAL OF MOLECULAR CATALYSIS A: CHEMICAL

*PatentsALERT*

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**CHEMICALS****5731252****Process for improving productivity of a carbonylation catalyst solution by removing corrosion metals**

Warner R Jay; Broussard Jerry Allen Corpus Christi, TX, United States assigned to Hoechst Celanese Corporation

A process for treating low water content carbonylation catalyst solutions which contain a rhodium component and an alkali metal component to remove metallic corrosion products is disclosed. The process comprises contacting the catalyst solution with an ion exchange resin, preferably in the lithium form, and a sufficient amount of water to decrease the concentration of alkali metal ions to optimize removal of corrosion metal products.

**5731255****Catalytic systems and methods for carbonylation**

Pan Li Rui; Ina Tomohide; Matsuoka Kazuyuki Himeji, Japan assigned to Daicel Chemical Industries Ltd

A carbonylation catalytic system comprises (A) a combination of (A1) a Group VIII metal source of Periodic Table of the Elements (e.g., palladium, palladium chloride) supported on a carrier, (A2) a ligand such as triphenylphosphine and (A3) an acid such as an alkyl-sulfonic acid, or (B) a combination of (B1) the Group VIII metal source except for palladium (e.g., a platinum compound), (B2) a ligand such as triphenylphosphine and (B3) an electron donative compound having an electron donability  $\Delta n_D$  of not less than 2 (for instance, an amine such as a heterocyclic tertiary amine). The catalytic system (B) may further comprise (B4) an acid such as methanesulfonic acid. In the presence of the catalytic system (A) or (B), an acetylenic or olefinic unsaturated compound is allowed to react with carbon monoxide and a nucleophilic compound having an active hydrogen such as water, an alcohol and a carboxylic acid in a liquid phase to give an unsaturated or saturated carboxylic acid or an ester thereof with high transformation rate and selectivity.

**5731446****Molybdenum epoxidation catalyst recovery**

Albal Rajendra S; Evans Thomas; Wentzheimer W Wayne; Donn Allen M; Gelb Morri West Chester, PA, United States assigned to ARCO Chemical Technology L P

An aqueous epoxidation process stream containing molybdenum and sodium values and organics is treated for organics removal as by incineration and an aqueous solution containing molybdenum and sodium is recovered, cooled, acidified and contacted with activated carbon and an aqueous stream reduced in molybdenum is recovered, further molybdenum reduction can be achieved by treatment with basic ion exchange resin.

**5731449****Triethylenediamine synthesis with base-treated zeolites as catalysts**

Li Hong-Xin; Santiesteban Josacu e Guadalupe; Armor John Nelso Allentown, PA, United States assigned to Air Products and Chemicals Inc

A process for preparing triethylenediamine by passing an ethanolamine, ethyleneamine, piperazine or morpholine over a pentasil-type zeolite at elevated temperature characterized by employing a ZSM-5 zeolite in the hydrogen or ammonium form which has been pretreated with an aqueous caustic solution.

**5731457****Vinyl acetate process utilizing a palladium-gold-copper catalyst**

Nicolau Ioan; Broussard Jerry A; Colling Philip M Corpus Christi, TX, United States assigned to Hoechst Celanese Corporation

A process is disclosed for the production of vinyl acetate by reaction of ethylene, oxygen and acetic acid as reactants comprising contacting said reactants and a non-halogen containing copper compound with a catalyst comprising a porous support on the porous surfaces of which is deposited catalytically effective amounts of metallic palladium, gold and copper. During the process to prepare vinyl acetate, a stream of alkali metal acetate is preferably passed over the catalyst. The process results in higher vinyl acetate selectivity and productivity due to lower CO<sub>2</sub> selectivity during the life of the catalyst, and/or longer catalyst life.

**5731460****Oxidative cleavage of alkenes with a catalyst system containing a source of molybdenum, a source of ruthenium and a phase transfer agent**

Johnstone Alexander; Middleton Paul John; Service Miranda; Sanderson William Ronald South Wirral, United Kingdom assigned to Solvay Interlox Limited

PCT No. PCT/GB94/01345 Sec. 371 Date Feb. 14, 1996 Sec. 102(e) Date Feb. 14, 1996 PCT Filed Jun. 22, 1994 PCT Pub. No. WO95/00243 PCT Pub. Date Jan. 5, 1995. A catalyst system and process for the oxidative cleavage of alkenes with hydrogen peroxide is provided. The catalyst system comprises a source of ruthenium, a source of molybdenum and a phase transfer agent. The process comprises contacting an alkene with the hydrogen peroxide in the presence of the above catalyst system. Sources of ruthenium and molybdenum comprise the metals, salts or complexes. Preferred sources are RuCl<sub>3</sub> and MoO<sub>3</sub>. The phase transfer agent is preferably a quaternary ammonium salt. The process usually takes place in the presence of an organic solvent, preferably t-butanol.

## ENVIRONMENTAL CATALYSIS

### 5723403

**Production process for catalysts on supports including a centrifuging step for the support after coating**  
Durand Daniel; Mabilon Gil; Guibard Isabelle Rueil Malmaison, France assigned to Institut Francais Du Petrole

A production process for supported catalysts is described comprising: (a) preparing a coating suspension containing at least one refractory inorganic oxide and at least some of the elements intended to constitute catalytically active phase (A); (b) filling at least part of the open porosity of a support with this suspension; (c) drying the filled support by centrifuging; (d) a thermal treatment of the support to obtain a support coated by a wash coat; (e) optionally impregnating the coated support with a solution containing the rest of, or elements of, catalytically active phase (A); and (f) thermally activating the catalyst. This preparation process is of particular interest in the production of catalysts for treating exhaust gases of internal combustion engines, where the wash coat deposited on a support comprises in particular a refractory inorganic oxide, iron oxide and cerium oxide and, by way of a catalytically active element, at least one noble metal such as platinum, rhodium or palladium.

### 5723404

**Process for the production of mixed oxide powders for catalysts for the removal of nitrogen oxides**  
Bumltje Kai; Kischkewitz Jumltje; Braun Rolf Michae; Holtmann Udo; Barenthien Peter-Joachim

Duisburg, Germany assigned to Bayer Aktiengesellschaft

A process for the production of a mixed oxide powder, that contains as chief constituent TiO<sub>2</sub> in the form of anatase and as minor constituents at least one of the catalytically active oxides MoO<sub>3</sub>, WO<sub>3</sub> and V<sub>2</sub>O<sub>5</sub>, suitable for use as a catalyst for the removal of nitrogen oxides, comprising (a) partially neutralizing a titanium dioxide hydrate suspension containing sulphuric acid with an alkaline liquor to a pH value between about 4.0 and 6.0 at temperatures between about 20 degrees and 100°C, (b) filtering the suspension from (a) to produce a filter cake and intensively washing the filter cake, (c) adding to the filter cake from (b) at least one water-soluble salt of at least one of the metals Mo, W and V in solid or dissolved form, and (d) drying the filter cake from (c) and calcining it at a temperature between about 300 degrees and 750°C

### 5726119

**Catalyst for exhaust gas purification**

Sera Hisashi; Miyaura Shinobu; Okabe Toshiyuki; Murakami Hirosh Hiroshima ken, Japan assigned to Mazda Motor Corporation

A catalyst carrier assembly for an automobile exhaust gas purifying device includes a smooth metal sheet and a pre-corrugated metal sheet wound alternately in a roll having a number of honeycomb convolutions. Each corrugation of the web-like pre-corrugated metal sheet is welded to the flat metal sheet at a plurality of points in the transverse direction during forming of the cylindrical roll. After forming the cylindrical roll, the cylindrical roll is heated so as to solder the web-like flat metal sheet and the web-like pre-corrugated metal sheet to each other at both of their end portions.

### 5727368

**Hybrid motor system with a consumable catalytic bed a composition of the catalytic bed and a method of using**

Wernimont Eric J; Meyer Scott E; Ventura Mark Dallas, TX, United States

A method, device and composition for achieving ignition and sustained combustion using a solid consumable catalytic bed (CCB) is described. The CCB accomplishes this by decomposition of an injected fluid. Initially this reaction is catalytic or hypergolic in na-

ture, eventually becoming entirely thermal as the CCB is consumed in the reaction generated. The CCB may be placed in a hybrid motor system such that the decomposed injected fluid will undergo combustion with the solid grain. When the injected fluid is high concentration hydrogen peroxide the catalytic materials of construction for the CCB are selected from the metallic hydride family, the manganese oxide family and the cuprocyanide family.

#### 5727385

##### **Lean-burn NO<sub>x</sub> catalyst/NO<sub>x</sub> trap system**

Hepburn Jeffrey Scott Dearborn, MI, United States assigned to Ford Global Technologies Inc

The invention is a catalyst system for purifying exhaust gases generated by a lean-burn internal combustion engine, particularly automotive engines. The catalyst system comprises two separate components located in the exhaust gas passage, the first being a lean-burn nitrogen oxide catalyst and the second being a nitrogen oxide trap material, where the lean-burn NO<sub>x</sub> catalyst is located upstream of the NO<sub>x</sub> trap material in the exhaust gas passage. Preferably the catalyst comprises a transition metal such as copper, chromium, iron, cobalt, or manganese loaded on a refractory oxide or exchanged into a zeolite. The NO<sub>x</sub> trap preferably comprises (i) at least one precious metal selected from platinum and palladium loaded on a porous support; and (ii) at least one alkali metal or alkaline earth metal (a) loaded on a porous support or (b) present as an oxide thereof. Optionally the catalyst system may further comprise a three-way catalyst located either between the two-components or after the NO<sub>x</sub> trap material.

#### 5728643

##### **NO<sub>x</sub> decomposition catalyst and exhaust gas purifier using said catalyst**

Naitoh Isao; Ohsumi Kazuo Oiso machi, Japan assigned to Isuzu Ceramics Research Institute Co Ltd

The present invention provides an NO<sub>x</sub> decomposition catalyst which can decompose NO<sub>x</sub> in exhaust gas to decrease the amount of NO<sub>x</sub> in exhaust gas and is improved in durability through suppression of thermal decomposition thereof, and an exhaust gas purifier wherein said catalyst is used. This NO<sub>x</sub> decomposition catalyst is a compound having a brownmillerite type

structure represented by the general formula: A<sub>3</sub>-XBXC<sub>4</sub>-YDYOZ, the carbon content of which compound may be at most 1.25 wt. %. This NO<sub>x</sub> decomposition catalyst can be used in an exhaust gas purifier applicable to an internal combustion engine.

#### 5728909

##### **Method of cracking polymeric materials catalyzed by copper**

Butcher Jared Athens, OH, United States assigned to Ohio University

The present invention is a method for depolymerizing or cracking polymeric materials. The method of the present invention may be used in the disposal and/or recycling of such materials. Products of the degradation of polymeric materials using the present method may be recycled or more easily treated for disposal. The present invention is a process for degrading, depolymerizing or cracking a polymeric material, otherwise amenable to cracking by alkali fusion, comprising the steps of: (a) preparing a molten reaction mixture comprising: (i) a basic material; (ii) a source of copper; and (iii) said polymeric material; and (b) maintaining said molten mixture at a temperature sufficient to reflux said molten mixture for sufficient time to depolymerize said polymeric material.

#### 5733837

##### **Catalyst for catalytic reduction of nitrogen oxides**

Nakatsuji Tada; Shimizu Hiromitsu; Yasukawa Ritsu; Miyamoto Katsumi; Tsuchida Hiroshi Osaka, Japan assigned to Sakai Chemical Industry Co Ltd ; Petroleum Energy CenterCosmo Oil Co Ltd

A catalyst for catalytic reduction of nitrogen oxides using a hydrocarbon and/or a oxygen-containing organic compound as a reducing agent is disclosed, which comprises a cerium oxide supported on a solid acid carrier. Also, a catalyst for catalytic reduction of nitrogen oxides using a hydrocarbon and/or an oxygen-containing organic compound as a reducing agent is disclosed, which comprises: (a) at least one element selected from the elements of Group Ib, Group IIa, Group IIb, Group IIIa, Group IIIb, Group IVa, Group IVb, Group Va, Group VIa, Group VIIa, and Group VIII in the Periodic Table (hereinafter referred to as the elements belonging to group (a)); and (b) a cerium oxide, supported on a solid acid carrier.

**FINE CHEMICALS AND PHARMACEUTICALS****5726334****Process for the preparation of ruthenium hydrogenation catalysts and products thereof**

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

This invention relates to a process for the preparation of ruthenium complexes of the formula  $\text{RuH}_2\text{L}_2(\text{PR}_3)_2$ , wherein each L is independently  $\text{H}_2$  or an additional equivalent of  $\text{PR}_3$ , and each R is independently H, a hydrocarbyl group, or an assembly of at least two hydrocarbyl groups connected by ether or amine linkages, comprising contacting a source of ruthenium and  $\text{PR}_3$  with gaseous hydrogen in the presence of a strong base, a phase-transfer catalyst, water and an organic solvent; and the use of certain classes of ruthenium complexes as catalysts in hydrogenation, and reductive hydrolysis processes.

**5726335****Zirconium compounds, their preparation and their use as catalysts**

Stephan Douglas W La Salle, CANADA assigned to University of Windsor

Novel mononuclear ZIV trihydride, monoalkyl dihydride and deuteride compounds are prepared and are used as catalysts in dehydrocoupling reactions.

**5726343****Process for the preparation of arylacetic ester derivatives via palladium-catalyzed cross coupling reaction**

Ziegler Hugo; Neff Denis; Stutz Wolfgang Witterswil, Switzerland assigned to Novartis Corporation

PCT No. PCT/EP95/00146 Sec. 371 Date Jul. 22, 1996 Sec. 102(e) Date Jul. 22, 1996 PCT Filed Jan. 16, 1995 PCT Pub. No. WO95/20569 PCT Pub. Date Aug. 3, 1995. Process for the preparation of 2-methoxyimino-2-arylacetic esters of formula (I) in which R is C1-C12alkyl, which comprises reacting an appropriately substituted boronic acid of general formula (II) or the trimeric form (III) herein, which is in equilibrium with it, in the presence of a Pd catalyst, with a methoxyiminoacetic ester of formula (IV) in which R is C1-C12alkyl and X is a leaving group.

According to a further process variant, in principle the groups which split off the two reactants may change places. The process can be applied not only to phenyl derivatives but also to larger ring systems (naphthyl, pyridyl, heterocycles).

**5728876****Resolution of the racemates of primary and secondary amines by enzyme-catalyzed acylation**

Balkenhohl Friedhelm; Hauer Bernhard; Ladner Wolfgang; Pressler Uwe; Numl ubling Christoph Limburgerhof, Germany assigned to BASF Aktiengesellschaft

PCT No. PCT/EP94/03102 Sec. 371 Date Mar. 11, 1996 Sec. 102(e) Date Mar. 11, 1996 PCT Filed Sep. 16, 1994 PCT Pub. No. WO95/08636 PCT Pub. Date Mar. 30, 1995. A process for producing optically active primary and secondary amines from the corresponding racemates is characterised in that (a) a racemic amine is enantioselectively acylated in the presence of a hydrolase with an ester whose acid component bears a fluorine, nitrogen, oxygen or sulphur atom at the proximity of the carbonyl carbon atom; (b) the mixture of optically active amine and optically active acylated amine is separated so that an enantiomer of amine is produced; (c) if desired the other enantiomer of the amine is extracted from the acylated amine by amide cleavage.

**POLYMERS****5731386****Polymer for positive acid catalyzed resists**

Thackeray James W; Sinta Roger; Denison Mark D; Ablaza Sheri L Braintree, MA, United States assigned to Shipley Company LLC

The invention comprises a polymer formulated for an acid hardened resist system. The polymer is one having acid labile blocking groups and inert blocking groups. The photoresist comprises the polymer and a photoacid generator. The inclusion of inert blocking groups on the resin improves shelf life without deleteriously affecting photolithographic properties of the resist.

**5731393****Ethylene polymer, process for preparing the same, solid titanium catalyst component for ethylene polymerization and ethylene polymerization catalyst**

Kojoh Shin-ich; Kioka Mamoru Yamaguchi, Japan assigned to Mitsui Petrochemical Industries Ltd

An ethylene polymer having small values of  $M_w/M_n$  and  $M_z/M_w$ , a small proportion of long-chain branches and a high swell ratio and a process for preparing the polymer are disclosed. A solid titanium catalyst component obtained by initially contacting a solid titanium composite containing titanium, magnesium, halogen and a compound having at least two ether linkages present through plural atoms with an organometallic compound and then contacting the resulting product with oxygen is further disclosed. An ethylene polymerization catalyst comprising the above catalyst component and an organometallic compound catalyst component is furthermore disclosed. The ethylene polymer is excellent in moldability, and from this polymer, a molded article which is excellent in rigidity and impact resistance and free from poor appearance can be obtained. By the use of the ethylene polymerization catalyst, an ethylene polymer having excellent properties as mentioned above can be obtained.

#### 5731407

##### **Double metal cyanide complex catalysts**

Le-Khac Bi West Chester, PA, United States assigned to Arco Chemical Technology L P

Improved double metal cyanide catalysts are disclosed. The substantially amorphous catalysts of the invention are more active for polymerizing epoxides than conventional DMC catalysts, which have a substantial crystalline component. Polyol products made with the catalysts are unusually clear, have exceptionally low unsaturations, and contain no detectable amount of low molecular weight polyol impurities. A method of making the improved DMC catalysts, which involves intimately combining the reactants, is also disclosed.

#### 5733834

##### **Organic carrier supported metallocene catalyst for olefin polymerization**

Soga Gazuo; Kim Hyun-joon; Lee Sang-kyun; Jung Min-chul; Son Byung-hee; Thosiya Wuoelmi; Thakhasi Irai; Hiroro Nishida Ishigawa, Japan assigned to Samsung General Chemicals Co Ltd

The organic carrier supported metallocene catalyst of the present invention is prepared by preparing a ligand complex of a silicone compound having at least one halogen, an alkyl group and a cycloalkane dienyl group, activating styrene polymer or styrene/divinylbenzene copolymer with a strong base including a metal atom

such as Li, Na, K or Mg, reacting the activated polymer or copolymer with the ligand complex of a silicone compound so that the ligand may be supported on the activated polymer or copolymer, and reacting the organic carrier supported ligand with a compound of a transition metal of Group IVb of the Periodic Table or Lanthanides of Atomic Number 58–71. The styrene polymer or styrene/divinylbenzene copolymer may be alkylated by Friedel-Crafts alkylation before they are activated with a strong base.

#### 5733835

##### **Cobalt containing catalyst system**

Castner Kenneth Floyd Uniontown, OH, United States assigned to The Goodyear Tire and Rubber Company

It has been determined that 1,3-butadiene monomer can be polymerized into *cis*-1,4-polybutadiene rubber utilizing a cobalt-based catalyst system which is comprised of (a) an organocobalt compound, (b) a trialkylaluminum compound and (c) hexafluoro-2-propanol. The use of this catalyst system results in extremely fast rates of polymerization. The molecular weight of the *cis*-1,4-polybutadiene rubber made utilizing this cobalt-based catalyst system can be regulated by conducting the polymerization in the presence of 1,5-cyclooctadiene. This present invention more specifically discloses a catalyst system which is particularly useful for polymerizing 1,3-butadiene monomer into *cis*-1,4-polybutadiene, said catalyst system being comprised of (a) an organocobalt compound, (b) a trialkylaluminum compound and (c) hexafluoro-2-propanol. The subject invention further discloses a process for synthesizing *cis*-1,4-polybutadiene rubber which comprises polymerizing 1,3-butadiene in the presence of (a) an organocobalt compound, (b) a trialkylaluminum compound and (c) hexafluoro-2-propanol.

#### 5733945

##### **Process for manufacturing polyurethane using a metal acetyl acetonate/acetyl acetone catalyst system and the product made therefrom**

Simpson Scott S Woodstock, CT, United States assigned to Rogers Corporation

Nickel acetyl acetonate catalysts used in the manufacture of polyurethanes and particularly polyurethane foam, is replaced with a more environmentally friendly organo-metallic catalyst, specifically other metal acetyl acetonates such as iron or copper. In accordance with

an important feature of this invention, in addition to the metal acetyl acetonate, the catalyst system also includes acetyl acetone. The acetyl acetone acts as a delay mechanism to delay the catalytic action of the metal acetyl acetonate which is normally highly catalytic at relatively low temperatures. It will be appreciated that high catalytic activity at relatively low temperature will lead to deleterious premature cure. By adding acetyl acetone into the catalyst system, the acetyl acetone acts to delay and/or slow the catalytic action of the metal acetyl acetonate until the polyurethane is heated at which point the acetyl acetone is driven off and the metal acetyl acetonate then provides a relatively fast cure at the elevated temperature.

#### 5733969

##### **Zeolite catalyst for the polycondensation of polyester**

Thiele Ulrich Bruchkoebel, Germany assigned to Zimmer Aktiengesellschaft

A zeolite polycondensation catalyst comprising an alkali- or alkaline earth metal aluminum silicate zeolite having an original water content of 12 to 30 weight % and a solubility, measured at 260°C, in an esterification mixture consisting essentially of bis(hydroxy ethylene)terephthalate, of over 8.0 weight %, and an average particle size of less than 1.0  $\mu$ m. The present invention is also a process for the production of polyester using this catalyst.

#### 5733979

##### **Catalytic solid usable for the stereospecific polymerisation of alpha-olefins, process for preparing it and process for polymerising alpha-olefins in its presence**

Costa Jean-Louis; Pamart Sabine Grimbergen, Belgium assigned to Solvay (Société Anonyme)

Catalytic solids based on titanium trichloride complex, usable for the stereospecific polymerisation of alpha-olefins, obtained by heat treatment, in the presence of a halogenated activating agent, of the liquid material resulting from bringing  $TiCl_4$ , pretreated with an electron-donor compound, into contact with a composition (C) corresponding to the general formula (\*See Patent for Tabular Presentation\*)  $PS$  in which R represents a hydrocarbon radical or a hydrogen atom; Y represents a group chosen from  $-OR'$ ,  $-SR'$  and  $-NR'R''$ , in which  $R'$  and  $R''$  each represent a hydrocarbon radical or a hydro-

gen atom; X represents a halogen; p is an arbitrary number such that  $0 < p < 3$ ; and q is an arbitrary number such that  $0 < q < 3$ ; the sum  $(p + q)$  being such that  $0 < (p + q) < \text{or} = 3$ . These catalytic solids of controllable porosity permit the production of a wide range of propylene polymers, in particular the propylene and ethylene copolymers known as block copolymers.

#### 5733989

##### **Prepolymerized catalyst composition, a process for the preparation thereof, and a process for polymerizing alpha-olefins**

Pentti Ismo; Leskinen Pauli Kulloo, Finland assigned to Borealis A/S

The present invention concerns prepolymerized catalyst composition for polymerization of alpha-olefins, a process for the preparation thereof and a process for polymerization of alpha-olefins. According to the polymerization process a procatalyst composition containing a transition metal is prepolymerized with a monomer in order to produce a prepolymerized Ziegler-Natta type catalyst composition and said catalyst composition is contacted with an alpha-olefin monomer, in particular with ethylene or propylene, for preparing a polymer. According to the invention the procatalyst composition is preferably prepolymerized in a medium which is inert to the catalyst components, the viscosity of the medium being so high that the catalyst does not substantially settle in this medium. Because the catalyst composition according to the invention does not have to be dried before being fed into the medium, its activity is high before and during polymerization.

#### 5733990

##### **Catalyst for producing polyolefin and process for producing polyolefin**

Soga Kazuo; Uozumi Toshiya; Arai Takashi Ishikawa, Japan assigned to Daicel Chemical Industries Ltd

A catalyst for producing a poly- alpha-olefin which comprises a metallocene compound containing an element of group IVA bonded to an organic polymer containing an element of group IVB; and a process for producing a poly- alpha-olefin which comprises polymerizing an alpha-olefin in the presence of the above-described catalyst and also a specified aluminoxane as a co-catalyst.

## CATALYST PREPARATION

### 5723605

#### **Bicyclic amidines, process for their preparation, and their use as catalyst**

Werbitzky Oleg; Daum Ulrich; Bregy Rachel Visp, Switzerland assigned to Lonza Ltd

The process for the preparation of bicyclic amidines of the general formula: (\*See Patent for Chemical Structure\*) I wherein A is selected from the group consisting of -CR1R2-CR3R4-CR5R6-, -CR1R2-CR3R4-CR5R6-CR7R8- and -CR1R2-CR3R4-CR5R6-CR7R8-CR9R10-, wherein the substituents in A are in each case numbered starting from the nitrogen atom, and B is selected from the group consisting of -CR11R12-CR13R14-, -CR11R12-CR15R16-CR17R18-CR13R14- and -CR11R12-CR15R16-CR17R18-CR13R14-, and R1, R2 and R11 to R14 are, in each case independently of one another, hydrogen, C1-C4-alkyl, aryl, or are C1-C4-alkyl which is substituted with hydroxyl, amino, C1-C4-alkylamino or mercapto, and R3 to R10 and R15 to R18 are, in each case independently of one another, hydrogen, C1-C4-alkyl, aryl, hydroxyl, amino, C1-C4-alkylamino or mercapto, or are C1-C4-alkyl which is substituted with hydroxyl, amino, C1-C4-alkylamino or mercapto. The process includes heating (reacting) a lactone of the general formula: (\*See Patent for Chemical Structure\*) II wherein A is as defined above, to at least 150°C together with an at least equimolar quantity of an amine of the general formula: (\*See Patent for Tabular Presentation\*) PS wherein B

### 5733838

#### **Process for the production of a hydrogenation catalyst**

Vicari Maximilian; Flick Klemens; Melder Johann-Peter; Schnurr Werner; Wulff-Dumling Joachim Neuhofen, Germany assigned to BASF Aktiengesellschaft

A hydrogenation catalyst based on an alloy of aluminum and of a transition metal is prepared by preparing a kneaded material from the alloy and an assistant, converting the kneaded material into moldings, calcining the moldings and treating the calcined moldings with an alkali metal hydroxide, by a process in which the assistant used is (a) polyvinyl alcohol and water or (b) stearic acid, and the catalyst prepared according to the invention is used for hydrogenation and hydrogenolysis, in particular the partial hydrogenation of aliphatic

alpha,omega-dinitriles to aliphatic alpha,omega-aminonitriles.

## REFINERY

### 5723712

#### **Catalytic composition for biphasic catalysis, in particular using nickel complexes, and a process for the oligomerization of olefins**

Chauvin Yves; de Souza Roberto; Olivier Helene Le Pecq, France assigned to Institut Francais du Petrole

A novel catalytic composition comprises a mixture of lithium halide, a hydrocarbylaluminium halide and at least one compound of a catalytic element, in particular a nickel complex. The invention also concerns a process for the oligomerisation and co-oligomerisation of olefins catalysed by said composition. The catalytic mixture, which is liquid at the start of the reaction, is gradually transformed into a solid which is then readily separated from the reaction products.

### 5723716

#### **Method for upgrading waxy feeds using a catalyst comprising mixed powdered dewaxing catalyst and powdered isomerization catalyst formed into a discrete particle (law082)**

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

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

### 5725755

#### **Catalytic dewaxing process for the production of high vi lubricants in enhanced yield**

Forbus T Reginald Newton, PA, United States assigned to Mobil Oil Corporation

A catalytic hydrodewaxing process is described for producing liquid hydrocarbon lubricant base stock from liquid hydrocarbon feedstock in greater yield and viscosity index equivalent to solvent dewaxing methods. The process involves contacting a feedstream comprising hydrogen and the hydrocarbon feedstock with shape selective metallosilicate catalyst particles under hydrodewaxing conditions sufficient to produce a base stock having a predetermined viscosity index without regard



to the base stock pour point temperature produced by the process. Pour point depressants are added to the base stock to lower the pour point temperature of the base stock to a predetermined temperature.

#### 5725756

##### **In situ mitigation of coke buildup in porous catalysts with supercritical reaction media**

Subramaniam Bala; Saim Said Lawrence, KS, United States assigned to Center For Research Inc

A method to minimize catalyst deactivation rate and coke laydown, and maximize desired reaction rate in processing of industrially significant reactions under supercritical conditions to generate a reaction mixture stream including formed reaction products and reactants, said contacting at a desired catalyst temperature of about 1–1.2 critical temperature of the resulting reaction mixture and at a pressure between the critical pressure of the reaction mixture and a pressure necessary to establish said reaction mixture fluid density of greater than 0.65 gm/cc.

#### 5726112

##### **Method of regenerating deactivated catalysts**

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

A deactivated reforming catalyst comprising a type L zeolite containing a Group VIII noble metal may be regenerated and have enhanced dispersion by a method involving contacting the catalyst with oxygen and water at elevated temperatures, contacting the catalyst at elevated temperatures with a source of chlorine such as HCl or Cl<sub>2</sub>, and preferably oxygen and water, contacting the catalyst at elevated temperatures with oxygen and optionally water, and contacting the catalyst at elevated temperatures with hydrogen and optionally water to reduce the catalyst. Preferably the noble metal is platinum.

#### 5726114

##### **Method of preparation of ex situ selectivated zeolite catalysts for enhanced shape selective applications and methods to increase the activity thereof**

Chang Clarence; Lutner John D; McCullen Sharon B; Rodewald Paul; Shihabi David Princeton, NJ, United States assigned to Mobil Oil Corporation

A method of preparing a modified catalytic molecular sieve for enhanced shape selective hydrocarbon conversions in which a catalytic molecular sieve is modified by being exposed to at least one ex situ selectivation sequence, each sequence including an impregnation of the molecular sieve with a selectivating agent in an aqueous emulsion and a subsequent calcination of the impregnated molecular sieve. The selectivating agent compositions for the ex situ selectivation method are also described, including the selectivating agents, the surfactants, and the aqueous components. Also, a method for moderate steaming of the ex situ selectivated molecular sieve. Also a method for in situ trim-selectivating the ex situ selectivated catalytic molecular sieve. Also described is the modified catalytic molecular sieve modified by this method. Also described is a process for shape selective hydrocarbon conversion comprising contacting a hydrocarbon feedstream under conversion conditions with the modified catalytic molecular sieve.

#### 5731256

##### **Alkylation catalyst for c4-c5 isoparaffins using at least one c2–c6 olefin**

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The present invention concerns a catalyst comprising a porous organic or mineral support, preferably silica, and an acidic phase containing B(OSO<sub>2</sub>CF<sub>3</sub>)<sub>3</sub> and at least one acid selected from the group formed by sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) and trifluoromethane sulphonic acid (CF<sub>3</sub>SO<sub>3</sub>H), the support having been impregnated by said acidic phase, said catalyst being such that it is constituted essentially by particles with an average diameter of between 0.1 and 150 μm, such that the support, prior to its impregnation with said acidic phase, has a total pore volume of between 0.5 and 6 cm<sup>3</sup> per gram and said catalyst being characterized in that said acidic phase contains: between 0.1 and 70% by weight of B(OSO<sub>2</sub>CF<sub>3</sub>)<sub>3</sub>; between 0 and 90% by weight of H<sub>2</sub>SO<sub>4</sub>; between 0 and 90% by weight of CF<sub>3</sub>SO<sub>3</sub>H. The catalyst is useful for the catalytic alkylation of isobutane and/or isopentane in the presence of at least one olefin containing 2 to 6 carbon atoms per molecule, preferably 3 to 6 carbon atoms per molecule.