

ABSTRACTS

of current literature on the platinum metals and their alloys

PROPERTIES

The Ordering Mechanism in CuPt as Studied by Electrical Resistance Measurements and Electron Microscopy

E. TORFS, J. VAN LANDUYT, L. STALS and S. AMELINCKX, *Phys. Status Solidi A, Appl. Res.*, 1975, **31**, (2), 633-645

Resistivity measurements and electron microscopic studies of the ordering mechanism in CuPt showed a complex ordering mode consisting of homogeneous and heterogeneous processes at $<475^{\circ}\text{C}$; the dispersed ordered domains stopped growing at $475\text{--}620^{\circ}\text{C}$. Transformation twins observed near the critical temperature for ordering are related to stress relief in the larger domains.

Diffusion of Platinum in the Fe-Pt System

J. KUČERA and B. MILLION, *Phys. Status Solidi A, Appl. Res.*, 1975, **31**, (1), 275-282

The diffusion of Pt in 15 to 60%Pt-Fe alloys was studied at $780\text{--}1420^{\circ}\text{C}$ by the residual activity method using the isotope Pt-193 m; Pt homodiffusion coefficients D were obtained. The results are discussed on the basis of the Fe-Pt equilibrium diagram. The increase of activation enthalpy δ (ΔH) which is due to the FePt ordered structure is 6.8 kcal/mol.

Effect of Oxygen on the Thermionic Emission of Impurity Ions from a Platinum Surface

L. P. REKOVA, V. V. MOZGIN, L. N. ZVYAGINTSEVA, V. N. BONDARENKO and YA. M. FOGEL, *Sov. Phys., Tech. Phys.*, 1975, **20**, (3), 382-386

The influence of O_2 on the emission of thermionic ions and secondary and gas ions of particles of volume impurities from the surface of heated Pt was studied. Results at 1573K show a specific influence of O_2 on the diffuse flux of impurity particles from the interior of the Pt to its surface through dislocations.

Surface Composition of Pd-Au and Pd-Ag Catalysts by Auger Electron Spectroscopy

B. J. WOOD and H. WISE, *Surface Sci.*, 1975, **52**, (1), 151-160

Studies of the metal surface composition of Pd-Au and Pd-Ag alloys in microspheres ($50\mu\text{m}$ in diameter) and in Al_2O_3 -supported crystallite ($<100\text{\AA}$ in diameter) forms made by Auger electron spectroscopy showed the agreement of the observed Pd-Au ratios at the surface with those of the bulk in both forms. However, in the case of supported Pd-Ag, the surface exhibited Ag-enrichment relative to the bulk. The results

are explained with the help of the regular solution monolayer model and the binding energies between the dissimilar metal atoms are calculated.

Magnetic Properties and Electrical Resistivity of $(\text{Ni}_{1-x}\text{Pd}_x)_3\text{Al}$

M. SATO, *J. Phys. Soc. Japan*, 1975, **39**, (1), 98-102

The magnetic properties and electrical resistivity of $(\text{Ni}_{1-x}\text{Pd}_x)_3\text{Al}$ were measured, the value of x being varied up to 0.20 through the ferromagnetic critical concentration of $x_c \approx 0.095$. The magnetic susceptibility of these alloys is explained approximately by the simple uniform enhancement model. Experimental results are in good agreement with theory.

Low Field Magnetic Susceptibility of Amorphous $\text{Co}_x\text{Pd}_{80-x}\text{Si}_{20}$ and $\text{Fe}_x\text{Pd}_{80-x}\text{Si}_{20}$ Alloys

A. ZENTKO, P. DUHAJ, L. POTOCKÝ, T. TIMA and J. BÁNSKÝ, *Phys. Status Solidi A, Appl. Res.*, 1975, **31**, (1), K41-K42

Temperature dependence of the magnetic susceptibility $\chi(T)$ of $\text{Co}_x\text{Pd}_{80-x}\text{Si}_{20}$ and $\text{Fe}_x\text{Pd}_{80-x}\text{Si}_{20}$ alloys was measured in a low magnetic field ($\approx 2\text{Oe}$) by the induction method using the a.c. mutual inductance bridge. A sharp peak in the observed course of $\chi(T)$ which appeared in Co alloys with $x \leq 10\text{at.}\% \text{Co}$ and in all Fe alloys was due to the loss of the short-range order of the amorphous basal Co- or Fe-Pd-Si alloys. At higher concentrations ($x > 10\text{at.}\% \text{Co}$) the long-range random ferromagnetic ordering appeared also in the basal matrix and the maximum in the case of $\chi(T)$ disappeared.

Studies of Hydride Formation and Superconductivity in Hydrides of Th-Pd Compounds

H. OSTERREICHER, J. CLINTON and H. BITTNER, *J. Solid State Chem.*, 1976, **16**, (1-2), 209-210

X-ray studies were made of hydride formation and superconductivity of intermetallic compounds of the Th-Pd binary system produced during the reaction of H_2 with Th-Pd phases (ThPd_4 , ThPd_3 , Th_3Pd_5 , ThPd and Th_2Pd) at up to 200°C and 100 atm. The results showed that only Th_3Pd_5 , ThPd and Th_2Pd absorb a noticeable amount of H forming $\text{Th}_3\text{Pd}_5\text{H}_4$, ThPdH_4 and Th_2PdH_6 . Superconductivity was measured and no transitions were observed down to 1.8K. From the results presented the conclusion is made that higher H_2 concentrations in these intermetallic compounds are beneficial for superconductivity.

Upper Critical Fields of Noncrystalline $Zr_{77}Rh_{23}$ Alloy and Intermetallic Zr_2Rh Compound

K. TOGANO and K. TACHIKAWA, *Phys. Lett. A*, 1975, **54**, (3), 205-206

The temperature dependence of the upper critical field for the noncrystalline $Zr_{77}Rh_{23}$ alloy obtained by liquid quenching was measured and is discussed in terms of existing theory. The same measurement was also carried out for the intermetallic Zr_2Rh compound.

Thermoelectric Power of Ir(Fe)

J. S. TOUGER and M. P. SARACHIK, *Solid State Commun.*, 1975, **17**, (11), 1389-1391

Thermoelectric power is measured in 0.5-1.0% Fe-Ir and in pure Ir at 4.2-300K. Peaks similar to those found in Pd-Ni and Rh-Fe occurred in Fe-Ir at the spin fluctuation temperature $T_{sf} = 28K$, independent of solute concentration. These three alloy systems are compared and their similarities and differences are discussed.

Electrical Resistivity and Magnetic Ordering in C.P.H. Ruthenium-Iron Solid Solutions

B. V. B. SARKISSIAN and B. R. COLES, *J. Less-Common Metals*, 1975, **43**, 83-88

Electrical resistivity, susceptibility and magnetisation measurements at low temperatures on Ru-Fe solid solutions with up to 70% Fe, show that some type of magnetic ordering occurs at $50 \pm 2\%$ Fe. It is suggested that the ordering is of variable antiferromagnetic character.

The Physico-chemical Investigation of the Re-Ru-Ti and Re-Ru-V Systems

V. K. YURTAEVA, M. V. RAEVSKAYA, I. G. SOKOLOVA, O. I. CHECHERNIKOVA and E. M. SOKOLOVSKAYA, *Vest. Moskov. Univ. Ser. II, Khim.*, 1975, **16**, (5), 572-575

The phase diagrams of the Re-Ru-Ti and Re-Ru-V systems were constructed at 1000°C and the ternary intermediate phase $-\sigma$ and $-\gamma$ were found. The magnetic susceptibility of these alloys was studied as a function of temperature.

CHEMICAL COMPOUNDS

Preparation of Silylplatinum Complexes by Interaction of Organosilicon Hydrides and Carbonatobis(phosphine)platinum(II) Complexes

C. EABORN, T. N. METHAM and A. PIDCOCK, *J. Chem. Soc., Dalton Trans.*, 1975, (21), 2212-2214

Bis(silyl) complexes $[Pt(SiR_3)_2L_2]$ ($R_3 = MePh_2$; $L = PMe_2Ph$, PEt_2Ph , $PMePh_2$ and PPh_3) or $[Pt(SiHR_2)_2L_2]$ ($R_2 = Ph_2$ or $MePh$) were produced by reacting $[Pr(CO)_3L_2]$ with $SiHR_3$ in benzene. H n.m.r. spectroscopic studies showed that all the products had *cis* configurations.

Magnetic Susceptibility of the One-dimensional Conductor $(H_3O)_{1.6}[Pt(C_2O_4)_2]_nH_2O$

D. HEITKAMP, H. S. RÄDE, H. J. KELLER and H. H. RUPP, *J. Solid State Chem.*, 1975, **15**, (3), 292-296

The magnetic susceptibility of the $(H_3O)_{1.6}[Pt(C_2O_4)_2]_nH_2O$, a mixed valency planar compound with columnar structure and one-dimensional metallic conduction properties, was measured at 1.5-300 K. The observed paramagnetism is described by a linear $1/T$ dependence with a break in the slope at a characteristic temperature. The Curie constants as well as the point of discontinuity are found to depend on the crystal H_2O content. The results are discussed in terms of different theoretical concepts.

Novel Rhodium(I)-Porphyrin Complexes and Organorhodium(III)-Porphyrin Complexes. IV.

H. OGOSHI, J. SETSUNE, T. OMURA and Z. YOSHIDA, *J. Am. Chem. Soc.*, 1975, **97**, (22), 6461-6466

The preparation of two new Rh(I) porphyrins, porphyrin $[Rh(CO)_2]_2$ and *N*-alkyl-porphyrin $[Rh(CO)_2Cl]_2$ as a result of the reaction of $[Rh(CO)_2Cl]_2$ with octaethylporphyrin and *N*-alkyloctaethylporphyrin is described. An oxygen-sensitive Rh(I) porphyrin was also obtained from chlororhodium(III) porphyrin by using $NaBH_4$.

Chloro-1,2-bis(diphenylphosphino)ethane-carboxylrhodium(I): an Exceptional Complex within a Series

A. R. SANGER, *J. Chem. Soc., Chem. Commun.*, 1975, (21), 893-894

Spectroscopic studies of the series of complexes $[\{RhCl(CO)(Ph_2P[CH_2]_nPPh_2)\}_m]$ ($n = 1$ to 4) showed that all the square-planar complexes were dimeric ($m=2$) with a *trans* configuration about Rh. The complex with $n=2$ is monomeric with *cis* configuration.

Iridium and Rhodium Dihydride-hydroborate Complexes of the Type $[MH_2(BH_4)L_2]$

H. D. EMPSTALL, E. MENTZER and B. L. SHAW, *J. Chem. Soc., Chem. Commun.*, 1975, (21), 861-862

Studies of $[IrH_2(BH_4)L_2]$ ($L =$ bulky tertiary phosphine) complexes showed them to be the first metal-hydroborates in which the BH_4 ligand was not fluxional; an analogous Rh complex showed some fluxionality. H_2 resonances for the bridging hydrogens (IrH_2B) and the terminal hydrogens (BH_2) were observed.

Information on $KIrO_3$

R. HOPPE and K. CLAES, *J. Less-Common Metals*, 1975, **43**, 129-142

The preparation of $KIrO_3$ from mixtures of $KO_2 + Ir$ ($K:Ir = 1.8:1$) is described. $KIrO_3$ crystallises in a cubic structure of space group $Pn\bar{3}-T_h^2$ with $a = 9.48\text{\AA}$ and $Z = 12$.

The Interaction of 1,2,3-Benzotriazole with Ruthenium(IV)

A. I. BESEV, L. N. LOMAKINA, M. N. MIKHEEVA and T. I. IGNAT'eva, *Vest. Moskov. Univ. Ser. II, Khim.*, 1975, **16**, (5), 581-585

The interaction of Ru(IV) with 1,2,3-benzotriazole was studied as a function of ionic state of metal in the initial solution, acidity of the solution and the presence of reducers. The crimson compound formed during the reaction of RuCl₄ at pH 0-2.9 turned gradually into the green compound with the ratio Ru:R=1:1. In the presence of redoxon the yellow compound formed at pH 0.5-2.3.

Tetracarbonyl(phosphine)ruthenium Complexes: Synthesis and Kinetics of Carbonyl Substitution

B. F. G. JOHNSON, J. LEWIS and M. V. TWIGG, *J. Chem. Soc., Dalton Trans.*, 1975, (18), 1876-1879

The preparation of the complexes [Ru(CO)₄L] and *trans*-[Ru(CO)₃L₂] (L=PPh₃, PMePh₂ or PBu₃) during photolysis of [Ru₃(CO)₁₂] in the presence of an excess of ligand is described. These complexes can be also obtained by high pressure carbonylation of *trans*-[Ru(CO)₃(PPh₃)₂]. Solid [Ru(CO)₄PPh₃] forms [Ru₃(CO)₉(PPh₃)₃] on heating and reacts with excess of ligand to form *trans*-[Ru(CO)₃L₂] while in solution.

Transition-metal Nitrosyl Compounds. Part XI. The Preparation and the Study of Fluxional Behaviour of Some Cationic Acetylene Complexes of Osmium

J. A. SEGAL and B. F. G. JOHNSON, *J. Chem. Soc., Dalton Trans.*, 1975, (20), 1990-1992

A number of cationic acetylene Os complexes of the type [Os(CO)NO(A)L₂] [PF₆] [L=PPh₃, A=C₂H₂, C₂HPh, C₂Ph₂, or C₂(CO₂Me)₂; L=P(C₆H₁₁)₃, A=C₂H₂] were prepared, and characterised by their ¹H n.m.r. spectra. For the complex where A=C₂H₂, the variable-temperature studies are consistent with acetylene rotation about the metal-acetylene bond with ΔG_{Tc}=11.5±0.2 kcal/mol [L=PPh₃] and 14.4±0.5 kcal/mol [L=P(C₆H₁₁)₃].

ELECTROCHEMISTRY

Hydrogen Production under Sunlight with an Electrochemical Photocell

A. FUJISHIMA, K. KOHAYAKAWA and K. HONDA, *J. Electrochem Soc.*, 1975, **122**, (11), 1487-1489

An electrochemical photocell for H₂ production consists of five Pt cathode and TiO₂ anode units in which four anode plates are connected in parallel. The cell containing 1.0M NaOH and 0.5M H₂SO₄ electrolyte solutions, works under irradiation with sunlight. The sunlight intensity of 110,000 lux produces 6.6 litres of H₂/m² of TiO₂. The energy conversion efficiency of the photocell is estimated to be more than 0.4%.

The Behaviour of Ir(IV) in Perchlorate Solutions

A. T. PILIPENKO, N. F. FALENDYSH and E. P. PARKHOMENKO, *Zh. Neorg. Khim.*, 1975, **20**, (11), 3044-3047

Studies of the state of Ir(IV) in HClO₄ solutions show that the following processes take place: the reduction of Ir(IV) to Ir(III), hydrolysis and hydrolytic polymerisation. The extent of these reactions depends on the acidity of the medium and the age of the solution. It is found that in 0.1 N HClO₄ all Ir(IV) is fully reduced to Ir(III) in the course of one month, and that molecules having a polymerisation factor >2 are also present in this solution.

ELECTRODEPOSITION AND SURFACE COATINGS

On the Electrolytic Activity of Electrodeposited Palladium on Pyrolytic Graphite

I. MORCOS, *J. Electrochem. Soc.*, 1975, **122**, (11), 1492-1493

The electrocatalytic activity toward oxygen reduction of both bulk Pd electrodes and electrodes prepared by the electrodeposition of a Pd layer on pyrolytic graphite substrates was studied by slow scanning voltammetry in acid and alkaline media. Current-potential curves obtained as a function of the disc rotation speed show that the electrodeposited Pd has a higher electrolytic activity than the bulk Pd and that the difference in the activity increases with the increase in rotation speed. The results are interpreted in terms of different intrinsic electrocatalytic properties of the electrodeposited Pd.

Electrodeposition of Palladium-Manganese Alloy

S. I. VINOGRADOV, V. C. YANIN and V. I. SEKACHEVA, *Zashchita Metal.*, 1975, **11**, (6), 751-752

Studies were made of Pd-Mn alloys deposited on Pt or C electrodes from an electrolyte containing ethylenediamine Pd and Mn sulphate at a current density of 1-7 A/dm², 3-7 pH and at 20-50°C. The 8 to 10% Mn-Pd alloy, deposited from an electrolyte containing 15-20 g/l Pd, 5-20 g/l Mn, at 4-4.5 pH, 20-40°C and 1.5-4 A/dm², has a microhardness of 240 kg/mm² and wear resistance to stress on contact of 200 g/mm² which is five times higher than that of a pure Pd.

A Rutherford Scattering Study of Catalyst Systems for Electroless Cu Plating

II. SnCl₂ Sensitisation and PdCl₂ Activation

R. L. MEEK, *J. Electrochem. Soc.*, 1975, **122**, (11), 1478-1481

Preparation of graphite substrates, for electroless Cu plating, by sensitisation in SnCl₂ solutions and activation in a PdCl₂ solution was compared to a method using mixed Pd-Sn colloidal solutions.

The results obtained by a high energy ion back-scattering technique show that in the first method the Pd/Sn ratio is considerably less; more Pd and Sn are lost into the electroless plating solution and longer times ($\geq 10^3$ sec) are required to initiate the electroless plating reaction than in the case of the mixed Pd-Sn colloidal catalyst systems.

LABORATORY APPARATUS AND TECHNIQUE

Measurement of Heat Conductivity of Metals in an Environment of Compressed Gas. The Palladium/Hydrogen System up to 24 kbar at 25°C.

A. W. SZAFRANSKI and B. BARANOWSKI, *J. Phys. E: Sci. Instrum.*, 1975, 8, (10), 823-825

A comparative method of measurement of heat conductivity of metals in an environment of a compressed gas is given. Two samples, one of an unknown heat conductivity and the second as a reference, are placed inside the cylindrical Cu shield with attached Cu-Pt thermocouples. The temperature difference between two samples can be measured with accuracy of ~ 0.015 K. The method was applied to the Pd/H, Pd/He and manganin/H systems up to 24kbar at 25°C.

A Hydrogen-sensitive Pd-gate M.O.S. Transistor

K. I. LUNDSTRÖM, M. S. SHIVARAMAN and C. M. SVENSSON, *J. Appl. Phys.*, 1975, 46, (9), 3876-81
A thin palladium film is used as the gate metal of a M.O.S. transistor which can be employed as a sensitive detector for hydrogen in air, nitrogen or argon. At a device temperature of 150°C the sensitivity in air is 10 p.p.m. hydrogen.

Intermetallic Compounds of Yttrium and Hafnium with Platinum

C. E. HOLCOMBE, *J. Less-Common Metals*, 1976, 44, 331-335

The platinum-hafnium intermetallic compounds HfPt_3 and HfPt_5 , prepared by powder metallurgical techniques, have high melting points and great stability. Studies made suggest that such materials could be suitable containers for reactive oxides undergoing high temperature investigations.

HETEROGENEOUS CATALYSIS

C₆-Hydrocarbon Transformations under Poisoning of Alumina-Platinum Catalyst by Thiophene and Pyridine

YU. N. USOV, L. G. ZUBANOVA and N. I. KUVSHINOVA, *Neftekhimiya*, 1975, 15, (6), 842-847

The influence of thiophene and pyridine poisoning on the activity of Pt/Al₂O₃ catalyst was studied in the reactions of aromatisation and C₆-dehydrogenation of *n*-hexane, and other hydrocarbons, at 407-480°C by a pulsed chroma-

tographic method. The results show a fast decrease in activity depending on the temperature and the amount of the poisonous agent.

Hydrogen Cyanide Production During Reduction of Nitric Oxide over Platinum Catalysts

R. J. H. VOORHOEVE, C. K. N. PATEL, L. E. TRIMBLE and R. J. KERL, *Science*, 1975, 190, (4210), 149-151
Studies of the catalytic reduction of NO with CO and H₂ over Pt supported on cordierite and Pt sponge catalysts were made using a bench-scale flow reactor at 400-800°C. Up to 80 p.p.m. of HCN is formed over Pt at 600-800°C in the presence of H₂O vapour. In the absence of H₂O vapour the HCN concentration rises to 700 p.p.m. No significant differences were found between a Pt sponge and Pt supported on cordierite. The results are discussed in relation to the catalytic treatment of automotive exhaust.

The Catalytic Effect of Platinum in the Oxidation of Monocrystalline Silicon

E. S. VORONTSOV and V. M. STRUKOV, *Kinet. Kataliz*, 1975, 16, (4), 1075-1077

The oxidation rates of monocrystalline Si in the presence and absence of Pt black were studied in air at 500-1200°C by the interference observation method. The results show that the reaction rate increases by a factor of 2400 at 1200°C in the presence of Pt black. High oxidation rates can also be obtained at as low a temperature as 500°C at which the reaction would not proceed without the catalyst. Extensive coking and recrystallisation of the Pt black, taking place at temperatures $> 1100^\circ\text{C}$, cause a decrease in its catalytic activity.

Ammonia Oxidation on Metals

N. I. IL'CHENKO, G. I. GOLODETS and I. M. AVILOVA, *Kinet. Kataliz*, 1975, 16, (6), 1455-1460

Studies of NH₃ oxidation on various metals show that the specific catalytic activity at 300°C decreases in the following order: Pt > Pd > Cu > Ag > Ni > Au > Fe > W > Ti. As the O₂ binding energy increases, the catalytic activity and selectivity with respect to N₂O decrease. The starting temperature of N₂ formation is lower than the temperature of N₂O formation.

Stability of Metal Catalysts in the Liquid-phase Hydrogenation of Organic Unsaturated Sulphur Compounds. I. Hydrogenation of Divalent Sulphur in the Presence of Palladium

A. V. MASHKINA, *Kinet. Kataliz*, 1975, 16, (4), 925-930

The influence of thioethers and thiophenes on the activity of 4.7% Pd/Al₂O₃ catalyst was studied in the hydrogenation of 2,5-dihydrothiophene sulphone. It is shown that all thioethers and thiophenes have a poisonous effect on the catalyst. The quick deactivation of the catalyst is proposed to be due to the formation of a bond between

S and Pd. This finding is in disagreement with the literature views about the high stability of Pd catalysts in the hydrogenation of divalent unsaturated S compounds.

Hydrogenation of Dimethylethynylcarbinol on Ruthenium-Palladium Catalysts Supported on Titanium Oxide

D. V. SOKOL'SKII, T. M. DUKHOVNAYA and K. K. DZHARDAMALIEVA, *Zh. Fiz. Khim.*, 1975, **49**, (11), 2852-2856

The hydrogenation of dimethylethynylcarbinol over 1% Ru-Pd/TiO₂ catalysts at 20-40°C in H₂O, 0.1N KOH, 0.1N H₂SO₄ and 96% C₂H₅OH was studied. The change in the Ru/Pd ratio is found to influence the rate of H₂ absorption. The selectivity of hydrogenation is found to be 80-90%. The activation energies are 2.5-10.5 kcal/mol and depend on the Ru content.

Hydrogenation of Hexene-1 on Supported Osmium-Palladium Catalysts

D. V. SOKOL'SKII, K. K. DZHARDAMALIEVA and S. N. DIL'MAGAMBETOV, *Zh. Fiz. Khim.*, 1975, **49**, (8), 2132-2134

Liquid-phase hydrogenation of hexene-1 on 1% Os-Pd/Al₂O₃ catalysts in C₂H₅OH, at 20, 30 and 40°C was found to be accompanied by a displacement of the double bond and *cis*- and *trans*-isomerisation. The catalytic activity of the contacts decreases monotonically with an increase of Os content of the catalyst.

HOMOGENEOUS CATALYSIS

Interaction of Acyl Chlorides and Triethylsilane Catalysed by *cis*-Dichlorobis (tri-phenylphosphine)platinum(II) and Related Complexes

S. P. DENT, C. EABORN and A. PIDCOCK, *J. Chem. Soc., Dalton Trans.*, 1975, (23), 2646-2648

The reaction of the acyl halides and triethylsilane catalysed by *cis*-[PtCl₂(PPh₃)₂] at 120°C produced aldehydes XC₆H₄CHO (X=H, *p*-Me, *o*-MeO, *p*-MeO, *p*-Cl, *p*-Br, and *p*-NO₂) in 50-84% yield. When *p*-methoxybenzoyl chloride was used the triethyl-*p*-methoxybenzyloxysilane was also formed. The conversion of this chloride into aldehyde is also catalysed by *cis*-[PdCl₂(PPh₃)₂], [RuCl₂(PPh₃)₃] and *trans*-[IrCl(CO)(PPh₃)₂] and benzyloxysilane is formed.

On the Rate of Interaction of Diiodine-bis (diethylsulphide)platinum(II) with Ammonia

V. A. VALYAEVA, *Zh. Neorg. Khim.*, 1975, **20**, (10), 2724-2727

The reaction rate coefficients of isomers of [PtI₂.2Et₂S] with NH₃ in C₂H₅OH and benzene were studied. An increased *trans* effect of diethylsulphide in complex Pt(II) compounds was observed. A possible mechanism of the reaction of [PtI₂.2Et₂S] isomers with NH₃ is suggested.

Isomerisation of Phenylcyclopropanes by a Homogeneous Rhodium Catalyst

P.-W. CHUM and J. A. ROTH, *J. Catalysis*, 1975, **39**, (2), 198-204

The isomerisation of isomeric phenylcyclopropanes in chloroform over a [Rh(CO)₂Cl]₂ catalyst yielded conjugated phenyl alkenes. The rate of reaction and isomer distribution was mainly influenced by conformational, conjugative and steric interactions of the substituted cyclopropanes.

GLASS TECHNOLOGY

Contribution on the Corrosion of Pt/Rh 90/10 Alloy in Glass Melts under the Influence of an Electric Current

G. REINACHER, *Glastech. Ber.*, 1975, **48**, (11), 221-226

The corrosion of 90% Pt/Rh alloy crucible used for melting glass at 1200°C was studied. The crucible formed one electrode, and a centrally immersed strip of the same metal the other. Severe corrosion of the electrodes occurred when a voltage of 1.5V was applied to the central electrode. Spectral analysis, metallographic and hot-stage microscope methods were used to examine the corroded electrodes. A method of preventing the corrosion by earthing the electrodes and the melt with Pt wire or strip is suggested.

Oxidation State and Optical Absorption of Rhodium in Borate and Silicate Glasses

A. PAUL and J. M. PARKER, *Phys. Chem. Glasses*, 1975, **16**, (5), 103-107

The optical and redox characteristics of Rh(III) in sodium and potassium borate glasses, soda-lime-silica glasses and a series of (17.1-x) Na₂O, 2xNaCl, 82.9 B₂O₃ glasses was studied by absorption spectrometry and X-ray and chemical analysis. All the absorption bands are consistent with the low spin *d*⁶ configuration for Rh(III), the ion being in octahedral co-ordination. The solubility of Rh in the borate glass increases with the increase of alkali and chloride contents. Silicate glasses melted in Pt-Rh crucibles are also found to have a substantial Rh(III) content.

DENTAL AND MEDICAL USES

"Braille" Reading by a Blind Volunteer by Visual Cortex Stimulation

W. H. DOBELLE, M. G. MLADEJOVSKY, J. R. EVANS, T. S. ROBERTS and J. P. GIRVIN, *Nature*, 1976, **259**, 111-112

An array of 64 platinum electrodes insulated with Teflon are utilised in a chronic implant which has been used for preliminary experiments in information transfer by cortical stimulation. In the reported case a blind volunteer was able to read "braille" transmitted by cortical phosphenes at 30 letters per minute, much quicker than he was able to read tactile braille.