

affected by high pressure. A method for obtaining absolute corrections for Pt:10% Rh-Pt and Chromel-Alumel thermocouples for any high-pressure cell is described.

Comment on the Pressure Dependence of the emf of Thermocouples

E. T. PETERS and J. J. RYAN, *Ibid.*, 933

Tests on Pt:13%Rh-Pt, Pt:10%Rh-Pt and Chromel:Alumel are in general agreement with the previous paper at 40 kbar, 200–1000°C but deviations become important if used to extrapolate above 1000°C.

A Study of the Thermoelectric Properties of Pt/Ru-Alloys

J. ISRAEL, *J. Nucl. Materials*, 1966, 18, (3), 272–277

The large neutron cross-section of Rh and its transmutation to Pd in nuclear reactors make Rh unsuitable for use in thermocouples in such reactors but Ru has low neutron cross-section and has been tested in Pt:Ru-Pt thermocouples. Oxidising atmospheres must be avoided or volatilisation of Ru occurs. Ru in the alloys tested was analysed by resistivity measurements. Thermo-e.m.f. is a function of Ru content and of temperature. 6% Ru-Pt is the most useful alloy;

working is not difficult and its e.m.f. is almost independent of Ru content. At a given temperature with these alloys e.m.f. does not continue to rise with Ru content.

The Derivation of the Provisional Reference Table CCT64, T=f(W) for Platinum Resistance Thermometers for the Range from 12 to 273.15°K. Part I. The Derivation of the Table for the Range from 12 to 95°K

M. PORLOVA, D. I. SHAREVSKAYA, D. N. ASTROV, I. G. KRUTIKOVA, C. R. BARBER and J. G. HAYES, *Metrologia*, 1966, 2, (1), 6–10

Part II. The Derivation of the Table for the Range from 90 to 273.15°K

C. R. BARBER and J. G. HAYES, *Ibid.*, 11–13

The provisional reference table CCT 64 was established over the two overlapping subranges. An international comparison of standard Pt resistance thermometers from NBS and PSU (U.S.A.), PRMI (U.S.S.R.) and NPL (U.K.) for the average table took mean values of T after corrections to the individual tables for the range 12–95°K. NPL made readings with an He gas thermometer over the range 90–273.15°K to compare their Pt resistance thermometer with the thermodynamic scale. A skeleton version of CCT 64 is given.

NEW PATENTS

METALS AND ALLOYS

Ruthenium Alloys

INTERNATIONAL NICKEL LTD.

British Patent 1,025,400

Ru alloys of substantial hardness and strength and appreciable ductility are produced by powder metallurgy, comprise Ru dispersed in an Au/Pd matrix and contain 5–35 wt.% Au, 5–35 wt.% Pd, optionally max. 10 wt.% Pt, Rh, Ir, Mo and/or W or their mixtures and the balance Ru, which must amount to at least 60 wt.%.

Production of Platinum Metal Articles

THE INTERNATIONAL NICKEL CO. INC.

U.S. Patent 3,217,404

Components made of Pt or its alloys with up to 40% Ir, up to 5% Os, up to 50% Pd, up to 40% Rh or up to 15% Ru are united so that the finished structure may be used at up to 1450°C or even higher temperatures, by placing between the parts a brazing alloy comprising 0–100% Au and 0–100% Cu, maintaining the assembly for 0.5–150 min at a temperature at least 100°C above the m.p. of the brazing alloy but below the m.p. of the components and, when the diffusion of Pt into the brazing alloy is complete, raising

the temperature of the assembly above its operational temperature.

Palladium Diffusion Tubes

CHEMETRON CORP.

U.S. Patent 3,226,915

An improved furnace structure apparatus for the production of high purity H₂ on a commercial scale comprises a number of diffusion cells each of which is equipped with diffusion tubes made of Pd or Pd/Ag alloy.

Reaction Tubes Made of or Lined with Platinum

IMPERIAL CHEMICAL INDUSTRIES LTD.

U.S. Patent 3,231,625

Fluorochlorobenzenes are made by thermal disproportionation of convenient higher fluorochlorobenzenes in a tube made of or lined with Pt, Ni or C and in the presence of AlF₃ dispersed on MgF₂ and at 700–850°C.

Hydrogen Diffusion Tubes

JOHNSON, MATTHEY & CO. LTD.

Italian Patent 695,432

H₂ is separated from gaseous mixtures using diffusion tubes formed of Pd or 25% Ag-Pd alloy. This corresponds to *British Patent* 966,122.

Activation of Platinum

JOHNSON, MATTHEY & CO. LTD.

Italian Patent 697,128

Pt group metal electrodes are activated by applying a coating of Hg to the surface, which is heated to a temperature sufficient to distill off the Hg and leave the surface in the activated condition. This corresponds to *British Patent 957,703*.

ELECTROCHEMISTRY

Alkaline Electro-chemical Storage Battery Cells

GENERAL MOTORS CORP. *British Patent 1,022,830*

An electrochemical storage battery cell comprises a Zn cathode, an alkaline electrolyte, e.g. KOH and an anode produced by impregnating a sintered Ag plate with a solution of PdCl₂, NH₄OH and NH₄COOH, so that 1-1.5 wt. % Pd is incorporated, drying the plate, heating for about 5 min at 500°F and then for at least 20 min at 1000°F.

Platinum Anode in the Electrolytic Production of Ketones

ESSO RESEARCH AND ENGINEERING CO.

U.S. Patent 3,219,562

A Pt anode is used in the electrolytic production of ketones from n-olefines extracted from hydrocarbon mixtures with the aid of H₂SO₃.

Platinum Group Metals in the Electrolytic Production of Alkali Metal Chlorates

IMPERIAL CHEMICAL INDUSTRIES LTD.

U.S. Patent 3,219,563

A multielectrolytic cell for the production of alkali metal chlorates comprises unit cells separated by Ti sheets each of which is coated with a Pt group metal, which films then act as cathodes and anodes of the individual cells.

A Diaphragm for an Electrolytic Cell

AMALGAMATED CURACAO PATENTS CO. N.V.

U.S. Patent 3,222,265

An ion-permeable and electrolyte impermeable diaphragm for an electrolytic cell is made of Ti or its alloy and has a coating of a noble metal, preferably Pt, Rh, Ir or their alloys, on one side and a barrier layer of TiO₂ on the uncoated parts.

ELECTRODEPOSITION AND SURFACE COATINGS

Electrodeposition of Iridium

INTERNATIONAL NICKEL LTD.

British Patent 1,022,451

Ir is electrodeposited on etched Ti or Mo or Cu, Ni, brass or mild steel substrate carrying a flash coating of Au or Pd by using an aqueous bath

containing 0.5-10 g/l Ir (IV) and 0.1-1.0 moles/l free HBr and operating this bath at 70-80°C and 0.14-0.35 A/dm².

Coating of Palladium Silver Alloy Membranes

LEESONA CORP.

U.S. Patent 3,219,481

A high specific surface area film of Pt or Pd black is deposited on a Pd/Ag alloy membrane by first exposing the membrane to H₂ in a fluid system and then to a solution of a Pt or Pd salt.

Electrodeposition of Palladium-Silver Alloys

LEESONA CORP.

U.S. Patent 3,226,309

A Pd/Ag alloy is deposited on an article by dispersing Pd and Ag ions in a molten bath of alkali metal halide, immersing the article to be coated in the bath, connecting it in as the cathode and passing current through the bath to plate out the Pd/Ag alloy.

LABORATORY APPARATUS AND TECHNIQUE

Ionisation Gauges

E. LEYBOLD'S NACHFOLGER

British Patent 1,018,840

An ionisation gauge comprises a cathode and a foraminous anode and an ion collecting electrode, both made of Pt or its alloy, and defining an enclosed ionisation chamber on the side of the anode remote from the cathode.

Measuring Instrument with Alloy Tension Strip

W. C. HERAEUS G.m.b.H.

British Patents 1,018,958-9

A measuring instrument having a rotatable meter mechanism includes a tension strip made of an alloy consisting of 1-50 wt. % Fe, Co, Ni, W, Mo, Cu, or Ag, 1-30 wt. % of at least one Pt group metal and the balance of at least 30 wt. % Au.

Pure Rhodium Hygrometer Electrode

BECKMAN INSTRUMENTS INC.

U.S. Patent 3,223,609

An electrolytic hygrometer capable of operating in an H₂ atmosphere has an inner jacket made of insulating material and supporting a pair of electrodes made of pure Rh or having active portions containing pure Rh, a hygroscopic substance bridging the electrode gap and a source of potential applicable across the said electrodes.

BRAZING

Alloys for the Brazing of Refractory Metals

GENERAL DYNAMICS CORP. *U.S. Patent 3,220,828*

Alloys useful for the brazing of Nb, Ta, Mo and

their alloys and providing high temperature protective coatings comprise 20-60 wt.% Ti, 20-60 wt.% Cr, 5-35 wt.% Pd, and 5-25 wt.% Si.

CATALYSIS

Production of Caprolactam

E. I. DU PONT DE NEMOURS & CO.

British Patent 1,018,854

Caprolactam is produced by charging a pressure vessel with adipomononitric acid, a Raney Ni, Ru or Pd catalyst and water, MeOH, AlOH, NH₃ or THF as solvent or their mixtures, applying 100-2000 p.s.i.g. pressure, heating for about 0.5-2.5 h at 170-230°C.

Catalytic Hydrogenation of Dialkylnitrosamines

ALLIED CHEMICAL CORP.

British Patent 1,020,392

Unsymmetrical dialkylhydrazines are produced by treating a slurry of the dialkylnitrosamine with H₂ in the presence of a Pt or Pd catalyst and under hydrogenation conditions passing the mixture through a flash evaporator and recycling the catalyst which is separated from the reaction mixture.

Substituted Benzoic Acid Amides

ABBOTT LABORATORIES *British Patent 1,020,496*

Substituted benzoic acid amides are prepared by reacting approximately equimolar proportions of 4-7C cycloalkanone and 3-4C cycloalkylamine in a dry, inert, organic solvent, removing all the water of reaction, hydrogenating the dry organic solution with H₂ in the presence of Pd, Pt, Ru or their oxides or Rh and reacting the resultant dicyclic secondary amine with 4-amino-substituted-benzoyl chloride.

Production of an Ether by the Hydrogenolysis of a Cyclic Ketal

SHELL INTERNATIONALE RESEARCH MIJ. N.V.

British Patent 1,020,500

An ether having a hydroxy, alkoxy or aralkoxy group in the 2- or 3-position may be produced by the liquid phase hydrogenolysis of a cyclic ketal with H₂ in the presence of 0.0005-15 wt.% supported or unsupported Rh, Pd, Ni, Pt, Ru or a mixture of these metals.

Reduction of the Aromatic Content of Petroleum Distillates

LABOFINA S.A.

British Patent 1,021,321

The aromatic content of a petroleum distillate having an S content maximum 300 ppm and a boiling range 60-350°C is reduced by hydrogenating the distillate at 10-400°C, and 70-1000 p.s.i.g. in the presence of a catalyst comprising 75-95 wt.% SiO₂, and the balance Al₂O₃ as carrier together with 0.1-1 wt.% Pt.

Production of Esters

IMPERIAL CHEMICAL INDUSTRIES LTD.

British Patent 1,021,693

An ester of a carboxylic acid is produced by contacting a saturated aliphatic or aromatic aldehyde with a saturated aliphatic alcohol at 0-200°C, 1-50 atm and in the presence of a Pd salt, O₂ and an inorganic redox system.

Hydrocracking Process

UNION OIL COMPANY OF CALIFORNIA

British Patent 1,021,793

A catalyst for the hydrocracking of hydrocarbons at 400-800°F and 500-2500 p.s.i.g. comprises Y-type zeolite including H ions and at least 10% divalent metal ions satisfying the ion-exchange capacity of the zeolite and an intimately compounded Group VIII metal, preferably Pd.

Process for Preparing Aldehydes, Ketones and Acids Corresponding to the Aldehydes from Commercial Crude Olefines

FARBWERKE HOECHST A. G.

British Patent 1,021,898

Carbonyl compounds are produced by contacting a mixture of olefines, acetylenes and dienes with H₂ and a solid hydrogenation catalyst, preferably a finely divided, supported Ni or Pt group metal catalyst, and then contacting the gaseous products with O₂ in a neutral to acid medium with H₂O and a catalyst comprising a Pd, Ir, Ru, Rh or Pt salt and an inorganic salt of a polyvalent metal.

Catalytic Treatment of Alkyl and Aryl Hydrocarbons

THE BRITISH PETROLEUM CO. LTD.

British Patent 1,023,211

A mixture of alkyl and aryl hydrocarbons is isomerised by contacting it and H₂ at 454-510°C and at least 400 p.s.i.g. with a catalyst comprising an Al₂O₃ support, 0.01-5 wt.% Pt group metal and 1-15 wt.% F₂.

Production of Carbonyl Compounds

THE DISTILLERS CO. LTD.

British Patent 1,024,684

Methyl isobutyl ketone is produced by reacting 4-methylpentene-1 for 0.25-5 hours at 20-120°C with a mixture of a Pt group metal compound, CuCl₂ and acetate and H₂O so that the reaction medium has a pH 1.7-2.4 when measured at 18°C.

Catalyst for the Conversion of Hydrocarbons

THE BRITISH PETROLEUM CO. LTD.

British Patent 1,026,632

A catalyst for the conversion of hydrocarbons comprises a Group II-IV halogenatable refractory oxide, 0.25-0.4 wt.% H₂, 1-15 wt.% halogen, preferably F₂ and 0.01-5 wt.% Pt group metal, preferably Pt.

Selective Hydrogenation Procedure and Catalyst therefor

CHEMETRON CORP. *British Patent 1,026,721*

A catalyst for the selective hydrogenation of triple bonds in a mixture of an acetylenic hydrocarbon and a conjugated diene comprises 20-70 wt. % CuO, 0.04-1 wt. % Pd and the balance Cr₂O₃.

Naphtha Feed Reforming Process

ESSO RESEARCH AND ENGINEERING CO.

British Patent 1,027,364

Hydrofined naphtha feed is hydroformed in the presence of a catalyst comprising an Al₂O₃ carrier having dispersed or supported upon it 0.05-5 wt. % Pt group metal catalyst, preferably 0.3-0.6 wt. % Pt.

Palladium-Containing Selective Hydrogenation Catalysts

CHEMETRON CORP.

U.S. Patent 3,218,268

A catalyst for the selective hydrogenation of acetylenic bonds in the presence of olefinic bonds comprises 20-70% CuO, 30-80% Cr₂O₃ and 0.04-1% Pd promoter and a binder selected from Ca aluminate cement and Al₂O₃.

Chloroplatinic Acid Catalysts

GENERAL ELECTRIC CO. *U.S. Patent 3,220,972*

A catalyst for the production of organosilicon compositions is formed by reacting 1 mole H₂PtCl₆ with at least 2 moles alcohol or ether or their mixtures at 60-80°C and at a reduced pressure.

Noble Metal Catalysts in the Production of Olefinic Esters

UNION CARBIDE CORP. *U.S. Patent 3,221,045*

Olefinic esters are produced by reacting an ethylenically unsaturated hydrocarbon and a saturated hydrocarbyl monocarboxylic acid in an anhydrous homogenous liquid phase and in the presence of a catalytic amount of Ir, Au, Rh, Pt, Pd or Ru alkanoate, cycloalkane carboxylate or acetylacetonate and a catalytic co-oxidant selected from the Cu, Fe, Cr, Co, Pb, Ni, Mo, W, V, Mn, Os or lanthanide salt of such acids.

Platinum Group Metal Reforming Catalysts

IMPERIAL CHEMICAL INDUSTRIES LTD.

U.S. Patent 3,222,132

In a continuous process of steam reforming of liquid hydrocarbons the latter are reacted with steam at 550-1100°C, 1-50 atm. and in the presence of a catalyst comprising γ -alumina and 0.01-20 wt. % Ru, Pd, Os, Ir, Pt or their compounds.

Platinum Group Metal Hydrogenation Catalyst

MOBIL OIL CO. INC.

U.S. Patent 3,222,274

High energy jet fuel is produced by contacting a

charge of naphtha at 300-750°F and 50-2000 p.s.i.g. with H₂ and a catalyst consisting of a refractory metal oxide supporting 0.1-1 wt. % Pt group metal.

Hydrocarbon Conversion Catalyst

MOBIL OIL CO. INC.

U.S. Patent 3,223,617

A hydrocarbon conversion catalyst comprises a mechanical mixture of less than 100 μ particles size of (i) Al₂O₃ carrier supporting 0.05-5 wt. % Pt and (ii) a porous inert carrier supporting 0.1-40 wt. % Ln₂O₃, preferably Sm₂O₃, so that the relative weight fractions of the two components are between ~0.1 and ~0.9.

Naphtha-Reforming Platinum Catalyst

SHELL OIL CO.

U.S. Patent 3,224,962

Excessive hydrocracking of naphtha is avoided by using catalysts containing about 0.75 wt. % Pt and about 0.75 wt. % halogen and partially sulphiding them with a gas containing 10-200 p.p.m. S and at a linear velocity of 4-8 ft/min.

Supported Catalysts Containing Copper Oxide and Palladium

ETHYL CORP.

U.S. Patent 3,224,981

A catalyst for the purification of exhaust gases of internal combustion engines comprises activated transitional Al₂O₃, 0.5-25 wt. % CuO and 0.01-3 wt. % Pd.

Platinum Group Metal-Crystalline Zeolite Catalysts

MOBIL OIL CO. INC.

U.S. Patent 3,226,339

A hydrocarbon conversion catalyst is produced by contacting a crystalline aluminosilicate zeolite with a solution of an ionisable Pt group metal compound and an ionisable metal-mineral acid salt for a sufficient time to afford uniform distribution of the Pt group metal, drying the resultant composite and activating it by heating at 250-1100°F.

Palladium Hydrogenation Catalysts

OLIN MATHIESON CHEMICAL CORP.

U.S. Patent, 3,226,432

Alkylboranes are produced by hydrogenating a corresponding chlorovinylborane with H₂, at 20-100°C, 0-50 p.s.i.g. and in the presence of a catalyst comprising 0.2-3 wt. % Pd supported on fine C black or SiO₂.

Platinum Group Metal Catalysts in the Production of Primary Amines

THE ATLANTIC REFINING CO.

U.S. Patent 3,226,442

A saturated, primary, aliphatic amine is produced by hydrogenating R-CH=CH-NO₂, where R is 1-24C alkyl, at 20-100°C, 25-80 p.s.i.g. and

in the presence of a mixture of H_2O with C_2H_5OH and dioxane and a hydrogenation catalyst selected from Pt group metal or Raney Ni, but preferably Pd or Pd/Ru on charcoal.

Group VIII Noble Metal Oxidation Catalysts NATIONAL DISTILLERS & CHEMICAL CO.

U.S. Patent 3,227,747

Unsaturated esters are produced by reacting an unsaturated organic compound with $Cu(OOCR)_2$, where R is H, alkyl, aryl or chloroalkyl, in the presence of $RC\equiv N$ and a catalytic amount of Pt, Pd, Rh, Ru, Os, Ir or their oxides or organic or inorganic salts.

Platinum/Copper Dehydrogenation Catalyst MONSANTO CO.

U.S. Patent 3,228,991

Methyl-1,3-cyclopentadiene is produced by the catalytic dehydrogenation of methylcyclopentane at 400–600°C and in the presence of a SiO_2 , Al_2O_3 or SiO_2/Al_2O_3 carrier impregnated with 0.05–5 wt. % of a mixture of 1–90 wt. % Cu and the balance Pt.

Platinum-on-Alumina Olefine Polymerisation Catalyst

SINCLAIR RESEARCH INC. *U.S. Patent 3,231,483*

Olefines, in particular C_2H_4 , are polymerised by subjecting them to a high energy ionising radiation dose of 1×10^4 to 3×10^6 REP and in the presence of Al_2O_3 or Al_2O_3/SiO_2 supporting 0.01–4 wt. % PtO_2 , 1–20 wt. % TiO_2 and 0.5–15 wt. % Cr_2O_3 or their mixtures.

Platinum Group Metal Oxidation Catalysts

IMPERIAL CHEMICAL INDUSTRIES LTD.

U.S. Patent 3,231,620

Carbonyl compounds are produced by contacting a 2–8C olefine or diolefine with H_2O_2 in the presence of a Pt, Pd, Ru, Rh, Os or Ir salt and an aqueous mineral acid.

Group VIII Metal Hydrocracking Catalysts

UNIVERSAL OIL PRODUCTS *U.S. Patent 3,232,864*

Highly stable and active catalysts for the hydrocracking of hydrocarbons are produced by compositing 0.1–20 wt. % a Group VIII metal compound, preferably Fe, Co, Ni, Pd, Pt, Ru, Rh, Os or Ir, with a refractory inorganic oxide carrier, calcining the composite at 1100–1700°F in an O_2 containing atmosphere and reducing in a H_2 atmosphere at 1000–1200°F so that the crystallite size of the metallic component increases from about 60 Å to about 100 Å.

Active Alumina Supported Platinum-Hydrogen Hydro-isomerisation Catalyst

PHILLIPS PETROLEUM CO. *U.S. Patent 3,233,001*

Cyclohexane is produced from a 6C hydrocarbon feed mixture by contacting it at 500–800°F with H_2 and Pt/halogen catalyst supported on active

Al_2O_3 , fractionating the effluent, hydrogenating the overhead fraction in the presence of a convenient catalyst and repeating this procedure several times.

Group VIII Metal Hydrocarbon Conversion Catalysts

STANDARD OIL CO. (INDIANA)

U.S. Patent 3,233,008

Isoparaffins are produced from normal olefinic feedstocks by contacting the feed at 400–750°F and 100–1500 p.s.i.g. with H_2 and an active composite isomerisation-hydrogenation catalyst comprising a solid acidic component and one or more Group VIII metals or oxides, e.g. 0.05–2 wt. % Pt.

FUEL CELLS

Formed Carbon Electrodes for Fuel Cells and Fuel Cells Containing the Same

AMERICAN CYANAMID CO.

British Patent 1,025,370

A formed C electrode for a fuel cell comprises a porous C mass through which is distributed 0.1–40 wt. % of a Pt group metal, 3–30 wt. % of a binder-waterproofing agent and finally an additional 0.1–10 wt. % of electrodeposited Pt group metal which may be the same as or different from the Pt group metal referred to above.

Fuel Cell Electrodes Made of Improved Catalytic Metal or Alloy

LEESONA CORP.

British Patent 1,027,634–6

An improved fuel cell has at least one electrode which has a support structure of a host metal or alloy of Au, Cu, Ag, Fe, Co, Ni, Ru, Rh, Os, Pt, Ir or Pd having introduced into it 10–200 mg Li/cm² surface area and a final coating of a thin film of Pt black.

Fuel Cell Electrode

SHELL OIL CO. (NEW YORK)

U.S. Patent 3,222,224

A fuel cell electrode comprises a base of porous, non-conductive plastic, a layer of Ag coated with Rh or Au and a layer of C black activated with 1–10 wt. % Pd, Pt or Ru.

Fuel Cell Electrodes

LEESONA CORP.

U.S. Patent 3,226,263

A fuel cell electrode is produced by coating C, Pt, Pd, Nd, Ni, Co, Rh, Ru, Fe, Cu, Au, Ag, Cd, Zn, Cr or Mo metal having random particle size distribution of 0.5 μ to $\frac{1}{8}$ in., with a thermo-setting resin, suspending and then sedimenting the metal particles through a fluid body, collecting and separating the particles from the fluid, heating and then cooling to effect bonding, shaping and then heating to carbonise the resin and to sinter the metal particles.

Noble Metal Fuel Cell Electrodes

ESSO RESEARCH AND ENGINEERING CO.

U.S. Patent 3,231,428

A fuel cell comprises a container filled with aqueous H_2SO_4 electrolyte, spaced anode and cathode immersed in this electrolyte and a mixed catalyst of 0.003–50 wt. % Ir and the balance Pt applied on these electrodes and means for supplying H_2 and O_2 into this fuel cell.

ELECTRICAL AND ELECTRONIC ENGINEERING

Manufacture of Sealed Magnetic Reed Contact Units

STANDARD TELEPHONES AND CABLES LTD.

British Patent 1,019,060

A sealed magnetic reed contact unit is produced by coating the contact portions of the reeds, made of electrically and magnetically conductive material, with a layer of Pd so that no diffusion takes place and sealing the reeds in an enclosure which is evacuated or is filled with an inert gas.

Thermoelectric Devices and Methods of Fabricating Them

RADIO CORPORATION OF AMERICA

British Patent 1,020,116

A thermoelectric device is produced by bonding a body of Ge-Si alloy to a body of metal or second Ge-Si alloy by using a vacuum bonding technique and Au, Ag, Ru, Rh, Pd, Pt or alloys containing more than half of these metals, to act as bonding material.

Anodes for Ion Sources

PHILIPS ELECTRONIC AND ASSOCIATED INDUSTRIES

LTD.

British Patent 1,020,197

An anode for an ion source comprises a container for an alkali-metal compound, an accelerating electrode and a heating means and the wall of said container comprises porous W coated on the outside with a 100–5000 Å film of Ir, Ru, Re, Os or their mixtures.

Ceramic Dielectric Electrical Capacitors

THE TELEGRAPH CONDENSER CO. LTD.

British Patent 1,027,513

An electrical capacitor element comprises a body of ceramic dielectric a first side of which is in an oxidised state and a second side in a reduced state. Pd-coated, sintered ceramic particles forming a Pd electrode are attached to the first (oxidised) side and a Ag counter-electrode is attached to the second (reduced) side of the ceramic body.

Electrical Contacts for Semiconductors

BELL TELEPHONE LABORATORIES INC.

U.S. Patent 3,231,421

A metal contact is formed on a semiconductor

wafer by forming an oxide coating, removing the oxide film selectively to expose the semiconductor surface, depositing a layer of Pd, recoating it with Al, heating the assembly so that bonding of the semiconductor takes place whilst the metal layers overlying the oxide film become non-adherent.

TEMPERATURE MEASUREMENT

Method of Making Heat Sensors

J. E. LINDBERG

British Patent 1,018,699

A heat sensor is produced by inserting a Pd wire into a tube, heating it cyclically to 250–750°F, cooling, introducing H_2 at above 50 p.s.i.g. to ensure that some of it is ingassed by the wire, withdrawing excess of H_2 from the tube and sealing the latter off from the atmosphere.

Thermocouple Probe

GENERAL ELECTRIC CO.

British Patent 1,022,978

High temperature thermocouples of improved construction consist of an exterior housing made of sintered Ir, refractory metal oxide insulators, a suitable thermocouple and conductors and a sheath of 20% Rh-Pt alloy.

Electrical Resistance Thermometers

ROSEMOUNT ENGINEERING CO. LTD.

British Patent 1,025,501

A resistance thermometer is manufactured by placing a helix of noble metal, e.g. Pt, wire in a bore or bores of a tube of insulating material, withdrawing part of the wire in between its ends and twisting it to form a short-circuited loop so that the resistance of the wire measured between its ends reaches a required value for the temperature at which the operation is carried out.

Thermoelements

DEUTSCHE GOLD- UND SILBER-SCHNEIDANSTALT

British Patent 1,025,654

A thermocouple comprises a negative element made from Pt or a noble metal alloy which is negative with respect to Pt and a positive element comprising a binary alloy of Pd and 2–15 at. % of a second metal whose thermoelectric voltages are positive with respect to Pt.

Bead-type Thermistors

VICTORY ENGINEERING CORP.

U.S. Patent 3,221,393

Bead-type thermistors are produced by coating two Pt/Ir conductors with Au, applying a bead of calcined, powdered metallic oxides mixed with binder so that each conductor is embedded in the bead, heating the assembly in a furnace at 1000–1500°C, applying a layer of powdered glass to the bead surface and reheating to 700–900°C.