

Water-Gas Shift Reaction over Ruthenium Carbonyl Complexes Anchored to Silica via Phosphine Ligands

Y. DOI, A. YOKOTA, H. MIYAKE and K. SOGA, *Inorg. Chim. Acta, Artic. and Lett.*, 1984, **90**, (1), L7-L9

The synthesis of Ru carbonyl complexes, anchored to SiO₂ via phosphine ligands, Ru(CO)₄(PPh₂C₂H₄-SIL)₍₁₎ and H₄Ru₄(CO)₈(PPh₂C₂H₄-SIL)₍₂₎, and their catalytic properties for the water gas shift reaction are reported. The i.r. spectra of both of the used catalysts were almost identical with their original complexes. Catalyst (2) could be reused without any loss of catalytic activity. Complex (1) exhibited a high catalytic activity for the water gas shift reaction.

FUEL CELLS

Functional Metal-Porphyrine Derivatives and Their Polymers. Part II. Secondary Fuel Cells based on Oxygen Reduction at a Platinum Electrode Modified by Metal-2,9,16,23-Tetracarboxyphthalocyanine Covalently Bound to Poly(2-vinylpyridine-styrene)

O. HIRABARU, T. NAKASE, K. HANABUSA, H. SHIRAI, K. TAKEMOTO and N. HOJO, *J. Chem. Soc., Dalton Trans.*, 1984, (8), 1485-1489

A new type of secondary fuel cell is described in which O₂ evolved by electrolysis of H₂O in the charging process is stored in the polymer matrix of metal-2,9,16,23-tetracarboxyphthalocyanine covalently bound to poly(2-vinylpyridine-styrene) (M = Fe^{III}, Co^{II}, Ni^{II} and Cu^{II}) on a Pt electrode and then electrocatalytically reduced in the discharging process in 30% KOH aqueous solution. For this cell, there was no significant decay in its characteristics after over 30 charge-discharge cycles.

NEW PATENTS

METALS AND ALLOYS

High Permeability Alloy

FURUKAWA ELECTRIC CO. LTD. *U.S. Patent* 4,435,212
A high permeability alloy of excellent wear resistance, suitable for use in magnetic heads, consists essentially of Fe with 3-10% Al, 4-11% Si and 2.1-20% Ru.

CHEMICAL COMPOUNDS

Ruthenium and Iridium Pyrochlores

EXXON RESEARCH & ENGINEERING CO.

U.S. Patent 4,440,670

A procedure is described for preparing electrically conductive compounds of formula M₂(M'_{2-x}M_x)O_{7-y} which have a high surface area. M is Pb and/or Bi and M' is Ru and/or Ir.

ELECTRICAL AND ELECTRONIC ENGINEERING

Enhanced Quantum Efficiency of Pd₂Si Schottky Infrared Diodes on <111> Si

R. C. MCKEE, *IEEE Trans. Electron Devices*, 1984, **31**, (7), 968-970

A two-fold improvement in the i.r. emission efficiency has been obtained on Pd₂Si/p-Si Schottky diodes through using <111> Si for the substrate orientation. Photo response measurements were taken for <111> Si and <100> Si. Leakage current vs. temperature measurements at 6V reverse bias of the Pd₂Si/p-Si <111> diodes with guard ring structures, agreed with thermionic emission leakage current theory, using barrier value 0.35 eV obtained by photo response. These results have implications for detection applications.

TEMPERATURE MEASUREMENT

Search for Thermometers with Low Magnetoresistive Effects: Platinum-Cobalt Alloy

F. PAVESE and P. CRESTO, *Cryogenics*, 1984, **24**, (9), 464-470

A systematic set of measurements on Pt-Co thermometers of difference Co concentrations have been performed at 2-28K and up to 6T. Also three commercial thermometers with 0.5wt% Co were used. Pt-Co alloy, with 0.5at.% Co was insensitive to magnetic fields within ±0.5K down to 4K and up to 4T, or within ±0.2K above 10K and below 3T. Among high-stability thermometers presently available Pt-Co alloy showed the least error in magnetic field at fields of a few teslas.

ELECTROCHEMISTRY

Electrolysis Electrodes

PERMELEC ELECTRODE LTD. *British Appl.* 2,134,544A

Between the conductive metal substrate and electrode active coating (of a platinum group metal or its oxide) of an electrolytic electrode there is an intermediate layer comprising Pt dispersed in a conductive mixed oxide of at least one of Ti (IV) and Sn (IV) and of at least one of Ta (V) and Nb (V).

Tetrafluoroethylene Electrolytic Production

IMPERIAL CHEMICAL INDUSTRIES P.L.C.

British Appl. 2,135,669A

A Pt cathode and Pt or TiO₂/RuO₂ anode may be employed in the production of tetrafluoroethylene by the electrolytic reduction of an electrolyte solution containing dichlorodifluoromethane.

Electrolytic Water Sterilisation

HIDOTRONIC DE COLOMBIA S.A.

European Appl. 114,364

A water sterilisation unit relying on oxidation and the release of Ag ions, using Pt and Ag electrodes, respectively, is controlled by a cell which detects the flow rate.

Rechargeable Lead-Hydrogen Cell

YARDNEY CORP.

European Appl. 114,484

A new type of design for these cells uses gas-porous negative electrodes containing Pt and/or Pd catalysts.

Durable Electrolysis Electrode

T.D.K. ELECTRONICS CO. LTD. *U.S. Patent* 4,443,317

An electrode of improved durability, especially for use in brine electrolysis, consists of a valve metal substrate coated with a mixture of 40–90 mol% Pd oxide, 0.1–20 mol % Pt and 5–50 mol% ($Ru_xTi_{1-x}O_2$, where x is 0.05–0.5).

Oxidation Resistant Electrode

DIAMOND SHAMROCK CORP. *U.S. Patent* 4,444,642

Electrodes for use in electrolytic processes consist of a valve metal substrate, such as Ti, and an adherent active outer coating, such as MnO_2 . In a process for producing electrodes of increased durability by protecting the substrate from corrosion, its surface is treated with a solution of HCl and a platinum group metal chloride and heated to form a mixed valve metal/platinum group metal oxide film, prior to the application of the MnO_2 coating.

Hydrogen-Bromine Cell

SIEMENS A.G.

German Offen. 3,241,801

In a H-Br cell of reduced cost, the Br electrode is made of pyrolysed graphite and the H electrode of platinised pyrolytic graphite.

ELECTRODEPOSITION AND SURFACE COATINGS

Palladium Electroplating Bath

O.M.I. INTERNATIONAL CORP. *British Appl.* 2,133,041A

A high speed bath for the electrodeposition of ductile Pd metal consists of a Pd amine complex, $(NH_4)_2SO_4$, ammonium halide, a Group IA metal pyrophosphate and a stress-reduced agent. It may be used to deposit ductile Pd on Cu, Ni, brass, Fe, Au and alloys thereof.

Electroplating Indium on Palladium

INSTITUT ELEKTROKHIMII URALSKOGO NAUCHNOGO TSENTRA AKADEMII NAUK SSR

British Appl. 2,136,447A

On a Pd substrate there is deposited, by electroplating from a molten salt bath containing In values, a layer which consists of four sublayers, starting from the substrate, (i) a solid solution of In in Pd, (ii) Pd_3In , (iii) Pd_2In and (iv) β -PdIn. The thickness of layer (iv) constitutes 50–90% of the total thickness of the coating layer.

High Temperature Coatings

G. K. SIEVERS

U.S. Patent 4,439,470

High performance alloy parts such as turbine vanes and blades are protected from corrosion, erosion and wear by applying an electrodeposited film of Rh, optionally a second platinum group metal, an Al_2O_3 slurry and a diffusion pack of Al and Al_2O_3 .

Recoating of Electrodes

DIAMOND SHAMROCK CORP. *U.S. Patent* 4,446,245

Used dimensionally stable electrodes having a Ru oxide or other platinum group metal coating on a valve metal base are cleaned and activated. The old coating is then enriched in platinum group metal by impregnation using a dilute solution, and a fresh catalytic coating is applied.

Superalloy Coating Compositions

HOWMET TURBINE COMPONENTS CORP.

U.S. Patent 4,447,503

Coatings for Fe-, Ni- and Co-base superalloys, having good high temperature oxidation resistance, include Cr, Al, Ta, Mn, optionally W, Si or Hf, up to 5% La, Y or other lanthanide elements, up to 5% of lanthanide and/or refractory metal oxide particles, up to 5% Ti, up to 15% Pt, Rh or Pd and the balance chosen from Ni, Co and Fe.

LABORATORY APPARATUS AND TECHNIQUE

Capacitive Humidity Sensor

VAISALI OY.

British Patent 2,133,161A

A capacitive humidity sensor has electrode patterns of a chemically resistant metal such as Pt, Pd or Au on a glass substrate and protected by a thin isolator film which may be of Ta oxide or SiO_2 .

Humidity Sensitive Device

MURATA MANUFACTURING CO. LTD.

British Patent 2,135,781A

A humidity sensitive film in a humidity sensitive device includes a conductive powder such as Pd, and is formed over interdigitated Au electrodes on an insulating substrate.

Carbon Monoxide Sensing Element

NOHMI BOSAI KOGYO CO. LTD.

European Appl. 114,310

An element able to detect CO more quickly and at lower concentrations is made by mixing stannic oxide, Sb oxychloride and Pt in ratios such that $Sb : Sn = 2-8$ and $Pt : Sn = 2-10$ and then calcining the mixture at 600–850°C.

Thermal Air Flow Meter

HITACHI LTD.

European Appl. 116,144

A meter consists of a hollow cylindrical support made of an insulating material, a heat sensitive resistor (thin Pt wire) and lead wires bonded together by a fired glass layer. This meter measures the flow rate from changes in the resistance with temperature.

Gas Sensor Construction

HITACHI LTD. *U.S. Patent 4,441,981*

The gas sensor is used for detecting CO, propane, town gas or H₂, and unlike known sensors it has electrodes made of the same material. One electrode is coated with an oxidising catalyst and the other is exposed directly to the gas. In the examples Pt electrodes are deposited on a zirconia-yttria solid electrolyte, and the catalyst layer consists of Pt/Al₂O₃.

Catalytic Gas Sensor

BACHARACH INSTRUMENT CO. *U.S. Patent 4,447,397*

A reference element for a catalytic gas sensor with improved life in the presence of combustible gases comprises a filament such as of a platinum alloy with Ir, Rh, Ru or Au, coated with a layer of TiO₂.

JOINING

Nickel Alloy Brazing Filler

ALLIED CORP. *European Appl. 117,923*

Steels and superalloys may be brazed together, such as in nuclear reactor construction, using a filler alloy containing 25-35 at.% Pd, 15-20 at.% Si and the balance Ni. One alloy contains 55 Ni, 30 Pd, 15 Si.

HETEROGENEOUS CATALYSIS

Catalytic Heating Apparatus

ROSS JAMES HEATERS LTD. *British Appl. 2,133,522A*

A catalyst in a forced-draught space-heating apparatus, suitable for vehicles, boats or caravans, is preferably a Pt-based salt deposited on a corrugated, spirally wound stainless steel support.

Power Storage Battery

SOUTH AFRICAN INVENTIONS DEVELOPMENT CORP.

British Appl. 2,134,698A

In a power storage battery at least one heat pipe is provided with a catalytic converter for the flameless catalytic combustion of hydrocarbon fuels. The catalytic converter preferably contains Pt or Pd in the pores of a porous ceramic substrate.

Ruthenium Catalysts

BRITISH PETROLEUM CO. P.L.C.

British Appl. 2,136,704A

Catalysts, which may be used for NH₃ production, are prepared by impregnating a C support with a halogen-containing compound of Ru, reducing this compound to Ru metal with H₂, and then depositing an alkali metal and a Ba compound.

Hydrocarbon Hydrodesulphurisation Catalyst

SHELL INTERNATIONALE RESEARCH Mij. B.V.

European Appl. 116,383

Hydrocarbon oil fractions are desulphurised by contact with H₂ in the presence of a catalyst containing Pt whiskers. The whiskers may be formed by burning off C deposited on a Pt wire cloth surface.

Hydrogen Peroxide Synthesis

AIR PRODUCTS & CHEMICALS INC.

European Appl. 117,306

Pd/C catalysts for peroxide production from H₂ and O₂ are improved by using a non-graphic C support having a surface area greater than 400 m²/g and by hydrogenating the Pd after impregnation.

Methyl Methacrylate Production

BASF A.G.

European Appl. 117,496

Carboxylic esters are produced from aldehydes and alcohols in the presence of O₂ and an active Pd-Pb mixture deposited on a support consisting of Zn oxide. Pd is deposited from a Pd salt.

Catalyst for an External Combustion Engine

U.S. SECRETARY OF COMMERCE

European Appl. 118,430

Catalytic materials suitable for use in an external combustion engine (to act as both a flameless heat source and heat transfer medium) preferably consist of Pt-Rh alloys and the like applied as a coating to the engine head.

Conversion Catalyst Regeneration

STANDARD OIL CO. (INDIANA)

U.S. Patent 4,435,282

A coke-containing fluid cracking catalyst, particularly of the molecular sieve type, is regenerated by heating it in an O₂-containing gas in the presence of finely divided particles of a platinum group metal or Re catalyst, preferably Pt itself.

Catalyst Reactivation

STANDARD OIL CO. (INDIANA) *U.S. Patent 4,435,311*

A catalyst consisting of AMS-IB crystalline borosilicate molecular sieve supporting a platinum group metal, especially Pt, is reactivated by treatment with water vapour.

Fibre Packs for Ammonia Oxidation (Process)

JOHNSON MATTHEY & CO. LTD. *U.S. Patent 4,435,373*

In a process for the production of HNO₃ by the oxidation of NH₃, a gas stream containing NH₃ and O₂ is passed over a catalyst assembly. This catalyst assembly includes an agglomeration or assemblage of randomly oriented melt-spun fibres fabricated by melt extracting or melt spinning a platinum group metal or an alloy containing at least one platinum group metal. The agglomeration of fibres may be sandwiched between layers of a platinum group metal gauze.

Alcohols and Esters from Synthesis Gas

TEXACO INC.

U.S. Patent 4,436,838

Alcohols and esters are produced from a mixture of CO and H₂ at 500 psig or greater, and 150°C or above in the presence, as catalyst, of one or more compounds, a compound of Zr, Ti, V or Cr and a quaternary phosphonium salt in the presence of an inert oxygenated solvent.

Indole Preparation

MITSUI TOATSU CHEMICALS INC.

U.S. Patents 4,436,916/17

Indoles are prepared from anilines and glycols using as catalyst at least one metallic oxide, such as $\text{SiO}_2\text{-Y}_2\text{O}_3$, $\text{SiO}_2\text{-La}_2\text{O}_3$, $\text{SiO}_2\text{-Ce}_2\text{O}_3$ and $\text{SiO}_2\text{-ZnO-AgO}$; a sulphide or selenide of at least one of Pd, Pt and Mo; a chloride, nitrate, sulphate or phosphate of certain metals, including Y; at least one of Ir, Os and Ru, or metallic SiO_2 supported on an Al_2O_3 or other carrier.

Propylene and n-Butylene Dimerisation

SHELL OIL CO.

U.S. Patent 4,436,946

A heterogenous Pd cyanide catalyst, optionally supported on Pt cyanide, is used in the selective dimerisation of propylene, 1-butene and/or 2-butene.

Automobile Exhaust Catalyst

REGIE NATIONALE DES USINES RENAULT

U.S. Patent 4,437,926

In a catalytic converter for an I.C. engine the active material is an alloy of 40–80% Fe, up to 40% Ni, up to 40% Cr, 0.02–0.1% C, 0.05–2% platinum group metal(s) (preferably a combination of 0.2% Pt, 0.15% Ru and 0.05% Rh) optionally activated or stabilised with up to 3% Ce, Cu, Mo, Ti, La, Ca, Y, Al, W and/or Mn which has been subjected to intergranular corrosion with an acid.

Platinum Group Metal Catalysts

MOBIL OIL CORP.

U.S. Patent 4,444,909

Catalysts for the conversion of synthesis gas to 1–10C hydrocarbons, alcohols, aldehydes and ketones consist of a ZSM zeolite and Pt, Pd, Ir or Rh.

Selective Unsaturated Carboxylic Acid Reduction

UOP INC.

U.S. Patent 4,446,073

Unsaturated acids may be reduced to esters or alcohols retaining the unsaturation in the presence of a supported mixture of 1–10% Cd and 0.1–2% Ru optionally containing 0.01–2.5% platinum group metal. Typically Pt or Pd is used in a catalyst for the reduction of oleic, crotonic or erucic acid.

Iridium-Containing Catalyst Reactivation

EXXON RESEARCH & ENGINEERING CO.

U.S. Patent 4,447,551

Ir-containing catalysts containing agglomerated metallic Ir and/or Ir oxides can be efficiently redispersed and reactivated by the use of a halide pretreatment prior to a halogen redispersion step, both steps following decoking and reduction of the Ir oxides if present. The agglomerated catalyst may further contain a Pt, Rh, Re and/or Pd co-catalyst.

Ultrasonically Promoted Hydrosilations

NORTH DAKOTA STATE UNIVERSITY

U.S. Patent 4,447,633

Ultrasonically promoted hydrosilation of non-aromatic C to C π bonds is achieved using a platinum metal catalyst.

I.C. Engine Exhaust Gas Treatment

FORD MOTOR CO.

U.S. Patent 4,448,756

Finely divided Pd and a Pt-Rh three way catalyst are included in the catalyst system used in a process for treatment of exhaust gases from an I.C. engine.

Olefin Oxidation Catalysts

PHILLIPS PETROLEUM CO.

U.S. Patent 4,448,892

A composition useful for the Wacker catalytic oxidation of olefins to carbonyl compounds contains one or more suitable Pd components, one or more suitable heteropolyacid or Cu components, one or more surfactants as defined and at least one fluorocarbon compound.

Catalytic Converter

DEGUSSA A.G.

U.S. Patent 4,450,244

A catalyst for the oxidation of exhaust gases from an I.C. engine fuelled by alcohol consists of a package of alternating flat and corrugated steel sheets, coated with Al_2O_3 and impregnated with Pd.

Gas Purification Catalyst

M. O. OSMANOV

Russian Patent 1,088,768

In a process for oxidising CO in gas streams also containing SO_2 over a $\text{Pt/Al}_2\text{O}_3$ catalyst, the working temperature is reduced if the catalyst consists of 0.00014–0.00086 mol Pt, 0.05–0.25 mol each of Co oxide, Cu oxide, Ce oxide and Al_2O_3 to make 1 mol.

Laser Catalysts

UNIVERSAL MATTHEY PRODUCTS LTD.

South African Appl. 83/7689

Catalysts for the oxidation of CO to CO_2 consist of Pd, one or more of Pt, Ru, Rh and Ir and one or more of Cu, Ni, Co, Fe, Mn, Ag, La, Ce, Pr and Nd on a stannic oxide support.

HOMOGENEOUS CATALYSIS

Paper Making Polymers Production

W. R. GRACE & CO.

British Appls. 2,136,816/17A

In the production of polymers having a substantially completely saturated polymeric backbone chain with pendant alkylene amine groups, polymers such as polybutadiene, containing an olefinic bond are aminomethylated in the presence of a Group VIII metal compound as catalyst, preferably a compound of Rh, Ru or Ir. These polymers may be used as retention and drainage aids or wet strength additives in paper making.

Isocyanate Preparation

INDIAN EXPLOSIVES LTD. AND CHEMICALS AND FIBRES

OF INDIA LTD.

European Appl. 115,660

Isocyanates are produced by the reaction of nitrobenzene or dinitrotoluene with CO in the presence of an Fe, Ru, Rh or Pt carbonyl. Thus nitrobenzene reacts under a 100 psi pressure of CO in the presence of triruthenium dodecacarbonyl to give phenyl isocyanate.

Bicyclic Olefins

FIRMENICH S.A.

U.S. Patent 4,443,632

Bicyclic olefins are made from corresponding aldehydes which are obtained by hydroformylation and ring closure of monocyclic ketoaldehydes in the presence of a catalyst such as $\text{HRh}(\text{CO})(\text{PPh}_3)_3$.

Hydroformylation Catalysts

EXXON RESEARCH & ENGINEERS CO.

U.S. Patent 4,450,299

The hydroformylation of olefins to aldehydes is catalysed by complexes of Rh with Si-containing phosphines, especially $\text{Rh}(\text{CO})\text{H}(\text{Me}_3\text{SiCH}_2\text{CH}_2\text{PPh}_2)_3$ or $\text{Rh}(\text{CO})\text{H}[\text{Me}_2\text{Si}(\text{CH}_2\text{CH}_2\text{PPh}_2)_2]_3$.

FUEL CELLS

Ternary Fuel Cell Catalysts

UNITED TECHNOLOGIES CORP.

British Appl. 2,133,420A

A ternary metal alloy catalyst comprising Pt, Cr and Co dispersed on an electrically conductive C black has a catalytic activity for the electrochemical reduction of O of at least 2.5 times that of unalloyed Pt on the same C black. Preferably the alloy contains 6–12% Cr, 8–14% Co and the balance Pt.

Fuel Cell Electrode

HITACHI LTD.

U.S. Patent 4,446,210

Fine cracking in the catalyst layer baked on an electrode from a paste is reduced by forming the paste from a mixture of submicron particles, and materials 10^3 – 10^{10} times larger, both materials being electroconductive. The particles may be platinum metal and/or C particles.

Fuel Cell Electrode

ELECTROCHEMISCHE ENERGIECONVERSIE N.V.

U.S. Patent 4,447,505

A fuel cell electrode has a catalytic layer composed of two separately prepared intimate mixtures of a noble metal (preferably Pt) on C having different specific surface areas.

CHEMICAL TECHNOLOGY

Metal Powders

UNIVERSITY OF PARIS

European Appl. 113,281

Metal powders are obtained by heating a suspension of a corresponding oxide, hydroxide or salt in a liquid polyol such as ethylene glycol at a temperature above 85°C. The metals which can be so obtained are Pt, Pd, Ir, Os, Au, Cu, Cd, Pb, Co, Ni and Ag.

Heavy Metal Ion in an Absorbing Agent

T. A. LITOVITZ

European Appl. 118,493

Radioactive I is removed from waste streams by passage over porous silicate glass, silica gel or charcoal carrying a heavy metal ion able to bond the I (or another anion). The metal may be Pt, Pd, Pb, Cu, Tl or Ag.

Biodispersions

DIAMOND SHAMROCK CORP.

U.S. Patent 4,448,886

High dispersion metal crystallites dispersed in a carbonaceous material matrix are produced by growing living microbes in a growth medium containing dissolved metal which is incorporated by the microbes, harvesting the microbes containing the metal and pyrolysing the harvested microbes in an inert or reducing atmosphere. The metal may be Pt, Rh, Ru, Au or Ag.

GLASS TECHNOLOGY

Glass Fibre Spinneret Production

OWENS-CORNING FIBERGLAS CORP.

U.S. Patent 4,447,248

An orificed discharge wall for supplying streams of molten glass is made by inserting orificed elements of Pt, Pd, Ir, Os, Rh, Ru or their base alloys in a laminate member of a layer of refractory metal such as Ti, V, Ta, Cr, Mo, W, Re or their base alloys, and a layer of Pt, Pd, Ir, Os, Rh, Ru or their base alloys. Isostatic pressure and heat are used to seal the elements in the member.

ELECTRICAL AND ELECTRONIC ENGINEERING

Cathode Ray Tube

R.C.A. CORP.

British Appl. 2,136,631A

A cathode ray tube includes metallised glass beads each coated with Hanovia Liquid Bright Platinum No. 5 by painting, screening, spraying or print transfer, and then curing at 500°C to give a Pt-Au alloy coating.

Zinc-Bromine Battery

EXXON RESEARCH & ENGINEERING CO.

European Appl. 113,159

Ru is used to catalyse the recombination of any liberated H_2 with bromide ions in a Zn-Br battery.

Ohmic and/or Barrier Contacts on Semiconductors

I.B.M. DEUTSCHLAND G.m.b.H. *European Appl. 115,550*

Ohmic and/or Schottky barrier layers are produced on a semiconductor by applying a fresh layer of Si in a high vacuum, applying a layer of Pt, Pd, Rh, Zr, Hf or Ni, sintering to form a metal silicide and finally applying a layer of Al, Ta, Ti, W or Ti-W.

Stain Resistant Ruthenium Oxide Resistors

E. I. DU PONT DE NEMOURS & CO.

European Appl. 115,798

Thick film resistors are mainly based on Ru oxide but high Ru contents are associated with staining by a dark black residue. This is now avoided by introducing an O-containing non-alkali metal compound which is stable at up to 150°C, such as noble metal oxides, chromates, Ag oxide, Ba nitrate, etc.

Solar Cell

TELEFUNKEN ELECTRONIC G.m.b.H.

European Appl. 118,797

A solar cell exposed to radiation on both sides has a semiconductor body with Ti-Pd-Ag conductors.

Magnetic Recording Media

INTERNATIONAL BUSINESS MACHINES CORP.

U.S. Patent 4,438,066

Magnetic recording media of high coercivity and saturation magnetisation are alloys $\text{Co}_{1-x}\text{Pt}_x$, where x is 10–30 at%.

Platinum Coated Silver Powder

G.T.E. PRODUCTS CORP.

U.S. Patent 4,439,468

A procedure is provided for coating finely divided Ag powder (90–99.5% of the final product) with an even layer of Pt, for use in conductive pastes.

Ignition Plug

NGK SPARK PLUG CO. LTD.

U.S. Patent 4,442,375

A self-cleaning plug has a porcelain body with its electrode of Pt, Pd, etc., in a conical depression.

Printed Circuits

J. B. O'HARA

U.S. Patent 4,444,619

In producing printed circuits, track areas are electroplated with a Pd-Ni alloy to which both solder and Au plate are directly bondable to provide a joint.

TEMPERATURE MEASUREMENT

Temperature Sensors

GENERAL ELECTRIC CO. P.L.C. *British Appl.* 2,134,712A

In a temperature sensor a metal contact, for example, of Au is separated from an associated region by a barrier layer of an amorphous Ta-Ir alloy.

High Temperature Thermistor

GENERAL ELECTRIC CO.

U.S. Patent 4,447,799

A thermistor, suitable for use at above 400°C includes fired quantities of conductive paste consisting primarily of Bi ruthenate or Ru oxide.

MEDICAL USES

Radiodiagnostic Agents

BYK-MALLINCKRODT CIL B.V. *European Appl.* 113,135

Specified radio-labelled metallocene derivatives are useful radiodiagnostic agents, especially for examining the kidneys. The central metal atom is preferably Ru, Os, Fe, Cr, V or Co.

New Anti-Tumour Platinum Complexes

INCO RESEARCH & DEVELOPMENT CENTER INC.

European Appl. 113,508

New hydrophobic anti-tumour materials which can be incorporated into phospholipid vesicles are complexes of Pt with a phosphatidic acid, amine or diamine.

Electrical Energy Transfer with Living Tissue

BIOSONICS INC.

European Appl. 114,511

Electrical energy may be transferred to and from living tissue using a thin elastomeric glove in which the fingers are provided with Pt electrodes connected to a supply or a load.

Dental Filling Material

ESPE FABRIK PHARMAZEUTISCHER PRAPARATE G.m.b.H.

European Appl. 115,058

A durable dental filling material is a mixture of a curable resin solution and a powdered sintered mixture of a Ca-Al fluorosilicate glass, Pd, Pt, Ag, Au or alloy thereof and, optionally, a polycarboxylic acid and/or a chelating agent.

Platinum Complexes for Cancer Treatment

TANABE SEIYAKU CO. LTD.

European Appl. 115,929

Complexes LPtXX' are useful in the treatment of cancers. L is a 2-aminomethylpyridine and X, X' are each halogen, NO_3 or carboxylate, or XX' is sulphate or phosphate.

Medicinal Bipolar Electrode

SIEMENS A.G.

European Appl. 116,280

A bipolar electrode particularly suitable for heart pacemakers is improved by a surface layer (in the active area) which has a high double layer capacity. This layer consists of a refractory metal carbide, nitride or carbonitride applied to a Pt, Ti or other body.

Anti-Tumour Complexes

DEGUSSA A.G.

European Appl. 116,955

New materials for cancer treatment are the complexes LPtX_2 . L is an optionally substituted 1,2-diphenyl ethylene-diamine and X_2 is an anion(s) such as Cl, Br, phosphate, sulphate or maleate.

Blood Lymphocyte Separation

TECHNICON INSTRUMENTS CORP.

European Appl. 119,692

Lymphocytes are separated from whole blood by centrifuging through a barrier made of Pt, Fe, Au or Ag particles (or particles of their alloys) in a hydrophilic material.

Antivirus Complexes

RESEARCH CORP.

U.S. Patent 4,440,782

New Pt complexes are intended for treating viral infections (for example in fowls). The general description refers to diamine (such as ethylene diamine) and carboxylate (such as malonate) ligands but all of the examples use $\text{Pt}(\text{NH}_3)_2\text{Cl}_2$ or $\text{Pt}(\text{NH}_3)_2(\text{H}_2\text{O})_2$.

Platinum Wire Electrode

MITSUBISHI RAYON CO. LTD.

U.S. Patent 4,442,841

An electrode for use in the living body, for measuring the O concentration in blood, consists of very fine Pt wire coated with cellulose acetate.