NEW PATENTS

CHEMICAL COMPOUNDS

Thermally Stable Organic Iridium Compounds

MITSUBISHI MATERIALS CORP.

Japanese Appl. 8/306,667

A novel organic Ir compound is used as an evaporation source for forming dense uniform Ir or Ir oxide thin films, used as wiring for semiconductor devices, by metal organic chemical vapour deposition. This compound is liquid at room temperature and thermally stable, providing a steady evaporation rate.

ELECTROCHEMISTRY

Ruthenium Nanocrystalline Alloy

HYDRO-QUEBEC *World Appl.* 97/4,146A

A nanocrystalline alloy, $Ti_{30+x}Ru_{15+y}Fe_{25+z}O_{30+t}M_u$ (M is at least one of Cr, Mn, V, W, Sb, Pt and Pb; x, y, z, t and u have values such that $x+y+z+t+u=0$) is described. The alloy is inexpensive, stable and is used for cathodes for the electrochemical synthesis of Na chlorate. The cathode H over-potential, measured at 250 mA cm^{-2} and 70°C, is 600 mV, which is 300 mV lower than the soft steel cathodes presently used.

Electrode for Electrolysis

KARPOV PHYS. CHEM. INST. *U.S. Patent* 5,587,058

An electrode for electrolysis has a support of film forming metal (alloy) with a composite coating of oxides of Ir, Ru, Ti and Ta, where the molar ratios (IrO_2 + RuO_2):(TiO_2 + Ta_2O_5) = 1–19:3–1; IrO_2:RuO_2 = 24–4:1; and TiO_2:Ta_2O_5 = 1:0–0.05. This electrode is used in chloralkali cells, for electrosynthesis of chlorates and hypochlorites, sea and waste water electrolysis, etc. It has improved corrosion resistance and improved interface stability to oxidation.

Water Treatment

T. M. SNEE *U.S. Patent* 5,603,843

Water is treated by passing it through an ionisation chamber containing two ion-producing electrodes, at least one being made of plasma-fused Ir-coated Ti. Water passes over the electrodes either in sequence or simultaneously with the current being periodically reversed to change electrode polarity and flush off contaminants. An extra Cu alloy electrode is also used, containing Zn and Al ions to control algae and bacteria. Zn ions reduce Cu staining, and Al ions are used for flocculation.

Electrode for Metal Foil Production

ISHIFUKU KINZOKU KOGYO K.K

Japanese Appl. 8/225,977

An electrode used as an anode for metal surface treatment, and the production and recovery of metal foil, is manufactured by electric discharge machining a Ti substrate with a Pt layer and coating with a solution containing Ir and Ta, to form an alloy layer of Ti, Pt and Ta. Intermediate and outer layers consist of IrO_2 and Ta_2O_5.

Electrode for Coating Valve Metals

TOYO SEIKAN K.K. *Japanese Appl.* 8/269,763

An electrode is produced by applying a catalyst solution containing SiO_2 sol and a Pt group element oxide onto a corrosion-resistant valve metal substrate, followed by drying and firing. This electrode is used for forming a coating of a Pt group element oxide and SiO_2 on a valve metal substrate. The electrode has superior durability as an anode in electrolysis in baths containing dissolved organic matter and has an easily regenerated surface. The catalyst-applied solution shows no precipitation or gelatinisation during storage, giving continuous stability and cost efficiency.

Electrolytic Water Generator

HOSHIZAKI ELECTRIC CO. LTD.

Japanese Appl. 8/309,357

An electrolytic H_2O generator has an electrolyser divided into three cells by a pair of diaphragms; one cell containing a Pt-Ir electrode. Electrolysis is performed between cells 1 and 2 and washing electrolysis between 2 and 3. The generator produces alkali ion H_2O and acid H_2O by electrolysing city H_2O, dilute salt H_2O, etc. Electrolysis of the electrolysed H_2O can be performed efficiently using the Pt-Ir electrode, while effectively removing scale caused by Ca and Mg.

Electrode with Catalytic Action

MIKURO K.K. *Japanese Appl.* 8/311,677

The formation of a catalytic electrode involves sticking an aqueous solution of metal salts consisting of Pt, Ir or Ru to the surface of a metal with a high ionisation tendency and allowing the metal to stand. These electrodes are used in a H_2O electrolysing or a fuel cell device. They are formed without electrolytic plating and labour and costs are reduced.

Anode for Solid Oxide Electrolysis

MITSUBISHI JUKOGYO K.K. *Japanese Appl.* 8/325,775

An anode for solid oxide electrolysis is obtained by forming a dense Pt layer on yttria-stabilised ZrO_2 by electroless plating. A porous body consisting of an electronic conductive perovskite oxide is then laminated onto this Pt layer. The Pt intermediate layer has high electronic conductivity and shows no oxidation even under high temperatures and high oxygen partial pressure. The electroless plating provides good adhesion in the yttria stabilised ZrO_2. The anode electrode has no peeling in electrolysis and is stably actuated on low overvoltage.

Electrode Material for Ion Water Generation

KOBE STEEL LTD. *Japanese Appl.* 9/1,147

An electrode for electrolytic ion water generators consists of a layer of Pt, Ir, Pd or Rh oxide coated on a substrate which has no open holes. An alternative electrode material consists of a plate or foil of Pt, Ir, Pd or Rh laminated on the surface of a substrate. The generator has a non-polar electrode configuration and the electrode has a longer operating life.

Electrochemical Device

MATSUSHITA DENKI SANGYO K.K.

Japanese Appl. 9/38,459

An electrochemical device for NOx decomposition has a cathode comprising a mixture of Pt and an alkaline earth oxide, laminated with an alkaline earth carbonate; a mixture of Pt and an alkaline earth carbonate, laminated with a compound oxide of Pt and an alkaline earth element; a mixture of Pt and a compound oxide of Pt and an alkaline earth metal, or laminated with a $YBa_2Cu_3O_7$-type oxide. NOx is decomposed in excess O_2, at a lower temperature and current density than conventional methods.

ELECTRODEPOSITION AND SURFACE COATINGS

Electroplating with Palladium

DODUCO & CO. G.m.b.H. *European Appl.* 757,121A

An alkaline or neutral bath for electroplating with Pd (alloys) contains 2–25 g l^{-1} of a diamino-dichloro-Pd complex, at least one conductive salt, a buffer substance, a brightener and a wetting agent and H_2O. The bath also contains 0.01–1 mole nitrite (NO_2) per mole of Pd, as an amino-nitrite complex. Highly glossy and ductile layers of Pd (alloy) are produced.

Electroless Plating

KAO CORP. *Japanese Appl.* 8/283,950

Electroless plating for the manufacture of stampers, used in photo-disk production, involves treating a resin surface with a copolymer containing a quaternary ammonium salt residue and an ethylene glycol chain residue at the side chain. The surface is then treated with Sn-Pd activator (for adsorbing catalyst nuclei on the surface) followed by an electroless plating solution to form metal coatings.

Electroless Plating Pretreatment

MATSUSHITA ELECTRIC WORKS LTD.

Japanese Appl. 8/283,951

Electroless plating pretreatment is performed by sticking a Pd catalyst of particle size of 0.01–0.05 μm, onto the surface of a substrate prior to electroless plating. The method is used to prepare printed wiring boards.

Catalytic Filler

HITACHI CABLE LTD. *Japanese Appl.* 8/283,952

A catalytic filler consists of a Ru and a Pd compound adsorbed on the surface of a finely pulverised filler. This allows electroless metal plating deposition by contacting with H_2 or a reducing agent.

Superconducting Thin Film Structure

NEC CORP. *Japanese Appl.* 9/40,497

A high-temperature superconductive thin film structure consists of a Si substrate onto which is deposited a thin film of PtSi, followed by a thin film of $SrRuO_3$ and a high-temperature superconductive thin film, which consists of $LnBa_2Cu_3O_{7-\sigma}$ (Ln = Y, La, Er, Eu, Gd, Dy or Ho) or $Ti_xBa_yCa_zCu_uO_v$ (x:y:z:u:v = 2:2:2:3:10, 1:2:2:3:9 or 1:2:3:4:11).

Platinum Coating

PPV-VERW. A.G. *German Appl.* 1/95/32,170

The formation of a firmly-adhering highly catalytic coating containing Pt on a SiC substrate which contains free Si involves electrolysis of an aqueous H_2PtCl_6 solution containing an alkali(ne earth) compound and a N base, with the substrate as the anode, to deposit Pt on the substrate at room temperature. The coated substrate is then heated in an inert gas at a temperature between the melting point of Pt and 420°C and cooled to room temperature. It is used to coat inside engine chambers, gas turbine blades and exhaust gas catalysts.

APPARATUS AND TECHNIQUE

Conducting Polymer Films for Sensors

UNIV. SOUTHAMPTON *World Appl.* 97/4,464A

Conducting polymer films, with excellent frictional properties, high sensitivity, stability and resistance to temperature and humidity changes, consist of a polymer and an organosulfonate and/or organophosphonate counter-ion. These films can be deposited onto a Pt, Au, C, SnO_2, Cu or doped Si electrode, or electrochemically grown on a substrate. Sensors made from these films may be used to discriminate between different types of beverages and foodstuffs, and to identify malodours and taints.

Alcohol Sensor

MORI SEISAKUSHO K.K. *Japanese Appl.* 9/15,185

An alcohol sensor with high sensitivity consists of a resistance bridge containing an Fe-Pb alloy sensing wire coated with a Pt black-Al_2O_3, litharge-Al_2O_3, or Pt black-litharge-Al_2O_3 catalyst. This is held at 140–160°C for ethyl alcohol detection and 150–200°C for methyl alcohol detection.

Catalyst for Decomposing Hydrogen Peroxide

MEDICAL DEVICE POLYMERS G.m.b.H.

German Appl. 1/95/22,950

A catalyst for decomposing H_2O_2 in aqueous solution consists of a Pt layer deposited by sputtering onto a substrate, such as ceramic. This system is used to care for contact lenses, where the lenses are cleaned and sterilised by an aqueous solution containing 3% H_2O_2. The Pt layer is configured in such a way that sufficient time is allowed for disinfection of the lenses with H_2O_2, while residual H_2O_2, remaining after the disinfection, is decomposed effectively into H_2O and O_2.

Single Crystal Diamond Film

KOBE SEIKO SHO K.K. *German Appl.* 1/96/30,759

The production of large area single crystal diamond films, virtually free of grain boundaries, involves depositing a film of Pt or Pt alloy containing > 50 at.% Pt onto a base substrate of LiF, CaF_2, MgO, NiO, ZrO_2, Al_2O_3, quartz, Si, glass, etc. After heat treatment, a single crystal diamond film is then deposited onto the Pt (alloy) substrate by gaseous phase synthesis. These films are used for electronic devices, heat sinks, surface acoustic wave devices, etc.

HETEROGENEOUS CATALYSIS

Exhaust Gas Purification Catalyst

TOYOTA JIDOSHA K.K. *European Appl.* 754,494A

A catalyst for purifying exhaust gas consists of a heat resistant complex oxide, containing Pt and at least one alkaline earth or Group IIIA element, prepared by the sol-gel method. This catalyst has good heat resistance, which prevents or restricts sintering even in high temperature (> 1000°C) lean atmospheres.

Partial Dehydrogenation of Alkynes

BASF A.G. *European Appl.* 754,664A

Alkenes are prepared by the partial hydrogenation of alkynes in the liquid phase at 20–250°C and 0.3–200 bar H_2 pressure using a Pd catalyst in a solid bed carrier. The catalyst is obtained by tempering the carrier material in air, cooling, coating with metallic Pd under vacuum, shaping and processing into a monolithic catalyst element. Addition of 10–18 ppm CO to the H_2 maintains the selectivity of catalyst.

Combined Adsorber and Light-off Catalyst

GENERAL MOTORS CORP. *European Appl.* 755,714A

A combined adsorption and low temperature light-off catalyst for removal of hydrocarbons, CO and NOx from engine exhaust gases is claimed. It comprises an adsorbing base of zeolite in combination with an oxide selected from Al_2O_3, TiO_2 or ZrO_2, and a mixture of SiO_2:Al_2O_3 in ratio 10:1 to 35:1, and a catalytically active component selected from Pd, Pt, Rh and Ir.

Palladium-Lead Catalyst

ASAHI KASEI KOGYO K.K. *World Appl.* 97/3,751A

A catalyst for continuous production of carboxylic ester from aldehyde, alcohol and O_2 has Pd and Pb supported on a carrier at a Pd:Pb atomic ratio of 3:0.7–1.3. Carboxylic esters can be prepared selectively with fewer by-products, even at high temperature. Pb ions are generated to further the reaction.

Diesel Engine with Trap

CLEAN DIESEL TECHNOL. INC. *World Appl.* 97/4,045A

The operation of diesel engines equipped with diesel traps is improved by adding a Pt group metal composition and a Ce compound to diesel fuel. Exhaust gases with reduced unburned hydrocarbons and less CO are produced. They are then passed through the diesel trap, where the particulates are collected and burned at a lower temperature than is achievable when the Pt group metal or Ce are not present. Emissions of NOx, unburned hydrocarbons and CO are reduced while particulates are controlled and the oxidation of SO_2 to SO_3 is minimised.

Catalyst for Hydrogenation of Aromatics

SHELL CANADA LTD. *World Appl.* 97/5,948A

A catalyst for the hydrogenation of aromatics is prepared by incorporating 0.1–15 wt.% Pt and/or Pd and 2–40 wt.% of an actinide metal onto an acidic carrier, drying and calcining. It is highly active for hydrotreating aromatics to reduce S and/or N containing compounds and hydrocracking processes.

Cyclohexanol and Cyclohexanone Production

KOREA RES. INST. CHEM. TECHNOL. *World Appl.* 97/8,119A

Cyclohexanol and cyclohexanone are produced by oxidising cyclohexane in the presence of an Fe/Pd catalyst with gaseous H_2 and O_2 fed into the reaction medium using a mixture of acetone and acetic acid as the solvent. The catalyst is a mixture of Fe compounds, such as $FeCl_2$, $FeCl_3$, etc., and $PdCl_2$ or $Pd(NO_3)_2$, supported on an Al_2O_3, SiO_2, etc., carrier. Improved catalyst activity and stability are obtained by ligand binding with the Fe catalyst using the solvent mixture of acetone and acetic acid instead of pure acetone. Yields of cyclohexanol and cyclohexanone are increased to 4–12% with fewer by-products and catalyst deactivation is reduced.

Formaldehyde Oxidation

ROCHESTER GAS & ELECTRIC CORP. *U.S. Patent* 5,585,083

A process for the oxidation of formaldehyde to CO_2 and H_2O, which undergoes initiation at –5 to 25°C, involves exposing a gaseous mixture comprising formaldehyde and an O_2 containing oxidising agent to a catalyst. This consists of 1–50 wt.% of noble metal selected from Pt, Pd, Au, Ag and Rh which has been dispersed on 50–99 wt.% of a metal oxide with more than one stable oxidation state, including at least Sn oxide. This process efficiently converts unwanted formaldehyde to non-toxic components without the use of filters or the addition of energy.

Thermally Stable Rhodium Phase

FORD MOTOR CO. *U.S. Patent* 5,597,772

The manufacture of a thermally stable Rh-containing phase of a catalyst system for treating exhaust gases from an I.C.E. involves hydrothermally pretreating a γ-Al_2O_3 support in a steam-air mixture, for at least 24 hours at a temperature of ≥ 950°C, followed by impregnation with Rh. This system minimises reactions between Rh and Al_2O_3, while decreasing the extent of Rh occlusion and sintering.

Palladium Nitrate Solution

NISSAN MOTOR CO. LTD. *Japanese Appl.* 8/143,317

Pd metal grain, 1 pt. wt. of 60% HNO_3, 0.003–0.03 pt. wt. of 35% HCl and an inert gas, such as N_2, were enclosed in a sealed container and heated at 82–98°C under a pressure of 0.5–10 kg cm^{-2} to give $Pd(NO_3)_2$. This process provides a quick method for the production of $Pd(NO_3)_2$ solution, which is used as an automobile exhaust gas purification catalyst.

Exhaust Gas Purification

KYOCERA CORP. *Japanese Appl.* 8/323,204

Materials for the removal of NOx from car exhaust gases are produced by adding 1–20 wt.% of Mn_2O_3 carrying 0.01–1.0 wt.% of at least one metal selected from Pt, Pd, Rh, Ru and Ir to a spinel composite oxide containing Ni and Ga as the main components. These materials have excellent heat resistance, high NOx decomposing ability and are capable of efficiently purifying NOx in exhaust gas with high O_2 density.

Decomposition Catalyst

SUMITOMO METAL MINING CO.

Japanese Appl. 8/323,208

A decomposition catalyst for volatile organic chlorine (VOC) compounds comprises 0.1–5 wt.% of at least one of Pt, Pd and/or Ru carried as a catalytic component on a three-component oxide carrier system consisting of P or B in a ZrO_2 and TiO_2 composition. VOCs can be decomposed efficiently regardless of density in the presence of air and H_2O and activity of the catalyst can be maintained over a long time.

Purification of Exhaust Gas

TOYOTA JIDOSHA K.K. *Japanese Appl.* 9/885

A catalyst for purifying exhaust gas from a diesel engine consists of a zeolite supporting Rh and Pt arranged in a flow path of exhaust gas containing excess O_2. After adding H_2 to the exhaust gas it is then contacted with the catalyst to reduce NOx. Also claimed is a catalyst prepared by supporting Rh and Pt on a porous support, such as Al_2O_3, SiO_2, etc., and heating the support at > 700°C.

Catalyst for Exhaust Gas Purification

CATALER IND. CO. LTD. *Japanese Appl.* 9/10,585

A catalyst consists of a support carrying a catalyst layer comprising a mixture of activated Al_2O_3 supporting 1–5 wt.% Pt and Rh, Pd and Rh, or Pt, Pd and Rh, CeO_2 stabilised by Zr or Zr and a rare earth element (except Ce) and a refractory inorganic oxide mainly consisting of activated Al_2O_3. This catalyst is used for purifying exhaust gas; it has good durability and heat resistance, and can be used at high temperature in a drastically changing atmosphere.

Nitrogen Oxide Removal Apparatus

NIPPONDENSO CO. LTD. *Japanese Appl.* 9/19,626

A NOx removal apparatus consists of a catalyst containing Pt on a carrier composed mainly of Al_2O_3. The average particle size of the Pt varies between the upstream and downstream sides. This removes NOx over a wide temperature range from excess O_2-containing exhaust gas from a lean burn or diesel engine.

Hydrogenation of Carboxylic Acids

MITSUBISHI CHEM. CORP. *Japanese Appl.* 9/25,253

Hydrogenation of carboxylic acids is carried out in the presence of a catalyst prepared by supporting an organic Pd and an organic Re complex on a carrier in an organic solvent followed by reduction. This process is used to produce alcohols, ethers and lactones efficiently, under mild conditions.

Purification of Exhaust Gas

MATSUDA K.K.

Japanese Appls. 9/38,498 and 9/38,501

A catalyst for purifying engine exhaust gases has a porous hydrocarbon absorbing agent layer formed on a catalyst support. On this layer is formed an active species obtained by adding Rh oxide to Pd oxide and onto this is coated an auxiliary catalyst composed of CeO_2, which has an O_2 occluding function. Thermal deterioration of the active catalyst species is prevented.

Catalyst for Reforming Benzine Fractions

KATALIZATOR RES. FIRM *Russian Patent* 2,051,736

A catalyst which shows improved stability for reforming benzine fractions contains Pt, Mn oxide, Cl_2 and a thermally stable support in the form of γ-Al_2O_3. It additionally contains Re and Al perrhenate, with component ratios (in wt.%) of 0.2–0.4 Pt, 0.2–0.6 Re, 0.05–0.2 Mn oxide, 0.01–0.2 Al perrhenate and 0.8–1.5 Cl_2 with the balance being γ-Al_2O_3.

Oxidation Catalyst for Hydrocarbons

EKATERINBURG NONFERR. METALS TREAT.

Russian Patent 2,063,804

A catalyst for the oxidation-purification of hydrocarbon-containing gases contains 0.02–0.11 wt.% Pt, from a solution of chloride of Pt ammonia salts, applied onto an oxidised stainless steel support. This catalyst shows high activity at 250–400°C and reduced cost.

Catalytic Reforming of Benzine Fractions

V. B. MARYSHEV *Russian Patent* 2,064,000

A method for the catalytic reforming of benzine fractions involves contacting the benzine fractions at 450–550°C and 0.5–4.0 MPa with a F-containing alumino-Pt catalyst in a first reactor, followed by Cl-promoted catalysts in 2 to 3 subsequent reactors. This increases the stability of the catalyst by reducing its sensitivity to catalyst-poisoning substances.

HOMOGENEOUS CATALYSIS

Linear Aldehyde Production

DSM N.V. *World Appl.* 97/8,123–24A

Linear aldehydes are prepared by linear olefin hydroformylation by contacting the olefin, H_2, H_2O and CO in a solvent containing a dissolved catalyst. The catalyst consists of a Pt or Pd compound free of anionic halide, a bidentate diaryl phosphine ligand, optionally containing a ferrocenyl bridging group, and a metal or acid promoter component. This process works for a variety of olefins and gives good selectivity.

Preparation of Acetogenin Compounds

UNIV. MINNESOTA *U.S. Patent* 5,587,491

Acetogenin compounds are formed by coupling a vinyl iodide with an alkyne in the presence of a Pd catalyst, CuI and a base, in an organic solvent, to give an enzyme compound, followed by selective reduction and removal of the hydroxy protecting group. This process may be used, for example, for the preparation of optically active (+)-asimicin and (+)-bullatacin, which are antitumour agents and pesticides.

Aromatic Heterocycles and Carbocycles

UNIV. IOWA STATE RES. FOUND. INC.

U.S. Patent 5,596,100

The preparation of aromatic heterocyclic and carbocyclic compounds involves the reaction of an iodoaryl compound with an alkyne, in the presence of a Pd catalyst, a base and a chloride ion source, in an organic solvent. This is an efficient process that uses readily available starting materials and does not require the use of Cu salts or Cu catalysts.

Octyl *p*-Methoxycinnamate Preparation

BROMINE COMPOUNDS LTD. *German Appl.* 1/96/33,917

The preparation of octyl *p*-methoxycinnamate (1) involves coupling *p*-bromoanisole (2) with acrylic acid or salt in H_2O, in the presence of a base and a Pd catalyst system, such that the molar ratio of Pd catalyst to (2) is 1:(200–90,000), at elevated temperature and autogenous pressure. This gives *p*-methoxycinnamic acid which is then esterified with 2-ethylhexanol. The process gives good yields of (1), used in sun protection products, with a very high degree of purity. It is also clean, safe, economical and very suitable for industrial scale use.

FUEL CELLS

Non-Carburised Platinum Alloy Catalyst

STONEHART ASSOC. INC. *U.S. Patent* 5,593,934

A non-carburised Pt alloy catalyst, used as an electrocatalyst in chemical reactions or fuel cells, consists of (in at.%) 40–90 Pt, 5–30 Mn and 5–30 Fe on a C support. It has a high catalytic activity and an extended life, with the specific activity being enhanced by the addition of the Mn and Fe.

Electrode for Fuel Cell

TOSHIBA K.K. *Japanese Appl.* 9/27,327

A fuel cell electrode consists of an alloy of Pt and a noble metal coated on a base metal which absorbs O_2 and is formed on one side surface of a porous C plate. This electrode has high resistance to impurities contained in the fuel gas, such as CO, etc., even for high concentrations of CO and even when the fuel cell is operated at low temperature.

Fuel Battery

TOSHIBA K.K. *Japanese Appl.* 9/35,736

A solid macromolecular fuel battery consists of a Pt-Ru catalyst with 50–85 wt.% of Ru to Pt in the fuel pole and has a battery operating temperature of 100–120°C. This environment ensures that the fuel pole catalyst is not liable to CO poisoning and enables the battery to exhibit stable characteristics for long periods of time.

ELECTRICAL AND ELECTRONIC ENGINEERING

Magneto-Optical Medium

EASTMAN KODAK CO. *European Appls.* 762,411–412A

A magneto-optical disk structure comprises a Co/Pt superlattice sputtered from alternate Pt and Co layers on a seed layer, which is sputtered on a substrate, at a pressure of < 5 mtorr. An optical data storage medium consists of multiple data-storage levels, each storage level comprising a transparent dielectric seed layer and a partially transmissive recording layer with alternate Co and Pt layers on the seed layer. The Co/Pt superlattice gives high coercivity, good squareness of the Kerr hysteresis loop and high anisotropy energy. It has low recording noise and a high C:N ratio.

Thin Films for Semiconductor Devices

FUJITSU LTD. *Japanese Appl.* 8/260,148

A thin film is formed by depositing a film of Ir or Ir oxide by CVD using $Ir(DPM)_3$ as a raw material. The production of a good quality semiconductor device with a thin film of Ir (oxide), formed by the above method, is described. These films have superior coverage on bed substrates with irregular surfaces.

Bonding Wire

SUMITOMO METAL MINING CO. *Japanese Appl.* 8/316,263

A bonding wire for a multi-pin semiconductive device consists of a core material of ≥ 99.99 wt.% pure Au covered by an exterior Au alloy containing one or more metals selected from Ru, Pt, Pd and Ag. The diameter of the core is 30–90% of total wire diameter.

Electroconductive Paste Compositions

TANAKA KIKINZOKU INT. K.K. *Japanese Appl.* 9/17,232

An electroconductive paste consists of 100 wt. pts. of an electroconductive powder containing at least Ag and if necessary Pd or Pt, a glass frit made of 0.3–7 wt. pts. of B_2O_3-SiO_2-Al_2O_3-CaO type non-crystalline glass and 1–9 wt. pts. of PbO-Al_2O_3-SiO_2 type crystalline glass. A Bi compound and an additive consisting of a 0.5–2 wt. pts. Ru compound and a 0.5–2 wt. pts Cu oxide dispersed in an organic vehicle are also included. This material is suitable for printed circuit board at high density and smaller size parts. It has improved resistance to solder and repair properties.

Platinum Film Production

MITSUBISHI MATERIALS CORP. *Japanese Appl.* 9/20,980

The production of a Pt film, used in a base electrode for a dielectric memory in a semiconductor device, involves forming a Pt film on a substrate by MOCVD using an organic Pt compound. This method effectively forms Pt films with improved flatness and high substrate adhesion. Selectively forming the Pt films on a patterned conductive material film requires no fine fabrication, such as dry etching.

MEDICAL USES

Liquid Urobilinogen Composition

BAYER CORP. *European Appl.* 753,742A

The preparation of a urobilinogen composition, which is stable in liquid form for at least 18 months, involves reducing bilirubin with H_2 and Pd on activated C as catalyst, and storing the composition under an inert gas. This composition is used in a comprehensive urinalysis control solution containing specific quantified compositions, selected from glucose bilirubin, ketones, blood haemoglobin, etc. A method for ensuring that a clinical diagnostic test device is properly working is also claimed.

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