

in the presence of H_2SO_4 at 197–200°C. The formation of polymeric Ir(IV) compounds reduces the catalytic activity. Unstable intermediate compounds, probably of Ir(VI), form initially and are strongly oxidising. Small amounts of Ir evaporate during oxidation of Ir perchlorate due to formation of the higher oxide IrO_3 .

Catalytic Oxidation of Triphenylphosphine Using a Ruthenium-Oxygen Complex

B. W. GRAHAM, K. R. LAING, C. J. O'CONNOR and W. R. ROPER, *J. Chem. Soc., D, Chem. Commun.*, 1970, (19), 1272

$Ru(O_2)(NCS)(NO)(PPh_3)_2$ efficiently catalyses oxidation by O_2 of PPh_3 to the oxide.

Hydrogenation of Olefins by μ -Dichloro- π -benzene-ruthenium(II)

I. OGATA, R. IWATA and Y. IKEDA, *Tetrahedron Letters*, 1970, (34), 3011–3014

The hydrogenation of pentenes by $[Ru(C_6H_6)Cl_2]_n$ was studied in various solvents. The catalytic activity and reaction products depended on the solvent used. The mechanism of hydrogenation and the species produced in coordinating solvents, e.g. DMSO, are discussed.

FUEL CELLS

A Fuel-Cell that Operates on Human Blood

Chemical Week, 1970, 107, (2), 40

A fuel cell which could power an artificial heart has electrodes of a noble metal substrate to which selective catalysts of Au-Pd alloys are bonded. Placed directly in the blood, one electrode reacts preferentially with glucose in the blood, the other with O_2 . 20 $\mu w/cm^2$ of electrode

were obtained; about 10 w would be needed to power an artificial heart.

CHEMICAL TECHNOLOGY

Influence of Palladium on the Corrosion and Electrochemical Behaviour of Steel OX25H6T

N. D. TOMASHOV, G. P. CHERNOVA, L. N. VOLKOV, *Zaschita Metal.*, 1970, 6, (4), 425–427

Studies on the steel OX25H6T, which contains 6% Ni and 25% Cr, showed that passivation using 0.1–0.5% Pd occurs in two stages. The corrosion rates for various Pd additions were: 0.1% Pd, 26.8 g/m^2h ; 0.2% Pd, 18 g/m^2h ; 0.5% Pd, 24.5 g/m^2h , in 20% H_2SO_4 at 100°C for 5 h testing.

TEMPERATURE MEASUREMENT

On the Control of the Temperature Regime of Glass Masses Delivered for Moulding

V. M. BUDOV, YU. V. SESKUTOV, V. SH. YAKUPOV, V. S. PAVLOV and V. V. FOKIN, *Steklo Keram.*, 1970, (8), 6–8

Studies of the variations with depth of temperature of molten sheet glass in cooling tanks were carried out using high temperature thermocouples above the surface, Pt-cased thermocouples projecting from the tank walls into the glass and open junction low-inertia Pt:Rh-Pt thermocouples dipped into the glass to various depths. Fluctuations and variations at these points indicate that one temperature-measuring point is insufficient and that the thermal processes are complex.

NEW PATENTS

METALS AND ALLOYS

Alloys of Variable Transition Temperature

F. E. WANG & W. J. BUEHLER
British Patent 1,202,404

The alloy JL_xM_{1-x} has a martensitic transition temperature depending on the ratio L : M. J is a Group VIA metal, and makes up 50 at.% of the alloy, the remaining 50% being L + M, where x is greater than 0 and less than 1. Typically, J is Zr, L is Rh and M is Ru or J is Zr, L is Pd and M is Rh.

Workable Duplex Structured Ruthenium Alloys

INTERNATIONAL NICKEL CO. INC.
U.S. Patent 3,498,763

A cold-workable Ru alloy capable of being cold

drawn to wire contains about 60–90% Ru, 5–40% Cu, up to about 35% Pd and up to 10% Ni. It is produced by liquid-phase sintering, preferably by infiltration of Cu or Cu alloy, into a Ru compact at a temperature between 1083°C and 1500°C.

Dispersion-hardened Noble Metals

P. R. MALLORY & CO. INC. *U.S. Patent* 3,515,542
Cu, Au, Ag, Pt, Pd and their alloys are strengthened or hardened by introducing up to 10% of a compound of Cr, Ti, Th, U, Zr, B or Si or alloys thereof. A melt is formed of the noble metal and the hardening element and gas bubbled through the melt to form the compound, usually an oxide.

Hardening of Platinum Metals

JOHNSON, MATTHEY & CO. LTD
German Appl. 1,533,275

Pt, Pd, Rh and their alloys with one or more

other Pt metals are hardened by the addition of a small amount of one or more base metals. These metals, such as Cr, must form compounds stable at high temperatures.

Dispersion-strengthened Metals

JOHNSON, MATTHEY & CO. LTD
German Appl. 1,935,329

A molten metal (Ag, Au or a Pt metal) is sprayed, together with a disperse-phase component (oxide, carbide, nitride, or sulphide) on to a cooled former. The product may be suitable for, e.g., electric contacts, thermoelements or resistors; or for use as a catalyst, diffusion membrane or spinneret.

CHEMICAL COMPOUNDS

Electrically Conductive Oxides Containing Palladium

E. I. DU PONT DE NEMOURS & CO.
U.S. Patent 3,498,931

New electrically conductive oxides have the formula $PdMO_2$, in which M is Co, Cr, Rh or Cr/Rh, but may vary slightly in stoichiometry from the formula. They are prepared by the reaction of a Pd dihalide, optionally mixed with Pd, and an appropriate oxide containing M.

Organometallic Polymers

MCDONNELL DOUGLAS CORP.
U.S. Patent 3,504,052

A novel class of polymers contains ruthenocene or osmocene units which are interlinked to form polymeric products having high heat stability and other advantageous properties. They are produced by reacting ruthenocene or osmocene with an aldehyde or ketone in the melt phase and in the presence of a Lewis acid catalyst.

ELECTRODEPOSITION AND SURFACE COATINGS

Metallising of Ceramics

E. I. DU PONT DE NEMOURS & CO.
British Patent 1,202,999

A ceramic is metallised by applying to its surface a finely divided granular noble metal powder. This powder comprises at least 60 wt.% of Pt and optionally a further metal selected from Pd, Rh and/or Ru. At least 50 wt.% of the Pt must have a surface area of 0.01–1 m²/g. The coated surface is fired, preferably at 1400–2000°C, to give a tightly adherent conductive metal film.

Oxidation-resistant Coated Article Containing Iridium, Ruthenium, Molybdenum or Tungsten

INTERNATIONAL NICKEL CO. INC.
U.S. Patent 3,499,740

A coated metal article has a body and a coating of

different compositions which are resistant to interdiffusion at elevated temperatures. They are single-phase conjugate compositions falling at opposite terminals of an alloy tie line on a ternary metallurgical system diagram having Au at one apex, Pd at a second; Ru, Ir, W or Mo at the third.

Palladium Coated Electric Contacts

INTERNATIONAL NICKEL CO. INC.
U.S. Patent 3,500,537

Corrosion-resistant electrical contacts are made coated with Pd. The Pd is electrodeposited from an aqueous ammoniacal bath comprising tetrammino-palladous bromide and having a pH of about 8–10. The deposit is highly ductile thus permitting deformation to form electrical contacts.

Plating Solutions for Rhodium

K. OHKUBO et al. *U.S. Patent* 3,515,651

An electrolyte for electroplating low stress Rh and Rh alloy deposits comprises a Rh salt, optionally a salt of another metal capable of alloying with Rh and at least one of hexameta-phosphoric acid and alkali metal or ammonium hexametaphosphates.

JOINING

Brazing Alloy for Joining Graphite to Graphite and to Refractory Metals

U.S. ATOMIC ENERGY COMMISSION
U.S. Patent 3,497,332

The joining of graphite to graphite and to refractory metals such as Mo, W and their alloys is effected with a brazing alloy consisting essentially of Ni, Pd and 2–12% Cr.

Solderable Stainless Steel

P. R. MALLORY & CO. INC. *U.S. Patent* 3,515,950

A method for rendering solderable a stainless steel body resistant to corrosive attack from common electrolytes includes covering one layer of a stainless steel body with layers of metal. A first metal layer serves as a barrier layer to the diffusion of a subsequent metal layer through to the stainless steel body. The subsequent metal layer is resistant to corrosive attack from common electrolytes, is solderable and consists of Ag alloyed with Au, Pd, Pt, Re or Os. The alloy layer may be formed by covering the barrier layer with a layer of Ag and Au or one of the other metals. The layered stainless steel body is heated to a temperature below the melting point temperature of the metal layer having the lowest melting point so that the layers (except the barrier layer) diffuse into one another, forming an alloy layer overlaying the barrier layer.

Solder for Thermoelements

SIEMENS A.G. *German Appl.* 1,533,547

The solder is an alloy of composition:



where Me is Fe or a metal of Group IV, V or VI, other than Cr and Zr, and y is ≥ 0 .

Soldering Semiconductors

TELEFUNKEN PATENTVERWERTUNGS-G.m.b.H.
German Appl. 1,564,901

A diode or transistor is attached to a Mo or W base by two layers of a noble metal, preferably Rh.

Solder for Steel and Refractory Alloys

L. A. MARKOVICH et al. *U.S.S.R. Patent* 261,887
The solder has the composition 32–34% Pd, 22–25% Ni, 11–13% Cr and the remainder Cu.

HETEROGENEOUS CATALYSIS

Self-cleaning Gas Ovens

GENERAL ELECTRIC CO.
British Patent 1,200,087

Cooking fumes in a gas oven are oxidised by an oven liner coated with a Pt catalyst.

Dehydrogenation Catalyst

BRITISH PETROLEUM CO. LTD
British Patent 1,200,651

Normal alkanes are dehydrogenated to normal alkenes in the presence of a Pt group metal exchanged on to a molecular sieve.

Oxidation Catalyst

INSTYTUT NAWOZOW SZTYCZNYCH
British Patent 1,200,952

Concentrated NO is formed by the oxidation of NH_3 with O_2 and water vapour in the presence of a Pt catalyst.

Acrylonitrile Dimerisation Catalyst

E. I. DU PONT DE NEMOURS & CO.
British Patent 1,205,285

Adiponitrile is prepared by the dimerisation of acrylonitrile in the presence of a catalyst which is a mixture of a water-soluble salt of a carboxylic acid and a water-soluble Ru salt, supported on C or Al_2O_3 .

Catalyst

IMPERIAL CHEMICAL INDUSTRIES LTD
British Patent 1,205,521

Aromatic isocyanates are prepared by the action of nitro or nitroso compounds with CO in the presence of a catalyst which is a mixture of at least one of the noble metals Ru, Rh, Pd, Os, Ir and Pt with two or more heavy metal oxides, hydroxides, carbonates, basic carbonates or basic phosphates.

Isomerisation Catalyst

IMPERIAL CHEMICAL INDUSTRIES LTD
British Patent 1,205,677

The isomerisation of olefines is effected in the

presence of noble metals, preferably Pt, Ru or Pd. Pd gives best results.

Two-stage Hydrocarbon Hydrogenation

UNIVERSAL OIL PRODUCTS CO.
U.S. Patent 3,494,859

An aromatic hydrocarbon feedstock containing diolefines, mono-olefines and sulphur contaminants is hydrogenated at a relatively low temperature of 200–500°F with a composite catalyst of Li in Pd (I)/ Al_2O_3 to convert the diolefines to mono-olefines. Conventional desulphurisation is then carried out.

Production of Acrylonitrile and Methacrylonitrile

SUN OIL CO. *U.S. Patent* 3,499,025

Acrylonitrile and methacrylonitrile are prepared by reacting C_3H_6 and *iso*- C_4H_8 respectively with air or O_2 in the presence of a slight excess of NH_3 over a Pt catalyst. The catalyst is in the form of a metallic gauze. Temperatures of from 750–1000°C and contact times of less than 0.1 second are used.

Hydrogenation of Aromatic Nitro Compound

E. I. DU PONT DE NEMOURS & CO.
U.S. Patent 3,499,034

A new process is described for the hydrogenation of aromatic nitro compounds. It is a continuous, one stage process producing a yield of about 99% of theory of substantially pure aromatic amine. Pd/C is a preferred catalyst.

Apparatus for Treating an Exhaust Gas Stream with Different Catalyst Beds

UNIVERSAL OIL PRODUCTS CO.
U.S. Patent 3,503,715

A unitary apparatus for effecting the catalytic oxidation of engine exhaust gases, where there may be both high and low quantities of hydrocarbon emissions with such gases, has one catalyst layer comprising Pt/ Al_2O_3 particles containing a Ba, Ca or Sr component.

Catalytic Reforming Process

UNIVERSAL OIL PRODUCTS CO.
U.S. Patent 3,515,665

A continuous low pressure reforming process is described using a Pt catalyst.

Catalytic Hydrocarbon Conversion

BRITISH PETROLEUM CO. LTD
U.S. Patent 3,516,925

A new conversion catalyst for waxy petroleum feedstocks consists of a Group VI or Group VIII metal deposited on a decationised mordenite containing up to 2% of non-catalytic metal cations. The mordenite must have pore openings of 5Å or more. A Pt catalyst deposited on decationised mordenite is described in several examples.

Naphtha Reforming Process

CHEVRON RESEARCH CO.

French Patent 1,583,982

Reforming with a Pt-Re supported catalyst is effected in specified process conditions.

Hydrogenation Catalyst

DEUTSCHE GOLD- UND SILBER-SCHNEIDANSTALT

German Appl. 1,542,089

Liquid-phase hydrogenation can be achieved at comparatively low temperatures and pressures in the presence of a Pt group metal catalyst in suspension, e.g. finely divided Pd.

Catalysts

JOHNSON MATTHEY & CO. LTD

German Appl. 1,542,214

Catalysts which are active in oxidation, reduction, hydrogenation and dehydrogenation reactions consist of homogeneous mixtures of two or more noble metal (except Os) oxides. They are not just physical mixtures but are formed, e.g. by coprecipitation from a mixed salt solution.

Catalyst

JOHNSON MATTHEY & CO. LTD

German Appl. 1,542,216

A catalyst which is useful for, e.g. oxidation and hydrogenation reactions, consists of a coprecipitated mixture of Pt and Ru oxides, with the weight ratio of the two metals being approximately: Pt from 20 to almost 90; Ru from just over 10 to 80.

Catalyst

JOHNSON MATTHEY & CO. LTD

German Appl. 1,542,239

A catalyst which is active in oxidation and reduction reactions, for example, consists of a mixture, in the proportions of at least 3 : 1, of a noble metal oxide (excluding oxides of Os) with at least one oxide of Fe, Co, Ni or Cu.

Reduction Catalyst

INVENTA A.G. FÜR FORSCHUNG UND PATENT-
VERWERTUNG *German Appl. 1,567,596*

NO may be reacted with hydrogen in H₂SO₄, in the presence of a Pt catalyst (e.g., 2% Pt/C), to give hydroxylamine sulphate.

Oxidation Catalyst

CELANESE CORP.

German Appl. 1,568,364

The partial oxidation of organic compounds, e.g., alcohols, aldehydes, ketones, by an alkali metal or alkaline earth metal hypochlorite is catalysed by the presence of Ru.

Reforming Catalyst

CHEVRON RESEARCH CO. *German Appl. 1,932,339*

The catalyst consists of a porous inorganic oxide combined with 0.01–3 wt.% of Pt, 0.01–5 wt.% of Re and 0.1–3 wt.% of a halide.

Hydrocracking Catalyst

CHEVRON RESEARCH CO.

German Appl. 1,947,979

The catalyst is a crystalline zeolite molecular sieve supporting 0.01 to 2.0 wt.% of Pt, Pd or Ir and 0.01 to 2.0 wt.% Re or their compounds.

Vinyl Acetate Production

KNAPSACK A.G.

Dutch Appl. 69.15,305

Vinyl acetate and other esters are produced from olefines, acids and O₂ by passage over a catalyst comprising supported Pt metal. The support, e.g. SiO₂, has a particle size of 0.1–1.5 mm, preferably 0.1–0.5 mm. It may be hollow.

HOMOGENEOUS CATALYSIS

OXO Catalyst

MITSUBISHI CHEMICAL INDUSTRIES LTD

British Patent 1,202,507

The reaction between an olefinic compound, CO and H₂ can be carried out continuously in the presence of a solution of a Rh compound in a polar organic solvent, e.g. Rh nitrate, acetate or chloride in methanol.

Polymerisation Catalysts

CELANESE CORP.

British Patent 1,202,681

The polymerisation of oxymethylene and/or thiomethylene units is catalysed by hydrated trihalides of Ru, Rh, Pd, Cs, Ir and Pt.

OXO Catalyst

BRITISH PETROLEUM CO. LTD

British Patent 1,202,779

Olefines are conveniently hydroformylated in the presence of a catalyst which is a complex of Ir with one carbonyl ligand, one hydride ligand and three other neutral ligands. A typical Ir complex is IrHCO(Ph₃P)₃.

Oxidation Catalysts

BRITISH PETROLEUM CO. LTD

British Patent 1,206,166

Olefines are oxidised by an O₂-containing gas in the presence of a complex of a Group VIII metal, especially Ir(PPh₃)₂COCl, Rh(PPh₃)₃I and Rh(PPh₃)₃Cl.

Rhodium Complex Carbonylation Catalysts

ETHYL CORP.

U.S. Patent 3,515,757

Aldehydes are produced from olefines, CO and H₂ using a complex of formula RhHX₂(CO)(TI₂)₂, where X is halogen (except F), L is the same or different H atom, 6–12 C aryl, 7–12 C alkaryl or 1–12 C alkyl group, and T is P, As or Sb. Typical catalysts are Rh hydridocarbonylbis(triphenyl arsine) dichloride and Rh hydridocarbonylbis(n-heptyldi-β-naphthylphosphine) dibromide.

Hydroquinone Production

LONZA S.A.

French Patent 2,014,219

Hydroquinone is produced from C_2H_2 , CO and H_2 in the presence of a trimeric Ru tetracarbonyl.

Hydrogenation Catalyst

E. I. DU PONT DE NEMOURS & CO.

German Appl. 1,542,380

The catalyst is made by mixing and heating together finely-divided Al_2O_3 , Ru chloride or nitrosonitrate and $(NH_4)_2CO_3$ or bicarbonate.

Hydrogenation Catalysts

IMPERIAL CHEMICAL INDUSTRIES LTD

German Appl. 1,568,817

Olefinic and acetylenic compounds are hydrogenated in the presence of specified Rh complexes, especially $RhX(Ph_3P)_3$, where X is an anionic group such as halide.

Hydroformylation Catalyst

JOHNSON MATTHEY & CO. LTD.

German Appl. 1,939,322

A catalyst for hydroformylation is a Rh hydrido-carbonyl phosphine complex, e.g. $RhH(CO)(PPh_3)_3$.

FUEL CELLS

Fuel Cell

UNITED AIRCRAFT CORP. *British Patent 1,200,022*

In a fuel cell system capable of operating at full load in the temperature range -40° to $+50^\circ C$, the catalyst is Pt black.

Fuel Cells

GENERAL ELECTRIC CO. *British Patent 1,204,540*

In such a cell the fuel electrode consists of a support material of a metal silicide, Ta boride, Ti boride or B carbide on which is dispersed a catalyst. The latter consists of a Pt-Ru alloy containing 20 to 80 wt. % of Ru.

Palladium Hydrogen Diffusion Fuel Cell Electrode

U.S. SECRETARY OF THE AIR FORCE

U.S. Patent 3,497,390

A fuel cell has an electrolyte positioned in a container between a porous oxygen electrode to which oxygen is supplied and a non-porous Pd anode to which gaseous H_2 is supplied. The Pd anode is produced by heating a Pd strip in air to a temperature between $500^\circ C$ and $875^\circ C$.

Fuel Cell Cathode

LEESONA CORP.

U.S. Patent 3,514,336

A fuel cell cathode is a lightweight structure consisting of a mixture of Pt black or another catalytic metal and a hydrophobic polymer such as ptf.

CHEMICAL TECHNOLOGY

Hydrogen Release for a Heat Pipe

A.C.F. INDUSTRIES INC.

U.S. Patent 3,503,438

A heat pipe system, particularly for a railway car, using water which may dissociate and develop a dangerously high pressure of H_2 , is provided with a H_2 release device located outside the car. The release device is a Pd or Pd alloy tube sealed to a wall of the heat pipe system and having a closed inner end and an open outer end.

Dispersion-strengthened Metals

JOHNSON MATTHEY & CO. LTD

French Patent 2,012,909

A mixture of a "host" metal (e.g. a Group VIII noble metal) and a smaller proportion of at least one more reactive metal, in the form of a powder, is projected at high temperature through an atmosphere which will react with the more reactive metal (to form, e.g. oxide, sulphide, nitride), and collected on a cooled surface.

GLASS TECHNOLOGY

Method of Forming Jets in Bushing Base-plates

OWENS-CORNING FIBERGLASS CORP.

U.S. Patent 3,514,841

A method of forming jets in bushing base-plates made of Pt or Pt alloy is described. Pt-Rh and Pt-Ir containing from 1-10 wt. % of gold (especially 2-6% Au) are preferred. The metal is formed into a body having solid raised portions on one surface, further metal is joined to each of these portions and passage ways are formed through them by the application of dies under pressure. Further metal joined may be of a different alloy.

ELECTRICAL AND ELECTRONIC ENGINEERING

Electrical Heaters for Glass

TRIPLEX SAFETY GLASS CO. LTD

British Patent 1,202,522

An "ink" containing metal particles or a chemical which will produce such particles on firing, is applied to the glass by silk-screen printing. The metal may be Ag, Au, Pt or Pd.

Electrodes

IMPERIAL CHEMICAL INDUSTRIES LTD

British Patent 1,206,863

Electrodes, e.g., for the electrolysis of alkali metal chlorides, are obtained by coating Ti with an operative electrode material. This consists of oxides of at least one Pt group metal or mixtures thereof with at least one Pt group metal. The preferred composition is RuO_2 .

Alloy for Electrical Leads

WILKINSON DENTAL MANUFACTURING CO. INC.

U.S. Patent 3,495,978

A new alloy for electrical leads normally embedded in a ceramic base constituting a portion of an electrical component, such as a potentiometer, is described. The alloy consists of from 64–90% Au, 10–35% Pd and 0.5–2% Ru. The proportions are selected so that a greatly improved lead wire is provided in which oxidation is substantially avoided even at the firing temperatures of the ceramic base in which the lead is embedded.

Metallising Ceramics

E. I. DU PONT DE NEMOURS & CO.

U.S. Patent 3,497,384

A process for metallising a ceramic substrate by applying a noble metal powder consisting of 60–100% Pt (having a surface area within the range of 0.1–1 m²/g) and optionally Pd, Rh, Ru and their alloys or mixtures and firing the powder at a temperature within the range of 1400–2000°C is described. The metal powder forms a tightly adherent conductive metal coating on the ceramic substrate. The process does not use the conventional inorganic binders.

Manufacture of Electrodes

NIPPON CARBIDE K.K. *U.S. Patent 3,497,426*

Electrodes are made by mechanically cleaning a Ti surface in the absence of O₂ or N₂ (e.g., by buffing with sandpaper in benzene). They are immediately transferred to a vacuum container, avoiding contact with O₂ or N₂, and a first Pt group metal coat is then vapour plated on to the cleaned surface to a thickness of 100–3000 Å. A second coating of Pt or Rh is subsequently electroplated on to the surface to a thickness of 0.1–5 μ. The electrode is suitable for the electrolysis of chlorides and sulphates.

Tungsten Dispenser Cathode

U.S. PHILIPS CORP. *U.S. Patent 3,497,757*

An improved coated dispenser-type cathode consisting of a metal matrix of W or W-Mo in reactive relationship with an alkaline earth metal compound which will supply Ba or BaO to the emitting surface of the matrix is described. The matrix emitting surface is coated with a thin porous layer of an alloy of Os and Ir, or Os and Ru, to provide longer cathode lifetime. There is also less danger during the manufacture of the cathode than with prior art coated cathodes.

Electrically Conducting Platinum Cobalt Oxides

E. I. DU PONT DE NEMOURS & CO.

U.S. Patent 3,514,414

An electrically conductive PtCo oxide is described having the formula Pt_xCo_yO_z, where x and y are 0.85 ± 0.15, and a crystal structure based on the rhombohedral space group R3m. It is prepared at

elevated temperature and pressure from Co₃O₄ and PtO₂. The compound, which may be slightly modified with Mn, is useful in electrical resistors.

Current Collectors for Cells with Hot Acid Electrolytes

GENERAL ELECTRIC CO. *U.S. Patent 3,515,595*

Current collectors comprise ternary alloys consisting of Ni, Pd and Au. For cells using a hot phosphoric acid electrolyte the alloy preferably consists of 50–80% Ni, 5% Pd and 2% Au on a weight basis. For cells using hot H₂SO₄ or sulphonic acid polymer electrolyte the alloy preferably consists of 30–50% Ni, at least 30% Pd and at least 5% Au, on a weight basis.

Electrodes

PRODUITS CHIMIQUES PECHINEY-ST. GOBAIN

French Patent 1,586,120

Electrodes, particularly anodes for the electrolysis of alkali metal chlorides, consist of Ti coated with a noble metal, e.g., Pt.

Electric Resistor

JOHNSON MATTHEY & CO. LTD

German Appl. 1,640,561

The resistor consists of an insulating body with a resistive surface layer of a mixture of 10–80 wt.% (esp. 46–65 wt.%) of finely divided RuO₂, the remainder being glass. Alternative compositions include finely divided Ag and compositions of matter formed by heating RuO₂ with a Group V metal oxide, such as NbO₅.

Electrode Coating Process

PPG INDUSTRIES INC. *Dutch Appl. 69.14899*

An anode for brine electrolysis is coated with Ti and a noble metal oxide. An organic Ti compound and a decomposable noble metal compound are applied to the base anode and heated to produce the oxide coating. Ti resinate and Ru resinate are suitable compounds.

Electrode for Electrochemical Processes

IMPERIAL CHEMICAL INDUSTRIES LTD

Dutch Appl. 69.17586

The electrode has a body of refractory coated with a layer of active catalyst. The layer consists of a Pt metal containing a small amount of a Sn, Sb and/or Ge oxide. In an example a Ti body is coated with a mixture deposited from a solution of a Sn alkoxy compound and RuCl₃.

TEMPERATURE MEASUREMENT

Resistance Thermometer

ROSEMOUNT ENGINEERING CO. LTD

British Patent 1,199,878

A Pt resistance thermometer is designed for use in conditions of high vibration.