



Strasbourg (France)

E-MRS 2005 Spring Meeting
May 31 – June 3, 2005

SYMPOSIUM K

Protective coatings and thin films – 05

Symposium Organizers :

Yves Pauleau, National Polytechnic Institute of Grenoble, France

Jörg Patscheider, Swiss Federal Laboratories for Materials Testing and Research (EMPA), Dübendorf, Switzerland

Witold Gulbinski, Technical University of Koszalin, Poland

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E-MRS 2005 Spring Meeting

SYMPOSIUM K

Tuesday, May 31, 2005
Mardi 31 mai 2005

Morning
Matin

Session I : Multilayer coatings

Session chairs : **M. Benlahsen** (University of Picardie, Amiens, France)
F. Levy (EPFL, Lausanne, Switzerland)

- K-I.1** 9:00 -Invited- MULTIFUNCTIONAL NANOLAMINATED PVD COATINGS IN THE SYSTEM Ti-Al-N-C BY COMBINATION OF METASTABLE FCC PHASES AND NANOCOMPOSITE MICROSTRUCTURES
Michael Stüber, S.Ulrich, H.Leiste, Institut für Materialforschung, Forschungszentrum, Karlsruhe, Germany.
- K-I.2** 9:30 X-RAY RESIDUAL STRESS ANALYSIS ON CrN/Cr/CrN MULTILAYER PVD COATINGS
F. R. Lamastra(a), F. Leonardi(a), R. Montanari(b), F. Casadei(c), T. Valente(d), and G. Gusmano(a), (a)Rome University "Tor Vergata", Department of Chemical Science and Technology, Rome, Italy, (b)Rome University "Tor Vergata", Department of Mechanical Engineering, Rome, Italy, (c)Centro Sviluppo Materiali Spa, Rome, Italy, (d)Rome University "La Sapienza", Department of Chemical and Materials Engineering, Rome, Italy.
- K-I.3** 9:50 INVESTIGATION OF MICROSTRUCTURAL CHARACTERISTICS IN CrN/TiN SUPERLATTICES
S. Logothetidis, K. Sarakinos, and N. Kalfagiannis, Aristotle University of Thessaloniki, Department of Physics, Thessaloniki, Greece.
- K-I.4** 10:10 OPTICAL MULTILAYERS IN GLASS INDUSTRY: MECHANICAL RESPONSE AND ADHESION ISSUES
E. Barthel, D. Dalmas, M. Klotz, E. Sondergard, and A. Dinescu, Surface du Verre et Interfaces, Unité Mixte CNRS/Saint-Gobain, Aubervilliers, France.
- K-I.5** 10:30 COMPOSITIONAL DEPTH PROFILING ANALYSIS OF THIN AND ULTRATHIN MULTILAYER COATINGS BY RADIO-FREQUENCY GLOW DISCHARGE OPTICAL EMISSION SPECTROSCOPY
R. Escobar Galindo, E. Forniés, and J.M. Albella Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Cantoblanco, Madrid, Spain.
- 10:50 **BREAK**

Session II : Solid lubricant and tribological coatings

Session chairs : **J.-P. Celis** (Katholieke Universiteit, Leuven, Belgium)

C. Meunier (University of Franche-Comté, Belfort, France)

- K-II.1** 11:10 -Invited- NANO-STRUCTURED WEAR RESISTANT COATINGS PREPARED BY THERMAL SPRAYING AND LASER CLADDING
Igor Smurov, Ecole Nationale d'Ingénieurs de St-Etienne, DIPI Laboratory, Saint-Etienne, France.
- K-II.2** 11:40 WEAR AND FAILURE MODES OF PVD COATED CEMENTED CARBIDE CUTTING SAWS
P. Panjan(a), R. Kos(b), M. Cekada(a), (a)Jozef Stefan Institute, Ljubljana, Slovenia, (b)Kolektor d.o.o., Idrija, Slovenia.
- K-II.3** 12:00 MECHANICAL AND TRIBOCORROSION BEHAVIOUR OF PLASMA NITRIDED AND PLASMA NITRIDED + OXIDISED Ti6Al4V ALLOY
A. C. Fernandes(a), F. Vaz(a), E. Ariza(b), L. A. Rocha(b), A. R. L. Ribeiro(b), A. C. Vieira(b), J. P. Rivière(c), and L. Pichon(c), (a)Dept. Física, Universidade do Minho, Campus Azurém, Guimarães, Portugal, (b)Universidade do Minho, Dept. Eng. Mecânica, Campus Azurém, Guimarães, Portugal, (c)Laboratoire de Métallurgie Physique, Université de Poitiers, Futuroscope, France.
- K-II.4** 12:20 LUBRIFICIOUS CARBON LAYERS ON HARD COATINGS INTENDED FOR AUTOMOTIVE TOOLING
S. Mutti(a), S. Luridiana(a), L. Guzman(b), and L. Maines (b), (a)Microcoat, Sedriano (MI), Italy, (b)Dip. di Ingegneria dei Materiali, Università di Trento, Mesiano di Povo (TN), Italy.
- K-II.5** 12:40 DEVELOPMENT AND TRIBOLOGICAL QUALIFICATION OF A MODIFIED MoS₂ SOLID LUBRICANT FILM
M. Brizuela, J.I. Oñate, J.L. Viviente, I. Braceras, D. Gonzalez, and A. Garcia-Luis, INASMET, San Sebastian, Spain.
- 13:00 **LUNCH**

Tuesday, May 31, 2005
Mardi 31 mai 2005

Afternoon
Après-midi

Session III : Nanostructured coatings and thin films

Session chairs : **A. Korhonen** (Helsinki University of Technology, Finland)
P. Ossi (Politecnico, Milano, Italy)

- K-III.1** 14:30 -Invited- ENCAPSULATION OF METALLIC NANOPARTICLES IN CARBON AND BORON NITRIDE THIN FILMS PREPARED BY ION-BEAM SPUTTERING
David Babonneau, J. Toudert, S. Camelio, T. Cabioch, and T. Girardeau Laboratoire de Métallurgie Physique, University of Poitiers, Futuroscope, France.
- K-III.2** 15:00 COMPOSITION, MECHANICAL PROPERTIES AND FRICTION BEHAVIOR OF NICKEL/HYDROGENATED AMORPHOUS CARBON COMPOSITE FILMS
S. Kukielka(a), W. Gulbinski(a), Y. Pauleau(b), S.N. Dub(c), and J.J. Grob(d), (a)Technical University of Koszalin, Faculty of Mechanical Engineering, Department of Physics, Koszalin, Poland, (b)CNRS-LEMD, Grenoble, France, (c)Institute for Superhard Materials, Kiev, Ukraine, (d)CNRS-PHASE, Strasbourg, France.
- K-III.3** 15:20 MICROSTRUCTURES IN CO-SPUTTERED Al-C THIN FILMS DEVELOPING AT ELEVATED TEMPERATURES
D. Biro(a), A. Kovács(b), A. Dévényi(c), and **P.B. Barna**(b), (a)Petru Maior University, Sapientia University, Tg.Mures, Romania, (b)Research Institute for Technical Physics and Materials Science of HAS, Budapest, Hungary, (c)National Institute of Materials Physics, Bucharest-Magurele, Romania.
- K-III.4** 15:40 NANOSTRUCTURED CHROMIUM-BASED COATINGS DEPOSITED AT LOW TEMPERATURE BY DLI-MOCVD UNDER ATMOSPHERIC PRESSURE FROM Cr(CO)₆
A. Douard(a), F. Maury(a), F. Teyssandier(b), and M. Nadal(b), (a)Centre Interuniversitaire de Recherche et d'Ingénierie des Matériaux (CIRIMAT), Toulouse, France, (b)Institut de Science et de Génie des Matériaux et Procédés, Technosud, Perpignan, France.
- K-III.5** 16:00 NANO-STRUCTURED COATINGS OF METAL CONTAINING DIAMOND-LIKE CARBON FILMS DEPOSITED BY FEMTOSECOND PULSED LASER ABLATION
N. Benchikh(a,b), F. Garrelie(a), C. Donnet(a), K. Wolski(b), J.N. Rouzaud(c), R.Y. Fillit(b), J. Fontaine(d), M. Belin(d), F. Rogemond(a), and J.L. Subtil(a), (a)Université Jean Monnet de Saint-Etienne, France, (b)Ecole Nationale Supérieure des Mines de Saint-Etienne, France, (c) Ecole Normale Supérieure de Paris, France, (d) Ecole Centrale de Lyon, France.
- 16:20 **BREAK**

Session IV : Composite coatings and thin films

Session chairs : **J.I. Oñate** (INASMET, San Sebastian, Spain)

V. Teixeira (University of Minho, Guimaraes, Portugal)

- K-IV.1** 16:40 COPPER/MOLYBDENUM NITRIDE COMPOSITE THIN FILMS – THE STRUCTURE, MECHANICAL PROPERTIES, PHASE COMPOSITION AND HIGH TEMPERATURE TRIBOLOGICAL BEHAVIOR
T. Suszko and W. Gulbinski, Technical University of Koszalin, Department of Mechanical Engineering, Physics Division, Koszalin, Poland.
- K-IV.2** 17:00 ENHANCED HARDNESS IN SPUTTERED Zr-Ni-N FILMS
J.Suna(a), J.Musil(a), J.G. Han(b), and V. Ondok(a), (a)Department of Physics, Univerzity of West Bohemia, Plzen, Czech Republic, (b)Center for Advanced Technology, SungKyunKwan University, Suwon, Korea.
- K-IV.3** 17:20 STRUCTURAL AND MECHANICAL PROPERTIES OF IBAD DEPOSITED NANOCOMPOSITE $Ti_{1-x}Ni_xN_y$ COATINGS
A. Akbari(a,b), J.P. Rivière(a), C. Templier(a), E. Le Bourhis(a), (a)Laboratoire de Métallurgie Physique, Université de Poitiers, Chasseneuil Futuroscope, France, (b)Department of Materials Engineering, Sahand University of Technology, Tabriz, Iran.
- K-IV.4** 17:40 CHARACTERIZATION OF W-Ge-N COATINGS DEPOSITED BY SPUTTERING
A.P. Piedade, M.J.. Gomes, and A. Cavaleiro, ICEMS, Departamento de Engenharia Mecânica, Universidade de Coimbra, Portugal.
- K-IV.5** 18:00 THERMAL DECOMPOSITION OF $Zr_{1-x}Al_xN$ THIN FILMS DEPOSITED BY MAGNETRON SPUTTERING
R. Sanjinés, R. Lamni, C. S. Sandu, and F. Lévy, Ecole Polytechnique Fédérale de Lausanne (EPFL), Institut de Physique de la Matière Complexe, Lausanne, Switzerland.
- 18:20-20:00 **POSTER SESSION I**
+ in parallel, the special oral session for graduate student award (max. 5 candidates)
This special session for graduate student award would continue on Wednesday, June 2 from 8:30 to 12:10 (max. 10 candidates)

POSTER SESSION I
Tuesday, May 31, 2005
18:20 – 20:00

Multilayer coatings

- K/PI.01** CRYSTALLOGRAPHIC ASPECTS RELATED TO ADVANCED TRIBOLOGICAL MULTILAYERS OF Cr/CrN, Ti/TiN AND TiN/CrN TYPES PRODUCED BY PULSED LASER DEPOSITION (PLD)
L. Major(a), J. Morgiel(a), B. Major(a), J.M. Lackner(b), W. Waldhauser(b), R. Ebner(b), L. Nistor(c), and G. van Tendeloo(d), (a)Institute of Metallurgy and Materials Science PAS, Cracow, Poland, (b)Laserzentrum Leoben, Austria, (c)National Institute for Materials Physics, Magurele, Ilfov, Romania, (d)EMAT University of Antwerp, Belgium.
- K/PI.02** THE INFLUENCE OF SILVER ON THE FORMATION OF GAMMA-TiAl FROM Ti/Al MULTILAYERS WITH DIFFERENT PERIODS
A. S. Ramos and M. T. Vieira, ICEMS, Departamento de Engenharia Mecânica, Faculdade de Ciências e Tecnologia, Universidade de Coimbra, Portugal.
- K/PI.03** HIGH RESOLUTION ELECTRON MICROSCOPY OF CrN-TiN THIN FILMS GROWN ON Si(100) BY RF MAGNETRON SPUTTERING
N. Frangis, D. Papapetros, I. Tsiaoussis, S. Logothetidis, Solid State Physics Section, Department of Physics, Aristotle University of Thessaloniki, Greece.
- K/PI.04** EFFECT OF THE Al₂O₃+Al-Ni MULTILAYERS ON THE MECHANICAL PROPERTIES OF INCONEL 600 ALLOY
H. Garbacz, P. Widlicki, T. Wierzchon, and K.J. Kurzydowski, Warsaw University of Technology, Faculty of Materials Science Engineering, Warsaw, Poland.
- K/PI.05** HIGH STABILITY NANO-MULTILAYER RESISTIVE FILMS
Arunas Andziulis, Beatrice Andziulienė, Jonas Vaupsas and Marius Zadvydas, Department of Informatics Engineering and Physics, Klaipėda University, Lithuania.

Solid lubricant and tribological coatings

- K/PI.06** WEAR BEHAVIOUR OF NiTi SHAPE MEMORY ALLOY AFTER OXYGEN-PIII TREATMENT
S. Mändl, A. Fleischer, D. Manova, and B. Rauschenbach, Leibniz-Institut für Oberflächenmodifizierung, Leipzig, Germany.
- K/PI.07** STRUCTURAL AND TRIBOLOGICAL PROPERTIES OF HYDROGENATED AMORPHOUS CARBON (a-C:H) FILMS WITH ACETYLENE (C₂H₂) PARTIAL PRESSURE DEPOSITED BY CLOSED-FIELD UNBALANCED MAGNETRON SPUTTERING
Yong Seob Park and Byungyou Hong, School of information and communication Engineering, Sungkyunkwan University, Suwon, Korea.
- K/PI.08** STRUCTURAL, MECHANICAL, TRIBOLOGICAL PROPERTIES OF MoS₂/C MULTILAYERS DEPOSITED BY PULSED LASER DEPOSITION TECHNIQUE
A. R. Phani(a) and J.E. Kraznowski(b), (a)INFN and Department of Physics, University of L'Aquila, Coppito, L'Aquila, Italy, (b)Department of Mechanical Engineering, University of New Hampshire, Durham, NH, USA.
- K/PI.09** COMPUTATIONAL STUDIES OF FLUOROCARBON FILMS
Inkook Jang, Wendung Hsu, Simon Phillpot, and Susan B. Sinnott, Department of Materials Science and Engineering, University of Florida, Gainesville, Florida, USA.
- K/PI.10** TRIBOLOGICAL PROPERTIES OF THE MULTILAYERED DIAMOND-LIKE CARBON (DLC) FILMS PREPARED BY PECVD METHOD
Youngsook Jeon(a,b), Won Seok Choi(a,b), and Byungyou Hong(a,b), (a)School of Information and Communication Engineering, Sungkyunkwan University, Suwon, Korea, (b)Center for Advanced Plasma Surface Technology, Sungkyunkwan University, Suwon, Korea.
- K/PI.11** TRIBOLOGICAL CHARACTERIZATION OF FUNCTIONALLY GRADED Ti-C-N(H) COATINGS WITH MULTIPLE-LAYER STRUCTURE
D. Boscarino(a), S. Restello(b), and V. Rigato(b), (a)Thin Films srl, Padova, Italy, (2)INFN-Laboratori Nazionali di Legnaro, Legnaro (PD), Italy.
- K/PI.12** TRIBOLOGICAL TESTING OF SELF-MATED NANOCRYSTALLINE DIAMOND COATINGS ON Si₃N₄ CERAMICS
C. S. Abreu(a), M.S. Amaral(b), F.J. Oliveira(b), A. Tallaire(c), F. Bénédic(c), G. Cicala(d), J.R. Gomes(e), and R.F. Silva(b), (a)Physics Dept., Porto Superior Engineering Institute, ISEP, Porto, Portugal, (b)Ceramics and Glass Eng. Dept., CICECO, Univ. of Aveiro, Portugal, (c)LIMHP, UPR 1311 CNRS, Université Paris 13, Villetaneuse, France, (d)IMIP-CNR Sezione di Bari, University of Bari, Italy, (e)Mechanical Eng. Dept., CIICS, University of Minho, Guimarães, Portugal.

- K/PI.13** SYNTHESIS OF THE SILICON DOPED a-C:H FILMS FROM HEXAMETHYLDISILOXANE VAPOR BY DC ION BEAM
V. Kopustinskas, S. Meskinis, S. Tamulevicius, M. Andrulevicius. Institute of Physical Electronics of Kaunas University of Technology, Kaunas, Lithuania.

Nanostructured coatings and thin films

- K/PI.14** DLC-SiO_x NANOCOMPOSITE FILMS DEPOSITED FROM CH₄:SiH₄:O₂ GAS MIXTURES
J.C. Damasceno and S.S. Camargo Jr., COPPE, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ Brazil.
- K/PI.15** CHARACTERIZATION OF NANOCRYSTALLINE TiO₂ – HfO₂ THIN FILMS PREPARED BY LOW PRESSURE HOT TARGET REACTIVE MAGNETRON SPUTTERING
J. Domaradzki(a), D. Kaczmarek(a), E. L. Prociow(a), A. Borkowska(a), R. Kudrawiec(b), J. Misiewicz(b), D. Schmeisser(c), and G. Beuckert(c), (a)Faculty of Microsystem Electronics and Photonics, WUT, Wroclaw, Poland, (b)Institute of Physics, WUT, Wroclaw, Poland, (c)Applied Physics, Sensor Technology, BTU Cottbus, Cottbus, Germany.
- K/PI.16** COMPOSITION DEPENDENCE OF THE STRUCTURE AND PROPERTIES OF Ni₃C-CARBON NANOCOMPOSITE FILMS
K. Sedláková(a), Zs. Czigány(b), O. Geszti(b), G. Radnóczy(b), T. Ujvári(c), and I. Bertóti(c), (a)Institute of Electrical Engineering SAS, Bratislava, Slovakia, (b)Research Institute for Technical Physics and Materials Science, Budapest, Hungary, (c)Institute of Materials and Environmental Chemistry, Chemical Research Centre, Budapest, Hungary.
- K/PI.17** STRUCTURE AND ELECTRIC PROPERTY RELATIONS IN C-Ni AND CN_x-Ni NANOCOMPOSITE FILMS
Gy. J. Kovács(a), A. Koós(a), G. Sáfrán(a), O. Geszti(a), G. Radnóczy(a), and M. Veres(b), (a)Research Institute for Technical Physics and Materials Science, Budapest, Hungary, (b)Research Institute for Solid State Physics and Optics, Budapest, Hungary.
- K/PI.18** STRUCTURE AND MORPHOLOGY OF NICKEL/CARBON COMPOSITE FILMS FORMED BY MICROWAVE PLASMA-ASSISTED DEPOSITION TECHNIQUE
V.V. Uglov(a), A.K. Kuleshov(a), M.V. Astashynskaya(a), M.P. Samstov(b), Y. Pauleau(c), T.A. Kuznetsova(d), and S.N. Dub(e), (a)Belarusian State University, Minsk, Belarus, (b)Research Institute For Applied Physical Problems of Belarusian State University, Minsk, Belarus, (c)National Polytechnic Institute of Grenoble, CNRS-LEMN, Grenoble, France, (d)BRSPU of Powdered Metallurgy, Minsk, Belarus, (e)Institute for Superhard Materials, Kiev, Ukraine.
- K/PI.19** CORROSION BEHAVIOUR OF NANOCOMPOSITE HARD COATINGS OF TYPE MeN-Me
Mustafa Ürgen, Ali Fuat Çakr, Behiye Yüksel, Ahmet Öztürk and Vefa Erizmik, Istanbul Technical University, Department of Metallurgy and Materials Eng., Istanbul, Turkey.

Composite coatings and thin films

- K/PI.20** MORPHOLOGY AND CHARACTERIZATION OF LASER CLAD COMPOSITE NiCrBSi-WC COATINGS ON STAINLESS STEEL
C. Alvarez, J. M. Amado, G. Rogríguez, M. J. Tobar, and A. Yañez, Dpto. de Enxeñeria Industrial II, Universidade da Coruña, Ferrol, Spain.

Surface modifications for biomedical applications

- K/PI.21** SURFACE ENERGY OF METAL-IMPLANTED FLUORINE-BASED POLYMER
Ricky K. Y. Fu(a), Y. X. Huang(a), Y. F. Mei(a), G. G. Siu(a), Paul. K. Chu(a), X. B. Tian(b), S. Q. Yang(b), and J.Y. Chen(c), (a)Dept. of Physics & Materials Science, City University of Hong Kong, Kowloon, Hong Kong, (b)State Key Laboratory of Welding Production Technology, Harbin Institute of Technology, Harbin, China, (c)School of Materials Science and Engineering, Southwest Jiaotong University, Chengdu, China.
- K/PI.22** DISSOLUTION KINETICS OF BIOMIMETICALLY PREPARED MINERAL IN PHYSIOLOGICAL MEDIA
A.C. Jayasuriya(a), N.A. Ebraheim(a), D.H. Kohn(b), and A.H. Jayatissa(c), (a)Medical College of Ohio, Department of Orthopadics, Toledo, OH, USA, (b)The University of Michigan, Department of Biologic and Materials Sciences, Ann Arbor MI, USA, (c)MIME Department, The University of Toledo, OH, USA.

Coatings for biomedical applications

- K/PI.23** THE CHARACTERIZATION OF BIOACTIVE TITANIUM OXIDE OVERLAYER ON NITRIDE FILMS
Hong-Ying Chen and Min-Min Lee, Department of Applied Life Science, Taichung Healthcare and Management University, Wufong Township, Taichung County 413, Taiwan, R.O.C.
- K/PI.24** WEAR CORROSION PROPERTIES OF ELECTROLYTIC Al₂O₃-ZrO₂ COATINGS ON Ti-6Al-4V IMPLANT ALLOYS IN HANK'S SOLUTION
S.J. Wu, C. C. Chang, and S. K. Yen, Department of Materials Engineering, National Chung Hsing University, Taichung, Taiwan.

K/PI.25 HYDROXYAPATITE PULSED LASER DEPOSITED THIN FILMS BEHAVIOR WHEN SUBMITTED TO BIOLOGICAL SIMULATED TESTS
S. Grigorescu(a), C. Ristoscu(a), G. Socol(a), E. Axente(a), F. Feugeas(b), and I. N. Mihailescu(a), (a)Lasers Department, National Institute for Lasers, Plasma and Radiation Physics, Bucarest-Magurele, Romania, (b)INSA Strasbourg, France.

Innovative coatings, deposition processes and surface treatments

K/PI.26 Ti ION IMPLANTATION AND ELECTRON BEAM TREATMENT OF Al/Al₂O₃ COATINGS DEPOSITED ON GRAPHITE SUBSTRATE
A.D. Pogrebnjak(a), Yu N. Tyurin(b), N.A. Pogrebnjak Jr.(a), M.A. Kalyskhanov(c), V.V. Ponaryadov(d), and Sh. M. Ruzimov(d), (a)Sumy Institute for Surface Modification, Sumy, Ukraine, (b)O.E. Paton Institute for Electric Welding, NASU of Ukraine, Kiev, Ukraine, (c)East-Kazakhstan University, Ust-Kamenogorsk, Kazakhstan (d)Belarus State University of Uzbekistan, Tashkent, Uzbekistan.

K/PI.27 APPLICATION OF HIGH-VELOCITY PLASMA JET FOR PRODUCTION OF CERAMIC AND METAL-CERAMIC COATINGS
A.D. Pogrebnjak(a), Yu.N.Tyurin(b), and M.II'yashenko(a), (a)Sumy Institute for Surface Modification, Sumy, Ukraine, (b)Electric Welding Institute NASU of Ukraine, Kiev, Ukraine.

K/PI.28 INFLUENCE OF THE RF-SPUTTERING POWER AND THE NEGATIVE BIAS VOLTAGE ON THE STRUCTURE AND THE MECHANICAL PROPERTIES OF W-C THIN FILMS
K. Abdouahdi(a), C. Sant(a), C. Legrand-Buscema(a), F. Miserque(c), J. Perrière(b), G. Renou(a), P. Aubert(a), (a)Laboratoire d'Etude des Milieux Nanométriques, Bât Maupertuis 1, rue du Père Jarlan, 91025 Evry Cedex, France, (b)Institut des Nanosciences, Université Paris VI, Campus Boucleaut, 140 rue de Lourmel, 75015 Paris, France, (c)DPC/SCP/LRSI, Commissariat à l'Energie Atomique, Centre de Saclay, Direction de l'Energie Nucléaire, Laboratoire de Réactivité de Surfaces et Interfaces, 91191 Gif-sur-Yvette Cedex, France

K/PI.29 SURFACE ANALYTICAL CHEMICAL IMAGING AND MORPHOLOGY OF Cu-Cr ALLOY
A. Lamperti(a), P.M. Ossi(a), and V.P. Rotshtein(b), (a)Centre of Excellence "Nano Engineered Materials and Surfaces" – NEMAS and Dipartimento di Ingegneria Nucleare, Politecnico di Milano, Italy, (b)Tomsk State Pedagogical University, Tomsk, Russia.

K/PI.30 SURFACE ALLOYING OF STAINLESS STEEL 316 WITH COPPER USING PULSED ELECTRON-BEAM MELTING OF FILM-SUBSTRATE SYSTEM
V.P. Rotshtein(a), A.B. Markov(a), Yu.F. Ivanov(a), K.V. Karlik(a), V.V. Uglov(b), A.K. Kuleshov(b), M.V. Novitskaya(b), S.N. Dub(c), Y. Pauleau(d), and I.A. Shulepov(e), (a)Institute of High Current Electronics, Tomsk, Russia, (b)Belarusian State University, Minsk, Belarus, (c)Institute for Superhard Materials, Kiev, Ukraine, (d)CNRS-LEMD, Grenoble, France, (e)Nuclear Physics Institute, Tomsk Polytechnic University, Tomsk, Russia.

K/PI.31 SURFACE MODIFICATION OF Ti_{49.5}Ni_{50.5} WITH LOW-ENERGY, HIGH-CURRENT ELECTRON BEAMS
L.L. Meisner(a), A.I. Lotkov(a), V.P. Sivokha(a), V.P. Rotshtein(b), A.B. Markov(b), and K.V. Karlik(b), (a)Institute of Strength Physics and Materials Science of SB RAS, Tomsk, Russia, (b)Institute of High Current Electronics, Tomsk, Russia.

K/PI.32 PHYSICAL PROPERTIES OF TITANIUM OXYNITRIDE THIN FILMS PREPARED BY REACTIVE SPUTTERING WITH GAS PULSING TECHNIQUE
Jean-Marie Chappé(a), Nicolas Martin(a), Jan Lintymer(a), Joseph Gavaille(a), Fabrice Sthal(b), and Jamal Takadoum(a), (a)Laboratoire de Microanalyse des Surfaces (LMS), Ecole Nationale Supérieure de Mécanique et des Microtechniques (ENSM), Besançon, France, (b)Institut FEMTO-ST, Département LCEP, Besançon, France.

K/PI.33 LASER TREATMENT OF PLASMA SPRAYED ZrSiO₄ COATINGS
S. Schelz, N. Branland, D. Plessis, B. Minot, and S. Lambert, CEA, Le Ripault, Monts, France.

K/PI.34 PULSED ELECTRON-BEAM MELTING OF Ti-6Al-4V ALLOY AT ELEVATED TEMPERATURES
R. Guenzel(a), A. B. Markov(b), V. P. Rotshtein(b), D. I. Proskurovsky(b), M. T. Pham(c), and V. A. Shulov(d), (a)APT Company, Grosermannsdorf, Germany, (b)Institute of High-Current Electronics, Tomsk, Russia, (c)Institute of Ion Beam Physics and Materials Research, Forschungszentrum Rossendorf, Dresden, Germany, (d)Moscow Aviation Institute, Moscow, Russia.

K/PI.35 PHASE COMPOSITION AND STRESS DEVELOPMENT IN TERNARY Ti-Zr-N SOLID SOLUTION COATINGS DEPOSITED WITH COMBINING OF PLASMA FLOWS
V.V.Uglov(a), V.M.Anishchik(a), S.V.Zlotski(a), and G. Abadias(b), Belarusian State University, Minsk, Belarus, (b)Laboratoire de Metallurgie Physique, Université de Poitiers, Chasseneuil Futuroscope, France.

K/PI.36 STRUCTURAL CHARACTERISATION OF AIR OXIDISED Ti-Si-N COATINGS DEPOSITED BY REACTIVE SPUTTERING
D. Pilloud(a), M.C. Marco de Lucas(b), and J.F. Pierson(c), (a)Dpt CREST, Institut FEMTO-ST, Université de Franche Comté, Montbéliard, France, (b)LRRS, Université de Bourgogne, Dijon, France, (c)Dpt CREST, Institut FEMTO-ST, Université de Franche Comté, Montbéliard, France.

- K/PI.37** THE MECHANISM OF LOW-DIMENSIONAL SURFACE STRUCTURE FORMATION BY COMPRESSION PLASMA FLOW
V.V. Ugllov(a), V.M. Anishchik(a), N.N. Cherenda(a), Yu.V. Sveshnikov(a), Y. Pauleau(b), N.T. Kvasov(c), L.A. Danilyuc), A.V. Punko(c), V.M. Astashynski(d), E.A. Kostyukevich(d), and A.M. Kuzmitski(d), (a)Belarusian State University, Minsk, Belarus, (b)National Polytechnic Institute of Grenoble, CNRS-LEMD, Grenoble, France, (c)Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus, (d)Institute of Molecular and Atomic Physics of National Academy of Sciences of Belarus, Minsk, Belarus.
- K/PI.38** POROUS SURFACE OF NiTi ALLOY PRODUCED BY PLASMA ION IMPLANTATION
N. Shevchenko, A. Muecklich, E. Richter, and M.F. Maitz, Forschungszentrum Rossendorf e.V., Institute of Ion Beam Physics and Materials Research, Dresden, Germany.
- K/PI.39** SURFACE MODIFICATION OF COTTON FABRICS BY ATMOSPHERIC PRESSURE PLASMA (APP)
G. Rombola(a), P. Mandracci(a), C.F. Pirri(a), and F. Parisi(b), (a)Material and Microsystem Laboratory, Department of Physics, Politecnico di Torino, Italy, (b)Gripn s.r.l., Torino, Italy.
- K/PI.40** FUNCTIONAL COATINGS BY LASER PROCESSING AND CLADDING
A. Yakovlev(a), Sh. Jumaine(b), and I.Smurov(a), (a)ENISE, DIPI, Saint-Etienne, France, (b)HEF, Saint-Etienne, France.
- K/PI.41** AMORPHOUS AlMo THIN FILMS PREPARED BY MAGNETRON CODEPOSITION
N. Radic(a), T. Car(a), Z. Siketic(a), A. Tonejc(b), I. Djerdj(b), J.Ivkov(c), and M. Metikos-Hukovic(d), (a)Rudjer Boskovic" Institute, Zagreb, Croatia, (b)Faculty of Sciences, Phys. Dept., Zagreb, Croatia, (c)Institute of Physics, Zagreb, Croatia, (d)Faculty Chem. Eng. and Tech., Zagreb, Croatia.
- K/PI.42** VASCULAR PROSTHESES WITH CONTROLLED RELEASE OF ANTIBIOTICS: SURFACE MODIFICATION WITH CYCLODEXTRINS OF PET PROSTHESES
N. Blanchemain(a), S. Haulon(a), F. Boschin(a), H.F. Hildebrand(a), M. Morcellet(b), and B. Martel(b), (a)GRB, Faculté de Médecine, Lille, France, (b)LCOM, Univ. Sciences Technol. Lille, Villeneuve d'Ascq, France.
- K/PI.43** VASCULAR PROSTHESES WITH CONTROLLED RELEASE OF ANTIBIOTICS: BIOCOMPATIBILITY OF PET PROSTHESES GRAFTED WITH CDs
N. Blanchemain(a), S. Haulon(a), H.F. Hildebrand(a), M. Morcellet(b), and B. Martel(b), (a)GRB, Faculté de Médecine, Lille, France, (b)LCOM, Univ. Sciences Technol. Lille, Villeneuve d'Ascq, France.
- K/PI.44** COMBINED LASER/SOL-GEL SYNTHESIS OF Si/O/C/N COATINGS
Tamer Ezz, Philip Crouse, and Lin Li, Laser Processing Research Centre, School of Mechanical, Aerospace, and Civil Engineering, The University of Manchester, United Kingdom.

Diamond-like carbon films

- K/PI.45** FORMATION OF CARBON STRUCTURE FILMS BY PLASMA SPRAY TECHNIQUE
L. Marcinauskas, A. Grigonis, V. Valinčius, and P. Valatkevičius, Kaunas University of Technology, Faculty of Fundamental Science, Department of Physics, Kaunas, Lithuania.
- K/PI.46** THE INFLUENCE OF BIAS VOLTAGE ON STRUCTURE OF a-C:H FILMS
M. Ouchabane(a), M. Aoucher(b), and K. Henda(a), (a)Centre de Développement des Technologies Avancées, Division des Milieux Ionisés & Lasers, Alger, Algeria, (b)Laboratoire de Physique des Matériaux, Equipe Couches Minces et Semiconducteurs, Faculté de Physique, USTHB, Alger, Algeria.
- K/PI.47** OPTICAL PROPERTIES OF DIAMOND-LIKE CARBON PROTECTIVE LAYERS DEPOSITED ON THE Co-Cr-Ni IMPLANT ALLOY
L. Zieba(a), J.Jaglarz(b), J.Cisowski(a), B.Rajchel(c), and W.Rakowski(c), (a)Institute of Physics, Cracow University of Technology, Centre of Polymer Chemistry PAN, Cracow, Poland, (b) Institute of Physics, Cracow University of Technology, Poland, (c)The Henryk Niewodniczanski Institute of Nuclear Physics Polish Academy of Science, Cracow, Poland.
- K/PI.48** NCD BY HFCVD ON A Si₃N₄ – BIOGLASS® COMPOSITE FOR BIOMECHANICAL APPLICATIONS
M. Amaral(a), E. Salgueiredo(a), F.J. Oliveira(a), A.J.S. Fernandes(b), F. Costa(b), and R.F. Silva(a), (a)Glass and Ceramics Engineering Department, CICECO, University of Aveiro, Portugal, (b)Physics Department, University of Aveiro, Portugal.

Carbon-based coatings and thin films

- K/PI.49** CONSISTENT DESCRIPTION OF BORON CARBIDE FILM GROWTH BY COMBINING SURFACE AND VOLUME ANALYSES
T. Szörényi(a), I. Bertóti(b), J.-P. Stoquert(c), F. Antoni(c), and E. Fogarassy(c), (a)Research Group on Laser Physics, Szeged, Hungary, (b)Chemical Research Center of the Hungarian Academy of Sciences, Budapest, Hungary, (c)CNRS-PHASE, Strasbourg, France.
- K/PI.50** HARD BCN THIN FILMS GROWN BY DUAL ION BEAM SPUTTERING
J. Bareño, C. Morant, P. Prieto, J.M. Sanz, and E. Elizalde, Departamento de Física Aplicada (C-XII), Universidad Autónoma de Madrid, Cantoblanco, Madrid, Spain.

K/PI.51 SURFACE CHARACTERIZATION OF TERNARY CARBIDES OF TRANSITION ELEMENTS PREPARED BY FEMTOSECOND LASER ABLATION AND DEPOSITION
N. Tuccitto(a), A.Licciardello(a), and R.Teghil(b), (a)Dip. di Scienze Chimiche, Catania, Italy, (b)University of Potenza, Italy.

K/PI.52 CARBIDE FORMATION IN TANTALUM THIN LAYERS DEPOSITED ON STEEL SUBSTRATES
Y. Hadjar(a), R. Halimi(a), and F. Tancret(b), (a)Laboratoire Couches Minces et Interfaces, Université Mentouri, Constantine, Algeria, (b)Laboratoire Génie des Matériaux, Ecole Polytechnique de l'Université de Nantes, France.

Boron-based coatings and thin films

K/PI.53 CUBIC BORON NITRIDE PHASE FORMATION AT ROOM-TEMPERATURE UPON RADIO-FREQUENCY PLASMA ENHANCED PULSED-LASER DEPOSITION
C. Y. Zhanga, J. B. Wang, S. W. Lia, X. Zhoua, and G. W. Yang, State key laboratory of optoelectronic materials and technologies, School of Physics Science & Engineering, Zhongshan University, Guangzhou, China.

K/PI.54 CONSTITUTION OF THICK OXYGEN-CONTAINING CUBIC BORON NITRIDE FILMS
K. Sell, E. Nold, M. Stüber, S. Ulrich, J. Ye, and C. Ziebert, Forschungszentrum Karlsruhe, Institut für Materialforschung I, Karlsruhe, Germany.

Wednesday, June 1, 2005
Mercredi 1er juin 2005

Afternoon
Après-midi

Session V : Surface modifications for biomedical applications

Session chairs : A. Garcia-Luis (INASMET, San Sebastian, Spain)

A. Matthews (The University of Sheffield, U.K.)

- K-V.1** 14:00 -Invited- FIBER-REINFORCED COMPOSITE LAMINATES AS COATING FOR ENAMEL AND DENTINE
Arzu Tezvergil, Institute of Dentistry University of Turku, Finland.
- K-V.2** 14:30 -Invited SURFACE COATINGS FOR BIOLOGICAL ACTIVATION AND FUNCTIONALIZATION OF MEDICAL DEVICES
Hartmut F. Hildebrand, N. Blanchemain, G. Mayer, and M. Lefèbvre, Groupe de Recherche sur les Biomateriaux, Laboratoire de Biophysique, Faculté de Médecine, Lille, France.
- K-V.3** 15:00 Si-BASED AMORPHOUS THIN FILMS FOR PERFORMANCE IMPROVEMENT OF DENTAL PROSTHESES
P. Mandracci(a), C.F. Pirri(a), C. Carossa(b), and P. Ceruti(b), (a)Material and Microsystem Laboratory, Department of Physics, Politecnico di Torino, Italy, (b)Clinica Odontostomatologica, Università di Torino, Italy.
- K-V.4** 15:20 EFFECT OF A GOLD-PALLADIUM COATING ON THE LONG-TERM ADHESION OF HUMAN OSTEOBLASTS ON BIOCOMPATIBLE METALLIC MATERIALS
K. Anselme(a) and M. Bigerelle(b), (a)Institut de Chimie des Surfaces et Interfaces, Mulhouse, France, (b)Laboratoire Roberval, UTC, Centre de Recherches de Royallieu, Compiègne, France.
- K-V.5** 15:40 PLASMA SURFACE TREATMENT OF POLYETHYLENE TEREPHTHALATE FILMS FOR BACTERIAL REPELLENCE
E. Amanatides(a), D. Mataras(a), M. Katsikogianni(b), and Y.F. Missirlis(b), (a)Plasma Technology Laboratory, Department of Chemical Engineering, University of Patras, Greece, (b)Laboratory of Biomechanics and Biomedical Engineering, Department of Mechanical Engineering and Aeronautics, University of Patras, Greece.
- K-V.6** 16:00 MIXING FLUORIDE POLYMERS WITH STAINLESS STEEL THIN FILMS FOR INVASIVE MEDICAL DEVICES
A.P. Piedade and M.T. Vieira, ICEMS-Departamento de Engenharia Mecânica, Universidade de Coimbra, Coimbra, Portugal.
- 16:20 **BREAK**

Session VI : Coatings for biomedical applications

Session chairs : **A. Goulet** (Polytech, Nantes, France)

V.T. Vieira (University of Coimbra, Portugal)

- K-VI.1** 16:40 -Invited- TAILOR-MADE FUNCTIONAL LAYERS ON Ti-IMPLANTS FOR VARIOUS APPLICATIONS IN BIOMEDICINE
Jürgen Breme(a), S. Winter(a), D. Velten(a), F. Aubertin(a), E. Eisenbarth(a), and H.F. Hildebrand(b), (a)Lehrstuhl für Metallische Werkstoffe, Universität des Saarlandes, Saarbrücken, Germany, (b)Groupe de Recherche sur les Biomatériaux, Faculté de Médecine, Lille, France.
- K-VI.2** 17:10 ELASTIC TiN COATING DEPOSITED ON POLYURETHANE BY PULSED LASER
R. Major(a), J. Bonarski(a), J. Morgiel(a), **B. Major**(a), R. Kustos(b), J.M. Lackner(c), W. Waldhauser(c), and P. Lacki(d), (a)Institute of Metallurgy and Materials Science PAS, Cracow, Poland, (b)Foundation of Cardiac Surgery Development, Zabrze, Poland, (c)Laser Center Leoben, Graz, Austria, (d)Czestochowa University of Technology, Czestochowa, Poland.
- K-VI.3** 17:30 COMPARISON OF HYDROGENATED AND UNHYDROGENATED CARBON FILMS OBTAINED BY FCVA ONTO Ti6Al4V: STRUCTURE, HARDNESS AND BIOCOMPATIBILITY STUDY
C. Meunier(a), Y.Stauffer(b), A. Daglar(a), F. Chai(c), S. Mikhailov(b), and H.F. Hildebrand(c), (a)FEMTO-ST/CREST, Montbéliard, France, (b)CAFI-EIAJ, Le Locle, Switzerland, (c)Groupe de Recherche sur les Biomatériaux (GRB), Lille France.
- K-VI.4** 17:50 PROCESSING AND IN VITRO BEHAVIOUR OF HYDROXYAPATITE COATINGS PREPARED BY ELECTROSTATIC SPRAY ASSISTED VAPOUR DEPOSITION (ESAVD) BASED METHOD
Xianghui Hou, Kwang-Leong Choy, and Sian Ellen Leach, School of Mechanical, Materials and Manufacturing Engineering, The University of Nottingham, University Park, Nottingham, United Kingdom.
- K-VI.5** 18:10 ADHESION STRENGTH OF SOL-GEL DERIVED FLUORIDATED HYDROXYAPATITE COATINGS
Sam Zhang(a), Wang Yongsheng(a), Cheng Kui(a), and Zeng Xianting(b), (a)School of Mechanical and Production Engineering, Nanyang Technological University, Singapore, (b)Singapore Institute of Manufacturing Technology, Singapore.
- 19:00 **AWARD CEREMONY**
The symposium organizers and the candidates to the graduate student award are requested to attend.
- CONFERENCE RECEPTION**

Thursday, June 2, 2005
Jeudi 2 juin 2005

Morning
Matin

Session VII : Innovative coatings, deposition processes and surface treatments

Session chairs : **E. Bergmann** (Ecole d'Ingénieurs de Genève, Switzerland)

X. De La Fuente (University of Zaragoza, Spain)

- K-VII.1** 8:30 -Invited- ION IMPLANTATION FOR SURFACE MODIFICATION OF BIOMATERIALS
Jacek Jagielski(a), A. Piatkowska(a), P. Aubert(b), and L. Thomé(c), (a)Institute of Electronic Materials Technology, Warsaw, Poland, (b)University of Evry-Val d'Essonne, Evry, France, (c)CSNSM, Orsay, France.
- K-VII.2** 9:00 LASER TRANSFORMATION HARDENING OF A TOOL STEEL: SIMULATION BASED PARAMETER OPTIMIZATION AND EXPERIMENTAL RESULTS
C. Alvarez, J. M. Amado, A. Ramil, E. Saavedra, M. J. Tobar, A. Yañez Dpto. de Ingeniería Industrial II. Universidade da Coruña, Ferrol, Spain.
- K-VII.3** 9:20 PROPERTIES OF TiN FILMS PRODUCED IN HOLLOW CATHODE AND MICROWAVE ECR HYBRID PLASMA SYSTEM
L-E. Gustavsson, H. Baránková and L. Bárdo, Ångström Laboratory, Uppsala University, The Plasma Group, Uppsala, Sweden.
- K-VII.4** 9:40 OPTIMIZATION OF SPRAY PYROLYSIS ZIRCONIA COATINGS ON ALUMINIZED STEEL
R. López Ibáñez, F. Martin, J.R. Ramos-Barrado, D. Leinen, Laboratorio de Materiales y Superficie, Dpto. Física Aplicada I and Dpto. Ingeniería Química, Universidad de Málaga, Campus de Teatinos, Málaga, Spain.
- K-VII.5** 10:00 PROTECTIVE COATINGS BY CHEMICAL VAPOR DEPOSITION
Sanjay Mathur, Hao Shen, Eva Hemmer, Thomas Ruegamer, Jessica Altmayer and Patrick Kuhn, CVD Division, Leibniz Institute of New Materials Saarland University Campus, Saarbruecken, Germany.
- 10:20 **BREAK**

Session VIII : Diamond-like carbon films

Session chairs : **J.M. Albella** (CSIC, Madrid, Spain)

C. Godet (Ecole Polytechnique, Palaiseau, France)

- K-VIII.1** 10:40 -Invited- INTERACTION BETWEEN CARBON COATINGS AND TISSUE
Stanislaw Mitura, and K. Mitura, Technical University of Lodz, Poland.
- K-VIII.2** 11:10 GROWTH OF THIN HYDROCARBON FILMS AND HYDROGEN PRODUCTION IN A CUSP PLASMA DEVICE
N. Spinicchia(a), G. Angella(b), M. De Angeli(a), G. Gervasini(a), and E. Signorelli(b), (a)Istituto di Fisica del Plasma "P. Caldirola" CNR-EURATOM, Milano, Italy, (b)Istituto per l'Energetica e le Interfasi CNR, Milano, Italy.
- K-VIII.3** 11:30 NEAR-SURFACE MECHANICAL PROPERTIES AND SURFACE MORPHOLOGY OF AMORPHOUS CARBON ULTRA-THIN FILMS
S. Kassavetis(a), G. Matenoglou(a), S. Logothetidis(a), and S. Kennou(b), (a)Aristotle University of Thessaloniki, Greece, (b)University of Patras, Greece.
- K-VIII.4** 11:50 CONTROL OF STRESS AND DELAMINATION IN SINGLE AND MULTI-LAYER CARBON THIN FILMS PREPARED BY CATHODIC ARC AND RF PLASMA DEPOSITION AND IMPLANTATION
Peter C.T. Ha(a,d), D.R. McKenzie(a), M.M.M. Bilek(a), E.D. Doyle(b), D.G. McCulloch(c), and P.K. Chu(d), (a)School of Physics, University of Sydney, Sydney, NSW, Australia, (b)Swinburne University of Technology, Melbourne, Australia, (c)Department of Applied Physics, RMIT, Melbourne, Australia, (d)Department of Physics and Materials Science, City University of Hong Kong, Hong Kong, China.
- K-VIII.5** 12:10 THICK WELL ADHERENT CARBON FILMS WITH REDUCED STRESS
K. V. Oskomov, N. S. Sochugov, and S. V. Rabotkin, Institute of High Current Electronics SB RAS, Tomsk, Russia.
- 12:30 **LUNCH**

Thursday, June 2, 2005
Jeudi 2 juin 2005

Afternoon
Après-midi

Session IX : Carbon-based coatings and thin films

Session chairs : **P. Andreazza** (University of Orleans, France)

S. Logothetidis (University of Thessaloniki, Greece)

- K-IX.1** 14:00 CHARACTERIZATION OF a-CN_x:H PARTICLES AND COATINGS PREPARED IN A CH₄/N₂ R.F. PLASMA
Jérémy Pereira(a), Isabelle Géraud-Grenier(a), Véronique Massereau-Guilbaud(a), André Plain(a), and Vincent Fernandez(b), (a)LASEP, Faculté des Sciences, Université d'Orléans, Site de Bourges, France, (b)LPCM, Institut des Matériaux Jean Rouxel, Nantes, France.
- K-IX.2** 14:20 COMPOSITION, STRUCTURE AND NANOMECHANICAL PROPERTIES OF C-Si-N THIN FILMS DEPOSITED BY ION IMPLANTATION ASSISTED PLASMA BEAM CVD
A. Tóth, M. Mohai, T. Ujvári, and I. Bertóti, Institute of Materials and Environmental Chemistry, Chemical Research Center, Hungarian Academy of Sciences, Budapest, Hungary.
- K-IX.3** 14:40 AMORPHOUS SILICON CARBIDE COATINGS GROWN BY LOW FREQUENCY PACVD: STRUCTURAL AND MECHANICAL DESCRIPTION
A. Soum-Glaude(a), L. Thomas(a), R. Berjoan(a), and E. Tomasella(b), (a)CNRS – PROMES - Tecnosud, Perpignan, France, (b)CNRS-LMI, Aubière, France.
- K-IX.4** 15:00 MORPHOLOGICAL CHARACTERIZATION AND SCALING BEHAVIOUR OF WC COATINGS DEPOSITED BY HVOF THERMAL SPRAY
R. Buzio(a), A. Chierichetti(b), G. Bianchi(c), and U. Valbusa(d), (a)INFM-UdR Genova and Dipartimento di Fisica, Genova, Italy, (b)Flame Spray S.p.A, Roncello (MI), Italy, (c)Dresser Italia S.r.l., Voghera (PV), Italy, (d)INFM-UdR Genova and Dipartimento di Fisica, Genova, Italy.
- K-IX.5** 15:20 BORON CARBIDE FILMS BY PULSED LASER DEPOSITION: ULTRASHORT PULSES RESULT IN IMPROVED PROPERTIES
T. Csáki(a), T. Szörényi(b), F. Antoni(c), and E. Fogarassy(c), (a)Department of Optics and Quantum Electronics, University of Szeged, Hungary, (b)Research Group on Laser Physics of the Hungarian Academy of Sciences, University of Szeged, Hungary, (c)CNRS-PHASE, Strasbourg, France.
- 15:40 **BREAK**

Session X : Boron-based coatings and thin films

Session chairs : **N.J.M. Carvalho** (NV Bekaert SA, Zwevegem, Belgium)

M.-P. Delplancke (Université Libre de Bruxelles, Belgium)

- K-X.1** 16:00 PHASE FORMATION AND MICROSTRUCTURE OF BORON NITRIDE THIN LAYERS DEPOSITED USING Nd:YAG AND KrF LASERS
W. Mroz(a), R. Kosydar(b), B. Major(b), M. Jelinek(c), T. Kocourek(c), L.Nistor(d), and G. Van Tendeloo(e), (a)Institute of Optoelectronics MUT, Warsaw, Poland, (b)Institute of Metallurgy and Materials Science PAS, Cracow, Poland, (c)Institute of Physics, Academy of Science, Prague, Czech Republic, (d)National Institute for Materials Physics, Magurele, Ilfov, Romania, (e)EMAT University of Antwerp, Belgium.
- K-X.2** 16:20 INFLUENCE OF DEPOSITION PARAMETERS ON THE TEXTURE OF BORON NITRIDE THIN FILMS SYNTHESISED IN A MICROWAVE PLASMA ENHANCED CVD REACTOR
P. Thévenin(a), M. Eliaoui(a,b), A. Ahaitouf(b), A. Soltani(c), and A. Bath(a), (a)LMOPS-Supelec, Metz, France, (b)FST Fès-Saïs, University of Fès, Morocco, (c)IEMN, Villeneuve d'Ascq, France.
- K-X.3** 16:40 OPTICAL INVESTIGATIONS OF THE EFFECT OF TEMPERATURE AND PLASMA CONDITIONS ON THE GROWTH OF sp^3 -BONDED BN THIN FILMS
A. Laskarakis, S. Logothetidis, and S. Kassavetis, Aristotle University of Thessaloniki, Department of Physics, Thessaloniki, Greece.
- K-X.4** 17:00 HIGH RESOLUTION DEPTH PROFILING OF MECHANICAL PROPERTIES OF THICK CUBIC BORON NITRIDE COATINGS
C. Ziebert, J. Ye, K. Sell, and S. Ulrich, Forschungszentrum Karlsruhe, Institut für Materialforschung I, Karlsruhe, Germany.
- K-X.5** 17:20 STRESS REDUCED NANOCOMPOSITE COATINGS CONSISTING OF CUBIC AND HEXAGONAL BORON NITRIDE
M. Lattemann(a), S. Ulrich(b), K. Sell(b), and J. Ye(b), (a)Linköping University, Linköping, Sweden, (b)Forschungszentrum, IMF I, Karlsruhe, Germany.
- K-X.6** 17:40 SYNTHESIS AND CHARACTERIZATION OF Zr-B-N THIN FILMS DEPOSITED BY TRIODE SPUTTERING
A. Chala(a), C. Labidi(b), C. Nouveau(b), B. Angleraud(c), and M.A. Djouadi(c), (a)Département de Physique, Université de Biskra, Algérie, (b)Laboratoire Bourguignon des Matériaux et Procédés, ENSAM, Cluny, France, (c)Institut des Matériaux Jean Rouxel, Nantes, France.
- K-X.7** 18:00 PROPERTIES OF BORON CARBO- NITRIDE THIN FILMS OBTAINED BY RADIOFREQUENCY BEAM ASSISTED PULSED LASER DEPOSITION
F. Stokker-Cheregi(a), A. Dauscher(b), A. Moldovan(a), G. Dinescu(a), C. Ghica(c), L.C. Nistor(c), and M. Dinescu(a), (a)National Institute for Laser, Plasma and Radiation Physics, Magurele, Bucharest, Romania, (b)Laboratoire de Physique des Matériaux (LPM), Ecole des Mines de Nancy, France, (c)National Institute for Material Research, Bucharest, Romania.
- 18:20-20:00 **POSTER SESSION II**

POSTER SESSION II
Thursday, June 2, 2005
18:20 – 20:00

Structural characterization of coatings

- K/PII.01** INFLUENCE OF HYDROGENATED AMORPHOUS CARBON SUBSTRATES ON THE MORPHOLOGY OF DEPOSITED PARAFFIN THIN FILMS
M.E.R. Dotto, M. Ferreira, and S.S. Camargo Jr., COPPE, Universidade Federal do Rio de Janeiro, RJ Brazil.
- K/PII.02** PASSIVATION OF Al-SURFACES AGAINST OXIDATION BY MONOATOMIC Sn WETTING LAYERS
B. Schwarz(a), C. Eisenmenger-Sittner(a), E. Klein(a), C. Tomastik(b), K. Mayerhofer(c), P.B. Barna(d), A. Kovac(d), (a)Vienna University of Technology, Institute of Solid State Physics, Wien, Austria, (b)Vienna University of Technology, Institute of General Physics, Wien, Austria, (c)Vienna University of Technology, Institute of Chem. Technol and Analytics, Wien, Austria, (d)Research Institute for Technical Physics and Material Science, Budapest, Hungary.
- K/PII.03** MICROSTRUCTURE AND SURFACE MORPHOLOGY OF YSZ THIN FILMS DEPOSITED BY E-BEAM TECHNIQUE
G.Laukaitis(a), J. Dudonis(a), A. Galdikas(a), R. Cerapaitis(a), and D. Milcius(b), (a)Physics Department, Kaunas University of Technology, Kaunas, Lithuania, (b)Lithuania Energy Institute, Kaunas, Lithuania.
- K/PII.04** METALLIZATION OF POLY(ETHYLENE TEREPHTHALATE) IN THE WIDE RANGE SUBSTRATE TEMPERATURES
B. Cyziute(a), S. Tamulevicius(b,a), P. Goudeau(c), M. Andrulevicius(b), and A. Guobiene(b), (a)Department of Physics, Kaunas University of Technology, Kaunas, Lithuania, (b)Physical Electronics Institute of Kaunas University of Technology, Kaunas, Lithuania, (c)Laboratory of Physical Metallurgy, University of Poitiers, Futuroscope, France.
- K/PII.05** STRUCTURAL STUDY OF EB-PVD ZrO₂ THIN FILMS FOR THERMAL BARRIER COATING APPLICATIONS
I. Muñoz-Ochando, M. Vila, and C. Prieto, Instituto de Ciencia de Materiales de Madrid, Consejo Superior de Investigaciones Científicas, Cantoblanco, Madrid, Spain.
- K/PII.06** X-RAY DIFFRACTION AND RAMAN SPECTROSCOPY ANALYSIS OF ZrO₂ THIN FILMS DOPED WITH Gd₂O₃ AND Y₂O₃
A. Portinha(a), V.Teixeira(a), J. Carneiro(a), and C. Moura(b), University of Minho, Physics Department, GRF-Functional Coatings Group, Campus de Azurém, Guimarães, Portugal, (b)University of Minho, Physics Department, Campus de Gualtar, Braga, Portugal.

Adhesion of coatings

- K/PII.07** THE INFLUENCE OF ARGON AND NITROGEN RF PLASMA PRE-TREATMENT ON THE ADHESION STRENGTH OF PVD COPPER COATINGS
E. Neubauer(a), C. Eisenmenger-Sittner(b), C. Schrank(b), H. Bangert(b), and G. Korb(a), (a)ARC Seibersdorf Research, Dept. Materials Research, Seibersdorf, Austria, (b)Vienna University of Technology, Institute of Solid State Physics, Wien, Austria.
- K/PII.08** SCRATCH TEST AND MULTILAYER POLYMERIC COATINGS
Y. Rudermann(a), M. Bigerelle(b), and A. Iost(a), (a)Equipe Surfaces et Interfaces ENSAM Lille, Laboratoire de Métallurgie Physique et Génie des Matériaux, Lille, France, (b)Université de Technologie de Compiègne, Laboratoire Roberval, Compiègne, France.
- K/PII.09** CONTRIBUTION TO THE STUDY OF REACTION BETWEEN HARD COATINGS OF TITANIUM AND STEEL SUBSTRATES
R. Gheriani(a), R. Bensaha(b), and R. Halimi(b), (a)Physical laboratory of Materials, University of Ouargla, Algeria, (b)Unity of Research, Materials and Applications, University of Constantine, Algeria.
- K/PII.10** ELECTROCHEMICAL PREPARATION OF HAP/ZrO₂ COATINGS ON TITANIUM FOR BIOMEDICAL APPLICATIONS
S. K. Yen, C. C. Chang, C. M. Lin, S. J. Wu, and H. L. Hsiang, Department of Materials Engineering, National Chung Hsing University, Taichung, Taiwan.
- K/PII.11** EVALUATION OF ADHESION OF TANTALUM OXYNITRIDE THIN FILMS DEPOSITED BY REACTIVE MAGNETRON SPUTTERING ONTO STEEL SUBSTRATE
O. Banakh(a), C. Csefalvay(a), J. Saffioti(a), P.-A. Steinmann(a), and M. Fenker(b), (a)University of Applied Sciences, HE-ARC, Le Locle, Switzerland, (b)Research Institute for Precious Metals and Metals Chemistry, Schwäbisch Gmünd, Germany.
- K/PII.12** ELABORATION OF ZINC OXIDE COATING ON PEN : EVALUATION OF ADHESION
L.Guedri-Knani(a,b), S.Ben Amor (a,b), G. Baud(c), M.Jacquet(c), and M.Ghedira(b,c), (a)Institut Supérieur des Sciences Appliquées et de Technologie de Sousse, Sousse Ibn Khaldoun, Tunisia, (b)Laboratoire de Physico-Chimie de la Matière Condensée, Faculté des Sciences de Monastir, Tunisia, (c)Laboratoire des Matériaux Inorganiques, Université Blaise Pascal, Aubière, France.

K/PII.13 TiN/ZrN NANO-HETEROSTRUCTURE DEPOSITION AND CHARACTERIZATION
M. Braic(a), M. Balaceanu(a), A. Purice(b), F. Stokker-Cheregi(b), A. Moldovan(b), N. Scarisoreanu(b), G. Dinescu(b), A. Dauscher(c), and M. Dinescu(b), (a)National Institute of Optoelectronics, Bucharest, Romania, (b)National Institute for Laser, Plasma and Radiation Physics, Magurele, Bucharest, Romania, (c)Laboratoire de Physique des Matériaux (LPM), Ecole des Mines de Nancy, France.

Mechanical properties of coatings

K/PII.14 REACTIVE RADIO-FREQUENCY SPUTTERING DEPOSITION OF TITANIUM NITRIDE ON SILICON AND STEEL
N. Saoula(a), H. Djani-Ait Aissa(a), K. Henda(a), and R. Kesri(b), (a)Laboratoire des Plasmas, Centre de Développement des Technologies Avancées, Alger, Algeria, (b)Laboratoire d'Electrochimie-Corrosion, Métallurgie et Chimie Minérale, Faculté de Chimie, USTHB, Alger, Algeria.

K/PII.15 INFLUENCE OF ION ENERGY ON PROPERTIES OF Mg ALLOY THIN FILMS FORMED BY ION BEAM SPUTTER DEPOSITION
Y. Bohne(a), D.M. Seeger(b), C. Blawert(b), W. Dietzel(b), S. Mändl(a), and B. Rauschenbach(a), (a)Leibniz-Institut für Oberflächenmodifizierung, Leipzig, Germany, (b)Center for Magnesium Technology, GKSS Forschungszentrum Geesthacht, Geesthacht, Germany.

K/PII.16 MECHANICAL PROPERTIES OF Cr₂O₃ COATINGS SYNTHESIZED BY LASER ABLATION
M. Tabbal(a), S. Kahwaji(a), T. C. Christidis(a), S. Isber(a), B. Nsouli(b), and K. Zahraman(b), (a)Dept. of Physics, American University of Beirut, Lebanon, (b)Lebanese Atomic Energy Commission-CNRS, Lebanon.

K/PII.17 SURFACE PREPARATION OF ALUMINIUM ALLOYS IN ORDER TO IMPROVE THE MECHANICAL PROPERTIES OF STRUCTURAL ADHESIVES
I. Marino(a), C. Dispenza(a,b), C. Spadaro(a), G. Spadaro(a,b), and C. Sunseri(a,b), (a)Dipartimento di Ingegneria Chimica dei Processi e dei Materiali, (b)Centro Interdipartimentale di Ricerca sui Materiali Compositi Università di Palermo, Italy.

K/PII.18 THE EFFECT OF STRUCTURE ON MECHANICAL PROPERTIES OF TiB₂-W₂B₅ NANOCRYSTALLINE COATINGS
S.N. Dub(a), O.N. Grigoryev(b), O.V. Sobol'(c), A.N. Stetsenko(c), and A.A. Podtelezchnikov(c), (a)Institute for Superhard Materials, Kiev, Ukraine, (b)Institute of Material Science Problems, Kiev, Ukraine, (c)National Technical University "KhPI", Kharkov, Ukraine.

K/PII.19 THE MECHANICAL PROPERTIES OF PECVD a-SiC:H FILMS PREPARED FROM METHYLTRICHLOROSILANE
V.I. Ivashchenko, S.N. Dub, O.K. Porada, L.A. Ivashchenko, P.L. Skrynsky and A.I. Stegnii, Institute of Material Science Problems, Kyiv, Ukraine.

K/PII.20 NANOINDENTATION HARDNESS AND STRUCTURE OF ION BEAM SPUTTERED TiN/W MULTILAYER HARD COATINGS
G. Abadias(a), S. Dub(b), and R. Shmegeera(b), (a)Université de Poitiers, Laboratoire de Métallurgie Physique, SP2MI, Futuroscope-Chassagneuil, France, (b)Institute for Superhard Materials, Kiev, Ukraine.

K/PII.21 PROPERTIES OF NbSi_xN_x THIN FILMS DEPOSITED BY DC REACTIVE MAGNETRON SPUTTERING
M. Benkahoul, C.S. Sandu, M. Parlinska-Wojtan, R. Sanjinés, and F. Lévy, Ecole Polytechnique Fédérale de Lausanne (EPFL), Institut de Physique de la Matière Complexe, Lausanne, Switzerland.

K/PII.22 MORPHOLOGICAL, STRUCTURAL AND MECHANICAL PROPERTIES OF NbN THIN FILMS DEPOSITED BY REACTIVE MAGNETRON SPUTTERING
C.S. Sandu, M. Benkahoul, M. Parlinska-Wojtan, R. Sanjinés, and F. Lévy, Ecole Polytechnique Fédérale de Lausanne (EPFL), Institut de Physique de la Matière Complexe, Lausanne, Switzerland.

K/PII.23 RESIDUAL STRESS CONTROL IN MoCr THIN FILMS BY IONISED MAGNETRON SPUTTERING
J. Tranchant, B. Angleraud, P.Y. Tessier, M.P. Besland, A. Djouadi, and J.P. Landesman, Laboratoire des Plasmas et Couches Minces. Institut des Matériaux Jean Rouxel, Université de Nantes, France.

K/PII.24 MICRO AND NANOSTRUCTURES FOR BIOLOGICAL ANALYSIS, BASED ON AMORPHOUS THIN-FILMS GROWN BY PLASMA TECHNIQUES
M. Cocuzza(a), S.Bianco(a), S. Ferrero(a), E. Giuri(a), P. Mandracci(a), G. Piacenza(b), D. Bich(b), and P. Schina(b), (a)Material and Microsystem Laboratory, Department of Physics, Politecnico di Torino, Italy, (b)Environment, Park S.p.A. Clean NT Lab division, Olivetti-I-jet, Arnad (Aosta) Italy.

K/PII.25 MICROINDENTATION DEPTH PROFILING OF SELECTED PVD HARD COATINGS
M. Cekada, P. Panjan, and M. Panjan, Jozef Stefan Institute, Ljubljana, Slovenia.

Plasma nitriding of surfaces

- K/PII.26** ACTIVATED GAS NITRIDING OF 17 – 4PH STAINLESS STEEL
P. Kochmanski and J. Nowacki, Technical University of Szczecin, Poland
- K/PII.27** INFLUENCE OF ANNEALING CONDITIONS ON ION NITRIDING OF MARTENSITIC STAINLESS STEEL
D. Manova(a), S. Mändl(a), E. Richter(b), H. Neumann(a), and B. Rauschenbach(a), (a)Leibniz-Institut für Oberflächenmodifizierung, Leipzig, Germany, (b)Institut für Ionenstrahlphysik und Materialforschung, Forschungszentrum Rossendorf, Dresden, Germany.
- K/PII.28** EFFECT OF DUPLEX TREATMENTS BY PLASMA NITRIDING AND TRIODE SPUTTERING ON CORROSION BEHAVIOR OF 32CDV13 LOW ALLOY STEEL
A. Chala(a), C. Nouveau(b), M. A. Djouadi(c), J. P. Millet(d), B. Normand(d), and M. S. Aïda(e), (a)Département de Physique, Université de Biskra, Algeria, (b)LABOMAP, Ecole Nationale Supérieure d'Arts et Métiers, Clunay, France, (c)Institut des Matériaux Jean Rouxel, Nantes, France, (d)Laboratoire de Physico-Chimie Industrielle, INSA de Lyon, Villeurbanne, France, (e)Laboratoire des Couches Minces et Interfaces, Université Mentouri, Constantine, Algeria.
- K/PII.29** MICROSTRUCTURE AND PROPERTIES OF THE PROTECTIVE LAYERS ON CHROMIUM STEEL
J. Bielawski and K. Szczecinski, Institute of Materials Science and Engineering, Szczecin University of Technology, Szczecin, Poland.
- K/PII.30** THE INFLUENCE OF THE THICKNESS OF THE CrN COATING ON PROPERTIES OF THE COMPOSITE "NITRIDED LAYER/CrN COATING" OBTAINED BY CONTINUOUS DUPLEX TREATMENT METHOD
Jerzy Smolik(a), Jan Walkowicz(a), Michael Gulde(b), and Silvia Di Rosa(c), (a)Institute for Terotechnology, Radom, Poland, (b)Universität Hannover, Germany, (c)Fiat Research Center, Torino, Italy.

Wear-resistant coatings

- K/PII.31** MODELLING ROUTE FOR WEAR-PROTECTING ABRADABLE COATINGS
H.I. Faraoun(a), J.L. Seichepine(a), C. Coddet(a), H. Aourag(a), J. Zwick(b), N. Hopkins(c), D. Sporer(d), and M. Hertter(e), (a)Laboratoire d'Etudes et de Recherches sur les Matériaux, les Procédés et les Surfaces. LERMPS-UTBM, Belfort, France, (b)Materials Science Institute, Aachen University, Germany, (c)Rolls-Royce plc, Derby, United Kingdom, (d)Neomet Ltd., Manchester, United Kingdom, (e)MTU Aero Engines, München, Germany.
- K/PII.32** INFLUENCE OF THE MORPHOLOGICAL TEXTURE ON THE LOW WEAR DAMAGE OF PAINT COATED SHEETS
F. Hennebelle(a), M. Bigerelle(a,b), D. Najjar(a), and A. Iost(a), (a)LMPGM, ESI, ENSAM, Lille, France, (b)Laboratoire Roberval, UTC/CNRS, Compiègne, France.
- K/PII.33** HARD Ti-Si-N SPUTTERED COATINGS FOR WOOD PROCESSING
D. Pilloud(a), J.F. Pierson(a), C. Nouveau(b), and A. Cavaleiro(c), (a)Dpt CREST, Insitut FEMTO-ST, Université de Franche Comté, Montbéliard, France, (b)LaBoMaP, ENSAM, Clunay, France, (c)DEM, Universidade de Coimbra, Portugal.
- K/PII.34** THE STRUCTURE AND HARDNESS OF MAGNETRON SPUTTERED Ti-Al-N THIN FILMS WITH LOW N CONTENTS (< 42 at. %).
A. Manaia(a), J.P. Dias(a), J.C. Oliveira(b), A. Cavaleiro(b), D. Teer(c), S. Field(c), and J. Hampshire(c), (a)Instituto Pedro Nunes, Coimbra, Portugal, (b)Departamento de Engenharia Mecânica, Universidade de Coimbra, Portugal, (c)Teer Coatings Ltd. Berry Hill Industrial Estate, Droitwich, UK.
- K/PII.35** THE CHARACTERISTICS STUDY OF Fe-Mn-Al-C ALLOY COATINGS DEPOSITED BY HVOF SPRAY
Y.L. Lin, C.C. Chang, S.K. Yen, and Weite Wu, Hsiuping Institute of Technology, Mechanical Engineering, Dali, Taichung, Taiwan.
- K/PII.36** WEAR PHENOMENA INVESTIGATION OF CERAMIC COATINGS PROCESSED USING ATMOSPHERIC PLASMA SPRAYING
S. Guessasma(a), M. Cherigui(a), M. Bounazef(b), Ph. Nardin(c), N. Fennineche(a), and T. Sahraoui(a), (a)Laboratory of Study and Research in Materials, Processes and Surfaces (LERMPS), UTBM, Site de Sevenans, Belfort, France, (b)Hydrology and Materials Laboratory, Sidi Bel Abbe`s University, Algeria, (c)FEMTO ST-CREST, Parc Tech., Belfort, France.

Corrosion-resistant coatings

- K/PII.37** CHARACTERIZATION OF ALUMINIZED LAYER FORMATION ON Ti ALLOYS COATED BY Al FILM DURING ANNEALING
S.Romankov, B.N.Mukashev, A.Mamaeva, and E.Vdovitenko, Institute of Physics and Technology, Kazakhstan.
- K/PII.38** THE HIGH TEMPERATURE CORROSION OF PACK ALUMINIZED Co-BASE SUPERALLOY IN Na₂SO₄ AND NaCl MOLTEN SALT AT 1173 K
Jyh-Wei Lee(a), Jun-Shen Chen(a), Chaur-Jeng Wang(b), and Shih-Ming Chen(b), (a)Department of Mechanical Engineering, Tung Nan Institute of Technology, Taipei, Taiwan, (b)Department of Mechanical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan.
- K/PII.39** EFFECTS OF ALLOY ELEMENTS ON THE HOT CORROSION BEHAVIOR OF ALUMINIZED ALLOY STEELS
Jyh-Wei Lee(a) and Yo Yu Chang(b), (a)Department of Mechanical Engineering, Tung Nan Institute of Technology, Taipei, Taiwan, (b)Safety Division, Institute of Occupational Safety and Health, Council of Labor Affairs, Executive Yuan, Taipei, Taiwan.
- K/PII.40** MICROSTRUCTURE STUDIES OF AN ALUMINIDE COATING ON 9Cr-1Mo STEEL DURING HIGH TEMPERATURE OXIDATION
Yo. Yu. Chang and Chang-Cheng Tsaur, institute of Occupational Safety and Health, Sijhih City, Taipei, Taiwan.
- K/PII.41** A COMPARATIVE STUDY OF THE STRUCTURE AND THE CORROSION BEHAVIOR OF ZINC COATINGS DEPOSITED WITH VARIOUS METHODS
G. Vourlias(a), N. Pistofidis(a), D. Chaliampalias(a), P. Patsalas(b), G. Stergioudis(a), and D. Tsipas(c), (a)Aristotle University of Thessaloniki, Department of Physics, Thessaloniki, Greece, (b)University of Ioannina, Department Materials science & Engineering, Ioannina, Greece, (c)Aristotle University of Thessaloniki, Department of Mechanical Engineering, Thessaloniki, Greece.
- K/PII.42** CORROSION-PROTECTIVE BEHAVIOR OF THIN CERIA LAYERS ELECTRODEPOSITED ON STAINLESS STEEL
D. Nicolova(a), E.Stoyanova(a), D. Stoychev(a), P. Stefanov(b), and Ts. Marinova(b), (a)Institute of Physical Chemistry, (b)Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria.
- K/PII.43** THE HIGH-TEMPERATURE OXIDATION BEHAVIOR OF HOT-DIPPING Al-Si COATING ON CARBON STEEL
Chaur-Jeng Wang and Shih-Ming Chen, National Taiwan University of Science and Technology, Department of Mechanical Engineering, Taipei, Taiwan.
- K/PII.44** CORROSION BEHAVIOUR OF ZIRCONIA BARRIER COATINGS ON GALVANIZED STEEL
R. Romero Pareja, R. López Ibáñez, F. Martín Jiménez, J.R. Ramos-Barrado, and D. Leinen, Laboratorio de Materiales y Superficie (Unidad Asociada al CSIC), Dpto. Física Aplicada I & Dpto. Ingeniería Química, Universidad de Málaga, Campus de Teatinos, Málaga, Spain.
- K/PII.45** ELECTROLYTIC Al₂O₃/Y₂O₃ DOUBLE-LAYER COATINGS ON IN-617 SUPERALLOY
C. T. Hsu, C. C. Chang, T. N. Chang, and S. K. Yen, Department of Materials Engineering, National Chung Hsing University, Taichung, Taiwan.
- K/PII.46** MICROSTRUCTURAL CHARACTERIZATION AND STUDY OF CORROSION BEHAVIOR OF PLASMA-SPRAYED TIN COATINGS
N. Pistofidis(a), G. Vourlias(a), E. Pavlidou(a), P. Patsalas(b), G. Stergioudis(a), E. K. Polychroniadis(a), and D. Tsipas(c), (a)Aristotle University of Thessaloniki, Department of Physics, Thessaloniki, Greece, (b)University of Ioannina, Department Materials science & Engineering, Ioannina, Greece, (c)Aristotle University of Thessaloniki, Department of Mechanical Engineering, Thessaloniki, Greece.
- K/PII.47** THE CORROSION RESISTANCE OF CHROMIUM CARBIDE COATINGS DEPOSITED ON STEEL BY FILTERED CATHODIC VACUUM ARC DEPOSITION
Han C. Shih, Chun-Chun Lin, and Ku-Ling Chang, Department of Material Science and Engineering, National Tsing Hua University Hsinchu, Taiwan, ROC.
- K/PII.48** PLASMA DEPOSITED SiO_x COATINGS FOR THE CORROSION PROTECTION OF ALUMINUM AND MAGNESIUM ALLOYS
Ch. Voulgaris(a), E. Amanatides(a), D. Mataras(a), S. Grassini(b), E. Angelini(b), and F. Rosalbino(b), (a)Plasma Technology Laboratory, Department of Chemical Engineering, University of Patras, Greece, (b)Department of Materials Science and Chemical Engineering, Polytechnic of Turin, Turin, Italy.
- K/PII.49** CORROSION RESISTANCE OF NITRIDED LAYERS ON AUSTENITIC STEEL
J. Baranowska(a) and B. Arnold(b), (a)Institute of Materials Science and Engineering, Szczecin University of Technology, Szczecin, Poland, (b)Institute of Materials Science and Welding, Hamburg University of Applied Science, Hamburg, Germany.
- K/PII.50** HAFNIUM DIBORIDE COATINGS BY CHEMICAL VAPOR DEPOSITION
S. Jayaraman(a), Y. Yang(a), J.E. Gerbi(a), A. Chatterjee(a), P. Bellon(a), J.R. Abelson(a), D.Y. Kim(b), G.S. Girolami(b), and J.-P. Chevalier(c), (a)Dept. of Materials Science and Engineering, University of Illinois at Urbana Champaign, IL, USA, (b)Dept. of Chemistry, University of Illinois at Urbana Champaign, IL, USA, (c)Centre d'Etudes Chimie-Metallurgie, Vitry, France.

- K/PII.51** LOW PRESSURE PLASMA PROCESSES FOR CORROSION PROTECTION OF METALS
S. Grassini(a), E. Angelini(a), F. Rosalbino(a), F. Fracassi(b), R.d'Agostino(b), and F. Palumbo(c), (a)Department of Materials Science and Chemical Engineering, Polytechnic of Turin, Turin, Italy, (b)Department of Chemistry, University of Bari, Bari, Italy, (c)Institute for Inorganic Metodologies and Plasmas, CNR, Bari, Italy
- K/PII.52** HOT CORROSION OF LASER-GLAZED PLASMA-SPRAYED THERMAL BARRIER COATINGS
C. Batista(a), A. Portinha(a), R. M. Ribeiro(a), V. Teixeira(a), and C.R. Oliveira(b), (a)University of Minho, Physics Department, Campus de Gualtar, Braga, Portugal, (b)IDIT, Instituto de Desenvolvimento e Inovação Tecnológica, Santa Maria da Feira, Portugal and University Lusfada, Vila Nova de Famalicão, Portugal.
- K/PII.53** OXIDATION TUNING IN AlCrN COATINGS
J.L. Endrino(a), A. Reiter(a), R. Escobar(b), and J.M. Albella(b), (a)Balzers AG, SBU Tools, Balzers, Liechtenstein, (b)Instituto de Materiales de Madrid, C.S.I.C., Cantoblanco, Madrid, Spain.
- K/PII.54** TRIBOCORROSION BEHAVIOUR OF ZrN_xO_y THIN FILMS FOR DECORATIVE APPLICATIONS
S.C. Ferreira(a), E. Ariza(a), L. A. Rocha(a), F. Vaz(b), L. Cunha(c), P. Carvalho(b), L. Rebouta(b), E. Alves(d), Ph. Goudeau(e), and J. P. Rivière(e), (a)Universidade do Minho, Dept. Eng. Mecânica, Azurém, Guimarães, Portugal, (b)Universidade do Minho, Dept. Física, Azurém, Guimarães, Portugal, (c)Universidade do Minho, Dept. Física, Campus de Gualtar, Braga, Portugal, (d)ITN, Departamento de Física, Sacavém, Portugal, (e)Laboratoire de Métallurgie Physique, Université de Poitiers, Futuroscope, France.

Friday, June 3, 2005
Vendredi 3 juin 2005

Morning
Matin

Session XI : Structural characterization of coatings

Session chairs : **J.Th.M De Hosson** (University of Groningen, the Netherlands)
O. Zywitski (FEP, Dresden, Germany)

- K-XI.1** 8:30 -Invited- STRUCTURAL AND MECHANICAL PROPERTIES OF NANOSTRUCTURED METALS : SYNERGIES BETWEEN SIMULATION AND EXPERIMENTS
Helena Van Swygenhoven, P.M. Derlet, A. Froseth, and S. Van Petegem, Paul Scherrer Institute, ASQ/NUM, Materials Science and Simulation PSI-Villigen, Switzerland.
- K-XI.2** 9:00 MICROSTRUCTURE AND MECHANICAL INVESTIGATIONS OF TUNGSTEN CARBIDE FILMS DEPOSITED BY REACTIVE RF SPUTTERING
K. Abdelouahdi(a), C.Legrand-Buscema(a), C.Sant(a), J.Perrière(b), G.Renou(a), and P.Aubert(a), (a)Laboratoire d'Etude des Milieux Nanométriques, Evry, France, (b)Groupe de Physique des Solides, Université Paris VI, Campus Bouicaut, Paris, France.
- K-XI.3** 9:20 COMPOSITION AND STRUCTURE OF THIN FILMS. SPECTRAL SIMULATION AND EXPERIMENTAL RESULTS
E. Mielczarski and J.A. Mielczarski LEM, CNRS/INPL, Vandoeuvre lès Nancy, France.
- K-XI.4** 9:40 SIMULATED SPUTTERING AND NANOSCUPTING IN THIN FILMS
P. Süle and M. Menyhárd, Research Institute for Technical Physics and Materials Science, Surface Physics, Budapest, Hungary.
- K-XI.5** 10:00 MICROSTRUCTURE EVOLUTION AND GRAIN GROWTH OF TiN-TiB₂ NANOCOMPOSITE FILMS : EXPERIMENT AND SIMULATION
Y.G. Shen, Y.H. Lu, and Z.-J. Liu, Department of Manufacturing Engineering & Engineering Management, City University of Hong Kong, Kowloon, Hong Kong.
- 10:20 **BREAK**

Session XII : Adhesion of coatings

Session chairs : **F. Maury** (INP Toulouse, France)
N. Radic (Ruder Boskovic Institute, Zagreb, Croatia)

- K-XII.1** 10:40 MULTI-SENSOR TECHNOLOGY FOR SCRATCH, ADHESION, AND DURABILITY CHARACTERIZATION OF THIN FILM COATING
J. Xiao, N. Gitis, and M. Vinogradov, Center for Tribology, Inc., Campbell, CA, USA.
- K-XII.2** 11:00 OPTIMIZATION OF ADHESION AND RESIDUAL STRESSES IN THERMALLY SPRAYED COATINGS
S. Guessasma(a) and D.H. Bassir(b), (a)LERMPS-UTBM, Site Sévenans, Belfort, France, (b)Institut FEMTO-ST, Département LMARC, Université de Franche Comté, Besançon, France.
- K-XII.3** 11:20 INVESTIGATION OF HIGH POWER IMPULSE MAGNETRON SPUTTERING PRE-TREATED INTERFACES FOR ADHESION ENHANCEMENT OF HARD COATINGS ON STEEL
M. Lattemann(a), P.A.O. Persson(a), J. Bohlmark(a), U. Helmersson(a), and A.P. Ehiasarian(b), (a)Linköping University, Linköping, Sweden, (b)Sheffield Hallam University, Sheffield, UK.
- K-XII.4** 11:40 XPS STUDY OF THE DLC/Ti AND DLC/a-Si INTERFACES
S. Meskinis, V. Kopustinskas, K. Slapikas, M. Andrulevicius, and S. Tamulevicius, Institute of Physical Electronics of Kaunas University of Technology, Kaunas, Lithuania.
- K-XII.5** 12:00 THE INFLUENCE OF Cr-BASED COATINGS ON THE ADHESION FORCE BETWEEN EPOXY MOLDING COMPOUNDS AND IC ENCAPSULATION MOLD
Sung-Mao Chiu, Institute of Materials Science and Engineering, National Sun Yat-Sen University, Kaoshiung, Taiwan.
- 12:20 **LUNCH**

Friday, June 3, 2005
Vendredi 3 juin 2005

Afternoon
Après-midi

Session XIII : Mechanical properties of coatings and thin films

Session chairs : **D. Leinen** (University of Malaga, Spain)

G. Radnoczi (RITPMS, Budapest, Hungary)

- K-XIII.1** 14:00 INFLUENCE OF APPLIED BIAS ON THE STRUCTURAL AND MECHANICAL PROPERTIES OF TUNGSTEN OXYNITRIDE FILMS DEPOSITED BY D.C. SPUTTERING
N.M.G. Parreira, N.J.M. Carvalho, and A. Cavaleiro, ICEMS – Dep. of Mechanical Engineering, University of Coimbra, Portugal.
- K-XIII.2** 14:20 COMPARISON OF STRUCTURE AND MECHANICAL PROPERTIES OF SiO₂-LIKE FILMS DEPOSITED IN O₂/HMDSO PULSED AND CONTINUOUS PLASMAS
A. Bousquet(a), V. Bursikova(b), A. Goullet(a), A. Djouadi(a), L. Zajickova(b), and A. Granier(a), (a)LPCM-IMN, Université de Nantes, France, (b)Department of Physical Electronics, Masaryk University, Brno, Czech Republic.
- K-XIII.3** 14:40 THE ROLE OF PSEUDOMORPHIC STABILIZATION IN CRYSTAL STRUCTURE AND MECHANICAL PROPERTIES OF NANOCOMPOSITE THIN FILMS
G. Allidi, R. Sanjines, and A. Karimi, IPMC, Faculty of Basic Science, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland.
- K-XIII.4** 15:00 STRUCTURE AND THERMAL STABILITY OF SUPERHARD NANOCRYSTALLINE TiAlN LAYERS DEPOSITED BY REACTIVE PULSED MAGNETRON SPUTTERING
O. Zywitzki, H. Klostermann, F. Fietzke, and T. Modes, Fraunhofer Institut Elektronenstrahl- und Plasmatechnik, Dresden, Germany.
- K-XIII.5** 15:20 TENSILE AND COMPRESSIVE STRESS IN HARD METAL FILMS
G.C.A.M.Janssen, Delft University of Technology, Materials Science and Engineering, Delft, The Netherlands.
- K-XIII.6** 15:40 STRESS IN SPUTTERED HARD FILMS : ORIGIN AND EVOLUTION AFTER ION IRRADIATION
G. Abadías, A. Debelle, A. Michel, and C. Jaouen, Laboratoire de Métallurgie Physique, Université de Poitiers, SP2MI, Chasseneuil-Futuroscope, France.
- 16:00 **END OF THE SYMPOSIUM K**