

# ABSTRACTS

of current literature on the platinum metals and their alloys

## PROPERTIES

### Microstructure and Shape Memory Behavior of

#### Ti<sub>51.2</sub>(Pd<sub>27.0</sub>Ni<sub>21.8</sub>) and Ti<sub>49.5</sub>(Pd<sub>28.5</sub>Ni<sub>22.0</sub>) Thin Films

T. SAWAGUCHI, M. SATO and A. ISHIDA, *Mater. Sci. Eng., A*, 2002, 332, (1–2), 47–55

Ti-rich (Ti<sub>51.2</sub>(Pd<sub>27.0</sub>Ni<sub>21.8</sub>)) (1) and near-equiatomic (Ti<sub>49.5</sub>(Pd<sub>28.5</sub>Ni<sub>22.0</sub>)) thin films were annealed at 773, 873 and 973 K from the amorphous state. At < 973 K, these crystallisations are effective for grain refinement. Film (1), annealed at 773 K, has fine plate-like Ti<sub>2</sub>Pd-type precipitates with a diameter < 100 nm inside the B2 grain. The shape memory characteristics can be improved by precipitate hardening.

### Hydrogen Absorption of Nanoscale Pd Particles Embedded in ZrO<sub>2</sub> Matrix Prepared from Zr–Pd Amorphous Alloys

S. YAMAURA, K. SASAMORI, H. KIMURA, A. INOUE, Y. C. ZHANG and Y. ARATA, *J. Mater. Res.*, 2002, 17, (6), 1329–1334

Nanoscale Pd particles in an isolated dispersed state embedded in ZrO<sub>2</sub> matrix gave maximum H<sub>2</sub> absorption amounts of ~ 2.4 mass% (H<sub>2</sub>/Pd) at 323 K and 2.2 mass% (H<sub>2</sub>/Pd) at 423 K with H<sub>2</sub> pressure of 1 MPa. In contrast, Pd metal in bulk and powder forms gave only 0.7 and 1.2 mass%, respectively.

## CHEMICAL COMPOUNDS

### Multinuclear Magnetic Resonance Studies of the Aqueous Products of the Complexes *cis*- and *trans*-Pt(Ypy)<sub>2</sub>(NO<sub>3</sub>)<sub>2</sub> Where Ypy = Pyridine Derivative

F. D. ROCHON and C. TESSIER, *Can. J. Chem.*, 2002, 80, (4), 379–387

The product of the *cis* title complexes undergoing aquation in acidic pD was *cis*-[Pt(Ypy)<sub>2</sub>(D<sub>2</sub>O)<sub>2</sub>]<sup>2+</sup>, whereas hydrolysis in basic medium gave *cis*-Pt(Ypy)<sub>2</sub>(OD)<sub>2</sub>. Complexes containing 2-picoline and 2,4-lutidine ligands behaved differently in their <sup>195</sup>Pt NMR due to the *ortho* effect. The *trans* analogues showed two signals in acidic pD corresponding to the diaqua monomer and the monohydroxo-bridged aqua dimer. Two species were also observed in basic pD.

### Nonradical Trapping Pathway for Reactions of Nitroxides with Rhodium Porphyrin Alkyls Bearing β-Hydrogens and Subsequent Carbon–Carbon Bond Activation

K. W. MAK, S. K. YEUNG and K. S. CHAN, *Organometallics*, 2002, 21, (12), 2362–2364

A novel nitroxide-induced H atom abstraction and β-elimination of Rh porphyrin alkyls was demonstrated. Subsequent C–C bond activation of methyl-substituted nitroxides by the Rh(II) porphyrin radical yielded Rh porphyrin methyl complexes.

### Liquid-Crystalline Materials Based on Rhodium Carboxylate Coordination Polymers: Synthesis, Characterization and Mesomorphic Properties of Tetra(alkoxybenzoato)dirhodium(II) Complexes and Their Pyrazine Adducts

M. RUSJAN, B. DONNIO, D. GUILLON and F. D. CUKIERNIK, *Chem. Mater.*, 2002, 14, (4), 1564–1575

Rh<sub>2</sub>( $\alpha, \gamma, \zeta$ -BmOCn)<sub>4</sub> (B = benzoate group; *m* = number of alkoxy chains on the aromatic ring;  $\alpha, \gamma, \zeta$  = their anchoring positions; *n* = number of C atoms in each alkoxy chain) and their pyrazine adducts (with polymeric structure via connected metallic centres) were synthesised. Most exhibit LC columnar and cubic mesophases with melting transition temperatures close to or below room temperature. The equatorial ligands of the adducts fill the interdimeric space.

### Piano-Stool Inversion in Arene Complexes of Ru(II): Modelling the Transition State

T. J. GELDBACH, P. S. PREGOSIN and A. ALBINATI, *J. Chem. Soc., Dalton Trans.*, 2002, (12), 2419–2420

[RuH(arene)(Binap)]CF<sub>3</sub>SO<sub>3</sub> (arene = η<sup>6</sup>-benzene (1) or η<sup>6</sup>-toluene) was prepared. The structures were markedly distorted from a classical three-legged piano-stool structure with (1) having the P–Ru–P plane ~ perpendicular to the plane of the arene. The structure of (1) indicates a transition state leading from one diastereomer to another via inversion at Ru.

## ELECTROCHEMISTRY

### Degradation Mechanism of Long Service Life Ti/IrO<sub>2</sub>–Ta<sub>2</sub>O<sub>5</sub> Oxide Anodes in Sulphuric Acid

J. M. HU, H. M. MENG, J. Q. ZHANG and C. N. CAO, *Corros. Sci.*, 2002, 44, (8), 1655–1668

Ageing studies of Ti/70% IrO<sub>2</sub>–30% Ta<sub>2</sub>O<sub>5</sub> anodes over the whole of their electrolysis time in H<sub>2</sub>SO<sub>4</sub> established that their performance can be divided into ‘active’, ‘stable’ and ‘deactive’ regions. In the first two stages, the loss of coated oxides is dominated by dissolution of the active component (IrO<sub>2</sub> exhibits preferential loss). In the ‘deactive’ region, the oxide coatings are lost mainly by peeling at the Ti/oxide layer interface region.

### Preparation and Electrochemical Characterization of Ti/Ru,Mn<sub>1-x</sub>O<sub>2</sub> Electrodes

J. L. FERNÁNDEZ, M. R. GENNERO DE CHIALVO and A. C. CHIALVO, *J. Appl. Electrochem.*, 2002, 32, (5), 513–520

DSA<sup>®</sup> type electrodes of Ru–Mn mixed oxides (30 ≤ at.% Ru < 100) supported on Ti were prepared by spray pyrolysis. Polarisation curves were used to evaluate their behaviour as anodes for the Cl<sub>2</sub> and O<sub>2</sub> evolution reactions. A composition of ~ 70 at.% Ru gave the best electrocatalytic activity and stability.

## PHOTOCONVERSION

### The Singlet-Triplet Energy Gap in Organic and Pt-Containing Phenylene Ethynylene Polymers and Monomers

A. KÖHLER, J. S. WILSON, R. H. FRIEND, M. K. AL-SUTI, M. S. KHAN, A. GERHARD and H. BÄSSLER, *J. Chem. Phys.*, 2002, 116, (21), 9457–9463

The evolution of the  $T_1$  triplet excited state in a series of phenylene ethynylene polymers (1) and monomers with Pt atoms in the polymer backbone and in an analogous series of all-organic polymers (2) with the Pt(II) tributylphosphonium complex being replaced by phenylene was studied. The Pt increases spin-orbit coupling so the  $T_1$  state emission (phosphorescence) is easier to detect. For both (1) and (2), the  $T_1$  state was at a constant separation of  $0.7 \pm 0.1$  eV below the singlet  $S_1$  state.

### The Effect of pH on the Emission and Absorption Spectra of a Ruthenium Complex

J. C. ELLERBROCK, S. M. MCLOUGHLIN and A. I. BABA, *Inorg. Chem. Commun.*, 2002, 5, (8), 555–559

The protonable ligand for the Ru(1,10-phenanthroline)<sub>2</sub>(3-carboxy,4-hydroxy-1,10-phenanthroline)<sup>2+</sup>-(PF<sub>6</sub>)<sub>2</sub> complex (1) is readily prepared. (1) has a small spectrophotometric change that results in a large emission intensity change. The emission intensity of (1) is pH dependent in the pH range 3–11. (1) is useful for luminescence-based pH sensors.

## ELECTRODEPOSITION AND SURFACE COATINGS

### Crystallographic and Electrical Properties of Platinum Film Grown by Chemical Vapor Deposition Using (Methylcyclopentadienyl)trimethylplatinum

M. HIRATANI, T. NABATAME, Y. MATSUI and S. KIMURA, *Thin Solid Films*, 2002, 410, (1–2), 200–204

Pt thin films (1) grown by CVD using MeCpPtMe<sub>3</sub> were found to contain O and C impurities. The C impurities produce a micrograin morphology that contributes to high residual resistivity. High O contamination is observed, irrespective of the O<sub>2</sub>/Ar ratio during growth. The intrinsic electrical transport property is not affected by the contaminants. (1) grown under oxidative conditions have good electrical properties so are useful as electrodes for MIM capacitors.

### Electrodeposition of Osmium

T. JONES, *Met. Finish.*, 2002, 100, (6), 84, 86–90

The electrodeposition of Os is reviewed. The alkaline process, hexachloro-osmate process, nitrosyl complex process and molten salt process are described. Blackening of the Os deposit for the hexachloro-osmate process is prevented by the use of dual anodes inside and outside a large porous pot. Very limited data on the deposit properties are available. Details of applications, alloys, analytical control techniques and toxicity are included. (19 Refs.)

## APPARATUS AND TECHNIQUE

### Polysilicon Mesoscopic Wires Coated by Pd as High Sensitivity H<sub>2</sub> Sensors

A. TIBUZZI, C. DI NATALE, A. D'AMICO, B. MARGESIN, S. BRIDA, M. ZEN and G. SONCINI, *Sens. Actuators B, Chem.*, 2002, 83, (1–3), 175–180

Mesoscopic poly-Si wires coated by a thin film of Pd (100 nm) can be used as H<sub>2</sub> sensors. Using surface micromachining combined with a usual microelectronic planar process, poly-Si wires of the following dimensions were fabricated: 0.25–3.7 μm wide, 100–140 μm long, and ~ 600 nm thick. Because of their high surface/volume ratio, these wires exhibit a very high resistance percentage variation under H<sub>2</sub> absorption.

### CH<sub>4</sub> Decomposition with a Pd-Ag Hydrogen-Permeating Membrane Reactor for Hydrogen Production at Decreased Temperature

T. ISHIHARA, A. KAWAHARA, A. FUKUNAGA, H. NISHIGUCHI, H. SHINKAI, M. MIYAKI and Y. TAKITA, *Ind. Eng. Chem. Res.*, 2002, 41, (14), 3365–3369

The CH<sub>4</sub> decomposition reaction into C and H<sub>2</sub> over Ni/SiO<sub>2</sub> was investigated using a Pd-Ag H<sub>2</sub>-permeating membrane reactor. Removing the formed H<sub>2</sub> with the Pd-Ag membrane increases the CH<sub>4</sub> decomposition activity (> 88%) at < 773 K. A higher H<sub>2</sub> permeation rate was achieved with 77Pd-23Ag than with 90Pd-10Ag, thus increasing CH<sub>4</sub> conversion. The H<sub>2</sub> formed was > 99.99% pure.

## HETEROGENEOUS CATALYSIS

### Deep Oxidation of VOC Mixtures with Platinum Supported on Al<sub>2</sub>O<sub>3</sub>/Al Monoliths

N. BURGOS, M. PAULIS, M. M. ANTXUSTEGI and M. MONTES, *Appl. Catal. B: Environ.*, 2002, 38, (4), 251–258

Pt impregnated metallic monoliths (1) were prepared from anodised Al foils. The catalytic oxidation activity of (1) was tested for the VOCs: 2-propanol, toluene, methyl ethyl ketone, acetone and their mixtures. Complete oxidation was achieved except for 2-propanol, where acetone was found as an oxidation intermediate. Even if the adsorption of the VOC on the Al<sub>2</sub>O<sub>3</sub> is governed by its polarity, the reactivity is mainly affected by the competition of the O atoms chemisorbed on the Pt particles.

### Isomerization and Hydrocracking of *n*-Decane over Bimetallic Pt-Pd Clusters Supported on Mesoporous MCM-41 Catalysts

S. P. ELANGO VAN, C. BISCHOF and M. HARTMANN, *Catal. Lett.*, 2002, 80, (1–2), 35–40

Pt-Pd/AlMCM-41 (1) is superior to Pt/AlMCM-41 and Pd/AlMCM-41 for *n*-decane isomerisation. The use of (1) results in a higher C<sub>10</sub> isomer yield at a substantially lower reaction temperature. (1) has a better balance between the two catalytic functions, namely acid sites and metal sites.

## Laser-Activated Membrane Introduction Mass Spectrometry for High-Throughput Evaluation of Bulk Heterogeneous Catalysts

A. NAYAR, R. LIU, R. J. ALLEN, M. J. MCCALL, R. R. WILLIS and E. S. SMOTKIN, *Anal. Chem.*, 2002, 74, (9), 1933–1938

LAMIMS has been used to evaluate catalysts such as Pt/CeO<sub>2</sub>-ZrO<sub>2</sub> under realistic conditions. The catalyst array is supported on C paper overlaid upon a silicone rubber membrane configuration in a variation of MIMS. The C paper serves as a heat-dissipating gas diffusion layer that allows laser heating of catalyst samples to far above the decomposition temperature of the polymer membrane that separates the array from the mass spectrometer vacuum chamber. A bulk catalyst array spot can be evaluated for activity and selectivity in as little as 90 seconds.

## Catalytic Activity and Poisoning of Specific Sites on Supported Metal Nanoparticles

S. SCHAUERMANN, J. HOFFMANN, V. JOHÁNEK, J. HARTMANN, J. LIBUDA and H.-J. FREUND, *Angew. Chem. Int. Ed.*, 2002, 41, (14), 2532–2535

Molecular beam methods and time-resolved reflection–absorption IR spectroscopy were combined in order to investigate MeOH decomposition on Pd nanoparticles/Al<sub>2</sub>O<sub>3</sub>/NiAl(110) model catalyst. Two competing reaction pathways were observed: a rapid dehydrogenation to give CO and a slow C–O bond breakage to form C and hydrocarbon species. It was shown that C–O bond breakage occurs preferentially at particle step and edge sites.

## Hydrogenation of Phenol by the Pd/Mg and Pd/Fe Bimetallic Systems under Mild Reaction Conditions

J. MORALES, R. HUTCHESON, C. NORADOUN and I. F. CHENG, *Ind. Eng. Chem. Res.*, 2002, 41, (13), 3071–3074

Three Pd-catalysed zerovalent metal systems were able to hydrogenate phenol to cyclohexanol and cyclohexanone at room temperature and pressure. Treatment of aqueous phenol solutions (5.0 mM) with Pd (2.6 ppt m/m)/Mg (1.00 g 20 mesh) and with 0.53 g of 1/8 in. Pd (0.5%)/Al<sub>2</sub>O<sub>3</sub> in contact with 1.00 g 20 mesh Mg resulted in 74% and 24% destruction, respectively, of the reactant after 6 h. The Pd/Al<sub>2</sub>O<sub>3</sub> with Mg system was greatly enhanced by 2% v/v glacial acetic acid, resulting in an 84% reduction of phenol with a C balance of 93%.

## Self-Regeneration of a Pd-Perovskite Catalyst for Automotive Emissions Control

Y. NISHIHATA, J. MIZUKI, T. AKAO, H. TANAKA, M. UENISHI, M. KIMURA, T. OKAMOTO and N. HAMADA, *Nature*, 2002, 418, (6894), 164–167

X-Ray diffraction and absorption established that LaFe<sub>0.57</sub>Co<sub>0.38</sub>Pd<sub>0.05</sub>O<sub>3</sub> autocatalyst (1) retains high metal dispersion owing to structural responses to the fluctuations in exhaust gas composition. As (1) is cycled between oxidative and reductive atmospheres, Pd reversibly moves into and out of the perovskite lattice.

## HOMOGENEOUS CATALYSIS

### High-Throughput Screening Studies of Fiber-Supported Catalysts Leading to Room-Temperature Suzuki Coupling

T. J. COLACOT, E. S. GORE and A. KUBER, *Organometallics*, 2002, 21, (16), 3301–3304

High-throughput screening of Ph<sub>3</sub>P-based polymer-supported catalysts such as FibreCat™-1001 and selected Pd/C catalysts gave nearly quantitative conversion of activated and unactivated aryl bromides in Suzuki coupling using EtOH/H<sub>2</sub>O. The FibreCat catalysts did not leach Pd. For *p*-chloroacetophenone and 3-bromothiophene, coupling could be possible by tuning the FibreCat catalysts with *t*-Bu<sub>3</sub>P.

### Palladium Catalyzed Oxidation of Monoterpenes: Novel Oxidation of Myrcene with Dioxxygen

J. A. GONÇALVES, O. W. HOWARTH and E. V. GUSEVSKAYA, *J. Mol. Catal. A: Chem.*, 2002, 185, (1–2), 97–104

Myrcene (7-methyl-3-methylene-1,6-octadiene) can be efficiently and selectively oxidised by O<sub>2</sub> in glacial acetic acid containing LiCl, with PdCl<sub>2</sub>-CuCl<sub>2</sub>. New monoterpenes with a cyclopentane skeleton, 3- and 4-(1-acetoxy-1-methylethyl)-1-vinylcyclopentene, were produced. These products have a pleasant scent with a flower or fruit tinge and have potential as components of synthetic perfumes.

### Novel Synthesis of Fused Isoxazolidines via a Palladium Catalysed Allene Insertion–Intramolecular 1,3-Dipolar Cycloaddition Cascade Reaction

T. AFTAB, R. GRIGG, M. LADLOW, V. SRIDHARAN and M. THORNTON-PETT, *Chem. Commun.*, 2002, (16), 1754–1755

Aryl iodides react with allene (1 atm) and nitrene in toluene at 120°C over 48 h in the presence of 10 mol% Pd(OAc)<sub>2</sub>, 20 mol% PPh<sub>3</sub> and Cs<sub>2</sub>CO<sub>3</sub> to afford the corresponding isoxazolidines in 50–77% yield. The synthesis is a one pot reaction involving a Pd catalysed allenation of the aryl iodide in combination with a nitrene cycloaddition, creating two rings, two stereocentres and one tetrasubstituted C centre.

### Polymerization of Phenylacetylene Catalyzed by Diphosphinopalladium(II) Complexes

K. LI, G. WEI, J. DARKWA and S. K. POLLACK, *Macromolecules*, 2002, 35, (12), 4573–4576

Cationic bis(phosphino)Pd complexes were generated *in situ* by the reaction of (dppf)PdCl(CH<sub>3</sub>), (dippf)PdCl(CH<sub>3</sub>), (dppe)PdCl(CH<sub>3</sub>), (dppf)PdCl<sub>2</sub>, (dippf)PdCl<sub>2</sub> and (dppe)PdCl<sub>2</sub> (dppf = bis(diphenylphosphino)ferrocene, dippf = bis(diisopropylphosphino)ferrocene and dppe = bis(diphenylphosphino)ethane) with AgOTf. The dppf- and dippf-Pd complexes catalysed the polymerisation of phenylacetylene, whereas the dppe analogues formed phenylacetylene oligomers. The highest molecular weight polymer was obtained from a 1:1 CH<sub>2</sub>Cl<sub>2</sub>/CH<sub>3</sub>CN mixture at room temperature. This seemed to be the best conditions for polymerisation.

### A Simple, Recyclable, Polymer-Supported Palladium Catalyst for Suzuki Coupling – An Effective Way to Minimize Palladium Contamination

W.-C. SHIEH, R. SHEKHAR, T. BLACKLOCK and A. TEDESCO, *Synth. Commun.*, 2002, 32, (7), 1059–1067

Preparation of a polymer-supported catalyst (1) involved wet impregnation of a polymer-bound phosphine with PdCl<sub>2</sub> in EtOH. (1) was used for Suzuki coupling. After each cycle (1) was recyclable with low Pd leaching. The Suzuki coupling of an aryl-bromide with *p*-trifluoromethylphenylboronic acid resulted in the synthesis of 2-aminotetralin, used in the treatment of epilepsy, stroke, and brain or spinal trauma.

### 1,3-Dipolar Cycloaddition Reactions of Carbonyl Ylides with 1,2-Diones: Synthesis of Novel Spiro Oxabicycles

V. NAIR, K. C. SHEELA, D. SETHUMADHAVAN, R. DHANYA and N. P. RATH, *Tetrahedron*, 2002, 58, (21), 4171–4177

A facile 1,3-dipolar cycloaddition reaction of carbonyl ylides with a range of *o*-quinones afforded highly oxygenated spiro oxabicycles. Rh<sub>2</sub>(OAc)<sub>2</sub> was employed as the catalyst. The reactions were carried out in toluene at room temperature under an atmosphere of Ar. For 1,2-benzoquinones, the ylide preferentially adds to the more electron deficient of the two carbonyls of the quinone.

### A Free Ligand for the Asymmetric Dihydroxylation of Olefins Utilizing One-Phase Catalysis and Two-Phase Separation

Y.-Q. KUANG, S.-Y. ZHANG, R. JIANG and L.-L. WEI, *Tetrahedron Lett.*, 2002, 43, (20), 3669–3671

A free bis-cinchona alkaloid derivative (1) was used as the ligand in the Os-catalysed asymmetric dihydroxylation of olefins. (1) can be easily prepared. The molar ratio of (1)/olefin was 5%, which was much lower than that required for the corresponding soluble polymer-supported cinchona alkaloid ligands (10–25%). Yields of 89–93% and ees of 89–99% were achieved with (1). Repetitive use of (1) is possible without significant loss of enantioselectivity when a small quantity of OsO<sub>4</sub> is added after each run.

### The Oxidation of Alcohols in Substituted Imidazolium Ionic Liquids Using Ruthenium Catalysts

V. FARMER and T. WELTON, *Green Chem.*, 2002, 4, (2), 97–102

Substituted imidazolium ionic liquids may be used as solvents for the oxidation of alcohols to aldehydes and ketones using [<sup>T</sup>Pr<sub>4</sub>N][RuO<sub>4</sub>] (1) as the source of the metal catalyst. (1) was used in conjunction with either *N*-methylmorpholine-*N*'-oxide or O<sub>2</sub> as co-oxidants. Benzylic alcohols were oxidised to their aldehydes in good to excellent yields, whereas aliphatic alcohols required much longer reaction times and gave poor yields.

## FUEL CELLS

### Fundamental Aspects in Electrocatalysis: from the Reactivity of Single-Crystals to Fuel Cell Electrocatalysts

K. A. FRIEDRICH, K. P. GEYZERS, A. J. DICKINSON and U. STIMMING, *J. Electroanal. Chem.*, 2002, 524–525, 261–272

Nanostructured Pt-Ru electrodes prepared by metal electrodeposition exhibited distinct characteristics regarding CO oxidation due to a cooperative reaction mechanism involving CO surface mobility. For Pt-Ru/C catalyst, prepared by the sulfite method, at 25°C the mass activity increases with increasing catalyst mass loading ≤ ~ 55 wt.%. Then a plateau in the mass activity vs. weight loading is reached. At 65°C, a maximum mass activity occurs at 60 wt.%.

### Surface Properties and Physicochemical Characterizations of a New Type of Anode Material, La<sub>1-x</sub>Sr<sub>x</sub>Cr<sub>1-y</sub>Ru<sub>y</sub>O<sub>3-δ</sub>, for a Solid Oxide Fuel Cell under Methane at Intermediate Temperature

A.-L. SAUVET, J. FOULETIER, F. GAILLARD and M. PRIMET, *J. Catal.*, 2002, 209, (1), 25–34

The material La<sub>1-x</sub>Sr<sub>x</sub>Cr<sub>1-y</sub>Ru<sub>y</sub>O<sub>3-δ</sub> (1) gave no loss of Ru even after sintering in air at 1100°C. The activity of (1) for CH<sub>4</sub> steam reforming in a CH<sub>4</sub>-rich atmosphere is similar to that of Ru metal. However, Ru loss during preliminary treatment and the agglomeration of Ru particles during reaction were avoided.

## ELECTRICAL AND ELECTRONIC ENGINEERING

### Effects of Si Interlayer Conditions on Platinum Ohmic Contacts for p-Type Silicon Carbide

T. JANG, J. W. ERICKSON and L. M. PORTER, *J. Electron. Mater.*, 2002, 31, (5), 506–511

A study of Pt ohmic contacts with Si interlayers on *p*-type SiC was performed. The use of a Si layer decreased the specific contact resistance (SCR) relative to Pt contacts without Si. The SCR values were reduced further by: (a) the deposition of the Si layer at 500°C, (b) the incorporation of B in the layer, and (c) the design of the Pt:Si layer thicknesses in a 1:1 atomic ratio. The lowest average SCR value was 2.89 × 10<sup>-4</sup> Ω cm<sup>2</sup>.

### Structural and Magnetic Properties of CoCrPt Perpendicular Media Grown on Different Buffer Layers

C. L. PLATT, K. W. WIEMAN, E. B. SVEDBERG, T. J. KLEMMER, J. K. HOWARD and D. J. SMITH, *J. Magn. Magn. Mater.*, 2002, 247, (2), 153–158

Thin buffer layers (~ 10–15 nm) of Ta/Ru, Ta/Hf or amorphous (CoCrPt)Ta<sub>25</sub> for growing CoCrPt film on gave media layers with high perpendicular coercivity (~ 3 kOe). Coercivity was only 1.7 kOe with a Ta/Ti buffer. XRD rocking curves showed the highest degree of (0 0 2) texture with the Ta/Ru buffer. This buffer promoted local epitaxy with the media layer.