

diffuse rapidly into the Pt film at apparent imperfections in the film. These areas are believed to be primary sites for premature IMPATT device failure.

An AES/XPS Study of the Chemistry of Palladium on Hydrogenated Amorphous Silicon Schottky Barrier Solar Cells

J. H. THOMAS and D. E. CARLSON, *J. Electrochem. Soc.*, 1981, **128**, (2), 415-420

Thin layers of Pd (~100 Å thick) on hydrogenated amorphous Si have been used as diodes and photo-voltaic devices (solar cells). AES and XPS with ion-milling were used to characterise the interface region, where a thin oxide layer is observed along with possible Pd silicide. Pd and Pd silicides extend well into the Si substrate. Pd silicide is due in part to ion-mixing. The degradation is due to oxide formation at the Pd/a-Si:H interface.

Thin Palladium Silicide Contacts to Silicon

S. KRITZINGER and K. N. TU, *J. Appl. Phys.*, 1981, **52**, (1), 305-310

A new approach to the development of very thin Pd₂Si-to-Si contacts for possible future use in ultrasmall devices is described. It is based on the principle of diluting the silicide-forming Pd metal with Si, by codeposition of these two elements onto a single-crystal Si substrate. During annealing of the layered structure, Pd is extracted from the amorphous alloy to form the metal-rich and very stable compound Pd₂Si at the surface. The decomposing Pd₈₀Si₂₀ is also converted to Pd₂Si. In this way, a silicide is formed for which only ~50% of the required Si need be supplied by the Si-substrate, resulting in a very shallow silicide contact.

NEW PATENTS

METALS AND ALLOYS

Jewellery Alloys

JOHNSON MATTHEY & CO. LTD.

British Patent 1,582,582

Pt alloys which may be cast by the lost-wax investment casting method contain a minimum of 95% Pt, 1.5-3.5% Ga and the balance Au or other specified metals. Around 0.1% Y may be added as a deoxidiser.

Corrosion Resistant Amorphous Platinum Metal Alloys

TOYO SODA MANUFACTURING CO. LTD.

British Appl. 2,051,128 A

Amorphous alloys, especially useful as electrode materials in brine cells, are prepared by rapid quenching from the liquid state, and contain 10-40 at.% P and/or Si with 0.7 at.% B and/or C, 90-60

A Comparison of Clad Inlay Gold, Palladium, and Palladium-Silver Contact Alloys

R. J. RUSSELL and P. O. CAPP, *Insul./Circuits*, 1981, **27**, (3), 34-38

A comparison of contact resistance between Pd and 60%Pd-40%Ag and traditional Au alloys was performed. Pd and 60%Pd-40%Ag clad inlays had low, stable contact resistance under dry circuit conditions and with 100g load after artificial ageing. Au clad inlays had considerable contact resistance increases after artificial ageing. Their resistances were greater than those of Pd and 60%Pd-40%Ag at the same thickness. Pd and 60%Pd-40%Ag contact alloys were equal in performance to other precious metal alloys when subjected to a hostile gas environment.

MEDICAL USES

Pd-Co Dental Casting Ferromagnetic Alloys

Y. KINOCHI, J. USHITA, H. TSUTSUI, Y. YOSHIDA, H. SASAKI and T. MIYAZAKI, *J. Dent. Res.*, 1981, **60**, (1), 50-58

Three dental alloys, 43wt.%Pd-57wt.%Co, 41wt.%Pd-54wt.%Co-5wt.%Cr and 43wt.%Pd-27wt.%Co-30wt.%Ni have been developed, and their magnetic and physical properties and corrosion resistances have been measured. The alloys were found to have magnetic properties suitable for generating an effective magnetic attraction in combination with the Sm-Co magnet. They have typical dental casting alloy properties, Pd-Co-Ni was the most easily melted and had the highest corrosion resistance.

at.%Pd, Rh and/or Pt or one of these metals combined with up to 80 at.% Ir and Ru and optionally up to 25 at.% Ti, Zr, Nb or Ta.

ELECTROCHEMISTRY

Electrochemical Cell

NATIONAL RESEARCH DEVELOPMENT CORP.

British Patent 1,585,070

Electrochemical cells for detecting the presence of an oxidisable or reducible component, such as O₂ or H₂, in a gas or a liquid suffer from background current flow which varies throughout the cell life. This is now overcome by using a Pt/Pt oxide counter electrode of surface area comparable to that of the working electrode, which may be formed from Pd, Ti, Zr, Y or Ni. The counter electrode used in the cell is preferably of Pd.

Hydrogen Production

ASAHI GLASS CO. LTD.

European Appl. 27,146

In a process for producing H₂ by electrolysing an aqueous solution of a Group IA metal hydroxide, a fluorinated polymer cation exchange resin membrane is bonded on one side to a gas and liquid-permeable anode and on the other side to a gas and liquid-permeable cathode. The anode may be a platinum group metal or alloy or oxide thereof, graphite or Ni and the cathode of Fe, Ni, stainless steel or platinum group metal/C.

Hydrogen Generator

KERNFORSCHUNGSANLAGE JULICH G.m.b.H.

U.S. Patent 4,235,863

A membrane cell for water electrolysis has a hydride forming liquid metal in the cathode compartment, which can be heated to release H₂. The preferred membrane material is Pd coated with Fe where it comes in to contact with the liquid metal.

ELECTRODEPOSITION AND SURFACE COATINGS

Palladium-Nickel Alloy Plating

INTERNATIONAL BUSINESS MACHINES CORP.

British Patent 1,583,696

A new bath which improves the rate of Ni deposition in the presence of Pd contains, per litre, 3-6 g Pd ion, as palladosammine chloride, about 12 g Ni ion, 10-50 g ammonium sulphamate, sulphate or chloride, 1-1000 ppm sulphite ion and 30-50 cm³ NH₄OH to give a pH of 8.8 to 9.6 and to solubilise the Pd and Ni ions as ammonia complexes.

Platinum Group Metal Thermal Barriers

JOHNSON MATTHEY & CO. LTD.

British Appl. 2,041,246

Coatings on Ni, Co or Fe-based superalloys, refractory alloys or refractory metals consist of a protective layer of one or more platinum group metals and a refractory metal oxide such as Al, Zn, Ti and a thermal barrier of a stabilised refractory oxide, such as yttria stabilised zirconia.

Chemical Palladium Alloy Plating

MINE SAFETY APPLIANCES CO.

British Appl. 2,053,284 A

A complexed Pd-borane bath is used to deposit a layer containing 1-3% amorphous B, 1-3% crystalline Pd and the remainder intermetallic compounds of Pd and H. This layer bonds extremely strongly to electroless Ni.

Palladium Plating Bath

OXY METAL INDUSTRIES CORP.

British Appl. 2,060,706 A

Bright, pure Pd deposits may be obtained even on Fe, Co and Ni substrates from a bath containing Pd, as

an amine complex, a brightener selected from methylenebis (naphthalene Na sulphonate), Na benzene sulphonate, benzene sulphonamide and phenylsulphonic acid and an optical brightener which is an allylic sulphonate.

Rhodium Protection for Titanium

HALCON RESEARCH & DEVELOPMENT CORP.

U.S. Patent 4,238,551

The rate of corrosion of Ti by strong acid is inhibited by an electrodeposited surface layer of Rh. The whole surface area is protected even if only a small area of the surface is coated with Rh. Other platinum metals are not effective.

Ammonia-Free Palladium Plating Bath

SIEMENS A.G.

U.S. Patent 4,242,180

The addition of NH₃ to Pd plating baths (for example to form ammine complexes) is undesirable because it constantly evaporates, causing environmental problems and difficulties with pH control. Now aminoacetic acid is added as a sole complexing agent to overcome these problems. The plating baths contain up to 150 g/l of aminoacetic acid, up to 50 g/l Pd as a diglycinate complex and optionally Ag, Ni and/or Co as alloying metals

LABORATORY APPARATUS AND TECHNIQUE

Flame Ionisation Detector

WTI WESTENSCHAPPELIJK TECHNISCHE

INSTRUMENTATIE

British Patent 1,588,555

A flame ionisation detector for monitoring anaesthetic gases consists of a hairpin shaped capillary tube with a flame aperture at the bend. The flame is ignited by passing an electric current through a Pt wire monitoring electrode mounted in the capillary tube

Smoke Detector Ionisation Chamber

THE RADIOCHEMICAL CENTRE LTD.

British Appl. 2,052,846 A

A thin coating of Rh is used to protect the Ni-63 source in a smoke detector ionisation chamber.

Oxygen Sensor for I.C.E. Exhausts

FORD MOTOR CO.

U.S. Patent 4,225,559

The loss of low temperature sensitivity of known TiO₂-based O₂ sensors exposed to exhaust gas streams is due to Pt loss caused by the vaporisation of PtO₂. The loss may now be reduced by forming the electrodes from a Pt-Rh alloy, preferably Pt-10% Rh.

Nitrido-Bridged Staining Reagent

JOHNSON MATTHEY & CO. LTD.

U.S. Patent 4,235,868

Nitrido-bridged Os and Ru compounds are novel reagents for the detection of DNA and polysaccharides by electron spectroscopy.

Exhaust Gas Sensor

FORD MOTOR CO.

U.S. Patent 4,237,722

The susceptibility of Pt electrodes of a TiO_2 -based sensor to attack by C present in engine exhausts is reduced by increasing the amount of energy required to produce chemical reaction between the Pt and C. This may be achieved by annealing the electrodes or by alloying the Pt with Au or Rh.

Gas Detector

TOKYO SHIBAURA DENKI K.K. *U.S. Patent 4,242,303*

A gas detector having high sensitivity towards isobutane and low alcohol sensitivity has a detector element containing a n-type metal oxide semiconductor (for example ZnO or SnO_2), up to 8% of Pt, Pd and/or Rh and P (in an amount 1.5 to 30 times the platinum metal content of the material).

Ozone Determination

COOLBOX VERTRIEBSGESELLSCHAFT G.m.b.H.

German Offen. 2,928,324

A cell for measuring the concentration of ozone in water has electrodes of a Pt-containing Au alloy, preferably 80% Au-15% Ag-3% Pd-2% Pt.

JOINING

Thick Film Conductor Bonding

WELWYN ELECTRIC LTD. *British Appl. 2,051,775 A*

The mutual connection and bonding of thick film electrical conductors is carried out with conducting particles in a glass-ceramic matrix, for example Pd-Ag in a glass matrix.

Platinum Metal Coated Refractories

OWENS-CORNING FIBERGLAS CORP.

U.S. Patent 4,240,847

Small particle alloys of Pt and Rh prepared by reducing complexes of the metals in aqueous solution are particularly effective for bonding platinum group metal sheets to refractory substrates. The alloys are deposited on to the refractory and heated.

HETEROGENEOUS CATALYSIS

Hydrogen and Oxygen Generation from Water

CENTURY MFG. CO.

British Patent 1,585,527

Steam dissociation is carried out in the presence of a magnetic catalyst which may be or contain Pd, amongst other catalytic metals, and an applied magnetic field. Application of the magnetic field allows dissociation to take place at a lower temperature.

Two Stage I.C.E. Exhaust Gas Treatment

CATERPILLAR TRACTOR CO. *British Patent 1,586,530*

NH_3 is mixed with an I.C.E. exhaust gas stream and passed over a catalyst, deposited on an inorganic support, at 200–800°C to reduce the NO content.

The reaction is completed over an oxidation catalyst. Platinum group metal catalysts are preferred.

Storage and Transportation of Anaerobic Cultures

MARCON LABORATORIES INC. *British Patent 1,586,570*

An O_2 -free environment is provided by a closed bag containing a H_2 generator, such as a tablet containing K borohydride, a catalyst, such as Pd on Au for promoting reaction between O_2 and H_2 and a colour indicator showing the presence or absence of O_2 .

Catalytic Coating for Piston Head of an I.C.E.

K. SCHMIDT G.m.b.H.

British Patent 1,589,011

The head of the piston of an I.C.E. is coated with a layer of porous Al_2O_3 impregnated with a Pt-Pd or Pt-Rh catalyst.

Exhaust Purification Catalyst

U.O.P. INC.

British Appl. 2,055,303 A

I.C.E. catalysts, which are responsive to change between oxidising and reducing conditions and contain Pt-Rh or Pd-Rh, are promoted with up to 10% U. The catalysts are used in three-way converters.

Catalytic Decomposition of Ozone

JOHNSON MATTHEY & CO. LTD.

British Appl. 2,056,424 A

O_3 is removed from gases by decomposition to O_2 on a catalyst containing one or more of Pt, Pd, Ru, Ir, Os, Rh, Fe, Co, Ni, Ag, Mn, and Sn and/or alloys, mixtures and compounds containing one or more of these metals. Preferably the catalyst metal is deposited on a wash-coated metal alloy support.

Catalytic Combustion Engine

RICARDO CONSULTING ENGINEERS LTD.

British Appl. 2,057,563 A

A reciprocating engine, without spark ignition, uses a catalyst in each combustion chamber to initiate and promote combustion. A preferred catalyst consists of a Pt gauze supported on a wide-grid carrier.

Hydrocarbon Reforming in a Bed of Magnetically Stabilised Fluidised Catalyst

EXXON RESEARCH & ENGINEERING CO.

European Appl. 21,854

Application of a magnetic field to a bed of, for example, Pt particles mixed with particles of a ferromagnetic material, greatly improves the gas-solid contact and reduces the residence time.

Attenuated Superactive

Platinum-Rhenium Catalytic Composite

U.O.P. INC.

U.S. Patent 4,231,897

A catalyst for hydrocarbon conversion consists of pyrolysed Re carbonyl impregnated on to a porous

carrier containing 0.01–2% of a platinum group metal, 0.01–5% Re, 0.01–5% Cd and 0.1–3.5% of a halogen component.

Multimetallic Reforming Catalyst

EXXON RESEARCH & ENGINEERING CO.

U.S. Patent 4,231,898

A catalyst is prepared by impregnating a carrier with a Cu-halogen acid solution, neutralising and then impregnating the neutralised support with a hydrogenation-dehydrogenation component, which may be Pt, Pd and/or Ir with Re.

Intermetallic Catalysts for Ammonia Oxidation

JOHNSON MATTHEY & CO. LTD.

U.S. Patent 4,233,185

A catalyst for oxidation-reduction reactions is an intermetallic compound $TiPt_3$, $LnPd$, $LnPd_3$, Ln_3Pd_2 , $TaIr_3$, $NbIr_3$, $TaPd$, $TiRu$, $NbIr$, $TaRh_3$, $NbRh_3$, VIr_3 or $CeRu_2$, where Ln is Sm, Gd, Dy, Ho or europium.

Exhaust Gas Purification Catalyst

FORD MOTOR CO.

U.S. Patent 4,233,188

An equilibrium three-way catalyst (which is active over all operating conditions of an I.C. engine and may be used with normal carburettor systems consists of 10–5000 ppm Ir, 500–50,000 ppm of an O_2 storage material, (such as Re), 500–10,000 ppm Ni or W and 500–10,000 ppm Pd.

Nickel-Rich Platinum Group Metal-Base Metal Car Catalysts

JOHNSON MATTHEY & CO. LTD. *U.S. Patent 4,237,032*

A catalyst, which as well as removing O_2 from a gas containing excess O_2 will also restore O_2 to an O_2 deficient gas, consists of a substrate, a washcoat of a refractory metal oxide and Ni and Ce and a precious metal catalytic coating of Pt, Rh, Ru, Pd, Ir, Os, Au and/or Ag. The washcoat preferably consists of the refractory metal oxide and a perovskite, such as $La_{0.8}Ba_{0.2}Co_{0.987}Rh_{0.013}O_3$.

Hydroreforming Catalyst

INSTITUT FRANCAIS DU PETROLE

U.S. Patent 4,239,652

A catalyst for the production of aromatic hydrocarbons under severe conditions contains 0.05–0.06% of a platinum group metal, 0.005–5% Sb, 0.01–4% of Ga, In and/or Tl and 1–10% of a halogen component supported on Al_2O_3 . It is used in a moving bed reactor and has an improved life compared with conventional catalysts.

Preparation of Non-Pyrophoric Palladium Catalysts

CHINOIN GYOGYSZER

U.S. Patent 4,239,653

Pd salts or complexes adsorbed on active C having homogeneous pore distribution, and which have been

treated with an alkali and then reduced, give non-pyrophoric, highly active catalysts.

Spinel-Supported Platinum and Palladium Exhaust Purification Catalysts

K. K. TOYOTA CHUO KENKYUSHO

U.S. Patent 4,239,656

A durable, high mechanical strength catalyst for use in I.C.E. exhaust gas purifiers contains Pt and/or Pd supported on an Al_2O_3 - MgO_2 spinel.

Methane Conversion Catalysts

EXXON RESEARCH & ENGINEERING CO.

U.S. Patent 4,239,658

Regenerable catalyst-reagents for conversion and oligomerisation of methane to ethylene- and benzene-rich fractions at low temperature contain a Group VIII or IB noble metal, notably Pt, Ir or Pd, a Group VIB metal oxide which is reducible to a lower oxide, notably Cr, Mo or W and a Group IIA metal, especially Mg or Sr, composited with a spinel-coated refractory support.

Palladium-Gold Getter Grids for Ammonia Oxidation Process

M. PANSTWAWA & INSTYTUT NAWOZOW SZTUEZNYCH

U.S. Patent 4,239,833

Getter grids for preventing platinum metal loss from nitric acid plants are woven from wires having different gauges. For pressureless processes the thickness difference is 30–400%, for medium pressure reactions 60–600% and for high pressure reactions 100–1000%. The design reduces pressure drop in the reaction caused by the use of getter grids.

Palladium/Silica Hydrogenation Catalyst for Hydrogen Peroxide Manufacture

E. I. DU PONT DE NEMOURS & CO.

U.S. Patent 4,240,933

An amorphous Pd/SiO₂ catalyst contains small amounts of Zr, Th, Hf, Ce, Ti or Al hydroxides or oxides. Preparation conditions are adjusted so that the additive metal compound deposits from the solution before the Pd compound and serves as a base for the subsequently reduced Pd metal.

Water Addition to I.C.E. Fuels

ERNST RAWYLER-EHRAT

U.S. Patent 4,242,076

Less fuel is required to operate a diesel or Otto engine if H₂O vapour is added to the fuel supply and if a H₂O dissociation catalyst is included in the combustion chamber. A Pt sponge catalyst may be used.

Hydrogenolysis of Norbornadiene Dimer

SUN OIL CO. OF PENNSYLVANIA *U.S. Patent 4,242,529*

Hydrogenolysis of a saturated endo-endo dehydro-norbornadiene hexacyclic dimer is carried out in the presence of a Group VIII metal catalyst (Pd, Ni, Rh or Pt). The resulting pentacyclic isomers are used to depress the freezing point of the saturated hexacyclic dimer which is used as a high density missile fuel.

HOMOGENEOUS CATALYSIS

Rhodium Carbonylation Catalysts

AIR PRODUCTS & CHEMICALS INC.

British Patent 1,584,740

A Rh complex catalyst having phosphorus or arsenic ligands, typically di[bis(diphenylphosphino)ethane]Rh chloride, has low volatility when used in carbonylation reactions for the preparation of carboxylic acids and esters, resulting in low catalyst loss and hence longer catalyst life.

Production of an Alcohol and Carboxylic Acid

JOHNSON MATTHEY & CO. LTD., BP CHEMICALS LTD.
AND THE UNIVERSITY OF SHEFFIELD

British Appl. 2,054,592 A

A mixture of an alcohol and a compound containing a carboxylic group, especially ethanol and acetic acid, is produced from an aldehyde in the presence of a platinum group metal catalyst, such as $[Rh_2(C_5Me_5)_2(OH)_3]Cl \cdot 4H_2O$.

Hydroformylation of Olefins

KURARAY CO. LTD.

British Appl. 2,056,874 A

Certain trisubstituted diphosphino compounds, such as trans-1,2-bis(diphenyl-phosphinomethyl)-cyclopropane, considerably prolong the active life of Rh catalysts, such as $HRh(CO)(PPh_3)_3$ used in the hydroformylation of olefinic compounds.

Aminoalkylpsoralen Photosensitisers

THOMAS C. ELDER INC.

British Appl. 2,058,073 A

Psoralen dermal sensitising agents for use in photo-chemotherapy may be produced by the oxidation of coumarin derivatives with OsO_4 .

Palladium Complex Catalysts

U.K. SECRETARY OF STATE FOR DEFENCE

British Appl. 2,058,074 A

New catalysts for olefin hydrogenation, silane alcoholysis and other reactions have the formula $[ZPdLL']_2X_2$ where Z is an alkylene or phenylene diphosphine, diarsine, distibine or diamine, L and L' are weakly co-ordinated solvent molecules and X is an anion, such as a Pd perchlorate-bis(diphenyl phosphino)ethane-solvent complex.

Rhodium Catalysts

UNION CARBIDE CORP.

European Appl. 28,378

The stability of Rh-carbonyl-tertiary phosphine catalysts for olefin hydroformylation is improved if the phosphine ligand is $RPPH_2$ or R_2PPh and R is a branched or cyclic alkyl group.

Ruthenium and Rhodium Hydride Homogenous Hydrogenation Catalysts

ALLIED CHEMICAL CORP.

U.S. Patent 4,232,170

Anionic Ru and Rh hydride catalyst containing P, arsenic and antimony aryl and alkyl ligands, typically

K tris(triphenylphosphine)Ru hydride, are active for the homogeneous hydrogenation of primary carboxylic acid esters to primary alcohols. The original filing covered Group VIII metal catalysts but the claims have been limited to specific Ru and Rh catalysts.

Palladium Catalyst for Propylene Oxidation

INSTITUT FRANCAIS DU PETROLE

French Appl. 2,450,802

Pd catalysts, $PdLL'L'_m$, where L and L' are acetate, carboxylate or sulphonate ligands and L' is an amine, phosphine, arsine or stibine ligand, are active for the oxidation of propylene to allyl acetate.

FUEL CELLS

Fuel Cell Electrode

TEXAS INSTRUMENTS INC.

U.S. Patent 4,229,490

Fuel cell electrodes are prepared by impregnating a thin carbonised paper-like substrate with an electrolyte-repelling material and then screen-printing Pt black electrodes on to the repellent layer.

Fuel Cell Oxygen Electrode

U.S. DEPARTMENT OF ENERGY

U.S. Patent 4,232,097

An O_2 electrode for an acid fuel cell has a Group IA metal-W bronze substrate covered by a thin layer of Pt-W bronze, Pt_yWO_3 , where y is at least 0.8.

CHEMICAL TECHNOLOGY

Aqueous Hydroxyethyl Carboxyethyl Cellulose Polymers

UNION CARBIDE CORP.

British Appl. 2,055,106 A

Cellulose polymers, which are particularly suitable for use in oil drilling applications are crosslinked by polyvalent metal compounds. A long list of suitable crosslinking metals includes Ru, Rh, Pd, Ag and Pt.

ELECTRICAL AND ELECTRONIC ENGINEERING

Glass-Halogen Incandescent Lamps

GENERAL ELECTRIC CO.

British Patent 1,583,660

A new design of all-glass lamp uses wedge pins made of Pt-plated Mo.

Optical Fibres

PLESSEY CO. LTD.

British Patent 1,585,899

Optical fibres are usually coated with a protective plastic layer which is not suitable for use in hostile, high temperature ($400^\circ C$) environments. Fibres suitable for use at these temperatures are first coated with a Pt or Au resin solution and are then plated, for example with Pt, Au or Cu, to increase the coating thickness.

Optical Video Disc

R.C.A. CORP.

British Appl. 2,060,973 A

The material used and the thickness of the reflective, transmissive and absorptive layers of an optical recording material are chosen to obtain high sensitivity for widely differing, more than 100 nm, wavelengths. The reflective layer may be Au or Al and the absorptive layer of Rh.

Photoelectric Cell

THOMSON-C.S.F.

European Appl. 24,378

A solar cell consisting of a metal substrate coated with doped Si post-treated with a H plasma is further coated with a very thin (transparent) layer of a metal, preferably Pt.

I.C. Engine

RICARDO CONSULTING ENGINEERS LTD.

European Appl. 25,298

A reciprocating piston I.C.E. which has a low compression ratio, for example 11-15:1, and can operate on petrol, methanol or diesel fuel includes a swirl-promoting pre-combustion chamber and a catalytic screen of Pt gauze.

Relay Contacts

SIEMENS A.G.

European Appl. 27,205

Relay contacts having excellent properties are sintered products containing 80-100% Ni and 0-20% Pd.

Display Device

INTERNATIONAL BUSINESS MACHINES CORP.

European Appl. 27,855

An electrochromic display device includes a film of a polymer, such as polypyrrole, deposited on a display electrode which is preferably of Pt.

Polycrystalline Diamond Body

GENERAL ELECTRIC CO.

U.S. Patent 4,231,195

A bonded diamond body, for use in abrasive tools, consists of diamond crystals bonded together by a mass of eutectic Si-rich alloy, (the Si may be alloyed with Pt, Pd, Rh, Ru, Y and/or other transition metals) which also contain hexagonal nitride. The B nitride may be added in a shielding metal cup of Y.

Amorphous Magnetic Thin Films for Magnetic Bubble Domains

INTERNATIONAL BUSINESS MACHINES CORP.

U.S. Patent 4,236,946

A sputtered amorphous film having a highly stable easy axis of magnetisation consists of Fe, B and up to 10% of a transition metal, which may be Pt, Pd or Y.

Thermoplastic Electrode Ink

FERRO CORP.

U.S. Patent 4,243,710

An ink consisting of a mixture of metal powders in a thermoplastic vehicle can be screened on to a dielectric substrate and immediately laminated

without a drying step. The ink, especially useful for the manufacture of multi-layer ceramic capacitors, contains 40% of metal powder consisting of 20 parts Pt, 20 parts Pd and 60 parts Au, and 60% of a vehicle consisting of 68 parts cetyl alcohol, 18 parts spermaceti wax and 14 parts methacrylate resin.

Dispersion Imaging Material

ASAHI KASEI KOGYO K.K.

U.S. Patent 4,243,746

Dry imaging material for microfilm applications consists of a sub-layer containing at least 70% Pd, Au and/or Ge of thickness 5-200 Å, a main imaging layer containing Sn and optionally an outer protective polymer layer. The sublayer modifies the layer structure of the Sn-based imaging layer giving good sensitivity and excellent gradation.

TEMPERATURE MEASUREMENT

Thermocouples for Metallurgical Furnaces

SIDBEC-DOSCO

British Patent 1,586,015

A self-heating thermocouple for monitoring the hot face of a refractory lining of a metallurgical furnace consists of Pt:Pt-Rh thermocouples embedded in an outer sheath of insulating refractory metal oxide and an inner sheath of a powdered oxide material such as Ni-ferrite, which becomes conductive at high temperature.

Thin Film Resistance Thermometer Probe

LEEDS & NORTHRUP CO.

U.S. Patent 4,242,659

The header portion of the probe is formed from a sandwich of three buttons (brazed together with a Au-Cu brazing alloy) enabling the header to withstand shock and vibration in use. A resistance thermometer detector chip is brazed (with a Cu-Au or Pt-Au-Ag brazing alloy) to the header and Pt ribbon straps are resistance welded between a contact pad on the chip and thick film metallisation on the header.

MEDICAL USES

Palladium in Cardiac Pacers

CORDIS CORP.

British Patent 1,583,610

Where the cardiac pacer contains an electrochemical cell which generates hydrogen, Pd is introduced into the cell to act as a getter. Pd is present as a solid body which is oxidised on its surface and hermetically sealed into the casing using this oxide film.

Mixed Amine Complexes of Platinum

JOHNSON MATTHEY & CO. LTD.

British Appl. 2,060,615 A

New agents for cancer treatment are Pt(II) or (IV) halide complexes of one molecule of NH₃ and one of an aliphatic amine, such as a PtCl₂ complex of NH₃ and cyclopentylamine or ethylamine.