Technical Sessions
Key to Session/Paper Numbers

A Coatings for Use at High Temperature

B Hard Coatings and Vapor Deposition Technology

C Fundamentals and Technology of Multifunctional Thin Films

D Coatings for Biomedical and Healthcare Applications

E Tribology and Mechanical Behavior of Coatings and Engineered Surfaces

EX Exhibitors Keynote Lecture

F New Horizons in Coatings and Thin Films

G Applications, Manufacturing, and Equipment

PL Plenary Lecture

TS Topical Symposia

Program numbers are listed with the symposium letter first, the session number second, and the number of the paper last (i.e., A1-1-1= symposium A, session one, paper number one).

Symposium scheduling pointers:

- All morning sessions begin at 8:00 am except for Monday when the technical sessions begin at 10:00 am following the completion of the 8:00 am Plenary Session
- Monday and Thursday afternoon sessions start at 1:30 pm; Tuesday and Wednesday afternoon sessions starting times vary 1:30 - 2:10 pm. Most session lunch breaks start at 12:00 pm
- Invited speakers (marked as such in the program) are allotted 40 minutes. Contributed speakers are allotted 20 minutes

If you are making an oral presentation:

All technical session rooms are equipped with computers, LCD projectors, screens, laser pointers and microphones. Please test your presentation materials to be certain that they are compatible with the equipment being provided in the technical session rooms. The Presenter's Preview Screening Room is the Dover. Please allow ample time for the test, preferably the day before your presentation. The Preview Room's hours of operation are Sunday, 3:30-6:30 pm and Monday – Thursday 8:00 am–5:30 pm

If you are making a poster presentation:

Boards will be available for posting materials at 11:00 am until 3:00 pm on Thursday, April 23. Prior to entering the Grand Hall, authors presenting a poster are required to check in at the table located in the Hall's doorway. Please be prepared to show photo identification as well as your registration badge. These forms of identification must match the name of the poster presenter listed in the ICMCTF program. A sign listing the paper's number, title, and presenting author will aid each presenter in locating the correct board where the poster materials are to be displayed. The board space provided is approximately four feet by four feet. All poster materials MUST be posted by 3:00 pm. Any poster boards that do not have presentation materials posted by 3 pm will have their titles removed; their presentation deleted from the program, and the author will be listed as a No-Show. All presenters are required to be at their poster presentation during the entire session (5:00 - 7:00 pm), in order to promote discussion and for the author to answer attendee questions. Be forewarned, all poster materials will be discarded if not removed from the boards by 9:00 pm Thursday evening.

Reminder: Please turn off CELL PHONES and PAGERS when you are attending the Technical Sessions

Monday Morning, April 20, 2015

Plenary Lecture
Room: Town & Country

8:00-9:45 am

8:00 am

Plenary Lecture Session

Eric Chason, Brown University
Providence, RI

"Connecting Residual Stress and Thin Film Growth Processes: Real-time Experiments and a Kinetic Model"

Polycrystalline thin films often develop residual stress during growth. Since it can be large enough to impact performance or cause failure, there is a need to understand and control it. Stress evolution can be measured in real-time during film growth using wafer curvature techniques. A large number of studies have been performed that quantify the dependence of the stress on deposition rate, grain size, temperature and microstructure in numerous materials systems. These show that the residual stress may depend strongly on the processing conditions, e.g., electrodeposited Ni films can be 400 MPa (tensile) if the film is grown rapidly and -500 MPa (compressive) if the film is grown slowly. The stress can also go through a series of states during deposition, even changing sign as the microstructure evolves from individual islands to a continuous film.

But why do they develop stress at all, since strained films have higher energy than relaxed ones? To understand the non-equilibrium state of the film, we consider the kinetic processes that occur during thin film growth. We have developed a model that explains the stress evolution in terms of competing mechanisms that operate as the boundary forms between adjacent grains. The stress changes because the balance between these mechanisms changes with different processing conditions or with the evolving microstructure. The model predicts a dependence on the dimensionless parameter D/LR where D is the diffusivity, R is the growth rate and L is the grain size. We compare the calculations from the model with measurements on different films as a function of growth rate, temperature and grain size. More recently, studies of stress in patterned films have been performed in which the microstructure of the film is known precisely, allowing for direct comparison with the model.

8:00-9:45 am
Town & Country Room

Monday Morning, April 20, 2015

	Hard Coatings and Vapor Deposition Technology Room: Golden West - Session B2-1 CVD Coatings and Technologies **Moderators: Elisabeth Blanquet**, University of Grenoble-Alps, France, **Masaharu Shiratani**, Kyushu University, Japan	Fundamentals and Technology of Multifunctional Thin Films Room: Sunrise - Session C4-1 Thin Films for Energy Related Applications **Moderators: KinMan Yu**, Lawrence Berkeley National Laboratory, USA, **James Partridge**, RMIT University, Australia
10:00 am	**B2-1-1** Chemical Vapor Deposition of Diamond Coatings on Cu-W Alloys, **B. WAN**, Y. LI, Q. YANG, X. SUN, University of Saskatchewan, Canada	**C4-1-1** Synthesis of Porous Crystalline TiO2 Thin Films by Glancing Angle Reactive Magnetron Sputtering, **S. KONSTANTINIDIS**, J. DERVAUX, P-A. CORMIER, R. SNYDERS, University of Mons, Belgium
10:20 am	**B2-1-2** Advanced CVD-Diamond Coatings on Cutting Tools for Machining of CFRP, **M. WODA**, B. MESIC, M. FRANK, C. SCHIFFERS, W. KÖLKER, O. LEMMER, CemeCon AG, Germany	**C4-1-2** Titanium Oxynitride as a High Capacity and High-Rate Anode Material for Lithium Ion Batteries, K.-F. CHIU, **S.-H. SU**, H.-J. LEU, C.-H. HSIA, Feng Chia University, Taiwan
10:40 am	**B2-1-3** Surface Reactions during Ammonia-Plasma-Assisted Atomic LayerDeposition of Silicon Nitride, **S. AGARWAL**, R. OVANESYAN, Colorado School of Mines, USA, D. HAUSMANN, Lam Research Corporation, USA	**C4-1-3** Observation of a Reversible Phase Transition in the Dielectric Function Response of Si Nanostructures upon Li Intercalation using Generalized Ellipsometry, **D. SEKORA**, R.Y. LAI, University of Nebraska-Lincoln, USA, D. SCHMIDT, National University of Singapore, Singapore Synchrotron Light Source, Singapore, T. HOFMANN, M. SCHUBERT, E. SCHUBERT, University of Nebraska-Lincoln, USA
11:00 am	**B2-1-4** Microstructural Investigation of CVD Titanium Aluminium Nitride Multilayer Coatings, S. MOUSAVI NIK, Chalmers University of Technology, Sweden, D. STIENS, T. MANNS, S. RUPPI, Walter AG, Germany, **M. HALVARSSON**, Chalmers University of Technology, Sweden	**C4-1-4** Novel Concept Towards Highly Efficient Photoelectrochemical (PEC) Water Splitting, M. RISTOVA, Lawrence Berkeley National Laboratory, USA, K.M. YU, City University of Hong Kong, Hong Kong, W. ZHU, **W. WALUKIEWICZ**, Lawrence Berkeley National Laboratory, USA
11:20 am	**B2-1-5** Amorphous Phase Mixed α-Al_2O_3 Hard Coatings by Plasma-Enhanced Chemical Vapor Deposition, **N. IWASAKI**, S. TATSUOKA, K. SATO, K. YAMAGUCHI, Mitsubishi Materials Corporation, Japan	**C4-1-5** Stacking Faults in Mg-doped InN, S. KHROMOV, P. PERSSON, Linköping University, Sweden, X. WANG, Peking University, China, A. YOSHIKAWA, Chiba University, Japan, J. ROSÉN, E. JANZÉN, **V. DARAKCHIEVA**, Linköping University, Sweden
11:40 am	**B2-1-6** Novel Transparent Silicon Nitride Film Synthesis at Room Temperature by Radical and Plasma Control with RF/UHF Hybrid Plasma Processes, **J. HAN**, Sungkyunkwan University, Korea, B. SAHU, K. SHIN, Sungkyunkwan University, Republic of Korea, K. ISHIKAWA, M. HORI, Nagoya University, Japan	**C4-1-6** Effects of Polishing Treatment and Chemical Bath Deposited Zinc Sulphide (ZnS) Thin films on Ferritic Stainless Steel 430, **P. AKINYEMI**, KOLEBAJE, ADENODI, Adeyemi College of Education, Nigeria, ABIODUN, University of Benin, Nigeria
12:00 pm		**C4-1-7** Modification of the Surface Properties of Metallic Alloys by Nanopulsed Laser Surface Melting Applications and Comprehension of Laser-Matter Interaction, **W. PACQUENTIN**, N. CARON, M. TABARANT, C. BLANC, CEA Cross-Cutting program on Advanced Materials Saclay, France, N. SEMMAR, GREMI, Orléans University, France
12:20 pm	**Micromaterials: Focused Topic Session** **"Current Capability and Future Developments in High Temperature Nanomechanical Testing in Controlled Environments"** **12:15-1:15 pm** **Town & Country Room**	

Monday Morning, April 20, 2015

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room: Royal Palm 4-6 - Session E2-1** **Mechanical Properties and Adhesion** **Moderators: Johann Michler**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Etienne Bousser**, Ecole Polytechnique, Canada, **Fan-Bean Wu**, National United University, Taiwan	**New Horizons in Coatings and Thin Films** **Room: California - Session F5** **Coatings for Compliant Substrates** **Moderators: Steve Bull**, Newcastle University, UK, **Stephen Kukureka**, University of Birmingham, UK
10:00 am	**E2-1-1** Mechanical Properties of Ni Based Coatings Deposited by Flame Spray Technique Varying Oxygen Flow, **H. JIMENEZ**, J.J. OLAYA-FLOREZ, J.E. ALFONSO ORJUELA, Universidad Nacional de Colombia, Colombia	**F5-1 Invited** Measurement and Control Of Interfacial Adhesion, **V. GUPTA**, University of California Los Angeles, USA
10:20 am	**E2-1-2** Study of the Hardness and Thermal Stability of the TiAlN Coatings with High and Low Aluminum Content, E. CAMPS, J. QUIÑONES-GALVAN, Instituto Nacional de Investigaciones Nucleares, México, **J. RESTREPO**, S. MUHL, Universidad Nacional Autonoma de Mexico, México	Invited talk continued.
10:40 am	**E2-1-3** Structural, Tribological, and Electrochemical Properties of Plasma Nitrided Pure Titanium, **I. CELIK**, Gumushane University, Turkey, M. KARAKAN, Ataturk University, Turkey	**F5-3** Failure Behaviour of AZO/Ag/AZO Multilayers on Pen Substrates for Flexible Electronic Devices, D. MOHAMMED, University of Birmingham, UK, S. ELHAMALI, D. KOUTSOGEORGIS, Nottingham Trent University, UK, J. BOWEN, **S. KUKUREKA**, University of Birmingham, UK
11:00 am	**E2-1-4** Effect of Processing Parameters on Wear Resistance and Mechanical Properties of Thick ZrN Coatings on D2 Steel Deposited by Unbalanced Magnetron Sputtering, **H.H. CHANG**, G.P. YU, J.H. HUANG, National Tsing Hua University, Taiwan	**F5-4** Electro-mechanical Characterization of Directly Written Ag Patterns on Compliant Substrates for Optoelectronic Devices, **M.A. TORRES ARANGO**, S. KONSTANTINOS, West Virginia University, USA
11:20 am		**F5-5 Invited** Conformal Coating of Fibrous and Porous Substrates by ALD, **J. DENDOOVEN**, D. DEDUYTSCHE, J. MUSSCHOOT, A.K. ROY, C. DETAVERNIER, Ghent University, Belgium
11:40 am		Invited talk continued.
12:00 pm		**F5-7** Effects of Electrolyte Composition on the Process of Conversion of Aluminium Foil into Alumina Ceramics by Plasma Electrolytic Oxidation, **H. MESHREGHI**, A. YEROKHIN, A. MATTHEWS, The University of Sheffield, UK
12:20 pm	**Micromaterials: Focused Topic Session** **"Current Capability and Future Developments in High Temperature Nanomechanical Testing in Controlled Environments"** **12:15-1:15 pm** **Town & Country Room**	

Monday Morning, April 20, 2015

	Topical Symposia Room: Sunset - Session TS1 **Mechanical Aspects of Biointerfaces** **Moderators: Jinju Chen**, Newcastle University, UK, **Sandra E. Rodil Posada**, Universidad Nacional Autónoma de México, México	Topical Symposia Room: Royal Palm 1-3 - Session TS6 **Atmospheric Plasma Applications** **Moderator: Hana Baránková**, Uppsala University, Sweden
10:00 am	**TS1-1** Influence of Surface Topography and Roughness on Initial Formation of Biofilm, **Y. AMMAR**, D. SWAILES, B. BRIDGENS, J. CHEN, Newcastle University, UK	**TS6-1** Incorporation of Amine Moieties onto Ultra-high Molecular Weight Polyethylene (UHMWPE) Surface via Plasma Polymerization and Grafting of Allylamine, **G. AZIZ**, R. MORENT, N. DE GEYTER, H. DECLERCQ, R. CORNELISSEN, Ghent University, Belgium
10:20 am	**TS1-2 Invited** Phase Field Model of Biofilm-Flow Interaction, **T. ZHANG**, Montana State University, USA	**TS6-2** Modification of TiO_2 Powder via Atmospheric Dielectric Barrier Discharge Treatment for High Performance Lithium-ion Battery Anodes, **S.I. CHUANG**, H. YANG, H.W. CHEN, J.G. DUH, National Tsing Hua University, Taiwan
10:40 am	Invited talk continued.	**TS6-3 Invited** Development of Cold Atmospheric Pressure Plasma Jets for Material Processing and Surface Decontamination, **K.G. KOSTOV**, Universidade Estadual Paulista - UNESP, Brazil, M. MACHIDA, UNICAMP, Brazil, V. PRYSIAZNHYI, R.Y. HONDA, T. NISHIME, A. CASTRO, Universidade Estadual Paulista - UNESP, Brazil
11:00 am	**TS1-4** Nanomechanical and Microstructure Analysis of Extracellular Matrix of Immortalized Cell Line Y201 from Human Mesenchymal Stem Cells, **P. DUAN**, J. CHEN, Newcastle University, UK	Invited talk continued.
11:20 am	**TS1-5 Invited** 3D Monolayer Stress Cytometry, R. SERRANO, A. AUNG, S. VARGHESE, University of California San Diego, USA, **J.C. DEL ALAMO**, University of California San Diego	**TS6-5** Application of Atmospheric Pressure Plasma on PE for Increased Prosthesis Adhesion, **S. VAN VREKHEM**, P. COOLS, H. DECLERCQ, Ghent University, Belgium, A. VAN TONGEL, Ghent University Hospital, Belgium, F. BARBERIS, Genoa University, Italy, R. CORNELISSEN, N. DE GEYTER, R. MORENT, Ghent University, Belgium
11:40 am	Invited talk continued.	**TS6-6** Plasma Discharge Process for the Nitrogen-functionalization of CNTs and their Electrocatalytic Activities, **S.Y. LEE**, S.M. KIM, A.R. CHO, Korea Aerospace University, Korea, J.W. KIM, Incheon University, Korea
12:00 pm		**TS6-7** Atmospheric Pressure Plasma Enhanced Recycled Wastes for High Performance Si-based Lithium Ion Battery, **B.H. CHEN**, S.I. CHUANG, J.G. DUH, National Tsing Hua University, Taiwan, W.R. LIU, Chung Yuan Christian University, Taiwan
	Micromaterials: Focused Topic Session **"Current Capability and Future Developments in High Temperature Nanomechanical Testing in Controlled Environments"** **12:15-1:15 pm** **Town & Country Room**	**TS6-8** Coating Preparation on Mg and Corrosion Protection for Magnesium/Steel Coupling, **F. SUN**, X. NIE, University of Windsor, Canada

Monday Afternoon, April 20, 2015

	Hard Coatings and Vapor Deposition Technology **Room: Golden West - Session B2-2** **CVD Coatings and Technologies** **Moderators: Elisabeth Blanquet**, University of Grenoble-Alps, France, **Masaharu Shiratani**, Kyushu University, Japan	**Hard Coatings and Vapor Deposition Technology** **Room: San Diego - Session B3** **Deposition Technologies and Applications for Diamond-like Coatings** **Moderators: Klaus Böbel**, Robert Bosch GmbH, Germany, **Chris Engdahl**, Crystallume, USA
1:30 pm	**B2-2-1** The Initial Stages of sp^2-BN Thin Film Growth by Chemical Vapor Deposition, **M. CHUBAROV**, H. PEDERSEN, Linköping University, IFM, Sweden, ZC. CZIGÁNY, Hungarian Academy of Sciences, Hungary, M. GARBRECHT, H. HÖGBERG, A. HENRY, Linköping University, IFM, Sweden	**B3-1** Influence of the Acetylene Precursor Dilution with Argon on the Microstructure, Mechanical and Tribological Properties of a-C:H Films Deposited by Modified Pulsed-DC PECVD Method, G. CAPOTE, Universidad Nacional de Colombia, Colombia, G. MASTRAPA, PUC-Rio, Brazil, **V. TRAVA-AIROLDI**, INPE, Brazil
1:50 pm	**B2-2-2 Invited** Functionalization Of Aluminium Nitride Thin Films And Coatings, **M. PONS**, R. BOICHOT, F. MERCIER, E. BLANQUET, S. LAY, University of Grenoble-Alps, France, D. PIQUE, Sil'tronix St, France	**B3-2** Investigation of Corrosion and Adhesion Property of Diamond-like-carbon andNitrogen Doped Diamond –Like- Carbon on Ti-6Al-4V, **S. BHATTACHERJEE**, Q. YANG, University of Saskatchewan, Canada
2:10 pm	Invited talk continued.	**B3-3** Diamond-like Amorphous Carbon Layer Deposited by Inductively Coupled Plasma System for Next Generation Dry Etching Hard Mask, **S.J. PARK**, D. KIM, S. LEE, J. NAM, J. WON, Samsung Electronics, Republic of Korea
2:30 pm	**B2-2-4** Oxidation Resistance and Mechanical Properties of Al-rich Nanolamellar Ti0.05Al0.95N Coatings Prepared by CVD, **J. TODT**, University of Leoben, Austria, R. PITONAK, A. KÖPF, R. WEIßENBACHER, Böhlerit GmbH & Co. KG, Austria, J. KECKES, University of Leoben, Austria	**B3-4** Hardness, Wettability and Electrical Conductivity of Hydrogenated Carbon Coatings Deposited by a Plasma Beam Source, **M. FENKER**, K. PETRIKOWSKI, fem Forschungsinstitut Edelmetalle & Metallchemie, Germany
2:50 pm	**B2-2-5** Wear Properties of CVD <001>Textured α - Al_2O_3 in Different Cutting Conditions in Stainless SteelL, **R. MORJAN BRENNING**, Sandvik Coromant, Sweden	**B3-5 Invited** Development of Si-Containing DLC (DLC-Si) Coatings for Automobile Application, **H. MORI**, Toyota Central R&D Labs., Inc., Japan
3:10 pm	**B2-2-6** Deposition of Diamond Coating on Fe-Based Substrates with Al and Al/AlN Interlayers, **X. SUN**, Y. LI, L. YANG, Q. YANG, University of Saskatchewan, Canada	Invited talk continued.
3:30 pm	**B2-2-7 Invited** New Type of BN, AlBN Films Prepared by Synergetic Deposition Processes using Laser and Plasma: the Nanostructures, Properties and Growth Mechanisms, **S. KOMATSU**, National Institute of Materials Science, Japan	**B3-7** Sputtering-based Routes for High-rate Synthesis of Dense and Hard Amorphous Carbon Thin Films, **A. AIJAZ**, Uppsala University, Angstrom Laboratory, Sweden, K. SARAKINOS, U. HELMERSSON, Linköping University, Sweden
3:50 pm	Invited talk continued.	**B3-8** Friction and Wear Performance of Multilayered a-C:H:Al Coatings, **L. KILMAN**, Oerlikon Sorevi, France, C. JAOUL, M. COLAS, P. TRISTANT, C. DUBLANCHE-TIXIER, E. LABORDE, SPCTS, France, F. MEUNIER, Oerlikon Sorevi, France, O. JARRY, Oerlikon Metaplas, Germany
4:10 pm	**B2-2-9** Low Temperature Plasma Deposited Silicon Oxycarbide Films using Organosilicon for Polycarbonate Glazing, S.E. LEE, H.S. JANG, **Y.C. PARK**, Handong Global University, Korea	**B3-9 Invited** DLC Coatings with its Unique Properties and its use in Multiple Market Segments, **T. HURKMANS**, IHI Ionbond Inc., USA
4:30 pm		Invited talk continued.
4:50 pm		**B3-11** Thick DLC Deposition by MF-AC PECVD Process, **H. TAMAGAKI**, J. HAGA, A. UMEDA, H. ITO, Kobe Steel, Ltd., Japan
5:10 pm		**B3-12** Site-selective Coating of Carbon Protective Layer on Sub-micron Trenches Using Plasma CVD, **M. SHIRATANI**, X. DONG, K. KOGA, N. ITAGAKI, H. SEO, Kyushu University, Japan, G. UCHIDA, Osaka University, Japan
5:30 pm		**B3-13** Effects of Normal and Shear Stresses in Rolling and Mixed Mode Contact on the Wear and Delamination of a WC/a-C:H Tribological Coating, **B. MAHMOUDI**, The University of Akron, USA, C.H. HAGER, The Timken Company, USA, G.L. DOLL, The University of Akron, USA
	Hysitron: Focused Topic Session **"Recent Developments in Characterization of Thin Films"** **5:30-6:30 pm** **Town & Country Room**	**Welcome Mixer** **6:30-8:00 pm** **Atlas Foyer**

Monday Afternoon, April 20, 2015

	Fundamentals and Technology of Multifunctional Thin Films **Room: Sunrise - Session C4-2** **Thin Films for Energy Related Applications** **Moderators: KinMan Yu**, Lawrence Berkeley National Laboratory, USA, **James Partridge**, RMIT University, Australia	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room: Royal Palm 4-6 - Session E2-2** **Mechanical Properties and Adhesion** **Moderators: Johann Michler**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Etienne Bousser**, Ecole Polytechnique, Canada, **Fan-Bean Wu**, National United University, Taiwan
1:30 pm	**C4-2-1 Invited** Surface Polarity Effects and New Hydrogen-related Complexes Observed in the High-resolution Luminescence from ZnO, **R. REEVES**, University of Canterbury, New Zealand	**E2-2-1** Electrical Resistance Response of Environmental Barrier Coated, Melt Infiltrated SiC/SiC CMCs Subjected to Tensile Loading Under High Heat-flux Thermal Gradient Conditions, **M.P. APPLEBY**, D. ZHU, NASA Glenn Research Center, USA
1:50 pm	Invited talk continued.	**E2-2-2** Room Temperature Viscoplasticity of Nanocrystalline Nickel Thin Films, G. MOHANTY, J. WEHRS, EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland, **B. BOYCE**, Sandia National Laboratories, USA, M. HASEGAWA, L. PHILIPPE, J. MICHLER, EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland
2:10 pm	**C4-2-3** Porous Silicon Buffer Layer Effect on ZnO Pyroelectricity, **K. CICEK**, University of Bristol, UK, T. KARACALI, Ataturk University, Turkey	**E2-2-3 Invited** Orientation Dependent Mechanical Properties Of Metal-ceramic Nanolaminates, **J. MOLINA-ALDAREGUIA**, Y. LINGWEI, IMDEA Materials Institute, Spain, C. MAYER, N. CHAWLA, Arizona State University, USA
2:30 pm	**C4-2-4** Electronic Band Structure Engineering of Highly Mismatched $ZnO_{1-x}Te_x$ Alloy Synthesized by Pulsed-Laser Deposition, **M. TING**, University of California Berkeley, USA, R. DOS REIS, Lawrence Berkeley National Laboratory, USA, M. HETTICK, A. JAVEY, S. MAO, University of California Berkeley, USA, K.M. YU, W. WALUKIEWICZ, Lawrence Berkeley National Laboratory, USA	Invited talk continued.
2:50 pm	**C4-2-5** Solar Selective Coatings for High Temperature Concentrating Solar Power: Design, Deposition and Ageing Behaviour Characterization, **B. COTO**, J. BARRIGA, IK4-TEKNIKER, Spain, H. CACHAFEIRO, Aries Ingeniería y Sistemas S.A, Spain, J. GOIKOETXEA, U. RUIZ-DE-GOPEGUI, IK4-TEKNIKER, Spain	**E2-2-5** Time and Temperature Dependence of Viscoelastic Stress Relaxation in Al and Al Alloy Thin Films, A.W. HUANG, National Chung Hsing University, Taiwan, R. VINCI, W. BROWN, Lehigh University, USA, C-H. LU, C-C. WU, **M.T. LIN**, National Chung Hsing University, Taiwan
3:10 pm	**C4-2-6** The Origin of In Solution-processable Bilayer Organometal Halide Hybrid Solar Cells, Y.Y. YU, **R.S. CHIANG**, Ming Chi University of Technology, Taiwan	**E2-2-6** Determination of Intrinsic Stresses in Coatings by Multi-axial Indentation, M. FUCHS, Saxonian Institute of Surface Mechanics, Germany, H. GRÜTTNER, M. NIEHER, **S. WEIßMANTEL**, University of Applied Sciences Mittweida, Germany, N. SCHWARZER, Saxonian Institute of Surface Mechanics, Germany
3:30 pm	**C4-2-7** $LiFePO_{4-x}N_y$ Thin Film Electrodes Coated on Carbon Fiber Modified Current Collectors for Pseudocapacitors, K.-F. CHIU, S.-H. SU, H.-J. LEU, **W.-C.. HUANG**, Feng Chia University, Taiwan	**E2-2-7** Microstructure-scale Measurements and Simulations of Surface Deformation in Columnar Tantalum Multicrystals, **C. BATTAILE**, H. LIM, J. CARROLL, Sandia National Laboratories, USA
3:50 pm	**C4-2-8** Structural and Photo-electric Properties of Cuprous Oxide (Cu_2O) Thin Films Prepared by Ion-beam-assisted Deposition (IBAD), **C.K. CHANG**, Ming Chi University of Technology, Taiwan, C. LI, National Yang Ming University, Taiwan, J.H. HSIEH, Ming Chi University of Technology, Taiwan	**E2-2-8** Measurement of Fracture Toughness in Thin Films by the Indentation Pillar Splitting Tests: Developments and Limitations, **M. SEBASTIANI**, "Roma TRE" University, Italy
4:10 pm		**E2-2-9 Invited** Interfacial Structure Effects on the Mechanical Behavior of Layered Nanocomposites, **N. MARA**, J. CARPENTER, W. MOOK, S. ZHENG, Los Alamos National Laboratory, USA, T. NIZOLEK, University of California Santa Barbara, USA, S. PATHAK, Los Alamos National Laboratory, USA, S. KALIDINDI, Georgia Institute of Technology, USA, J. WANG, Los Alamos National Laboratory, USA, T. POLLOCK, University of California, Santa Barbara, USA, I. BEYERLEIN, Los Alamos National Laboratory, USA
4:30 pm		Invited talk continued.
4:50 pm		**E2-2-11** Numerical and Experimental Evaluation of Critical Variables for Multilayer Coatings Failure under Indentation Loads, **N. FUKUMASU**, University of São Paulo, Brazil, E. PRADOS, Federal University of ABC, Brazil, A. TSCHIPTSCHIN, R. SOUZA, University of São Paulo, Brazil
5:10 pm		**E2-2-12** Investigation on Plastic Behavior of HPPMS CrN, AlN and CrN/AlN-Multilayer Coatings using Finite Element Simulation and Nanoindentation, K. BOBZIN, RWTH Aachen University, Germany, N. BAGCIVAN, Schaeffler Technologies GmbH & Co. KG, Germany, T. BRÖGELMANN, R. BRUGNARA, **M. ARGHAVANI**, RWTH Aachen University, Germany, T.S. YANG, Y.Y. CHANG, S.Y. CHANG, National Formosa University, Taiwan
	Hysitron: Focused Topic Session **"Recent Developments in Characterization of Thin Films"** **5:30-6:30 pm** **Town & Country Room**	**Welcome Mixer** **6:30-8:00 pm** **Atlas Foyer**

Monday Afternoon, April 20, 2015

	New Horizons in Coatings and Thin Films **Room: California - Session F1** **Nanomaterials and Nanofabrication** **Moderators: Yukiko Yamada-Takamura**, Japan Advanced Institute of Science and Technology, Japan, **Sumit Agarwal**, Colorado School of Mines, USA	**Topical Symposia** **Room: Royal Palm 1-3 - Session TS4** **Graphene and 2D Nanostructures** **Moderators: Jiaxing Huang**, Northwestern University, **Haitao Liu**, University of Pittsburgh, USA
1:30 pm	**F1-1** Growth and Characterization of Heteroepitaxial III-N Semiconductor Films using Atomic Layer Epitaxy, **C. EDDY, JR.**, N. NEPAL, V. ANDERSON, J. HITE, U.S. Naval Research Laboratory, USA	**TS4-1** The Method to Growth of Porous Graphene by Chemical Vapor Deposition and the Application of NO_2 Gas Sensor and the Food Additives Molecules, **K.-C. HUANG**, J.-M. TING, National Cheng Kung University, Taiwan
1:50 pm	**F1-2 Invited** Fast Rate and High Efficiency Cluster-assisted Epitaxy by Mesoplasma CVD, **M. KAMBARA**, S. WU, L.W. CHEN, K. SAWADA, T. ICHIMARU, T. YOSHIDA, The University of Tokyo, Japan	**TS4-2** Nucleation and Growth of Sputtered Two-Dimensional Transition Metal Dichacogenides, **C. MURATORE**, University of Dayton, USA, M. JESPERSEN, J. BULTMAN, J. HU, University of Dayton Research Institute; Air Force Research Laboratory, USA, R. NAGUY, Air Force Research Laboratory; University of Dayton, USA, M. MCCONNEY, N. GLAVIN, R. STEVENSON, Air Force Research Laboratory, USA, A. WAITE, UTC/Air Force Research Laboratory; University of Dayton, USA, M.A. HAQUE, Penn State University, USA, A. SAFRIET, University of Dayton Research Institute; Air Force
2:10 pm	Invited talk continued.	**TS4-3 Invited** Phonon Transport in Graphene: Graphene Applications in Thermal Coatings, **A. BALANDIN**, University of California – Riverside, USA
2:30 pm	**F1-4** Synthesis and Characterization of Zeolite Y Coating on Mild Steel, **K. SIVAKUMAR**, Coimbatore Institute of Technology, India, A. SANTHANAM, M. NATARAJAN, CIT, India, D. VELAUTHAPILLAI, University College of Bergen, Norway, B. RANGASAMY, PSG College of Technology, India	Invited talk continued.
2:50 pm	**F1-5** Synthesis of Nanotwins in Low and High Stacking Fault Energy Materials, **L. VELASCO ESTRADA**, A. HODGE, University of Southern California, USA	**TS4-5** Orientation-Dependent Binding Energy of Graphene on the Pd(111) Surface, B. KAPPES, Colorado School of Mines, USA, **A. EBNONNASIR**, S. KODAMBAKA, UCLA, USA, C. CIOBANU, Colorado School of Mines, USA
3:10 pm	**F1-6 Invited** Novel Approaches to Plasma Processing of Carbon-based Nanomaterials, **R.M. SANKARAN**, Case Western Reserve University, USA	**TS4-6** Characterization and Potential Gas Sorption Applications of Nanoporous Spongy Graphene Synthesized by Wet Chemical Reduction and Freeze Drying, N. KOSTOGLOU, University of Cyprus, Cyprus, G. CONSTANTINIDES, Cyprus University of Technology, Cyprus, G. CHARALAMBOPOULOU, T. STERIOTIS, National Center for Scientific Research Demokritos, Greece, Y. LI, K. LIAO, K. POLYCHRONOPOULOU, Khalifa University of Science, Technology & Research, UAE, V. RYZHKOV, Fibrtec Incorporation, USA, C. MITTERER, Montanuniversität Leoben, Austria, **C. REBHOLZ**, University of Cyprus, Cyprus
3:30 pm	Invited talk continued.	**TS4-7** Graphene Content-Sliding Speed Relation in the Ni-Graphene Nanocomposites Produced by Pulse Electrodeposition, **H. ALGUL**, M. TOKUR, S. OZCAN, M. UYSAL, A. ALP, H. AKBULUT, Sakarya University, Turkey
3:50 pm	**F1-8** Prospects of the Physical Vapor Deposition Synthesis of 2D Materials, **A.A. VOEVODIN**, Air Force Research Laboratory, USA, C. MURATORE, University of Dayton, USA, N. GLAVIN, J. HU, A. WAITE, J. BULTMAN, A. SAFRIET, M. MCCONNEY, M. CHECK, R. STEVENSON, R. NAGUY, J. ANDERS, Air Force Research Laboratory, USA	**TS4-8** Graphene as a Protective Coating and Superior Lubricant for Electrical Contacts, **D. BERMAN**, A. ERDEMIR, A. SUMANT, Argonne National Laboratory, USA
4:10 pm	**F1-9** A Facile One-step Route of Synthesizing α-type MnO_2/rGO Nanocomposites as Anode Materials for Lithium-ion Batteries, **S.C. WENG**, National Cheng Kung University, Taiwan, C.C. CHANG, National University of Tainan, Taiwan, C.C. HO, J.L. HUANG, National Cheng Kung University, Taiwan	**TS4-9** Three-Dimensional Textured Graphene Bioelectronics, M.C. WANG, J. CHOI, A. ASHRAF, K.H. YONG, J. LEEM, **S. NAM**, University of Illinois at Urbana-Champaign, USA
4:30 pm	**F1-10** Photoelectric Properties of Orthorhombic and Zinc Blende Phase SnS Nanocrystals by a Facile Colloidal Synthesis Method, **P.C. HUANG**, J.L. HUANG, National Cheng Kung University, Taiwan, S.C. WANG, M.O. SHAIKH, Southern Taiwan University of Science and Technology, Taiwan, C.Y. LIN, National Cheng Kung University, Taiwan	**TS4-10 Invited** Layer-by-Layer Thin Film Based on Reduced Graphene Oxide: A Surface Coating That Can Be Antiseptized within Minutes of Solar Exposure, L. HUI, J.T. AULETTA, Z. HUANG, X. CHEN, F. XIA, S. YANG, H. LIU, **L. YANG**, University of Science and Technology of China, China
4:50 pm	**F1-11** ZnO Nano-trees Active Layers as Heavy Hydrocarbon Sensors: from Material Synthesis to Electrical and Gas Sensing Properties, **M. ARAB POUR YAZDI**, IRTES-LERMPS-UTBM, France, N. MARTIN, FEMTO-ST, France, E. MONSIFROT, Sarl Dephis, France, P. BRIOIS, IRTES-LERMPS-UTBM, France, A. BILLARD, Lrc Cea-Irtes-Lermps-Utbm, France	Invited talk continued.
5:10 pm	**F1-12** Hybrid Processing Method for Fabrication for Nanocomposite Nacre-Like Materials, **V. POENITZSCH**, Southwest Research Institute, USA, S. DIPIETRO, Exothermics, Inc., USA, R. WEI, K. COULTER, Southwest Research Institute, USA	**Hysitron: Focused Topic Session** **"Recent Developments in Characterization of Thin Films"** **5:30-6:30 pm** **Town & Country Room**
5:30 pm	**F1-13** The Electric Conductivity of Carbon Film with Top Surface Graphene Nanocrystallite Induced by Low Energy Electron Irradiation, **C. WANG**, D.F. DIAO, Shenzhen University, China	**Welcome Mixer** **6:30-8:00 pm** **Atlas Foyer**

Monday Afternoon, April 20, 2015

Topical Symposia
Room: Sunset - Session TS5

Plasma Diagnostics and Modeling
Moderators: Yolanda Aranda Gonzalvo, Consultant, **Ante Hecimovic**, Ruhr-Universität Bochum, Germany

1:30 pm	**TS5-1 Invited** Insights from Modeling of Pulse Power for Control of Deposition and Surface Modification, **M.J. KUSHNER**, University of Michigan, USA	
1:50 pm	Invited talk continued.	
2:10 pm	**TS5-3** 2D and 3D Modelling of HiPIMS Plasma and Transport, **T. MINEA**, A. REVEL, University Paris-Sud, France, C. COSTIN, Al. I. Cuza University, Romania, D. LUNDIN, University Paris-Sud, France, N. BRENNING, Royal Institute of Technology, Sweden	
2:30 pm	**TS5-4** Direction and Sub-structures of Ionization Zones in DC Magnetron Sputtering, **Y. YANG**, J. LIU, Y. QIU, A. ANDERS, Lawrence Berkeley National Laboratory, USA	
2:50 pm	**TS5-5** Plasma Analysis of Inductively Coupled Impulse Sputtering by Investigation of Cu, Ti and Ni Species, **D. LOCH**, Sheffield Hallam University, UK, Y.A. GONZALVO, Hiden Analytical Ltd, UK, A.P. EHIASARIAN, Sheffield Hallam University, UK	
3:10 pm	**TS5-6** Investigation of Gaseous By-products of Interaction of In-liquid Plasmas with Al during Plasma Electrolytic Oxidation, **A. YEROKHIN**, Y. GAO, The University of Sheffield, UK, Y.A. GONZALVO, Hiden Analytical Ltd, UK, L. SNIZHKO, Ukrainian State University for Chemical Engineering, Ukraine, A. MATTHEWS, The University of Sheffield, UK	
3:30 pm	**TS5-7 Invited** Non-conventional Plasma and Sheath Diagnostics Related to Process Parameters, **H. KERSTEN**, S. BORNHOLDT, V. SCHNEIDER, A. SPETHMAN, T. TROTTENBERG, Institute of Experimental and Applied Physics, Kiel University, Germany	
3:50 pm	Invited talk continued.	
4:10 pm	**TS5-9** Plasma Plume Characterization in Pulsed Laser Deposition of Ultra-thin Boron Nitride Films, **N. GLAVIN**, Air Force Research Laboratory, USA, T. FISHER, Purdue University, USA, A.A. VOEVODIN, Air Force Research Laboratory, USA	
4:30 pm	**TS5-10** Transient Analysis and Modeling for Diagnostic of Pulsed Bipolar Plasma Electrolytic Oxidation Process, **E. PARFENOV**, A. FATKULLIN, Ufa State Aviation Technical University, Russian Federation, A. YEROKHIN, The University of Sheffield, UK, D. LAZAREV, Ufa State Aviation Technical University, Russian Federation	
4:50 pm	**TS5-11** Investigation of Plasma Nitriding Process by Absorption Spectroscopy, **V.H. BAGGIO-SCHEID**, D. NEVES, Sao Jose dos Campos, Brazil	
5:10 pm	**Round Table Discussion Follows**	
	Hysitron: Focused Topic Session **"Recent Developments in Characterization of Thin Films"** **5:30-6:30 pm** **Town & Country Room**	**Welcome Mixer** **6:30-8:00 pm** **Atlas Foyer**

Tuesday Morning, April 21, 2015

	Hard Coatings and Vapor Deposition Technology Room: California - Session B1-1 **PVD Coatings and Technologies** **Moderators: Alpana Ranade**, GE Aviation, USA, **Steffen Weißmantel**, University of Applied Sciences Mittweida, Germany, **Jyh-Wei Lee**, Ming Chi University of Technology, Taiwan	Hard Coatings and Vapor Deposition Technology Room: Golden West - Session B4-1 **Properties and Characterization of Hard Coatings and Surfaces** **Moderators: Uwe Beck**, BAM Berlin, Germany, **Chau-Chang Chou**, National Taiwan Ocean University, Taiwan, **Grzegorz Greczynski**, Linköping University, IFM, Sweden
8:00 am	**B1-1-1 Invited** Multi-component High-entropy Materials: Suppressed Interdiffusion Kinetics and Dislocation-mediated Deformation for Applications to Diffusion Barriers and Hard Coatings, **S.Y. CHANG**, S.Y. LIN, C.E. LI, National Chung Hsing University, Taiwan, S.J. LIN, J.W. YEH, National Tsing Hua University, Taiwan	**B4-1-1** Tribological Behaviour of Cathodic Arc Evaporated Ti-Al-N Based Hard Coatings, **S. GLATZ**, J. PAULITSCH, R. HOLLERWEGER, Vienna University of Technology, Austria, R. RACHBAUER, Oerlikon Balzers Coating AG, Liechtenstein, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, P. MAYRHOFER, Vienna University of Technology, Austria
8:20 am	Invited talk continued.	**B4-1-2** Tuning Hardness and Fracture Resistance of ZrN-based Nanostructured Thin Films, **S.P.K. YALAMANCHILI**, Linköping University, Sweden, E. JIMÉNEZ-PIQUÉ, Universitat Politècnica de Catalunya, Spain, N. GHAFOOR, M. ODÉN, Linköping University, Sweden
8:40 am	**B1-1-3** Dynamic and Structural Stability of Cubic Vanadium Nitride, **A.B. MEI**, University of Illinois at Urbana-Champaign, USA, O. HELLMAN, California Institute of Technology, USA, N. WIREKLINT, Chalmers University of Technology, Sweden, C. SCHLEPÜTZ, Argonne National Laboratory, USA, D. SANGIOVANNI, B. ALLING, I. ABRIKOSOV, Linköping University, Sweden, A. ROCKETT, University of Illinois at Urbana-Champaign, USA, L. HULTMAN, Linköping University, Sweden, J. GREENE, I. PETROV, University of Illinois at Urbana-Champaign, USA **GRADUATE STUDENT FINALIST**	**B4-1-3** Phase Transformations During Annealing in Air and Vacuum Atmosphere in Arc Evaporated (Ti,Cr,Al)N Coatings Studied by In-situ High-energy X-ray Diffraction, **D.M. OSTACH**, Helmholtz-Zentrum Geesthacht, Germany
9:00 am	**B1-1-4** Modeling of Coating Thickness and Microstructure on Complex 3D Parts in an Electron Beam Physical Vapor Deposition Process, T. WASFY, Indiana University, USA, **A. FEUERSTEIN**, P APENOUVON, D. MCPHERSON, A. FULTON, M. HOERSTEN, Praxair Surface Technologies, Inc., USA	**B4-1-4 Invited** Properties and Characterization of Interfaces and Interlayers and the Correlation to Long-term Adhesion, **R. HAUERT**, K. THORWARTH, U. MÜLLER, B. WEISSE, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, D. BERNOULLI, R. SPOLENAK, ETH Zurich, Laboratory for Nanometallurgy, Switzerland
9:20 am	**B1-1-5** Ion Energies in Cathodic Arcs: Charge Exchange Collisions Allow for the Revival of the Potential Hump Theory, **A. ANDERS**, Lawrence Berkeley National Laboratory, USA	Invited talk continued.
9:40 am	**B1-1-6** Decorative Colored Coatings on Metal Strips, **C. METZNER**, B. SCHEFFEL, F. FIETZKE, F.H. RÖGNER, Fraunhofer Inst. for Electron Beam and Plasma Tech. (FEP), Germany	**B4-1-6** Role of Droplets in the Phase Formation of Arc Evaporated $(Al_{0.70}Cr_{0.25}Fe_{0.05})_2O_3$ Coatings, **C.M. KOLLER**, Vienna University of Technology, Austria, J. RAMM, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, J. PAULITSCH, Oerlikon Balzers Coating Austria GmbH, Austria, P. MAYRHOFER, Vienna University of Tech., Austria **GRADUATE STUDENT FINALIST**
10:00 am	**B1-1-7** New Trends , New Opportunity for Hybrid Technology – Duplex Coatings: Plasma Nitriding + PVD and PECVD, **P. COLLIGNON**, PD2I - PerformCoat GmbH, France, Y. SAMPEUR, C. KUNZ, PerformCoat GmbH, France	**B4-1-7** Erosion Resistance of CrN, TiN, CrAlN and TiAlN Coatings Deposited by Cathodic Arc Evaporation, **Z. GASEM**, N. ANKAH, King Fahd University of Petroleum and Minerals, Saudi Arabia
10:20 am	**B1-1-8** Effects of Annealing on NIR Shielding Properties of Cs-doped Tungsten Oxide Thin Films Deposited by Electron Beam Evaporation, **C.S. LONG**, National Cheng Kung University, Taiwan, H.W. LU, National Chin-Yi University of Technology, Taiwan, D.F. LII, Cheng Shiu University, Taiwan, J.L. HUANG, National Cheng Kung University, Taiwan	**B4-1-8** Effect of Phase Content on Fracture Toughness of ZrN_xO_y Coatings, **H.W. HSIAO**, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan
10:40 am	**B1-1-9** Hardness, Abrasion Wear and Corrosion Resistance of Multilayer Coatings Based on Titanium Nitride, **J. ASENCIOS**, K. PAUCAR, C. BENNDORF, A. TALLEDO, Universidad Nacional de Ingenieria, Peru	**B4-1-9** Deformation of CrAlN/Si_3N_4 Nanocomposite Coating at Elevated Temperatures, **S. LIU**, Singapore Institute of Manufacturing Technology, Singapore, J. WHEELER, J. MICHLER, EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland, X.T. ZENG, Singapore Institute of Manufacturing Technology, Singapore, W. CLEGG, University of Cambridge, UK
11:00 am	**B1-1-10** Hardness, Abrasion Wear and Optical Properties of Metal Containing a-C:H Coatings Made by rf Magnetron Sputtering, **J. VILLALOBOS**, J.L. AMPUERO, C. BENNDORF, A. TALLEDO, Universidad Nacional de Ingenieria, Peru	**B4-1-10** Tribological and Adhesion Properties of the CrZrN Coatings with Various Interlayers with Different H/E Ratios, **H.K. KIM**, J.H. LA, S.Y. LEE, Korea Aerospace University, Republic of Korea
	Exhibition Hall Opens Today **Grand Hall** **12:00-7:00 pm** **Enjoy Lunch in the Exhibition Hall 12:15 pm**	

Tuesday Morning, April 21, 2015

	Fundamentals and Technology of Multifunctional Thin Films **Room: Sunset - Session C3** **Transparent Conducting Oxides and Related Inorganic and Organic Materials** **Moderators: Junichi Nomoto**, Kochi University of Technology, Japan, **Marco Cremona**, Pontifícia Universidade Católica do Rio de Janeiro, Brazil	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room: Royal Palm 4-6 - Session E2-3** **Mechanical Properties and Adhesion** **Moderators: Johann Michler**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Etienne Bousser**, Ecole Polytechnique, Canada, **Fan-Bean Wu**, National United University, Taiwan
8:00 am	**C3-1 Invited** Cu_2O-based Heterojunction Solar Cells Using Metal Oxide Thin Films as the n-type Semiconductor Layer, **T. MINAMI**, Y. NISHI, T. MIYATA, Kanazawa Institute of Technology, Japan	**E2-3-1 Invited** In-situ Characterizations for Interfacial Performances of Materials, **Y.R. JENG**, National Chung Cheng University, Taiwan
8:20 am	Invited talk continued.	Invited talk continued.
8:40 am	**C3-3** Effects of Oxygen Gas Flow Rate and Ga Contents on Structural Properties of Ga-doped ZnO Films Prepared by Ion-plating with a DC Arc Discharge, **T. TERASAKO**, Ehime University, Japan, J. NOMOTO, H. MAKINO, N. YAMAMOTO, Kochi University of Technology, Japan, S. SHIRAKATA, Ehime University, Japan, T. YAMAMOTO, Kochi University of Technology, Japan	**E2-3-3** Tribo-mechanical Properties of Highly Elastic Hybrid SiOCH Optical Coatings, **T. SCHMITT**, J. SCHMITT, T. POIRIE, O. ZABEIDA, J.E. KLEMBERG-SAPIEHA, L. MARTINU, Ecole Polytechnique de Montreal, Canada
9:00 am	**C3-4** Bandgap tuned $Zn_{1-x}Mg_xO$ Thin Films Co-deposited Using High Impulse Power and Direct Current Magnetron Sputtering, **E. MAYES**, B. MURDOCH, RMIT University, Australia, M. BILEK, D. MCKENZIE, University of Sydney, Australia, D. MCCULLOCH, J. PARTRIDGE, RMIT University, Australia	**E2-3-4** In-Situ Optical Oblique Observation of Scratch Testing, **J. WHEELER**, J. WEHRS, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, G. FAVARO, TriTec SA, Switzerland, J. MICHLER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
9:20 am	**C3-5** Fabrication and Analyses on the Flexible Electrochromic Device of Tungsten Oxide, C. LI, National Yang Ming University, Taiwan, J.H. HSIEH, Ming Chi University of Technology, Taiwan, **T.Y. SU**, National Central University, Taiwan	**E2-3-5** Influence of Shot Peening and Grit Blasting on the Adhesion and the Tribological Behavior of Diamond-like Carbon Coating (a-C:H), **M. KACHEL**, Fraunhofer IWM and Karlsruhe Institute of Technology KIT, Germany
9:40 am	**C3-6** Optical, Electrical and Magnetic Properties of (Ga, Co)-ZnO Films by Radio Frequency Magnetron Co-sputtering, S.C. CHEN, **C.H. WANG**, Ming Chi University of Technology, Taiwan, C.L. TSAI, Industrial Technology Research Institute, Taiwan, T.Y. KUO, National Taiwan University, Taiwan, Y.K. FU, Y.H. FANG, Industrial Technology Research Institute, Taiwan	**E2-3-6** Investigation of Adhesion of Diamond-like Carbon on Ti6Al4V, **C. ZHANG**, Q. YANG, L. YANG, H. NIAKAN, Y. LI, S. KHATIR, University of Saskatchewan, Canada, Y.F. HU, Canadian Light Source Inc., Canada
10:00 am	**C3-7** Photocatalytic Study on Indium Tantalum Oxide Thin Film Deposited by Sputtering, C. LI, National Yang Ming University, Taiwan, J.H. HSIEH, Ming Chi University of Technology, Taiwan, **PH. HSUEH**, National Central University, Taiwan	**E2-3-7 Invited** On the Use of the In-situ Observation of the Contact and the FE Modelling to Analyse the Damage of Coated Polymeric Surfaces, **C. GAUTHIER**, University of Strasbourg / Institut Charles Sadron, France
10:20 am		Invited talk continued.
10:40 am		**E2-3-9** Improved Adhesion of CVD-Diamond on Cemented Carbide Tools by Microwave Plasma-enhanced Surface Engineering, **M. MEE**, Fraunhofer IWM and Karlsruhe Institute of Technology KIT, Germany

Exhibition Hall Opens Today
Grand Hall
12:00-7:00 pm
Enjoy Lunch in the Exhibition Hall 12:15 pm

Tuesday Morning, April 21, 2015

	New Horizons in Coatings and Thin Films Room: Sunrise - Session F3 New Boron, Boride and Boron Nitride Based Coatings **Moderators: Aharon Inspektor**, Kennametal Incorporated, USA, **Mikhail Chubarov**, Linköping University, IFM	New Horizons in Coatings and Thin Films Room: Royal Palm 1-3 - Session F6-1 Thin Films and Coatings for Fuel Cells & Batteries **Moderators: Chintalapalle Ramana**, University of Texas at El Paso, USA, **Sanjay Khare**, University of Toledo, USA
8:00 am	**F3-1** Mechanical and Tribological Properties of Arc Evaporated $Ti_{1-x}Al_xN/Mo_{1-x-y}Si_xB_y$ Multilayer Coatings, **H. RIEDL**, Vienna University of Technology, Austria, J. KALAS, Oerlikon Balzers Coating AG, Liechtenstein, P. POLCIK, Plansee Composite Materials GmbH, Germany, P. MAYRHOFER, Vienna University of Technology, Austria	**F6-1-1** Electrochemical Performance of Multilayered Si thin Film Anodes for Li-ion Batteries, **G.V. DADHEECH**, General Motors R&D Center, USA, C.U. UTHAISAR, Fraunhofer USA, USA, V. MILLER, University of California Berkeley, USA, T. SCHUELKE, M. BECKER, Fraunhofer USA, USA
8:20 am	**F3-2** Mo_2BC Coatings for Metal Forming: Interactions Between Tool Surface and Aluminium by Theory and Experiment, H. BOLVARDI, D. MUSIC, **J.M. SCHNEIDER**, RWTH Aachen University, Germany	**F6-1-2 Invited** On the Surface Evolution in Stressed Films: from Metal Films at High Temperature to Electrode Films in Li-ion Batteries, **R. PANAT**, Washington State University, USA
8:40 am	**F3-3** Experimental and Computational Study of $B_xAl_{1-x}N$, **H. EUCHNER**, P. WIEHOFF, P. MAYRHOFER, Vienna University of Technology, Austria	Invited talk continued.
9:00 am	**F3-4** Growth and Nanostructure of Zirconium Diboride Thin Films for High Temperature Electronics, **D. STEWART**, R. MEULENBERG, R. LAD, University of Maine, USA	**F6-1-4** Study on Enhancing Performance of Thin Film Amorphous SnO_x on C60 as an Anode Material for all Solid State Battery, **K.S. LEE**, Yonsei University, Republic of Korea, Y.S. YOON, Gachon University, Republic of Korea
9:20 am	**F3-5 Invited** Hexagonal Boron Nitride – Wafer-scale Epitaxial Growth and Exploration of Active Devices, **J.Y. LIN**, H.X. JIANG, Texas Tech University, USA	**F6-1-5** CeO_2-Doped $(Co,Mn)_3O_4$ Coatings for Protecting Solid Oxide Fuel Cell Interconnect Alloys, **J.H. ZHU**, J. SIMPSON, M. LEWIS, Tennessee Technological University, USA
9:40 am	Invited talk continued.	
10:00 am	**F3-7** Growth Kinetics of Boride Coatings Formed at the Surface AISI M2 During Dehydrated Paste Pack Boriding, **M.A. DOÑU RUIZ**, Universidad Politécnica del Valle de Mexico, Mexico, N. LOPEZ-PERRUSQUIA, Universidad Politecnica del Valle de Mexico, Mexico, C.R. TORRES SAN MIGUEL, G.M. URRIOLAGOITIA CALDERÓN, Insituto Politécnico Nacional, Mexico, E.A. CERILLO MORENO, Universidad Politecnica del Valle de Mexico, Mexico, J.V. CORTES SUAREZ, Universidad Autónoma Metropolitana Azcapotzalco, México	
	Exhibition Hall Opens Today **Grand Hall** **12:00-7:00 pm** **Enjoy Lunch in the Exhibition Hall 12:15 pm**	

Tuesday Morning, April 21, 2015

Exhibitors Keynote Lecture
Room: Town & Country

11:00 am-12:00 pm

11:00 am

Exhibition Keynote Lecture

JÜRGEN RAMM

Oerlikon Balzers, Oerlikon Surface Solutions AG

"Synthesis of Oxides by Reactive Cathodic Arc Evaporation: Cathode Surface and Coating Properties"

Reactive cathodic arc evaporation is an attractive method to produce thin oxide coatings at moderate substrate temperatures. Characteristic for this deposition method are two distinctive features which influence the crystalline phases of the synthesized coatings: the freedom to select the chemical composition of the compound cathodes and the control of the metal-to-oxygen ratio during the deposition. An attempt is made to predict the phase formation generated by the arc at the cathode (target) surface and correlate it with the phases of the synthesized coating. The development of the phases at the target surface depends on the oxygen partial pressure and on the particle size utilized to fabricate the powder metallurgical targets. A comparison of the processes at the target surface with the coating synthesis unveils correlations. This knowledge is helpful in the designing of oxide coatings for dedicated applications. The influence of the chemical composition of the targets and the oxygen partial pressure on the formation of the binary and ternary oxide phases was investigated for the Al-Cr, Al-Hf and Al-Ni material systems.
The application of oxide coatings in high-temperature environments as oxidation and diffusion barriers is of particular interest. The oxidation process was studied for intermetallic coatings during annealing in ambient atmosphere with temperatures up to 1300°C. The spontaneous selective oxide growth in these materials was investigated by in-situ high-temperature XRD and explains the mechanical malfunctions of the coatings. In search of oxidation barrier coatings for these intermetallic layers, oxide coatings were synthesized for which the metallic components correspond to the metallic components in the underlying intermetallic layer. These coatings showed improved thermal stability which is a result of the pre-formation of high-temperature oxide phases during oxide synthesis already at a substrate temperature of 550°C. Outstanding barrier quality was found for the solid solution of $(Al,Cr)_2O_3$ in corundum structures for several applications.

11:00 am-12:00 pm
Town & Country Room

Exhibition Hall Opens Today
Grand Hall
12:00-7:00 pm
Enjoy Lunch in the Exhibition Hall 12:15 pm

Tuesday Afternoon, April 21, 2015

	Coatings for Use at High Temperature **Room: Royal Palm 4-6 - Session A1-1** **Coatings to Resist High Temperature Oxidation, Corrosion and Fouling** **Moderators: Mark Weaver**, The University of Alabama, USA, **Vladislav Kolarik**, Fraunhofer Institute for Chemical Technology ICT, Germany, **Elizabeth Opila**, University of Virginia, USA	**Hard Coatings and Vapor Deposition Technology** **Room: California - Session B1-2** **PVD Coatings and Technologies** **Moderators: Alpana Ranade**, GE Aviation, USA, **Steffen Weißmantel**, University of Applied Sciences Mittweida, Germany, **Jyh-Wei Lee**, Ming Chi University of Technology, Taiwan
1:30 pm		
1:50 pm		**B1-2-2** Effect of Oxygen Incorporation on the Structure and Elasticity of Ti-Al-O-N Coatings Synthesized by Cathodic Arc and High Power Pulsed Magnetron Sputtering, **M. HANS**, M. TO BABEN, D. MUSIC, J. EBENHÖCH, RWTH Aachen University, Germany, D. PRIMETZHOFER, Uppsala University, Sweden, D. KURAPOV, M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, H. RUDIGIER, Oerlikon Balzers Coating AG, Liechtenstein, J.M. SCHNEIDER, RWTH Aachen University, Germany
2:10 pm	**A1-1-3** Solvothermally Densified Ceramic Coatings as Corrosion Protection for Boiler Tubes in Waste-to-energy (WTE) Plants, **D. MÜLLER**, D. AßBICHLER, S. HEUSS-AßBICHLER, Ludwig-Maximilians-Universität München, Germany	**B1-2-3** Improvement of the Fatigue and Wear Resistance of the Nitride-based Coatings used in Forming Tool Applications, **A. KHATIBI**, M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein
2:30 pm	**A1-1-4** Thermodynamic and Kinetic Modelling for Predicting the Microstructural Evolution in Oxidation Resistant Coatings during High Temperature Exposure, **R. PILLAI**, A. CHYRKIN, Forschungszentrum Jülich, Germany, W. SLOOF, Delft University of Technology, Netherlands, W. QUADAKKERS, Forschungszentrum Jülich, Germany	**B1-2-4** Influence of Composition on the Wear Properties of Boron Carbonitride (BCN) Coatings Deposited by High Power Impulse Magnetron Sputtering, **T. HIRTE**, R. FEUERFEIL, V. PERÉZ-SOLÓRZANO, T. WAGNER, Robert Bosch GmbH, Germany, M. SCHERGE, Fraunhofer Institute for Mechanics of Materials, IWM, Germany
2:50 pm	**A1-1-5 Invited** Structure and Degradation Mechanisms of Pd-Pt-aluminide Bond Coatings for EB-PVD TBCs, **R. SWADZBA**, Institute for Ferrous Metallurgy, Poland, L. SWADZBA, Silesian University of Technology, Poland, J. WIEDERMANN, Institute for Ferrous Metallurgy, Poland, M. HETMANCZYK, B. MENDALA, B. WITALA, Silesian University of Technology, Poland	**B1-2-5** Low Temperature In-situ Crystallization TiNi Shape Memory Thin Film Deposited by Magnetron Sputtering, **H. CICEK**, I. EFEOGLU, Y. TOTIK, K.V. EZIRMIK, E. ARSLAN, Atatürk University, Turkey
3:10 pm	Invited talk continued.	**B1-2-6** Study on AlCrN Coatings Deposited by Modulated Pulsed Power Magnetron Sputtering for Lube Free Die Casting, **B. WANG**, G. BOURNE, S. MIDSON, A. KORENYI-BOTH, M. KAUFMAN, Colorado School of Mines, USA
3:30 pm	**A1-1-7** Study of Oxide Scale Formed in Thermal Barrier Coating System on CMSX-4, CM 247 LC and PW1483 Alloys, K. UNOCIC, **B. PINT**, ORNL, USA	**B1-2-7** Fabrication and Characterization of Nanolayered Single Element Nitride Coating: Case for TaN and HfN, **Y.H. YANG**, K.Y. LIU, Y.X. QIU, J.H. WU, F.B. WU, National United University, Taiwan
3:50 pm	**A1-1-8** Modelling the Influence of Alloying Elements on the Microstructrural Evolution in MCrAlY Coatings at High Temperatures, **A. CHYRKIN**, R. PILLAI, Forschungszentrum Jülich, Germany, W. SLOOF, Delft University of Technology, Netherlands, R. VAßEN, Forschungszentrum Jülich, Germany, U. GLATZEL, University of Bayreuth, Germany, W. QUADAKKERS, Forschungszentrum Jülich, Germany, T. GALIULLIN, Forschungszentrum Jülich GmbH, Germany	**B1-2-8** High Transparency AZO film Synthesis by Magnetron Sputtering with Dual Confined High Density Magnetic Field, **L. WEN**, Sungkyunkwan University, Korea, S.B. JIN, Sungkyunkwan Univerisity, Korea, M. KUMA, B. SAHU, J. HAN, Sungkyunkwan University, Korea
4:10 pm	**A1-1-9** Interdiffusion between MCrAlY Bond Coats and Ni-base Single-Crystal Superalloys, **P. TERBERGER**, R. VAßEN, Forschungszentrum Jülich, Germany	**B1-2-9 Invited** Bio-inspired Organic/Inorganic Multilayer Coatings Synthesized by RF Sputtering and Pulse Laser Deposition, **P.-Y. CHEN**, H.-M. YANG, T.-H. HSU, H.-K. CHANG, Y.-C. CHAN, National Tsing Hua University, Taiwan, J.W. LEE, Ming Chi University of Technology, Taiwan, J.G. DUH, National Tsing Hua University, Taiwan Invited talk continued.
4:30 pm	**A1-1-10** Long-term Tests of Resistance of Laser Clad and Thermal Sprayed Inconel 625 Coatings to Hot Gas Corrosion in a Complex Atmosphere Containing HCl, SO_2, and Ammonia, **B. IWANIAK**, Hi-Technology, Poland, D. PALUCH, A. IWANIAK, Silesian University of Technology, Poland	
4:50 pm	**A1-1-11** Synthesis of MCrAlYCcoatings via an Electrolytic Codeposition Process, J. WITMAN, B. BATES, **Y. ZHANG**, Tennessee Technological University, USA	**B1-2-11** The Effect of Substrate Pulsed Bias Voltage on Microstructure, Mechanical Properties and Coating-Substrate Adhesion of PVD Cr-Cu-N Nanocomposite Films, **X. LIU**, L. LIU, A. LEYLAND, A. MATTHEWS, The University of Sheffield, UK
5:10 pm		**B1-2-12** Reversing the Inverse Hardness-Toughness Trend using W/VC Multilayer Coatings, **K. SHI**, Shanghai Jiao Tong University, China, C. WANG, Northwestern Polytechnical University, China, C. GROSS, Y.W. CHUNG, Northwestern University, USA
	Exhibition Hall Opens Today **Grand Hall** **12:00-7:00 pm**	**Exhibition Reception** **Grand Hall** **5:30-7:00 pm**

Tuesday Afternoon, April 21, 2015

	Hard Coatings and Vapor Deposition Technology **Room: Golden West - Session B4-2** **Properties and Characterization of Hard Coatings and Surfaces** **Moderators: Uwe Beck**, BAM Berlin, Germany, **Chau-Chang Chou**, National Taiwan Ocean University, Taiwan, **Grzegorz Greczynski**, Linköping University, IFM, Sweden	**Fundamentals and Technology of Multifunctional Thin Films** **Room: Sunset - Session C2** **Novel Aspects in Thin Film Characterization and Data Modeling** **Moderators: Tino Hofmann**, University of Nebraska-Lincoln, USA, **Nikolas Podraza**, University of Toledo, USA
1:30 pm		**C2-1 Invited** Passive PT Symmetry in Organic Thin Films and Waveguides via Complex Index Modulation, **C. GIEBINK**, Penn State University, USA
1:50 pm	**B4-2-2 Invited** Thermal Effects Influencing Stability and Performance of Coatings in Automotive Applications, J. BECKER, Oerlikon Balzers Coating Germany GmbH, Germany, **A. GIES**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, S. HESSEL, Oerlikon Balzers Coating Germany GmbH, Germany, J. KARNER, Oerlikon Balzers Coating AG, Liechtenstein	Invited talk continued.
2:10 pm	Invited talk continued.	**C2-3** Electrochemical Reduction of Methylene Blue Immobilized on Highly Ordered 3-dimensional Nanostructured Surfaces Studied by in-situ EC, QCM-D and Generalized Spectroscopic Ellipsometry, A. ZAITOUNA, D. SEKORA, **T. HOFMANN**, E. SCHUBERT, M. SCHUBERT, R.Y. LAI, University of Nebraska-Lincoln, USA
2:30 pm	**B4-2-4** Hydrogen Permeation Behavior of Nitride Coatings and Surface-nitride Stainless Steel, **M. TAMURA**, The University of Electro-Communications, Japan	**C2-4** Copper Oxide Thin Films: Comparative Study of Spectroscopy Ellipsometry and Morphology for Gas Sensing Applications, A. BEJAOUI, City University of Hong Kong, China, A. LABIDI, Université de Carthage, Tunisia, J. GUERIN, K. AGUIR, Université Aix-Marseille, France, C.H. TO, **J.A. ZAPIEN**, City University of Hong Kong, China
2:50 pm	**B4-2-5** Influence of Target Composition and Bias Voltage on the Microstructure, Mechanical, Tribological and Thermal Properties of Arc Evaporated $Ti_{1-x}Al_xN$ Hard Coatings, **B. GROSSMANN**, N. SCHALK, Montanuniversität Leoben, Austria, C. CZETTL, M. POHLER, CERATIZIT Austria GmbH, Austria, C. MITTERER, Montanuniversität Leoben, Austria	**C2-5** Spectroscopic Ellipsometry Studies of n-i-p Hydrogenated Amorphous Silicon based Photovoltaic Devices, **L. KARKI GAUTAM**, M. JUNDA, H.F. HANEEF, R.W. COLLINS, N.J. PODRAZA, University of Toledo, USA
3:10 pm	**B4-2-6** Plasma-sprayed Coatings: Identification of Elasto-Plastic Properties using Macro-indentation and an Inverse Levenberg-Marquardt Method, **N. KIND**, B. BERTHEL, S. FOUVRY, LTDS - Ecole Centrale de Lyon, France, C. POUPON, O. JAUBERT, Airbus Group, France	**C2-6 Invited** Insights into the Physical Properties of Organic Based Thin Film Electronic Devices by Using Light-Bias, Modulation, and Transient Measurement Techniques, **D. GUNDLACH**, National Institute of Standards and Technology, USA
3:30 pm	**B4-2-7** Measuring Elastic Constants of TiZrN Thin Films by Combining $\cos^2\alpha \sin^2\psi$ XRD and Laser Curvature Methods : Effect of Film Compositions, **H.L. LIU**, G.P. YU, J.H. HUANG, National Tsing Hua University, Taiwan	Invited talk continued.
3:50 pm	**B4-2-8** Cutting Performance and Wear Behavior of AIP Deposited AlCrN Based Coating, **H. NII**, K. YAMAMOTO, M. ABE, Kobe Steel Ltd., Japan	**C2-8** X-RAY Scattering Methods for the Characterization of Layered Structures, **L. GRIEGER**, J. WOITOK, N. NORBERG, PANalytical B.V., Netherlands
4:10 pm	**B4-2-9** Mechanical and Tribological Properties of PVD Titanium-based Multilayer Coatings with Modulated Nitrogen-to-titanium Ratio, **C. IAMVASANT**, J. KAVANAGH, A. MATTHEWS, A. LEYLAND, University of Sheffield, UK	**C2-9** Application of Spectroscopic Ellipsometry Data Analysis with Finite-Difference Time-Domain Method on 1D Periodic Structures, **Y. FOO**, J.A. ZAPIEN, City University of Hong Kong, Hong Kong Special Administrative Region of China
4:30 pm		**C2-10** Structural, Optical and Electrical Characteristics of $SrTiO_3$ Thin Films Deposited by RF Magnetron Sputtering, **T. BAYRAK**, C. OZGIT-AKGUN, M. KUMAR, A. HAIDER, S.A. LEGHARI, A.K. OKYAY, N. BIYIKLI, E. GOLDENBERG, Bilkent University, Turkey
4:50 pm		**C2-11** Determination of Low Absorption Levels in Dielectric Films using the R&T Direct Absorption Method, R. VERNHES, **L. MARTINU**, Polytechnique Montreal, Canada
	Exhibition Hall Opens Today **Grand Hall** **12:00-7:00 pm**	**Exhibition Reception** **Grand Hall** **5:30-7:00 pm**

Tuesday Afternoon, April 21, 2015

	New Horizons in Coatings and Thin Films **Room: Royal Palm 1-3 - Session F6-2** **Thin Films and Coatings for Fuel Cells & Batteries** **Moderators: Chintalapalle Ramana**, University of Texas at El Paso, USA, **Sanjay Khare**, University of Toledo, USA	**Topical Symposia** **Room: Sunrise - Session TS3** **Energetic Materials and Micro-Structures for Nanomanufacturing** **Moderators: Carole Rossi**, LAAS-CNRS, France, **Ibrahim Gunduz**, Purdue University, USA
1:30 pm		
1:50 pm		**TS3-2 Invited** Reactive Gasless Nanocomposites: Structure – Reactivity Relationship, **A. MUKASYAN**, K. MANUKYAN, C. SHUCK, University of Notre Dame, USA, A. ROGACHEV, Institute of Structural Macrokinetics and Materials Science, Russia
2:10 pm	**F6-2-3 Invited** Designing Electrode Coatings to Enhance Life of Lithium-Ion Cells, **D. ABRAHAM**, Argonne National Laboratory, USA	Invited talk continued.
2:30 pm	Invited talk continued.	**TS3-4** On the Micro/Nano-intermetallic Structures Formation During Steel to Aluminum Weld-brazing Process, **G. FILLIARD**, Renault & ENSAM, France, S. MEZGHANI, M. EL MANSORI, ENSAM, France, J-C. SAINT-MARTIN, Renault, France
2:50 pm	**F6-2-5** The Shielding Effect of Fe_2O_3 Coated $LiCoO_2$ Particles in Radiation Environment, **Y.N. LEE**, Y.S. YOON, Gachon University, Republic of Korea	**TS3-5** Investigating the Compositional Limits of Self-Sustained Propagating Reactions in Sputter-Deposited Al_x/Pt_y Multilayers, **D.P. ADAMS**, R.V. REEVES, C.E. SOBCZAK, Sandia National Laboratories, USA
3:10 pm	**F6-2-6** Formation of Palladium Hydrides in Low Temperature Ar/H_2-Plasma, H. WULFF, Greifswald University, Institute of Physics, Germany, M. QUAAS, LITEC-LP, Germany, H. AHRENS, University of Greifswald, Institute of Physics, Germany, **M. FROEHLICH**, INP Greifswald, Germany, C.A. HELM, Greifswald University, Institute of Physics, Germany	**TS3-6** Growth of Atomically Smooth ZnO for Energetic ZnO/Al Nanolaminates, **Y. GAO**, C. NANAYAKKARA, J.F. VEYAN, University of Texas at Dallas, USA, J.M. DUCÉRÉ, A. ESTEVE, C. ROSSI, Université de Toulouse, France, Y. CHABAL, University of Texas at Dallas, USA
3:30 pm	**F6-2-7** Electrolytic Coating of Sn on Nickel Foam Support for Highly Reversible Anode for Li Ion Batteries, **M. TOKUR**, H. ALGUL, M. UYSAL, T. CETINKAYA, H. AKBULUT, Sakarya University, Turkey	**TS3-7** The Utilization of Metal/Metal Oxide Core-Shell Powders Optimizes the Dilution of Thermite Mixtures, **K. WOLL**, Karlsruhe Institute of Technology (KIT), Germany, J.D. GIBBINS, K. SLUSARSKI, A. KINSEY, T. WEIHS, Johns Hopkins University, USA
3:50 pm	**F6-2-8** Development of Composite Electrode using Oxide Solid Electrolyte for all Solid State Lithium Ion Battery by Spark Plasma Sintering, **S.P. WOO**, Yonsei University, Republic of Korea, Y.S. YOON, Gachon University, Republic of Korea	**TS3-8** Development of Free Standing, Flexible Tape Cast Energetic Material Films, **B. CLARK**, M. PANTOYA, Texas Tech University, USA, R. HEAPS, M. DANIELS, Idaho National Laboratory, USA
4:10 pm	**F6-2-9** Functionally Graded CuSi Thin Film Anode by Magnetron Sputtering for Lithium Ion Battery, D. POLAT, Istanbul Technical University, Turkey, O.L. ERYILMAZ, Argonne National Laboratory, **O. KELES**, Istanbul Technical University, Turkey, A. ERDEMIR, K. AMINE, Argonne National Laboratory, USA	**TS3-9** Role of Trimethylaluminum and Cu at the Interfaces of Al/CuO Nanolaminates, **C. NANAYAKKARA**, Y. LU, Y. GAO, J.F. VEYAN, University of Texas at Dallas, USA, J.M. DUCÉRÉ, A. ESTEVE, C. ROSSI, Université de Toulouse, France, Y. CHABAL, University of Texas at Dallas, USA
4:30 pm	**F6-2-10** Resistivity Analysis of BiTiO Thin Films Produced by Unbalanced Magnetron Sputtering, **G. OROZCO HERNANDEZ**, J.J. OLAYA-FLOREZ, E. RESTREPO PARRA, Universidad Nacional de Colombia, Colombia	**TS3-10** Flash and Laser Ignition of Composite Al Particles with Dielectric Inclusions, **I. GUNDUZ**, S. SON, Purdue University, USA
4:50 pm		**TS3-11** An Atomic Scale Insight into Interface Layers Formation in Al/CuO Nanolaminated Thin Films: a Kinetic Monte Carlo Simulation of Deposition Process, M. GUILTAT, A. ESTEVE, C. ROSSI, M. DJAFARI ROUHANI, LAAS-CNRS, France, Y. CHABAL, University of Texas at Dallas, USA, **A. HEMERYCK**, LAAS-CNRS, France
5:10 pm		**TS3-12** Ignition and Combustion Characteristics of Metastable Intermolecular Composites for Material Joining Purpose, H. SUI, J. RAWLINS, J. KANG, **J. WEN**, University of Waterloo, Canada, N. CHAUMEIX, CNRS, France
5:30 pm		**TS3-13** Effect of Nano-engineered Interfaces in Alumina-free Magnetron Sputtered AL-CUO Nanolaminates, S. PINON, LAAS-CNRS, France, N. CHARITH, Y. GAO, J.F. VEYAN, University of Texas at Dallas, USA, J.M. DUCÉRÉ, A. ESTEVE, A. HEMERYCK, LAAS-CNRS, France, Y. CHABAL, University of Texas at Dallas, USA, **C. ROSSI**, LAAS-CNRS, France
	Exhibition Hall Opens Today **Grand Hall** **12:00-7:00 pm**	**Exhibition Reception** **Grand Hall** **5:30-7:00 pm**

Wednesday Morning, April 22, 2015

	Coatings for Use at High Temperature **Room: Royal Palm 4-6 - Session A1-2** **Coatings to Resist High Temperature Oxidation, Corrosion and Fouling** **Moderators: Mark Weaver**, The University of Alabama, USA, **Vladislav Kolarik**, Fraunhofer Institute for Chemical Technology ICT, Germany, **Elizabeth Opila**, University of Virginia, USA	**Hard Coatings and Vapor Deposition Technology** **Room: California - Session B1-3** **PVD Coatings and Technologies** **Moderators: Alpana Ranade**, GE Aviation, USA, **Steffen Weißmantel**, University of Applied Sciences Mittweida, Germany, **Jyh-Wei Lee**, Ming Chi University of Technology, Taiwan
8:00 am	**A1-2-1 Invited** Influence of Substrate Composition on the High Temperature Oxidation Behavior of Various Coating Systems, **J. HAYNES**, K. UNOCIC, B. ARMSTRONG, B. PINT, Oak Ridge National Laboratory, USA	**B1-3-1** Construction and Characterisation of a Device to Coat Large Quantities of Granular Materials by Magnetron Sputtering, **A. EDER**, G. SCHMID, H. MAHR, C. EISENMENGER-SITTNER, Vienna University of Technology, Austria
8:20 am	Invited talk continued.	**B1-3-2** Characterization and Piezoelectric Properties of Reactively Sputtered ScAlN on Y-128° $LiNbO_3$, **P.H. CHEN**, J.L. HUANG, National Cheng Kung University, Taiwan, D.F. LII, Cheng Shiu University, Taiwan, S. WU, Tung-Fang Design University, Taiwan
8:40 am	**A1-2-3** Factors Affecting Performance of Thermal Barrier Coatings During Hot Corrosion Tests, **K.P. JONNALAGADDA**, IEI, Linköping University, Sweden, R. ERIKSSON, Siemens AG, Large Gas Turbines, Germany, R.L. PENG, IEI, Linköping University, Sweden, X. HAI, Siemens Industrial Trubomachinery AB, Sweden, S. JOHANSSON, IEI, Linköping University, Sweden	**B1-3-3** Effect of Mo-Cu Cathode Composition on Plasma Generation, Macroparticle Formation, and Thin Film Deposition in DC Vacuum Arc Synthesis, **I. ZHIRKOV**, Linköping University, IFM, Sweden, P. POLCIK, K. SZILARD, Plansee Composite Materials GmbH, Germany, J. ROSEN, Linköping University, IFM, Sweden
9:00 am	**A1-2-4** APS TBC Performance on Directionally-Solidified Superalloy Substrates with HVOF NiCoCrAlYHfSi Bond Coatings, **M. LANCE**, J. HAYNES, B. PINT, Oak Ridge National Laboratory, USA	**B1-3-4** Effects on Photosensitivity and Photocatalysis of TIO_2 Thin Film by Doping Fe and N, **C.C. WANG**, National Chung Hsing University, Taiwan, H.C. SHIH, Chinese Culture University, Taiwan
9:20 am	**A1-2-5** Effect of Substrate Surface Condition on the Performance of Cr Oxide Coatings on 316L Steel in Carburizing Atmospheres, L. MELO, Instituto Politécnico Nacional, México, C. HINOHOSA, O. SALAS, D. MELO-MÁXIMO, A. MURILLO, Itesm-Cem, México, R. TORRES, Pucpr, Brazil, VM. LÓPEZ, Instituto Politécnico Nacional, México, **J. OSEGUERA**, Itesm-Cem, México	**B1-3-5** Mixing Thermodynamics, Age-hardening Potential, and Electronic Structure of Ternary $M1_{1-x}M2_xB_2$ Alloys, Theory and Experiments, A.B. BJÖRN, I. ZHIRKOV, A. MOCKUTE, R.A. ARMIENTO, H. HÖGBERG, L. HULTMAN, **J. ROSEN**, Linköping University, IFM, Sweden
9:40 am	**A1-2-6** Chemical and Mechanical Evolution of Ceramic Abradable Turbine Coatings Subjected to Simulated High Hydrogen Content Combustion Environments, **M. BASU MAJUMDER**, R. CLAYTON, D. MUMM, University of California, Irvine, USA	**B1-3-6** A Study of the Properties of CrN-Ag Coatings for Orthopaedic Applications, **S. BANFIELD**, Wallwork Tecvac R&D, UK, J. HOUSDEN, Tecvac Ltd, UK, A. LEYLAND, A. MATTHEWS, The University of Sheffield, UK, J. SHELTON, D. DE VILLIERS, Queen Mary, University of London, UK, A. TRAYNOR, Corin, UK
10:00 am	**A1-2-7 Invited** Novel Coatings Against Metal Dusting by a Combination of a Catalytic and a Barrier Approach, **MC. GALETZ**, S. MADLOCH, M. SCHÜTZE, Dechema Forschungsinstitut, Germany	**B1-3-7** Intrinsic Structural, Mechanical and Corrosion Properties of Sputtered Al-Zr Thin Films, M. REFFASS, LRC CEA/UTBM LIS-HP, Site de Montbéliard, France, A. BILLARD, Lrc Cea-Irtes-Lermps-Utbm, France, E. CONFORTO, Université de La Rochelle, France, **F. SANCHETTE**, LRC CEA- UMR CNRS 6279-ICD LASMIS, France, J. CREUS, Université de La Rochelle, France
10:20 am	Invited talk continued.	**B1-3-8 Invited** A Novel Industrial PLD-System for the Production of Superhard Stressfree ta-C Films, **S. HEICKE**, Creavac GmbH, Germany
10:40 am	**A1-2-9** Extended Exposure of Protective Al Oxide Thin Films in Carburizing Atmospheres, E. URIBE, **O. SALAS**, D. MELO-MÁXIMO, Itesm-Cem, México, R. TORRES, Pucpr, Brazil, J. OSEGUERA, Itesm-Cem, México	Invited talk continued.
11:00 am	**A1-2-10** High Temperature Tribological Behaviour of Fluorinated Tetrahedral Amorphous Carbon (ta-C-F) Coatings against Aluminum Alloys, S. BHOWMICK, **M.Z.U. KHAN**, A. BANERJI, University of Windsor, Canada, M.J. LUKITSCH, General Motors R&D Center, Canada, A. ALPAS, University of Windsor, Canada	
	Exhibition Hall Closes Today **Grand Hall** **Open 10:00 am-2:00 pm**	

Wednesday Morning, April 22, 2015

	Hard Coatings and Vapor Deposition Technology **Room: Golden West - Session B4-3** **Properties and Characterization of Hard Coatings and Surfaces** **Moderators: Uwe Beck**, BAM Berlin, Germany, **Chau-Chang Chou**, National Taiwan Ocean University, Taiwan, **Grzegorz Greczynski**, Linköping University, IFM, Sweden	**Fundamentals and Technology of Multifunctional Thin Films** **Room: Royal Palm 1-3 - Session C5** **Thin Films for Active Devices** **Moderator: Vanya Darakchieva**, Linköping University, Sweden
8:00 am		**C5-1** Analysis of Dopant Distribution in Co-deposited Organic Thin Films by Scanning Transmission Electron Microscopy, **M. CREMONA**, Pontifícia Universidade Católica do Rio de Janeiro, Brazil, Y. PAREDES, Universidad de las Fuerzas Armadas, Ecuador, A. CAMPOS, C. ACHETE, National Institute of Metrology, Brazil
8:20 am	**B4-3-2** Flow Curves of Hard Coatings: Determination from Nanoindentation Experiments and Fiinite Element Methods as well as Validation with Micropillar Compression Tests, **I. KRAJINOVIĆ**, M. TKADLETZ, Materials Center Leoben Forschung GmbH, Austria, N. SCHALK, C. MITTERER, Montanuniversität Leoben, Austria, R. TICHY, W. ECKER, Materials Center Leoben Forschung GmbH, Austria, C. CZETTL, CERATIZIT Austria GmbH, Austria	**C5-2** Optical Waveguide and 1.54 μm Photoluminescence Properties in Rf Sputtered Er/Yb Co-doped ZnO Thin Films, **S.-L. LI**, Qufu Normal University, China
8:40 am	**B4-3-3** The Role of Hydrogen and Acetylene in the Synthesis of Nano-Crystalline Titanium Carbide Coatings, J.E. KLEMBERG-SAPIEHA, **E. BOUSSER**, Ecole Polytechnique, Canada	**C5-3 Invited** Nitride- and Oxide-nanorods for High-gain Photoconductors and Solar Fuels, **L.C. CHEN**, National Taiwan University, Taiwan
9:00 am	**B4-3-4** Numerical Evaluation of Scratch Tests on Borided Layers, A. MENESES-AMADOR, **L.F. JIMÉNEZ TINOCO**, C.D. RESÉNDIZ-CALDERÓN, Instituto Politecnico Nacional, Mexico, A. MOUFTIEZ, ICAM, France, G.A. RODRÍGUEZ-CASTRO, I.E. CAMPOS-SILVA, Instituto Politecnico Nacional, Mexico	Invited talk continued.
9:20 am	**B4-3-5 Invited** On the Mechanisms and Mitigation of Volcanic Ash Attack on YSZ Thermal Barrier Coatings, **R. WU**, National Institute for Materials Science, Japan	**C5-5** Highly Textured AlN Thin Films on Si by Reactive High Power Impulse Magnetron Sputtering, **T. KUBART**, T. TORNDAHL, M. MOREIRA, I. KATARDJIEV, Uppsala University, Angstrom Laboratory, Sweden
9:40 am	Invited talk continued.	**C5-6** Active Plasmonic Metamaterials Based on the Phase Transition of VO_2 Thin Films, **H. KIM**, N. CHARIPAR, E. BRECKENFELD, M. OSOFSKY, A. PIQUE, Naval Research Laboratory, USA
10:00 am	**B4-3-7** Evaluation of Carbon Steel Surface Treated by AIH-FPP using a Ti and Al Particles, **S.S. SAITO**, K.S. SUZUKI, J.K. KOMOTORI, Keio University, Japan	**C5-7 Invited** 1 ML InN/GaN Matrix Coherent-structure QW System and its Evolution to Short-period Superlattice (SPS)-based InGaN Ternary Alloys, **A. YOSHIKAWA**, K. KUSAKABE, Chiba University, Japan
10:20 am	**B4-3-8** Microstructural Design: A Successful Strategy for Fracture Toughness Enhancement of Hard Coatings Studied by Micro-Cantilever Testing, **R. DANIEL**, J. ZALESAK, M. MEINDLHUMER, Montanuniversität Leoben, Austria, B. SARTORY, Materials Center Leoben Forschung GmbH, Austria, C. MITTERER, J. KECKES, Montanuniversität Leoben, Austria	Invited talk continued.
10:40 am	**B4-3-9 Invited** Mechanical and Thermal Post-Treatment of Hard Coatings: a Review, **N. SCHALK**, Montanuniversität Leoben, Austria, M. TKADLETZ, Materials Center Leoben Forschung GmbH, Austria, C. CZETTL, CERATIZIT Austria GmbH, Austria, J. KECKES, C. MITTERER, Montanuniversität Leoben, Austria	
11:00 am	Invited talk continued.	
11:20 am	**B4-3-11** Elastic and Microstructural Properties of Hard Refractory Metal Thin Films Fabricated by DC Magnetron Sputtering, **T. YAKUPOV**, Z. UTEGULOV, Nazarbayev University, Kazakhstan, T. DEMIRKAN, T. KARABACAK, University of Arkansas at Little Rock, USA	
11:40 am	**B4-3-12** Study on Thermal Stability and Mechanical Properties of Nanocomposite Zr-W-B-N Thin Films, **P. DUBEY**, R. CHANDRA, Indian Institute of Technology Roorkee, India, V. ARYA, BHEL R&D, India, M. KUMAR, Indian Institute of Technology Roorkee, India	

Exhibition Hall Closes Today
Grand Hall
Open 10:00 am-2:00 pm
Enjoy Lunch in the Exhibition Hall 12:15 pm

Wednesday Morning, April 22, 2015

	Coatings for Biomedical and Healthcare Applications **Room: Sunrise - Session D3** **Coatings for Bio-corrosion, Tribo-corrosion and Bio-tribology** **Moderators: Jean Geringer**, Mines Saint-Etienne, France, **Tolou Shokuhfar**, Michigan Technological University, USA, **Yu Yan**, University of Science and Technology, China	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room: San Diego - Session E3-1** **Tribology of Coatings for Automotive and Aerospace Applications** **Moderators: Astrid Gies**, Oerlikon Balzers, Oerlikon Surface Solutions AG, **Gary L. Doll**, The University of Akron, USA, **Pantcho Stoyanov**, Kennametal Incorporated, USA
8:00 am	**D3-1** Mechanistic Study of Wear of Ceramic Heads by Metallic Stems in Modular Implants, N. MOHARRAMI, D. LANGTON, **S.J. BULL**, Newcastle University, UK	**E3-1-1** Wear Laws and Glaze Layer Formation on New Coatings for Aeronautics in a Ceramic Versus Metallic Alloy Contact under Fretting Wear at High Temperatures, **A. VIAT**, S. FOUVRY, LTDS - Ecole Centrale de Lyon, France, L. PIN, Herakles groupe Safran, France, M.-I. DE BARROS BOUCHET, LTDS - Ecole Centrale de Lyon, France, A. MOURET, Herakles groupe Safran, France
8:20 am	**D3-2** Chemistry, Structure, and Wear Properties of $Nb_{1-x}Ti_xN$ Thin Films, A. MARTINS, R. SANJINES, **A. KARIMI**, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland, A. SANTANA, N. GOEBBELS, IHI Ionbond AG, Switzerland, R. HEUBERGER, L. ESCHBACH, RMS Foundation, Switzerland	**E3-1-2** Friction Influenced by Surface Roughness and Sliding Speeds at Oil Lubricating Conditions, **G. WANG**, X. NIE, University of Windsor, Canada
8:40 am	**D3-3** Electrochemical Response of ZrCN-Ag-a(C,N) Coatings in Simulated Joint Electrolyte, **S. CALDERON**, University of Minho - University of Coimbra, Portugal, A. CAVALEIRO, University of Coimbra, Portugal, S. CARVALHO, University of Minho - University of Coimbra, Portugal **GRADUATE STUDENT FINALIST**	**E3-1-3 Invited** Exploring the Mechanical and Thermal Stability of Nanocrystalline Metal Composite and Alloy Thin Films, **N. ARGIBAY**, M. DUGGER, S. PRASAD, B. CLARK, J.E. MOGONYE, B. BOYCE, M. CHANDROSS, Sandia National Laboratories, USA
9:00 am	**D3-4** Femtolaser Micro-Texturing on CoCr Alloy for Heads of Hip Joints: Effect of Dimples' Parameters on Friction and Wear in MoM and MoP Contacts, N. CRISAN, **V. FRIDRICI**, P. KAPSA, LTDS - Ecole Centrale de Lyon, France	Invited talk continued.
9:20 am	**D3-5** Effects of Duty Cycle and Electrolyte Concentration on the Microstructure and Biocompatibility of Plasma Electrolytic Oxidation Treatment on Zirconium Metal, **S.F. LU**, Y.C. YANG, National Taipei University of Technology,Taiwan, J.W. LEE, Ming Chi University of Technology, Taiwan, B.S. LOU, Chang Gung University, Taiwan	**E3-1-5** An Endeavour to Examine Erosion Failure Mechanisms in TiCrN Coatings, **K. VALLETI**, R. KRISHNA, S. JOSHI, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), India
9:40 am	**D3-6 Invited** Experimental Techniques for Bio-tribocorrosion Studies and Available Models for Interpretation, **A. IGUAL MUÑOZ**, Universitat Poltècnica de València, Spain	**E3-1-6** PVD- Thin Films for Static Friction Applications, **O. ZIMMER**, V. WEIHNACHT, Fraunhofer IWS Dresden, Germany
10:00 am	Invited talk continued.	**E3-1-7** Tribological Properties of WC-CoCr Coatings Sprayed at Supersonic Velocities (HVOF) using Ultra Fine Grain Powders, **A. IWANIAK**, M. HETMANCZYK, Silesian University of Technology, Poland, R. SWADZBA, Institute for Ferrous Metallurgy, Poland, G. WIECLAW, K. ROSNER, Certech, Poland
10:20 am		**E3-1-8** Electrochemical Behavior of WC-Co Thermal Spray Coatings, Modified by Sub-microcrystalline Carbides, **H. MYALSKA**, J. MICHALSKA, K. SZYMAŃSKI, G. MOSKAL, Silesian University of Technology, Poland
10:40 am		**E3-1-9** Development of DLC Coating Architectures for Demanding Functional Surface Applications Through Nano- and Micro-mechanical Testing, **B. BEAKE**, M. DAVIES, Micro Materials Ltd, UK, T. LISKIEWICZ, University of Leeds, UK, V. VISHNYAKOV, Huddersfield University, UK
11:00 am		**E3-1-10** Effect of Humidity on Tribological Behaviour of Cd and Zn-Ni Coatings, **R. CHROMIK**, L. LEE, P. BEHERA, S. RAJAGOPALAN, McGill University, Canada
	Exhibition Hall Closes Today **Grand Hall** **Open 10:00 am-2:00 pm** **Enjoy Lunch in the Exhibition Hall 12:15 pm**	

Wednesday Morning, April 22, 2015

New Horizons in Coatings and Thin Films
Room: Sunset - Session F2-1

High Power Impulse Magnetron Sputtering (HiPIMS)
Moderators: Stephanos Konstantinidis, University of Mons, Belgium,
Tomas Kubart, Uppsala University, Angstrom Laboratory, Sweden

8:00 am	**F2-1-1 Invited** Controlled Growth of Transition-metal Nitride Alloy Films via Hybrid HIPIMS/Magnetron Co-sputtering using Synchronized Metal-ion Irradiation, **G. GRECZYNSKI**, J. LU, J. JENSEN, Linköping University, IFM, Sweden, I. PETROV, J. GREENE, University of Illinois at Urbana-Champaign, USA, W. KÖLKER, S. BOLZ, C. SCHIFFERS, O. LEMMER, CemeCon AG, Germany, L. HULTMAN, Linköping University, IFM, Sweden	
8:20 am	Invited talk continued.	
8:40 am	**F2-1-3** Characterization of Epitaxial V_2O_x Thin Films on C-plane Sapphire Grown Under Various O_2 Flows by High Power Impulse Magnetron Sputtering, **S. SHAYESTEHAMINZADEH**, E.B. THORSTEINSSON, U.B. ARNALDS, H.P. GISLASON, E.O. SVEINBJORNSSON, S. OLAFSSON, University of Iceland, Iceland	
9:00 am	**F2-1-4** Hydrogenated Si_yN_x Coatings Deposited by HiPIMS using NH_3, **S. SCHMIDT**, T. HÄNNINEN, C. GOYENOLA, L. HULTMAN, J. JENSEN, G. GUEORGUIEV, H. HÖGBERG, Linköping University, Sweden	
9:20 am	**F2-1-5** A Comparative Study of TiSiCN Nanocomposite Coatings Deposited using DCMS, PDCMS, PEMS, and DOMS Techniques, **J. LIN**, R. WEI, R. CASTILLO, K. COULTER, Southwest Research Institute, USA	
9:40 am	**F2-1-6** Microstructure and Mechanical Properties Evaluation of CrVN Coatings Fabricated by a Hybrid HIPIMS and RF Sputtering System, **P.W. CHANG**, J.W. LEE, Ming Chi University of Technology, Taiwan	
10:00 am	**F2-1-7** High Power Impulse Magnetron Sputter Deposited p-Type Titanium Monoxide on Flexible Substrate and Its Thin-film Transistor Performance, **W.C. PENG**, National Chung Hsing University, Taiwan, M.Y. CHEN, Y.H. CHEN, J.L. HE, Feng Chia University, Taiwan, D.S. WUU, National Chung Hsing University, Taiwan	
10:20 am	**F2-1-8** Circuits and Applications of Increasing of the HiPIMS Deposition Rate for an Industrial Scale, **G MARK**, M. MARK, MELEC GmbH, Germany, S. ULRICH, J. YE, S. SCHWEIGER, M. STÜBER, H. LEISTE, Karlsruhe Institute of Technology (KIT), Germany	
	Exhibition Hall Closes Today **Grand Hall** **Open 10:00 am-2:00 pm** **Enjoy Lunch in the Exhibition Hall 12:15 pm**	

Wednesday Afternoon, April 22, 2015

	Coatings for Use at High Temperature **Room: Royal Palm 4-6 - Session A1-3** **Coatings to Resist High Temperature Oxidation, Corrosion and Fouling** **Moderators: Mark Weaver**, The University of Alabama, USA, **Vladislav Kolarik**, Fraunhofer Institute for Chemical Technology ICT, Germany, **Elizabeth Opila**, University of Virginia, USA	**Hard Coatings and Vapor Deposition Technology** **Room: Golden West - Session B4-4** **Properties and Characterization of Hard Coatings and Surfaces** **Moderators: Uwe Beck**, BAM Berlin, Germany, **Chau-Chang Chou**, National Taiwan Ocean University, Taiwan, **Grzegorz Greczynski**, Linköping University, IFM, Sweden
1:30 pm		**B4-4-1** Compositional Driven Phase Evolution and Mechanical Properties of Mo-Cr-N Hard Coatings, **F. KLIMASHIN**, H. RIEDL, J. PAULITSCH, H. EUCHNER, P. MAYRHOFER, Vienna University of Technology, Austria
1:50 pm	**A1-3-2** New Interpretation of the Type II Hot Corrosion of Co- and Ni-base Alloys, **J. ALVARADO-OROZCO**, University of Pittsburgh, USA, J. GARCIA-HERRERA, CINVESTAV, Mexico, G. MEIER, F. PETTIT, University of Pittsburgh, USA	**B4-4-2** Erosion Behavior of AIP Deposited Thick $(Ti_{1-x}Al_x)N$ Coatings by High-velocity Particle Impact, **K. YAMAMOTO**, Kobe Steel Ltd., Japan, Y. IWAI, University of Fukui, Japan
2:10 pm	**A1-3-3** Oxidation-Induced Microstructural Changes in NI- and CO-based Alloys and Ferritic Steels at High Temperature, **L. GARCIA-FRESNILLO**, G. MEIER, University of Pittsburgh, USA, W. QUADAKKERS, Forschungszentrum Jülich, Germany	**B4-4-3** New Tantalum Nitride Interlayer for Diamond Deposition on Cutting Tools, **M. CHEVIOT**, M. GOUNE, A. POULON, CNRS, Univ. Bordeaux, ICMCB, France
2:30 pm	**A1-3-4** Design, Properties and Degradation Mechanisms of Pt-AL2O3 Multilayer Coating for High Temperature Solar Thermal Applications, **C. GREMION**, C. DUCROS, N. SCHEER, University of Grenoble Alpes, France, C. SEASSAL, E. DROUARD, Université de Lyon, Institut des Nanotechnologies de Lyon (INL), France	**B4-4-4** Effect of Composition on the Fracture Toughness of $Ti_{1-x}Zr_xN$ Hard Coatings, **J.H. HUANG**, Y.F. CHEN, G.P. YU, National Tsing Hua University, Taiwan
2:50 pm	**A1-3-5** Behavior of La-Sr-Mn Coatings for SOEC Interconnector Materials in Water Vapor and Pure Oxygen under High Pressure, **M. JUEZ LORENZO**, V. KOLARIK, V. KUCHENREUTHER-HUMMEL, Fraunhofer Institute for Chemical Technology ICT, Germany, D. SCHIMANKE, C. GEIPEL, sunfire GmbH, Germany	**B4-4-5 Invited** Stress Distribution by Residual Stress Depth Profiling in Wear Resistant Oxide and Nitride Coatings; the Effect on Process Conditions, Microstructure and Mechanical Properties, M. JOHANSSON-JÕESAAR, **J. ANDERSSON**, N. NORRBY, T. LARSSON, Seco Tools AB, Fagersta, Sweden Invited talk continued.
3:10 pm	**A1-3-6** Laser Deposition of NiCrAlY/ZrO_2–8wt%Y_2O_3 for TBC Applications, **V. TELEGINSKI**, D.C. CHAGAS, Aeronautical Institute of Technology, Brazil, A.C. OLIVEIRA, University Center of FEI, Brazil, S.A. PIANARO, State University of Ponta Grossa - UEPG, Brazil, G. VASCONCELOS, Aeronautical Institute of Technology, Brazil	
3:30 pm	**A1-3-7** Corrosion Resistance of $BI_XTI_YO_Z$ Coatings Deposited on TI6AL4V Alloys and its Dependence on the Sputtering Parameters Magnitude, **J.E. ALFONSO**, M. PINZON, Z. ROJAS, J.J. OLAYA-FLOREZ, Universidad Nacional de Colombia, Colombia, C. PINEDA-VARGAS, Cape Peninsula University of Technology, South Africa	**B4-4-7** Effective Method to Control Elemental Composition in Ternary and Quaternary Hard Coatings by Mosaic Steered Cathodic Arc deposition, **Y. YAMAZAKI**, G. KAMATH, G. GAL, H. RICHTER, Richter Precision Inc., USA, D.E. WOLFE, The Pennsylvania State University, USA
3:50 pm	**A1-3-8** Thermal Properties Of Europium Zirconate, Cerate And Hafnate, **M. STOPYRA**, G. MOSKAL, M. MIKUŚKIEWICZ, H. MYALSKA, D. NIEMIEC, A. JASIK, Silesian University of Technology, Poland	**B4-4-8** Applying Reflectance Spectroscopy for the Characterization of the Surfaces of Gray Iron Cast, **C. MELO PIRAQUIVE**, O.E. PIAMBA TULCAN, National University of Colombia, Colombia
4:10 pm	**A1-3-9** Synthesis of Hydroxide Thin Film on the Magnesium Alloys using Hydrothermal Method, **H. JEONG**, Y. YOO, Pohang Iron and Steel Company, Korea	**B4-4-9** The Effect of Humidity on the Friction and Wear Behaviour of Hydrogenated DLC, Non-hydrogenated DLC and Modified a-C:H:Si Coatings, **C. LIU**, The University of Sheffield, UK, H. ZHAO, A. NEVILLE, University of Leeds, UK, A. MATTHEWS, A. LEYLAND, The University of Sheffield, UK
4:30 pm	**A1-3-10** Mechanical Property and Oxidation Behavior of an a-CNx Deposited Tungsten Carbide with Various Silica-Alumina Hybrid Composite Interlayers Prepared by Sol-Gel Technique, C.-C. CHOU, J.-S. LIN, National Taiwan Ocean University, Taiwan, R. WU, National Institute for Materials Science, Japan, J.W. LEE, Ming Chi University of Technology, Taiwan, **M.-K. HSU**, National Taiwan Ocean University, Taiwan	
4:50 pm	**A1-3-11** The Creation of Thermal Stable Hydrogen-impermeable TiN-based Coatings on Zirconium Alloys, E. KASHKAROV, N. NIKITENKOV, YU. TYURIN, **V. KUDIIAROV**, National Research Tomsk Polytechnic University, Russian Federation	
	Exhibition Hall Closes Today **Grand Hall** **Open 10:00 am-2:00 pm**	**Awards Convocation 5:45 pm** **San Diego Room** **Honorary Lecturer: Dr. Péter B. Barna** **"Historical Perspective: 60 Years of Thin Film Research"** **Awards Reception will follow the Convocation at 7:30 pm Poolside**

Wednesday Afternoon, April 22, 2015

	Hard Coatings and Vapor Deposition Technology **Room: California - Session B7** **Computational Design and Experimental Development of Functional Thin Films** **Moderators: Ferenc Tasnadi**, Linköping University, Sweden, **Holger Euchner**, Vienna University of Technology, Austria	**Fundamentals and Technology of Multifunctional Thin Films** **Room: Royal Palm 1-3 - Session C1** **Recent Advances in Optical Thin Films and Nanomaterials** **Moderator: Ludvik Martinu**, Polytechnique Montreal, Canada
1:30 pm	**B7-1 Invited** Surface Adsorption Phenomena From First Principles: an Application to Protective Coatings, **D. HOLEC**, Montanuniversität Leoben, Austria, H. RIEDL, Vienna University of Technology, Austria, D. MUSIC, RWTH Aachen University, Germany, O. JANTSCHNER, Montanuniversität Leoben, Austria, J. PAULITSCH, Oerlikon Balzers Coating Austria GmbH, Austria, P. MAYRHOFER, Vienna University of Technology, Austria	**C1-1** Friction and Wear Properties of Ti:Ta-doped DLC Coatings, **I. EFEOGLU**, Y. TOTIK, K.V. EZIRMIK, E. ARSLAN, Atatürk University, Turkey, A. KELES, Ataturk University, Turkey, E.E. SUKUROGLU, Atatürk University, Turkey
1:50 pm	Invited talk continued.	**C1-2** Thin Films Composed of Gold Nanoclusters Dispersed in a Dielectric Matrix, **J. BORGES**, Czech Technical University in Prague, Czech Republic, T. KUBART, Uppsala University, Angstrom Laboratory, Sweden, M. VASILEVSKIY, University of Minho, Portugal, A. CAVALEIRO, SEG-CEMUC, University of Coimbra, Portugal, F. VAZ, University of Minho, Portugal, T. POLCAR, Czech Technical University in Prague, Czech Republic
2:10 pm	**B7-3** Surface Softening in Metal - Ceramic Sliding Contacts: An Experimental and Numerical Investigation, **P. STOYANOV**, Kennametal Incorporated, USA, P. ROMERO, Fraunhofer-Institute for Mechanics of Materials IWM, Germany, M. DIENWIEBEL, Fraunhofer Institute for Mechanics of Materials IWM and Karlsruhe Institute of Technology KIT, Germany, O. ABAD, R. GRALLA, INM – Leibniz-Institute for New Materials and Saarland University, Germany, M. MOSELER, Fraunhofer-Institute for Mechanics of Materials IWM, Germany, R. BENNEWITZ, INM – Leibniz-Institute for New Materials and Saarland University, Germany	**C1-3 Invited** Optical Filters and Coatings for Earth Observation from Space, **A. PIEGARI**, ENEA, Italy
2:30 pm	**B7-4** Impact of Al on Structure and Mechanical Properties of NbN and TaN, **P. MAYRHOFER**, Vienna University of Technology, Austria, D. HOLEC, Montanuniversität Leoben, Austria	Invited talk continued.
2:50 pm	**B7-5** Influence of Passivation Layer on the Performance of Gold Films under Thermal Treatment, **S.J. ZHOU**, T.M. SHAO, Tsinghua University, China	**C1-5** Energetic Deposition of Hafnium-based Oxides and Oxynitrides: Comparison of Cathodic Arc and HiPIMS, **B. MURDOCH**, RMIT University, Australia, R. GANESAN, D. MCKENZIE, M. BILEK, The University of Sydney, Australia, D. MCCULLOCH, J. PARTRIDGE, RMIT University, Australia
3:10 pm	**B7-6 Invited** Overcoming Growth Limitations by ab initio Guided Surface Engineering, **J. NEUGEBAUER**, L. LYMPERAKIS, Max-Planck-Institut für Eisenforschung, Germany	**C1-6** Smart Hybrid of Two Different Magnetron Sputtering Technologies to Enhance Electrical Properties of Highly Transparent Conductive Al-Doped ZnO Films with Well-Defined Single (0001) Orientation, **J. NOMOTO**, H. MAKINO, T. YAMAMOTO, Kochi University of Technology, Japan
3:30 pm	Invited talk continued.	**C1-7** Glass Ceramic Phosphor Thin Layer for LED Lighting Package, **J.H. LIAO**, Y.R. CHUNG, F.B. WU, National United University, Taiwan
3:50 pm	**B7-8** A 3D Kinetic Monte Carlo Model of TiN Growth Morphology, **G. ABADIAS**, F. NITA, C. MASTAIL, Université de Poitiers, Institut Pprime, France	**C1-8** Functionalization of SiC Substrates by a SOL-GEL Route in order to Optimize their Spectral Selectivity, **J. MOLLICONE**, P. LENORMAND, F. ANSART, CIRIMAT, France, B. ROUSSEAU, LTN, France
4:10 pm	**B7-9** Molecular Dynamics Simulations of TiN/TiN(001) Growth, D. EDSTROM, Linköping University, IFM,Sweden, D. SANGIOVANNI, **V. CHIRITA**, L. HULTMAN, Linköping University, IFM, Sweden, I. PETROV, J. GREENE, University of Illinois at Urbana-Champaign, USA	**C1-9** Adhesion and Failure Pattern of Optical Coatings on Polymers and Glass, **U. BECK**, S. HIELSCHER, BAM Berlin, Germany
4:30 pm	**B7-10** Computational Fluid Dynamics (CFD) Simulation of CVD Process for MT-Ti(C,N) Coating, **S.Q. WANG**, Y. DU, Central South University, China, X.M. CHEN, Zhuzhou Cemented Carbide Cutting Tools Co., Ltd., China, L. CHEN, Central South University and Zhuzhou Cemented Carbide Cutting Tools Co., Ltd., China, S.Q. WANG, Zhuzhou Cemented Carbide Cutting Tools Co., Ltd., China	**C1-10 Invited** Atomistic Driven Performance of TCO Films, **G. EXARHOS**, Pacific Northwest National Laboratory, USA
4:50 pm	**B7-11** Electronic and Bonding Analysis of Hardness in Pyrite-type Transition-metal Pernitrides, **S. KHARE**, Z. LIU, University of Toledo, USA, D. GALL, Rensselaer Polytechnic Institute, USA	Invited talk continued.
5:10 pm		**C1-12** Optical and Antibacterial Properties of Silver Nanoparticles Embedded on Transparent-dielectric Films, G. TAFUR, O. VARAS, D. VASQUEZ, C. BENNDORF, **A. TALLEDO**, Universidad Nacional de Ingenieria, Peru, D. ACOSTA, Universidad Nacional Autonoma de Mexico
	Exhibition Hall Closes Today **Grand Hall** **Open 10:00 am-2:00 pm**	**Awards Convocation 5:45 pm** **San Diego Room** **Honorary Lecturer: Dr. Péter B. Barna** **"Historical Perspective: 60 Years of Thin Film Research"** **Awards Reception will follow the Convocation at 7:30 pm Poolside**

Wednesday Afternoon, April 22, 2015

	Coatings for Biomedical and Healthcare Applications **Room: Sunrise - Session D1** **Anti-bacterial Coatings, Surface Functionalization, Surgical Instruments** **Moderators: Kerstin Thorwarth**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Argelia Almaguer-Flores**, Universidad Nacional Autonoma de Mexico, Mexico	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room: San Diego - Session E3-2** **Tribology of Coatings for Automotive and Aerospace Applications** **Moderators: Astrid Gies**, Oerlikon Balzers, Oerlikon Surface Solutions AG, **Gary L. Doll**, The University of Akron, USA, **Pantcho Stoyanov**, Kennametal Incorporated, USA
1:30 pm	**D1-1** Mechanical Properties, Biocompatibility and Antibacterial Behaviors of Tunable TaO_xN_y and TaO_xN_y-Ag Thin Films, J.H. HSIEH, **Y.H. LAI**, Ming Chi University of Technology, Taiwan, C. LEE, National Yang Ming University., Taiwan	**E3-2-1** Influence of the Physicochemical Structure of a SiC_x:H Interlayer on the Tribological Behavior of a-C:H Thin Films Grown on Steel by EC-PECVD, F. CEMIN, L. BIM, C. MENEZES, L. LEIDENS, M. MAIA DA COSTA, C. AGUZZOLI, F. ALVAREZ, **C. FIGUEROA**, Universidade de Caxias do Sul, Brazil
1:50 pm	**D1-2** PVD-grown Antimicrobial Thin Films on PVDF Substrates for Sensors Applications, **S.M. MARQUES**, University of Minho, Portugal, I. CARVALHO, Czech Technical University in Prague, Czech Republic, S. LANCEROS-MENDEZ, M. HENRIQUES, University of Minho, Portugal, T. POLCAR, Czech Technical University in Prague, Czech Republic, S. CARVALHO, University of Minho, Portugal	**E3-2-2** Development and Tribological Characterization of Ni-doped Vanadium Nitride Coatings, **G. RAMIREZ**, O.L. ERYILMAZ, Argonne National Laboratory, USA, R. MIRABAL, O. DEPABLOS-RIVERA, S.E. RODIL POSADA, Universidad Nacional Autónoma de México, México, Y. LIAO, A. ERDEMIR, Argonne National Laboratory, USA
2:10 pm	**D1-3 Invited** Anti-biofilm Strategies for Implanted Biomaterials, **J. JENNINGS**, University of Memphis, USA	**E3-2-3** Wear Resistant Zirconium Based Coatings, **J. BARRIGA**, IK4-TEKNIKER, Spain
2:30 pm	Invited talk continued.	**E3-2-4** Diamond-like Carbon for Sliding Components in Heavy Machinery Drive Train, **B. FENG**, H. YOON, W. TIAN, Caterpillar Inc., USA
2:50 pm	**D1-5** Silver Activation as a Trigger Element of the Silver Ionization for Antibacterial Activity in Multifunctional Coatings, **I. FERRERI**, S. CALDERON, M. HENRIQUES, S. CARVALHO, University of Minho, Portugal	**E3-2-5** Development of Low Friction and Wear Resistant Nanocomposite Coatings for Piston Rings, J. LIANG, **R. WEI**, D. BITISIS, P. LEE, Southwest Research Institute, USA
3:10 pm	**D1-6** Influence of Hybrid Current Modes During Plasma Electrolytic Oxidation of Magnesium: Possible Implications on Biodegradable Implant Applications, **S. NARAYANAN**, M.H. LEE, Chonbuk National University, Republic of Korea	**E3-2-6** Wear Mechanism of HIPIMS Mo-W Doped Carbon Coatings in Dry and Boundary Lubrication Conditions, **P. HOVSEPIAN**, P. MANDAL, A.P. EHIASARIAN, Sheffield Hallam University, UK
3:30 pm	**D1-7** Attachment and Proliferation of Neurons on Ultrananocrystalline Diamond Films with Different Surface Terminations, A. VOSS, H. WEI, M. GIESE, University of Kassel, Germany, G. CECCONE, Inst. for Health and Consumer Prot., European Comm. Joint Res. Ctr., Italy, M. STENGL, J.P. REITHMAIER, **C. POPOV**, University of Kassel, Germany	**E3-2-7** Lubrication of Steel and DLC Contacts by MoDTC-Containing Lubricant. Effect of Lubricant Degradation, **M. DE FEO**, M.-I. DE BARROS BOUCHET, C. MINFRAY, T. LE-MOGNE, B. VACHER, LTDS - Ecole Centrale de Lyon, France, L. YANG, F. MEUNIER, Oerlikon Sorevi, France, B. THIEBAUT, TOTAL Solaize Researcher Center, France, J.-M. MARTIN, LTDS - Ecole Centrale de Lyon, France
3:50 pm	**D1-8** Super-hydrophobic AISI 304 Stainless Steel Surface Prepared by Electrochemical Treatment and Fluorocarbon Coating for Orthodontic Application, **C.W. LIN**, Feng Chia University; Central Taiwan University of Science and Technology, Taiwan, C.M. CHOU, Taichung Veterans General Hospital; National Yang-Ming University, Taiwan, C.J. CHUNG, Central Taiwan University of Science and Technology, Taiwan, J.L. HE, Feng Chia University, Taiwan	**E3-2-8 Invited** Atomistic Simulations of Tribo-induced Phase Transitions in Coatings, **M. MOSELER**, Fraunhofer Institute for Mechanics of Materials IWM, Germany
4:10 pm	**D1-9** Triode Plasma Nitriding of Austenitic Manganese Steels, **X.T. TAO**, J. KAVANAGH, A. MATTHEWS, A. LEYLAND, University of Sheffield, UK	Invited talk continued.
4:30 pm	**D1-10** **Invited** Functional Nanomaterials for Healthcare Applications, **S. KALE**, Defence Institute of Advanced Technology, India	
4:50 pm	Invited talk continued.	
	Exhibition Hall Closes Today **Grand Hall** **Open 10:00 am-2:00 pm**	**Awards Convocation 5:45 pm** **San Diego Room** **Honorary Lecturer: Dr. Péter B. Barna** **"Historical Perspective: 60 Years of Thin Film Research"** **Awards Reception will follow the Convocation at 7:30 pm Poolside**

Wednesday Afternoon, April 22, 2015

New Horizons in Coatings and Thin Films
Room: Sunset - Session F2-2

High Power Impulse Magnetron Sputtering (HiPIMS)
Moderators: Stephanos Konstantinidis, University of Mons, Belgium,
Tomas Kubart, Uppsala University, Angstrom Laboratory, Sweden

1:30 pm	**F2-2-1 Invited** Laser Diagnostics of Particle Dynamics in HiPIMS Plasmas, **C. VITELARU**, National Institute for Optoelectronics-INOE 2000, Romania, D. LUNDIN, Université Paris-Sud 11, France, V. TIRON, Alexandru Ioan Cuza University, Romania, N. BRENNING, Royal Institute of Technology, Sweden, G. POPA, Alexandru Ioan Cuza University, Romania, T. MINEA, Université Paris-Sud 11, France
1:50 pm	Invited talk continued.
2:10 pm	**F2-2-3** Correlation Between Ion Transport and Plasma Oscillations in DC and HiPIMS Discharges, **A. HECIMOVIC**, V. SCHULZ-VON DER GATHEN, J. WINTER, A. VON KEUDELL, Ruhr-Universität Bochum, Germany
2:30 pm	**F2-2-4** Dynamics and Potential Structure of Ionization Zones in Magnetron Discharges, **M. PANJAN**, Y. YANG, J. LIU, A. ANDERS, Lawrence Berkeley National Laboratory, USA
2:50 pm	**F2-2-5** Plasma Characterization of Sputtered Aluminum with a MF Superimposed HIPIMS Process from Industrial Sized Rotatables, **H. GERDES**, R. BANDORF, BRÄUER, Fraunhofer Institute for Surface Engineering and Thin Films, Germany, M. MARK, MELEC GmbH, Germany, T. SCHÜTTE, PLASUS, Germany
3:10 pm	**F2-2-6** Controlled Reactive High-power Impulse Magnetron Sputtering - Experiments and Modelling, **J. VLCEK**, T. KOZAK, J. REZEK, University of West Bohemia, Czech Republic
3:30 pm	**F2-2-7** Analysis of Ion Energy Distribution at the Substrate during a HPPMS (Cr, Al)N Process using Energy Resolved Mass Spectrometer and Retarding Field Analyser, K. BOBZIN, T. BRÖGELMANN, R. BRUGNARA, **S. CHROMY**, RWTH Aachen University, Germany
3:50 pm	**F2-2-8** Electronic Properties Correlated to Vacancy Model in Nickel Oxide Thin Films Deposited by Reactive HiPIMS Discharge, **J. KERAUDY**, IRT Jules Verne, France, A. FERREC, A. GOULLET, P.Y. JOUAN, IMN Jean Rouxel, France
4:10 pm	**F2-2-9** Investigation of Plasma Conditions and Film Growth during Reactive HiPIMS of HfO_2 Films, **A. REED**, Air Force Research Laboratory and University of Dayton, USA, J. HU, University of Dayton Research Institute and Air Force Research Laboratory, USA, J. WOHLWEND, UTC; Air Force Research Laboratory, USA, R. NAGUY, Air Force Research Laboratory, USA, J. BULTMAN, University of Dayton Research Institute; Air Force Research Laboratory, USA, C. MURATORE, University of Dayton, USA, P. SHAMBERGER, Texas A & M University, USA, A.A. VOEVODIN, Air Force Research Laboratory, USA
4:30 pm	**F2-2-10** Magnetically Enhanced Hipims, **X. TIAN**, J. GAO, C. GONG, Harbin Institute of Technology, China, P.K. CHU, City University of Hong Kong, China
4:50 pm	**F2-2-11** Plasma Pretreatment of Tungsten Carbide and Steels by High Power Impulse Magnetron Sputtering, **A.P. EHIASARIAN**, A.W. ONISZCZUK, T.J. MORTON, Sheffield Hallam University, UK, C.F. CARLSTROM, M. AHLGREN, Sandvik Coromant, Sweden

2015 R.F. Bunshah Annual Award & Honorary Lecture
Prof. Emeritus Péter B. Barna

Abstract: Historical Perspective: 60 Years of Thin Film Research

The appearance of new families of incredibly powerful characterization tools, beginning in the middle of 20th century, opened the third, and perhaps the most exciting and stimulating, golden age of thin films (J.E. Greene, Appl. Phys. Rev. 1, 04302 (2014)). These tools made possible the ability to probe material's structure at the atomic scale in order to understand the correlations among growth, nanostructure, and properties. This provides, the fundamental knowledge necessary to synthesize desired artificial thin-film nanostructures for designed functionality, the basis for practical applications leading to new devices to enhance the quality of our lives. One of the most important and stimulating results initiating this golden age was the discovery and video-visualization, atom-by-atom, of the fundamental phenomena underlying self-organizing evolution of thin-film structures. Numerous laboratories designed and constructed experimental devices to deposit thin films in electron diffraction units or electron microscopes operated under well-controlled UHV conditions.

This lecture is a review of the primary results obtained during UHV transmission electron microscopy (TEM) experiments carried out in the Budapest laboratory. Details of primary and secondary nucleation phenomena during the early stages of film growth are determining factors for subsequent nanostructure formation pathways. UHV-TEM videos will be used to illustrate the vapour-liquid-solid phase transition, liquid-like and solid-phase coalescence of impinging crystallites, and the evolution of preferred crystal orientation. The role of the substrate template, dopants, and contamination on influencing nucleation, phase formation, and crystal growth will also be demonstrated. Finally, fundamental mechanisms controlling grain size, texture evolution, and nanocomposite formation (surface segregation of a 2D tissue phase encapsulating growing nanocrystals) will be illustrated using co-deposition of indium and carbon.

Applications deriving from these analytical and modelling results will be also briefly reviewed.

Exhibition Hall Closes Today
Grand Hall
Open 10:00 am-2:00 pm

Awards Convocation 5:45 pm
San Diego Room
Honorary Lecturer: Dr. Péter B. Barna
"Historical Perspective: 60 Years of Thin Film Research"
Awards Reception will follow the Convocation at 7:30 pm Poolside

Thursday Morning, April 23, 2015

	Coatings for Use at High Temperature **Room: Royal Palm 4-6 - Session A2-1** **Thermal and Environmental Barrier Coatings** **Moderators: Kang Lee**, Rolls Royce, USA, **Prabhakar Mohan**, Solar Turbines, USA, **Kinga Unocic**, ORNL, USA	**Coatings for Biomedical and Healthcare Applications** **Room: Sunrise - Session D2** **Surface Coatings, Micro/Nano Texturing, Nanotubes, Drug Delivery, Biodegradable Implants** **Moderators: Sankara Narayanan**, Chonbuk National University, Korea, **Yifeng Liao**, Argonne National Laboratory, USA
8:00 am	**A2-1-1** Elucidating the Mechanism of Bond Coat Cavitation under CMAS-infiltrated TBCs through Modeling and Experimentation, **K. WESSELS**, R.W. JACKSON, University of California, Santa Barbara, USA, D. KONITZER, GE Aviation, USA, M. BEGLEY, T. POLLOCK, C. LEVI, University of California, Santa Barbara, USA	**D2-1** Biofilm Formation on Stainless Steel Substrates Covered with TiO_2 Thin Films, V. GARCÍA-PÉREZ, J. AMEZCUA-GARCÍA, **A. ALMAGUER-FLORES**, S.E. RODIL POSADA, Universidad Nacional Autonoma de Mexico, Mexico
8:20 am	**A2-1-2 Invited** Pt Effect on MCrAlY Coatings for TBC System Applications, **A. ROUAIX-VANDE PUT**, M.C. LAFONT, L. LAFFONT, Université de Toulouse, Institut Carnot CIRIMAT, France, E. PÉRÉ, Université de Pau et des Pays de l'Adour, IPREM, France, D. OQUAB, Université de Toulouse, Institut Carnot CIRIMAT, France, A. RAFFAITIN, Turbomeca, France, D. MONCEAU, Université de Toulouse, Institut Carnot CIRIMAT, France	**D2-2 Invited** Science and Technology of Multifunctional Biocompatible Ultrananocrystalline Diamond (UNCD) Coatings and Applications to a New Generation of Medical Devices and Implants, **O. AUCIELLO**, University of Texas at Dallas, USA
8:40 am	Invited talk continued.	Invited talk continued.
9:00 am	**A2-1-4** Understanding the Presence of $CASO_4$ Within CMAS and its Effect on the Infiltration Behaviour in EB-PVD 7YSZ, **R. NARAPARAJU**, U. SCHULZ, P. MECHNICH, M.G. RODRIGUEZ, DLR Institute of Materials Research, Germany	**D2-4** In *Vitro* Biological Response of Rhin Hydroxyapatite-coating Titania Coatings on Ti-alloy Produced by Plasma Electrolytic Oxidation for Dental Implant Applications, **W.K. YEUNG**, The University of Sheffield, UK, I. SUHORUKOVA, D. SHTANSKY, E.A. LEVASHOV, National University of Science and Technology "MISIS", Russian Federation, I. ZHITNYAK, N. GLOUSHANKOVA, N.N. Blokhin Russian Cancer Research Center of RAMS, Russian Federation, A. MATTHEWS, A. YEROKHIN, The University of Sheffield, UK
9:20 am	**A2-1-5** Effect of Yttria Content on the Spallation Resistance of Plasma Sprayed YSZ in the Presence of Volcanic Ash, **C. TALTAVULL**, W. CLYNE, Cambridge University, UK	**D2-5** Anodizing of AZ31 Mg Alloy in Cerium Contained Ethanol Solution, **S.A. SALMAN**, Nagoya University, Japan; Al-Azhar University, Egypt
9:40 am	**A2-1-6** Calcium-Magnesium-Aluminosilicate (CMAS) Interactions with Ytterbium-Silicate Environmental Barrier Coatings, F. STOLZENBURG, Northwestern University, USA, K. LEE, Rolls Royce, USA, **K. FABER**, Northwestern University, USA	**D2-6** Antimicrobial Nanostructured Alloys for Tattoo Machines, **E.M. HUNT**, B. ALLEN, T. KELLY, West Texas A&M University, USA
10:00 am	**A2-1-7 Invited** Analysis of Ex-service Parts for the Development of TBC Lifetime Prediction Models, **G. WITZ**, D. RENUSCH, M. SCHAUDINN, B. BORDENET, H.-P. BOSSMANN, Alstom ltd., Switzerland	**D2-7** HiPIMS Titanium Coatings on PEEK for Medical Applications, **K. THORWARTH**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, G. THORWARTH, DePuy Synthes, Switzerland, P. BARKER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, C. VOISARD, M. KRAFT, DePuy Synthes, Switzerland, J. PATSCHEIDER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
10:20 am	Invited talk continued.	**D2-8 Invited** Wear Particles in Hip Replacements – Can We Make them Behave?, **R. POURZAL**, Rush University Medical Center, USA
10:40 am	**A2-1-9** Fracture Behavior and Lifetime Performance of Thermal Barrier Coatings in Thermally Graded Mechanical Fatigue Environments, **Z. LU**, S.W. MYOUNG, Y.G. JUNG, Changwon National University, Republic of Korea	Invited talk continued.
11:00 am	**A2-1-10** Analysis of Interfacial Crack Growth in Pre-cracked Ceramic Coating Systems under Biaxial Loading, **H. SAPARDANIS**, V. MAUREL, A. KÖSTER, V. GUIPONT, S. DUVINAGE, Ecole des Mines, France	**D2-10** The Influence of the MAO Coating on the Biocompatibility Properties for NiTi Alloy, **S. SUKUROGLU**, Gümüşhane University, Turkey, Y. TOTIK, E. ARSLAN, E.E. SUKUROGLU, I. EFEOGLU, Atatürk University, Turkey
11:20 am	**A2-1-11** Stability of Rare Earth Silicates in High-Temperature High-Velocity Water Vapor, **E. OPILA**, R. GOLDEN, C. PARKER, University of Virginia, USA	
11:40 am	**A2-1-12** Hybrid EBC/TBC Coatings for Si-Based Ceramics in Corrosive Environments, **S. DIXIT**, Plasma Technology Inc., USA, S. BASU, J. XU, V. SARIN, Boston University, USA	
12:00 pm	**A2-1-13** Fracture Mechanics Based Lifetime Assessment of Bi-Layer Thermal Barrier Coatings, **M. RUDOLPHI**, MC. GALETZ, M. SCHÜTZE, DECHEMA-Forschungsinstitut, Germany, M. FROMMHERZ, A. SCHOLZ, M. OECHSNER, IfW, Technische Universität Darmstadt, Germany, E. BAKAN, R. VAßEN, Research Centre Jülich, Germany, W. STAMM, Siemens Energy, Germany	
	2016 ICMCTF Planning Meeting **12:00-1:00 pm** **Golden West Room**	**Elsevier Authors FTS: Focused Topic Session** **"How to Get Your Paper Published"** **12:15-1:15 pm** **California Room**

Thursday Morning, April 23, 2015

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room: San Diego - Session E1-1** **Friction, Wear, Lubrication Effects, and Modeling** **Moderators: Michael Chandross**, Sandia National Laboratories, USA, **Giovanni Ramirez**, Argonne National Laboratory, USA	**New Horizons in Coatings and Thin Films** **Room: California - Session F4-1** **Functional Oxide and Oxynitride Coatings** **Moderators: Jürgen Ramm**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, **Michael Stüber**, Karlsruhe Institute of Technology (KIT), Germany
8:00 am	**E1-1-1 Invited** Friction Modification of Surfaces using Graphene and Graphene Composite Materials, **J. BATTEAS**, B. EWERS, J. SPEAR, Texas A&M University, USA	**F4-1-1** Surface Wettability Partitioning Between Chromium Oxide and Chromium Nitride Thin Films with Potential Industrial Wettability Gradient Applications, A. OGWU, University of the West of Scotland, UK, **J. KAVANAGH**, University of Sheffield, UK, S. URRAHMAN, M. OJE, University of the West of Scotland, UK, A. MATTHEWS, A. LEYLAND, University of Sheffield, UK
8:20 am	Invited talk continued.	**F4-1-2** Al-Cr-O Coatings Deposited by S3p™, **D. KURAPOV**, S. KRASSNITZER, T. BACHMANN, J. HAGMANN, W. KALSS, M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, H. RUDIGIER, Oerlikon Balzers Coating AG, Liechtenstein
8:40 am	**E1-1-3** Alignment and Wear Debris Effects Between Laser-patterned Steel Surfaces under Dry Sliding Conditions, **A. ROSENKRANZ**, L. REINERT, C. GACHOT, F. MÜCKLICH, Saarland University, Germany	**F4-1-3** Optical Characterization of Amorphous Tungsten Oxynitride Thin Films Made by DC Sputtering, **C. RAMANA**, M. VARGAS, E. RUBIO, A. TARANGO, University of Texas at El Paso, USA, B. FLETCHER, University of California, Santa Barbara, USA, N. MURPHY, Air Force Research Laboratory, USA
9:00 am	**E1-1-4** A Universal Model for the Load-Displacement Relation in an Elastic Coated Spherical Contact, R. GOLTSBERG, **I. ETSION**, Technion, Israel	**F4-1-4** Structure-Property Relations in Reactively Sputtered Molybdenum Oxide Thin Films, **J. PACHLHOFER**, C. JACHS, R. FRANZ, Montanuniversität Leoben, Austria, E. FRANZKE, J. WINKLER, PLANSEE SE, Austria, C. MITTERER, Montanuniversität Leoben, Austria
9:20 am	**E1-1-5** Modeling the Effect of Substrate on Load Bearing Capacity of Thin Hard Coatings, C.T. WANG, Nanjing University of Science & Technology, China, **T.J. HAKALA**, A. LAUKKANEN, H. RONKAINEN, K. HOLMBERG, VTT Technical Research Centre of Finland, Finland, N. GAO, R. WOOD, T. LANGDON, University of Southampton, UK	**F4-1-5 Invited** Phase Stability of Transition Metal Aluminium Oxynitride Coatings, **M. TO BABEN**, K.P. SHAHA, M. HANS, P.K. GOKULDOSS, Y.T. CHEN, J.M. SCHNEIDER, RWTH Aachen University, Germany
9:40 am	**E1-1-6** Experimental Study of Coatings and Interfaces in Dry Cutting of Natural Fiber Reinforced Plastics, **F. CHEGDANI**, S. MEZGHANI, A. MKADDEM, M. EL MANSORI, Arts et Métiers ParisTech, MSMP Laboratory, France	Invited talk continued.
10:00 am	**E1-1-7 Invited** Back from Space: Results from the Materials on the International Space Station Experiments (MISSE) Tribometers, **BA. KRICK**, Lehigh University, USA, WG. SAWYER, University of Florida, USA	**F4-1-7** Formation of Duplex Oxide Layers on the Ti-13Nb-13Zr Alloy, **A. OSSOWSKA**, A. ZIELINSKI, Gdansk University of Technology, Poland, D. SCHARNWEBER, R. BEUTNER, Technische Universität Dresden, Germany
10:20 am	Invited talk continued.	**F4-1-8** Hydrophobicity of Thin Films of Compounds of Low-Electronegativity Metals, **S. ZENKIN**, S. KOS, J. MUSIL, University of West Bohemia, Czech Republic
10:40 am	**E1-1-9** Friction and Lubrication Contribution of Microscale Surface Roughness to Gear Contact Noise, **S. JOLIVET**, S. MEZGHANI, J. ISSELIN, A. GIRAUDEAU, M. EL MANSORI, Arts et Métiers ParisTech, MSMP, France, H. ZAHOUANI, LTDS - Ecole Centrale de Lyon, France	
11:00 am	**E1-1-10** Experimental Investigation on Lubrication Effect of Liquid Nitrogen Under Sliding Wear Conditions, S. JOSYULA, R. GUNDA, **S. NARALA**, BITS-Pilani, Hyderabad Campus, India	
11:20 am	**E1-1-11** Micro-Abrasive Wear Resistance of CoB/Co_2B Coatings Formed in CoCrMo Alloy, G.A. RODRÍGUEZ-CASTRO, **C.D. RESÉNDIZ-CALDERÓN**, L.F. JIMÉNEZ-TINOCO, A. MENESES-AMADOR, E.A. GALLARDO-HERNÁNDEZ, I.E. CAMPOS-SILVA, Instituto Politecnico Nacional, Mexico	
	2016 ICMCTF Planning Meeting **12:00-1:00 pm** **Golden West Room**	**Elsevier Authors FTS: Focused Topic Session** **"How to Get Your Paper Published"** **12:15-1:15 pm** **California Room**

Thursday Morning, April 23, 2015

	Applications, Manufacturing, and Equipment Room: Golden West - Session G2-1 **Advances in Deposition Eqiuipment and Processes** **Moderators: Mats Ahlgren**, Sandvik Coromant, Sweden, **Ladislav Bardos**, Uppsala University, Sweden	Applications, Manufacturing, and Equipment Room: Sunset - Session G3 **Coatings Pre-/Post Treatments** **Moderators: Tetsuya Takahashi**, KCS Europe GmbH, Germany, **Yin-Yu Chang**, National Formosa University, Taiwan
8:00 am	**G2-1-1** An Overview of Available PVD and PACVD Technologies for Specific Tool and Tribological Applications, M. EERDEN, G. NEGREA, I. KOLEV, R. JACOBS, G. FRANSEN, **D. DOERWALD**, R. TIETEMA, IHI Hauzer Techno Coating B.V., Netherlands	**G3-1** Duplex Electron Beam Surface Treatment and PVDHard Coating - the Key for Wear-resistant Cast Irons and Al Alloys, **R. ZENKER**, A. BUCHWALDER, A. JUNG, E. ZAULIG, TU Bergakademie Freiberg, Germany
8:20 am	**G2-1-2** HiPIMS Equipment for Dedicated Coatings for Indexable Inserts, **C. SCHIFFERS**, T. LEYENDECKER, O. LEMMER, W. KÖLKER, CemeCon AG, Germany	**G3-2 Invited** Pre-treatments and Post-treatments of Hard Coatings for Better Performance, **S.B. ABUSUILIK**, J. NISHIDA, Hitachi Metals, Ltd., Japan
8:40 am	**G2-1-3 Invited** Advanced Coatings for Aerospace and Defense Applications, **K.O. LEGG**, Corrdesa LLC, USA	Invited talk continued.
9:00 am	Invited talk continued.	**G3-4** Effect of Surface Roughness on Galling Behaviour of Steel on Hard Coatings, **T. KLÜNSNER**, F. ZIELBAUER, S. MARSONER, Materials Center Leoben Forschung GmbH, Austria, M. DELLER, Fritz Schiess AG, Switzerland, M. MORSTEIN, PLATIT AG Advanced Coating Systems, Switzerland
9:20 am	**G2-1-5** Development of Rod Type Carbon Arc Source and Application for DLC Coating, S. HIROTA, H. FUJII, J. MUNEMASA, S. TANIFUJI, **K. AKARI**, Kobe Steel Ltd., Japan	**G3-5** Enhancement of the Gas Barrier Property of Polypropylene by γ-APS Coating after Plasma Treatment, **K. TSUJI**, Keio University, Japan, A. UEDONO, University of Tsukuba, Japan, A. HOTTA, Keio University, Japan
9:40 am	**G2-1-6** Hollow Cathode Activated Magnetron, **H. BARÁNKOVÁ**, L. BARDOS, Uppsala University, Sweden, M. BERNICK, R. NEWCOMB, Angstrom Sciences, Inc., USA	**G3-6** Dry-blasting of CVD α-Al_2O_3 Hard Coatings: Influence of Blasting Media Size, Hardness and Coating Texture on the Stress-depth Gradients Investigated by X-ray Nanodiffraction, **M. TKADLETZ**, Materials Center Leoben Forschung GmbH, Austria, N. SCHALK, J. KECKES, Montanuniversität Leoben, Austria, I. KRAJINOVIĆ, Materials Center Leoben Forschung GmbH, Austria, C. CZETTL, CERATIZIT Austria GmbH, Austria, C. MITTERER, Montanuniversität Leoben, Austria
10:00 am	**G2-1-7** Recent Developments of Hard Coatings Based on the Eifeler-Vacotec Alpha400P and Alpha900P PVD Coating Systems, **F. NAHIF**, M. SCHENKEL, J. BLAZEK, M. LARTZ, R. SCHEIBE, E. VOSS, Eifeler-Vacotec GmbH, Germany	**G3-7** Study of the Corrosion Behavior by the EIS Technique over the Surface of Borided and Non-borided AISI 316L Steels Immersed in a Simulated Body Fluid, **I. MEJIA-CABALLERO**, Instituto Politecnico Nacional, Mexico, M. PALOMAR-PARDAVE, Universidad Autonoma Metropolitana, Azcapotzalco, Mexico, J. MARTÍNEZ-TRINIDAD, Instituto Politecnico Nacional, Mexico, M. ROMERO-ROMO, Universidad Autonoma Metropolitana, Azcapotzalco, Mexico, R. PEREZ PASTEN-BORJA, Instituto Politecnico Nacional, ENCB, Mexico, C. LOPEZ-GARCIA, I.E. CAMPOS-SILVA, Instituto Politecnico Nacional, Mexico
	2016 ICMCTF Planning Meeting **12:00-1:00 pm** **Golden West Room**	**Elsevier Authors FTS: Focused Topic Session** **"How to Get Your Paper Published"** **12:15-1:15 pm** **California Room**

Thursday Afternoon, April 23, 2015

	Coatings for Use at High Temperature **Room: Royal Palm 4-6 - Session A2-2**	**Hard Coatings and Vapor Deposition Technology** **Room: Sunrise - Session B5-1**
	Thermal and Environmental Barrier Coatings **Moderators: Kang Lee**, Rolls Royce, USA, **Prabhakar Mohan**, Solar Turbines, USA, **Kinga Unocic**, ORNL, USA	**Hard and Multifunctional Nano-Structured Coatings** **Moderators: Jiri Houska**, University of West Bohemia, NTIS, Czech Republic, **Robert Franz**, Montanuniversität Leoben, Austria
1:30 pm	**A2-2-1 Invited** Damage Mechanisms in an EBPVD TBC Coated System Under Combustion Environment Testing Conditions, J. CORMIER, **F. MAUGET**, F. HAMON, J. MENDEZ, ISAE-ENSMA & Institut Pprime, UPR CNRS 3346, France	**B5-1-1** Structure, Mechanical and Thermal Properties of TiAlN/AlTiN Multilayer Coatings, **Y. DU**, Central South University, China, L. CHEN, Central South Univ. and Zhuzhou Cemented Carbide Cutting Tools Co., LTD, China, Y. XU, Central South University, China, F. PEI, Central South Univ. and Zhuzhou Cemented Carbide Cutting Tools Co., LTD, China
1:50 pm	Invited talk continued.	**B5-1-2** Basis Properties and Industrial Applications of Al_xTi_yN Hard Coatings with Two Third at% of Al and One Third at% Ti by Cathodic Vacuum Arc Evaporation, **J. VETTER**, Oerlikon Metaplas GmbH, Germany, J. ANDERSSON, J. SJÖLÉN, Seco Tools AB, Sweden, J. MÜLLER, Oerlikon Metaplas GmbH, Germany, L. KARLSSON, Seco Tools AB, Sweden
2:10 pm	**A2-2-3** Stability of Modified YPSZ Thermal Barrier Coatings under Thermal Cycling, V. KUCHENREUTHER-HUMMEL, **V. KOLARIK**, M. JUEZ LORENZO, Fraunhofer Institute for Chemical Technology ICT, Germany, W. STAMM, Siemens Power Generation, Germany	**B5-1-3** Effect of Nitrogen Vacancies on the Thermal Stability and Hardness of $(Ti_{0.5}Al_{0.5})N_y$ Coatings, **I. SCHRAMM**, Linköping University, Sweden, M. JOHANSSON-JÖESAAR, SECO Tools AB, Sweden, F. MÜCKLICH, Saarland University, Germany, M. ODÉN, Linköping University, Sweden
2:30 pm	**A2-2-4 Invited** Improved Performance Thermal Barrier Coatings Using The Solution Precursor Plasma Spray Process, **M. GELL**, E. JORDAN, J. ROTH, C. JIANG, R. KUMAR, University of Connecticut, USA, B. NAIR, J. WANG, HiFunda LLC, USA	**B5-1-4** Interrelationships Between Mechanical Properties and Resistance to Cracking of Magnetron Sputtered (Ti, Al, V) N_x Nitride Films, **J. PROCHAZKA**, R. CERSTVY, J. MUSIL, University of West Bohemia, NTIS, Czech Republic
2:50 pm	Invited talk continued.	**B5-1-5 Invited** Controlling Mechanical and Optical Properties by Alloying: Ternary and Quaternary Oxynitride Coatings, **E. LEWIN**, Uppsala University, Sweden
3:10 pm	**A2-2-6** Microstructural Change of YSZ Thermal Barrier Coatings Based on the Substrate Rotation and Heat Treatment by EBPVD, **Y.S. OH**, C.Y. PARK, Y.S. HAN, S.W. KIM, S.M. LEE, H.T. KIM, Korea Institute of Ceramic Engineering & Technology, Republic of Korea, B.K. JANG, National Institite of Materials Science, Japan, D.S. LIM, Korea University, Republic of Korea	Invited talk continued.
3:30 pm	**A2-2-7** Phase Relations in the $TaO_{2.5}$-$YO_{1.5}$-ZrO_2 System and Implications for Thermal Barrier Coatings, **C. MACAULEY**, J. VAN SLUYTMAN, A. FERNANDEZ, C. LEVI, University of California, Santa Barbara, USA	**B5-1-7** Phase Transitions of Metastable AlN Embedded in Nanoscaled TiN/(Ti,Al)N/AlN Multilayer Coatings, **U. RATAYSKI**, D. CHEMLIK, C. WÜSTEFELD, F. HANZIG, M. MOTYLENKO, Institute of Materials Science, TU Bergakademie Freiberg, Germany, M. ŠÍMA, SHM Ltd., Czech Republic, D. RAFAJA, Institute of Materials Science, TU Bergakademie Freiberg, Germany
3:50 pm	**A2-2-8 Invited** Synthesis and Related Properties of Low k TBCs with Hollow Alumina Microspheres, **F. PEDRAZA**, B. FERNANDEZ, B. BOUCHAUD, Université de La Rochelle, France, R. PODOR, Institut de Chimie Séparative de Marcoule, France	**B5-1-8** Mechanical Properties of ZnO/Al2O3 Nanolaminates Deposited by ALD, **T. HOMOLA**, V. BURŠÍKOVÁ, Masaryk University, Czech Republic, P. MAYDANNIK, T. IVANOVA, Lappeenranta University of Technology, Finland, J.M. LACKNER, JOANNEUM RESEARCH Forschungsgesellschaft mbH, Austria
4:10 pm	Invited talk continued.	
4:30 pm	**A2-2-10** Phase Stable $Y/YbO_{1.5}$-$TaO_{2.5}$-ZrO_2 EB-PVD Thermal Barrier Coatings, **S. HEINZE**, University of California, Santa Barbara, USA, V. TOLPYGO, Honeywell Aerospace, USA, C. LEVI, University of California, Santa Barbara, USA	
4:50 pm	**A2-2-11** EB-PVD TBCs Based on the ZrO_2-Yb_2O_3-Ta_2O_5 System, **J. VAN SLUYTMAN**, S. HEINZE, University of California, Santa Barbara, USA, V. TOLPYGO, Honeywell Aerospace, USA, C. LEVI, University of California, Santa Barbara, USA	

Poster Session
5:00-7:00 pm
Grand Hall
Reception begins at 6:00 pm

Thursday Afternoon, April 23, 2015

	Hard Coatings and Vapor Deposition Technology **Room: Royal Palm 1-3 - Session B6-1** **Coating Design and Architectures** **Moderators: Rostislav Daniel**, Montanuniversität Leoben, Austria, **Sven Ulrich**, Karlsruhe Institute of Technology (KIT), Germany	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room: San Diego - Session E1-2** **Friction, Wear, Lubrication Effects, and Modeling** **Moderators: Michael Chandross**, Sandia National Laboratories, USA, **Giovanni Ramirez**, Argonne National Laboratory, USA
1:30 pm	**B6-1-1 Invited** Advanced Coating Designs for Hybrid Deposition Processes, **BRÄUER**, J. BRAND, A. DIETZ, M. KEUNECKE, P. KLAGES, M. THOMAS, M. VERGÖHL, W. VIÖL, Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany	**E1-2-1** Textured Surface with Low Friction using CO_2 Laser Beam, **L. VIEIRA**, Universidade do Vale do Paraíba, Brazil, G. VASCONCELOS, Aeronautical Institute of Technology, Brazil, P. GONCALVES, Universidade do Vale do Paraíba, Brazil
1:50 pm	Invited talk continued.	**E1-2-2** The Role of Growth Defects on the Run-in Period in a Tribological Contact, **A. DRNOVŠEK**, P. PANJAN, M. PANJAN, S. PASKVALE, M. ČEKADA, Jožef Stefan Institute, Slovenia
2:10 pm	**B6-1-3** Structure and Mechanical Properties of TiAlN/ZrN Multilayer Coatings by Combining Experimental Investigation and First-principles Calculations, **Y. XU**, Central South University, China, K. CHANG, RWTH Aachen University, Germany, L. CHEN, F. PEI, Central South University and Zhuzhou Cemented Carbide Cutting Tools Co., LTD, China, Y. DU, Central South University, China	**E1-2-3 Invited** Tribology in the Space Environment, **J.R. LINCE**, The Aerospace Corporation, USA
2:30 pm	**B6-1-4** Effect of Duplex Treatment and Film Architecture on the Mechanical Properties of ZrN-TiN Multilayer Coatings, J.E. KLEMBERG-SAPIEHA, Ecole Polytechnique, Canada, **A. RAVEH**, Rotem Industries, Israel	Invited talk continued.
2:50 pm	**B6-1-5** Thermo-mechanically Optimized Multilayer Thin Films, **M. BARTOSIK**, M. TODT, H. RIEDL, C.M. KOLLER, Vienna University of Technology, Austria, R. RACHBAUER, Oerlikon Balzers Coating AG, Liechtenstein, H. BÖHM, P. MAYRHOFER, Vienna University of Technology, Austria	**E1-2-5** Reconstruction Mechanisms of Tantalum Oxide Coatings with Low Concentrations of Silver for High Temperature Tribological Applications, **S. AOUADI**, D. STONE, J. GU, University of North Texas, USA, H. GAO, University of California Merced, USA, C. CHANTHARANGSI, C. PAKSUNCHAI, University Technology Thonburi, Thailand, A. MARTINI, University of California Merced, USA
3:10 pm	**B6-1-6 Invited** Customized Coating Design for Cutting Tool Applications, **M. ARNDT**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	**E1-2-6** Comparison of the Tribological Measurements of Stainless Steel 410 With/Without Various Magnetron Sputtering Coatings (NbN, NbSiN, TaSiN) by Pin-on-Disk Test in Vacuum, Argon and Atmospheric Pressure, E. GARCÍA, Universidad Nacional Autónoma de México, México, M. FIGUEROA, Instituto Politécnico Nacional de México, México, **S. MUHL**, S.E. RODIL POSADA, Universidad Nacional Autónoma de México, México, E. CAMPS, Instituto Nacional de Investigaciones Nucleares, México, México, G. RAMIREZ, Argonne National Laboratory, USA
3:30 pm	Invited talk continued.	**E1-2-7 Invited** Toughness Enhancement of Nanostructured Hard Coatings: Design Strategies and Toughness Measurement Techniques, **Y.W. CHUNG**, Northwestern University, USA
3:50 pm		Invited talk continued.
4:10 pm		**E1-2-9** Study of Dry Sliding Wear Behaviour of TiO_2-30wt% Inconel718 Coated on Copper, R. SURESH KUMAR, BMSCE, Bangalore, India, C.S. RAMESH, PESIT, Bangalore, India, B.K. PAVAN KUMAR, BITM, Ballari, India, G. DILIP MARUTHI, R. RASHMI, **R.V. RAM**, BMSCE, Bangalore, India
4:30 pm		**E1-2-10** MWCNT and Sliding Speed Relationship on the Wear Mechanisms of the Pulse Electro Co-deposited Ni-MWCNT Nanocomposite Coatings, **G HATIPOGLU**, M. KARTAL, M. UYSAL, T. CETINKAYA, H. AKBULUT, Sakarya University, Turkey
4:50 pm		**E1-2-11** The Influence of Cr/Al Ratio on Tribological Properties of Nanocomposite (Cr, Al)SiN Coatings under High Temperature, **C.C. CHANG**, H.W. CHEN, National Tsing Hua University, Taiwan, J.W. LEE, Ming Chi University of Technology, Taiwan, J.G. DUH, National Tsing Hua University, Taiwan

Poster Session
5:00-7:00 pm
Grand Hall
Reception begins at 6:00 pm

Thursday Afternoon, April 23, 2015

	New Horizons in Coatings and Thin Films **Room: California - Session F4-2**	**Applications, Manufacturing, and Equipment** **Room: Golden West - Session G2-2**
	Functional Oxide and Oxynitride Coatings **Moderators: Jürgen Ramm**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, **Michael Stüber**, Karlsruhe Institute of Technology (KIT), Germany	**Advances in Deposition Eqiuipment and Processes** **Moderators: Mats Ahlgren**, Sandvik Coromant, Sweden, **Ladislav Bardos**, Uppsala University, Sweden
1:30 pm		**G2-2-1 Invited** Today's Expectations on CVD Equipment for Tooling Applications, **H. HOLZSCHUH**, Sucotec AG, Switzerland
1:50 pm		Invited talk continued.
2:10 pm	**F4-2-3 Invited** From Nitride to Oxide – Deposition of High-temperature Wear Resistant Coatings by PVD, **M. MORSTEIN**, PLATIT AG Advanced Coating Systems, Switzerland	**G2-2-3** Novel Low Pressure Plasma Curtain for Inline Etching/Cleaning, and Coating by PECVD, **D. CHRYSOSTOMOU**, PVA TePla America, USA
2:30 pm	Invited talk continued.	**G2-2-4** Ultra Short Pulsed Laser Deposition Technology For Industrial Applications, **J. LIIMATAINEN**, V. KEKKONEN, J. KAISTO, J. PIIRTO, A. ZOLOTUKHIN, Picodeon Oy Ltd, Finland
2:50 pm	**F4-2-5** Incorporation and Bonding of Si in Si-doped Arc-deposited $(Al,Cr)_2O_3$, **L. LANDÄLV**, Linköping University and Sandvik Coromant AB, Sweden, E. GÖTHELID, M. AHLGREN, Sandvik Coromant, Sweden, G. GRECZYNSKI, J. JENSEN, J. LU, L. HULTMAN, B. ALLING, P. EKLUND, Linköping University, IFM, Sweden	**G2-2-5** Circular Ion Sources for Plasma Enhanced Atomic Layer Deposition Applications, **F. PAPA**, V. BELLIDO-GONZALEZ, D. MONAGHAN, Gencoa Ltd., USA, H. LI, Gencoa Ltd., UK
3:10 pm	**F4-2-6** Closed Loop Feedback Control for Reactive Sputtering of Aluminum Oxynitrides with Two Reactive Gases and HIPIMS Discharges, **W. SPROUL**, Reactive Sputtering, Inc., USA, F. PAPA, V. BELLIDO-GONZALEZ, D. MONAGHAN, Gencoa Ltd., USA	**G2-2-6** Rotating Cathodes Technology: Advances in Deposition Technology and Coating Design, **B. TORP**, PLATIT, Inc., USA, T. CSELLE, A. LÜMKEMANN, T. SCHÄR, M. MORSTEIN, PLATIT AG Advanced Coating Systems, Switzerland
3:30 pm	**F4-2-7** Magnetron Sputtered Catalytic Coatings on Hollow Glass Microspheres for a H_2-Storage System, **G. SCHMID**, J. BAUER, C. EISENMENGER-SITTNER, A. EDER, Vienna University of Technology, Austria	**G2-2-7 Invited** Quantitative Characterisation of PVD Plasma Processes, **P. AWAKOWICZ**, S. BIENHOLZ, N. BIBINOV, S. RIES, Ruhr-Universität Bochum, Germany
3:50 pm	**F4-2-8** Photocatalytic and Photoelectrochemical Properties of Bismuth Vanadate Thin Films Produced by Dual Magnetron Sputtering, M. THALLURI, A. TAGLIAFERRO, Polytechnic of Turin, Italy, R. MIRABAL, O. DEPABLOS-RIVERA, J.C. MEDINA, M. BIZARRO, **S.E. RODIL POSADA**, Universidad Nacional Autónoma de México, Mexico	Invited talk continued.
4:10 pm	**F4-2-9** Studies of Plasma Electrolytic Oxidation Coatings Containing Halloysite Nanoclay on AM50 Alloy, **M. SUN**, A. YEROKHIN, A. MATTHEWS, The University of Sheffield, UK	
	Poster Session **5:00-7:00 pm** **Grand Hall** **Reception begins at 6:00 pm**	

Thursday Afternoon, April 23, 2015

Topical Symposia
Room: Sunset - Session TS2-1

Advanced Characterization of Coatings and Thin Films
Moderators: Marco Sebastiani, "Roma TRE" University, Italy, **Jeffrey Wheeler**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

1:30 pm	**TS2-1-1 Invited** Fracture Property Characterization in Brittle Films and Coatings, **B.N. JAYA**, M. KOEHLER, Max Planck Institute for Iron Research, Germany, V. SCHNABEL, RWTH Aachen, Germany, D. RAABE, Max Planck Institute for Iron Research, Germany, J.M. SCHNEIDER, RWTH Aachen University, Germany, V. JAYARAM, Indian Institute of Science, India, C. KIRCHLECHNER, G. DEHM, Max Planck Institute for Iron Research, Germany	
1:50 pm	Invited talk continued.	
2:10 pm	**TS2-1-3** Deformation and Fracture of Cubic Boron Nitride, S. PURKAYASTHA, R. STEARN, **W. CLEGG**, University of Cambridge, UK	
2:30 pm	**TS2-1-4** Recent Progress in Advanced Characterization Techniques for the Development of Wear Resistant Hard Coatings, **C. MITTERER**, R. DANIEL, Montanuniversität Leoben, Austria, A. ZEILINGER, M. TKADLETZ, Materials Center Leoben Forschung GmbH, Austria, M. MÜHLBACHER, N. SCHALK, J. KECKES, Montanuniversität Leoben, Austria	
2:50 pm	**TS2-1-5** Size Effect on Fracture Toughness of Gold Thin Films Studied by Bulge Testing, **E.I. PREIß**, B. MERLE, M. GÖKEN, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany	
3:10 pm	**TS2-1-6** Dynamic Interface Toughness Characterization via a New Femtosecond Laser Ablation Technique, **D. JORGENSEN**, J.W. PRO, M. BEGLEY, T. POLLOCK, University of California, Santa Barbara, USA	
3:30 pm	**TS2-1-7** High-Temperature Fracture Toughness and Yield Strength of Thin Ceramic Coatings, **J. BEST**, J. ZECHNER, J. WHEELER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, M. MORSTEIN, T. SCHÄR, PLATIT AG Advanced Coating Systems, Switzerland, R. RAGHAVAN, Max-Planck-Institut fuer Eisenforschung, Germany, V. CHAWLA, J. MICHLER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
3:50 pm	**TS2-1-8** High-Temperature Nanoindentation of Epitaxial ZrB_2 Coatings Deposited by Magnetron Sputtering, **E. BROITMAN**, L. TENGDELIUS, IFM Linköpings Universitet, Sweden, U. HANGEN, Hysitron, Inc., Germany, J. LU, L. HULTMAN, H. HÖGBERG, IFM Linköpings Universitet, Sweden	
4:10 pm	**TS2-1-9** Using the Young's Modulus of Coatings for Measuring the Residual Stresses, P. GADAUD, ENSMA, Université de Poitiers, France, **X. MILHET**, Pprime Institute - UPR CNRS 3346 - Université de Poitiers - ENSMA - France	
4:30 pm	**TS2-1-10** Mechanical and Electro-chemical Analysis of Ultrathin Protective Coatings, D. STAUFFER, **A. QIU**, Hysitron, Inc., USA	
4:50 pm	**TS2-1-11** Effects of Annealing on the Microstructure and Mechanical Property of W-Zr-Si Thin Film Metallic Glasses, **J.C. CHANG**, J.W. LEE, Ming Chi University of Technology, Taiwan, B.S. LOU, Chang Gung University, Taiwan, C.L. LI, J.P. CHU, National Taiwan University of Science and Technology, Taiwan	
5:10 pm	**TS2-1-12** Recent Innovations in Glow Discharge Optical Emission Spectrometry GD-OES for Material Characterization (Coatings and Thin Films), **P. HUNAULT**, HORIBA Scientific, USA, C. MORIN, HORIBA Instruments Incorporated, USA, P. CHAPON, HORIBA Jobin Yvon S.A.S., France	

Poster Session
5:00-7:00 pm
Grand Hall
Reception begins at 6:00 pm

Coatings for Use at High Temperature
Room: Grand Hall - Session AP

Symposium A Poster Session
5:00 pm

AP-5
Thermal Shock and Post-contact Fatigue Test in Thermal Barrier Coatings, **K.S. LEE**, D.H. LEE, Kookmin University, Republic of Korea

AP-6
Microstructure Changes in Zr1Nb Alloy after Pulsed Electron Beam Surface Modification and Hydrogenation, N. PUSHILINA, **V. KUDIIAROV**, R. LAPTEV, A. LIDER, National Research Tomsk Polytechnic University, Russian Federation

AP-7
Mechanical Properties of Nanolayered TiN/TiAlN Coatings Processed by Cathodic Arc Deposition, J. WANG, Nanyang Technological University, Singapore, M. ARAB POUR YAZDI, IRTES-LERMPS-UTBM, France, **F. LOMELLO**, CEA Cross-Cutting program on Advanced Materials Saclay, France, F. SANCHETTE, Institut Charles Delaunay, France, Z. DONG, T. WHITE, Nanyang Technological University, Singapore, Y. WOUTERS, SiMaP, UMR CNRS/UJF/Grenoble INP, France, F. SCHUSTER, CEA Cross-Cutting program on Advanced Materials Saclay, France, A. BILLARD, LRC CEA-UTBM LIS-HP, France

AP-9
Thermal Durability of Thermal Barrier Coatings with Bond Coat Species and Cyclic Thermal Exposure Temperature, **Q.Z. CUI**, Z. LU, S.W. MYOUNG, S. LEE, Y.G. JUNG, Changwon National University, Republic of Korea

AP-10
Comparative Study of TGO Evolution During High Temperature Oxidation of EB-PVD TBCs on Various Bond Coatings, **R. SWADZBA**, J. WIEDERMANN, Institute for Ferrous Metallurgy, Poland, L. SWADZBA, M. HETMANCZYK, B. MENDALA, B. WITALA, Silesian University of Technology, Poland

AP-11
Silicide Coatings in Mo and TZM Alloy and their Oxidation Resistance, G. MOSKAL, **H. MYALSKA**, D. NIEMIEC, M. STOPYRA, B. WITALA, J. TRACZ, P. KAŁAMARZ, H. ALBRECHT, Silesian University of Technology, Poland, A. WRONA, Institute of Non Ferrous Metals, Poland, M. OSADNIK, Institute of Non-Ferrous Metals, Poland

AP-13
Optical Properties of BiTiO Thin Films Produced by Unbalanced Magnetron Sputtering, **G. OROZCO HERNANDEZ**, J.J. OLAYA-FLOREZ, J.E. ALFONSO ORJUELA, Universidad Nacional de Colombia, Colombia

AP-14
Furnace Cycling Behavior of Rumpling-resistant Y' Bond Coats, **D. JORGENSEN**, R.W. JACKSON, University of California, Santa Barbara, USA, A. SUZUKI, D. LIPKIN, GE Global Research, USA, T. POLLOCK, University of California, Santa Barbara, USA

AP-16
Characterization of the Influence of Grain Refinement on the Oxidation Behavior of Model Alumina-formers, **T. BUTLER**, M. WEAVER, The University of Alabama, USA

AP-17
Microstructure and Oxidation Resistance of $MoSi_2$ Coatings Material and its Modification with Different Types of Oxides, G. MOSKAL, B. WITALA, **M. STOPYRA**, H. MYALSKA, D. NIEMIEC, J. TRACZ, P. KAŁAMARZ, H. ALBRECHT, Silesian University of Technology, Poland, A. WRONA, Institute of Non Ferrous Metals, Poland, M. OSADNIK, Institute of Non-Ferrous Metals, Poland

AP-19
Electrophoresis Deposition of TiO_2 Coatings for use in All-plastic Plastic Flexible Dye-sensitized Solar Cells, L.-C. CHEN, M.-H. HON, J.-M. TING, **K.-C. HUANG**, National Cheng Kung University, Taiwan

AP-20
Evaluation of Thermal Conductivity of ZrO_2-Y_2O_3 Coatings by Pulsed Thermal Imaging Method, **B.K. JANG**, National Institite of Materials Science, Japan, J.G. SUN, Argonne National Laboratory, USA, S.W. KIM, Y.S. OH, S.M. LEE, H.T. KIM, Korea Institute of Ceramic Engineering & Technology, Republic of Korea

AP-23
Tests of Corrosion Resistance of Plasma Sprayed Multilayer Coatings Based on ZrO_2-20MgO in the Conditions of Cyclical Exposure to Molten Zinc, **A. IWANIAK**, Silesian University of Technology, Poland, G. WIECLAW, K. ROSNER, Certech, Poland, B. IWANIAK, Hi-Technology, Poland

AP-24
PVD-based Synthesis and Characterization of High Functional Nanolaminate Coatings, **M. FROEHLICH**, W. GARKAS, K.-D. WELTMANN, Leibniz Institute for Plasma Science and Technology (INP), Germany, C. LEYENS, Technische Universität Dresden, Germany

AP-25
Performance of Al and Cr Oxide Protective Thin Films on 316L Steel in Carburizing Atmospheres, D. MELO-MÁXIMO, **O. SALAS**, P. MIRANDA, E. URIBE, Itesm-Cem, México, L. MELO, Instituto Politécnico Nacional, México, J. OSEGUERA, Itesm-Cem, México

Hard Coatings and Vapor Deposition Technology
Room: Grand Hall - Session BP

Symposium B Poster Session
5:00 pm

BP-2
CrN/AlN and CrN/AlN/Al_2O_3 Coatings Deposited by Pulsed Cathodic Arc for Aluminum Die Casting Applications, K. BOBZIN, T. BRÖGELMANN, R. BRUGNARA, N. KRUPPE, **S. BASTÜRK**, RWTH Aachen University, Germany

BP-3
Effect of Substrate Bias and Coating Thickness on the Properties of nc-CrAlN/a-SixNy Hard Coatings Deposited by Lateral Rotating Cathodes Arc, **M. HARŠÁNI**, M. SAHUL, L. ČAPLOVIČ, Institute of Materials Science, Slovakia

BP-5
Influence of Si Doping on Process Stability, Plasma Generation, and $(Al,Cr)_2O_3$ Thin Film Deposition in a dc Arc System, **I. ZHIRKOV**, L. LANDÄLV, P. EKLUND, J. ROSEN, IFM, Linköping University, Sweden

BP-6
Characterization of AlN Thin Films on Ceramic Electric Insulators Deposited by Pulsed DC Magnetron Sputtering. Electrical insulator; Hydrophobicity; Plasma; Aluminum Nitride, S.A. PIANARO, State University of Ponta Grossa - UEPG, Brazil, **M.M. MAZUR**, Federal University of Paraná, UFPR, Brazil, K.F. PORTELLA, P. MENGARDA, UFPR-Brazil, J.S.S. MELO, Coelba, Brazil, M.O.G.P. BRAGANÇA, UFPR-Brazil, D. CERQUEIRA, Coelba, Brazil

BP-7
Experimental Investigation Into Thermal Spraying Technology Coatings of Ti-6Al-4V Substrate on the Microstructure and Properties Using CoMoCrSi Coatings, **C.M. LIN**, National Tsing Hua University, Taiwan, Y.M. TSAI, National Taiwan University of Science and Technology, Taiwan, T.L. SU, St. Mary's Junior College of Medicine, Taiwan, Y.L. KUO, D.S. CHOU, National Taiwan University of Science and Technology, Taiwan

BP-8
Investigation of (Ti,V)N and TiN/VN Coatings on AZ91D Mg Alloys, **M.E. ERTAS USLU**, A.C. ONEL, G. EKINCI, B. TOYDEMIR, S. DURDU, M. USTA, L. COLAKEROL ARSLAN, Gebze Institute of Technology, Turkey

BP-9
Structure and Morphology of Cathodic Arc Evaporated $(Cr,Al)_2O_3$ - based Multilayer Coatings, **C.M. KOLLER**, Vienna University of Technology, Austria, J. RAMM, Oerlikon Balzers Coating AG, Liechtenstein, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, J. PAULITSCH, Oerlikon Balzers Coating Austria GmbH, Austria, P. MAYRHOFER, Vienna University of Technology, Austria

BP-10
Synthesis of Al-Cr-O-N Coatings by Cathodic Arc Deposition Process, **W.Y. HO**, P.H. HSU, C.L. LIN, MingDao University, Taiwan

BP-12
Microstructure Characterization and Mechanical Properties of CrAlSiTiVN Hard Coatings Synthesized by Cathodic Arc Evaporation, Y.Y. CHANG, **C.H. CHEN**, National Formosa University, Taiwan

BP-13
Pre-Deposition Oxygen Treatment on Electrical and Reliability Characteristics of HfO_2 Gate Dielectrics, **Y.L. CHENG**, T.C. BO, C.S. WU, National Chi Nan University, Taiwan

BP-16
Effects On Optoelectronic Properties of AZO Thin Film by Doping Carbon, **C.C. WANG**, National Chung Hsing University, Taiwan, H.C. SHIH, Chinese Culture University, Taiwan

BP-17
Structure and Mechanical Properties of Mo-Al-N hard Coatings, **F. KLIMASHIN**, H. EUCHNER, H. RIEDL, P. MAYRHOFER, Vienna University of Technology, Austria

BP-18
Residual Stress Evolution and Microstructure on Ordering in FePt Thin Films with Different Initial Stress States, S.N. HSIAO, S.H. LIU, S.K. CHEN, Feng Chia University, Taiwan, A.C. SUN, Yuan Ze University, Taiwan, F.T. YUAN, Sentek Ltd, UK, H.Y. LEE, National Synchrotron Radiation Research Center, Taiwan, **S.-H. SU**, Feng Chia University, Taiwan

BP-19
Effect of the Deposition Conditions on Corrosion Resistance of ZrxOy Films Deposited by Reactive Sputtering, **J.J. OLAYA-FLOREZ**, J.E. ALFONSO, M. PINZON, Universidad Nacional de Colombia, Colombia

BP-22
Effect of Various Cr-N Interlayers on Adhesion Strength of the CrZrN Coatings on Tungsten Carbide Substrate, **H.K. KIM**, K.S. KIM, J.H. LA, S.Y. LEE, Korea Aerospace University, Republic of Korea, J.J. LEE, Seoul National University, Republic of Korea, W.Y. JEUNG, Korea Institute of Science and Technology, Republic of Korea, M.H. LEE, Korea Automotive Technology Institute, Republic of Korea, O.J. KWON, K.DLC Corporation, Republic of Korea

BP-23
A Numerical Simulation of Microwave Sheath-voltage Combination Plasma Source Designed for Ultra High Speed DLC Coating, **S. KAR**, L. ALBERTS, H. KOUSAKA, Nagoya University, Japan

BP-24
First Step Towards a Multi-scale Modelling of the Sputter Growth of Molybdenum on Si(100) Surface : *ab initio* Investigations, C. MASTAIL, J. DURINCK, R. BÉJAUD, **G. ABADIAS**, A. MICHEL, C. JAOUEN, Université de Poitiers, Institut Pprime, France

BP-25
Optimization of the Coil Design for the Induction Evaporation Process for the Zn-Mg Coating: Simulation and Experiment, J.H. LA, K.T. BAE, **S.Y. LEE**, Korea Aerospace University, Republic of Korea, M.K. SONG, Vector Fields Korea, Inc., Republic of Korea, K.H. NAM, Y.H. JUNG, POSCO Technical Research Laboratories, Republic of Korea

BP-27
Mechanical Properties of AlCrN/VN Nanolayered Thin Films Tailored by Cathodic Arc Deposition, **M. ARAB POUR YAZDI**, IRTES-LERMPS-UTBM, France, F. LOMELLO, CEA Cross-Cutting program on Advanced Materials Saclay, France, M.F. WANI, National Institute of Technology Hazratbal, India, F. SANCHETTE, LRC CEA- UMR CNRS 6279-ICD LASMIS, France, F. SCHUSTER, CEA Cross-Cutting program on Advanced Materials Saclay, France, A. BILLARD, Lrc Cea-Irtes-Lermps-Utbm, France

BP-29
Texture Analysis of CO Gas Added CVD Ti (C,N,O) Coating Layers on MT-TiCN, **S. NA**, J. KIM, E. LEE, S. SONG, TaeguTec LTD., Republic of Korea, B. MIN, J. LEE, Yeungnam University, Republic of Korea

BP-30
Effects of Nitrocarburizing Processing Times after Radical Nitriding for Surface Hardening of High-speed Tool Steel, **Y. KIKUCHI**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

BP-31
Preparation of Three-dimensional Structure CVD Diamond by Control of the Nucleation Site by using SiO Film, **T. HATTORI**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

BP-32
Preparation of CNx Films by RF Reactive Sputtering -Effects of Sputtering Gas on the Hardness and Friction Coefficient, **T. SHIROYA**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

BP-33
Effect of Pulse Frequency of Microwave Plasma on Carbon Nitride Synthesis, **I. TANAKA**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

BP-35
Study of Selected Properties of AlTiN Coatings after their Laser Treatment, **P. ZACKOVÁ**, Slovak University of Technology in Bratislava, Slovakia, M. SAHUL, Slovak University of Technology in Bratislava, Slovak Republic, M. SAHUL, Slovak University of Technology in Bratislava, Slovak Repulbic, M. BÉGER, L. ČAPLOVIČ, Slovak University of Technology in Bratislava, Slovak Republic

BP-38
Characterization of a Pulsed-DC PECVD System with Active Screen for DLC Films Growth, **M.A. RAMIREZ**, E.J. CORAT, V. TRAVA-AIROLDI, INPE, Brazil

BP-40
Wear and Growth Kinetics of Vanadium Carbide Coatings on Gray Cast Iron by Thermo- Reactive Diffusion Deposition Technique, A. AMAYA AVILA, **O.E. PIAMBA TULCAN**, J.J. OLAYA-FLOREZ, Universidad Nacional de Colombia, Colombia

BP-41
Mechanical Properties of Internally Oxidized Ru–Zr Coatings, Y.I. CHEN, **T.S. LU**, National Taiwan Ocean University, Taiwan

BP-42
Grain Size Induced Effects on the Decomposition Process of Ti-Al-N Thin Films, **H. RIEDL**, Vienna University of Technology, Austria, R. RACHBAUER, Oerlikon Balzers Coating AG, Liechtenstein, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, P. MAYRHOFER, Vienna University of Technology, Austria

BP-43
A Comparative Study of AlCrN Coatings Deposited by Al/Cr Co-Sputtering or AlCr Compound-Sputtering using Modulated Pulsed Power Magnetron Sputtering Technologies for Lube Free Die Casting, **B. WANG**, G. BOURNE, S. MIDSON, A. KORENYI-BOTH, M. KAUFMAN, Colorado School of Mines, USA

BP-44
Influence of Zirconium on Thermal Stability and Mechanical Properties of Arc Evaporated Ti-Al-N Hard Coatings, **S. GLATZ**, CDL-AOS at the University of Loeben; Vienna University of Technology, Austria, R. HOLLERWEGER, Vienna University of Technology, Austria, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, R. RACHBAUER, Oerlikon Balzers Coating AG, Liechtenstein, J. PAULITSCH, P. MAYRHOFER, Vienna University of Technology, Austria

BP-45
Synthesis and Corrosion Study of $Nb_xSi_yN_z$ Films Deposited by Unbalanced Magnetron, **L. VELASCO ESTRADA**, J.J. OLAYA-FLOREZ, Universidad Nacional de Colombia, Colombia, S.E. RODIL POSADA, Universidad Nacional Autonoma de Mexico, Mexico

BP-46
Tribomechanical and Structural Properties of a-SiC:H Films Deposited Using Liquid Precursors on Titanium Alloy, K. NASS, Universidade Federal de São Paulo-ICT/UNIFESP, Brazil, P. GONCALVES, **L. VIEIRA**, Universidade do Vale do Paraíba, Brazil, D. LEITE, Instituto Tecnológico de Aeronáutica - ITA, Brazil, M. MASSI, Universidade Federal de São Paulo-ICT/UNIFESP, Brazil, A. SOBRINHO, Instituto Tecnológico de Aeronáutica - ITA, Brazil, R.C. LAZZARINI DUTRA, D. REIS, Universidade Federal de São Paulo-ICT/UNIFESP, Brazil

BP-47
Microstructure and Mechanical Properties of Lanthanum Alloyed CrAlN Coatings, **H. DU**, H. ZHAO, H. LIANG, Sichuan University, China

BP-48
Microstructure and Mechanical Properties of Nanocomposite Ti-Al-Si-N Films Deposited by Inductively Coupled Plasma-Assisted Magnetron Sputtering, M.-J. PARK, S.-B. HEO, I. BAEK, E. AN, J.B. JEON, E. CHOI, **I.-W. PARK**, Korea Institute of Industrial Technology (KITECH), South Korea

BP-49
The Effect of Pulsed Magnetron Sputtering on Corrosion Behavior of CNx Thin Films, K.-S. KIM, **J.-H. KIM**, Korea Institute of Industrial Technology (KITECH), South Korea, S.-B. HEO, Korea Institute of Industrial Technology (KITECH),South Korea, W. KIM, U.-C. JUNG, Korea Institute of Industrial Technology (KITECH), South Korea

BP-50
Microstructure and Corrosion Behaviour of Sputtered Al-Zr Coatings Deposited on High Strength Steel, M. REFFASS, LRC CEA/UTBM LIS-HP, Site de Montbéliard, France, A. BILLARD, Lrc Cea-Irtes-Lermps-Utbm, France, **F. SANCHETTE**, LRC CEA-UMR CNRS 6279-ICD LASMIS, France, J. CREUS, Université de La Rochelle, France

BP-52
Tribocorrosion Properties of MAO/DLC Coatings Using a Duplex Process on Cp-Ti Alloys, E.E. SUKUROGLU, Atatürk University, Turkey, **S. SUKUROGLU**, Gümüşhane University, Turkey, E. ARSLAN, Y. TOTIK, I. EFEOGLU, Atatürk University, Turkey

BP-53
Tribocorrosion Properties of Metal Doped-DLC Thin Films, E. ARSLAN, Y. TOTIK, K.V. EZIRMIK, E.E. SUKUROGLU, **H. CICEK**, Atatürk University, Turkey, A. KELES, Ataturk University, Turkey, I. EFEOGLU, Atatürk University, Turkey

BP-54
Characterization and Study Layer Hard on Steel Grade Machinery, **N. LOPEZ-PERRUSQUIA**, M.A. DOÑU RUIZ, Universidad Politécnica del valle de Mexico, México, C.R. TORRES SAN MIGUEL, G.M. URRIOLAGOITIA CALDERÓN, Instituto Politecnico Nacional, Mexico, G. URRIOLAGOITIA SOSA, Instituto Politécnico Nacional, México

Fundamentals and Technology of Multifunctional Thin Films
Room: Grand Hall - Session CP

Symposium C Poster Session
5:00 pm

CP-1
Immobilization of Phthalocyanines on Nanocrystalline Diamond Surfaces for Photoelectrochemical Applications, C. PETKOV, P. REINTANZ, University of Kassel, Germany, M. VERES, L. HIMICS, Hungarian Academy of Sciences, Hungary, R. MERZ, M. KOPNARSKI, IFOS GmbH, Germany, U. SIEMELING, J.P. REITHMAIER, **C. POPOV**, University of Kassel, Germany

CP-2
A High-quality $SrTiO_3$ Nanocrystal Thin film prepared by Spin-coating method, **X.H. WANG**, Tsinghua University, China

CP-4
High-k Polymer Nanocomposites as Gate Dielectrics for Organic Thin Film Transistor Applications, Y.Y. YU, **R.S. CHIANG**, S.N. LIU, W.C. CHIEN, Ming Chi University of Technology, Taiwan

CP-7
AgNWs Embedded Transparent Conductive Oxide Films using a Facing Targets Sputtering Method, S. YOU, Gachon University, Republic of Korea, **Y.S. RIM**, University of California, Los Angeles, USA, K.H. KIM, H.W. CHOI, Gachon University, Republic of Korea

CP-8
Atomic Layer Deposited MgF2's Optical, Mechanical and Chemical Properties and Potential use on Future Astronomical Satellite Mirrors, **C. MOORE**, University of Colorado, Boulder, USA, J. HENNESSEY, A. JEWELL, S. NIKZAD, NASA Jet Propulsion Laboratory, USA, K. FRANCE, Center for Astrophysics and Space Astronomy, USA

CP-9
Effects of Cu Layer Thickness on the Opto-electronic Properties of Multilayer AZO/Cu/AZO Films, **C.H. CHU**, National Cheng Kung University, Taiwan, H.W. WU, Kun Shan University, Taiwan, J.L. HUANG, National Cheng Kung University, Taiwan

CP-10
Textured Surface Structures Formed Using Various Techniques on Transparent Conducting AZO Films Prepared by Magnetron Sputtering, T. MINAMI, **T. MIYATA**, R. UOZAKI, T. YAMANAKA, Kanazawa Institute of Technology, Japan

CP-12
Improved Electro-optical Characteristics of Liquid Crystal Displays by rf-sputtering Deposited *a*-IGZO Thin Films, **G.M. WU**, Chang Gung University, Taiwan

CP-17
Chemical Characterization and Optical Response of Si_xN_y Films Deposited on Common Glass Substrate, **J.E. ALFONSO**, M. PINZON, J.J. OLAYA-FLOREZ, Universidad Nacional de Colombia, Colombia, C. PINEDA-VARGAS, Cape Peninsula University of Technology, South Africa, H.S. VANEGAS, Universidad Nacional de Colombia, Colombia

CP-18
Effects of Ar, He, and Ne Gases on the Characteristics of SiH_4+H_2 ICP Plasma and the Resultant Properties of nc-Si:H Thin Films, J.H. HSIEH, **H.C. LIN**, Ming Chi University of Technology, Taiwan, C. LI, National Yang Ming University, Taiwan

CP-19
Transparent Conducting Oxides for near IR Plasmonic Applications, **H. KIM**, M. OSOFSKY, N. CHARIPAR, A. PIQUE, Naval Research Laboratory, USA

CP-22
Comparison of Cu(InGa)Se_2 Photovoltaic Absorbers Formed From Bilayer $(InGa)_2Se_3$/CuSe Precursor with Different Cu/III Ratio, **K. MOON**, A. SALH, H. PARK, W.K. KIM, Yeungnam University, Republic of Korea

CP-23
Characteristics of Hybrid Electrodes Fabricated using Carbon Nanotubes and Metal Meshes for Flexible Touch Screen Panels, **B.J. KIM**, S.H. HAN, J.S. PARK, J.S. PARK, Hanyang University, Republic of Korea

CP-24
Characterization of CdS Thin Films Grown on Cu(InGa)Se_2 by Chemical Bath Deposition using Three Different Cadmium Salts, **S. ALHAMMADI**, K. MOON, H. PARK, W.K. KIM, Yeungnam University, Republic of Korea

CP-25
Fabrication and Optical Characterization of Titanium-Tungsten Mixed Oxide Thin Films, **M. VARGAS**, C. RAMANA, University of Texas at El Paso, USA

CP-26
Effects of Furnace-annealing and Hot-pressing on Properties of SZO Thin Films and Characteristics of SZO-TFTs, S.H. LEE, **H.S. JUN**, J.S. PARK, Hanyang University, Republic of Korea

CP-27
Coating of Conductive Polymers via Electropolymerization on Carbon Nanotubes and Characterization for their use as Flexible Electrodes, **J.S. PARK**, B.J. KIM, S.H. HAN, J.S. PARK, Hanyang University, Republic of Korea

CP-28
Deposition and Characterization of Hafnium-aluminum-zinc-oxide Films for their use as Channel Layers of Thin Film Transistors, **S.H. LEE**, W. KIM, K.W. CHA, J.S. PARK, Hanyang University, Republic of Korea

CP-29
Minimizing Damage from Negative Oxygen Ions on Structure of $BaTiO_3$ Thin Film Deposited by Magnetron Sputtering Technique, R. THOMAS, INRS-EMT, Canada, R. NOUAR, PLASMIONIQUE Inc, Canada, B.H. VALLE, F.A. VARGAS, INRS-EMT, Canada, C. CÔTÉ, S. WOLFE, R. PORTER, **A. SARKISSIAN**, PLASMIONIQUE Inc, Canada, A. RUEDIGER, INRS-EMT, Canada

CP-31
Low Contact Resistance Carbon Film Modified Current Collectors for Electric Double Layer Supercapacitor, K.-F. CHIU, S.K. CHEN, H.-J. LEU, S.-N. SIAO, C.-C. HIAO, **J.-T. LIAO**, Feng Chia University, Taiwan

CP-32
Photocatalytic Ability Evaluation and Life Cycle Assessment of Environmentally Friendly TiO2 Thin Films, **Y. CHANG**, University of Taipei, Taiwan, J.W. LEE, Ming Chi University of Technology, Taiwan, W. CHEN, University of Taiepi, Taiwan, T. LIN, Ming Chi University of Technology, Taiwan, B.S. LOU, Chang Gung University, Taiwan, C. CHANG, National Taitung Junior College, Taiwan

CP-33
Novel Perylene Dyes For Organic Field Effect Transistors, M. MOSTAFANEJAD, Eastern Mediterranean University, Turkey, J.B. BODAPATI, British University of Nicosia, Turkey, **H. ICIL**, Eastern Mediterranean University, Turkey

CP-34
Thickness Dependent Structural, Morphological and Optical Behavior of Sputtered Nanostructured Titanium Thin Films, J. JAISWAL, S. CHAUHAN, **P. DUBEY**, R. CHANDRA, Indian Institute of Technology Roorkee, India

CP-35
20 mA Bidirectional Current Switching Based on Highly Resistive Vanadium Dioxide Thin Film Using CO_2 Laser, **J. KIM**, S. JO, K. PARK, Pukyong National University, Korea, B.-J. KIM, Mobrik Co., Ltd., Korea, Y.W. LEE, Pukyong National University, Korea

CP-37
High Temperature Oxidation of CrAlYN/CrY Thin Films and Adhesion Properties, M. TAHMASEBIAN MYANDOAB, **I. EFEOGLU**, K.V. EZIRMIK, Y. TOTIK, E. ARSLAN, H. CICEK, Atatürk University, Turkey

CP-38
Structural, Optical and Electrical Characteristics of $BaSrTiO_x$ Thin Films Deposited by RF Magnetron Sputtering, **T. BAYRAK**, A. HAIDER, S.A. LEGHARI, C. OZGIT-AKGUN, N. BIYIKLI, E. GOLDENBERG, Bilkent University, Turkey

Coatings for Biomedical and Healthcare Applications
Room: Grand Hall - Session DP

Symposium D Poster Session
5:00 pm

DP-4
Antibacterial Activity and Cell Compatibility of TiZrN, TiZrCN, and TiZr-amorphous Carbon Coatings, H.L. HUANG, China Medical University, Taiwan, **Y.Y. CHANG**, J.X. LIU, National Formosa University, Taiwan, M.T. TSAI, Hungkuang University, Taiwan, C.H. LAI, China Medical University, Taiwan

DP-5
Osteogenesis Ability of Biomimetic Modified 3Y-TZP Ceramic Using Chemical Treatment, S.K. HSU, Central Taiwan University of Science and Technology, Taiwan, P.L. CHANG, Taoyuan General Hospital, Taiwan, W.F. HO, H.C. HSU, H.J. LIAO, **S.C. WU**, Central Taiwan University of Science and Technology, Taiwan

DP-6
Bioactive Enhancement on the Polyetheretherketone Surface using High Power Impulse Magnetron Sputtered Titanium Dioxide Film, Y.J. YANG, Feng Chia University, Taiwan, H.K. TSOU, Taichung Veterans General Hospital, Taiwan, Y.H. CHEN, Feng Chia University, Taiwan, **C.J. CHUNG**, Central Taiwan University of Science and Technology, Taiwan, J.L. HE, Feng Chia University, Taiwan

DP-7
Surface Modification of Blood-contacting Biomaterials by Plasma-polymerized Super-hydrophobic Films using Hexamethyldisiloxane and Tetrafluoromethane as Precursors, C.R. HSIAO, Feng Chia University, Taiwan, **C.W. LIN**, Feng Chia University; Central Taiwan University of Science and Technology, Taiwan, C.M. CHOU, Taichung Veterans General Hospital; National Yang-Ming University, Taiwan, C.J. CHUNG, Central Taiwan University of Science and Technology, Taiwan, J.L. HE, Feng Chia University, Taiwan

DP-11
Effects of the Sputtering Pressure on the Preparation of Titanium Iodized Films by Reactive Sputtering, **K. FUJIMAKI**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

DP-19
Study of the Oxygen Reduction in Low-energy Ion Implantation of Silver Ions in Titanium to Improve Antibacterial Action, T. SOARES, A. SOUZA, Universidade de Caxias do Sul, Brazil, L. CASARIN, Universidade Federal do Rio Grande do Sul, Brazil, C. FIGUEROA, Universidade de Caxias do Sul, Brazil, E. TONDO, Universidade Federal do Rio Grande do Sul, Brazil, **C. AGUZZOLI**, Universidade de Caxias do Sul, Brazil

DP-21
Anodizing of AZ31 Mg Alloy under Various DC/AC Voltage, **S.A. SALMAN**, Nagoya University, Japan; Al-Azhar University, Egypt, K. NISHINAKA, Art one Co., Ltd, Japan, K. HIKIDA, K. KURODA, M. OKIDO, Nagoya University, Japan

DP-22
Adhesion and Hemocompatibility of Heparin/Collagen Polyelectrolyte Multilayers Coated on Titanium Substrates with a Dopamine Interlayer, **C.-C. CHOU**, H.-C. LIN, National Taiwan Ocean University, Taiwan, C.-H. YEH, Chang Gung Memorial Hospital at KeelungTaiwan, R. WU, National Institute for Materials Science, Japan, W.-J. CHERNG, Chang Gung Memorial Hospital at Keelung, Taiwan

DP-25
Hybrid Calcium Phosphate Coating with Silicon Doping on Ti-Nb-Zr Alloy by Electro-deposition and Sputtering, **Y.H. JEONG**, The Ohio State University, USA, H.C. CHOE, Chosun University, Republic of Korea

DP-27
Morphology of Mg-Doped Hydroxyapatite Coatings on Anodized Ti-xTa Alloys, **J.J. KIM**, H.C. CHOE, Chosun University, Republic of Korea

DP-28
Nanotubular Structured Oxide Film on the Ti-29Nb-xHf Alloys by Anodization, **S.Y. PARK**, H.C. CHOE, Chosun University, Republic of Korea

DP-29
The Variation of Nanotube Shape on the Ti-xNb Alloys by Nb Content and Applied Potential, **I.S. BYEON**, H.C. CHOE, Chosun University, Republic of Korea

DP-30
Corrosion Characteristics of Hydroxyapatite Coating Films on Micro-pore Formation on the Ti-35Ta-xNb Alloys, **H.C. CHOE**, C.I. JO, Y.M. KO, Chosun University, Republic of Korea

DP-33
The Hybrid Graphene Multilayer System (graphene/SiN/graphene) Coupled with Titanium Alloy (Ti6Al4V) - Structural, Mechanical and Corrosion Characterization, **M. KALISZ**, M. GROBELNY, M. DOMINIK, Motor Transport Institute, Poland

DP-34
Thin Films for Corrosion Protection of Ti6Al4V Titanium Alloy, **M. GROBELNY**, M. KALISZ, M. SZYMANSKA, Motor Transport Institute, Poland

DP-35
Detection of Organophosphates by Increasing Concentrations Using Gold Nano Layers on Silicon Thin Film and Spectral Reflection Measurement in MIR Band, **M. OCHANA**, D. ROTSHILD, Ariel University, Israel, T. HAVDALA, Bar-Ilan University, Israel, A. SHULZINGER, Ariel University, Israel, A. SHARONI, Bar-Ilan University, Israel, A. ABRAMOVICH, Ariel University, Israel

DP-36
Thin Film Metallic Glass Coated Medical Needles for Property Enhancements, Y. TANATSUGU, National Taiwan University of Science and Technology, Taiwan, C.C. YU, National Taiwan University of Science and Technology (NTUST), Taiwan, C.L. LI, **J.P. CHU**, National Taiwan University of Science and Technology, Taiwan, S.F. WANG, National Taipei University of Technology, Taiwan

DP-38
Adverse Testing in Metal-on-metal and CrN-Ag cCoated Hip Replacements, **L. ESPITALIER**, Wallwork Cambridge Ltd, UK, D. DE VILLIERS, M. ROYLE, Queen Mary University of London, UK, A. FOX, S. BANFIELD, J. HOUSDEN, Wallwork Cambridge Ltd., UK, A. KINBRUM, L. MORTON, S. COLLINS, Corin, UK, J. SHELTON, Queen Mary, University of London, UK

DP-39
Corrosion Resistance, Nanomechanical and Nanotribological Properties of $(TiAlV)N_x$ Coatings Deposited by Magnetron Sputtering on Biomedical Alloys, **B. ALEMÓN**, E. MARTÍNEZ, M. FLORES, Universidad de Guadalajara, Mexico, J.C. HUEGEL, Tecnológico de Monterrey, Mexico, E. BROITMAN, Linköping University, IFM, Sweden

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces
Room: Grand Hall - Session EP

Symposium E Poster Session
5:00 pm

EP-2
Co-deposition of Cu/WC/Graphene Hybrid Nanocomposites Produced by Electrophoretic Deposition, **H. AKBULUT**, G HATIPOGLU, M. KARTAL, M. TOKUR, H. ALGUL, M. UYSAL, T. CETINKAYA, Sakarya University, Turkey

EP-3
Laser Sintering Effects on NiCrAlY Coatings Deposited on Inconel 718 Substrates, D.C. CHAGAS, **V. TELEGINSKI**, A.C. OLIVEIRA, G. VASCONCELOS, Aeronautical Institute of Technology, Brazil

EP-4
Use of Cr as an Interlayer in SiC Films Deposited on Ti-6Al-4V alloys by HiPIMS, A. MERIJ, Federal University of São Paulo, Brazil, G. VALDETE MARTINS, Technological Institute of Aeronautics, Brazil, T. SUGAHARA, Federal University of São Paulo, Brazil, P.A. RADI, Universidade do Vale do Paraíba, Brazil, A. DA SILVA SOBRINHO, Technological Institute of Aeronautics, Brazil, D. REIS, **M. MASSI**, Federal University of São Paulo, Brazil

EP-7
Mechanical Properties of ZrCu Metallic Glass Thin Films Deposited by Magnetron Sputtering- Effect of the Temperature on the Elastic Constants, S. MERABTINE, F. CHALLALI, P. DJEMIA, N. GIRODON-BOULANDET, **D. FAURIE**, LSPM-CNRS, France

EP-12
Improvement of Wear and Corrosion Performance of TiN/TiAlN Multilayer Coated AISI 4340 Alloy Steel for Aerospace Application, **C.K. LIN**, Taipei Medical University, Taiwan, C.H. HSU, D.W. LAI, Tatung University, Taiwan, K.L. OU, Taipei Medical University, Taiwan

EP-13
Micro-abrasion Wear Testing of Sputter-deposited TiNi Shape Memory Alloy Thin Films, **C. LIU**, The University of Sheffield, UK, Y. FU, University of the West of Scotland, Scotland, A. LEYLAND, A. MATTHEWS, The University of Sheffield, UK

EP-15
Preparation, Friction and Wear Resistance of Nanocomposite Ni-SiC Coatings by Electrochemical Deposition, **M. ZHANG**, Liaoning Normal University, China

EP-16
Influence of Surface Modification of Cemented Carbide Tools on Coating Adhesion and Turning Performance, **S.M. ALVES**, W. ALBANO, Federal University of Rio Grande do Norte, Brazil

EP-17
Design and Manufacture of Acrylate and Nano-reinforced Acrylate Hard Transparent Coatings, M. BARLETTA, **S. VESCO**, Università degli Studi di Roma Tor Vergata, Italy, H-J. SUE, MM. HOSSAIN, Texas A&M University, USA

EP-18
Design and Manufacturing of Scratch and Wear Resistant High Molecular Weight Phenyl Methyl Polysiloxane Barrier Coatings, M. BARLETTA, S. VESCO, A. GISARIO, Università degli Studi di Roma Tor Vergata, Italy, **M. PUOPOLO**, Sapienza Università degli Studi di Roma, Italy

EP-19
Quantitative Estimation of the Scale Effect on Surface Finish of Annular Brass Workpiece after Abrasive Fluidized Bed Processing, **M. BARLETTA**, Università degli Studi di Roma Tor Vergata, Italy, M. EL MANSORI, S. MEGHANI, Arts et Métiers ParisTech, France, G. RUBINO, Università degli Studi della Tuscia, Italy

EP-20
Evaluation on the Nanoscratch Hardness of ECR Nanostructured Carbon Coatings, X. FAN, **C. WANG**, D.F. DIAO, Shenzhen University, China, L.W. YU, Jiaotong University, China

EP-21
Mechanical, Macro- and Nano-Tribological Properties, and Corrosion Behavior of Carbon-based Coatings Deposited by PVD and PACVD on AISI 420 Steel, E.L. DALIBON, National University of Technology, Argentina, L. ESCALADA, National University of Mar del Plata, Argentina, K.D. BAKOGLIDIS, Linköping University, IFM, Thin Film Physics Division, Sweden, S.P. BRÜHL, National University of Technology, Argentina, S. SIMISON, National University of Mar del Plata, Argentina, L. HULTMAN, **E. BROITMAN**, Linköping University, IFM, Sweden

EP-22
Effect of Duplex Treatment on Structural Properties and Wear Resistance of Pure Titanium, **I. CELIK**, Gumushane University, Turkey

EP-23
Erosion-Corrosion Wear of $NbVC_2$ Coating Deposited by Thermo-Reactive Deposition/Diffusion Technique, **F. VALLEJO**, J.J. OLAYA-FLOREZ, Universidad Nacional de Colombia, Colombia

EP-24
Acoustic Emission Analysis of Damage Progression in Thermal Barrier Coatings Under Thermal Cyclic Conditions, **M.P. APPLEBY**, D. ZHU, NASA Glenn Research Center, USA

Thursday Afternoon Poster Sessions

New Horizons in Coatings and Thin Films
Room: Grand Hall - Session FP

Symposium F Poster Session
5:00 pm

FP-2
Low Friction PVD Coating Deposition using HIPIMS under the CFUBMSIP Configuration, D. FULGONI, D. IEVLEV, S. FIELD, **H. SUN**, K. COOKE, Teer Coatings Ltd, Miba Coating Group, UK

FP-4
Platinum Catalyst Formed on Carbon Nanotube by In-Liquid Plasma Method for Fuel Cell, **Y. UENO**, A. HIRAI, A. ALMOWARAI, Y. SHOW, Tokai University, Japan

FP-5
The Effect of Wet Jet Milling Process on Dispersion Characteristics of CNT/PTFE Composite Film for Bipolar Plate of Fuel Cell, **A. ALMOWARAI**, Y. SHOW, A. HIRAI, Y. UENO, Tokai University, Japan

FP-6
Shape Controlled Growth of ZnO Nanorods and Fabrication of ZnO/CuO Heterojunctions by Chemical Bath Deposition using Zinc Nitrate Hexahydrate and Copper (III) Nitrate Trihydrate, **T. TERASAKO**, Ehime University, Japan, N.A. HAMBALI, N.A. JAYAH, Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, T. WAKISAKA, Ehime University, Japan, A.M. HASHIM, Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, M. YAGI, National Institute of Technology, Kagawa College, Japan

FP-7
Structure and Luminescent Properties of Europium-doped Yttria Thin Films Fabricated by Radio Frequency Magnetron Sputtering, S.Y. SHIN, **J.H. KIM**, Chungbuk National University, Republic of Korea

FP-8
A Possibility of by Liquid Phase Sintering Based Novel Non-crystalline Li-B-W-O Solid Electrolyte for All-Solid-State Batteries, **I.Y. KIM**, Y.S. YOON, Gachon University, Republic of Korea

FP-9
Enhanced Cycle Behavior of Lisipon coated Silicon Particles for an All-Solid-State-Battery, **S.Y. PARK**, Y.S. YOON, Gachon University, Republic of Korea

FP-10
Correlation Between Seed Layer Characteristics and the Structures and Properties of ZnO Nanowires Synthesized by Using Chemical Bath Deposition, T.-L. CHEN, **J.-M. TING**, National Cheng Kung University, Taiwan

FP-12
Formation Mechanism of Sputter Deposited Self-assembled Alternating Layered Metal Containing Hydrogenated Amorphous Carbon Film, J.-M. TING, National Cheng Kung University, Taiwan, **W.-Y. WU**, MingDao University, Taiwan

FP-13
Characteristics of $Mg_4Nb_2O_9$ Thin Film Prepared by RF Magnetron Sputtering, **C.H. SU**, C.L. HUANG, National Cheng Kung University, Taiwan

FP-14
The Effect of Annealing Conditions on the Rectification of Gd_2O_3/Si Heterojunction for Resistive Random Access Memory Application, **Y.D. HO**, C.S. WU, C.L. HUANG, National Cheng Kung University, Taiwan

FP-16
Functionalized Silica Coatings on Metallized Polyethylene Terephthalate Substrates for Low-Cost Durable Solar Reflectors, D. CAIRNS, Tailored Surfaces, USA, K. SIERROS, **M.A. TORRES ARANGO**, D. BANERJEE, West Virginia University, USA

Applications, Manufacturing, and Equipment
Room: Grand Hall - Session GP

Symposium G Poster Session
5:00 pm

GP-1
Characteristics of SiOC(-H) Films with Line Type Atmospheric Pressure Plasma Enhanced CVD Method, **T. MORI**, T. MASUKO, T. SUZUKI, Keio University, Japan

GP-2
Plasma-Nitriding Assisted Micro-Texturing onto Stainless Steel Molds, **T. AIZAWA**, Shibaura Institute of Technology, Japan, T. YAMAGUCHI, Sanko-Light Engineering, Co. Ltd., Japan

GP-4
Micro-Texturing into CVD-Diamond Coatings via Hollow-Cathode Oxygen Plasma Etching, **E.E. YUNATA**, T. AIZAWA, Shibaura Institute of Technology, Japan

GP-5
Aceylene Plasma Polymer Films Treated by Argon Plasma Immersion Ion Implantation, **R.P. MOTA**, R.Y. HONDA, N.C. CRUZ, E.C. RANGEL, São Paulo State University - UNESP, Brazil, D.C.R. DOS SANTOS, College of Technology, CEETEPS-Pindamonhangaba-SP-Brazil

GP-6
Thin Films Growth by PIIID Technique from Hexamethyldisilazane/Aargon Mixture, **F.V.P. KODAIRA**, R.P. MOTA, P.W.P. MOREIRA JR., São Paulo State University - UNESP, Brazil

GP-7
Performance of Carbide Coated Tools with DLC in the Drilling of SAE 323 Aluminum Alloy, **W. SILVA**, FCA - Botucatu, UNESP – Univ. Estadual Paulista, Brazil, J. CARNEIRO, L. JESUS, Pontificia Universidade Catolica de Minas Gerais, Brazil, V. AIROLDI, Instituto Nacional de Pesquisas Espaciais, Brazil

GP-9
Formation of Carbon Nanotube by Thermal CVD Method with Addition of Water into Source Gas, **A. HIRAI**, Y. UENO, A. ALMOWARAI, Y. SHOW, Tokai University, Japan

GP-10
Preparation of Ceramic Core with High Strength using Inorganic Precursor and Gel-casting Method, **G.-H. CHO**, J. LI, E.H. KIM, Y.G. JUNG, Changwon National University, Republic of Korea

GP-11
Effect of Electroless Nickel Interlayer on Erosive and Corrosive Behavior of PVD-(Cr, Zr)N Multilayer Coated ADI, C.H. HSU, **C.H. PENG**, P.C. PAN, Tatung University, Taiwan, C.K. LIN, Taipei Medical University, Taiwan

GP-12
Structural Analysis of the Enhanced Gas Barrier Properties of γ-APS Coating on Polypropylene after Plasma Treatment, **K. TSUJI**, Keio University, Japan, A. UEDONO, University of Tsukuba, Japan, A. HOTTA, Keio University, Japan

GP-13
Surface Hardening of a SAE 1045 Steel by Plasma Transferred Arc, **C. NEITZKE**, F. AMORIM, I. BASSANI, P. SOARES JR, R. TORRES, Pucpr, Brazil

GP-15
Study of Cracks Induced by Laser Shock in Plasma Sprayed Ceramic Coatings with 3D Structuration of the Interface, **H. SAPARDANIS**, V. GUIPONT, A. KÖSTER, J.-D. BARTOUT, F. BORIT, V. MAUREL, Ecole des Mines, France

Topical Symposia
Room: Grand Hall - Session TSP

Symposium TS Poster Session
5:00 pm

TSP-1
Fabrication and Characterization of Highly Flexible Al_2O_3/Al/Al_2O_3 Hybrid Composite, Z. WANG, Harbin Institute of Technology, China, H. HU, X. NIE, **F. SUN**, University of Windsor, Canada

TSP-2
Modelling the Nanomechanical Responses of Biopolymer Composites During the Nanoindentation, **P. DUAN**, J. CHEN, Newcastle University, UK

TSP-3
Modelling the Morphology Effect on Determining the Mechanical Properties of Biofilm by Nanoindentation, C. GEFFROY, Polytech, Marseille, France, J. MA, **J. CHEN**, Newcastle University, UK

TSP-5
Optical Properties and Electrical Transport in Nb-Ti-N Thin Films Deposited by Magnetron Sputtering, R. SANJINES, A. MARTINS, **A. KARIMI**, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland, N. GOEBBELS, A. SANTANA, IHI Ionbond AG, Switzerland

TSP-6
Retarding Field Analysis of the Ion Energy Distribution in a Large-area Capacitively Coupled Multi Frequency Plasma, **S. RIES**, C. CORBELLA, S. BIENHOLZ, D. GROCHLA, Ruhr Universität Bochum, Germany, J. SCHULZE, West Virginia University, USA, A. LUDWIG, A. VON KEUDELL, P. AWAKOWICZ, Ruhr Universität Bochum, Germany

TSP-7
Fabrication and Characterization of Hybrid Photoelectrode for Dye-sensitized Solar Cells, J.S. LEE, K.H. KIM, **H.W. CHOI**, Gachon University, Republic of Korea

TSP-9
Study on AISI 4140 Hardened by Paste Dehydrated Boron, **D. SANCHEZ HUERTA**, Tecnológico De Estudios Superiores De Cuautitlan Izcalli, México, N. LOPEZ-PERRUSQUIA, M.A. DOÑU RUIZ, Universidad Politécnica del Valle de México, México, J.V. CORTES SUAREZ, Universidad Autónoma Metropolitana Azcapotzalco, México, F. ORTIZ MEZA, Universidad Politécnica del Valle de México, México

TSP-10
Multiplexing Storage Using Angular Variation in Transmission Holographic PDLC, **E.H. KIM**, Y.G. JUNG, Changwon National University, Republic of Korea

TSP-12
On the Early Growth Stages of Sputter-deposited Pd Films, **J. COLIN**, G. ABADIAS, A. MICHEL, C. JAOUEN, C. MASTAIL, University of Poitiers, PPRIME Institute, CNRS, France

TSP-13
Analysis of the Formation of Iron Oxides on Surfaces by Diffuse Reflectance Spectroscopy Technique, **C. MELO PIRAQUIVE**, O.E. PIAMBA TULCAN, National University of Colombia, Colombia

TSP-15
Plasma Electrolytic Oxidation Process Diagnostics Using Microdischarge Video Imaging, **E. PARFENOV**, D. LAZAREV, M. GORBATKOV, Ufa State Aviation Technical University, Russian Federation, A. YEROKHIN, The University of Sheffield, UK

TSP-16
Transient Calorimetric Plasma Diagnostics Utilizing Passive Probes, S. BORNHOLDT, **H. KERSTEN**, Institute of Experimental and Applied Physics, Kiel University, Germany

TSP-17
Tensile Creep Rate Analysis of a Dental Feldspathic Porcelain Veneer, **A. LUNT**, University of Oxford, UK, S. KABRA, J. KELLEHER, S.Y. ZHANG, ISIS, Science and Technology Facilities Council, UK, A. KORSUNSKY, University of Oxford, UK

TSP-18
Cross-sectional Analysis of AlCr Composite Cathodes after Erosion in Cathodic Arc Plasma with Inert and Reactive Gas Atmosphere, **R. FRANZ**, F. MENDEZ-MARTIN, Montanuniversität Leoben, Austria, P. POLCIK, Plansee Composite Materials GmbH, Germany

Friday Morning, April 24, 2015

	Hard Coatings and Vapor Deposition Technology **Room: Sunrise - Session B5-2** **Hard and Multifunctional Nano-Structured Coatings** **Moderators: Jiri Houska**, University of West Bohemia, NTIS, Czech Republic, **Robert Franz**, Montanuniversität Leoben, Austria	**Hard Coatings and Vapor Deposition Technology** **Room: Royal Palm 1-3 - Session B6-2** **Coating Design and Architectures** **Moderators: Rostislav Daniel**, Montanuniversität Leoben, Austria, **Sven Ulrich**, Karlsruhe Institute of Technology (KIT), Germany
8:00 am	**B5-2-1** The Deformation of the Substrate During Indentation into Superhard Coatings: The Bückle's Rule Revised, M.G.J. VEPREK-HEIJMAN, **S. VEPREK**, Technical University Munich, Germany	**B6-2-1 Invited** Design and Properties of New Multifunctional Ceramic Coatings, **P. ZEMAN**, J. VLCEK, J. MUSIL, University of West Bohemia, Czech Republic
8:20 am	**B5-2-2** Deformation Behavior in Al/a-Si Core-shell Nanostructures and Layered Thin-films, **R. FLEMING**, M. ZOU, University of Arkansas, USA	Invited talk continued.
8:40 am	**B5-2-3 Invited** Nanocomposite Coatings with Enhanced Tribological and Corrosion Properties, **A. MATTHEWS**, A. LEYLAND, University of Sheffield, UK	**B6-2-3** Influence of Si Alloying and Al/Cr Ratio in AlCr Powder Metallurgical Targets on Coatings Deposited by Magnetron Sputtering, **S. KOLOZSVÁRI**, P. POLCIK, Plansee Composite Materials GmbH, Germany
9:00 am	Invited talk continued.	**B6-2-4** Platinum-based Nanocomposite Electrode Thin Films for High Temperature Operation, D. FRANKEL, S. MOULZOLF, M. PEREIRA DA CUNHA, **R. LAD**, Laboratory for Surface Science & Technology, University of Maine, USA
9:20 am	**B5-2-5** Temperature Dependence of Thin Films Elastic Constants by In-situ Brillouin Light Scattering. Application to Binary Nitride Thin Films, **D. FAURIE**, P. DJEMIA, N. GIRODON-BOULANDET, LSPM-CNRS, France, G. ABADIAS, Institut PPRIME, France	**B6-2-5 Invited** Biomimetic Approaches for Hard Coatings on Soft Substrates, **W. WALDHAUSER**, J.M. LACKNER, JOANNEUM RESEARCH Forschungsgesellschaft mbH, Austria
9:40 am	**B5-2-6** Hardness Enhancement and Deformation Mechanisms in Self Organized Zr-Al-N Nanocomposites Containing Multilayered Structures, **N. GHAFOOR**, K. YALAMANCHILI, Linköping University, IFM, Sweden, H. ABOUIFADL, J. BARRIRERO, F. MÜCKLICH, Saarland University, Germany, L. ROGSTRÖM, M. ODÉN, Linköping University, IFM, Sweden	Invited talk continued.
10:00 am	**B5-2-7** Processing of CrN/VN Nanolayered by Cathodic Arc Deposition: Lubricious High-temperature Oxide Formation, **F. LOMELLO**, CEA Cross-Cutting program on Advanced Materials Saclay, France, M. ARAB POUR YAZDI, IRTES-LERMPS-UTBM, site de Montbéliard, France, F. SANCHETTE, Institut Charles Delaunay, France, F. SCHUSTER, CEA Cross-Cutting program on Advanced Materials Saclay, France, A. BILLARD, LRC CEA-UTBM LIS-HP, site de Montbéliard, France	**B6-2-7** Hard Nanocrystalline Conductive Materials MBCN (M = Ti, Zr, Hf) for Harsh Environments: Effect of the Choice of Metal Element, **J. HOUSKA**, P. MARES, J. KOHOUT, R. CERSTVY, J. VLCEK, University of West Bohemia, NTIS, Czech Republic
10:20 am	**B5-2-8** Tribological Behavior of Thin Hard Nanostructured Coatings under different Temperature Levels, **E. SANTECCHIA**, Qatar University, Qatar, M. CABIBBO, M. EL MEHTEDI, S. SPIGARELLI, Università Politecnica delle Marche, Italy, A. HAMOUDA, F. MUSHARAVATI, Qatar University, Qatar	**B6-2-8** Innovative Architectured Sol-Gel Coatings for Wear and Corrosion Protection of Low-Carbon Steel, **C. LAVOLLEE**, M. GRESSIER, CIRIMAT, France, J.M. SOBRINO, J. GARCIA, J. REBY, CETIM, France, M.J. MENU, CIRIMAT, France
10:40 am	**B5-2-9 Invited** Nanostructuring Transition Metal Nitride Coatings — Good and Bad for Metal Cutting Tools, **L. JOHNSON**, Sandvik Coromant, Sweden	**B6-2-9** Some Aspects of Surface Treatment by Laser Melting, **R. BASU**, VTU, SAIT, India
11:00 am	Invited talk continued.	
11:20 am	**B5-2-11** Improving the Tribological and Corrosion Performance of a Magnesium Alloy by Depositing Novel Metallic Nanostructured PVD Coatings, **L. LIU**, J. KAVANAGH, A. MATTHEWS, A. LEYLAND, University of Sheffield, UK	
	2016 ICMCTF **April 25-29, 2016**	**2016 Abstract Submission Deadline** **October 1, 2015**
	Thank You & See You Next Year Party **Trellis Courtyard Near Pool** **12:30-1:30 pm**	**2016 Awards Nominations Deadline** **October 1, 2015**

Friday Morning, April 24, 2015

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room: San Diego - Session E1-3** **Friction, Wear, Lubrication Effects, and Modeling** **Moderators: Michael Chandross**, Sandia National Laboratories, USA, **Giovanni Ramirez**, Argonne National Laboratory, USA	**Applications, Manufacturing, and Equipment** **Room: Golden West - Session G1** **Innovations in Surface Engineering** **Moderators: Mirjam Arndt**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, **Christoph Metzner**, Fraunhofer Institute for Electron Beam and Plasma Technology (FEP), Germany
8:00 am	**E1-3-1** An Investigation of Material and Tribological Properties of MoS_2-Sb_2O_3-Au Solid Lubricant Films under Sliding and Rolling Contact in Different Environments, **H. SINGH**, K. MUTYALA, The University of Akron, USA, R. EVANS, The Timken Company, USA, G.L. DOLL, The University of Akron, USA	**G1-1 Invited** Tailored Coatings for Demanding Environments, **G. GEY**, Kennametal Inc., USA
8:20 am	**E1-3-2** Efficiency Improvement in Automobile Power Train by Diamond-like Carbon Coatings under Elasto-hydrodynamic Lubrication, K. BOBZIN, **T. BRÖGELMANN**, RWTH Aachen University, Germany, K. STAHL, K. MICHAELIS, J. MAYER, M. HINTERSTOIßER, Gear Research Center - Technische Universität München, Germany	Invited talk continued.
8:40 am	**E1-3-3** Deposition, Characterization, and Performance of Tribological Coatings on Spherical Rolling Elements, **K. MUTYALA**, H. SINGH, A. SAATCHI, The University of Akron, USA, R. EVANS, The Timken Company, USA, G.L. DOLL, The University of Akron, USA	**G1-3** Influence of the Composition on the Properties of $(Cr_{1-x},Al_x)N/MoS_y$ PVD Coatings, K. BOBZIN, T. BRÖGELMANN, **S. BASTÜRK**, RWTH Aachen University, Germany
9:00 am	**E1-3-4** The Electrical Contact Resistance Endurance of Silver Platted Contacts Subjected Combined Fretting-reciprocating Slidings, **J. LAPORTE**, S. FOUVRY, Ecole centrale de Lyon, LTDS, France	**G1-4** High Density Oxygen Plasma Ashing of CVD-Diamond Coatings with Minimum Damage to WC (Co) Tool Substrates, **E.E. YUNATA**, T. AIZAWA, K. YAMAUCHI, Shibaura Institute of Technology, Japan
9:20 am	**E1-3-5 Invited** Friction and Wear Mechanisms of Tungsten-carbon Systems: A Comparison of Dry and Lubricated Conditions, **M. DIENWIEBEL**, Fraunhofer Institute for Mechanics of Materials IWM and Karlsruhe Institute of Technology KIT, Germany, P. STOYANOV, Kennametal Inc., USA, P. ROMERO, Microtribology Center µTC, Fraunhofer IWM, Germany, R. MERZ, IFOS GmbH, Germany, P. STEMMER, University of Duisburg-Essen, Germany, M. MOSELER, Microtribology Center µTC, Fraunhofer IWM, Germany	**G1-5** Tribological Behaviour of Al-Si alloys with 6.5%, 12% and 18.5% Si during Machining using CVD Diamond and DLC Coated Tools, S. BHOWMICK, **A. BANERJI**, A. ALPAS, University of Windsor, Canada
9:40 am	Invited talk continued.	**G1-6** Wear Study of Structured Coated Belts in Advanced Abrasive Belt Finishing, **K. SERPIN**, S. MEZGHANI, M. EL MANSORI, Arts et Métiers ParisTech, MSMP, France
10:00 am	**E1-3-7** Tribological Performance of Diamond Like Carbon and Nitride Based Coatings against PTFE Based Composite Seal Materials in Oil Free Methane Environment, **O.L. ERYILMAZ**, G. RAMIREZ, A. ERDEMIR, Argonne National Laboratory, USA	**G1-7 Invited** Less is More... Future Demands in Coating Design for Machining Applications, **M. MAES**, Komet Group, Germany
10:20 am	**E1-3-8** Investigation and Tribological Performance Assessment of Various Solid Lubricant Mixtures, R. GUNDA, S. NARALA, **S. JOSYULA**, BITS-Pilani, Hyderabad Campus, India	Invited talk continued.
10:40 am	**E1-3-9** Microstructure and Mechanical Properties of Ti-Si-N Composite Coatings Synthesized by Different Target Silicon Content, **Q. WAN**, H. DING, Y.M. CHEN, H.D. LIU, C. LUO, Y.R. XU, D.J. FU, F. REN, Wuhan University, China, L.W. HU, Aerospace Precision Co., Ltd., China, B. YANG, Wuhan University, China	**G1-9** Laser-induced Transfer of PVD Layers from a Carrier onto Various Product Surfaces as Decorative and Functional Coatings, **R. DOMNICK**, Ara-Coatings GmbH & Co. KG, Germany
11:00 am	**E1-3-10** Analysis of Tribological Characteristics of Various Solid Lubricants at Different Sliding Conditions, **R. GUNDA**, S. JOSYULA, S. NARALA, BITS-Pilani, Hyderabad Campus, India	**G1-10** Solid-solution Hardening of Martensitic Stainless Steels via Low Temperature Plasma Nitriding, **T. AIZAWA**, T. KATOH, Shibaura Institute of Technology, Japan, S. MURAISHI, Tokyo Institute of Technology, Japan
11:20 am		**G1-11** Mechanical and Tribological Characterization of Duplex and Superduplex Stainless Steel Treated by Plasma Immersion Ion Implantation, **R. TORRES**, P. SOARES, Pontifícia Universidade Católica of Paraná, Brazil, F. SERBENA, G. SOUZA, Universidade Estadual de Ponta Grossa, Brazil, S BLUNK, C. LEPIENSKI, Universidade Federal of Paraná, Brazil
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Topical Symposia
Room: Sunset - Session TS2-2

Advanced Characterization of Coatings and Thin Films
Moderators: Marco Sebastiani, "Roma TRE" University, Italy, **Jeffrey Wheeler**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

8:00 am	**TS2-2-1** Evaluation of TiN Diffusion Barrier Layers with different Microstructures by Transmission Electron Microscopy and Atom Probe Tomography, **M. MÜHLBACHER**, F. MENDEZ-MARTIN, Montanuniversität Leoben, Austria, B. SARTORY, L. CHITU, Materials Center Leoben Forschung GmbH, Austria, J. LU, Linköping University, IFM, Sweden, N. SCHALK, J. KECKES, Montanuniversität Leoben, Austria, L. HULTMAN, Linköping University, IFM, Sweden, C. MITTERER, Montanuniversität Leoben, Austria	
8:20 am	**TS2-2-2** Mapping Deformation in Small-scale Testing using High Resolution Digital Image Correlation Methods, **F. DI GIOACCHINO**, W. CLEGG, University of Cambridge, UK	
8:40 am	**TS2-2-3 Invited** Towards Depth Profiling of Coating Properties: Stiffness, Hardness and Residual Stress, A. KORSUNSKY, **A. LUNT**, T. SUI, E. SALVATI, S. YING, University of Oxford, UK, E. BEMPORAD, M. SEBASTIANI, "Roma TRE" University, Italy	
9:00 am	Invited talk continued.	
9:20 am	**TS2-2-5** Influence of the Milling Geometry on the Relaxation Behavior of the H-Bar Geometry used for Residual Stress Measurement with the FIB-DIC Method, **L. BENKER**, M. KROTTENTHALER, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany, M. SEBASTIANI, University of Rome "Roma Tre", Italy, M. GÖKEN, Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany	
9:40 am	**TS2-2-6** Residual Stress Evaluation in Multilayer Coatings Combining Grazing Incidence $\sin^2(\psi)$ Method and Whole Powder Pattern Decomposition, H. GUERAULT, J. BRECHBUEHL, Bruker AXS GmbH, Germany, I. GARRN, Guehring KG, Germany, **B. HE**, Bruker AXS, Inc., USA	
10:00 am	**TS2-2-7** Intrinsic Stress Evolution in Low-Mobility Metal Thin Films: New Insights on Defects Incorporation and Stabilization, **J. COLIN**, G. ABADIAS, A. MICHEL, C. JAOUEN, University of Poitiers, PPRIME Institute, CNRS, France	
10:20 am	**TS2-2-8** Formation Mechanism of Pinholes in Electroplated Cu Films and Its Prevention, **C.-C. CHEN**, Yuan Ze University, Taiwan, C.-H. YANG, Yuan-Ze University, Taiwan, Y.-W. LEE, Yuan Ze University, Taiwan, T.-H. CHUNG, Kinsus Interconnect Technology Corporation, Taiwan, C-.E. HO, Yuan-Ze University, Taiwan	
10:40 am	**TS2-2-9** Material Optimization via Combinatorial Deposition and Analysis for Thermoelectric Thin Films, **R. SNYDER**, University of Dayton; Air Force Research Laboratory, USA, E. THOMAS, University of Dayton Research Institute; Air Force Research Laboratory, USA, A.A. VOEVODIN, Air Force Research Laboratory, USA	
11:00 am	**TS2-2-10** Abnormal Depletion of Cu Interconnects in Line-bump Solder Joints under Electron Current Stressing, C-.E. HO, **C.-H. YANG**, Yuan-Ze University, Taiwan, C.-T. CHEN, B.-Z. CHEN, Yuan Ze University, Taiwan	
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