

NEW PATENTS

METALS AND ALLOYS

Nickel-Zirconium Alloys for Batteries

DAISO CO. LTD.

Japanese Appl. 4/66,632-33

Alloys used for H₂ storage have a MgZn₂ type crystal structure and consist of (a) 10-37 wt.% Zr, 5-25 wt.% Ti, 4-20 wt.% Mn, 0.01-15 wt.% Fe, 0.001-0.5 wt.% Pt or Au, 0.1-15 wt.% V and balance Ni and impurities, or (b) 10-37 wt.% Zr, 5-30 wt.% Ti, 5-30 wt.% Mn, 1-30 wt.% Fe, 0.001-0.5 wt.% Pt or Au, 0.01-15 wt.% W, and balance Ni and impurities. The alloys are used for the active anode substance of enclosed Ni-H₂ batteries.

ELECTROCHEMISTRY

Bipolar Cell

MACDERMID INC.

European Appl. 486,187A

A bipolar cell consists of a tank provided with an anode of C or Ti optionally coated on one side with a layer of a conductive oxide of Pt, Pd, Ir, Ru or Au, a cathode of Ti, a direct current source, and one or more bipolar plates of Ta or Ti coated on one side with an oxide of Pt, Pd, Ir, Ru or Au. The cell is used in a process for electrowinning a heavy metal, in regeneration of a Cl-ammoniacal Cu etchant bath.

Enzyme Electrode Having Increased Output

OMRON CORP.

Japanese Appl. 4/69,564

An enzyme electrode has an electrode-sensitive surface covered with Pt black with an enzyme fixed on the Pt black. The Pt black is preferably formed by electrolyzing Pt on platinised C paper. The electrode output is increased under low O₂ conditions, and the response speed is stabilised.

Electrolysis Electrode Manufacture

PERMELEC ELECTRODE LTD. *Japanese Appl. 4/83,890*

An electrode used for an anodic oxidation reaction consists of a base of a valve metal or its alloy, with a surface coating layer of Pt containing 0.1-20 µm grains of Pb or a Pb alloy. The electrode is manufactured either by (a) plating a valve metal base with a Pt plating suspension containing Pb or a Pb alloy, or (b) coating the base with the suspension and pyrolysing.

Electrolytic Manufacture of Manganese Dioxide

MITSUI MINING & SME.

Japanese Appl. 4/99,293

MnO₂ is produced by electrolysis of an electrolytic Mn solution containing a dispersion of a Pt group metal oxide, which gives electroprecipitated MnO₂ containing 0.0005-0.5 wt.% (as metal) of a Pt group metal oxide. This method provides MnO₂ specifically for use in alkaline Mn cells as an activating substance for the positive electrode.

Durable Anode with Iridium-Tantalum Catalytic Layer

DAISO CO. LTD.

Japanese Appl. 4/99,294

An anode consists of a valve metal base coated with a first layer consisting of a mixed oxide of 30-80 mol % Ir oxide and 20-70 mol % Ta oxide, and then with a second layer consisting of an oxide of at least one of Ti, Ta, Sn, Nb and Zr, with either one layer each or a plurality of layers each. The first coating layer provides the catalytic activity, while the second layer covers the first layer and prevents it from falling off; hence providing a durable anode for use in electroplating Sn, Cr and so on.

Highly Durable Platinum Clad Titanium Electrode

KOBE STEEL LTD.

Japanese Appl. 4/103,798

A Pt clad Ti electrode is produced by applying a Pt layer on the outer surface of a Ti pipe, coating the whole surface of the pipe with a Cu layer, passing through an extrusion die to form a pair of thin parts in the pipe, rolling or pressing to flatten the pipe, cutting to obtain material plates, removing the Cu layer by treatment with acid, and then treating with a pickling solution for surface finishing. The Pt layer has excellent adhesion strength, and the electrode shows excellent durability when used in metal plating such as Ni, Cr or Au plating.

Palladium Cathode for Generating High Purity Hydrogen

TANAKA KIKINZOKU KOGYO K.K.

Japanese Appls. 4/141,595 and 4/141,598

Apparatus for producing high purity H₂ has a Pd or Pd alloy cathode where one surface is contacted with the electrolyte solution and the opposite surface is where generated H₂ is removed. The cathode is a Pd or Pd alloy pipe so that H₂ generated by electrolysis is removed from inside the pipe, or can be, for example, a disc shape; and a Pt anode may be used. High purity H₂ is easily obtained, at high current efficiency, and at a controllable rate.

Reducing Cyanide Concentrations in Chemical Treatment Baths

S.M.P. SOC. MATERIEL PERRIER S.A.

French Appl. 2,669,322

The concentration of cyanide ion in a chemical treatment bath is reduced by electrolysis using a Ti grid anode covered with a Pt, Pd, Rh, Ir or Ru based catalyst, and an expanded Ni or Pt cathode, followed by treating chemically to remove any remaining cyanide ion. Electrolysis is carried out at room temperature, in an alkaline medium, at 1-3 A/dm². The process is used for chemical treatment baths having cyanide ions present in complexed and free form, and allows treatment of a relatively high concentration, in shorter treatment times.

Anode for Electrochemical Processes with Ruthenium-Titanium Mixed Oxide Multilayer

LUTHER-UNIV. HALLE *German Appl. 4,032,417*

A dimensionally stable anode consists of a composite of a Ti substrate and a RuO₂-TiO₂ mixed oxide active layer which has individual layers of varying RuO₂:TiO₂ molar ratios so that the RuO₂ content decreases towards the anode surface. The anode has increased stability, long service life and high activity and selectivity, especially for chlor-alkali electrolysis.

Platinum Anode for Electrolytic Chloric Acid Production

EXTRAMURAL POLY. *Russian Patent 1,669,996*

Chloric acid is produced by electrolysis at 1.9–2.3V, for 1h, at 20°C, using a Pt anode and an electrolyte containing 90–125 g/l HCl and 0.6–6.3 g/l HNO₃. Using this electrolyte current efficiency is increased, and electrical energy consumption reduced.

ELECTRODEPOSITION AND SURFACE COATINGS

Ion Beam Induced Deposition of Platinum

MASSACHUSETTS INST. TECH. *U.S. Patent 5,104,684*

A process to form a conductive deposit on a substrate is effected by providing a Pt containing vapour precursor at a locus on the substrate while an ion beam is incident on the locus, to selectively deposit metallic Pt upon it. A greater degree of predictability in the control of the process is obtained.

High Temperature Oxidation Resistant Coatings

ISHIKAWAJIMA-HARIMA JUKO

Japanese Appls. 4/59,978–79

Oxidation resistant coatings are applied to (a) a high melting point metal, or (b) a C material, by either (a) applying a pasty Pt layer on the surface of the metal matrix, sintering to form an undercoat layer, then adhering mullite by plasma spraying, or (b) welding a metal material on the surface of the C matrix, applying a Pt paste, sintering to form an O₂ barrier coat layer, then thermal spraying a ceramic material on the barrier coat layer. In case (a) the coating improves oxidation resistance of the high melting point metal in a high temperature air or oxidising atmosphere, and in case (b) the coating gives high strength, high toughness and stability at high temperatures.

Electroplating Bath for Ruthenium-Molybdenum Alloy Films

TANAKA KIKINZOKU KOGYO *Japanese Appl. 4/74,883*

Ru-Mo alloy films are electroplated using a Ru alloy plating bath containing 0.50–10 g/l Ru chloride, 10–30 g/l sulphamic acid and 5–30 g/l of a molybdate, at 0.5–50 mA/cm² and 50–80°C. The bath may also contain thiourea, Na thiosulphate and selenious acid to improve brightness and adhesive strength.

Palladium Coating

TATSUTA ELEC. WIRE CABLE

Japanese Appls. 4/77,569 and 4/77,577

A coating for forming a piezoelectric buzzer electrode consists of 100 parts wt. of a mixture of 85–96 wt.% metallic Pd powder of average particle diameter 0.1–20 μm and 15–4 wt.% of a resol type phenolic resin, 0.1–8 parts wt. of a fatty acid, unsaturated fatty acid, or its metal salt, and optionally C black or graphite. The coating is applied to both sides of a piezoelectric vibrational element to form the electrode, which is connected to the buzzer.

Electroless Copper Plating with Improved Adhesion

HITACHI CHEM. CO. LTD. *Japanese Appl. 4/124,281*

Electroless Cu plating is effected by treating plating materials with a sensitising agent containing Pd chloride and Sn chloride, then treating with an adhesion accelerating agent such as an aqueous solution containing H₂SO₄, organic acid and H₂O₂, followed by electroless Cu plating. The method is used for electroless plating of Cu-clad laminated boards having throughholes, and gives improved adhesion.

Palladium-Nickel-Phosphorus Alloy Electroplating Bath

ISHIHARA YAKUHIN K.K. *Japanese Appl. 4/124,294*

An electroplating bath consists of an aqueous solution containing 0.01–0.5 mol/l of a Pd compound, 0.01–1 mol/l of a Ni compound, 0.02–1 mol/l of an amine compound, preferably a diamine, and 0.001–0.5 mol/l of phosphites and/or hypophosphites, especially a phosphite. The bath is extremely stable, free of NH₃, and gives bright and smooth plated films having good adhesion strength.

Plating Solution for Stable, Thick Ruthenium Plating

NIPPON MINING CO. *Japanese Appl. 4/165,092*

A Ru plating solution is acidic and contains Ru as a mixture of a nitrogen and sulphuric acid complex of Ru, and of a nitrogen and sulphamic acid complex of Ru, preferably with sulphamate and sulphate also present. The plating solution provides a stable, thick plating of 5 μm or more without crack development.

APPARATUS AND TECHNIQUE

Manufacture of High Density Tin Oxide Gas Sensor

CAPTEUR SENSORS & A. *British Appl. 2,249,179A*

A gas sensing transducer is prepared by mixing stannic oxide powder, a minor quantity of an additive to increase pellet density, Pt, and optionally water, compressing to form a pellet having a fine dispersion of Pt, and firing at elevated temperature. Compressed pellets can be produced with which CO and H₂ can be detected and quantitatively assessed individually.

Electrodes Used to Measure the Speed of Electroless Plating

HITACHI BORDEN CHEM. PROD. INC.

British Appl. 2,250,095A

Apparatus for measuring the deposition speed of electroless plating consists of a sensor having a pair of electrodes opposed to each other, a sensor drive circuit, a processing circuit, and a display circuit. The pair of electrodes each has a noble metal conductor of Pt, Pd, Au or Cu, and a non-conductor of alkali-proof non-conductive material such as epoxy resin.

Process for Monitoring Radioactive Ruthenium

BRIT. NUCLEAR FUELS P.L.C.

European Appl. 479,466A

A process for monitoring the concentration of volatile radioactive Ru in a gas stream involves removing particulates from the gas stream by filtration, passing through a glass packed column with a counter-flow of aqueous NaOH solution to dissolve volatile Ru, collecting the liquid, and then using a collimated detector to detect γ emissions.

Gas Sensitive Element for Detecting Oxygen and Ozone

OKU SEISAKUSHO K.K. *Japanese Appl. 4/62,462*

A gas sensitive element consists of a La fluoride layer on the gate insulating film of an MOS transistor, and an electrode layer of Pt and Pt black on the La fluoride layer, and is subjected to treatment with steam/ N_2 before use. The gas sensitive element is used for gas sensors sensitive to O_2 and ozone, and as a result of the steam treatment shows improved recovery characteristics after sensing gas.

Gas Sensor for Detection of Hydrogen Sulphide or Ammonia

TOTO K.K. *Japanese Appl. 4/62,466*

A gas sensor consists of a solid state La fluoride electrolyte, on the surface of which are a reference electrode of Sn plus SnF_2 or Au, and a Pt, Pd or Ir detection electrode. H_2S or NH_3 can be detected with high sensitivity by the gas sensor at ordinary temperatures, resulting from a change in ion activity near the detection electrode-electrolyte interface when these gases are present.

Selective Hydrocarbon Gas Detector

JAPAN ELTRN. CONTROL SYST.

Japanese Appl. 4/74,954

A hydrocarbon gas detector has an insulating base plate, a gas sensitive element on one side formed by burning a mixture of Sn oxide and Pd chloride, electrodes, and a heater for the gas sensitive element on the other side of the base plate. Preferably the gas sensitive element is formed by adding at least 5 wt.% of Pd chloride to Sn oxide, and the heater heats the element to near $400^\circ C$. The detector is used to detect hydrocarbon gases such as butane.

Manufacture of a Metal Light Shielding Membrane

SHARP K.K.

Japanese Appl. 4/90,501

A light transmitting substrate has multiple coloured membranes, and a negative resist containing Pd, Ag or their alloys coated on the coloured membrane region. The negative resist is exposed to light coming from the back of the substrate, developed, and treated by electroless plating to form a light shielding type metal membrane on the resist membrane. Using this method, a metal light shielding membrane can be selectively and efficiently formed in the region between the coloured membranes.

Thermal Flow Sensor with Platinum Thin Film Parts

NIPPONDENSO CO. LTD. *Japanese Appl. 4/95,721*

A thermal flow sensor consists of a heat generator with wiring parts at both ends continuously formed of Pt thin film on the surface of a glass base plate, and a protective film on them having contact holes at their terminal parts. The sensor has strength and is used to detect the suction air flow rate of engines, for example in the electronic fuel injection control system for a gasoline engine.

Oxygen Sensor Containing Platinum and Palladium

JAPAN ELECTRONIC CO. *Japanese Appl. 4/95,765*

An O_2 sensor has a closed-end zirconia cylindrical body with a Pt catalyst layer for oxidation on the outer surface, covered by a protective layer including 0.1–3 wt.% Pd for promoting hydrocarbon oxidation. The sensor is used to give stable control of the air:fuel ratio in internal combustion engines.

Gas Sensitive Element with Improved Recovery Time

OKU SEISAKUSHO K.K. *Japanese Appl. 4/105,057*

A compact gas sensitive element has an insulating layer at the gate part of a field effect transistor, on which is an electrode layer of Pt and Pt black, with a ceramic layer formed on the electrode layer. The element is used to sense O_2 or ozone at ordinary temperature, and has a recovery time of 10–20 min.

Electrochemical Gas Sensor with Fine Platinum Covered Working Electrode

MATSUSHITA ELECTRIC *Japanese Appl. 4/106,466*

An electrochemical gas sensor consists of a working electrode, a counter electrode, and a reference electrode on the surface of an insulating substrate, with a solid-state electrolyte layer covering the electrodes and between them. The surface of the working electrode is covered with fine metal particles of Pt or Au, which increases the reaction area for electrochemical reactions for gas detection, and results in enhanced sensor output or sensitivity. The sensor is used to detect CO , H_2 , alcohol, NO , and S oxides.

Oxygen Gas Sensor Having Solid Electrolyte

TOTO LTD.

Japanese Appl. 4/115,153

An O₂ gas sensor consists of a Pt detecting electrode and a Au, Ag or Sn counter electrode separately positioned on the surface of a LaF₃ solid electrolyte. The counter electrode is inert to O₂ at room temperature, so the electromotive force generated corresponds to the partial pressure of O₂ in the sample gas. The O₂ sensor device is small and has a simpler structure because the counter electrode can be used without shutting off the sample gas.

Dissolved Carbon Dioxide Gas Sensor

TERUMO CORP.

Japanese Patent 92/18,262

A gas sensor for detecting dissolved CO₂ consists of a CO₂ gas permeable outer tube containing an electrolytic aqueous solution which is reactive with CO₂ gas, and a Pt operating electrode in contact with the solution. The gas sensor is for use in catheters.

Metal Oxide Gas Sensor with Platinum Electrodes

ENERGIEVERSORGUNG SUEDSACHSEN A.G.

German Appl. 4,037,528

A gas sensor is prepared by depositing a thin Pt film on one side of a thin Al₂O₃ substrate and using it to define a pattern for a heater and electrodes, depositing a passivation layer, then a Sn oxide based sensitive layer, and heat treating. The sensors are used for measuring O₂ concentration in a gas, and are more reproducible, stable over a long period, and have higher sensitivity.

Voltammetric Determination of Higher Fatty Unsaturated Acids

DON UNIV.

Russian Patent 1,649,410

A method for determining higher fatty unsaturated acids involves recording voltamperogrammes over the range 0–(–2.2)V, at pH 6.4–6.7, in dimethyl formamide solution containing 0.15–0.01 mol/l tetraethyl ammonium bromide, and using a Pt microelectrode. Use of a Pt microelectrode instead of a Hg electrode increases the electrochemical activity of the unsaturated acids and provides a linear relationship between the limiting current value and acid concentration within a specified range.

JOINING

Platinum Solder for Manufacturing Heated Cathodes for X-Ray Tubes

LICENTIA PATENT-VERW. G.m.b.H.

German Appl. 4,035,361

A spiral W heating element is fixed to a cathode using a Pt solder and spot laser beam irradiation at the connection ends, under an Ar atmosphere. The process is used to manufacture heated cathodes for cathode ray tubes, especially X-ray tubes. High temperature support and connection of the W spiral is achieved without danger or damage.

HETEROGENOUS CATALYSIS

Catalyst for Decomposing and Deodorising Ozone

NIPPON SHOKUBAI CO. LTD.

European Appl. 479,159A

An ozone decomposition catalyst consists of a thin film containing Mn oxide, Pd metal and/or a Pd compound on a support, and is prepared by coating a slurry containing these components and an alumina sol as binder onto the support. The catalyst has long life, high activity for ozone decomposition, and high deodorising ability in the presence of ozone.

Easily Prepared Three-Way Catalyst Composition

NGK INSULATORS LTD.

European Appl. 485,180A

A three-way catalyst composition for internal combustion engine exhaust gas purification consists of a high silica zeolite with a Si:Al ratio of 40 or more, ion exchanged with Pt, Pd, Rh, Ir and/or Ru, and a heat resistant oxide such as Al₂O₃, TiO₂, ZrO₂, SiO₂ or others containing Pt, Pd, Rh, Ir and/or Ru.

Exhaust Purification Catalyst for Use with a Lean Burn Engine

TOYOTA JIDOSHA K.K.

European Appl. 488,250A

Exhaust gas containing NO_x and excess O₂ is purified by contact with a catalyst containing Pt, Pd and/or Rh, on a carrier consisting of an oxide or complex oxide of La, Ce, Pr, Nd and/or Sm, and/or Ti, Zr and/or Hf. The catalyst is particularly produced for a lean burn engine, and can be used to remove NO_x, CO and hydrocarbons over a wide temperature range.

New Catalyst for Purification of Diesel Engine Exhaust

NIPPON SHOKUBAI CO. LTD.

European Appl. 488,347A

A catalyst for diesel exhaust purification consists of a refractory three-dimensional structure loaded with 10–300 g/l ZrO₂, dispersed on which are up to 6 g/l Pd and/or up to 3 g/l Rh, with a wt. ratio of Pd and/or Rh to ZrO₂ of 0.001:1–0.2:1. The catalyst may further contain Au, Ag, an alkali metal and/or an alkaline earth metal.

Three-Way Catalyst for Treating Engine Exhaust

FORD FRANCE S.A.

European Appl. 488,514A

A three-way catalyst is prepared by impregnating an Al₂O₃ substrate by incipient wetness with an aqueous solution of pH < 4 containing 1–3 wt. % of a Pt group metal such as Pt, Pd, Rh or Ir and 10–120 wt. % of a water soluble alkyl or aryl acid, then drying and calcining. The catalyst has an impregnation layer of raft-like particle structures having increased metal density resulting from nesting of small and large metal particles in a given volume.

Oxidation Catalyst for Hydrocarbon Conversion

FORD FRANCE S.A. *European Appl.* 488,515A

An oxidation catalyst is prepared from a carrier such as a cordierite honeycomb, having an Al_2O_3 support, by impregnating with 1–5 wt.% Pt, then impregnating with an organo Ti compound which decomposes to a discontinuous TiO_2 phase covering up to 40% of the catalyst surface, and drying and calcining. The catalyst may also contain CaO , ZrO_2 or Fe_2O_3 . The catalyst is used to treat hydrocarbons in vehicle exhaust gases emitted during an engine cold start.

Noble Metal Catalyst for Hydrogen Production by Photolysis

ENIRICERCHÉ SPA. *European Appl.* 492,698A

H_2 is produced by photolysis of H_2O in the presence of a noble metal catalyst and a TiO_2 semiconductor, and optionally a Ru oxide catalyst is included in the aqueous suspension to enhance O_2 formation. The noble metal catalyst consists of Pt, Pd or Rh supported on SiO_2 , Al_2O_3 , or the TiO_2 semiconductor, and is prepared by ion exchange or impregnation.

Palladium Catalyst for Oxidation of Combustible Gases

N.E. CHEMCAT CORP. *European Appl.* 493,803A

An oxidation catalyst consists of 3–100 g/l Pd supported on a composite oxide powder of 4–19 wt.% SiO_2 , 3–10 wt.% boron, and balance Al_2O_3 . The powder may be formed into a moulded article such as pellets, or the catalyst may be supported on a ceramic or metal material. The catalyst has a prolonged life at 800°C or above, and is used for oxidising gaseous fuels or exhaust gases containing combustible gases.

Catalytic Removal of Nitrogen Oxides from Exhaust Gases

AGENCY OF IND. SCI. & TECHNOLOGY
European Appl. 494,388A

Removal of NO_x from exhaust gases is effected by contact with at least one catalyst, for example a polyvalent metal phosphate, in an atmosphere containing excess O_2 and in the presence of a hydrocarbon or O-containing organic compound, and preferably by further contact with an oxidation catalyst which may be Pt, Pd, Rh, Ir or Ru on a porous support. The catalyst gives efficient removal of NO_x from exhaust gases from industrial equipment such as boilers and so on.

Noble Metal-Titania Catalyst for Diesel Exhaust Gas Purification

NIPPON SHOKUBAI CO. LTD.
European Appl. 494,591A

A catalyst for diesel exhaust purification consists of 0–6 g/l Pt, 0–6 g/l Pd or 0–3 g/l Rh deposited or dispersed on 5–200 g/l TiO_2 which is deposited on a refractory 3-dimensional carrier; and optionally may contain Au, Ag, a rare earth, alkali, or alkaline earth metal.

Steam Reforming Catalyst Containing Rhodium and/or Ruthenium

A. IGARASHI *European Appl.* 495,534A

A steam reforming catalyst consists of 0.1–5 wt.% Rh and/or Ru supported on a partially stabilised zirconia carrier containing an Y oxide, MgO_2 or Ce oxide component as a stabiliser for the zirconia. The catalyst is used for steam reforming of hydrocarbons, and has high activity even at <500°C, high heat resistance, high mechanical strength, long life, and can be used at low steam:C ratio. A H_2 production plant for fuel cells or a small sized H_2 production plant are suitable uses for the catalyst.

Palladium Catalyst for Exhaust Gas Purification

ROVER GROUP LTD. *World Appl.* 92/4,965A

A catalyst used in the purification of motor vehicle exhaust gases consists of a partially reduced Pd oxide component on a support which is an oxide of a Group IIA, IIIA or IVA metal, or an oxide of a lanthanide metal. For example the support may be Y_2O_3 , ZrO_2 , BaCeO_3 , SrCeO_3 , SrZrO_3 , or SrTiO_3 .

Catalytic Diesel Exhaust Particulate Filter

ENGELHARD CORP. *U.S. Patent* 5,100,632

A diesel exhaust particulate filter consists of a high-temperature resistant filter element having porous walls, the surfaces of which have a catalyst consisting of a mixture of Pt group metal(s) and alkaline earth metal oxide(s). The catalyst is, for example, 5–150 g/ft² Pt/Rh at 5:1 ratio, and 30–1500 g/ft² Mg oxide. The soot particulates are collected on the surfaces of the walls where they are continuously removed by burning, and excessive build-up of particulates on the filter is avoided.

High Durability Three-Way Catalysts Containing Palladium and Rhodium

ALLIED-SIGNAL INC. *U.S. Patent* 5,116,800

High durability catalysts for reducing the amount of hydrocarbons, CO and NO_x in automotive exhaust gas consist of (a) $\delta\text{-Al}_2\text{O}_3$ support and optionally zirconia, (b) a promoter of Ba oxide and optionally La oxide deposited on the support, (c) an optional overlayer of Al_2O_3 and optionally zirconia, and (d) 0.01–0.9 wt.% Pd and 0.005–0.3 wt.% Rh deposited on the support and/or overlayer. The catalysts do not include Ce oxide, but show durability comparable to that of a catalyst containing Ce oxide.

Zeolite Catalyst with Supported Alloy Fine Particles

SHIN GIJUTSU JIGYODAN *Japanese Appl.* 4/63,140

A zeolite catalyst for treatment of waste gases is preferably prepared by ion-exchange with at least 2 metals from Pt, Pd, Rh, Ir, Co or Cu, then reduced, to give supported alloy fine particles. A catalyst can be obtained having alloy fine particles composed of several metals, which are highly dispersed in the zeolite.

Exhaust Purification Catalyst Containing Platinum, Palladium, Rhodium and Iridium

NISSAN MOTOR CO. LTD. *Japanese Appl. 4/74,534*

A catalyst for internal combustion engine exhaust gas purification consists of a base material such as cordierite, a first layer of Al_2O_3 containing Pt and/or Pd, a second layer of Al_2O_3 containing Rh supported on Zr oxide, and a third layer of Al_2O_3 containing Ir. The catalyst shows high efficiency for removal of NO_x in reducing and oxidising atmospheres, without deterioration of the heat-resistance of the catalyst.

Three-Way Catalysts Containing Alkoxysilane Compounds

TOYOTA JIDOSHA K.K. *Japanese Appl. 4/74,535*

A three-way catalyst is prepared by supporting a noble metal on the surface of Al_2O_3 , and then depositing an alkoxysilane, alkoxylalkylsilane or alkoxylsilicone, and heating. The catalyst is used to remove CO, hydrocarbons and NO_x from internal combustion engine exhaust gas, and can inhibit H_2S generation by reducing S compounds in the gas with H_2 or hydrocarbon adsorbed on the catalyst.

Activated Catalyst for Ozone Decomposition

MATSUSHITA ELEC. IND. K.K. *Japanese Appl. 4/74,538*

An ozone decomposition catalyst consists of a honeycomb semiconductor porcelain provided with an electrode part made of a thermistor material such as Ba titanate, and Pt, Pd, Au or Ag supported on the surface. The catalyst is activated by supplying electricity to raise the temperature to $>100^\circ\text{C}$ for a short time. Catalyst activation and regeneration and continuous decomposition of ozone can be carried out with high efficiency.

Catalyst for Decomposition of Nitrogen Oxides

AGENCY OF IND. SCI. TECH. *Japanese Appl. 4/78,442*

A catalyst having high activity for decomposition of NO_x consists of Pt or Pd and/or TiO_2 , ZrO_2 or SnO_2 supported on a zeolite containing an alkali metal, alkaline earth metal or proton, and Al and Si oxides, with partial or whole substitution at the metal site by Ti^{4+} , Zr^{4+} or Sn^{4+} .

Efficient Removal of Nitrogen Oxides from Exhaust Gases

NIIPPON SHOKUBAI K.K. *Japanese Appl. 4/83,516*

Efficient removal of NO_x from exhaust gases emitted from automobile internal combustion engines, boilers and industrial plant involves passing the exhaust gas and a fuel over a first catalyst layer to decompose the fuel into 2–4C unsaturated hydrocarbons, then introducing the exhaust gas together with the hydrocarbons to a second catalyst layer to decompose and remove NO_x in an oxidative atmosphere. The first catalyst layer is at least one oxide from Al, Si, zeolite, Ti and Zr, and the second catalyst layer consists of at least one of Pt, Pd, Ni, Cu and Co on zeolite or a non-alumina silicate.

New Catalyst for Removal of Carbon Particles from Diesel Exhaust

CATELER KOGYO K.K. *Japanese Appl. 4/87,627*

A new catalyst for treatment of diesel engine exhaust consists of a TiO_2 support, a catalyst supporting layer on the surface of the support, and a catalyst comprising a Pt group metal (for example Pt) and Mo loaded on the support layer. The catalyst is used to remove C particulates containing soluble organic fractions, hydrocarbons and CO from diesel engine exhaust.

Three-Way Catalyst with Spinel Support

TOYOTA JIDOSHA K.K. *Japanese Appl. 4/94,735*

A waste gas purification catalyst is prepared by adding Mg and Al alkoxide to an aqueous solution containing a precious metal salt (for example Pd nitrate) and triethanolamine at 1:20 to 1:3 ratio, separating the resultant sol, drying and firing. The precious metal can be highly dispersed in the spinel support, MgAl_2O_4 , formed from the Mg and Al alkoxide, giving the catalyst higher activity. It is used to remove NO_x , CO and hydrocarbons from combustion exhaust, and can reduce NO_x even in excess O_2 .

Removal of Carbon Monoxide, Oxygen and Nitrogen Oxides from Waste Gases

ALPHACREST K.K. *Japanese Appls. 4/100,519–20*

Waste gases such as combustion exhaust containing CO and O_2 or car exhaust containing O_2 are contacted with magnetite, at $200\text{--}400^\circ\text{C}$, to remove both CO and O_2 , or O_2 only, after which harmful gases like NO_x can be removed with a Pt or Pd catalyst.

Exhaust Purification Catalyst with Wide Temperature Range of Operation

MATSUSHITA ELEC. IND. *Japanese Appl. 4/104,838*

A catalyst for exhaust gas purification consists of a ceramic structure with a catalyst layer on the surface consisting of a mixture of fine ceramic powder of at least one of Al_2O_3 , Ce oxide or zirconia, an oxidising catalyst of perovskite type complex oxide and grains of at least one of Pt, Pd or Rh, and an inorganic binder. The catalyst has excellent activity for decomposing uncombusted hydrocarbons and CO in exhaust from various combustion devices, to CO_2 and H_2O .

Dual Catalyst System for Cleaning Exhaust Gas

BABCOCK-HITACHI K.K. *Japanese Appl. 4/118,028*

A system for removal of CO and NO_x from exhaust gas consists of a portion of an oxide catalyst containing Pt, Pd or Rh to oxidise CO, downstream of which is a packing portion containing Ti, W, V or Mo oxides or $\gamma\text{-Al}_2\text{O}_3$ to catch any noble metals released, then a device to introduce NH_3 , and finally a portion of catalyst containing an oxide of Ti, W, V or Mo to remove NO_x . The system can be used to clean the exhaust gas of a combined cycle system of gas turbine and boiler for waste heat recovery.

Honeycomb-Shaped Catalyst with Improved Heat Resistance

BABCOCK-HITACHI K.K. *Japanese Appl.* 4/118,049

A honeycomb catalyst is produced by immersing a honeycomb base in a mixture of boehmite slurry, Pd nitrate, La nitrate and TiO₂ sol to give 60 g/l of coating, then firing at high temperature to give 30 g/l Al₂O₃, 2 g/l Pd, 8 g/l La₂O₃, and 2 g/l TiO₂.

Catalysts for Purifying Exhaust Gases from Alcohol-Fuelled Engines

NIPPON SHOKUBAI CO. LTD. *Japanese Appl.* 4/126,547

Catalysts for purifying exhaust gases consist of three-dimensional structures coated with 50–250 g/l refractory inorganic oxide, preferably activated Al₂O₃, 0.05–10 g/l of oxides of at least one of Ti, Zr, Cr, W, Mn, Fe, Ni, In, Sn, Tl and Bi, 0.05–15 g/l Pd and 0.05–20 g/l Ag. The catalysts are used for purifying exhaust gases from internal combustion engines using alcohol-containing fuels, and have the ability to oxidise and remove unburnt alcohols and aldehydes even at low temperatures.

Palladium-Silver Catalyst for Use with Alcohol Fuelled Engines

NIPPON SHOKUBAI CO. LTD.

Japanese Appl. 4/145,943

A catalyst for internal combustion engine exhaust gas purification consists of a three-dimensional carrier, 50–250 g/l of a heat resistant inorganic oxide, preferably γ -Al₂O₃, 0.05–15 g/l Pd and 0.05–20 g/l Ag, and 0.05–10 g/l of an alkali metal oxide or alkaline earth metal oxide. The catalyst is for engines using alcohol or gasoline/alcohol as the fuel, and removes unreacted alcohol and aldehyde in the exhaust gas.

Regenerable Catalyst System for Decomposition of Nitrogen Oxides

OSAKA GAS CO. LTD. *Japanese Appl.* 4/161,230

A NO_x decomposition catalyst consists of at least one of Pt, Rh and Ir supported on a porous carrier of at least one of γ -Al₂O₃, zirconia and Ti oxide having a defined pore diameter distribution range. A system using the catalyst for NO_x decomposition also includes a regenerating process which involves contacting the catalyst with at least one of H₂, CH₄ and CO. The system can decompose NO_x in exhaust gas at relatively low temperature (<100°C) using small devices.

Three-Way Catalyst with Separate Platinum- and Rhodium-Containing Layers

NISSAN MOTOR CO. LTD. *Japanese Appl.* 4/161,248

An exhaust gas purification catalyst consists of a monolithic support coated with a metal oxide coating layer containing Pt and/or Pd, itself coated with another metal oxide coating layer containing Rh. The catalyst is used to remove hydrocarbons, CO and NO from combustion exhaust, and has a longer operating life because the Rh particles do not react easily with Al₂O₃ at high temperatures.

Monolithic Three-Way Catalyst with Separate Precious Metal Layers

NIPPON MOLYBDENUM K.K. *Japanese Appl.* 4/161,249

A three-way catalyst consists of a monolithic support loaded with three catalyst layers of active Al₂O₃; the first containing Pd and possibly Ce oxide, the intermediate layer containing no precious metals, and the upper layer containing Pt and/or Rh.

Composite Catalyst System for High Temperature Catalytic Combustion

KOBE STEEL LTD. *Japanese Appl.* 4/161,253

A composite combustion catalyst has a first catalyst at the mixed gas inlet which consists of a heat-resistant honeycomb structure loaded with 50 g/l Pd, and 50–200 g/l La oxide and/or Ba-containing Al₂O₃, and a second catalyst downstream which consists of a honeycomb mould of Mn-substituted layered aluminate containing Sr, La, Mn and Al.

Ruthenium Catalyst for Disposing of Chlorinated Aromatics

BAYER A.G.

German Appl. 4,101,528

Polyhalogenated aromatics such as di-halogenated benzene are reacted with mono-halo or non-halogenated aromatics at 200–600°C, in the presence of a catalyst preferably consisting of active C containing Ru or its compounds and optionally compounds of Cu, Ag or Zn. The halogen from the poly-halogenated reactant is exchanged with the H from the other reactant. This process is useful for disposing of waste products containing highly chlorinated benzenes, naphthalenes and biphenyls, with simultaneous production of PhCl and other useful products.

FUEL CELLS

Noble Metal-Chromium-Copper Electrocatalyst for Oxygen Reduction

UNIV. QUEBEC A MONTREAL *U.S. Patent* 5,126,216

An electrocatalyst having high activity for O₂ reduction consists of a ternary alloy of a Pt group metal, Cr and Cu, supported on an electrically conductive substrate such as C black. The catalyst is used for an O₂ reduction cathode, which can be used in an acid fuel cell with a sulphuric acid or phosphoric acid electrolyte. The catalyst has high mass activity, corrosion resistance, and relatively low cost, and is useful in fuel cells and other chemical, pharmaceutical, automotive and anti-pollution fields.

Benzaldehyde Manufacture Using a Fuel Cell

TOSOH CORP.

Japanese Appls. 4/92,375

and 4/99,188

A process used to manufacture benzaldehyde and benzoic acid involves reacting toluene with an oxidising agent at the Pd-containing anode of a fuel cell. Benzaldehyde and benzoic acid can be produced easily from toluene using the fuel cell. Benzaldehyde is produced with high selectivity.

Improved Activity Platinum Alloy Catalyst for Fuel Cell Electrode

TANAKA KIKINZOKU KOGYO K.K.

Japanese Appl. 4/135,642

A Pt alloy catalyst used for a fuel cell electrode consists of a C support loaded with 40–90 at.% Pt, 30–5 at.% Mn, and 30–5 at.% Ni or Co. The catalyst is prepared by reducing Pt ions in solution to deposit Pt on a C support, and then adding a solution containing organic acid-amine salts of the other elements to alloy with the Pt on the C support.

CHEMICAL TECHNOLOGY

Treatment of Spent Catalysts Containing Ruthenium and Cerium

BRITISH PETROLEUM CO. P.L.C.

European Appl. 489,494A

A spent solid catalyst containing Ru and Ce is treated for reuse by dissolving in concentrated HCl or HBr, adding concentrated HNO₃, heating at 50–150°C to drive off HCl or HBr, and diluting the solution with H₂O to obtain a product solution for use in the preparation of fresh catalysts.

Removal of Ruthenium from Aqueous Solution by Anodic Oxidation

HITACHI LTD.

Japanese Appl. 4/120,499

A method for removing Ru from aqueous solutions involves anodic oxidation to convert the Ru into Ru tetraoxide which remains near the anode, and is converted into insoluble Ru by self-decomposition. This method can remove Ru from aqueous solutions effectively, simply and with high efficiency, and can also remove Ru effectively from acid waste solutions.

GLASS TECHNOLOGY

Platinum Alloy Bushing for Spinning Glass Fibre

NIPPON ELECTRIC GLASS *Japanese Appl. 4/83,731*

Bushing for spinning glass fibre consists of a Pt alloy bushing plate having circular protruding nozzles at the bottom. Very small protrusions and recesses are formed in the outer surface of each nozzle to give a surface roughness of 0.5–50 µm.

Double Layer Platinum Alloy Bushing Plate for Glass Fibre Spinning

TANAKA KIKINZOKU KOGYO K.K.

Japanese Appl. 4/114,928

A bush for glass fibre spinning has a bushing plate consisting of a double layer composite sheet with a Pt alloy inner surface, and an outer surface of Pt-Au alloy containing 1–15% Au; and also present are a large number of nozzles formed by deep drawing from the Pt alloy side of the bushing plate. The bush prevents breakage of glass fibres during spinning, and has good wettability to molten glass.

ELECTRICAL AND ELECTRONIC ENGINEERING

Clad Bonding Wire for Semiconductor Device

TANAKA DENSHI KOGYO

British Appl. 2,248,416A

A wire used for a semiconductor device consists of a core of Pt, Pd, Au or Ag or an alloy of these, and a cladding of Pt, Pd, Au or Ag or an alloy of these different from the core. The ratio of the core diameter to the outer diameter of the cladding is preferably 15–60% or 85–99%. The wire is capable of forming a neck portion of equal or higher strength than other portions, and of forming a ball which will not crack a semiconductor package.

Manufacture of a Multilayer Thin Film Containing Cobalt and Platinum or Palladium

GOLD STAR CO. LTD.

European Appl. 479,109A

A process for manufacture of a thin multilayer magneto-optical recording medium in a short time involves deposition of Co and Pt or Pd on a moving baseplate. Co and Pt or Co and Pd are arranged on a target with isolating plates between the element regions and a voltage is supplied so that Co and Pt or Pd are alternately sputtered on the baseplate, which is moved horizontally over the target at a constant speed.

Magnetic Thin Film Recording Medium

KOMAG INC.

European Appl. 479,232A

A recording medium for horizontal recording consists of an Al alloy substrate, a 5–20 µm thick Ni-P alloy layer, an amorphous Ni-P layer less than 100 nm thick and a sputtered magnetic layer formed by vacuum deposition consisting of an alloy of 8–15 at.% Pt, 5–10 at.% Ni, 3–8 at.% Cr, 75 at.% or more Co.

Coating Method for Bonding in Superconductive Thin Film Devices

QUANTUM MAGNETICS I.

U.S. Patent 5,110,034

A superconductor electrical lead is bonded to a superconductive thin film pad of Nb or Ta on a substrate by forming a thin ribbon of Nb or Ta, coating the contact surface of the pad and/or the ribbon with a very thin layer of Pt, Pd or Au, contacting the surfaces, and ultrasonically bonding the thin ribbon to the bonding pad. The method is used for connections to SQUID sensors, superconducting thin film transformers or other superconducting thin film circuits, especially those involving high levels of integration.

Oxide Superconductors Containing Platinum or Palladium

HITACHI CHEMICAL K.K.

Japanese Appls. 4/65,342 and 4/77,316

Superconductors are based on oxides containing Bi, Sr, Ca and Cu as the main components, with part of the Bi replaced by Pb, and also contain (a) 0.1–2 wt.% Pt, or (b) 10–35 wt.% Ag and 0.1–2 wt.% Pd. Preparation is by sintering a homogeneously mixed powder of the components.

Palladium Thin Film for Capacitors

TANAKA KIKINZOKU KOGYO *Japanese Appl.* 4/65,375

A Pd thin film is formed on a glass or ceramics matrix by applying a mixed solution containing an organo-Pd compound, a resin as organic binder and an organic solvent, and drying and firing to form a Pd thin film up to 1 μm thick. The Pd film is used for making capacitors having a dense and uniform Pd film.

Photomagnetic Recording Medium with Large Kerr Effect

SANYO ELECTRIC K.K. *Japanese Appl.* 4/67,449

A photomagnetic recording medium consists of a film of alternately laminated layers of Pt and PdCo, where the PdCo layers have the highest Co concentration at the interfaces with the Pt layers. This results in a recording film having a large Kerr effect and large vertical magnetic anisotropy, which can be manufactured simply without any special equipment. The photomagnetic recording medium can record, replay and erase information using light from a light source such as a semiconductor laser.

Thallium Type Superconductor Containing Iridium

SEIKO EPSON CORP. *Japanese Appl.* 4/67,691

A polycrystalline Tl series superconducting material consists of Tl-M-Cu-O where M is an alkaline earth metal and has Ir added at 0.5–8.0% of the Cu present. The material is produced by preparing a target, using the target to produce a thin film by RF magnetron sputtering, annealing at 880°C and subjecting to O₂ plasma treatment. The superconducting material can be obtained economically, has high critical current density and a smooth surface, and can be used for electromagnetic sensors, superconducting transistors, current controlling devices and superconducting magnets.

Magnetic Head Having Improved Corrosion Resistance

NEC CORP. *Japanese Appl.* 4/69,808

A magnetic resistance effect head consists of a ferromagnetic magnetic resistance effect element and an amorphous soft magnetic layer formed on it through a non-magnetic conductor layer. The amorphous soft magnetic layer can be CoTaMo with 2–6 at.% Rh or 1–6 at.% Pt, or preferably CoZrMo with 2–6 at.% Pt. The reliability and corrosion resistance of the amorphous soft magnetic layer can be improved.

Bismuth Superconductive Material Containing Iridium

SEIKO EPSON CORP. *Japanese Appl.* 4/74,716

A superconductive material consists of Bi-Sr-Ca-Cu-O or Bi-Pb-Sr-Ca-Cu-O plus Ir, with an Ir:Cu ratio of 0.005–0.08. The composition suppresses deposition of the secondary phase at the grain boundary which hinders the electric current flow. The material is used as a superconductive transistor, a current control element, or a superconductive magnet.

Easily Handled Magneto-Optical Recording Disk

SHARP K.K.

Japanese Appl. 4/76,834

A magneto-optical recording disk consists of a transparent disk substrate laminated with a first transparent dielectric layer, a magneto-optical recording medium, a second transparent dielectric layer, and an Al-Pd group alloy reflecting film preferably having up to 1:9 Pd:Al atomic ratio, and with the Pd:Al composition ratio increasing from the centre to the periphery. The recording disk provides easy handling and avoids having a write power difference at the inner circle and periphery.

Improved Output Magnetic Recording Medium

MATSUSHITA ELEC. IND. K.K. *Japanese Appl.* 4/82,011

A magnetic recording medium has a Co-Pt-M-O perpendicular magnetic recording film where M is 0.5–5 at.% Zn, Cd or Mg, and the amount of O present is 5–15 at.%. The magnetic film is preferably formed on a polymer film by sputtering with a 10–40° incident angle. The magnetic recording medium is for high density recording, and has improved output power.

Conductor Paste for Ceramic Wiring Plates

NIPPON CEMENT K.K.

Japanese Appl. 4/88,067

A conductor paste contains (in proportion to Ag powder + Pd powder) 70–95 wt.% Ag powder, 5–30 wt.% Pd powder, 0.1–2 wt.% Mn oxide or MnCO₃ powder, 0.2–3 wt.% Cr₂O₃ powder, 0.2–5 wt.% glass frit, and an organic vehicle. The conductor paste has excellent wetting and high initial adhesive strength, and is used for ceramic wiring plates in electronic circuits, particularly for low temperature-sintered multilayer wiring plates.

Ceramic Substrate for Thick Film Hybrid Integrated Circuits

NOK CORP.

Japanese Appl. 4/92,879

A ceramic substrate has a patterned conductor layer consisting of a solder pad comprising a Ag-Pt or Ag-Pd conductor layer, a Pt or Pd conductor layer connected to enclose the solder pad, and a protective layer coated on the patterned conductor layer.

Manufacture of Oxide Superconductors Containing Platinum

HITACHI CHEM. CO. LTD.

Japanese Appls. 4/104,940-43

Oxide superconductors containing Tl, Ba, Ca, Cu, Sr (optional), O and (a) 0.1–5 wt.% Pt and 1–25 wt.% Ag, or (b) 0.1–5 wt.% Pt and/or Pd are manufactured by mixing the components, and sintering at 800–900°C in flowing air, static air or a low O₂ atmosphere. This method provides Tl-Ba-Ca-Cu-O or Tl-Ba-Sr-Ca-Cu-O based superconductors which maintain a high critical current density (J_c) on application of a magnetic field, and show less gradation in critical temperature and current density with time.

Ruthenium Composition for Thick Film Resistors

SUMITOMO METAL MINING CO.

Japanese Appl. 4/125,901

A composition for thick film resistors consists of a non-reduction type of glass frit mixed with 15–75 wt. % of a Ru compound conductor powder containing Ru, Sr, at least one of Ba, Ca, La, Ce or others, and at least one of Zr, Ti, Hf, Nb and Ta. The composition is stable in a non-oxidising atmosphere and has an improved thermal coefficient of resistance and improved voltage withstanding characteristics.

Polyorganosiloxane Composition Useful as an Adhesive

SHINETSU CHEM. IND. CO. LTD.

Japanese Appl. 4/126,787

A polyorganosiloxane composition contains an organopolysiloxane, an organohydrogen polysiloxane, an organohydrogen silane or organohydrogen siloxane, a cationic compound, and a Pt group metal catalyst. The composition is cured by low temperature heat treatment, at 100–150°C for 10–30 min and gives an elastomeric cured product which has excellent adhesion to metals, plastics and glass.

UV Curable Ink for Thin Film Fine Wiring Circuit Production

TANAKA MATSUSEI K.K. *Japanese Appl.* 4/145,172

A new UV curable ink contains as major components a noble metal organic compound, a base metal organic compound, an organic binder, and a solvent, where the binder is a UV curable resin. The noble metal organic compounds are salts of Pt, Au or Ag with organic acids. A thin film ultra-fine wiring circuit is produced by applying the ink to a substrate, photolithoetching, then heating.

Flame Resistant Polyamide Composition for Mouldings

RHONE-POULENC CHIMI *French Appl.* 2,665,171

A flame resistant polyamide composition preferably contains at least 80 wt. % polyamide, Pt at 0.001–100 parts wt. per million parts polyamide, and preferably contains 0.05–3 wt. % of a cyclic or linear polysiloxane. The composition is used for production of mouldings having good flame resistance, especially for tightening bushings for electrical wires or cables.

Palladium Coated Printed Wiring Boards with Improved Solderability

ISHIHARA CHEM. CO. LTD. *German Appl.* 4,201,129

A printed wiring board having a Pd coating on at least the Cu parts for solder-mounting components is manufactured by forming a Cu pattern on the Cu pattern, depositing a Pd coating on the Cu pattern parts by electroless plating or electroplating, removing the plating resist layer, etching the Cu to be removed, and forming a soldering resist pattern.

MEDICAL USES

Controlled Release Anti-Cancer Compositions

UNITIKA LTD.

European Appl. 486,998A

Pharmaceutical compositions contain 5–60 wt. % of a Pt-containing anti-cancer agent, preferably cisplatin or carboplatin, bound to deacetylated chitin. The chitin is 30–90% deacetylated, and is in the form of fibres, powder, sponge, gel, film, sheet or granules. The compositions provide controlled release of the anti-cancer agent over long periods, for example up to 4 months, in the presence of lysozyme.

New Anti-Microbial and Anti-Neoplastic Platinum Complexes

WARNER LAMBERT CO.

U.S. Patent 5,116,831

A new square-planar, cis Pt(II) four-co-ordinate complex includes aminoalkyl-substituted cycloalkylamine and mono- or bidentate ligands. For example, (SP-4-3)-(2-aziridine-methanamine-N1,N2) dichloro Pt is specifically claimed. The new complexes have antimicrobial activity, activity against L1210 and P388 murine leukaemia cell lines, and can be administered as anti-neoplastic agents.

Production of Platinum Green Complexes

AGENCY OF IND. SCI.

Japanese Appl. 4/108,796

Pt green complexes are produced by reacting cis-diododiammine Pt with uridine, thymidine, uracil, thymine, or others, in the presence of a Ag salt and oxidising agent, in a solvent at pH 1–8, and at 0–100°C.

New Platinum Anti-Tumour Drugs with Low Toxicity

SANGI K.K.

Japanese Appl. 4/112,832-33

New anti-tumour drugs contain 0.001–30 wt. % Pt supported on hydroxyapatite or chloroapatite, where the Pt is supported by adsorption and/or ion exchange methods. The anti-tumour hydroxyapatite and chloroapatite can be prepared by a simple method, and can be prepared to common dosage forms.

New Platinum Complexes for Treatment of Tumours

SEIKAGAKU KOGYO CO. LTD.

Japanese Appl. 4/135,485

New Pt complexes for treatment of tumours are prepared from a cis-dichlorodiamine Pt(II) complex or its hydroxy derivative by reaction with a polysaccharide and superoxide dismutase (SOD) at room temperature, in the dark, for 1–7 days. After this the unchanged Pt complex is dialysed, filtered, and the filtrate is lyophilised to give the new Pt complex. The new complexes are stable in blood, and release free SOD at a moderate rate which prevents renal disturbances caused by release of active oxygen.

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