

ELECTRICAL AND ELECTRONIC ENGINEERING

160×244 Element PtSi Schottky-Barrier IR-CCD Image Sensor

W. F. KOSONOCKY, F. V. SHALLCROSS, T. S. VILLANI and J. V. GROPE, *IEEE Trans. Electron Devices*, 1985, **ED-32**, (8), 1564-1573

A 160×244 element i.r. charge coupled device image sensor was developed with 80×40 μm² pixels for operation at 30 frames/s with standard TV face interface. The sensor was developed with PtSi Schottky barrier detectors for 3.0-5.0μm thermal imaging.

Novel Method of Producing Ultrasmall Platinum Silicide Gate Electrodes

P. H. WOERLEE, G. A. M. HURKX, W. J. M. J. JOSQUIN and J. F. C. M. VERHOEVEN, *Appl. Phys. Lett.*, 1985, **47**, (7), 700-702

To produce Pt silicide gate electrodes a novel method using a lateral chemical reaction of Pt with polycrystalline Si at a step edge was developed. The width of the wire is determined by the thickness of a sputtered metal layer. Wires with widths between 35 and 300nm have been produced.

In/Pt Ohmic Contacts to GaAs

D. C. MARVIN, N. A. IVES and M. S. LEUNG, *J. Appl. Phys.*, 1985, **58**, (7), 2659-2661

Graded heterojunction InGaAs ohmic contacts to GaAs with improved electrical and mechanical properties have been produced. The improvements result from the use of a thin Pt layer between the In layer and the 100(GaAs) substrate. This layer moderates the reaction of the In and GaAs producing a uniform contact with lower electrical resistivity.

NEW PATENTS

METALS AND ALLOYS

Creep Resistant Platinum Alloys

OWENS-CORNING FIBERGLAS CORP.

U.S. Patent 4,507,156

The creep resistance of a thermomechanical processed Pt-based alloy, for example yttria dispersion-strengthened Pt, is improved by heating the alloy to at least 2800°F for at least 6 hours.

Resistance Alloy

RESEARCH INSTITUTE OF ELECTRIC & MAGNETIC ALLOYS

U.S. Patent 4,518,439

An electrical resistance alloy having a very low temperature coefficient of resistance over a wide range of temperatures contains 59-88% Pd and 12-41% Fe and is produced by working the material in a specified manner.

TEMPERATURE MEASUREMENT

Properties of Industrial-Grade Platinum-Cobalt Resistance Thermometer between 1 and 27K

H. SAKURAI and L. M. BESLEY, *Rev. Sci. Instrum.*, 1985, **56**, (6), 1232-1235

The stability at 20K of five industrial type Pt-Co resistance thermometers undergoing thermal cycling has been studied, together with their resistance-temperature (R/T) characteristics between 1 and 27K, and their self-heating. The stability at 20K on cycling between room temperature and 20K is ~10mK, and on cycling between 100 and 20K it is a few mK. Differences in the R/T relationship between thermometers were very small, but the self-heating effects are relatively large, particularly at temperatures below 4K.

A Reference Function for Platinum Resistance Thermometer Interpolation between 13.8K and 273.15K

R. C. KEMP, L. M. BESLEY and W. R. G. KEMP, *Metrologia*, 1985, **21**, (3), 139-146

Recent accurate thermodynamic data are combined to provide a basis for a reference function for Pt resistance thermometer interpolation between 13.81K and 273.15K. The values of thermodynamic temperature for defining the fixed points of the IPTS and also for a number of secondary points are more accurately assigned than previously. A temperature scale based on this reference function and these defining fixed points would give thermodynamic temperatures to ±2mK. This system is proposed for use in the revision of the IPTS.

CHEMICAL COMPOUNDS

Tetrarhodium Dodecacarbonyl

DOW CHEMICAL CO.

U.S. Patent 4,514,380

Rh₄(CO)₁₂ is made in less than two hours by reacting RhCl₃ with CO in the presence of activated Cu and a Group IA metal halide and at 25-75°C and a pressure of 3.52-35.2 kg/cm².

ELECTROCHEMISTRY

Electrode Manufacture

PERMELEC ELECTRODE LTD. *British Appl. 2,154,248A*

A liquid composition containing electrode component metal (such as Ru, Pd or Ir) ions and an organic compound capable of forming a complex with the metal ions is thermally decomposed to form an electrode.

Electrode for Electrolysis

T.D.K. CORP. *European Appl.* 153,586

Electrodes for use, for example, in the electrolysis of brine and providing increased O overvoltage, reduced O evolution and improved anodic current efficiency consist of a valve metal substrate coated with a mixture of 10–30 mol% Ru oxide, 5–15 mol% Pt, Pt oxide and/or Ir oxide and 55–85 mol% Sn oxide.

Cryoelectrodeposition Electrode

R. M. ROSE and D. R. SADOWAY *European Appl.* 155,749

Amorphous metals and semiconductors may be electrodeposited in a cryogenic environment using Pt foil electrodes.

Ruthenium-Coated Electrodes

DOW CHEMICAL CO. *U.S. Patent* 4,507,183

An electrode is produced by electroplating Ru metal on to a substrate from a nonacidic Ru-containing electroplating solution which includes a salt of the complex $[\text{Ru}_2\text{N}(\text{H}_2\text{O})_2\text{X}_6]^{3-}$ where X is Cl or Br.

Anode for Electrolysis

R. C. LANGLEY *U.S. Patent* 4,512,866

An improved anode for use in electrolytic processes with an electrolyte containing H_2SO_4 acid consists of a valve metal substrate coated with a Pb antipassivation layer and then with a Pb ruthenate or Pb iridate catalyst.

Anode Electrocatalyst

BBC BROWN BOVERI & CO. LTD. *U.S. Patent* 4,513,102

A catalyst for coating anodes for electrolysis is a rutile crystal containing (in mols) 10–96% SnO_2 , 2–45% IrO_2 and 2–45% RuO_2 .

Photoelectrode

UNION OIL CO. OF CALIFORNIA *U.S. Patent* 4,521,499

A specified photoelectrode consists of a substrate containing a semiconductor material and a thin conductive coating which may be RuS_3 , PtCoO_2 , PdCoO_2 , PdCrO_2 or PdRhO_2 , among others.

Water Electrolysis

UNITED TECHNOLOGIES CORP. *U.S. Patent* 4,528,083

The generation of O_2 from a membrane electrolytic cell having a conventional catalytic cathode is improved by using a catalytic anode which is a ternary composition of at least two platinum group metals and one valve metal or their oxides. The preferred composition is 50% Ru, 25% Ir and 25% Ta.

Anode for the Electrolysis of Sea Water

INSTITUT KHIMII DALNEVOSTOCHNOGO NAUCHNOGO TSENTRA AN SSSR *Russian Patent* 1,139,770

An anode of improved stability for use in the electrolysis of sea water consists of a Ti substrate coated with a mixture of 25–91% Co, 3–15% Ru and 6–60% Ti in the form of their oxides, such that the ratio Ru oxide:TiO₂ is 1:2–4.

ELECTRODEPOSITION AND SURFACE COATINGS

Palladium Electroplating

A. T. & T. BELL LABORATORIES *U.S. Patent* 4,512,963

In an improved Pd electroplating process the metal is supplied as a Pd diammine hydroxide.

Corrosion-Resistant Coating

NASA *U.S. Patent* 4,522,844

A uniform thin metal film free from pinholes is deposited on a substrate by bombarding the amorphous metal or alloy with ions of an inert gas in the presence of a magnetic field and depositing the vapour so formed. Platinum group and/or lanthanide metals may be used in the process, and specific alloys include $(\text{Mo}_{0.6}\text{Ru}_{0.4})_{82}\text{B}_{18}$.

Thermally Stable Coatings

TURBINE COMPONENTS CORP. *U.S. Patent* 4,526,814

Procedures for protecting the surface of Ni-, Co- or Fe-based alloys from high-temperature oxidation by forming a protective diffusion layer of combined Al, Cr and Pt are claimed.

Palladium Electroplating Bath

INOVAN-STROEBE G.m.b.H. & CO. K.G. *German Offen.* 3,347,384

Uniform, bright, ductile Pd coatings are obtained by electrodeposition from a bath containing a Pd salt, a complexing agent which is a pyridine derivative such as pyridine acetic acid and Na K tartrate.

LABORATORY APPARATUS AND TECHNIQUE

Toxic Gas Detection

U.S. DEPARTMENT OF ENERGY *British Appl.* 2,155,184A

An instrument for detecting low concentrations of a pollutant or other component in air or other gas, includes a heating filament having a catalytic surface of a noble metal (such as Pt, Ir, Pd, Rh, Au, or a mixture of Pd and Ag), for exposure to the gas and producing a derivative product from the component, and an electrochemical sensor.

Force Detector

SHIMADZU CORP. *European Appl.* 150,584

In a high-precision, vibration-type force detector of good stability the vibration string is made of a Pt-based Ni-containing alloy such as 92.5%Pt–7.5%Ni.

Analytical Apparatus

ANATEL INSTRUMENT CORP. *European Appl.* 150,923

An instrument for measuring the organic C content of water samples incorporates two concentric circular electrodes, preferably of Pt, Pd, Rh, Ir or Ti.

Oxygen Sensor

TOYOTA CHOUO KENKYUSHO K.K.

U.S. Patent 4,510,036

A limiting electric current type O concentration detector of simple construction incorporates a ZrO_2 solid electrolyte, for example, stabilised with Y_2O_3 , a Pt film electrode and a Pt film heater.

Radiation Pyrometer

SMITHS INDUSTRIES P.L.C. *U.S. Patent 4,521,088*

A radiation pyrometer for a gas-turbine engine has a sapphire lens which focuses radiation from the turbine blades on to the end of a fibre-optic cable. The exposed front surface of the lens is coated, by vapour-phase deposition, with a mixture of Al_2O_3 and Pt to catalyse the oxidation of soot.

Carbon Monoxide Sensor

HONEYWELL INC. *U.S. Patent 4,523,690*

A sensor for toxic gases such as CO incorporates a Pt sensing electrode, a Pt counter electrode and a Ag-AgCl reference electrode.

Gas Sensor

ALLIED CORP. *U.S. Patent 4,525,266*

An electrochemical cell, particularly suitable for detecting H_2S , includes a C counter electrode, a Pt or Au sensing electrode and a Pt reference electrode.

JOINING

Brazing Alloy

ALLIED CORP. *U.S. Patent 4,508,257*

An alloy, which is free from B and P and is suitable for brazing at less than $1000^\circ C$, consists of Ni with 15–20 at.% Si and 25–35 at.% Pd.

Glass-to-Metal Seal

HONEYWELL INC. *U.S. Patent 4,509,880*

In a procedure for sealing a glass rod or tube into a narrow tube of metal, such as steel, the inserted end of the glass is first metallised for better bonding with the solder. According to the claims the metallisation consists of successive thin films of Ti-W alloy, Ni and Au but in the text a double coat of Pt-Ag is best.

HETEROGENEOUS CATALYSIS

Hydrocarbon Reforming

CHEVRON RESEARCH CO. *British Appl. 2,153,384A*

In a method of reforming hydrocarbons, in particular of dehydrocyclising alkanes containing at least 6 C atoms to form aromatic hydrocarbons, the hydrocarbons are contacted with a catalyst containing a large-pore zeolite (preferably of type L, X or Y), a Group VIII metal such as Pt, Pd, Rh, Ir or Ru, and one of Ba, Sr and Ca, under conditions so adjusted that the selectivity for n-hexane dehydrocyclisation is $> 50\%$.

Hydrocarbon Conversion

CHEVRON RESEARCH CO. *British Appl. 2,153,840A*

A hydrocarbon feed having a S concentration < 500 ppb is reformed over a dehydrocyclisation catalyst with a large-bore zeolite of at least one Group VIII metal, preferably Pt, to produce aromatics and H_2 .

Coal Liquefaction

COAL INDUSTRY (PATENTS) LTD.

British Appl. 2,156,841A

In a method of coal liquefaction using a liquid H donor solvent, at least part of the solvent is catalytically dehydrogenated using Pt and/or Pd on Al_2O_3 , SiO_2 or C, to reduce the cyclic saturates.

Heating Apparatus

NAKAJIMA DOKOSHO CO. LTD. *British Appl. 2,156,964A*

A heating apparatus, such as a soldering iron, using liquefied gas as a heat source, employs a combustion catalyst which is preferably 90–98% Pt and 2–10% Rh on Al_2O_3 and/or SiO_2 coated with $\gamma-Al_2O_3$.

Nitrogen Oxide Reduction in Stack Gases

UHDE G.m.b.H. *European Appl. 152,907*

NO_x in the stack gases from coal-fired power stations is reduced in two catalytic stages. In the first stage the reducing agent is the CO/hydrocarbon component of the gases, and in the second stage the N_2O so formed is reacted with an additive such as NH_3 . In both stages a washable catalyst such as Pt is used.

Hydrocarbon Reforming

INSTITUT FRANCAIS DU PETROLE

European Appl. 153,891

In a process for reforming a hydrocarbon stream by passage through multiple catalyst beds, the first bed, which contains 8–40% of the total amount of catalyst, consists of an Al_2O_3 carrier supporting 0.05–0.6% Pt, 0.005–3% Re and 0.1–15% halogen. The second and any subsequent beds consist of an Al_2O_3 carrier with 0.05–0.6% Pt, Sn, Tl and/or In and halogen.

Diesel Exhaust Gas Purification

DEGUSSA A.G. *European Appl. 154,145*

The filter and converter for diesel engine exhaust gases contains a number of filter layers of two different types: (a) a layer carrying a catalyst for promoting C black combustion and (b) a layer carrying a catalyst for burning off gaseous contaminants. The catalysts specified mostly contain base metals for (a) and platinum metals for (b).

Catalytic Combustion of Fuel in an I.C. Engine Cylinder

COVENTRY CITY COUNCIL *European Appl. 156,543*

An I.C. engine has two cylinders connected at their head ends by a combustion chamber containing a catalyst. The cylinders undergo a four stroke operation but the purpose of the Pt or mixed platinum metal catalyst is low temperature combustion.

Oxidation Catalyst

AMERICAN CYANAMID CO. *European Appl.* 158,119

A catalyst for the adiabatic oxidation of HCN to isocyanic acid consists of Pd-plated Ag crystallites.

Reduction Device

BECTON, DICKINSON & CO. *European Appl.* 158,728

A rupturable package provides means for reducing the O₂ in a given volume of air, such as a sealed gas jar, for growing anaerobic bacteria. The package contains a H₂-generating material and a catalyst such as a supported platinum group metal, preferably Pd.

Chimney Catalytic Reactor

FONDIS S.A. *European Appl.* 159,955

Pt or Pd catalyst units fitted in a domestic chimney, for example, are provided with a secondary air supply.

Olefin Oxidation Catalyst

PHILLIPS PETROLEUM CO. *U.S. Patent* 4,507,507

A Pd/heteropolyacid/surfactant catalyst system, used with suitable diluents, improves the oxidation of olefins to ketones while reducing corrosive effects.

Catalysts for Olefin Production

AIR PRODUCTS & CHEMICALS INC.

U.S. Patent 4,510,267

The conversion of synthesis gas to 2-6C olefins is catalysed by a Ru carbonyl complex such as Ru₃(CO)₁₂ supported on a carrier consisting of or containing Ce oxide.

Synthesis Gas Conversion Catalyst

STANDARD OIL CO. (OHIO) *U.S. Patent* 4,510,320

A catalyst for the production of alkanes and alkyl acetates from synthesis gas and acetic acid consists of a carrier such as Al₂O₃-SiO₂ supporting a mixed oxide of Ru, Ni and a Group IA metal, preferably Na.

Catalyst for Methanol Conversion

EXXON RESEARCH & ENGINEERING CO.

U.S. Patent 4,513,161

A catalyst for the conversion of methanol to higher paraffins and olefins consists of Ru on TiO₂.

Synthesis Gas Conversion Catalyst

EASTMAN KODAK CO. *U.S. Patent* 4,518,714

A catalyst for the conversion of synthesis gas to olefins consists of a Zn oxide carrier supporting about 1% each of Pd and Fe.

Dehydrogenation Catalyst

PHILLIPS PETROLEUM CO. *U.S. Patent* 4,520,223

A catalyst for the conversion of paraffins to olefins or dienes is obtained by depositing a platinum group metal, preferably Pt, on the surface of a pelletised refractory support, using an aqueous solution of an inorganic complex such as (NH₄)₆Pt(SO₄)₄.

Fischer-Tropsch Synthesis

MOBIL OIL CO. *U.S. Patent* 4,523,047

A specified procedure for the conversion of synthesis gas to liquid hydrocarbons incorporates, as catalyst, Pt or Pd supported on ZSM-45 zeolite.

Automobile Exhaust Catalyst

UOP INC. *U.S. Patent* 4,526,886

An improved three-way catalyst consists of an Al₂O₃ carrier supporting a mixture of 60-90% U, 4.5-35% Pt and 0.5-5% Rh.

Sea Water Deoxygenation

CONOCO INC. *U.S. Patent* 4,527,626

Injection-quality water for use in oil wells is obtained by (a) electrolysing sea water to obtain H₂, (b) mixing the H₂ with a mass of sea water containing dissolved O₂ and passing the mixture through a catalyst bed. The catalyst preferably consists of anion exchange resin beads coated with Pd.

Automotive Catalyst

TOYOTO JIDOSHA KOGYO K.K. and CATALER INDUSTRIAL CO. LTD. *U.S. Patent* 4,528,279

A durable catalyst for the purification of I.C. engine exhaust gases consists of a ceramic monolithic substrate coated with a film of Al₂O₃ containing 17.5-50% lanthanide metals of which more than 90% are oxides of Ce and La and the atomic ratio Ce:La is 0.05-0.3:1, and impregnated with Pt and Rh.

Lanthanide Catalyst for Carbonylation Reactions

HOECHST A.G. *German Offen.* 3,340,115

The formation of acetic acid and acetaldehyde from synthesis gas is catalysed by supported Rh, a promoter such as Y and a Group IA metal activator, such as Li.

Catalyst for Methanol Conversion

SUD-CHEMIE A.G. *German Offen.* 3,340,569

A catalyst for the conversion of aqueous methanol to synthesis gas consists of a carrier, based on TiO₂ or CeO₂, impregnated with 0.15-0.5% Pt, Pd or Rh.

Oxidation Catalyst

DRAGERWERK A.G. *German Offen.* 3,405,100

A catalyst for the oxidation of CO in industrial effluent gases to CO₂ consists of an activated C carrier impregnated with an ammine-forming metal such as Zn and then with Pt or Pd.

Purification of Flue Gases

SUD-CHEMIE A.G. *German Offen.* 3,428,231

NO_x in flue gases, especially those containing S oxides, is reduced by H₂ and C oxide(s) over a catalyst consisting of an Al₂O₃ and/or SiO₂ carrier containing lanthanide metal oxide(s), supporting Pt, Pd, Rh and/or Ru.

Wires for Catalytic Gauzes

VEB MANSFELD-KOMBINAT WILHELM PIECK
East German Patent 222,474

Wires for making catalytic gauzes consist of (a) a core which may contain base metal(s) but is preferably an alloy of Pt with 5% Rh and (b) a sheath which is preferably made of 75% Pd, 24% Pt and 1% Rh alloy.

HOMOGENEOUS CATALYSIS

Platinum- or Palladium-Siloxane Catalysts

DEGUSSA A.G. *European Appl. 151,991*
New catalysts for hydrosilylation and hydrogenation reactions are polymeric organosiloxane ammonium compounds of formula $(NR_4)_x Y^{x-}$ where Y is a Pt or Pd hexahalide or tetrahalide ion of valance x and R is an organic group of which at least one contains a siloxane group, such as $[N(CH_2CH_2CH_2SiO_{3/2})_4]_2 PtCl_4$.

Rhodium Catalyst for Ester Production

BP CHEMICALS LTD. *European Appl. 155,122*
A second ester is produced by reacting a first carboxylic ester, an olefin, CO and H_2 in the presence of a Rh source, a Ru source and Co or Zn iodide. Thus methyl acetate can be converted to propyl acetate with ethylene in the presence of Rh and Ru trichlorides, Zn iodide and picoline.

Rhodium Complex Catalyst

EXXON RESEARCH & ENGINEERING CO.
European Appl. 159,460

In a process for olefin hydroformylation the catalyst is a Rh complex of formula $Rh(L)_3(CO)H$ where L is a diaryl (higher alkyl) phosphine.

Platinum Complex Catalysts

MINNESOTA MINING & MANUFACTURING CO.
U.S. Patent 4,511,715

Olefin hydrosilylation is catalysed by a complex $PtCl_2(C_2H_4)(L)$ where L is pyridine or phenazine.

Catalyst for Acetaldehyde Production

NATIONAL DISTILLERS & CHEMICAL CORP.
U.S. Patent 4,514,521

A catalyst for the production of acetaldehyde and/or ethanol from synthesis gas is preferably $[RuCl_2(CO)_3]_2$ promoted with HX, LiX or a halide of a lanthanide metal.

Ruthenium Complex Catalyst

STANDARD OIL CO. *U.S. Patent 4,519,954*

A catalyst for the liquid-phase dimerisation of acrylic monomers consists of an oxide carrier such as SiO_2 , functionalised preferably with a P ligand such as $(EtO)_2SiCH_2CH_2PPh_2$ to which is bonded a Ru complex such as Ru dichloride tris(acrylonitrile).

Anti-Adhesive Composition

RHONE-POULENC SPECIALITES CHIMIQUES
French Appls. 2,554,117/18

An anti-adhesive composition curable at elevated temperature consists of an organopolysiloxane containing vinyl groups, an organohdropolysiloxane, a catalyst which is a complex of a platinum group metal, such as bis(ethylene) Rh acetylacetonate, and a specified inhibitor.

Rhodium Complex Catalyst

RUHRCHEMIE A.G. *German Offen. 3,341,035*
In a specified procedure for making aldehydes by the reaction of olefins with synthesis gas the catalyst is a Rh phosphine complex such as Rh triphenyl phosphine trisulphonate.

FUEL CELLS

Oxygen Permeable Membrane

TOSHIBA K.K. *European Appl. 154,468*
A composite membrane and air electrode for H_2-O_2 fuel cells, etc., consists of a porous membrane and a thin layer of metal oxide in a C matrix. The metal of the oxide may be Pt, Rh, Ir, Os or Ru.

Graphite Fuel Cell Electrode

HITACHI LTD. *European Appl. 157,385*
The performance of a fuel cell is improved by using electrodes made from lamellar graphite with a Group IB and/or Group VIII noble metal deposited on the surface and between the lamellae of the graphite. This may be achieved electrochemically, for example by using chloroplatinic acid.

Fuel Cell

PRUTEC LTD *U.S. Patent 4,513,066*
In a thin film, high pressure fuel cell of specified design, the electrodes are hydrophobic porous membranes coated with a thin film of precious metal catalyst, such as Pt.

CHEMICAL TECHNOLOGY

Diffusion Transfer Film Units

POLAROID CORP. *European Appl. 154,377*
Particularly useful image-receiving layers in a photographic product for Ag transfer images comprise colloidal Pd dispersed in colloidal SiO_2 .

The Production of Metal Particles from Molten Metal

JOHNSON MATTHEY P.L.C. *European Appl. 156,629*
A thin film of molten metal is formed on an angled portion of a surface wetted by the metal and the film is then broken up by a gas flow. The metal may be Pt, Pd, Ru, Au, Cu, Co, Ni, etc.

Infrared Absorbers

MITSUI TOATSU CHEMICALS INC.

U.S. Patent 4,508,655

Useful i.r. absorbers for incorporating into plastics are quaternary ammonium salts of specified halobenzene-o-dithiolates of Pt, Pd or Ni.

Metal Fibre Catchment Systems

JOHNSON MATTHEY P.L.C. *U.S. Patent 4,511,539*

A getter for the recovery of precious metals, for example from the off-gases from a nitric acid plant, consists of an assembly of randomly oriented irregular 0.5-4 inch fibres of Pt, Pd, Rh, Ru, Ir, Ag, Au and/or their alloys, produced by a melt-extraction or melt-spun process.

GLASS TECHNOLOGY

Terminals for Glass-Melting Feeder

OWENS-CORNING FIBERGLAS CORP.

U.S. Patent 4,516,995

Terminals for supplying current to a feeder in a fibre-glass spinning plant consist of a core of refractory base metal sheathed in a platinum metal or alloy.

ZGS-Pd Sandwich

JOHNSON MATTHEY P.L.C. *U.S. Patent 4,525,433*

Composite materials of good strength, ductility and electrical conductivity (particularly suitable for use in the manufacture of bushings for glass-fibre production) consist of (a) a layer of Pd or Pd alloy, optionally dispersion strengthened sandwiched between (b) two layers of Pt or a Pt alloy, optionally dispersion strengthened.

Glass Film

D. BOTTGER

German Offen. 3,507,852

Glass film is made by drawing molten glass through an electrically heated spinning plate of Pt or Pt alloy.

ELECTRICAL AND ELECTRONIC ENGINEERING

CMOS Structure Production

NATIONAL SEMICONDUCTOR CORP.

British Appl. 2,157,885A

In a process for producing CMOS structures with bipolar transistors, a layer of Pt is deposited over a wafer surface and sintered to create Pt silicide within contact holes.

Semiconductor Device Fabrication

FERRANTI P.L.C.

British Appl. 2,158,639A

An initially continuous Pt layer is deposited on a Si oxide passivating material during the production of a semiconductor device, in which Pt silicide is selectively formed.

Magnetic Transducer

HITACHI LTD.

European Appl. 152,000

A Co-Pt hard magnetic alloy may be used as the film in a magnetic transducer using magnetoresistance.

MESFET Transistors

LABORATOIRES D'ELECTRONIQUE ET DE PHYSIQUE APPLIQUEE LEP

European Appl. 152,126

Ti-Pt-Au or Cr-Pt-Au multilayer contacts may be used in a MESFET field effect transistor for hyperfrequency applications.

Small Diameter Radiant Tube Heater

WESTINGHOUSE ELECTRIC CORP.

European Appl. 152,734

Local high temperature heating of the inside of tube bores is achieved using an insulating rod wound with bare Pt-Rh wires.

Solid State Electrolytic Battery

SHARP K.K.

European Appl. 156,241

A novel battery has a transition metal cathode capable of storing H₂, such as a Ti-Ni alloy, a solid heteropolyacid electrolyte and a Pt plate-Pt wire anode.

Thermionic Electron Emitter

THORN EMI-VARIAN LTD.

European Appl. 156,454

The electron emissive layer of the emitter is formed of an alloy containing 32-34 at.% Os and the balance as W and a porous refractory activated with a Group IIA metal, such as Ba oxide in Al₂O₃.

Tungsten-Iridium Impregnated Cathode

VARIAN ASSOCIATES INC.

European Appl. 157,634

Pure W agglomerates are formed by sintering fine particles and then they are comminuted to coarse particles. The particles are mixed with fine Ir particles and then sintered. The cathode shapes formed are impregnated with a Group IIA aluminate.

Connections for Semiconductors

TEXAS INSTRUMENTS INC.

U.S. Patent 4,507,851

Electrical interconnections on a semiconductor device are prepared by (a) sputter etching a SiO₂ or Si nitride surface having windows on to a Si substrate and coating the entire surface consecutively with (b) Pt, (c) a barrier metal such as Ti-W alloy and (d) a conductive metal such as Al.

Metallised Ceramic

INTERNATIONAL BUSINESS MACHINES CORP.

U.S. Patent 4,510,000

In a process for making multilayer ceramic modules for the electronics industry, a green dielectric ceramic sheet bearing a Mo or W pattern is laminated with the metallised side of a plastic film, the backing is peeled away and the resulting composite is fired. The metallising metal, Pt, Rh, Ni or preferably Pd, alloys with the Mo or W to form a densified structure.

Solar Collector

INCO SELECTIVE SURFACES LTD.

U.S. Patent 4,518,467

A solar collector for use at high temperatures is produced by forming a porous oxide film on a stainless steel surface and electrolytically depositing Pd or Ni in the pores.

Merged Fuse and Schottky Diode

ADVANCED MICRO DEVICES INC.

U.S. Patent 4,518,981

A merged Pt silicide fuse and Schottky diode structure especially for use in integrated circuits is claimed. It is compact and shows improved reverse-biased electrical characteristics.

Variable Resistor

MURATA MANUFACTURING CO. LTD.

U.S. Patent 4,527,147

A variable resistor device consists of an insulating substrate; a conductive electrode formed from Ag-Pd, Ag-Pt or Ag, and optionally a glass frit, and resistors formed from glass frit; a filler such as Al_2O_3 , TiO_2 or Bi_2O_3 ; and an electrically conductive material which is Rh, Ru or Ag-Pd.

TEMPERATURE MEASUREMENT

Well Tool Sensors

OTIS ENGINEERING CORP. *British Appls. 2,153,536/37A*
Pt resistors are used for sensing temperature in a collar locator sensor and a flow sensor for use in a well tool.

Heating Apparatus Temperature Control

THORN EMI DOMESTIC APPLIANCES LTD.

British Appl. 2,153,555A

A Pt temperature sensor is used in the temperature control of heating apparatus, such as i.r. heating apparatus.

Temperature Sensor

TRW INC.

U.S. Patent 4,517,545

A temperature sensor of high resistivity and positive temperature coefficient of resistance is a fired thick film of a composition containing 35–85% glass frit and 15–65% of a mixture of Fe and Pd particles.

MEDICAL USES

Intravascular Catheter

M. MIROWSKI

British Appl. 2,157,954A

The distal tip of an electrode in an intravascular multiple electrode unitary catheter is made of a Pt-Ir alloy. An intermediate electrode includes lead fittings and spring wire of Pt-coated Ti. Ag wire is also employed in the device.

Noble Metal Dental Alloy

DEGUSSA A.G.

European Appl. 154,123

An alloy for firing on to ceramics for dental purposes contains 20–65% Au, 25–65% Pd, 0–7% Ga, 0.2–11% In and/or Sn, 0–2% Cu, 0.05–1% Ru, Ir and/or Re, V, Fe and Co but base metal content <5%.

Detectable Molecules

ENZO BIOCHEM INC.

European Appl. 154,788

Detectable organic molecules useful for in vitro or in vivo assays or therapy include a radioactive or non-radioactive metal capable of detection in a diagnostic procedure, such as an isotope of Pt, Pd, Ir, Os, Ru, Au, Ag, Ce, Er, Eu, Gd, Nd, Pr, Tb, Yb or Y.

Biodegradable Implant

UNIVERSITY OF STRATHCLYDE *European Appl. 155,288*

A biodegradable implant is made from a degradable glass containing a chemotherapeutic material which may be Pt, Au, Ag, Cu or Zn.

Silicone Compositions

WACKER-CHEMIE G.m.b.H. *European Appl. 158,141*

Curable silicone compositions for use in dentistry incorporate a Pt catalyst such as a product of reaction of chloroplatinic acid with a divinyltetramethyldisiloxane.

Cardiac Lead

A. E. ASTRINSKI

European Appl. 159,753

Electrodes of Pt, Pt-Ir or the like are used in a new design of cardiac sensing and pacing lead.

Dental Alloy

JENERIC INDUSTRIES INC.

U.S. Patent 4,518,564

A dental alloy for porcelain-fused-to-metal restorations preferably contains 65–75% Pd, 8–16% Cu, 3.5–6% In, 2–6% Sn, 0.5–1% Ru, 2–5.5% Zn and 0.05–0.15% B.

Carcinostatic Platinum Complexes

NIPPON KAYAKU K.K.

French Appl. 2,553,777

Twenty-three complexes of Pt with aliphatic diamines are claimed. They are more water-soluble and less toxic than cis-platin.

Platinum Complexes in Tumour Treatment

NATEC INSTITUT FUR NATURWISSENSCHAFTLICH-TECHNISCHE DIENSTE G.m.b.H.

German Offen. 3,340,806

Complexes of formula $L[Pt(NH_3)_2Cl_{1-3}]_2$ are claimed, L is a 5,8-dihydroxy-1,4-naphthoquinone.

Implantable Electrode

SIEMENS A.G.

German Offen. 3,345,990

In a specified implantable electrode device, such as for a cardiac pacemaker, the active electrode is preferably made of Pt or Pt-Ir alloy.