

# Technical Sessions

## Key to Session/Paper Numbers

- A** Coatings for Use at High Temperatures
  - 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** Surface Engineering-Applied Research and Industrial Applications (ICMCTF & SVC Joint Symposium)
  - H** Advanced Characterization of Coatings and Thin Films
  - PL** Plenary Lecture
- Topical Symposia: **TS1**-Biointerfaces  
**TS2**-Thermal Spray Technologies & Coatings

Program numbers are listed with the symposium letter first, the session number second, and the number of the paper last (i.e., A1-2-4= symposium A, session two, paper number four).

### Symposium scheduling pointers:

- Daily Morning sessions begin at 8:00 am, Monday the technical sessions begin at 10:00 am following the completion of the 8:00 am Plenary Session. Thursday the starting session times vary
- Daily most session lunch breaks start at 12:00 pm
- Daily afternoon sessions start at 1:30 pm Tuesday and Wednesday afternoon sessions have varying starting times 1:30 - 2:10 pm
- Invited speakers (marked as such in the program book) 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 Terrace Salon Room (TS2). 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 3:30 pm on Thursday, April 27. 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 3:30 pm. Any poster boards that do not have presentation materials posted by 3:30 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.

*A small picture of the presenting author is to be placed on the colored title identification sheet.*

**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 Sess**

## Plenary Lecture Session

**Prof. Christopher A. Schuh**

### **Grain Boundary Segregation: A Key Tool for Stabilizing Nanostructure in Next-Generation Coatings**

Department Head, Materials Science and Engineering  
Danae and Vasilis Salapatas Professor of Metallurgy  
MacVicar Fellow  
Massachusetts Institute of Technology

The performance of many coatings depends on the development of an internal nanostructure for optimal properties, but nanoscale structures are frequently thermodynamically unstable. The future of nanostructured coatings, therefore, lies in our ability to stabilize their structure. This talk will review the proliferating strategy of stabilizing nanostructure *via* grain boundary segregation, not only as a means of kinetically slowing structural evolution, but as a means of bringing a nanostructured state closer to thermodynamic equilibrium. After a review of the basic science, a general strategy for coating design will be established, illustrating how market and scientific considerations can combine to guide the development of nanostructured coatings. A series of coating design case studies will be presented for both electrodeposited and physical vapor deposited coatings, and the scientific issues underlying alloy configuration and structural stability will be examined. Commercial applications and adoption trajectories of several of these coating systems will be reviewed. Finally, future augmentations to the design strategy, such as the incorporation of meso-scale super-grain structure within the coating, will be speculated upon.



# Monday Morning, April 24, 2017

<b>Coatings for Use at High Temperatures</b> <b>Room: San Diego - Session A1-1</b> <b>Coatings to Resist High Temperature Oxidation, Corrosion and Fouling</b> <b>Moderators: Vladislav Kolarik, Fraunhofer Institute for Chemical Technology ICT, Germany, Prabhakar Mohan, Solar Turbines, USA, Anton Chyrkin, Forschungszentrum Jülich GmbH, Germany</b>		<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B1-1</b> <b>PVD Coatings and Technologies</b> <b>Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan</b>	
10:00 am	<b>A1-1-1 Invited</b> High-resolution Studies of Phase Transformations in Metal/oxide Composite Films for High-temperature Applications, <b>G.J. TATLOCK</b> , M.E. DUFFIELD, K.E. DAWSON, University of Liverpool, UK, D. HERNANDEZ-MALDONADO, SuperSTEM Laboratory, UK, J.F. LEWIS, 2DHeat Ltd, UK	<b>B1-1-1</b> Tunable Low Energy Ion Bombardment and its Influence on AlN Thin Films Deposited in Confocal DC Magnetron Sputtering, <b>M. TRANT</b> , M. FISCHER, K.F. THORWARTH, J. PATSCHEIDER, H.J. HUG, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
10:20 am	Invited talk continued.	<b>B1-1-2</b> Unprecedented Al Supersaturation in Single-phase Rock Salt Structure VAIN Films by Al <sup>+</sup> Subplantation, <b>G. GRECZYNSKI</b> , Linköping University, (IFM), Sweden, S. MRAZ, M. HANS, Aachen University, Germany, D. PRIMETZHOFFER, Uppsala University, Angstrom Laboratory, Sweden, J. LU, L. HULTMAN, Linköping University, (IFM), Sweden, J.M. SCHNEIDER, Aachen University, Germany	
10:40 am	<b>A1-1-3</b> High Temperature Corrosion Of Ni-Base Coatings For Boiler Applications - A Microstructural Study, <b>J. EKLUND</b> , J. PHOTER-SIMON, Chalmers University of Technology, Sweden, E. SADEGHIMERESHT, University West, Sweden, L-G. JOHANSSON, T. JONSSON, Chalmers University of Technology, Sweden, S. JOSHI, University West, Sweden, J. LISKE, Chalmers University of Technology, Sweden	<b>B1-1-3 Invited</b> Ion Beam Designed Thin-film Metasurfaces, <b>C. RONNING</b> , Friedrich-Schiller-Universität Jena, Institut für Festkörperphysik, Germany	
11:00 am	<b>A1-1-4</b> Coatings for Oxidation and Hot Corrosion Protection of Disk Alloys, <b>J. NESBITT</b> , T. GABB, S. DRAPER, NASA Glenn Research Center, USA, R. MILLER, Vantage Partners, LLC, USA, I. LOCCI, University of Toledo, USA, C. SUDBRACK, NASA Glenn Research Center, USA	Invited talk continued.	
11:20 am	<b>A1-1-5</b> High Temperature Oxidation Protection of $\gamma$ -Titanium Aluminide using Amorphous (Cr,Al)ON Coatings Deposited by High Speed Physical Vapor Deposition, <b>K. BOBZIN</b> , T. BRÖGELMANN, C. KALSCHUEER, <b>T. LIANG</b> , Engineering Institute - RWTH Aachen University, Germany	<b>B1-1-5</b> Mechanical and Thermal Behavior of Magnetron Sputtered Zr-Cu and Zr-Hf-Cu Metallic Glasses, <b>M. ZITEK</b> , P. ZEMAN, S. ZUZJAKOVA, R. ČERSTVÝ, S. HAVIAR, M. KOTRLOVA, University of West Bohemia, Czech Republic	
11:40 am	<b>A1-1-6</b> Cyclic Oxidation and Hot Corrosion Behaviour of Plasma Sprayed CoCrAlY/WC-Co Coating on Turbine Alloys, <b>H.S. NITHIN</b> , <b>V. DESAI</b> , <b>R.M. RANGARASIAH</b> , National Institute of Technology Karnataka, India	<b>B1-1-6</b> The Development of Ultrathin Zr-Cu-Ni-Al-N Thin Film Metallic Glass as a Diffusion Barrier for Cu-Si Interconnect, <b>J. LEE</b> , National Tsing Hua University, Taiwan, Y.J. CHEN, Metal Industries R&D Centre (MIRDC), Taiwan, J.G. DUH, National Tsing Hua University, Taiwan	
<p style="text-align: center;"> <b>Anton Paar: Focused Topic Session</b>  <b>“Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation”</b>  <b>12:15-1:15 pm</b>  <b>Town &amp; Country Room</b> </p>			

# Monday Morning, April 24, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: California - Session B5-1</b>  <b>Hard and Multifunctional Nanostructured Coatings</b> <b>Moderators: Jiri Capek, University of West Bohemia, Czech Republic,</b> <b>Robert Franz, Montanuniversität Leoben, Austria</b>		<b>Fundamentals and Technology of Multifunctional Materials and Devices</b> <b>Room: Royal Palm 4-6 - Session C2-1</b> <b>Thin Films for Active Devices</b> <b>Moderators: Vanya Darakchieva, Linköping University, IFM, Sweden,</b> <b>Marco Cremona, Pontificia Universidade Católica do Rio de Janeiro, Brazil,</b> <b>Junichi Nomoto, Kochi University of Technology, Japan</b>	
10:00 am	<b>B5-1-1</b> Synthesis and Characterization of HfNbTiVZr High Entropy Alloy Thin Films, <b>S. FRITZE</b> , D. KARLSSON, P. BERASTEGUI, D. REHNLUND, L. NYHOLM, M. SAHLBERG, E. LEWIN, U. JANSSEN, Uppsala University, Angstrom Laboratory, Sweden	<b>C2-1-1 Invited</b> Application of Gallium Oxide for High-Power Electronics, <b>M. HIGASHIWAKI</b> , M.H. WONG, K. KONISHI, National Institute of Information and Communications Technology, Japan, K. SASAKI, K. GOTO, Tamura Corporation, Japan, H. MURAKAMI, Y. KUMAGAI, Tokyo University of Agriculture and Technology, Japan, A. KURAMATA, S. YAMAKOSHI, Tamura Corporation, Japan	
10:20 am	<b>B5-1-2</b> Structural Stability of ZrN/SiN <sub>x</sub> Multilayered Coatings under Harsh Environments, <b>G. ABADIAS</b> , Institut P', Université de Poitiers-UPR 3346 CNRS-ENSMA, France, I. SALADUKHIN, V. UGLOV, S. ZLOTSKI, V. SHYMASNKI, Belarusian State University, Belarus	Invited talk continued.	
10:40 am	<b>B5-1-3</b> Magnetron Sputtered High-Temperature Hf-B-Si-C-N Films with Controlled Electrical Conductivity and Optical Transparency, <b>v. SIMOVA</b> , J. VLCEK, S. ZUZJAKOVA, R. ČERSTVÝ, J. HOUSKA, University of West Bohemia, Czech Republic	<b>C2-1-3</b> Phenomenon of Oxygen Ion Migration in In <sub>2</sub> O <sub>3</sub> -Based Resistive Random Access Memory, <b>C.-H. WU</b> , T.C. CHANG, T.M. TSAI, National Sun Yat-sen University, Taiwan	
11:00 am	<b>B5-1-4</b> Reactively Sputtered Multicomponent (TiZrHfVNb)N Thin Films, <b>K. JOHANSSON</b> , E. LEWIN, Uppsala University, Angstrom Laboratory, Sweden	<b>C2-1-4</b> Vapor-Liquid-Solid Growth of SnO <sub>2</sub> Nanowires Utilizing Alternate Source Supply and Their Photoluminescence Properties, <b>T. TERASAKO</b> , K. KOHNO, Ehime University, Japan, M. YAGI, National Institute of Technology, Kagawa College, Japan	
11:20 am	<b>B5-1-5</b> Deposition of Fluor-doped WS <sub>2</sub> -C Coatings on Nanostructured Anodized Aluminum Alloy Substrates for Wettability Control, S. RODRIGUES, SEG-CEMUC, Portugal, <b>S. CARVALHO</b> , University of Minho and University of Porto, Portugal, A. CAVALEIRO, SEG-CEMUC, Portugal	<b>C2-1-5</b> Endurance Improvement and Resistance Stabilization of Transparent Multilayer ReRAM with Oxygen Deficient WO <sub>x</sub> Layer and Heat Dissipating AlN Buffer Layer, <b>Y.H. LIN</b> , National Chiao Tung University, Taiwan, D.C. HUANG, Peking University, China, T.Y. TSENG, National Chiao Tung University, Taiwan	
11:40 am	<b>B5-1-6</b> Application and ISO Standard on PVD Multi-layer Hard Films, <b>S.H. ZHANG</b> , Anhui University of Technology, China	<b>C2-1-6</b> Mechanism of Selectivity Increased during Operation on Vanadium Oxide Based Selector, C.H. LIN, T.C. CHANG, K.C. CHANG, T.M. TSAI, C.H. PAN, National Sun Yat-sen University, Taiwan, <b>J.C. LIAO</b> , National Tsing Hua University, Taiwan, P.H. CHEN, C-KC. CHEN, National Sun Yat-sen University, Taiwan, S.M. SZE, National Chiao Tung University, Taiwan	
<p style="text-align: center;"> <b>Anton Paar: Focused Topic Session</b>  <b>“Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation”</b>  <b>12:15-1:15 pm</b>  <b>Town &amp; Country Room</b> </p>			

# Monday Morning, April 24, 2017

**Coatings for Biomedical and Healthcare Applications**  
**Room: Sunrise - Session D2**

**Bio-corrosion, Bio-tribology, and Bio-tribocorrosion**  
**Moderator: Anna Igual Munoz**, Ecole Polytechnique Federale de Lausanne, Switzerland

**New Horizons in Coatings and Thin Films**  
**Room: Royal Palm 1-3 - Session F1-1**

**Nanomaterials and Nanofabrication**  
**Moderators: R. Mohan Sankaran**, Case Western Reserve University, USA, **Sumit Agarwal**, Colorado School of Mines, USA

10:00 am	<b>D2-1</b> Evaluation of Tribocorrosion Kinetics and Biocompatibility of Electrochemically Induced Tribolayer for Hip Implants, M. LYVERS, D. BIJUKUMAR, University of Illinois College of Medicine at Rockford, USA, A. MOORE, Winnebago High School, USA, P. SABORIO, Rush University Medical Center, USA, D. ROYHMAN, Rush University Medical Center; and Northwestern University, USA, M. WIMMER, Rush University Medical Center, USA, K. SHULL, Northwestern University, USA, <b>M. MATHEW</b> , University of Illinois College of Medicine at Rockford; and Rush University Medical Center, USA	<b>F1-1-1</b> Sculptured Thin Films by Ion Beam Sputtering, <b>B. RAUSCHENBACH</b> , C. GRÜNER, Leibniz Institute of Surface Modification, Germany
10:20 am	<b>D2-2</b> Study of the Dynamic Behavior of a Tribocorrosion System, A. RODA BUCH, A. DALMAU, A. ROVIRA, Universitat Politècnica de València UPV, Spain, <b>A. IGUAL MUNOZ</b> , Ecole polytechnique federale de lausanne, Switzerland	<b>F1-1-2</b> The Effect of Thermal Treatment on the Structure and Surface Plasmon Resonance of Ag-coated ZnO Nanoparticles by Sol-gel Method, <b>c.c. WANG</b> , National Chung Hsing University, Taiwan, H.C. SHIH, Chinese Culture University, Taiwan
10:40 am	<b>D2-3 Invited</b> Tribocorrosion from Nano to Macroscale – the Effect of Proteins on Friction of CoCrMo Biomedical Alloy, <b>ESPALLARGAS</b> , NTNU, Norway	<b>F1-1-3 Invited</b> In-situ Electron Microscopy of Synthesis, Chemistry and Self-Assembly of Colloidal Nanostructures, <b>E. SUTTER</b> , University of Nebraska-Lincoln, USA
11:00 am	Invited talk continued.	Invited talk continued.
11:20 am	<b>D2-5</b> Fretting Corrosion of Biomaterials Dedicated to Dental Implants: Quantitative and Qualitative Insights, P. CORNE, A-S. VAILLANT-CORROY, P. DE MARCH, F. CLEYMAND, Institut Jean Lamour, France, <b>J. GERINGER</b> , Mines Saint Etienne, France	<b>F1-1-5</b> Deposition of PTFE – TiO <sub>2</sub> Composite Coatings Combining Superhydrophobic and Photocatalytic Properties by Reactive pDC Magnetron Sputtering from a Blended Powder Target, <b>M. RATOVA</b> , P.J. KELLY, G.T. WEST, Manchester Metropolitan University, UK
11:40 am	<b>D2-6</b> Mechanical and Anti-Corrosive Properties of Various Titania/Silica Hybrid Composite Film as the Interlayer of a Diamond-Like Carbon Deposited Ti6Al4V Substrate by Sol-Gel Technique, N.-E. WU, <b>W.-H. WU</b> , C.-C. CHOU, National Taiwan Ocean University, Taiwan, R. WU, National Institute for Materials Science, Japan, J.W. LEE, Ming Chi University of Technology, Taiwan	<b>F1-1-6</b> The Mechanisms of Growth of Zr-Fe-O Whiskers, <b>J. GU</b> , University of North Texas, USA, P. PETRY, University of Rouen, France, I. HAMMOOD, M. CARL, R.F. REIDY, S.M. AOUADI, University of North Texas, USA
	<p align="center"> <b>Anton Paar: Focused Topic Session</b>  <b>“Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation”</b>  <b>12:15-1:15 pm</b>  <b>Town &amp; Country Room</b> </p>	

# Monday Afternoon, April 24, 2017

<b>Coatings for Use at High Temperatures</b> <b>Room: San Diego - Session A1-2</b> <b>Coatings to Resist High Temperature Oxidation, Corrosion and Fouling</b> <b>Moderators: Vladislav Kolarik, Fraunhofer Institute for Chemical Technology ICT, Germany, Prabhakar Mohan, Solar Turbines, USA, Anton Chyrkin, Forschungszentrum Jülich GmbH, Germany</b>		<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B1-2</b> <b>PVD Coatings and Technologies</b> <b>Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan</b>	
1:30 pm	<b>A1-2-1</b> Pt Effect on Oxidation Resistance and Durability of $\beta$ -NiAl Coatings : A Coupled <i>ab initio</i> and Physics-based Modeling, <b>P. PATNAIK</b> , Gas Turbine Laboratory, Aerospace Portfolio, National Research Council, Canada, K. CHEN, Structures, Materials and Manufacturing Laboratory, Aerospace Portfolio, National Research Council, Canada	<b>B1-2-1 Invited</b> Air-based Deposition of Oxynitride Thin Films, <b>F.H. LU</b> , National Chung Hsing University, Taiwan	
1:50 pm	<b>A1-2-2</b> Synthesis and Characterization of Superalloy Coatings by Cathodic Arc Evaporation, <b>J. AST</b> , Laboratory for Mechanics of Materials and Nanostructures, Empa, Switzerland, <b>M. DÖBEL</b> , Ion Beam Physics, ETH Zurich, Switzerland, <b>A. DOMMANN</b> , Center for X-ray Analytics, Empa, Switzerland, <b>M. GINDRAT</b> , Oerlikon Metco AG, Switzerland, <b>X. MAEDER</b> , Laboratory for Mechanics of Materials and Nanostructures, Switzerland, <b>A. NEELS</b> , Center for X-ray Analytics, Empa, Switzerland, <b>P. POLCIK</b> , Plansee Composite Materials GmbH, Germany, <b>J. RAMM</b> , H. RUDIGIER, Oerlikon Surface Solutions AG, Liechtenstein, <b>K. VON ALLMEN</b> , Center for X-ray Analytics, Empa, Switzerland, <b>B. WIDRIG</b> , Oerlikon Surface Solutions AG, Liechtenstein	Invited talk continued.	
2:10 pm	<b>A1-2-3</b> High Temperature Binary or Doped Nickel Aluminide Coatings on Superalloys: An Industrial Approach, <b>v. PAPAGEORGIOU</b> , <b>S. VOGIATZIS</b> , <b>H. STRAKOV</b> , <b>A.A. ZAINAL</b> , <b>M. AUGER</b> , IHI Ionbond AG, Switzerland	<b>B1-2-3</b> Effect of Oxygen Contamination on PVD AlN Growth, <b>K. KNISELY</b> , <b>B. GRIFFIN</b> , <b>R. TIMON</b> , <b>M. OLEWINE</b> , <b>T. YOUNG</b> , <b>M. MONOCHIE</b> , <b>H. DALLO</b> , Sandia National Laboratories, USA	
2:30 pm	<b>A1-2-4</b> Corrosion Behavior of Iron Based Alloys Coated with Aluminum Oxide by RF Magnetron Sputtering, <b>D.V. MELO-MAXIMO</b> , <b>L. MELO-MÁXIMO</b> , <b>A.E. MURILLO</b> , <b>O. SALAS</b> , <b>B. GARCÍA</b> , ITESM-CEM, Mexico, <b>E. URIBE</b> , ITESM-QRO, Mexico, <b>J. OSEGUERA</b> , ITESM-CEM, Mexico	<b>B1-2-4</b> Optical and Mechanical Properties of Al-doped Zinc Oxide Thin Film Fabricated by a High Power Impulse Magnetron Sputtering, <b>y.c. HONG</b> , <b>J.W. LEE</b> , Ming Chi University of Technology, Taiwan, <b>B.S. LOU</b> , Chang Gung University, Taiwan	
2:50 pm	<b>A1-2-5</b> Effect of the Microstructure on Corrosion and Deformation Behavior of Zn-Mg Coatings on Steel Substrate, <b>J.H. LA</b> , <b>K.T. BAE</b> , <b>S.M. KIM</b> , <b>S.Y. LEE</b> , <b>Y.S. HONG</b> , Korea Aerospace University, Republic of Korea	<b>B1-2-5</b> Non-reactive and Reactive dc Magnetron Sputter Deposition of Molybdenum Oxide Thin Films, <b>J.M. PACHLHOFER</b> , <b>R. FRANZ</b> , Montanuniversität Leoben, Austria, <b>E. FRANZKE</b> , Plansee SE, Austria, <b>A. TARAZAGA MARTÍN-LUENGO</b> , Johannes Kepler University, Austria, <b>H. KÖSTENBAUER</b> , <b>J. WINKLER</b> , Plansee SE, Austria, <b>A. BONANNI</b> , Johannes Kepler University, Austria, <b>C. MITTERER</b> , Montanuniversität Leoben, Austria	
3:10 pm	<b>A1-2-6</b> A Comparative Analysis of Ternary Element Addition on Corrosion Behavior of Aluminide Coatings in Harsh Environmental Conditions, <b>u. ERTURK</b> , <b>B. IMER</b> , Middle East Technical University, Turkey	<b>B1-2-6</b> Piezoelectric Coefficient Enhancement in Low Mg Content Wurtzite $\text{Mg}_{1-x}\text{Zn}_x\text{O}$ Films, <b>y.J. CHEN</b> , <b>S. BRAHMA</b> , <b>C.P. LIU</b> , <b>J.L. HUANG</b> , National Cheng Kung University, Taiwan	
3:30 pm	<b>A1-2-7</b> Cyclic and Isothermal Corrosion Testing of Aluminide Slurry Coatings in Molten Nitrates for Heat Storage in Concentrated Solar Power Plants, <b>A. AGÜERO</b> , <b>S. RODRÍGUEZ</b> , <b>P. AUDIGIÉ</b> , Instituto Nacional de Técnica Aeroespacial (INTA), Spain	<b>B1-2-7</b> Ternary and Quaternary Hard Transparent Thin Films Made from Al, Si, O and N, <b>M. FISCHER</b> , <b>M. TRANT</b> , <b>K.F. THORWARTH</b> , <b>H.J. HUG</b> , <b>J. PATSCHEIDER</b> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
3:50 pm	<b>A1-2-8</b> Sol-gel $\text{ZrO}_2\text{-Y}_2\text{O}_3$ Coatings Validated in Molten Salt Environment for CSP Applications, <b>V. ENCINAS SÁNCHEZ</b> , <b>M.I. LASANTA</b> , <b>M.T. DE MIGUEL</b> , <b>G. GARCÍA MARTÍN</b> , <b>F.J. PÉREZ TRUJILLO</b> , Complutense University of Madrid, Spain	<b>B1-2-8</b> Characteristics of TiAlSiN Having a Hexagonal Structure, <b>S. INAGAKI</b> , <b>A. KAWANA</b> , Japan Coating Center Co., Ltd., Japan	
4:10 pm		<b>B1-2-9</b> A study of Preferred Orientation of VN Thin Film on Si Substrate Deposited by Unbalanced Magnetron Sputtering, <b>C.H. LIN</b> , <b>J.H. HUANG</b> , <b>G.P. YU</b> , National Tsing Hua University, Taiwan	
4:30 pm		<b>B1-2-10</b> Structure and Mechanical Property of AlP Deposited ( $\text{Al}_x\text{Cr}_{100-x}\text{N}$ ) Coatings with $x > 70\text{at}\%$ , <b>K. YAMAMOTO</b> , <b>H. NII</b> , <b>M. ABE</b> , Kobe Steel Ltd., Japan, <b>S. TAKADA</b> , <b>Y. IWAI</b> , University of Fukui, Japan	
4:50 pm		<b>B1-2-11</b> Control of Elastic-Plastic Deformability and Hardness in Nitride Hard Coatings on Cubic Boron Nitride Sintered Compact Cutting Tool, <b>M. TAKAHASHI</b> , <b>S. SATO</b> , <b>T. MAEKAWA</b> , Mitsubishi Materials Corporation, Japan	
5:10 pm		<b>B1-2-12</b> Effect of Preferred Orientation on the Fracture Toughness of VN Hard Coatings, <b>L.R. WEI</b> , <b>J.H. HUANG</b> , <b>G.P. YU</b> , National Tsing Hua University, Taiwan	
<b>Welcome Mixer</b> <b>5:30-7:00 pm</b> <b>Lion Fountain Courtyard</b>			

# Monday Afternoon, April 24, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: California - Session B5-2</b>  <b>Hard and Multifunctional Nanostructured Coatings</b> <b>Moderators: Jiri Capek, University of West Bohemia, Czech Republic,</b> <b>Robert Franz, Montanuniversität Leoben, Austria</b>		<b>Fundamentals and Technology of Multifunctional Materials and Devices</b> <b>Room: Royal Palm 4-6 - Session C2-2</b> <b>Thin Films for Active Devices</b> <b>Moderators: Vanya Darakchieva, Linköping University, IFM, Sweden,</b> <b>Marco Cremona, Pontificia Universidade Católica do Rio de Janeiro, Brazil,</b> <b>Junichi Nomoto, Kochi University of Technology, Japan</b>	
1:30 pm	<b>B5-2-1</b> B <sub>4</sub> C and Mo Coatings Characterization regarding Stamping Dies Application, F. SILVA, L. FERNANDES, F. ANDRADE, ISEP - School of Engineering, Polytechnic of Porto, Portugal, R. ALEXANDRE, TeandM - Technology, Engineering and Materials, S.A., Portugal, A. BAPTISTA, INEGI - Instituto de Ciência e Inovação em Eng. Mecânica e Eng. Industrial, Portugal, C. RODRIGUES, Colep Portugal, S.A., Portugal	C2-2-1	Ga-doped ZnO Films by Magnetron Sputtered at Ultralow Discharge Voltages: Effects of Defect Annihilation, Y. CHEN, M. FANPING, F. GE, H. FENG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China
1:50 pm	<b>B5-2-2</b> Effect of Energy on Structure, Microstructure and Enhanced Resistance to Cracking of Hard Sputter Deposited Ti(Ni)N <sub>x</sub> and Ti(Al,V)N <sub>x</sub> Films, M. JAROŠ, J. MUSIL, R. ČERSTVÝ, S. HAVIAR, University of West Bohemia, Czech Republic	C2-2-2	Reactive Sputter Deposition and Annealing of Nanometer Scale NiO Thin Films for Metal-Insulator-Metal Tunnel Junction Diodes, F. URBAN, S. BHANSALI, Florida International University, USA, A. SINGH, Intel, USA, D. BARTON, Retired, USA
2:10 pm	<b>B5-2-3 Invited</b> Ultra-thick, Superhard Nanocomposite Coatings Deposited using Plasma Enhanced Magnetron Sputtering (PEMS) and their Practical Applications, R. WEI, Southwest Research Institute, USA	C2-2-3 Invited	HVPE GaN and AlGaN Thin vs Thick Freestanding Films for Electronic and Optoelectronic Devices, T. PASKOVA, North Carolina State University, USA
2:30 pm	Invited talk continued.		Invited talk continued.
2:50 pm	<b>B5-2-5</b> Role of Interfaces in Determining the Fracture Resistance of Nanocomposite/Metal Nitride Multilayers, N. GHAFOR, Linköping University, IFM, Thin Film Physics Division, Sweden	C2-2-5	Characteristics of Non-polar ZnO Films Grown by Catalytic Reaction Assisted Chemical Vapor Deposition, A. KATO, M. IKEDA, Y. ADACHI, R. TAJIMA, K. YASUI, Nagaoka University of Technology, Japan
3:10 pm	<b>B5-2-6</b> Tribocorrosion Behaviour of Nanocomposite TiSiCN Coatings Tested in PBS Solution, A. HATEM, Pontificia Universidade Católica do Paraná, Brazil, J.L. LIN, R. WEI, Southwest Research Institute, USA, R. TORRES, C. LAURINDO, P. SOARES, Pontificia Universidade Católica do Paraná, Brazil	C2-2-6	Mechanism of a Number of Operation Resulted in Degradation on Multilayer Resistance Random Access Memory, Y.T. TSENG, T.C. CHANG, K.C. CHANG, T.M. TSAI, C.-H. WU, P.H. CHEN, C.H. LIN, National Sun Yat-sen University, Taiwan, S.M. SZE, National Chiao Tung University, Taiwan
3:30 pm	<b>B5-2-7</b> Carbon Supersaturated Fe-Cr-Ni-C Thin Films with a Unique Nanocolumnar Structure - a Tough, Low Friction and Corrosion Resistant Coating, T. SUSZKO, W. GULBINSKI, E. DOBRUCHOWSKA, Koszalin University of Technology, Poland, J. MORGIEL, Institute of Metallurgy and Materials Science of Polish Academy of Sciences, Poland	C2-2-7	An Ion Mass and Ion Energy Selected Hyperthermal Ion-Beam Assisted Deposition Setup for Nitride Nanofilm Synthesis, J.W. GERLACH, P. SCHUMACHER, M. MENSING, Leibniz Institute of Surface Modification (IOM), Germany, S. RAUSCHENBACH, Max Planck Institute for Solid State Research, Germany, B. RAUSCHENBACH, Leibniz Institute of Surface Modification (IOM), Germany
3:50 pm	<b>B5-2-8</b> Study of Wear Mechanism of Carbide and Ceramic Cutting Tools with Nano-structured Multi-layered Composite Functional Coatings, A. VERESCHAKA, A. VERESCHAKA, MSTU Stankin, Russian Federation, A. BATAKO, Liverpool John Moores University, UK, N. SITNIKOV, Federal State Unitary Enterprise "Keldysh Research Center", Russian Federation	C2-2-8	Improve Switching Characteristic of Resistive Random Access Memory with Chemical Plasma Treatment on TiN electrode, C.H. PAN, T.C. CHANG, T.M. TSAI, National Sun Yat-sen University, Taiwan
4:10 pm	<b>B5-2-9</b> Achieving High Hardness and Wear Resistance in V-Al-N Coatings by Low-temperature Magnetron Sputter Deposition, F. HUANG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China	C2-2-9	Critical Layer to Improve the Orientation Distribution and Carrier Transport of Direct-current Magnetron Sputtered Al-doped ZnO Polycrystalline Films using Various Al <sub>2</sub> O <sub>3</sub> Contents Composite Targets, J. NOMOTO, H. MAKINO, T. YAMAMOTO, Kochi University of Technology, Japan
4:30 pm	<b>B5-2-10</b> Novel CrVN/TiN Nanoscale Multilayer Coatings Deposited by DC Magnetron Sputtering, E. CONTRERAS, Y. GALINDEZ, G. BEJARANO, M. RODAS, M. GÓMEZ, Universidad de Antioquia, Colombia	C2-2-10	Next-Generation Electronic Materials Processing Tools Newly Developed at AFRL, B. HOWE, Air Force Research Laboratory, USA
4:50 pm	<b>B5-2-11</b> Ion Etching Induced Cross-linking: Origin of High Hardness for Nanocrystalline Carbon Films, X. FAN, D.F. DIAO, Shenzhen University, China	C2-2-11	The Role of Oxidized TiN Bottom Electrode in Resistive Random Access Memory with Supercritical CO <sub>2</sub> Fluid Treatment, Y.T. SU, C.H. PAN, T.C. CHANG, National Sun Yat-sen University, Taiwan
5:10 pm	<b>B5-2-12</b> Temperature Dependence of the Raman Spectra of Graphene Nanocrystallized Carbon Film Grown under Electron Irradiation, C. WANG, C. CHEN, Institute of Nanosurface Science and Engineering, Shenzhen University, China, X. PEIDONG, Xi'an Jiaotong University, China, D. DONGFENG, Institute of Nanosurface Science and Engineering, Shenzhen University, China	C2-2-12	Excellent Bipolar Resistive Switching Behavior in WN Thin Film for Non-volatile ReRAM Device Application, R. PRAKASH, D. KAUR, Indian Institute Of Technology Roorkee, India
<b>Welcome Mixer</b> <b>5:30-7:00 pm</b> <b>Lion Fountain Courtyard</b>			

# Monday Afternoon, April 24, 2017

<b>Coatings for Biomedical and Healthcare Applications</b> <b>Room: Sunrise - Session D1</b> <b>Surface Coatings and Surface Modifications in Biological Environments</b> <b>Moderators:</b> Kerstin Thorwarth, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, <b>Mathew T. Mathew</b> , University of Illinois College of Medicine at Rockford and Rush University Medical Center, USA, <b>Argelia Almaguer-Flores</b> , Universidad Nacional Autonoma de Mexico, Mexico	
1:30 pm	<b>D1-1</b> Reactively Sputtered Iridium Oxide Films for Biomedical Electrode Coatings: Microstructural Dependence of the In-Vitro Electrochemical Performance, N. PAGE, J.G. LUCCHI, J.G. BUCHAN, T. SCABAROZI, Rowan University, USA, S. AMINI, Johnson Matthey Inc., USA, <b>J.D. HETTINGER</b> , Rowan University, USA
1:50 pm	<b>D1-2</b> Nanostructured Surfaces based on Tantalum Oxide for Osseointegrated Metallic Implants, <b>C.F. ALMEIDA ALVES</b> , J. OLIVEIRA, S. PIRES, L. MARQUES, University of Minho, Portugal, D. SCHNEIDER, Fraunhofer Institut für Werkstoffphysik und Schichttechnologie, Germany, A. CAVALEIRO, University of Coimbra, Portugal, S. CARVALHO, University of Minho, Portugal
2:10 pm	<b>D1-3</b> Development of a Biocompatible Titanium Niobium Alloy Coating as a Buffer for Rigid Coatings on Polyetheretherketon, <b>M. KÖNIG</b> , K. BERGNER, H. SCHEERER, G. ANDERSON, M. OECHSNER, TU Darmstadt, Germany
2:30 pm	<b>D1-4</b> Development of Novel Long-Lasting S-Phase based Anti-Bacterial Coatings, D. FORMOSA, X. LI, H. DONG, The University of Birmingham, UK
2:50 pm	<b>D1-5 Invited</b> Single-step, Environmentally-Friendly, Biological Functionalisation through Radicals generated by Plasma Surface Modification of Biomedical Devices, <b>M.M. BILEK</b> , E. KOSOBRODOVA, A. KONDYURIN, B. AKHAVAN, M. SANTOS, EA. WAKELIN, GC YEO, C. TRAN, D.R. MCKENZIE, A. WEISS, University of Sydney, Australia, M. NG, S. WISE, Heart Research Institute, Australia
3:10 pm	Invited talk continued.
3:30 pm	<b>D1-7</b> Deposition and Characterisation of Silver Nanocomposite Coatings on Orthopaedic Grade Cobalt Chromium Alloys and the Related Antimicrobial Effects, <b>L. YANG</b> , Wallwork Cambridge Ltd, UK, L. RICHARDS, MatOrtho Limited, UK, A. MISHA, J.C. SHELTON, Queen Mary University of London, UK, S. COLLINS, MatOrtho Limited, UK, S. BANFIELD, L. ESPITALIER, Wallwork Cambridge Ltd, UK, H. HOTH, A. HART, Royal National Orthopaedic Hospital, UK, J. HOUSDEN, Wallwork Cambridge Ltd, UK
3:50 pm	<b>D1-8</b> Oral Bacteria Adhesion on Saliva Coated and Uncoated Stainless Steel Surfaces: Experimental Characterisation and Modelling, <b>J. CHEN</b> , S.B. CHINNARAJ, Y. AMMAR, J. PAHALA GEDARA, N. JAKUBOVICS, Newcastle University, UK
4:10 pm	<b>D1-9</b> Towards Antibacterial yet Biocompatible and Bioactive Surfaces, <b>D.V. SHTANSKY</b> , I.V. SUKHORUKOVA, A.N. SHEVEYKO, E.A. LEVASHOV, National University of Science and Technology "MISIS", Russian Federation
4:30 pm	<b>D1-10</b> Characteristics of Plasma Polymerization Films using HMDSO Precursor on 316L Stainless Steel, <b>s. WANG</b> , J.W. LEE, Y. LEE, Ming Chi University of Technology, Taiwan, B.S. LOU, Chang Gung University, Taiwan
4:50 pm	<b>D1-11</b> Structure and Biocompatibility of Fluorine-containing TaCN Thin Films, <b>J.H. HSIEH</b> , H.T. LIN, Ming Chi University of Technology, Taiwan, S.L. LIU, National Taipei University of Technology, Taiwan
5:10 pm	<b>D1-12</b> Effect of Zn on the Improvement of Corrosion Performance of MAO Coated Biodegradable Mg-Sr-Zn Alloys, <b>M. YAZICI</b> , Ondokuz Mayıs University, Turkey, Y. AZAKLI, S. CENGİZ, Y. GENCER, M. TARAKCI, Gebze Technical University, Turkey
<b>Welcome Mixer</b> <b>5:30-7:00 pm</b> <b>Lion Fountain Courtyard</b>	



# Monday Afternoon, April 24, 2017

<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F1-2</b>  <b>Nanomaterials and Nanofabrication</b> <b>Moderators: R. Mohan Sankaran</b> , Case Western Reserve University, USA, <b>Sumit Agarwal</b> , Colorado School of Mines, USA		<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F3</b>  <b>2D Materials: Synthesis, Characterization, and Applications</b> <b>Moderators: Haitao Liu</b> , University of Pittsburgh, USA, <b>Jiaxing Huang</b> , Northwestern University, USA, <b>Liping Wang</b> , Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China
1:30 pm	<b>F1-2-1 Invited</b> Accelerated Development of CuSb(S, Se) <sub>2</sub> Thin Film Photovoltaic Device Prototypes, <b>C. WOLDEN</b> , Colorado School of Mines, USA	Session F1-2 immediately prior to Session F3
1:50 pm	Invited talk continued.	
2:10 pm	Session F3 will begin immediately after Session F1-2	<b>F3-3</b> Tunable MoS <sub>2</sub> and MoS <sub>2</sub> -based Electrocatalysts by Hot-injection Method for Hydrogen Evolution Reaction, <b>C.L. WU</b> , P.C. HUANG, S. BRAHMA, J.L. HUANG, National Cheng Kung University, Taiwan, S.C. WANG, Southern Taiwan University of Science and Technology, Taiwan
2:30 pm		<b>F3-4</b> High-throughput Combinatorial Synthesis and Multimodal X-ray Analysis of Co-based Ternary Alloys, <b>J. THAPA</b> , C. GROSS, V.I. HEGDE, L. WARD, S.S. NAGHAVI, C.M. WOLVERTON, Y.-W. CHUNG, M.J. BEDZYK, Northwestern University, USA
2:50 pm		<b>F3-5</b> Development and Characterisation of Cost-Effective Graphene Oxide-Nickel Nanocomposite Coatings, <b>S. QI</b> , X. LI, <b>H. DONG</b> , The University of Birmingham, UK
3:10 pm		<b>F3-6</b> Fabrication of Functional Graphene Reinforced Polyurethane Nanocomposite Coatings with Regular Textures for Corrosion Inhibition, <b>W.J. ZHAO</b> , Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China
3:30 pm		<b>F3-7</b> Structure and Tribological Properties of TiSiCN Coatings Incorporated with Layered Structure of MAX Phase in Artificial Seawater, <b>J.L. LI</b> , Y. WANG, C.Q. DANG, L.P. WANG, Q.J. XUE, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China
3:50 pm		<b>F3-8</b> Graphene: Improving Material Performance by Keeping the Surface Cleaning, <b>H. LIU</b> , University of Pittsburgh, USA
<div style="text-align: center;"> <b>Welcome Mixer</b>  <b>5:30-7:00 pm</b>  <b>Lion Fountain Courtyard</b> </div>		

# Tuesday Morning, April 25, 2017

<b>Coatings for Use at High Temperatures</b> <b>Room: San Diego - Session A1-3</b> <b>Coatings to Resist High Temperature Oxidation, Corrosion and Fouling</b> <b>Moderators: Vladislav Kolarik, Fraunhofer Institute for Chemical Technology ICT, Germany, Prabhakar Mohan, Solar Turbines, USA, Anton Chyrkin, Forschungszentrum Jülich GmbH, Germany</b>		<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B1-3</b> <b>PVD Coatings and Technologies</b> <b>Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan</b>	
8:00 am	<b>A1-3-1</b> Thin Co and Ce/Co Coatings on Ferritic Stainless Steel Interconnects for Solid Oxide Fuel Cells, <b>H. FALK-WINDISCH</b> , M. SATTARI, L-G. JOHANSSON, J.E. SVENSSON, J. FROITZHEIM, Chalmers University of Technology, Sweden	B1-3-1	<b>Invited</b> Synthesis and Applications of High-precision Thin Film Multilayers, <b>A. LESON</b> , S. BRAUN, P. GAWLITZ, C. GRUHNE, A. KUBEC, M. MENZEL, Fraunhofer Institute for Material and Beam Technology, Germany
8:20 am	<b>A1-3-2</b> Long-term Oxidation of MCrAlY Coatings at 1000 °C and an Al-activity Based Coating Life Criterion, <b>P. ZHANG</b> , K. KANG, R. LIN PENG, Linköping University, Sweden, X.-H. LI, Siemens Industrial Turbomachinery AB, Sweden, S. JOHANSSON, Linköping University, Sweden	Invited talk continued.	
8:40 am	<b>A1-3-3</b> The Preparation of Ti <sub>2</sub> AlN MAX Phase Coatings and its Oxidation Mechanism under Different Atmosphere, <b>Z.Y. WANG</b> , University of Chinese Academy of Sciences, China, P.L. KE, A.Y. WANG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China	B1-3-3	Influences of Frequency and Duty Cycle on the Mechanical Properties of TiCrBN Thin Films Grown by a Hybrid Superimposed High Power Impulse Magnetron Sputtering and Radio Frequency sputtering technique, <b>C.Y. LU</b> , J.W. LEE, W. DIYATMIKA, Ming Chi University of Technology, Taiwan
9:00 am	<b>A1-3-4</b> Effect of Coating Architecture on the Corrosion Behavior of Ti-N/Cr-N Multilayer Coatings, <b>Y.S. YANG</b> , National Kaohsiung First University of Science and Technology, Taiwan	B1-3-4	Controllably Manipulating Adatom Mobility during PVD Deposition through Surface Acoustic Waves, <b>P.J.S. SHAH</b> , A. REED, A. WAITE, B. HOWE, M. MCCONNEY, Air Force Research Laboratory, USA
9:20 am	<b>A1-3-5</b> Effects of Encapsulating Material and Healing Agent Ratio on Crack Propagation Behavior for Thermal Barrier Coatings, <b>S.H. JEON</b> , S.S. LEE, S.H. JUNG, H.M. PARK, Y.G. JUNG, Changwon National University, Republic of Korea, J. ZHANG, Purdue University, USA	B1-3-5	Effects of Processing Parameters on the Fabrication of TiCrSiN Thin Films Deposited by a Hybrid HiPIMS and RF Sputtering System, <b>Y.X. QIU</b> , Y.C. YANG, National Taipei University of Technology, Taiwan, J.W. LEE, Ming Chi University of Technology, Taiwan
9:40 am	<b>A1-3-6</b> Comparative Study of Monolayer and Multilayer CrAlSiN PVD Coatings Behavior at High Temperature in Steam Atmosphere, <b>A. ILLANA</b> , S. MATO, Complutense University of Madrid, Spain, E. ALMANDOZ, G. GARCÍAS FUENTES, Navarra Industry Association, Spain, F.J. PÉREZ TRUJILLO, <b>M.I. LASANTA</b> , Complutense University of Madrid, Spain	B1-3-6	Exploring the High-temperature Hardness of Nanocrystalline W-Ti Coatings, <b>Y.-W. CHUNG</b> , C. GROSS, X. HE, Northwestern University, USA
10:00 am	<b>A1-3-7</b> Material Validation in Molten Salt Environment under Dynamic Conditions Using a Novel Pilot Plant Facility, <b>M.I. LASANTA</b> , G. GARCÍA MARTÍN, <b>V. ENCINAS SÁNCHEZ</b> , M.T. DE MIGUEL, F.J. PÉREZ TRUJILLO, Complutense University of Madrid, Spain	B1-3-7	Growth Mechanism of Sputter Deposited Self-assembled Alternating Layered Metal Containing Hydrogenated Amorphous Carbon Film, <b>J.M. TING</b> , National Cheng Kung University, Taiwan, <b>W. WU</b> , Da-Yeh University, Taiwan
10:20 am		B1-3-8	Phase Formation in Sputter Deposited Tantalum Coatings, <b>G.T. WEST</b> , M. RATOVA, P.J. KELLY, Manchester Metropolitan University, UK
<div style="text-align: center;"> <b>Exhibition Hall Opens Today</b>  <b>Grand Hall</b>  <b>12:00-7:00 pm</b>  <b>Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm</b> </div>			

# Tuesday Morning, April 25, 2017

Hard Coatings and Vapor Deposition Technologies Room: California - Session B4-1 Properties and Characterization of Hard Coatings and Surfaces Moderators: Ulrich May, Robert Bosch GmbH, Diesel Systems, Germany, Chau-Chang Chou, National Taiwan Ocean University, Taiwan, Farwah Nahif, Eifeler-Vacotec GmbH, Germany		Fundamentals and Technology of Multifunctional Materials and Devices Room: Royal Palm 4-6 - Session C1 Optical Metrology in Design, Optimization, and Production of Multifunctional Materials Moderators: Ludvik Martinu, Polytechnique Montreal, Canada, Nikolas Podraza, University of Toledo, USA	
8:00 am	<b>B4-1-1</b> Thermal Stability and Mechanical Properties of Sub-stoichiometric TiAlN Thin Films, <b>K.M. CALAMBA</b> , Linköping University, Sweden, I.C. SCHRAMM, Saarland University, Sweden, M.P. JOHANSSON-JÖESAAAR, SECO Tools, Sweden, J.F. PIERSON, University of Lorraine, France, M. ODÉN, Linköping University, Sweden	<b>C1-1 Invited</b> Metamaterials: from Design and Modeling to the Experimental Confirmation of their Optical Performance, <b>M. LEQUIME</b> , Institut Fresnel, France	
8:20 am	<b>B4-1-2</b> Microstructure and Hardness of Ti-B-N-C Nanocomposites Deposited from Ti and B <sub>4</sub> C Targets, <b>c. WÜSTEFELD</b> , Institute of Materials Science, TU Bergakademie, Germany, M. MOTYLENKO, Institute of Materials Science, TU Bergakademie Freiberg, Germany, M. ŠÍMA, M. JÍLEK, SHM Ltd., Czech Republic, D. RAFAJA, Institute of Materials Science, TU Bergakademie Freiberg, Germany	Invited talk continued.	
8:40 am	<b>B4-1-3 Invited</b> Strategies for Fracture Toughness Enhancement of Nanostructured Films by Microstructural and Grain-boundary Design: The Role of Microstructure, Stress and Property Heterogeneity, <b>R. DANIEL</b> , C. MITTERER, J. KECKES, Montanuniversität Leoben, Austria	<b>C1-3</b> Use of FDTD Method for Data Analysis of Spectroscopic Ellipsometry Data of Non-periodic sub-wavelength Structures, <b>J.A. ZAPIEN</b> , Y. FOO, City University of Hong Kong	
9:00 am	Invited talk continued.	<b>C1-4</b> Analysis Procedures for Multiple Sets of Ellipsometric Spectra, <b>N.J. PODRAZA</b> , K. GHIMIRE, P. UPRETY, M.M. JUNDA, University of Toledo, USA	
9:20 am	<b>B4-1-5</b> Epitaxial Growth of HfN Films using Synchronized Pulsed Substrate Bias during HiPIMS Discharge, M. VILLAMAYOR, Linköping University, (IFM), Sweden, T. SHIMIZU, Tokyo Metropolitan Univeristy, Japan, J. KERAUDY, R. BOYD, Linköping University, (IFM), Sweden, D. LUNDIN, LPGP, France, U. HELMERSSON, Linköping University, (IFM), Sweden	<b>C1-5</b> High Precision Absorption Measurements in Optical Films using the TRACK Method: Comparison with the Laser-induced Deflection, R. VERNHES, Polytechnique Montreal, Canada, C. MUHLIG, Leibniz-Institute of Photonic Technology (IPHT), Germany, L. MARTINU, Polytechnique Montreal, Canada	
9:40 am	<b>B4-1-6</b> HiPIMS and Ni Doping Induced Structure Reinforcement and Phase Change in nc-TiC/a-C:H Coatings, <b>P. SOUCEK</b> , J. DANIEL, J. HNILICA, K. BERNATOVA, L. ZABRANSKY, V. BURSIKOVA, M. STUPAVSKA, P. VAŠINA, Masaryk University, Czech Republic	<b>C1-6</b> Durability and Wear Mechanisms of Easy-to-clean Coatings on Glass and Displays Assessed by <i>in situ</i> Tribometry, J. QIAN, T. SCHMITT, B. BALOUKAS, J.E. KLEMBERG-SAPIEHA, L. MARTINU, Polytechnique Montreal, Canada, C.A. KOSIK-WILLIAMS, J.J. PRICE, E.L. NULL, Corning Incorporated, USA	
10:00 am	<b>B4-1-7</b> Correlation of Plasma Parameters and Thin Film Properties of HiPIMS Al-Cr-N films using a Combinatorial Approach, <b>L. BANKO</b> , D. GROCHLA, S. RIES, P. AWAKOWICZ, A. LUDWIG, Ruhr-Universität Bochum, Germany	<b>C1-7</b> Insitu Metrology for Surface Topography and Stress Characterization, <b>w. WALECKI</b> , Frontier Semiconductor, USA	
10:20 am		<b>C1-8</b> Scratch Failure vs Residual Stress: a Relationship Applied to Optical Coatings, T. POIRIÉ, T. SCHMITT, Polytechnique Montreal, Canada, E. BOUSSER, University of Manchester, UK, L. MARTINU, J.E. SAPIEHA, Polytechnique Montreal, Canada	
10:40 am		<b>C1-9</b> Fast Characterization of nm Thin to Thick Coatings using Pulsed-Rf Glow Discharge Optical Emission Spectrometry, <b>P. HUNAUULT</b> , M. CHAUSSEAU, K. SAVADKOUËI, HORIBA Scientific, USA, P. CHAPON, S. GAIASCHI, HORIBA Scientific, France	
<div>Exhibition Hall Opens Today Grand Hall 12:00-7:00 pm Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm</div>			

# Tuesday Morning, April 25, 2017

<b>Coatings for Biomedical and Healthcare Applications</b> <b>Room: Sunrise - Session D3</b>  <b>Medical Devices, Biosensors, and Biodegradation</b> <b>Moderators: Jessica Jennings, University of Memphis, USA, Robin Pourzal, Rush University Medical Center, USA</b>		<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F2-1</b>  <b>HiPIMS, Pulsed Plasmas and Energetic Deposition</b> <b>Moderators: Tiberiu Minea, Université Paris-Sud, France, Tomas Kubart, Uppsala University, Sweden</b>	
8:00 am	<b>D3-1</b> Challenges for Polymeric Orthopedic Implants - Enhanced Surface Functionalities using coatings deposited by HiPIMS, <b>K.F. THORWARTH</b> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, G.B. THORWARTH, IMT AG Greifensee, Switzerland, J. PATSCHEIDER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	F2-1-1	An Ionization Region Model of the Reactive Ar/O <sub>2</sub> High Power Impulse Magnetron Sputtering Discharge, <b>J.T. GUDMUNDSSON</b> , University of Iceland, Iceland, D. LUNDIN, CNRS, Université Paris-Sud, France, N. BRENNING, M.A. RAADU, C.Q. HUO, KTH - Royal Institute of Technology, Sweden, T. MINEA, CNRS, Université Paris-Sud, France
8:20 am	<b>D3-2</b> Alginate Coatings on Silver-decorated Calcium Phosphate nanospheres as an Antimicrobial coating component, <b>A. JENNINGS</b> , C. NELSON, S. MISHRA, M. GHIMIRE, J. BUMGARDNER, University of Memphis, USA	F2-1-2	Residual Stress Control of Al-rich (Ti,Al)N Hard Coatings by Pulse Duration in High Power Impulse Magnetron Sputtering, <b>T. SHIMIZU</b> , s. TAKAHASHI, H. KOMIYA, Tokyo Metropolitan University, Japan, Y. TERANISHI, K. MORIKAWA, Tokyo Metropolitan Industrial Technology Research Institute, Japan, M. YANG, Tokyo Metropolitan University, Japan, U. HELMERSSON, Linköping University, IFM, Sweden
8:40 am	<b>D3-3 Invited</b> Manufacturing, Testing, and Regulatory Aspects of Implant Coatings, <b>D. SCHOLVIN</b> , J.P. MOSELEY, Wright Medical, USA	F2-1-3 Invited	Energetic Deposition of Electronic Materials, <b>J.G. PARTRIDGE</b> , B.J. MURDOCH, N.L. MCDOUGALL, D.G. MCCULLOCH, RMIT University, Australia, R. GANESAN, M.M. BILEK, D.R. MCKENZIE, The University of Sydney, Australia, M.D. TUCKER, N.A. MARKS, Curtin University, Australia
9:00 am	Invited talk continued.		Invited talk continued.
9:20 am	<b>D3-5</b> Implant Alloy Microstructure can Enable Cell Induced Corrosion in Total Hip Replacements, <b>R. POURZAL</b> , D.J. HALL, R.M. URBAN, S.M. MCCARTHY, Rush University Medical Center, USA, J. EHRICH, A. FISCHER, University of Duisburg-Essen, Germany, J.J. JACOBS, Rush University Medical Center, USA	F2-1-5	Controlled Reactive HiPIMS of Thermochromic VO <sub>2</sub> Films at a Low Deposition Temperature (300 °C), <b>D. KOLENATY</b> , J. VLCEK, T. KOZAK, J. HOUSKA, R. ČERSTVÝ, University of West Bohemia, Czech Republic
9:40 am	<b>D3-6</b> Characterization of Solid-supported Thin Films and Molecular Interactions using Multi-Parametric Surface Plasmon Resonance, <b>A. JOKINEN</b> , N. GRANQVIST, J. KUNCOVA-KALLIO, J. SADOWSKI, BioNavis Ltd., Finland	F2-1-6	High Power Impulse Plasma Magnetron Sputtering – Dawn of Industrialization, W. GAJEWSKI, P. ROZANSKI, P. LESIUK, P. OZIMEK, <b>R. BUGYI</b> , TRUMPF Huettinger Sp. z o.o., Poland
10:00 am	<b>D3-7</b> Effect of Processing on the Structure and Biofunctionalization of AlN Thin Films Produced by r.f. Reactive Magnetron Sputtering, <b>A.E. MURILLO</b> , O. SALAS, L. MELO-MÁXIMO, B. GARCÍA, D.V. MELO-MAXIMO, Tecnológico de Monterrey-CEM, Mexico, K. GARCÍA, Tecnológico de Monterrey-CCM, Mexico, J. OSEGUERA, Tecnológico de Monterrey-CEM, Mexico	F2-1-7	Comparison of CrN from Planar and Rotating Target using Highly Ionized Processes, <b>H. GERDES</b> , A. THEMELIS, R. BANDORF, M. VERGÖHL, G. BRAEUER, Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany
10:20 am		F2-1-8	Molybdenum Thin Films Deposited by High Power Impulse Magnetron Sputtering, <b>A.P. EHIASARIAN</b> , D.A.L. LOCH, Sheffield Hallam University, UK
10:40 am		F2-1-9	Epitaxial Growth of Copper Thin Films on Si(001) by HiPIMS, <b>F. CEMIN</b> , Université Paris Sud, France, G. ABADIAS, Université de Poitiers, France, D. LUNDIN, T. MINEA, Université Paris-Sud, France
<div style="text-align: center;"> <b>Exhibition Hall Opens Today</b>  <b>Grand Hall</b>  <b>12:00-7:00 pm</b>  <b>Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm</b> </div>			

# Tuesday Morning, April 25, 2017

Exhibitors Keynote Lecture  
Room: Town & Country - Session

11:00 am-12:00 pm

## Exhibition Keynote Lecture

**Chris Engdahl**

### **Success and Failure in the Commercialization of CVD Diamond**

Vice President, Technology  
Crystallume, USA  
Santa Clara, California

The reality of diamond thin films caught the interest of many researchers when the rest of the world learned from the Soviet Union how to grow diamond from the gas phase in early 1980's. Besides the allure of being highly sought after gem-quality crystals, diamond has some impressive physical attributes: highest hardness, best electrical insulator, best thermal conductor, broadband optical transparency, high acoustic velocity and extreme chemical inertness. Funding for basic research and creation of private companies poured in. However, due to inadequate understanding of the scientific challenges in early stages of research and difficulties in scaling up production-level deposition systems, this resulted in a long cycle of public and private investors spending large sums of money for products that proved to be not viable. As a result, most large commercial efforts ceased to exist, and investors turned their attention away from CVD diamond. The primary commercial success for CVD diamond for the next 15-20 years was as an abrasive material used on polishing pads, cutting tools, and low-volume niche markets.

This talk will discuss the early promise and evolution of the field of CVD diamond, illustrating some of the problems and advantages of developing a novel and compelling coating into useful products. Several commercial applications of CVD diamond in use today will be presented, along with a few of the most interesting applications being positioned for the market in the near future. Interest in CVD diamond thin films has continued to thrive in academia, and commercial interest is undergoing a rebirth. Practical applications and useful deposition systems are now combining to support realistic commercial growth in the field.



Exhibition Hall Opens Today  
Grand Hall  
12:00-7:00 pm

# Tuesday Afternoon, April 25, 2017

<b>Coatings for Use at High Temperatures</b> <b>Room: Sunrise - Session A2-1</b>		<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B1-4</b>	
<b>Thermal and Environmental Barrier Coatings</b> <b>Moderators: Lars-Gunnar Johansson, Chalmers University of Technology, Sweden, Kang Lee, NASA Glenn Research Center, USA</b>		<b>PVD Coatings and Technologies</b> <b>Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan</b>	
1:30 pm			
1:50 pm		<b>B1-4-2</b> Combinatorial Exploration of the High Entropy Alloy System Fe-Mn-Ni-Co-Cr, <b>A. KAUFFMANN</b> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WK), Germany, M. STÜBER, H. LEISTE, S. ULRICH, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-AWP), Germany, S. SCHLABACH, D.V. SZABO, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WK), B. GORR, University of Siegen, Germany, H. CHEN, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WK), Germany, H.J. SEIFERT, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-AWP), Germany, M. HEILMAIER, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WK), Germany	
2:10 pm	<b>A2-1-3</b> Property Comparisons of Air Plasma Sprayed and Dense Homogeneous Yttrium Disilicate, <b>C. PARKER</b> , R. GOLDEN, E. OPILA, University of Virginia, USA	<b>B1-4-3</b> The Effect of Mo-Cu Cathode Composition on Thin Film Synthesis and DC Vacuum Arc Characteristics, <b>I. ZHIRKOV</b> , Linköping University, IFM, Sweden, P. POLCIK, S. KOLOZSVARI, Plansee Composite Materials GmbH, Germany, J. ROSEN, Linköping University, IFM, Sweden	
2:30 pm	<b>A2-1-4</b> Performance of Vacuum Plasma Spray Bond Coatings, <b>M. LANCE</b> , J.A. HAYNES, B.A. PINT, Oak Ridge National Laboratory, USA	<b>B1-4-4</b> Towards High-Rate Magnetron Sputter Deposition: Influence of Discharge Power on Deposition Process and Coating Properties, <b>c. SARINGER</b> , R. FRANZ, Montanuniversität Leoben, Austria, K. ZORN, MIBA High Tech Coatings, Austria, C. MITTERER, Montanuniversität Leoben, Austria	
2:50 pm	<b>A2-1-5 Invited</b> Predicting Microstructural Evolution in Aluminide Coatings during Manufacturing and Degradation in Service, <b>R. PILLAI</b> , A. CHYRKIN, T. GALIULLIN, W. LENG, D. GRÜNER, D. NAUMENKO, W.J. QUADAKKERS, Forschungszentrum Jülich GmbH, Germany	<b>B1-4-5</b> High Temperature Solid PVD Lubricants Based on Vanadium, <b>v. SOCHORA</b> , M. JILEK, JR., O. ZINDULKA, SHM, s.r.o., Czech Republic	
3:10 pm	Invited talk continued.	<b>B1-4-6</b> Grain Size-Dependent Metastable Phase Formation, <b>M. HANS</b> , D. MUSIC, RWTH Aachen University, Germany, D. KURAPOV, J. RAMM, M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, H. RUDIGIER, Oerlikon Balzers, Oerlikon Surface Solutions AG, Switzerland, J.M. SCHNEIDER, RWTH Aachen University, Germany <b>Graduate Student Finalist</b>	
3:30 pm	<b>A2-1-7</b> Engineered Architectures of Gadolinium Zirconate/YSZ based TBCs Subjected to Hot Corrosion Test, <b>s. MAHADE</b> , University West, Sweden, K.P. JONNALAGADDA, Linköping University, Sweden, N. CURRY, Treibacher Industrie AG, Austria, N. MARKOCSAN, P. NYLÉN, University West, Sweden, R.L. PENG, Linköping University, Sweden, X.-H. LI, Siemens Industrial Turbomachinery AB, Sweden	<b>B1-4-7</b> Nanoengineering Periodically Structured SiCu Thin Film Anodes for Rechargeable LIBs, <b>B.D. POLAT KARAHAN</b> , B. BILICI, Istanbul Technical University, Turkey, O.L. ERYILMAZ, K. AMINE, Argonne National Laboratory, USA, O. KELES, Istanbul Technical University, Turkey <b>Graduate Student Finalist</b>	
3:50 pm	<b>A2-1-8</b> Thermal Barrier Coatings: The Next Generation, <b>M. GELL</b> , E. JORDAN, R. KUMAR, University of Connecticut, USA, C. JIANG, J. WANG, B. NAIR, HiFunda LLC, USA	<b>B1-4-8</b> Thin Film Metallic Glass: Novel Coating Providing High Toughness and Low Friction, <b>c.c. YU</b> , J.P. CHU, National Taiwan University of Science and Technology, Taiwan, Y.L. SHEN, University of New Mexico, USA <b>Graduate Student Finalist</b>	
4:10 pm	<b>A2-1-9</b> Microstructure of Gas Flow Sputtered Thermal Barrier Coatings, <b>N. RÖSEMANN</b> , Institute for Materials, TU Braunschweig, Germany, K. ORTNER, Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany, M. BÄKER, Institute for Materials, TU Braunschweig, Germany, J. PETERSEN, Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany, G. BRÄUER, Institute of Surface Technology, TU Braunschweig, Germany, J. RÖSLER, Institute for Materials, TU Braunschweig, Germany	<b>Session B2-1 will follow immediately after B1-4 in the Golden West Room—see following page 15</b>	
4:30 pm	<b>A2-1-10</b> Current Environmental Barrier Coatings Research at NASA, <b>K. LEE</b> , D. WATERS, NASA Glenn Research Center, USA		
4:50 pm	<b>A2-1-11</b> CMAS Infiltration Prediction for 7YSZ TBCs Deposited by EB-PVD, <b>J. GOMEZ</b> , The University of Texas at El Paso, USA, R. NARAPARAJU, U. SCHULZ, German Aerospace Center (DLR), Germany, R. CHINTALAPALLE, University of Texas at El Paso, USA		
5:10 pm	<b>A2-1-12</b> Oxidation Behavior of CrN, AlCrN, and AlTiN Cathodic Arc PVD Coatings, <b>Z. GASEM</b> , A. ADESINA, King Fahd University of Petroleum and Minerals, Saudi Arabia		
	<b>Exhibition Hall Opens Today</b> <b>Grand Hall</b> <b>12:00-7:00 pm</b>	<b>Exhibition Reception</b> <b>Grand Hall</b> <b>5:30-7:00 pm</b>	

# Tuesday Afternoon, April 25, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B2-1</b>  <b>CVD Coatings and Technologies</b> <b>Moderators: Michel Pons</b> , SIMaP, University of Grenoble Alpes, CNRS, France, <b>Makoto Kambara</b> , The University of Tokyo, Japan		<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: California - Session B4-2</b> <b>Properties and Characterization of Hard Coatings and Surfaces</b> <b>Moderators: Ulrich May</b> , Robert Bosch GmbH, Diesel Systems, Germany, <b>Chau-Chang Chou</b> , National Taiwan Ocean University, Taiwan, <b>Farwah Nahif</b> , Eifeler-Vacotec GmbH, Germany
1:30 pm		
1:50 pm		
2:10 pm		<b>B4-2-3 Invited</b> Measurement of Residual Stress on Transition Metal Nitride Hard Coatings by Combining Average X-ray Strain Method and Nanoindentation, <b>J.H. HUANG</b> , A.-N. WANG, G.P. YU, National Tsing Hua University, Taiwan
2:30 pm		Invited talk continued.
2:50 pm		<b>B4-2-5</b> Investigation of the Tribocatalysis Mechanisms involved in the Extraction of Amorphous Carbon Boundary Films from Base Oils, <b>G. RAMIREZ</b> , O.L. ERYILMAZ, B. NARAYANAN, Y. LIAO, G. KAMATH, S. SANKARANARAYANAN, A. ERDEMIR, Argonne National Laboratory, USA
3:10 pm		<b>B4-2-6</b> Phase Stability and Strain Evolution in TiZrAlN Coatings During Annealing, <b>L. ROGSTRÖM</b> , R. PILEMALM, N. GHAFOR, Nanostructured Materials, IFM, Linköping University, Sweden, L. JOHNSON, Sandvik Coromant, Sweden, N. SCHELL, Helmholtz-Zentrum Geesthacht, Germany, M. ODÉN, Nanostructured Materials, IFM, Linköping University, Sweden
3:30 pm		<b>B4-2-7</b> Gas Inlet and Input Power Modulated Sputtering Molybdenum Nitride Thin Films, <b>J.Y. XIANG</b> , National United University, Taiwan
3:50 pm	Session B1-4 will follow immediately before B2-1 in the Golden West Room—see previous page 14	<b>B4-2-8</b> Transition Metal Nitrides Deposition by HiPIMS in DOMS Mode, <b>J.C. OLIVEIRA</b> , F. FERREIRA, R. SERRA, F. FERNANDES, A. CAVALEIRO, University of Coimbra, Portugal
4:10 pm	<b>B2-1-9 Invited</b> Combined Effects of Supersaturation and Stress for the Control of AlN Film Quality, <b>R. BOICHOT</b> , D.Y. CHEN, Grenoble-INP, France, F. MERCIER, CNRS, France, M. CHUBAROV, Grenoble-INP, France, G. GIUSTI, SilTronix, France, M. PONS, CNRS, France	<b>B4-2-9</b> Advanced HIPIMS Solution for R&D and Process Development, <b>J. HREBIK</b> , Kurt J. Lesker Company, USA, R. BANDORF, Fraunhofer IST, Germany
4:30 pm	Invited talk continued.	<b>B4-2-10</b> Determining of the Critical Loads of Transition Metal Nitrides on Steels, <b>A. KELES</b> , Ataturk University Faculty of Engineering, Turkey, H. CICEK, Erzurum Technical University, Turkey, O. BARAN, Erzincan University, Turkey, Y. TOTIK, I. EFEGLU, Ataturk University, Turkey
4:50 pm	<b>B2-1-11</b> Microstructural Investigation of CVD Titanium Aluminium Nitride Coatings, <b>H. PETTERSSON</b> , <b>O. BÄCKE</b> , Chalmers University of Technology, Sweden, D. STIENS, Walter AG, Germany, M. HALVARSSON, Chalmers University of Technology, Sweden	
5:10 pm	<b>B2-1-12</b> Fabrication of Boron-doped Diamond Films on Cemented Tungsten Carbide, <b>K. SAITO</b> , Japan Coating Center Co., Ltd., Chiba Institute of Technology, Japan, A. KAWANA, Japan Coating Center Co., Ltd., Japan, A. SUZUKI, Y. SAKAMOTO, Chiba Institute of Technology, Japan	
	<b>Exhibition Hall Opens Today</b> <b>Grand Hall</b> <b>12:00-7:00 pm</b>	<b>Exhibition Reception</b> <b>Grand Hall</b> <b>5:30-7:00 pm</b>

## Tuesday Afternoon, April 25, 2017

<b>Fundamentals and Technology of Multifunctional Materials and Devices</b> <b>Room: Royal Palm 4-6 - Session C2-3</b> <b>Thin Films for Active Devices</b> <b>Moderators: Vanya Darakchieva</b> , Linköping University, IFM, Sweden, <b>Marco Cremona</b> , Pontificia Universidade Católica do Rio de Janeiro, Brazil, <b>Junichi Nomoto</b> , Kochi University of Technology, Japan		<b>Tribology and Mechanical Behavior of Coatings and Engineered Surfaces</b> <b>Room: San Diego - Session E2-1</b> <b>Mechanical Properties and Adhesion</b> <b>Moderators: Gerhard Dehm</b> , Max-Planck Institut für Eisenforschung, Germany, <b>Etienne Bousser</b> , University of Manchester, UK, <b>Fan-Bean Wu</b> , National United University, Taiwan
1:30 pm		
1:50 pm	<b>C2-3-2</b> High Dielectric Constant of Polymer-inorganic Nanocomposites as Gate Dielectrics for Organic Thin Film Transistor Applications, <b>C.H. YANG</b> , Y.Y. YU, C.T. CHIU, Ming Chi University of Technology, Taiwan	<b>E2-1-2</b> Cross-sectional Investigation of Microstructure and Mechanical Properties of Graded Ti(N,B) Coatings, <b>M. TKADLETZ</b> , N. SCHALK, C. MITTERER, C. HOFER, J. KECKES, Montanuniversität Leoben, Austria, M. DELUCA, Materials Center Leoben Forschung GmbH, Austria, M. POHLER, C. CZETTL, CERATIZIT Austria GmbH, Austria
2:10 pm	<b>C2-3-3 Invited</b> A Retina Prosthesis based on Organic Thin Films, <b>G. LANZANI</b> , F. BENFENATI, Italian Institute of Technology, Italy, G. PERTILE, Ospedale Sacro Cuore, Italy	<b>E2-1-3</b> Nanocrystalline Pt-Au MEMS Electrical Switches, <b>N. ARGIBAY</b> , M. DUGGER, D.P. ADAMS, C. NORDQUIST, A. GRINE, M. HENRY, P. LU, Sandia National Laboratories, USA
2:30 pm	Invited talk continued.	<b>E2-1-4</b> Thin Film Metallic Glass: Novel Coating Providing High Toughness and Low Friction, <b>C.C. YU</b> , J.P. CHU, National Taiwan University of Science and Technology, Taiwan, Y.L. SHEN, University of New Mexico, USA <b>Graduate Student Finalist</b>
2:50 pm	<b>C2-3-5</b> Different Nitridation Condition Influence NBTI in FinFETs, <b>H.W. LIU</b> , T.C. CHANG, National Sun Yat-Sen University, Taiwan	<b>E2-1-5 Invited</b> Driving Force for the Texture Transformation of Thin Metal Films, A. ELLIS, Cornell University, USA, M. CHMIELUS, University of Pittsburgh, USA, S. BAKER, Cornell University, USA, Y-C. CHENG, P-L. LIU, <b>M-T. LIN</b> , National Chung Hsing University, Taiwan
3:10 pm	<b>C2-3-6</b> Analysis of Abnormal Transconductance in Body-tied PD SOI n-MOSFETs, <b>C.Y. LIN</b> , T.C. CHANG, National Sun Yat-sen University, Taiwan	Invited talk continued.
3:30 pm	<b>C2-3-7</b> Influence of the Ammonia Hardening on the Properties of Sol-Gel Thin Film Coatings, <b>C. BOSCHER</b> , J. AVICE, H. PIOMBINI, X. DIEUDONNÉ, P. BELLEVILLE, K. VALLÉ, CEA, France	<b>E2-1-7</b> Strength and Strain Hardening Behavior of Particle Strengthened Coherent Cu/Ni Multilayer Films, <b>R.L. SCHOEPPNER</b> , M. POLYAKOV, G. MOHANTY, J. MICHLER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
3:50 pm	<b>C2-3-8</b> Miniaturized Shape Memory (SMA) Bimorph Actuators with Polymer Layers, <b>C.R. KNICK</b> , G.L. SMITH, N.R. JANKOWSKI, C.J. MORRIS, US Army Research Laboratory, USA	<b>E2-1-8</b> Indentation Induced Deformation and Damage in Metal-Ceramic Multilayer Coatings, <b>Y.L. SHEN</b> , R.D. JAMISON, University of New Mexico, USA
4:10 pm	<b>C2-3-9</b> Investigating Degradation Behaviors Induced by Hot Carriers in the ESL in Amorphous InGaZnO TFTs with Different Electrode Materials and Structure, <b>C.I. YANG</b> , National Chiao Tung University, Taiwan, T.C. CHANG, National Sun Yat-Sen University, Taiwan	<b>E2-1-9</b> Influence of Various Interlayers on Mechanical Properties of CrAlN Coatings on Tungsten Carbide Substrate, <b>H.K. KIM</b> , J.H. LA, M.G. SONG, S.Y. LEE, Y.S. HONG, Korea Aerospace University, Republic of Korea
4:30 pm		<b>E2-1-10</b> Numerical Investigation of Damage and Fracture in Hard Nano-coating Layers using Cohesive Zone Modeling, <b>S. REZAEI</b> , S. WULFINGHOFF, S. REESE, RWTH Aachen University, Germany
	<b>Exhibition Hall Opens Today</b> <b>Grand Hall</b> <b>12:00-7:00 pm</b>	<b>Exhibition Reception</b> <b>Grand Hall</b> <b>5:30-7:00 pm</b>



# Tuesday Afternoon, April 25, 2017

<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F2-2</b>  <b>HiPIMS, Pulsed Plasmas and Energetic Deposition</b> <b>Moderators: Tiberiu Minea, Université Paris-Sud, France, Tomas Kubart, Uppsala University, Sweden</b>		<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F5</b> <b>Additive-manufacturing-based Methods and Surface Engineering</b> <b>Moderators: Ramana Chintalapalle, The University of Texas at El Paso, USA, Sven Ulrich, Karlsruhe Institute of Technology (KIT), Inst. for Applied Mat. (IAM-AWP), Germany</b>
1:30 pm		
1:50 pm	<b>F2-2-2</b> HPPMS Deposition from Composite Targets: Effect of Two Order of Magnitude Target Power Density Changes on the Composition of Sputtered Cr-Al-C Thin Films, <b>H. RUEß</b> , RWTH Aachen University, Germany, M. TO BABEN, GTT-Technologies, Germany, L. SHANG, RWTH Aachen University, Germany, P. POLCIK, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, M. HANS, RWTH Aachen University, Germany, D. PRIMETZHOFFER, Uppsala University, Sweden, J.M. SCHNEIDER, RWTH Aachen University, Germany	
2:10 pm	<b>F2-2-3</b> Adherent and Hard DLC Coatings Deposited by HiPIMS in Deep Oscillations Magnetron Sputtering (DOMS) Mode, <b>F. FERREIRA</b> , University of Coimbra, Portugal, A. AJAZ, T. KUBART, Uppsala University, Angstrom Laboratory, Sweden, A. CAVALEIRO, J.C. OLIVEIRA, University of Coimbra, Portugal	
2:30 pm	<b>F2-2-4</b> Variation of Local Chemical Compositions of (Ti, Al)N Films on Inner Wall of Small Hole deposited by High Power Impulse Magnetron Sputtering, <b>H. KOMIYA</b> , T. SHIMIZU, Tokyo Metropolitan University, Japan, Y. TERANISHI, K. MORIKAWA, M. YANG, Tokyo Metropolitan Industrial Technology Research Institute, Japan	
2:50 pm	<b>F2-2-5</b> A Feasibility Study on the Large-area Graphene Growth by using High Power Impulse Magnetron Sputtering (HIPIMS), <b>C. PANDEY</b> , M.J. PO, D.C. LIOU, M.Y. CHEN, Y.H. CHEN, J.L. HE, Feng Chia University, Taiwan	
3:10 pm	<b>F2-2-6</b> Deposition of Ultra-thick Yttrium Film for Medical Isotope Targeting Application by using HiPIMS, <b>D.Y. WANG</b> , M.H. SHIH, W.Y. HO, W.C. CHEN, MingDao University, Taiwan, <b>J. WANG</b> , J.H. HUNG, Aurora Scientific Corp, Canada	<b>Session F2-2 will be held immediately prior to F5</b>
3:30 pm	<b>Session F5 will begin immediately after Session F2-2</b>	<b>F5-7</b> 3D-Painted Metals and Alloys: A New Approach to Metal and Alloy Advanced Manufacturing, <b>A.E. JAKUS</b> , S.L. TAYLOR, <b>N.R. GEISENDORFER</b> , D.C. DUNAND, R.N. SHAH, Northwestern University, USA
3:50 pm		<b>F5-8</b> 3D Printing of 2D Materials, <b>A. JUHL</b> , Materials and Manufacturing Directorate, Air Force Research Laboratory, USA, <b>A. STROUD</b> , Institute for Micromanufacturing/Physics Program, Louisiana Tech University, USA, <b>W. LAI</b> , University of Dayton/Sensors Directorate, Air Force Research Laboratory, USA, <b>S. KIM</b> , Human Effectiveness Directorate, Air Force Research Laboratory, USA, <b>N. GLAVIN</b> , R.J. BERRY, M. LEUTY, Materials and Manufacturing Directorate, Air Force Research Laboratory, USA, <b>R.R. NAIK</b> , Human Effectiveness Directorate, Air Force Research Laboratory, USA, <b>M.F. DURSTOCK</b> , Materials and Manufacturing Directorate, Air Force Research Laboratory, P. DEROSA, Institute for Micromanufacturing/Physics Program, Louisiana Tech University, USA, <b>E.M. HECKMAN</b> , Sensors Directorate, Air Force Research Laboratory, USA, <b>C. MURATORE</b> , University of Dayton, USA
4:10 pm		<b>F5-9</b> Direct Laser Deposition of High Entropy Alloy Coatings on High Temperature Alloys, <b>D. FABIJANIC</b> , Q. CHAO, Deakin University, Australia, T. JARVIS, X. WU, Monash University, Australia, P. HODGSON, Deakin University, Australia
4:30 pm		<b>F5-10</b> In-situ Impedance Spectroscopy Evaluation of Electrolytic Plasma Polishing Process for Stainless Steels, <b>V. MUKAEVA</b> , E. PARFENOV, R. NEVYANTSEVA, Ufa State Aviation Technical University, Russian Federation, A. MATTHEWS, <b>A. YEROKHIN</b> , University of Manchester, UK
4:50 pm		<b>F5-11</b> Influence of Laser Power on the Corrosive Behaviour of Laser Metal Deposited Ti6Al4V+Cu in Artificially Prepared Sea Water, <b>M. ERINOSHO</b> , E.T. AKINLABI, University of Johannesburg, South Africa
	<b>Exhibition Hall Opens Today</b> <b>Grand Hall</b> <b>12:00-7:00 pm</b>	<b>Exhibition Reception</b> <b>Grand Hall</b> <b>5:30-7:00 pm</b>

# Wednesday Morning, April 26, 2017

Coatings for Use at High Temperatures Room: Sunrise - Session A2-2		Hard Coatings and Vapor Deposition Technologies Room: Golden West - Session B2-2	
Thermal and Environmental Barrier Coatings Moderators: Lars-Gunnar Johansson, Chalmers University of Technology, Sweden. <b>Kang Lee</b> , NASA Glenn Research Center, USA		CVD Coatings and Technologies Moderators: Michel Pons, SIMaP, University of Grenoble Alpes, CNRS, France. <b>Makoto Kambara</b> , The University of Tokyo, Japan	
8:00 am	<b>A2-2-1</b> La-Sr-Mn Based Chromium Barrier Coatings for Interconnectors in Pressurized Steam Electrolysis on Exposure to Pure Oxygen and Water Vapor, <b>V. KOLARIK</b> , M. JUEZ LORENZO, V. KUCHENREUTHER-HUMMEL, Fraunhofer Institute for Chemical Technology ICT, Germany, M. PÖTSCHKE, D. SCHIMANKE, Sunfire GmbH, Germany	<b>B2-2-1</b> Investigation of Ti-based Hard CVD Coatings on Various Metals Suited as Alternate Binder Phase for WC-Co Cutting Tools, <b>L. VON FIEANDT</b> , Uppsala University, Angstrom Laboratory, Sweden, E. LINDAHL, Sandvik Coromant R&D Materials and Processes, Sweden, T. LARSSON, SECO Tools, Sweden, M. BOMAN, Uppsala University, Angstrom Laboratory, Sweden	
8:20 am	<b>A2-2-2</b> Investigation of the Adhesion of Glassified Sand/salt Deposits on Thermal Barrier Coatings Exposed to High-temperature Combusted Gas Flows, <b>M. WALOCK</b> , B. BARNETT, A. NIETO, W. GAMBLE, A. GHOSHAL, M. MURUGAN, US Army Research Laboratory, USA, D. ZHU, National Aeronautics and Space Administration, USA, J. SWAB, M. PEPI, US Army Research Laboratory, USA, R. PEGG, C. ROWE, US Navy Naval Air Systems Command, USA, K. KERNER, US Army Aviation and Missile Research, Development, and Engineering Center, USA	<b>B2-2-2</b> Hot Filament CVD Diamond Coatings on Cutting Tools for Hard to Machine Materials, <b>M. WODA</b> , W. PUETZ, M. FRANK, B. MESIC, W. KOELKER, C. SCHIFFERS, O. LEMMER, CemeCon AG, Germany	
8:40 am	<b>A2-2-3</b> Effect of Nanostructure and Composition on the Transient Oxidation Behavior of Nanograined Alloys, <b>P. SHETTY</b> , J. KROGSTAD, University of Illinois at Urbana-Champaign, USA	<b>B2-2-3</b> Nanocluster Assisted Mesoplasma Epitaxial Bridging, <b>R. YAMADA</b> , The University of Tokyo, Japan, S. WU, Chinese Academy of Sciences, China, <b>M. KAMBARA</b> , The University of Tokyo, Japan	
9:00 am	<b>A2-2-4</b> CrAlSiYN Coating with AlSiN Intermediate Layers for Enhanced Thermal Stability and Oxidation Resistance at Elevated Temperatures, <b>S. LIU</b> , Singapore Inst. of Manufacturing Tech., Singapore, Y. YANG, Data Storage Inst., Singapore, F.L. NG, Singapore Inst. of Manufacturing Technology, Singapore, R. JI, Data Storage Inst., Singapore, <b>X.T. ZENG</b> , Singapore Inst. of Manufacturing Technology, Singapore	<b>B2-2-4</b> Low Pressure Chemical Vapor Deposition of hex-BN: Relationship between Gas Phase Chemistry and Coating Microstructure, <b>P. CARMINATI</b> , LCTS-CNRS, France, T. BUFFETEAU, N. DAUGEY, ISM-CNRS, France, G. CHOLLON, LCTS-CNRS, France, F. REBILLAT, LCTS-University of Bordeaux, France, <b>S. JACQUES</b> , LCTS-CNRS, France	
9:20 am	<b>A2-2-5</b> Metallic Coatings on Copper for High Heat Flux Application in Rocket Engines, <b>T. FIEDLER</b> , J. RÖSLER, M. BÄKER, Tech. Univer. Braunschweig, Germany	<b>B2-2-5 Invited</b> High-speed Structural Control for Functionalization of Various Oxide Films, <b>A. ITO</b> , Yokohama National University, Japan	
9:40 am	<b>A2-2-6</b> Mechanical Properties of ZrO <sub>2</sub> -Y <sub>2</sub> O <sub>3</sub> Thermal Barrier Coatings by Isothermal Heat Treatment, <b>B.K. JANG</b> , National Institute for Materials Science, Japan, K. YASUDA, Tokyo Institute of Technology, Japan, K.S. LEE, Kookmin University, Republic of Korea, S.W. KIM, Y.S. OH, H.T. KIM, Korea Institute of Ceramic Engineering and Technology, Republic of Korea	Invited talk continued.	
10:00 am	<b>A2-2-7</b> Estimation Of The Mechanical Properties Of Thermal Barrier Coatings With Porous And Dense Vertically Cracked Microstructures By Modified Small Punch Tests, <b>P. PLANQUES</b> , Cirimat - Safran Helicopter Engines, France, V. VIDAL, P. LOURS, Mines Albi, ICA (Institut Clément Ader), France, V. PROTON, F. CRABOS, Safran Helicopter Engines, France, J. HUEZ, B. VIGUIER, CIRIMAT, France	<b>B2-2-7</b> Protective Coatings Enabled by Atomic Layer Deposition Processing, <b>C. OLDHAM</b> , J. DAUBERT, G. PARSONS, NC State University, USA	
10:20 am	<b>A2-2-8</b> Comparison of Damage Evolution in High Purity Nano and a Conventional YSZ Thermal Barrier Coating during Thermal Cycling, <b>K.P. JONNALAGADDA</b> , R. ERIKSSON, Linköping University, Sweden, K. YUAN, Beijing General Research Institute of Mining and Metallurgy, China, X.-H. LI, Siemens Industrial Turbomachinery, Sweden, X. JI, Y. YU, Beijing General Research Institute of Mining and Metallurgy, China, R.L. PENG, Linköping University, Sweden	<b>B2-2-8</b> Chromium Carbide Growth at Low Temperature by a High Efficient DLI-MOCVD Process in Effluent Recycling Mode, <b>A. MICHAU</b> , <b>F. MAURY</b> , CIRIMAT, France, F. SCHUSTER, CEA Saclay, France, R. BOICHOT, M. PONS, SIMaP, University of Grenoble Alpes, CNRS, France, E. MONSIFROT, DEPHIS, France	
10:40 am	<b>A2-2-9</b> Non-reactively Sputtered Ultra-igh Temperature Hf-C and Ta-C Coatings, <b>H. LASFARGUES</b> , T. GLECHNER, C.M. KOLLER, TU Wien, Institute of Materials Science and Technology, Austria, V. PANETA, D. PRIMETZHOFFER, Uppsala University, Angstrom Laboratory, Sweden, S. KOLOZSVARI, Plansee Composite Materials GmbH, Germany, D. HOLEC, Montanuniversität Leoben, Austria, <b>H. RIEDL</b> , P.H. MAYRHOFER, TU Wien, Institute of Materials Science and Technology, Austria	<b>B2-2-9</b> Growth and Characterization of SiO <sub>x</sub> Thin Film Deposited by Plasma Enhanced CVD on a Magnesium Alloy, <b>H. JEONG</b> , J. CHO, POSCO (Pohang Iron and Steel Company), Republic of Korea	
11:00 am	<b>A2-2-10</b> Impact of Substrate Surface Morphology on APS Ceramic Coating Adhesion Measured by Laser Shock Test (LASAT), <b>H. SAPARDANIS</b> , V. GUIPONT, A. KOSTER, <b>V. MAUREL</b> , Mines ParisTech, France	<b>B2-2-10</b> Electrochemical Behavior of Graphene Coatings Deposited on Copper Metal by Electrophoretic Deposition and Chemical Vapor Deposition, <b>M. ALI RAZA</b> , A. ALI, F. ALI GHUARI, A. ASLAM, K. YAQOOB, A. WASAY, University of the Punjab, Pakistan, M. RAFFI, National Institute of Lasers and Optronics, Pakistan	
11:20 am	<b>A2-2-11</b> Influence of Pt Concentration on Structure of Aluminized Coatings on a Ni Base Superalloy, <b>E. PAULETTI</b> , <b>A.S. D'OLIVEIRA</b> , Universidade Federal do Paraná, Brazil	<b>B2-2-11</b> Characterization of Coated Silane Compounds on Aisi 304 Stainless Steel Using Plasma-Oxide Vapour as Adhesion, <b>A. BARUWA</b> , University of Johannesburg, South Africa, P. OLADIJO, Botswana International University of Science and Technology, Botswana, J. CHINN, Integrated Surface Technologies, Inc., USA, N. MALEDI, University of the Witwatersrand, South Africa, E.T. AKINLABI, University of Johannesburg, South Africa	
11:40 am	<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b> <b>Enjoy Light Luncheon Refreshments</b> <b>in the Exhibition Hall 12:15 pm</b>		

# Wednesday Morning, April 26, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: California - Session B4-3</b> <b>Properties and Characterization of Hard Coatings and Surfaces</b> <b>Moderators: Ulrich May</b> , Robert Bosch GmbH, Diesel Systems, Germany, <b>Chau-Chang Chou</b> , National Taiwan Ocean University, Taiwan, <b>Farwah Nahif</b> , Eifeler-Vacotec GmbH, Germany		<b>Tribology and Mechanical Behavior of Coatings and Engineered Surfaces</b> <b>Room: San Diego - Session E2-2</b> <b>Mechanical Properties and Adhesion</b> <b>Moderators: Gerhard Dehm</b> , Max-Planck Institut für Eisenforschung, Germany, <b>Etienne Bousser</b> , University of Manchester, UK, <b>Fan-Bean Wu</b> , National United University, Taiwan	
8:00 am	<b>B4-3-1 Invited</b> Aspects of Thermal Stability of TiAlN and ZrAlN, <b>M. ODÉN</b> , Linköping University, (IFM), Sweden	<b>E2-2-1</b> Study of Bauschinger Effect in Ni Thin Metallic Films Submitted to Cyclic Deformation, <b>P.O. RENAULT</b> , W. HE, P. GODARD, E. LE BOURHIS, P. GOUDEAU, Université de Poitiers, France	
8:20 am	Invited talk continued.	<b>E2-2-2</b> Mo-Re Thin Films for Flexible Display Applications, F. HAUSER, T. JÖRG, Montanuniversität Leoben, Austria, M.J. CORDILL, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria, R. FRANZ, Montanuniversität Leoben, Austria, H. KÖSTENBAUER, J. WINKLER, Plansee SE, Austria, <b>C. MITTERER</b> , Montanuniversität Leoben, Austria	
8:40 am	<b>B4-3-3</b> Effects of Treatment Temperature and Gas Blow Velocity of IH Nitriding on Microstructure of Titanium Alloy, <b>s. TAKESUE</b> , Keio University, Japan, S. KIKUCHI, Kobe University, Japan, H. AKEBONO, Hiroshima University, Japan, K. FUKAZAWA, Netsuren Co., Ltd., Japan, J. KOMOTORI, Keio University, Japan	<b>E2-2-3 Invited</b> Rate Sensitive and Creep Behavior of Thin Metallic and Oxide Films: on Chip Testing and Activation Volume Analysis, <b>T. PARDOEN</b> , G. LEMOINE, H. IDRISSE, Université Catholique de Louvain, Belgium, D. SCHRYVERS, University of Antwerpen, Belgium, M. GHIDELLI, M. COULOMBIER, R. VAYRETTE, L. DELANNAY, Université Catholique de Louvain, Belgium, S. GRAVIER, Grenoble INP, France, J.P. RASKIN, Université Catholique de Louvain, Belgium	
9:00 am	<b>B4-3-4</b> Oblique Angle Deposition of Nanostructured ZrC Thin Film by Reactive Magnetron Sputtering and its Effect on Structure and Mechanical Property, <b>s. SHANMUGAM</b> , A. SHARMA, M. GOWRAVARAM, S. SUWAS, Indian Institute of Science, India	Invited talk continued.	
9:20 am	<b>B4-3-5</b> The Influence of Al Content on Characteristics of CVD- Aluminum Titanium Nitride Films, <b>k. SATO</b> , S. TATSUOKA, K. YANAGISAWA, T. ISHIGAKI, K. YAMAGUCHI, S. NISHIDA, Mitsubishi Materials Corporation, Japan	<b>E2-2-5</b> Intrinsic Stresses - New Methods to Evaluate Them Using Enhancing Indentation Methods and New Models to Optimize Them, <b>N. BIERWISCH</b> , N. SCHWARZER, SIO, Germany	
9:40 am	<b>B4-3-6</b> Wear Resistance Capabilities of B-C-W Coatings, <b>H. KLOSTERMANN</b> , M. FRIEDEMANN, Fraunhofer FEP, Germany, M. OTTERSACH, D. SCHRAKNEPPER, Fraunhofer IPT, Germany, J. POETSCHKE, M. MAYER, Fraunhofer IKTS, Germany, F. FIETZKE, O. ZYWITZKI, Fraunhofer FEP, Germany	<b>E2-2-6</b> Investigation of Buckling Driven Delamination of DLC Coatings for Evaluation of Adhesion Strength, <b>R. BRAAK</b> , U. MAY, L. ONUSEIT, G. REPPHUN, Robert Bosch GmbH, Diesel Systems, Germany, M. GUENTHER, J. EMMERLICH, Robert Bosch GmbH, Germany, C. SCHMID, K. DURST, Physical Metallurgy, TU Darmstadt, Germany	
10:00 am	<b>B4-3-7</b> Micromechanical Properties and Wear Resistance of Quaternary TiAl(X)N Alloys (X=Nb, Cr or V), <b>Y.H. CHEN</b> , L. ROGSTRÖM, Nanostructured Materials, IFM, Linköping University, Sweden, J.J. ROA, Universitat Politècnica de Catalunya, Spain, M.P. JOHANSSON-JÖESAAAR, SECO Tools, Sweden, M. ANGLADA, Universitat Politècnica de Catalunya, Spain, M. ODÉN, Nanostructured Materials, IFM, Linköping University, Sweden	<b>E2-2-7</b> Characterization of Thin Films by Nanoindentation: Avoiding Mistakes during the Measurement and Data Analysis, <b>E. BROITMAN</b> , Engineering Consulting, Sweden	
10:20 am	<b>B4-3-8</b> High Resolution Lateral Force-displacement Measurements as a Tool for the Determination of Lateral Contact Stiffness and Poisson's Ratio, <b>T. CHUDOBA</b> , ASMEC GmbH, Germany	<b>E2-2-8</b> Plasma Electrolytic Oxidation Coatings on AZ31 Magnesium Alloys with Si <sub>3</sub> N <sub>4</sub> Nanoparticle Additives, <b>Y.Y. LIN</b> , J.W. LEE, C.M. TSENG, Ming Chi University of Technology, Taiwan, B.S. LOU, Chang Gung University, Taiwan	
10:40 am	<b>B4-3-9</b> Influence of a-Si:H Interlayer on the Adherence of a-C:H Coatings Deposited on Different Metallic Surfaces, G. CAPOTE, National University of Colombia, D.C. LUGO, Institute for Space Research, Brazil, J.M. GUTIÉRREZ, National University of Colombia, <b>V.J. TRAVA-AIROLDI</b> , Institute for Space Research, Brazil	<b>E2-2-9</b> Fractures, Wrinkles and Buckles in Brittle Multi-layers on Flexible Substrate, <b>D. DALMAS</b> , Laboratoire de Tribologie et Dynamique des Systèmes (LTDs), Ecole Centrale de Lyon, France, I. BEN CHEIKH, G. PARRY, R. ESTEVEZ, SIMaP – Univ. Grenoble Alpes, CNRS, SIMaP, France	
11:00 am	<b>B4-3-10</b> Reactive Magnetron Sputtering of Transition Metal Nitrides for Electronic and Opto-Electronic Applications, <b>A. REED</b> , Air Force Research Laboratory, USA, H.A. SMITH, University of Dayton and Air Force Research Laboratory, USA, M. MCCONNEY, D. LOOK, D.C. ABEYSINGHE, V. VASILYEV, J. CETNAR, B. HOWE, Air Force Research Laboratory, USA	<b>E2-2-10</b> Combined XPS and Adhesion Studies of Metal - Polymer Interfaces for Space Applications, <b>B. PUTZ</b> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Montanuniversität Leoben, Austria, G. MILASSIN, Y. BUTENKO, C. SEMPRIMOSCHNIG, European Space Research and Technology Centre (ESTEC), The Netherlands, M.J. CORDILL, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Montanuniversität Leoben, Austria	
11:20 am	<b>B4-3-11</b> Comparative Investigation of Zr-B(N), Zr-Si-B(N), and Zr-Al-Si-B(N) Hard Coatings, <b>P.V. KIRYUKHANTSEV-KORNEEV</b> , M. LEMESHEVA, I. YATSYUK, D.V. SHTANSKY, E.A. LEVASHOV, National University of Science and Technology "MISIS", Russian Federation	<b>E2-2-11</b> Mapping Adhesion Energy of Tungsten Based Barrier Layers with Scratch Induced Buckling, <b>A. KLEINBICHLER</b> , J. ZECHNER, KAI - Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria, M.J. CORDILL, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria	
11:40 am	<b>B4-3-12</b> Multiphysics Modelling and Experimental Investigation on the Characteristics of Laser Deposited Al-Sn-Si Coatings on Ti6Al4V Alloy, <b>O.S. FATOBA</b> , University of Johannesburg, South Africa, A. POPOOLA, Tshwane University of Technology, South Africa, E.T. AKINLABI, University of Johannesburg, South Africa		
<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b> <b>Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm</b>			

# Wednesday Morning, April 26, 2017

<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F4-1</b> <b>Functional Oxide and Oxynitride Coatings</b> <b>Moderators: Michael Stueber</b> , Karlsruhe Institute of Technology (KIT), Germany, <b>Anders Eriksson</b> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein		<b>Advanced Characterization Techniques for Coatings and Thin Films</b> <b>Room: Royal Palm 4-6 - Session H3-1</b> <b>Characterization of Coatings in Harsh Environments</b> <b>Moderators: David Armstrong</b> , University of Oxford, UK, <b>Jeff Wheeler</b> , Laboratory for Nanometallurgy, ETH Zürich, Switzerland	
8:00 am	<b>F4-1-1</b> Development of Microstructure, Phase Composition and Residual Stresses during Plasma Electrolytic Oxidation (PEO) of Aluminium Alloys, <b>E. BOUSSER</b> , A. YEROKHIN, The Univ. of Manchester, UK, T. SCHMITT, École Polytechnique de Montréal, Canada, A. GHOLINIA, J. DONOGHUE, The Univ. of Manchester, UK, D. ASQUITH, Sheffield Hallam Univ., UK, A. JARVIS, Univ. of Sheffield, UK, P.J. WITHERS, A. MATTHEWS, The Univ. of Manchester, UK	H3-1-1	<b>Invited</b> Small-Scale Mechanical Testing on Ion Beam Surface-Modified Engineering Materials, <b>P. HOSEMAN</b> , University of California at Berkeley, USA
8:20 am	<b>F4-1-2</b> Influence of Transition Metal Dopants on the Reactive Sputtering Process of Al <sub>2</sub> O <sub>3</sub> Thin Films and their Oxidation Resistance, <b>B. KOHLHAUSER</b> , H. RIEDL, C.M. KOLLER, Inst. of Mat. Sci. and Tech., TU Wien, Austria, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, V. PANETA, D. PRIMETZHOFFER, Uppsala Univ., Sweden, H. HUTTER, Inst. of Chem. Tech. and Analytics, TU Wien, Austria, P.H. MAYRHOFER, Inst. of Mat. Sci. and Tech., TU Wien, Austria	Invited talk continued.	
8:40 am	<b>F4-1-3</b> On the Phase Evolution of Al-Cr-based Intermetallics and Oxides Formed by Cathodic Arc Evaporation, V. DALBAUER, <b>C.M. KOLLER</b> , R. RAAB, CDL-AOS TU Wien, Austria, S. KOLOZSVÁRI, Plansee Composite Mat. GmbH, Germany, J. RAMM, Oerlikon Surface Solutions AG, Liechtenstein, M. BARTOSIK, P.H. MAYRHOFER, TU Wien, Austria	H3-1-3	<b>High Temperature Nanoindentation up to 800°C: Experimental Optimization</b> , <b>N.X. RANDALL</b> , M. CONTE, Anton Paar TriTec, Switzerland, J. SCHWIEDRZIK, J. MICHLER, EMPA, Switzerland
9:00 am	<b>F4-1-4</b> Synthesis of Local Epitaxial $\alpha$ -(Cr <sub>1-x</sub> Al <sub>x</sub> ) <sub>2</sub> O <sub>3</sub> Thin Films ( $0.08 \leq x \leq 0.16$ ) on $\alpha$ -Al <sub>2</sub> O <sub>3</sub> Substrates by R.F. Magnetron Sputtering, Y.G. GAO, H. LEISTE, M. STÜBER, <b>S. ULRICH</b> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-AWP), Germany	H3-1-4	<b>Size-dependent Nanoscale Plasticity in Oxidation-strengthened Zr/Nb Multilayers</b> , <b>M. CALLISTI</b> , Univ. of Southampton, UK, M. MONCLUS, IMDEA Materials Inst., Spain, J. LLORCA, Polytechnic Univ. of Madrid, Spain, J. MOLINA-ALDAREGUÍA, IMDEA Materials Institute, Madrid, Spain, T. POLCAR, University of Southampton, UK
9:20 am	<b>F4-1-5</b> Thermal Stability of Arc Evaporated Oxide, Nitride, Oxynitride, and Oxide/Nitride Coatings within the Systems Al-Cr-N and Al-Cr-O, <b>R. RAAB</b> , CDL-AOS TU Wien, Austria, C.M. KOLLER, TU Wien, Austria, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, J. RAMM, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, P.H. MAYRHOFER, TU Wien, Austria	H3-1-5	<b>High Temperature Mechanical Properties Characterization of DLC Films</b> , M. ROUHANI, National Chung Cheng University, Taiwan, F.C.N. HONG, National Cheng Kung University, Taiwan, <b>Y.R. JENG</b> , National Chung Cheng University, Taiwan
9:40 am	<b>F4-1-6</b> Structural Evolution in Reactive RF Magnetron Sputtered (Cr,Zr) <sub>2</sub> O <sub>3</sub> During Annealing, <b>L. LANDÄLV</b> , Linköping Univ., IFM, Thin Film Physics Div. and Sandvik Coromant R&D, Sweden, J. LU, Linköping Univ., IFM, Thin Film Physics Div., Sweden, S. SPITZ, H. LEISTE, S. ULRICH, Karlsruhe Inst. of Tech. (KIT), Inst. for Applied Mat. (IAM-AWP), Germany, M.P. JOHANSSON-JÖESÅR, Linköping Univ., IFM, Nanostructured Mat. And SECO TOOLS, Sweden, M. AHLGREN, E. GÖTHELID, Sandvik Coromant R&D, Sweden, B. ALLING, Linköping Univ., IFM, Thin Film Physics Div. and Max-Planck-Institut für Eisenforschung GmbH, Sweden, L. HULTMAN, Linköping Univ., IFM, Sweden, M. STÜBER, Karlsruhe Inst. of Tech. (KIT), Inst. for Applied Mat. (IAM-AWP), Germany, P. EKLUND, Linköping Univ., IFM, Thin Film Physics Div., Sweden	H3-1-6	<b>Aluminide Coatings on Thin-Walled Sheets – Mechanical Properties and Thermocyclic behaviour</b> , <b>J.T. BAUER</b> , DECHEMA-Forschungsinstitut, Germany, H. ACKERMANN, Oel-Waerme-Institut, Germany, M.C. GALETZ, DECHEMA-Forschungsinstitut, Germany
10:00 am	<b>F4-1-7 Invited</b> Ternary Oxide Coatings as High-temperature Solid Lubricants, <b>S.M. AOUADI</b> , J. GU, D.S. STONE, University of North Texas, USA, Y. GAO, A. MARTINI, University of California Merced, USA	H3-1-7	<b>Variable Temperature Micropillar Compression Transient Tests on Nanocrystalline Palladium-Gold: Probing Activation Parameters at the Lower Limit of Crystallinity</b> , <b>J. WEHRS</b> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
10:20 am	Invited talk continued.	H3-1-8	<b>High Temperature Micro-Mechanical Testing of Aluminide Coatings</b> , <b>J. GIBSON</b> , H. REUS, J.M. SCHNEIDER, S. KORTE-KERZEL, RWTH Aachen Univ., Germany
10:40 am	<b>F4-1-9</b> High-rate Reactive High-power Impulse Magnetron Sputtering of Hf-O-N Films with Tunable Composition and Properties, <b>J. VLCEK</b> , A. BELOSLUDTSEV, S. HAVIAR, J. HOUSKA, R. ČERSTVÝ, J. REZEK, University of West Bohemia, Czech Republic	H3-1-9	<b>Temperature-dependent Interfacial Layer Formation during Sputter-deposition of Zr Thin Films on Al<sub>2</sub>O<sub>3</sub>(0001)</b> , <b>K. TANAKA</b> , J. FANKHAUSER, Univ. of California, Los Angeles, USA, M. SATO, Nagoya Univ., Japan, D. YU, A. ALEMAN, A. EBNONNASIR, C. LI, Univ. of California, Los Angeles, USA, M. KOBASHI, Nagoya Univ., Japan, M. GOORSKY, S. KODAMBAKA, Univ. of California, Los Angeles, USA
11:00 am	<b>F4-1-10</b> Thin Films in the M-Si-O-N Systems, <b>S.A. ALI</b> , Linnæus Univ., Sweden, P. BIPLAB, R. MAGNUSSON, G. GRECZYNSKI, E. BROITMAN, Linköping Univ., (IFM), Sweden, B. JONSON, Linnæus Univ., Sweden, J. BIRCH, P. EKLUND, Linköping Univ., (IFM), Sweden		
11:20 am	<b>F4-1-11</b> Diffusion between Silica Thin Film Deposited by Reactive Magnetron Sputtering and Glass Substrate during Annealing at High Temperature, <b>J.T. FONNÉ</b> , E. GOUILLART, E. BUROV, H. MONTIGAUD, S. GRACHEV, Joint unit CNRS/Saint-Gobain UMR 125 - Surface of Glass and Interfaces, France, D. VANDEMBROUCQ, UMR 7636 CNRS/ESPCI/Paris 6 UPMC/Paris 7 Diderot - Physics and Mechanics of Heterogeneous Media Laboratory, France		
11:40 am	<b>F4-1-12</b> Investigation of Sputtered Zirconium Oxide Thin Films Deposited at Different Oxygen Partial Pressure, <b>N. PATEL</b> , Sardar Patel College of Engineering, India, V. CHAUHAN, Chandubhai S. Patel Institute of Technology (CSPIT), Charotar University of Science and Technology (CHARUSAT), India, S. RAWAL, McMaster University, Canada	<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b> <b>Enjoy Light Luncheon Refreshments</b> <b>in the Exhibition Hall 12:15 pm</b>	

# Wednesday Afternoon, April 26, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B3-1</b> <b>Deposition Technologies and Applications for Diamond-like Coatings</b> <b>Moderators: Frank Papa, Genco Ltd., USA, Klaus Böbel, Robert Bosch GmbH, Germany</b>		<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: California - Session B4-4</b> <b>Properties and Characterization of Hard Coatings and Surfaces</b> <b>Moderators: Ulrich May, Robert Bosch GmbH, Diesel Systems, Germany, Chau-Chang Chou, National Taiwan Ocean University, Taiwan, Farwah Nahif, Eifeler-Vacotec GmbH, Germany</b>	
1:30 pm			
1:50 pm			
2:10 pm	<b>B3-1-3</b> New Pathways for Improving Adhesion of DLC on Steel in Low Temperatures, L. LEIDENS, UCS and CAPES, Brazil, A. CRESPI, UCS, Brazil, F. ALVAREZ, IFGW-UNICAMP, Brazil, C. FIGUEROA, UCS, Brazil	<b>B4-4-3 Invited</b> Coatings Selection Criteria for WC/Co Cutting Tools, A. INSPEKTOR, P. SALVADOR, Carnegie Mellon University, USA	
2:30 pm	<b>B3-1-4</b> Stress Evolution of Diamond-like Carbon Films via Controlled Metal Doping, A.Y. WANG, X. LI, L. SUN, P. GUO, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China	Invited talk continued.	
2:50 pm	<b>B3-1-5</b> Influence of Alloying Metals on Tribological Properties of Diamond-like Carbon Films Synthesized by Metal Plasma Activated Deposition Process, D.Y. WANG, W.Y. HO, M.H. SHIH, W.C. CHEN, MingDao University, Taiwan, J. WANG, J.H. HUNG, Aurora Scientific Corp, Canada	<b>B4-4-5</b> Investigation of the Plasma Electrolytic Oxidation Mechanism of Titanium, G. MORTAZAVI, E. MELETIS, University of Texas at Arlington, USA	
3:10 pm	<b>B3-1-6</b> Thick Diamond Like Carbon Coatings Deposited by Deep Oscillation Magnetron Sputtering for Automotive Applications, J.L. LIN, P. LEE, R. WEI, K. COULTER, Southwest Research Institute, USA	<b>B4-4-6</b> Lessons Learned from Sputtering Icosahedrally Bonded Borides, o. HUNOLD, P. KEUTER, P. BLIEM, D. MUSIC, F. WITTMERS, A.L. RAVENSBURG, RWTH Aachen University, Germany, D. PRIMETZHOFFER, Uppsala University, Sweden, J.M. SCHNEIDER, RWTH Aachen University, Germany	
3:30 pm	<b>B3-1-7 Invited</b> Deposition of ta-C by Filtered and Unfiltered Laser-arc Technique – Actual Status, V. WEIHNACHT, G. ENGLBERGER, A. LESON, Fraunhofer IWS, Germany	<b>B4-4-7</b> Ductile Behavior of Hard MoBC and WBC Nanolaminates, P. VAŠINA, P. SOUCEK, S. MIRZAEI, L. ZABRANSKY, Masaryk University, Czech Republic, J. BURSIK, IPM, Academy of Science, Czech Republic, V. PERINA, NPI, Academy of Science, Czech Republic, V. BURSIKOVA, Masaryk University, Czech Republic	
3:50 pm	Invited talk continued.	<b>B4-4-8</b> Coating Characterization with Surface Acoustic Waves, M. ZAWISCHA, D. SCHNEIDER, M. LEONHARDT, S. MAKOWSKI, V. WEIHNACHT, Fraunhofer IWS, Germany	
4:10 pm	<b>B3-1-9</b> Wear Behavior of CoCrMo Alloy Coated with Highly Adhesive N-Doped DLC by ICP-CVD, J. CORONA GOMEZ, Q. YANG, University of Saskatchewan, Canada	<b>B4-4-9</b> Anti-Corrosion Performance and Wear Behaviour of Laser Deposited Ni-Ti-Zn Coatings on UNS G10150 Steel., A. XULU, Tshwane University of Technology, South Africa, O.S. FATOBA, University of Johannesburg, South Africa, A. POPOOLA, Tshwane University of Technology, South Africa, S. PITYANA, Council for Scientific and Industrial Research (CSIR), South Africa	
4:30 pm	<b>B3-1-10</b> Carbon-Based Coatings on Nanofabric by Using HIPIMS for Possible EAOPs Applications, P.W. WANG, C.M. TSEN, C.W. LIU, J.L. HE, Feng Chia University, Taiwan	<b>B4-4-10</b> Effect of V Addition on the Thermal Stability, Oxidation Resistance and Tribological Performance of Self-lubricant TiSi(V)N Coatings Deposited by HiPIMS in DOMS Mode, F. FERNANDES, R. SERRA, A. CAVALEIRO, SEG-CEMUC, University of Coimbra, Portugal	
4:50 pm	<b>B3-1-11</b> Effect of Electron Energy Distribution Function on Growth of Nanocrystallite-Graphene-Containing Carbon Films during Electron Irradiation Process in an ECR Plasma, W.C. CHEN, C. CHEN, D.F. DIAO, Institute of Nanosurface Science and Engineering, Shenzhen University, China	<b>B4-4-11</b> Wear Study of PVD AlTiN Coatings with High Al Content, J. KOHLSCHNEEN, C. BAREISS, Kennametal GmbH, Germany, C. CHARLTON, D. BANERJEE, Kennametal Inc., USA	
5:10 pm		<b>B4-4-12</b> Tribological Behavior of MoBCN-MoSx Coating under Elevated Temperature, X.D. ZHU, Q.Y. LI, L.S. QIU, K.W. XU, Xi'an Jiaotong University, China	
<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b>		<b>Awards Convocation 5:45 pm</b> <b>Town &amp; Country Room</b> <b>Honorary Lecturer: John A. Woollam</b> <b>“History and Basics of Ellipsometry with Examples”</b> <b>Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion</b>	

# Wednesday Afternoon, April 26, 2017

<b>Tribology and Mechanical Behavior of Coatings and Engineered Surfaces</b> <b>Room: San Diego - Session E3</b> <b>Tribology of Coatings for Automotive and Aerospace Applications</b> <b>Moderators: Sébastien Guimond</b> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, <b>Nicolas Argibay</b> , Sandia National Laboratories, USA, <b>Pantcho Stoyanov</b> , Pratt & Whitney, USA		<b>New Horizons in Coatings and Thin Films</b> <b>Room: Royal Palm 1-3 - Session F4-2</b> <b>Functional Oxide and Oxynitride Coatings</b> <b>Moderators: Michael Stueber</b> , Karlsruhe Institute of Technology (KIT), Germany, <b>Anders Eriksson</b> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein
1:30 pm		
1:50 pm	<b>E3-2</b> Bending Fatigue Property Enhancements of Metallic Substrates by Thin Film Metallic Glass Coatings, <b>C.H. CHANG</b> , J.P. CHU, National Taiwan University of Science and Technology, Taiwan	<b>F4-2-2</b> After-arc Plasma Technique to Modify Chemical States of Surface and Grain Boundaries of 50-nm-thick Conductive ZNO Films to Achieve a Fast-response Hydrogen Sensor, <b>T. YAMAMOTO</b> , J. NOMOTO, H. MAKINO, Kochi University of Technology, Japan, H. KITAMI, T. SAKEMI, Y. AOKI, Sumitomo Heavy Industries, Ltd., Japan, K. KOBAYASHI, Kochi University of Technology, Japan, S. KISHIMOTO, Kochi National College of Technology, Japan
2:10 pm	<b>E3-3</b> Optimization of the Tribological Contact between Piston Ring and Cylinder Wall with Oxide Coatings, <b>C. BOHNHEIO</b> , P. ERNST, P. LUETHY, Oerlikon Metco AG, Switzerland, J. RAMM, H. RUDIGIER, <b>F. SEIBERT</b> , B. WIDRIG, Oerlikon Surface Solutions AG, Liechtenstein	<b>F4-2-3</b> Microstructure and Corrosion Resistance of PVD Hf-coated Mg Alloy after Thermal Oxidation Treatment, <b>D. ZHANG</b> , Z. QI, B. WEI, <b>Z. WANG</b> , Xiamen University, China
2:30 pm	<b>E3-4</b> Mechanical Characterization of the Glaze Layer formed by Fretting Wear in a Ceramic versus Metallic Alloy Contact, <b>A. VIAT</b> , <b>G. GUILLONNEAU</b> , S. FOUVRY, Ecole Centrale de Lyon, France, G. KERMOUCHE, Ecole des Mines de Saint-Etienne, France, J. MICHLER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	<b>F4-2-4</b> HiPIMS Deposition of Ta-O-N Coatings with Modified Surface by Cu Nanoclusters for Water Splitting Application, <b>J. ČAPEK</b> , S. BATKOVÁ, S. HAVIAR, J. HOUSKA, University of West Bohemia, Czech Republic
2:50 pm	<b>E3-5 Invited</b> Sequence of Stages in the Microstructure Evolution in Copper under Reciprocating Tribological Loading, <b>C. GREINER</b> , Karlsruhe Institute of Technology (KIT), Germany	<b>F4-2-5 Invited</b> New Oxides and Oxynitrides for Thermoelectrics and Hard, Transparent Coatings, <b>P. EKLUND</b> , Linköping University, IFM, Sweden
3:10 pm	Invited talk continued.	Invited talk continued.
3:30 pm	<b>E3-7</b> Effect of Test Atmosphere on the Tribological Behaviour of the Fluorinated Tetrahedral Amorphous Carbon (ta-C-F) Coatings against Steel, <b>M.Z.U. KHAN</b> , S. BHOWMICK, A.T. ALPAS, University of Windsor, Canada	<b>F4-2-7</b> Reactive Magnetron Sputter Deposition of NbO <sub>x</sub> Thin Films, <b>R. LORENZ</b> , Montanuniversität Leoben, Austria, M. O'SULLIVAN, D. SPRENGER, B. LANG, Plansee SE, Austria, C. MITTERER, Montanuniversität Leoben, Austria
3:50 pm	<b>E3-8</b> Laser-based Process for Polymeric Tribological Coatings on Lightweight Components, <b>H. SAENDKER</b> , J. STOLLENWERK, Fraunhofer Institute for Laser Technology, Germany, P. LOOSEN, Chair for Technology of Optical Systems TOS, Germany	<b>F4-2-8</b> Electrical Properties of BiNbO Thin Films Deposited by Dual Co-sputtering, <b>O. DEPABLOS-RIVERA</b> , J. PÉREZ-ALVAREZ, Instituto de Investigación en Materiales-UNAM, Mexico, S. CHARVET, M. LEJEUNE, Université de Picardie Jules Verne, France, S.E. RODIL, Instituto de Investigación en Materiales-UNAM, Mexico
4:10 pm	<b>E3-9</b> Long-term Tests of Tribological Properties of HVOF-sprayed WCCoCr Carbide Coatings of Ultra-fine Powders with a View to Applying Them to Sliding Rings of Mechanical Seals, <b>A. IWANIAK</b> , R. SWADZBA, Silesian University of Technology, Poland, G. WIECLAW, Certech Sp. z o.o., Poland, L. NORYMBERCZYK, ANG A Uszczelnienia Mechaniczne Sp. z o.o., Poland	<b>F4-2-9</b> Structure and Properties of Magnetron-sputtered Manganese Ferrite Films, <b>F. FIETZKE</b> , O. ZYWITZKI, Fraunhofer FEP, Fraunhofer Institute for Organic Electronics, Germany
4:30 pm	<b>E3-10</b> Role of Oxygen in High Temperature Sliding Behaviour of W Containing Diamond-like Carbon (W-DLC), S. BHOWMICK, <b>M. LOU</b> , A.T. ALPAS, University of Windsor, Canada	<b>F4-2-10</b> On the Importance of Optimized Energy of the Bombarding Negative Ions in Magnetron Sputtered High Quality AZO Films, <b>F. MENG</b> , Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China
4:50 pm	<b>E3-11</b> Wear Mechanisms and Tribological Characterisation of Novel Nanocomposite Coated Cutting Tool Material for High Temperature Applications, <b>P. JADHAV</b> , S.K.R. NARALA, BITS Pilani Hyderabad campus, India	<b>F4-2-11</b> A Combined Optical and Electronic Structure Analysis of ZnO:Al Films: Bandgap Renormalization and the Burstein – Moss Effects, <b>N. TRINDADE</b> , Sao Paulo Federal Institute, Brazil, N. MARANA, M. JUNIOR, J. SAMBRANO, A. TABATA, J.H. SILVA, J.R. BORTOLETO, Sao Paulo State University, Brazil
	<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b>	<b>Awards Convocation 5:45 pm</b> <b>Town &amp; Country Room</b> <b>Honorary Lecturer: John A. Woollam</b> <b>"History and Basics of Ellipsometry with Examples"</b> <b>Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion</b>

# Wednesday Afternoon, April 26, 2017

<b>Surface Engineering - Applied Research and Industrial Applications</b> <b>Room: Sunrise - Session G2</b> <b>Components Coatings</b> <b>Moderators: Kenji Yamamoto</b> , Kobe Steel Ltd., Japan, <b>Osman L. Eryilmaz</b> , Argonne National Laboratory, USA, <b>Jolanta Klemberg-Sapieha</b> , Polytechnique Montreal, Canada		<b>Surface Engineering - Applied Research and Industrial Applications</b> <b>Room: Sunrise - Session G6</b> <b>Application-driven Cooperation between Industry and Research Institutions</b> <b>Moderators: Hamid Bolvardi</b> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, <b>Kirsten Bobzin</b> , Surface Engineering Institute - RWTH Aachen University, Germany
1:30 pm		Session G2 will be held immediately prior to G6
1:50 pm	<b>G2-2</b> Advanced Metal/Ceramic Nano-multilayers for Joining Applications: Interplay between Nano-confinement, Stress Relaxation and Environmental Conditions, <b>M. CHIODI</b> , C. CANCELLIERI, F. MOSZNER, Empa, Laboratory for Joining Technologies & Corrosion, Switzerland, <b>M. ANDRZEJCZUK</b> , Warsaw University of Technology, Poland, <b>J. JANCZAK-RUSCH</b> , L.P.H. JEURGENS, Empa, Laboratory for Joining Technologies & Corrosion, Switzerland	
2:10 pm	<b>G2-3 Invited</b> Coatings for the Aerospace Industry, <b>J.R. LINCE</b> , The Aerospace Corporation, USA	
2:30 pm	Invited talk continued.	
2:50 pm	<b>G2-5</b> Triboactive CrAlN+X Hybrid dcMS/HPPMS PVD Nitride Hard Coatings for Friction and Wear Reduction on Components, <b>K. BOBZIN</b> , T. BRÖGELMANN, <b>C. KALSCHUEER</b> , Surface Engineering Institute - RWTH Aachen University, Germany	
3:10 pm	<b>G2-6</b> Tribological Performance of PTFE Based Composite Seal Materials Against Diamond Like Carbon and Catalytically Active Nitride Based Nano-composite Coatings, <b>O.L. ERYILMAZ</b> , G. RAMIREZ, A. ERDEMIR, Argonne National Laboratory, USA	
3:30 pm	<b>Session G6 will begin immediately after G2</b>	<b>G6-7 Invited</b> Research Behind a High Performance Metal Cutting Tool, <b>J. SJÖLÉN</b> , SECO Tools, Sweden
3:50 pm		Invited talk continued.
4:10 pm		<b>G6-9</b> Residual Stress Measurement Technique for Static and Dynamic Coating Processes using Micro-machined Stress Sensors for Scientific and Industrial Applications, <b>L. BANKO</b> , <b>D. GROCHLA</b> , A. LUDWIG, Ruhr-Universität Bochum, Germany
4:30 pm		<b>G6-10</b> Improvement of Thermal Stability and Oxidation Resistance of Molybdenum Nitride, <b>F.F. KLIMASHIN</b> , CDL-AOS TU Wien, Austria, <b>M. ARNDT</b> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, <b>P. POLCIK</b> , Plansee Composite Materials GmbH, Germany, <b>H. EUCHNER</b> , N. KOUTNÁ, TU Wien, Austria, D. HOLEC, Montanuniversität Leoben, Austria, <b>P.H. MAYRHOFER</b> , TU Wien, Austria
4:50 pm		<b>G6-11</b> Effects of Solidification Behaviour on the Microstructure, Hardness and Corrosion Resistance Properties of Laser Alloyed Al-Fe-Si Coatings, <b>E.T. AKINLABI</b> , O.S. FATOBA, E.M. MAKHATHA, University of Johannesburg, South Africa
5:10 pm		<b>G6-12</b> Empirical Alloys-by-design Theory Calculations to the Microstructure Evolution Mechanical Properties of Mo-doped Laser Cladding NiAl Composite Coatings on Medium Carbon Steel Substrates, <b>C.M. LIN</b> , <b>W.Y. KAI</b> , National Taipei University of Technology, Taiwan
	<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b>	<b>Awards Convocation 5:45 pm</b> <b>Town &amp; Country Room</b> <b>Honorary Lecturer: John A. Woollam</b> <b>"History and Basics of Ellipsometry with Examples"</b> <b>Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion</b>

## Wednesday Afternoon, April 26, 2017

<b>Advanced Characterization Techniques for Coatings and Thin Films</b> <b>Room: Royal Palm 4-6 - Session H3-2</b> <b>Characterization of Coatings in Harsh Environments</b> <b>Moderators: David Armstrong</b> , University of Oxford, UK, <b>Jeff Wheeler</b> , Laboratory for Nanometallurgy, ETH Zürich, Switzerland		
1:30 pm		<b>2017 R.F. Bunshah Annual Award &amp; Honorary Lecture</b> <b>John A. Woollam</b>  Founder and President, J.A. Woollam, Co., Inc. Lincoln, Nebraska, USA  George Holmes University Professor, Department of Electrical and Computer Engineering University of Nebraska Lincoln, NE, USA  <b>History and Basics of Ellipsometry with Examples</b>  Interesting changes in polarization state of light upon oblique angle reflectance from (or transmission through) flat smooth materials were first explored by Paul Drude in Berlin, Germany, in the late 1800s. One of the first practical applications was to regulate sugar sales by measuring polarization rotation in solutions. The first U.S. Ellipsometry Conference was held at The National Bureau of Standards in 1963. Since then, the field has advanced rapidly in both basic knowledge and applications. Advancement of personal computers in the 1980s and 90s led to dramatic improvement in speed and utility of ellipsometry. This led to explosive increases in users. The first International Conference on Spectroscopic Ellipsometry was held in Paris in 1983, and conferences are generally held every three years.  The basic concept of ellipsometry is that a beam of electromagnetic radiation of known polarization state is directed at an oblique angle to a material of interest and the reflected (or transmitted) beam polarization state determined. This can be done with a range of angles of incidence and wavelengths. Optical modeling and regression allows one to infer numerous properties of the material. Examples are surface roughness, film thickness, index of refraction (sometimes graded), extinction coefficient, atomic ratios in alloys, crystallinity, etc. Ellipsometers are also used for optical critical-dimensional (OCD) metrology of integrated circuits. Other applications include microelectronics, organic materials, solid-state lasers, display technology, optical coatings, hard coatings, energy efficiency, solar energy, solid lubricants and lighting. In basic science, optical transitions are used to determine unknown parameters in energy bands of solids, crystallinity, and surface and interface chemistry with sub-nanometer dimensional sensitivity. Finally, new developments involving different spectral ranges, in situ, in-line technology, and combinations of ellipsometry with other techniques will be discussed.
1:50 pm		
2:10 pm	<b>H3-2-3 Invited</b> Recent Advances in Nanomechanical Testing of Thin Films: Variable Temperature, Ultra-high Strain Rates, in-situ EBSD Experiments, J. BEST, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, J.M. WHEELER, Laboratory for Nanometallurgy, Department of Materials Science, ETH Zürich, Switzerland, J. WEHRS, J. SCHWIEDRZIK, G. MOHANTY, J. AST, X. MAEDER, K. THOMAS, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, M. MORSTEIN, Platit Ag, Switzerland, <b>J. MICHLER</b> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	
2:30 pm	Invited talk continued.	
2:50 pm	<b>H3-2-5</b> Combined Size and Texture-dependent Deformation and Strengthening Mechanisms in Zr/Nb Nano-multilayers in Harsh Environments, T. POLCAR, M. CALLISTI, University of Southampton, UK	
3:10 pm	<b>H3-2-6</b> The Oxidation Resistance of ZrO <sub>2</sub> -Coated and Vacuum Annealed ZrN-Coated Zircaloy-4, I.S. TING, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan	
3:30 pm	<b>H3-2-7</b> Effect of Using Dissimilar Substrate Materials on Interfacial Properties of HVOF Deposited Inconel 718 Alloy, S. ABUALIGALEDARI, M. SALIMIJAZI, F. AZARMI, Y. HUANG, North Dakota State University, USA	
3:50 pm	<b>H3-2-8</b> Sublimation and Self Freezing of Planar Surfaces in Rarefied Atmospheres, R. BASU, Adarsha Institute of Technology, India	
	<b>Exhibition Hall Closes Today</b> <b>Grand Hall</b> <b>Open 10:00 am-2:00 pm</b>	<b>Awards Convocation 5:45 pm</b> <b>Town &amp; Country Room</b> <b>Honorary Lecturer: John A. Woollam</b> “History and Basics of Ellipsometry with Examples” <b>Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion</b>



# Thursday Morning, April 27, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B3-2</b> <b>Deposition Technologies and Applications for Diamond-like Coatings</b> <b>Moderators: Frank Papa, Genco Ltd., USA, Klaus Böbel, Robert Bosch GmbH, Germany</b>		<b>Fundamentals and Technology of Multifunctional Materials and Devices</b> <b>Room: Royal Palm 1-3 - Session C3-1</b> <b>Thin Films for Energy-related Applications</b> <b>Moderators: Jim Partridge, RMIT University, Australia, Martin Allen, University of Canterbury, New Zealand</b>
8:00 am	<b>B3-2-1</b> Tribological Behavior of Unlubricated Sliding between Steel Ball and Si-DLC Deposited by Ultra-high-speed Coating Employing MVP Method, T. NAKANO, K. YAMAGUCHI, I. TANAKA, H. KOUSAKA, Gifu University, Japan, H. HASHITOMI, Cnk Co., Ltd., Japan	
8:20 am	<b>B3-2-2</b> Tribological Behavior of DLC Coatings on AISI 4340 Steel Deposited in PECVD DC-Pulsed Technique with Additional Cathode for Automotive Applications., M.A. RAMIREZ R., D.C. LUGO, National Institute for Spacial Research INPE, Brazil, N.K. FUKUMASU, I.F. MACHADO, Surface Phenomena Laboratory - Polytechnic School - University of Sao Paulo - Brazil, E.M. MITMA P., V.J. TRAVA-AIROLDI, National Institute for Spacial Research INPE, Brazil	
8:40 am	<b>B3-2-3</b> Structural Evolution and Temperature-sensitivity of W-containing Diamond-like Carbon Films Deposited by a Hybrid Linear Ion Beam Systems, P. GUO, L. SUN, P.L. KE, A.Y. WANG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China	
9:00 am	<b>B3-2-4</b> Effects of Carbon Content and Argon Flow Rate on the Triboperformance of Self-lubricating WS <sub>2</sub> /a-C Sputtered Coating, H.T. CAO, J. TH.M DE HOSSON, Y.T. PEI, University of Groningen, Netherlands	
9:20 am	<b>B3-2-5 Invited</b> Industrial Development of Carbon-based Coatings, R. JACOBS, G.J. FRANSEN, R. TIETEMA, D. DOERWALD, J. LANDSBERGEN, IHI Hauzer Techno Coating B.V., Netherlands	<b>C3-1-5 Invited</b> Solar Photovoltaic Energy Generation in Thermal Insulation Glazing, D.R. MCKENZIE, The University of Sydney, Australia
9:40 am	Invited talk continued.	Invited talk continued.
10:00 am	<b>B3-2-7</b> Glow Discharge and Deposition of Thick DLC Film in Cage-shaped Hollow Cathode System with Adjustable Bias, X.B. TIAN, M.Z. WU, C.Z. GONG, Harbin Institute of Technology, China, R. WEI, Southwest Research Institute, USA	<b>C3-1-7</b> Effects of Annealing on Thermochromic Properties of W-doped Vanadium Dioxide Thin Films Deposited by Electron Beam Evaporation, S.E. CHEN, National Cheng Kung University, Taiwan, H.H. LU, National Chin-Yi University of Technology, Taiwan, S. BRAHMA, J.L. HUANG, National Cheng Kung University, Taiwan
10:20 am	<b>B3-2-8</b> Enhanced Adhesion Of Hard Dlc Coatings On Metallic And Insulating Substrates, I. FERNANDEZ, Nano4energy SI, Spain	<b>C3-1-8</b> Fabrication and Characterization of Titanium Doped $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Thin Films for Application in Oxygen Sensors, S. MANANDHAR, E. RUBIO, C. CHINTALAPALLE, The University of Texas at El Paso, USA
10:40 am	<b>B3-2-9</b> Low Friction of Graphene Nanocrystalline Embedded Carbon Nitride Coatings Prepared with MCECR Plasma Sputtering, P.F. WANG, Institute of Nanosurface Science and Engineering, Shenzhen University, China, W.Q. ZHANG, Xi'an Jiaotong University, China, D.F. DIAO, Shenzhen University, China	<b>C3-1-9</b> Bombardment of Tungsten Oxide Thin Layers by Low Energy of He and D Ions, H. HIJAZI, Y. ADDAB, Aix-Marseille Université, France, A. MAAN, J. DURAN, D. DONOVAN, University of Tennessee-Knoxville, USA, C. PARDANAUD, M. CABIÉ, Aix-Marseille Université, France, F.W. MEYER, M.E. BANNISTER, Oak Ridge National Laboratory, USA, R. PASCAL, C. MARTIN, Aix-Marseille Université, France
	<b>2018 ICMCTF Informational Meeting</b> <b>12:15-1:15 pm</b> <b>California Room</b>	<b>Elsevier Authors FTS: Focused Topic Session</b> <b>"How to Get Your Paper Published &amp; How to Review a Paper"</b> <b>12:15-1:15 pm</b> <b>Golden West Room</b>

# Thursday Morning, April 27, 2017

<b>Tribology and Mechanical Behavior of Coatings and Engineered Surfaces</b> <b>Room: San Diego - Session E1-1</b> <b>Friction, Wear, Lubrication Effects, and Modeling</b> <b>Moderators: Albano Cavaleiro</b> , University of Coimbra, Portugal, <b>Carsten Gachot</b> , Vienna University of Technology, Austria, <b>Giovanni Ramirez</b> , Argonne National Laboratory, USA		<b>Surface Engineering - Applied Research and Industrial Applications</b> <b>Room: Sunrise - Session G4</b> <b>Pre-/Post-Treatment and Duplex Technology</b> <b>Moderators: Hiroshi Tamagaki</b> , Kobelco, Co. Ltd., Japan, <b>Wan-Yu Wu</b> , Da-Yeh University, Taiwan, <b>Chris Stoessel</b> , Eastman Chemical Company, Inc., USA	
8:00 am	<b>E1-1-1</b> Stress and Friction Modelling for Improved Nano-scratch Testing of Hard Coatings, <b>B.D. BEAKE</b> , Micro Materials Ltd, UK, <b>V.M. VISHNYAKOV</b> , University of Huddersfield, UK, <b>T. LISKIEWICZ</b> , University of Leeds, UK	Session G5 will be held immediately prior to Session G4 (see following page 27)	
8:20 am	<b>E1-1-2</b> Wear Resistance and Solid Lubricity of Nanolayered Molybdenum Containing Nitride Coatings Deposited using Cathodic Arc Technique, <b>q. YANG</b> , National Research Council of Canada		
8:40 am	<b>E1-1-3 Invited</b> Exploring Tribological Interactions – from Molecules to Engineering Applications, <b>D. DINI</b> , Imperial College London, UK	<b>G4-3</b> Nitriding and DLC Coating of Aluminum Alloy Using High Current Pressure-Gradient-Type Plasma Source, <b>A. NISHIMOTO</b> , Kansai University, Japan, <b>E. FURUYA</b> , <b>K. KOUSAKA</b> , Chugai Ro Co., Ltd., Japan	
9:00 am	Invited talk continued.	<b>G4-4</b> Towards Hard yet Tough Ceramic Coatings, <b>s. ZHANG</b> , Nanyang Technical University, Singapore	
9:20 am	<b>E1-1-5</b> Mechanical Stability under Sliding Contact of Thin Multilayer with Weak Adhesion, <b>A. QUARRÉ DE BOIRY</b> , Joint unit CNRS/Saint-Gobain UMR 125 - Surface of Glass and Interfaces, France, <b>D. DALMAS</b> , École Centrale de Lyon – Laboratoire de Tribologie et Dynamique des Systèmes, France, <b>J.-Y. FAOU</b> , <b>J. TEISSEIRE</b> , Saint-Gobain Recherche, France	<b>G4-5 Invited</b> Flash Lamp Annealing (FLA) for Post-deposition Treatment at High Throughput, <b>T.R. GEBEL</b> , University of Applied Sciences Mittweida, Germany, <b>M. NEUBERT</b> , <b>ROVAK GmbH</b> , Germany, <b>W. SKORUPA</b> , Helmholtz Zentrum Dresden-Rossendorf, Germany	
9:40 am	<b>E1-1-6</b> Tribomechanical Behavior with the Incorporation of Silice in a Matrix of V <sub>2</sub> O <sub>5</sub> , <b>R. MIRABAL-ROJAS</b> , Instituto de Investigación en Materiales-UNAM, Mexico, <b>G. RAMIREZ</b> , Argonne National Laboratory, USA, <b>E. CAMPS</b> , Instituto Nacional de Investigaciones Nucleares, Mexico, <b>A. ERDEMIR</b> , Argonne National Laboratory, USA, <b>S.E. RODIL</b> , Universidad Nacional Autónoma de México	Invited talk continued.	
10:00 am	<b>E1-1-7</b> Tribocorrosion Investigation of Hydrogenated DLC Films of Different Roughness by Means of Vacuumtribology Accompanied by Mass Spectrometry, <b>M. KACHEL</b> , Fraunhofer Institute for Mechanics of Materials IWM, Germany	<b>G4-7</b> Evaluating the Effect of Titanium-Based PVD Metallic Thin Films on Nitrogen Diffusion Efficiency in Duplex Plasma Diffusion/Coating Systems, <b>G. YUMUSAK</b> , <b>A. LEYLAND</b> , University of Sheffield, UK, <b>A. MATTHEWS</b> , University of Manchester, UK	
10:20 am	<b>E1-1-8</b> Plasma-Assisted Lubrication for the Sliding between Polymer and Diamond-Like Carbon, <b>S. OKUMURA</b> , Nagoya University, Japan, <b>T. HIBINO</b> , <b>H. KOUSAKA</b> , Gifu University, Japan, <b>N. UMEHARA</b> , Nagoya University, Japan	<b>G4-8</b> Properties of Surface Passivation at Si/Al <sub>2</sub> O <sub>3</sub> Interface Annealed in Different Gas Ambient, <b>C.H. YANG</b> , National Chung-Hsing University, Taiwan, <b>C.W. HUANG</b> , <b>C.H. HSU</b> , Da-Yeh University, Taiwan, <b>C.Y. KUNG</b> , National Chung-Hsing University, Taiwan, <b>S.Y. LIEN</b> , Da-Yeh University, Taiwan, <b>W.Z. ZHU</b> , <b>X.G. MENG</b> , <b>X.Y. ZHANG</b> , Xiamen University of Technology, China	
10:40 am	<b>E1-1-9</b> Integrated Multiscale Material Modelling of Topographical Effects on Wear and Friction in Sliding DLC Contacts, <b>K. HOLMBERG</b> , <b>A. LAUKKANEN</b> , VTT Technical Research Centre, Finland, <b>T.J. HAKALA</b> , VTT Technical Research Centre of Finland Ltd, Finland, <b>H. RONKAINEN</b> , VTT Technical Research Centre, Finland, <b>G. STACHOWIAK</b> , <b>P. PODSIADLO</b> , <b>M. WOLSKI</b> , Curtin University, Australia, <b>M. GEE</b> , NPL National Physical Laboratory, UK, <b>C. GACHOT</b> , Saarland University, Germany, <b>L. LI</b> , Hong Kong City University, Hong Kong	<b>G4-9</b> High Performance Solar Selective Coatings based on TiN <sub>x</sub> O <sub>y</sub> , <b>C.Y. LEE</b> , <b>J.M. TING</b> , National Cheng Kung University, Taiwan	
11:00 am	<b>E1-1-10</b> A Comparative Study of Fatigue Properties of TiVN and TiNbN Thin Films Deposited On Different Substrates, <b>H. CICEK</b> , Erzurum Technical University, Turkey, <b>O. BARAN</b> , Erzurum University, Turkey, <b>A. KELES</b> , <b>Y. TOTIK</b> , <b>I. EFEUGLU</b> , Ataturk University, Turkey	<b>G4-10</b> Diagnostics of Surface Roughness during Electrolytic Plasma Polishing Pre-treatment for Stainless Steels, <b>V. MUKAEVA</b> , <b>E. PARFENOV</b> , <b>R.G. FARRAKHOV</b> , <b>M.S. GROMOVA</b> , Ufa State Aviation Technical University, Russian Federation, <b>A. YEROKHIN</b> , The University of Manchester, UK	
11:20 am	<b>E1-1-11</b> The Mechanical and Tribological Properties of Nanocomposite CrMoSiN Coatings, <b>Y.C. LU</b> , National Tsing Hua University, Taiwan		
11:40 am	<b>E1-1-12</b> Comparative Studies on Tribological Behaviors of a Magnetron Sputtered CrSiN Coating Under the Environments of Air and Water, <b>F. GE</b> , <b>J. CONGCONG</b> , <b>S. TAO</b> , <b>L. PENG</b> , <b>H. FENG</b> , Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China	<b>2018 ICMCTF Informational Meeting</b> <b>12:15-1:15 pm</b> <b>California Room</b>	
12:00 pm	<b>E1-1-13</b> The Mechanical and Tribological Properties of Ti [Nb, V] N Films on the 2024 Al-alloy, <b>O. BARAN</b> , Erzurum University, Turkey, <b>A. KELES</b> , Ataturk University, Turkey, <b>H. CICEK</b> , Erzurum Technical University, Turkey, <b>Y. TOTIK</b> , <b>I. EFEUGLU</b> , Ataturk University, Turkey	<b>Elsevier Authors FTS: Focused Topic Session</b> <b>“How to Get Your Paper Published &amp; How to Review a Paper”</b> <b>12:15-1:15 pm</b> <b>Golden West Room</b>	

# Thursday Morning, April 27, 2017

<b>Surface Engineering - Applied Research and Industrial Applications</b> <b>Room: Sunrise - Session G5</b> <b>Atmospheric Plasma Applications</b> <b>Moderators:</b> Hana Barankova, Uppsala University, Angstrom Laboratory, Sweden, <b>Sang-Yul Lee</b> , Korea Aerospace University, Korea		<b>Advanced Characterization Techniques for Coatings and Thin Films</b> <b>Room: Royal Palm 4-6 - Session H2-1</b> <b>Advanced Mechanical Testing of Surfaces and Coatings</b> <b>Moderators:</b> Benoit Merle, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany, <b>Marco Sebastiani</b> , Roma TRE University, Italy
8:00 am	<b>G5-1 Invited</b> Radiofrequency Cold Plasma Jets Generated at Atmospheric Pressure: from Principles to Applications, <b>G. DINESCU</b> , E.R. IONITA, M.D. IONITA, M. TEODORESCU, V. MARASCU, A. LAZEA-STOYANOVA, National Institute for Lasers, Plasma and Radiation Physics, Romania	<b>H2-1-1 Invited</b> Controlling Disorder in Vapor-deposited Metallic Thin Films and its Influence on Mechanical Behavior, D.J. MAGAGNOSC, University of Pennsylvania, USA, G. BALBUS, University of California Santa Barbara, USA, G. FENG, Villanova University, USA, <b>D.S. GIANOLA</b> , University of California Santa Barbara, USA Invited talk continued.
8:20 am	Invited talk continued.	Invited talk continued.
8:40 am	Session G4 will begin immediately after G5 (see previous page 26)	<b>H2-1-3</b> Influence of Microstructure on the Cyclic Electro-mechanical Behavior of Ductile Films on Polymer Substrates, <b>M.J. CORDILL</b> , O. GLUSHKO, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; Montanuniversität Leoben, Austria, D.M. TÖBBENS, Helmholtz-Zentrum Berlin für Materialien und Energie, Germany, C. KIRCHLECHNER, Max-Planck-Institut für Eisenforschung GmbH, Germany
9:00 am		<b>H2-1-4</b> Crystalline/Amorphous Metallic Multilayers – from Dislocations to Shear Bands, <b>M. MÜHLBACHER</b> , Montanuniversität Leoben, Austria, C. GAMMER, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria, F. SPIECKERMANN, C. MITTERER, J. ECKERT, Montanuniversität Leoben, Austria
9:20 am		<b>H2-1-5</b> A Novel Method for the Preparation of Tensile Thin Film Specimens for In-situ Mechanical Testing in the TEM, <b>B. MERLE</b> , J.P. LIEBIG, M. GÖKEN, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany
9:40 am		<b>H2-1-6</b> Liquid Metal Embrittlement at the Micro-scale: Gallium FIB vs. Xenon FIB, Y. XIAO, Laboratory for Nanometallurgy, ETH Zurich, Switzerland, <b>J.M. WHEELER</b> , Laboratory for Nanometallurgy, ETH Zürich, Switzerland
10:00 am		<b>H2-1-7</b> Quantum Contact Mechanics for Tribology, Wear and Erosion, <b>N. SCHWARZER</b> , SIO, Germany
10:20 am		<b>H2-1-8</b> Textile Nanocharacterization: Topography, Phase Imaging, and Nanomechanical Property Investigation of Polyester Yarn Interaction with Silicon Matrix, B. KIM, <b>G. PASCUAL</b> , K. LEE, Park Systems Corporation, USA
10:40 am		<b>H2-1-9</b> A Nanoindentation System with Equivalent Capabilities in Both Normal to and Parallel to the Sample Surface, <b>W.C. OLIVER</b> , Nanomechanics, Inc., USA, P.S. PHANI, International Advanced Research Centre for Powder Metallurgy & New Materials, India, K. JOHANNIS, Nanomechanics, Inc., USA, J.B. PETHICA, CRANN, Trinity College Dublin, Ireland, K. PARKS, Nanomechanics, Inc., USA
11:00 am		<b>H2-1-10</b> The Effects of TIP Sharpness and Substrate Properties on Nanohardness Measurement in Thin Hard Coatings by FEM, <b>F. LOFAJ</b> , D. NEMETH, Institute of Materials Research of SAS, Slovakia
11:20 am		<b>H2-1-11</b> Small Punch Testing for Mechanical Characterisation of a Free-standing CoNiCrAlY Coating, <b>H. CHEN</b> , University of Nottingham, China
11:40 am		<b>H2-1-12</b> Brittle Film-induced Cracking of Ductile Substrates, <b>X.L. PANG</b> , T. GUO, L.J. QIAO, University of Science and Technology Beijing, China
	<b>2018 ICMCTF Informational Meeting</b> <b>12:15-1:15 pm</b> <b>California Room</b>	<b>Elsevier Authors FTS: Focused Topic Session</b> <b>“How to Get Your Paper Published &amp; How to Review a Paper”</b> <b>12:15-1:15 pm</b> <b>Golden West Room</b>

# Thursday Morning, April 27, 2017

## Topical Symposia

Room: California - Session TS2-1

### Thermal, Cold, and Kinetic Sprayed Surface Coatings

Moderators: Pylin Sarobol, Sandia National Laboratories, USA,  
Charles Kay, ASB Industries, Inc., USA

8:00 am		
8:20 am		
8:40 am		
9:00 am	<b>TS2-1-4</b> Thermally Sprayed Alumina and Ceria-doped-Alumina Coatings on AZ91 Mg Alloy, <b>S. KUMAR</b> , ITMMEC, Indian Institute of Technology Delhi, India, D. KUMAR, J. JAIN, Indian Institute of Technology Delhi, India	
9:20 am	<b>TS2-1-5</b> Langmuir-Blodgett Colloidal Assembly: Challenges and Solutions, H.L. NIE, Donghua University, China, <b>J. HUANG</b> , Northwestern University, USA	
9:40 am	<b>TS2-1-6</b> Mechanical Properties of Thermal Spray Coatings on Carbon-fiber-reinforced Plastic, <b>R. KAINDL</b> , Joanneum Research, Austria, M. KRÄUTER, Graz University of Technology, Austria, P. ANGERER, Materials Center Leoben Forschung GmbH (MCL), Austria, W. STÖGER, SECAR Technology GmbH, Austria, M. TRAXLER, BVT Beschichtungs- und Verschleißtechnik GmbH, Austria, J.M. LACKNER, W. WALDHAUSER, Joanneum Research, Austria	
10:00 am	<b>TS2-1-7 Invited</b> Developments in the Understanding of the Fundamental Growth Mechanisms of Aerosol Deposition, <b>S.D. JOHNSON</b> , Naval Research Laboratory, USA, D.-S. PARK, Korean Institute of Material Science, Korea, Y.-S. PARK, Pukong National University, Korea, D. SCHWER, E.P. GORZKOWSKI, Naval Research Laboratory, USA	
10:20 am	Invited talk continued.	
10:40 am	<b>TS2-1-9</b> Aerosol Deposition as a Method of Room Temperature Thick-Film Deposition, <b>J. ADAMCZYK</b> , P. SAROBOL, A. VACKEL, T. HOLMES, Sandia National Laboratories, USA, P. FUIERER, New Mexico Institute of Mining and Technology, USA	
11:00 am	<b>TS2-1-10</b> Residual Stress Measurement of Aerosol Deposited Films, <b>A. VACKEL</b> , J. ADAMCZYK, T. HOLMES, P. SAROBOL, Sandia National Laboratories, USA	
11:20 am	<b>TS2-1-11</b> Microstructure and Properties of Room Temperature, Aerosol Deposited, Thick BaTiO <sub>3</sub> Dielectric Films, <b>P. SAROBOL</b> , A. VACKEL, J. ADAMCZYK, T. HOLMES, M.A. RODRIGUEZ, J. GRIEGO, H.J. BROWN-SHAKLEE, Sandia National Laboratories, USA	
11:40 am	<b>TS2-1-12</b> Dielectrics Produced via Aerosol Deposition, E. PATTERSON, ASEE, USA, S.D. JOHNSON, E.P. GORZKOWSKI, Naval Research Laboratory, USA	
	<b>2018 ICMCTF Informational Meeting</b> <b>12:15-1:15 pm</b> <b>California Room</b>	<b>Elsevier Authors FTS: Focused Topic Session</b> <b>"How to Get Your Paper Published &amp; How to Review a Paper"</b> <b>12:15-1:15 pm</b> <b>Golden West Room</b>

# Thursday Afternoon, April 27, 2017

**Hard Coatings and Vapor Deposition Technologies**  
**Room: Golden West - Session B6**

**Coating Design and Architectures**

**Moderators:** **Nina Schalk**, Montanuniversität Leoben, Austria, **Shou-Yi Chang**, National Tsing Hua University, Taiwan

**Fundamentals and Technology of Multifunctional Materials and Devices**

**Room: Royal Palm 1-3 - Session C3-2**

**Thin Films for Energy-related Applications**

**Moderators:** **Jim Partridge**, RMIT University, Australia, **Martin Allen**, University of Canterbury, New Zealand

1:30 pm	<b>B6-1</b> Radial Symmetry of the Compound Layer Growth in Plasma Nitriding of Pure Iron, <b>F. CASTILLO</b> , <b>J. OSEGUERA</b> , <b>E. HERNÁNDEZ</b> , <b>J. OTERO</b> , <b>D.V. MELO-MAXIMO</b> , <b>A. JIMENEZ</b> , Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico	<b>C3-2-1</b> P-type Cu <sub>2</sub> O Modified by NiO <sub>x</sub> as a Photocathode for Efficient Hydrogen Production in Photoelectrochemical Water Splitting, <b>C. LIN</b> , <b>J.M. TING</b> , National Cheng Kung University, Taiwan
1:50 pm	<b>B6-2</b> Self-assembled Nano-lamellar Ti <sub>1-x</sub> Al <sub>x</sub> N LP-CVD Coatings: Development and Analysis, <b>J. ZALESKAK</b> , <b>J. TODT</b> , Montanuniversität Leoben, Austria, <b>I. MATKO</b> , Institute of Physics, Slovak Academy of Sciences, Slovakia, <b>M. PETRENEC</b> , Tescan Brno s.r.o, Brno, Czech Republic, <b>B. SARTORY</b> , Materials Center Leoben Forschung GmbH (MCL), Austria, <b>R. PITONAK</b> , Böhlerit GmbH & Co KG, Austria, <b>R. DANIEL</b> , <b>J. KECKES</b> , Montanuniversität Leoben, Austria	<b>C3-2-2</b> High Temperature Resistant Molybdenum Thin Film Metal Mesh Electrode as Replacement for ITO, <b>N.B. BÖNNINGHOFF</b> , National Taiwan University of Science and Technology, Taiwan
2:10 pm	<b>B6-3 Invited</b> Fundamental Properties of TM Nitrides: Materials Design Strategies for Extreme Properties, <b>J.E. GREENE</b> , University of Illinois at Urbana-Champaign, USA	<b>C3-2-3 Invited</b> Piezoelectric and Pyroelectric Materials and Systems for Energy Harvesting, <b>C. BOWEN</b> , <b>M. XIE</b> , <b>Y. ZHANG</b> , <b>D. ZABEK</b> , <b>J. ROSCOW</b> , University of Bath, UK
2:30 pm	Invited talk continued.	Invited talk continued.
2:50 pm	<b>B6-5</b> Stabilisation of Cubic MoN and TaN Systems: the Role Point Defects, <b>D. HOLEC</b> , Montanuniversität Leoben, Austria, <b>N. KOUTNÁ</b> , <b>F.F. KLIMASHIN</b> , <b>P.H. MAYRHOFFER</b> , TU Wien, Austria	<b>C3-2-5</b> Ion-assisted Growth of Compound Thin Films for Energy-related Applications, <b>T. KUBART</b> , <b>A. AJJAZ</b> , Uppsala University, Sweden
3:10 pm	<b>B6-6</b> Vacancy Induced Mechanical Stabilization of Cubic Tungsten Nitride, <b>K. BALASUBRAMANIAN</b> , Rensselaer Polytechnic Institute, USA	<b>C3-2-6</b> Growth and Characterization of Thin Film CaMnO <sub>3</sub> and CaMn <sub>x</sub> Nb <sub>1-x</sub> O <sub>3</sub> Thermoelectrics, <b>E. EKSTRÖM</b> , <b>B. PAUL</b> , <b>F. ERIKSSON</b> , <b>P. EKLUND</b> , Linköping University, IFM, Sweden
3:30 pm	<b>B6-7</b> Nitrides and the Impact of Entropy on their Phase Stability, <b>P.H. MAYRHOFFER</b> , TU Wien, Austria, <b>D. HOLEC</b> , Montanuniversität Leoben, Austria, <b>F.F. KLIMASHIN</b> , <b>N. KOUTNÁ</b> , TU Wien, Austria	<b>C3-2-7</b> 3D-Painted Solid Oxide Fuel Cells: A New Approach to Functional Multi-Ceramic Construct Fabrication, <b>N.R. GEISENDORFER</b> , <b>A.E. JAKUS</b> , <b>H. WANG</b> , <b>Z. GAO</b> , <b>S.A. BARNETT</b> , <b>R.N. SHAH</b> , Northwestern University, USA
3:50 pm	<b>B6-8</b> Molecular Dynamics Simulations of TiN/TiN(001) Growth, <b>D. EDSTRÖM</b> , <b>D.G. SANGIOVANNI</b> , <b>L. HULTMAN</b> , Linköping University, IFM, Sweden, <b>I. PETROV</b> , <b>J.E. GREENE</b> , University of Illinois at Urbana-Champaign, USA, <b>V. CHIRITA</b> , Linköping University, IFM, Sweden	<b>C3-2-8</b> Nanoengineering Periodically Structured SiCu Thin Film Anodes for Rechargeable LIBs, <b>B.D. POLAT KARAHAN</b> , <b>B. BILICI</b> , Istanbul Technical University, Turkey, <b>O.L. ERYILMAZ</b> , <b>K. AMINE</b> , Argonne National Laboratory, USA, <b>O. KELES</b> , Istanbul Technical University, Turkey  <b>Graduate Student Finalist</b>
4:10 pm	<b>B6-9</b> Development of Reliable Interaction Potential for and Results of Molecular Dynamics Simulations of ZrO <sub>2</sub> Film Growth, <b>J. HOUŠKA</b> , University of West Bohemia, Czech Republic	<b>C3-2-9</b> A Mesoporous CuAlO <sub>2</sub> Hole Transport Layer for Perovskite Solar Cell, <b>W.J. SUN</b> , <b>J.M. TING</b> , <b>P. CHEN</b> , National Cheng Kung University, Taiwan
4:30 pm	<b>B6-10</b> Experimental Validation of Metal-on-insulator Thin Film Growth Theory, <b>B. LÜ</b> , <b>L. SOUQUI</b> , <b>V. ELOFSSON</b> , <b>K. SARAKINOS</b> , Linköping University, Sweden	<b>C3-2-10</b> Fabrication of Hybrid Perovskite Solar Cells based on Low Temperature Solution Process, <b>T.W. TSAI</b> , <b>Y.Y. YU</b> , <b>C.F. TENG</b> , Ming Chi University of Technology, Taiwan
4:50 pm	<b>B6-11</b> Surface Roughening Mechanism on the Epitaxial Growth of Si <sub>x</sub> Ge <sub>1-x</sub> Coating on Si Nanowire Substrate, <b>Y.Y. CAO</b> , <b>D.F. DIAO</b> , Shenzhen University, China	<b>C3-2-11</b> Improved Thermoelectric Performance of V-VI Thermoelectric Films by Electrochemical Deposition via Band Engineering, <b>J. KIM</b> , Korea Institute of Materials Science, Republic of Korea, <b>N. MYUNG</b> , UC Riverside, USA, <b>J-H. LIM</b> , Korea Institute of Materials Science, Republic of Korea

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

# Thursday Afternoon, April 27, 2017

<b>Tribology and Mechanical Behavior of Coatings and Engineered Surfaces</b> <b>Room: San Diego - Session E1-2</b> <b>Friction, Wear, Lubrication Effects, and Modeling</b> <b>Moderators: Albano Cavaleiro</b> , University of Coimbra, Portugal, <b>Carsten Gachot</b> , Vienna University of Technology, Austria, <b>Giovanni Ramirez</b> , Argonne National Laboratory, USA		<b>Surface Engineering - Applied Research and Industrial Applications</b> <b>Room: Sunrise - Session G3</b> <b>Innovative Surface Engineering for Advanced Cutting and Forming Tool Applications</b> <b>Moderators: Heidrun Klostermann</b> , Fraunhofer FEP, Germany, <b>Holger Gerdes</b> , Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany, <b>Ali Khatibi</b> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	
1:30 pm	<b>E1-2-1 Invited</b> Surface Engineering for Increasing Performance of Injection Molding Tools, <b>L. PLETH NIELSEN</b> , Danish Technological Institute, Denmark, <b>S. HENGESBERGER</b> , Institute of Applied Plastics Research at Engineering College Fribourg, Switzerland, <b>K. PAGH ALMTOFT</b> , B. HOLD CHRISTENSEN, Danish Technological Institute, Denmark	G3-1	Degradation Mechanisms of Protective Coatings in Precision Glass Molding, <b>M. FRIEDRICHS</b> , O. DAMBON, F. KLOCKE, Fraunhofer Institute for Production Technology, Germany
1:50 pm	Invited talk continued.	G3-2	Nanolayered Coatings for Advanced Fine Blanking Applications, <b>M. MORSTEIN</b> , T. SCHÄR, Platit Ag, Switzerland, B. TORP, PLATIT, Inc., USA, T. KLÜNSNER, Materials Center Leoben Forschung GmbH (MCL), Austria
2:10 pm	<b>E1-2-3</b> Increasing the Lifespan of High Pressure Die Cast Molds Subjected to Severe Wear, <b>F. SILVA</b> , <b>V. NUNES</b> , F. ANDRADE, ISEP - School of Engineering, Polytechnic of Porto, Portugal, <b>R. ALEXANDRE</b> , TeandM - Technology, Engineering and Materials, S.A., Portugal, <b>A. BAPTISTA</b> , INEGI - Instituto de Ciência e Inovação em Eng. Mecânica e Eng. Industrial, Portugal	G3-3 Invited	Growth of Low-defect-density $Ti_{1-x}Al_xN$ Thin Films by Cathodic Arc Evaporation under Industrial Conditions, <b>M. SARAIVA</b> , L. JOHNSON, Sandvik Coromant R&D, Sweden
2:30 pm	<b>E1-2-4</b> Effect of Cr Additions on the Structure, Oxidation, Tribological and Machining Performance of Multilayered TiAlN/CrAlN Films Deposited by Sputtering, <b>F. FERNANDES</b> , Instituto Pedro Nunes, Portugal, <b>M. DANEK</b> , Czech Technical University, Czech Republic, <b>T. POLCAR</b> , University of Southampton, UK, <b>A. CAVALEIRO</b> , University of Coimbra, Portugal	Invited talk continued.	
2:50 pm	<b>E1-2-5</b> Investigation on Tribological Behaviour of Boron Doped Diamond Coated Cemented Tungsten Carbide for Cutting Tool Applications, <b>R. KANNAN</b> , A. NARAYANAPERUMAL, R. RAO, Indian Institute of Technology Madras, India	G3-5	A Contribution to Explain the Mechanisms of Adhesive Wear in the Plastics Processing by the Example of Polycarbonate, <b>K. BOBZIN</b> , T. BRÖGELMANN, Surface Engineering Institute - RWTH Aachen University, Germany, <b>G. GRUNDMEIER</b> , T. DE LOS ARCOS, M. WIESING, University Paderborn, Germany, <b>N.C. KRUPPE</b> , Surface Engineering Institute - RWTH Aachen University, Germany
3:10 pm	<b>E1-2-6</b> Influence of Self-lubricating Non-metal Phase on the Erosion and Wear Behavior of Ni-based Abradable Coatings, <b>P. STOYANOV</b> , A. WUSATOWSKA-SARNEK, Pratt & Whitney, USA	G3-6	Enhanced Replication Ratio of Injection Molded Plastics Parts by using an Innovative Combination of Laser-Structuring and PVD Coating, <b>K. BOBZIN</b> , Surface Engineering Institute - RWTH Aachen University, Germany, <b>CH. HOPMANN</b> , Institute of Plastics Processing, RWTH Aachen University, Germany, <b>A. GILLNER</b> , Chair for Laser Technology, Aachen, Germany, <b>T. BRÖGELMANN</b> , N.C. KRUPPE, <b>M. NADERI</b> , Surface Engineering Institute - RWTH Aachen University, Germany, <b>M. ORTH</b> , Institute of Plastics Processing, RWTH Aachen University, Germany, <b>M. STEGER</b> , Chair for Laser Technology, Aachen, Germany
3:30 pm	<b>E1-2-7</b> Abrasive, Hydroabrasive and Erosion Wear Behavior of Nanostructured (Ti, Al)N-Cu/Ni Coatings, <b>D.S. BELOV</b> , I.V. BLINKOV, National University of Science and Technology MISiS, Russian Federation, <b>N.I. SMIRNOV</b> , Mechanical Engineering Research Institute of the Russian Academy of Sciences, Russian Federation, <b>A.O. VOLKHONSKII</b> , A.V. BONDAREV, V.S. SERGEVIN, National University of Science and Technology MISiS, Russian Federation	G3-7	The Solution to Crack Hard Nuts – the Right Combination of Substrate, Tool Geometry, Pretreatment and Advanced PVD Coatings for Milling Hardened Steels Successfully, <b>P. IMMICH</b> , U. SCHUNK, U. KRETZSCHMANN, LMT Fette Werkzeugtechnik, Germany, <b>C. KRIEG</b> , LMT Kieninger, Germany, <b>A. LÜMKEMANN</b> , M. MORSTEIN, B. TORP, T. CSELLE, Platit Ag, Switzerland
3:50 pm	<b>E1-2-8</b> Study of the Wear Mechanisms and Solutions Regarding Inserts used on Cork Grinders, <b>F. SILVA</b> , <b>T. OLIVEIRA</b> , ISEP - School of Engineering, Polytechnic of Porto, Portugal, <b>R. ALEXANDRE</b> , TeandM - Technology, Engineering and Materials, S.A., Portugal, <b>A. BAPTISTA</b> , INEGI - Instituto de Ciência e Inovação em Eng. Mecânica e Eng. Industrial, Portugal, <b>A. ALVES</b> , Amorim Cork Composites, S.A., Portugal	G3-8	Performance Evaluation of HSS Cutting Tool Coated with Hafnium and Vanadium Nitride Multilayers, by Temperature Measurement and Surface Inspection, on Machining AISI 1020 Steel, <b>J.H. NAVARRO-DEVIA</b> , W. APERADOR, Universidad Militar Nueva Granada, Colombia, <b>C. AMAYA</b> , CDT- ASTIN SENA, Colombia, <b>J.C. CAICEDO</b> , Universidad del Valle, Colombia
4:10 pm	<b>E1-2-9</b> Tuning Run-in Friction Behavior of Carbon Film with Graphene Nanocrystallite Structure, <b>C. CHEN</b> , S. QIU, D.F. DIAO, Shenzhen University, China	G3-9	High Temperature Oxidation and Cutting Performance of AlCrN, TiVN and Multilayered AlCrN/TiVN Hard Coatings, <b>S.Y. WENG</b> , Y.-Y. CHANG, National Formosa University, Taiwan
4:30 pm	<b>E1-2-10</b> Surface Charge Lubricity of Multi-layer Graphene: Quantum Entrapment, <b>X. ZHANG</b> , D.F. DIAO, Shenzhen University, China	G3-10	Sophisticated Wear Resistant Coatings used in Cold Sheet Metal Forming of AHSS Sheet Metals, <b>A. KHATIBI</b> , M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein
<b>Poster Session</b> <b>5:00-7:00 pm Grand Hall</b> <b>Reception begins at 6:00 pm</b>			

# Thursday Afternoon, April 27, 2017

## Advanced Characterization Techniques for Coatings and Thin Films

Room: Royal Palm 4-6 - Session H2-2

## Advanced Mechanical Testing of Surfaces and Coatings

**Moderators:** Benoit Merle, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany, Marco Sebastiani, Roma TRE University, Italy

## Topical Symposia

Room: California - Session TS2-2

## Thermal, Cold, and Kinetic Sprayed Surface Coatings

**Moderators:** Pylin Sarobol, Sandia National Laboratories, USA, Charles Kay, ASB Industries, Inc., USA

1:30 pm	<b>H2-2-1 Invited</b> Mechanical Properties of High-strength Low-weight Truss Structures Fabricated by 3D Direct Laser Writing, <b>R. SCHWAIGER</b> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WBM), Germany	<b>TS2-2-1</b> Influence of Bondcoat and Substrate Chemistry on Lifetime in Suspension Plasma Sprayed Thermal Barrier Coatings, <b>M. GUPTA</b> , N. MARKOCSAN, University West, Sweden, X.-H. LI, Siemens Industrial Turbomachinery AB, Sweden
1:50 pm	Invited talk continued.	<b>TS2-2-2</b> $\alpha$ -Oxide-Induced Grain Growth in Ligand-Free CZTS Nanoparticle Coatings, <b>S.A. EXARHOS</b> , E. PALMES, R. XU, L. MANGOLINI, University of California, Riverside, USA
2:10 pm	<b>H2-2-3</b> An improved Nanoindentation Method to Measure Residual Stress and Elastic Moduli of Freestanding Multilayer Thin Films, <b>M. SEBASTIANI</b> , M. GHIDELLI, Roma TRE University, Italy	<b>TS2-2-3</b> CaviTec HVOF Coatings for Protection against Cavitation Erosion, <b>S. LAVIGNE</b> , Polytechnique Montreal, Canada
2:30 pm	<b>H2-2-4</b> <i>In Situ</i> FIB-SEM DIC and Synchrotron XRD Analysis of the Mechanical Degradation of a Uniaxially Loaded Copper-Tungsten Nano-Multilayer, <b>L.M. ROMANO BRANDT</b> , E. SALVATI, C. PAPADAKI, H. ZHANG, S. YING, T. SUI, A.M. KORSUNSKY, University of Oxford, UK	<b>TS2-2-4</b> Experimental and Numerical Investigation on Fracture Toughness of Plasma-sprayed TBCs using a Modified Three-point Bending Method, <b>J.G. ZHU</b> , Jiangsu University, China
2:50 pm	<b>H2-2-5</b> Synchrotron Nano-diffraction Studies of Ex-situ and In-situ Indented Thin Films: Microstructure and Stress Analysis, <b>J. TODT</b> , Montanuniversität Leoben, Austria, C. KRYWKA, Helmholtz-Zentrum Geesthacht, Germany, M. BURGHAMMER, European Synchrotron Radiation Facility, France, J. KECKES, Montanuniversität Leoben, Austria	<b>TS2-2-5 Invited</b> Process Induced Real-time Residual Stress Measurement of Thermal Spray Coatings, <b>W. CHOI</b> , C. JENSEN, S. SAMPATH, ReliaCoat Technologies, LLC, USA, <b>A. VACKEL</b> , Sandia National Laboratories, USA
3:10 pm	<b>H2-2-6</b> Cross-sectional Microstructure and Mechanical Behaviour of As-deposited and Oxidised CVD TiB <sub>2</sub> Hard Coatings Determined by X-ray Nanodiffraction and Micro-mechanical Tests, <b>D.P. GRUBER</b> , M. TKADLETZ, N. SCHALK, Montanuniversität Leoben, Austria, B. SARTORY, Materials Center Leoben Forschung GmbH (MCL), Austria, C. MITTERER, J. KECKES, Montanuniversität Leoben, Austria	Invited talk continued.
3:30 pm	<b>H2-2-7</b> Fundamental Mechanical Properties of Simple- and Pt/Ir-modified-Aluminide Diffusion Coatings after Thermocyclic Exposure, <b>C. OSKAY</b> , M.C. GALETZ, DECHEMA-Forschungsinstitut, Germany, H. MURAKAMI, National Institute for Materials Science, Japan	<b>TS2-2-7</b> Metallization and Selective Metallization of Silver by Spraying, <b>D. STAELENS</b> , Jet Metal Technologies, France
3:50 pm	<b>H2-2-8</b> Fast Nano-mechanical Property Mapping using XPM on Nano-crystalline Structures, <b>A. QIU</b> , D. VODNICK, Hysitron, Inc., USA	<b>TS2-2-8</b> Microstructure and Mechanical Properties of CuSn10 Alloy Coating by Cold Spraying, <b>J. CAO</b> , Shanghai Jiaotong University, China

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

# Thursday Afternoon Poster Sessions

## Coatings for Use at High Temperatures Room: Grand Exhibit Hall - Session AP

### Symposium A Poster Session

5:00 pm

#### AP-2

Fracture Behavior and Thermal Durability of Lanthanum Zirconate Based Thermal Barrier Coatings with Buffer Layer in Thermally Graded Mechanical Fatigue Environments, **B.G. KIM**, G. LYU, S.H. JUNG, S.S. LEE, Y.G. JUNG, Changwon National University, Republic of Korea, J. ZHANG, Purdue University, USA

#### AP-3

Correlation of Thermal Characteristics and Microstructure of 7YSZ/La<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> and 7YSZ/Gd<sub>2</sub>Zr<sub>2</sub>O<sub>7</sub> Quadruple Layer EB-PVD Thermal Barrier Coatings, K. BOBZIN, T. BRÖGELMANN, C. KALSCHUEVER, T. LIANG, M. WELTERS, Surface Engineering Institute - RWTH Aachen University, Germany

#### AP-5

Oxidation Behavior of Nb-Si-N Coatings, **Y.I. CHEN**, Y.X. GAO, National Taiwan Ocean University, Taiwan, L.C. CHANG, Ming Chi University of Technology, Taiwan

#### AP-6

Corrosion Behavior of Amorphous and Crystalline Zn-Mg Coating in NaCl Solution, **J.H. LA**, K.T. BAE, S.M. KIM, S.Y. LEE, Y.S. HONG, Korea Aerospace University, Republic of Korea

#### AP-7

Nanocomposite Multilayered Coatings with High Thermal Stability and Oxidation Resistance, **D.V. SHTANSKY**, K.A. KUPTSOV, M. GOLIZADEH, P.V. KIRYUKHANTSEV-KORNEEV, National University of Science and Technology "MISIS", Russian Federation

#### AP-10

Structure, Mechanical, Tribological, And Chemical Properties Of Mo-Si-B And Mo-Al-Si-B Coatings, **P.V. KIRYUKHANTSEV-KORNEEV**, A.N. SHEVEYKO, A.V. BONDAREV, K.A. KUPTSOV, E.A. LEVASHOV, D.V. SHTANSKY, National University of Science and Technology "MISIS", Russian Federation

#### AP-11

Oxidation Resistance of Ta-Si-N Coatings, **Y.I. CHEN**, **Y.X. GAO**, National Taiwan Ocean University, Taiwan, L.C. CHANG, Ming Chi University of Technology, Taiwan

#### AP-12

Effect of Hot-dip Aluminum Coating on Dissimilar Weldment between Low Carbon Steel and 304 Stainless Steel in NaCl/Na<sub>2</sub>SO<sub>4</sub> Mixture Salts Induced Hot Corrosion, **H.C. LIANG**, K.J. TSAI, C.J. WNAG, National Taiwan University of Science and Technology, Taiwan

#### AP-13

Influence of Arc Power and Spray Distance on Mechanical Properties of ZrO<sub>2</sub>-10%Y<sub>2</sub>O<sub>3</sub>-18%TiO<sub>2</sub> Coatings Produced by Plasma Spray, **S. LISCANO**, L. GIL, Universidad Nacional Politecnica UNEXPO, Venezuela (Bolivarian Republic of), A. PORTOLES, Universidad Politecnica de Madrid, Spain, K. SILVA, Universidad Nacional Central de Venezuela, Venezuela (Bolivarian Republic of)

#### AP-14

A Parametric Study for Minimizing Thermal Stress of a Thermal Barrier Coating System, **J.G. LIM**, M.K. KIM, Sungkyunkwan University, Republic of Korea

#### AP-15

Investigation of the Influence of Subcoating on Thermal Shock and Corrosion Resistance in the Liquid Zinc of APS ZrO<sub>2</sub> Coating Doped with MgO, **A. IWANIAK**, Silesian University of Technology, Poland, A. MOSCICKI, Jolanta Mzyk Silesian University of Technology, Poland, G. WIECLAW, Krzysztof Rosner Certech, Poland

## Hard Coatings and Vapor Deposition Technologies Room: Grand Exhibit Hall - Session BP

### Symposium B Poster Session

5:00 pm

#### BP-9

Advanced Deposition of Hard a-C:Me Coatings by HPPMS using Ne as Process Gas, K. BOBZIN, T. BRÖGELMANN, N.C. KRUPPE, **M. ENGELS**, Surface Engineering Institute - RWTH Aachen University, Germany

#### BP-10

Plastic Deformation Behavior of Nanostructured CrN/AlN Multilayer Coatings Deposited by Hybrid dcMS/HPPMS, K. BOBZIN, T. BRÖGELMANN, **N.C. KRUPPE**, M. ARGHAVANI, Surface Engineering Institute - RWTH Aachen University, Germany

#### BP-13

Control and Characterization of Texture in CVD  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> Coatings, **C. CHEN**, P. LEICHT, R. COOPER, Z. LIU, D. BANERJEE, Kennametal Inc., USA

#### BP-14

New Tools and Models for Industrial Surface and Coating Optimization of Composite Structures, **N. BIERWISCH**, N. SCHWARZER, SIO, Germany

#### BP-15

Selection of a Reactive Magnetron Sputtering Method to Produce Films for Biosensors, **B. GARCÍA**, L. MELO-MÁXIMO, O. SALAS, D.V. MELO-MAXIMO, A.E. MURILLO, Tecnológico de Monterrey-CEM, Mexico, J.L. LIN, Southwest Research Institute, USA, J. OSEGUERA, Tecnológico de Monterrey-CEM, Mexico

#### BP-20

Preparation of Carbon based Multilayered Coatings by means of Pulsed Laser Deposition: Outstanding Mechanical Properties and Enhanced Film Toughness, **R. BERTRAM**, University of Applied Sciences Mittweida, Germany, M. HESS, Fritz Stepper GmbH & Co.KG, Germany, H. GRUETTNER, D. HALDAN, S. WEISMANTEL, University of Applied Sciences Mittweida, Germany

#### BP-22

Elastic Constants of Epitaxial Cubic Tantalum Nitride: Thin Film Growth and *ab initio* Calculations, **G. ABADIAS**, Institut P', Université de Poitiers-UPR 3346 CNRS-ENSMA, France, P. DJEMIA, C. LI, Laboratoire des Sciences des Procédés et des Matériaux (LSPM), France, Q.-M. HU, Shenyang National Laboratory for Materials Science, China, L. BELLARD, Université Pierre et Marie Curie-INSP, France, F. TASNADI, Linköping University, (IFM), Sweden

#### BP-24

Mechanical and Structural Properties of CrN/AlN Superlattices, **D. HOLEC**, Montanuniversität Leoben, Austria, M. FRIAK, Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Z. ZHANG, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria, M. BARTOSIK, P.H. MAYRHOFFER, TU Wien, Austria

#### BP-25

Characterization of the Hard Coating on Gray Cast Iron Under Hydrogen Charging, **N. LOPEZ PERRUSQUIA**, M.A. DOÑU RUIZ, M.G. REYES CORTES, Universidad Politecnica Del Valle De Mexico, C.R. TORRES SAN MIGUEL, Instituto Politécnico Nacional - ESIME, Mexico, J.V. CORTES SUARES, Universidad Autónoma Metropolitana, Mexico

#### BP-27

Characterization and Growth of B-doped Diamond Grown on HPHT Diamond Substrates using Mode Conversion Type Microwave Plasma CVD, **T. SAKUMA**, Chiba Institute of Technology, Ogura Jewell Industry Co., Ltd., Japan, A. SUZUKI, Y. SAKAMOTO, Chiba Institute of Technology, Japan

#### BP-28

Effects of the Reaction Gas Flow Rates on the Plasma State during Boron-doped Diamond Synthesis, **A. SUZUKI**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

#### BP-29

Effects of Pluse Frequency and Duty Cycle on Synthesis of Carbon Nitride using Pluse Microwave Plasma CVD, **K. YARITA**, Chiba Institute of Technology, Japan, I. TANAKA, Gifu University, Japan, Y. SAKAMOTO, Chiba Institute of Technology, Japan

#### BP-30

Duplex Coating of DLC on High Speed Tool Steel Substrates, Y. KIKUCHI, **R. FUJITA**, Y. SAKAMOTO, Chiba Institute of Technology, Japan

#### BP-32

Duplex Coating of DLC on High Speed Tool Steel Substrates, Y. KIKUCHI, R. FUJITA, **Y. SAKAMOTO**, Chiba Institute of Technology, Japan

#### BP-33

The Stability of Diamond-Like Coatings under Thermo-Mechanical Conditions, Q. LIU, X. LI, H. DONG, The University of Birmingham, UK



# Thursday Afternoon Poster Sessions

**BP-35**

Comparing of Adhesion Properties of TiNbVN Coatings Deposited on Different Substrates, **I. EFEUGLU**, Y. TOTIK, Ataturk University, Turkey, O. BARAN, Erzincan University, Turkey, H. CICEK, Erzurum Technical University, Turkey, A. KELES, Ataturk University, Turkey

**BP-40**

Numerical Analysis on Gas-Pressure and Input-Power Dependence of Substrate-Incident Hydrocarbon Species in Tetramethylsilane Plasmas for Silicon-Containing Diamond-Like Carbon Thin-Films Coatings, **A. ODA**, K. OHKI, Chiba Institute of Technology, Japan, S. KAWAGUCHI, K. SATOH, Muroran Institute of Technology, Japan, H. KOUSSAKA, Gifu University, Japan, T. OHTA, Meijo University, Japan

**BP-41**

The Effect of Substrate Bias on the Structure and Mechanical Properties of the a-C:N Films by a 90°-Bend Filtered Cathodic Arc Plasma (FCAP) System, **C.C. WANG**, National Chung Hsing University, Taiwan, H.C. SHIH, Chinese Culture University, Taiwan

**BP-42**

Stress Optimized Hard Nitride Coatings for High-performance Gear Hobbing, **M. BEUTNER**, Otto von Guericke University, Germany, A. LÜCKEMANN, M. MORSTEIN, PLATIT AG – Advanced Coating Systems, Switzerland, B. KARPUSCHEWSKI, Otto von Guericke University, Germany, M. JILEK, JR., PLATIT AG., Czech Republic, T. CSELLE, PLATIT AG – Advanced Coating Systems, Switzerland

**BP-43**

Growth of B-Doped Diamond using Hot Filament CVD, **M. IMAMIYA**, Y. SAKAMOTO, Chiba Institute of Technology, Japan, Y. TAKAHASHI, K. SUGIURA, Material Processing Studio Co., Ltd., Japan

**BP-44**

Formation Of Anti-Reflection Double Layers For Si Lens By Atomic Layer Deposition, **J. HEO**, K. KIM, Chonnam National University, Republic of Korea

**BP-45**

Texture, Mechanical and Electrochemical Properties of Magnetron Sputtered Cr<sub>1-x</sub>W<sub>x</sub>N/Si<sub>3</sub>N<sub>4</sub> Super Hard Nanocomposite Thin Films for Protective Coatings, **R. PRAKASH**, D. KAUR, Indian Institute Of Technology Roorkee, India

**BP-46**

Internal Stress on Adhesion of Hard Coatings Synthesized by Multi-arc Ion Plating, **L.S. QIU**, **X.D. ZHU**, K.W. XU, Xi'an Jiaotong University, China

**BP-47**

Diamond-like Coatings using High Power Impulse Magnetron Sputtering, **T. KUBART**, A. AIJAZ, Uppsala University, Sweden

**BP-48**

Synergistic Effect of Cu/Cr Co-doping on the Wettability and Mechanical Properties of Diamond-like Carbon Films, **L. SUN**, P. GUO, X. LI, A.Y. WANG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China

**BP-49**

Novel Technology for ta-C Coatings Deposition, **J. KLUSON**, M. JILEK, JR., PLATIT a.s., Czech Republic

**BP-53**

Evaluation of Plant-Extract-Based Metallic Nanoparticles for Corrosion Inhibition of Metallic Component, **O. SANNI**, A. POPOOLA, O.S. FATOBA, Tshwane University of Technology, South Africa

**BP-55**

Deposition of Crystalline Cr<sub>2</sub>O<sub>3</sub> Coatings by Reactive Radio-frequency Magnetron Sputtering, **M. MOHAMMAD TAHERI**, Q. YANG, **J. CORONA GOMEZ**, University of Saskatchewan, Canada

**BP-56**

Cerium Doping of Ti-Al-N Coatings for Excellent Thermal Stability and Oxidation Resistance, **H. ASANUMA**, Mitsubishi Materials Corporation, Japan, P. POLCIK, S. KOLOZSVARI, Plansee Composite Materials GmbH, Germany, F.F. KLIMASHIN, H. RIEDL, **P.H. MAYRHOFER**, Institute of Materials Science and Technology, TU Wien, Austria

**BP-57**

Arc Evaporated W-alloyed Ti-Al-N Coatings for Improved Thermal Stability, Mechanical, and Tribological Properties, **S.A. GLATZ**, Institute of Materials Science and Technology, TU Wien, Austria, H. BOLVARDI, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, S. KOLOZSVARI, Plansee Composite Materials GmbH, Germany, C.M. KOLLER, **H. RIEDL**, Institute of Materials Science and Technology, TU Wien, Austria, P.H. MAYRHOFER, Christian Doppler Laboratory for Application Oriented Coating Development at the Institute of Materials Science and Technology, TU Wien, Austria

## Fundamentals and Technology of Multifunctional Materials and Devices

**Room: Grand Exhibit Hall - Session CP**

### Symposium C Poster Session

**5:00 pm**

**CP-1**

Reversible Photo-Induced Deformation of Amorphous Carbon Nitride Films and their Potential Application to Light Driven Actuators, **T. HARATA**, M. AONO, K. ISHII, N. KITAZAWA, **Y. WATANABE**, National Defense Academy, Japan

**CP-2**

Mechanisms of Grain Growth Enhancement in Sintered-CZTS Nanoparticle Thin Films, **E. PALMES**, S.A. EXARHOS, R. XU, L. MANGOLINI, University of California, Riverside, USA

**CP-3**

Development of Dual Coating Process for Effective Combination of Sand Mold Process and 3D Printing Technique, **H.H. CHOI**, H.Y. PARK, E. TUMENBAYAR, G.H. CHO, E.H. KIM, Y.G. JUNG, Changwon National University, Republic of Korea, J. ZHANG, Purdue University, USA

**CP-4**

New Converting Process for Fabrication of Ceramic Core through 3D Printing Technique, **H.Y. PARK**, H.H. CHOI, E. TUMENBAYAR, G.H. CHO, E.H. KIM, Y.G. JUNG, Changwon National University, Republic of Korea, J. ZHANG, Purdue University, USA

**CP-5**

Effects of Aluminum Compounds on Strength in Ternary-Phase Binder System, **Y.G. JUNG**, E. TUMENBAYAR, E.H. KIM, Changwon National University, Republic of Korea, J. ZHANG, Purdue University, USA

**CP-7**

Bias-photo Stability of Hafnium-aluminum-zinc-oxide Thin Film Transistors, **J.H. PARK**, S.H. LEE, H.S. JUN, J.S. PARK, Hanyang University, Republic of Korea

**CP-11**

Electrical and Magnetic Properties of (Al, Co) co-doped ZnO Films Deposited by RF Magnetron Sputtering, **Y.W. LIN**, S.C. CHEN, Ming Chi University of Technology, Taiwan, H. SUN, Ocean University of China, China, C.H. WANG, Ming Chi University of Technology, Taiwan, C.K. WEN, T.H. CHUANG, National Taiwan University, Taiwan, X. WANG, Ocean University of China, China

**CP-12**

Study of Stress-optical Properties of Gold Nanoparticles Deposited on Compliant Substrate, **P.O. RENAULT**, P. GODARD, S. CAMELIO, D. BABONNEAU, University of Poitiers, France, S. EL JOUMANI, University of Casablanca, Morocco, B. BOUBEKER, University of Hassan II Casablanca, Morocco

**CP-13**

Development of Low Temperature TiO<sub>2</sub> Mesoporous Scaffold for Perovskite Solar Cells, **G.M. WU**, Chang Gung University, Taiwan

**CP-18**

Structural and Magnetic Properties of Perovskite SrMnO<sub>3</sub> Thin Films Grown by Molecular Beam Epitaxy, **J.W. BAI**, East China Normal University, China

**CP-19**

Yb-doped Zinc-Tin-Oxide Thin Film and its Application to Solar Cell, **Y. PARK**, W.K. KIM, Yeungnam University, Republic of Korea, G. FERBLANTIER, A. SLAOU, A. DINIA, CNRS-Université de Strasbourg, France, H. JUNG, S. ALHAMMADI, S.M. KWON, Yeungnam University, Republic of Korea

**CP-20**

Mo-patterning on Graphene-coated Glass Substrate for a Bifacial Cu(InGa)Se<sub>2</sub> Thin Film Solar Cell, **D. PARK**, W.K. KIM, Yeungnam University, Republic of Korea

**CP-21**

Enhanced Stability of Plasmonic Metal-dielectric Thin Films by CVD Grown Graphene Transfer, **T. DEL ROSSO**, Q. ZAMAN, E. CARDONA ROMANI, F. LAZARO FREIRE JR., O. PANDOLI, R. QUEIROZ AUCÉLIO, **M. CREMONA**, Pontificia Universidade Católica do Rio de Janeiro, Brazil

**CP-23**

Optical Characterization and Structural of ZnO Thin Film Prepared by Reactive Electron Beam Evaporation with Ion-Assisted Deposition from Metal Zinc, **H.P. CHEN**, W.H. CHO, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan, C.C. LEE, National Central University, Taiwan, Y.W. LIN, National Tsing Hua University, Taiwan, C.N. HSIAO, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan

**CP-24**

Opto-electrical Properties of Few-layer ReSe<sub>2</sub> FETS for Phototransistors, **D.J. LEE**, M.H. YOO, N.H. KIM, G.B. CHO, P.J. KO, Chosun University, Republic of Korea

# Thursday Afternoon Poster Sessions

## CP-25

The Annealing Temperature Dependence of the Structure, Electrical and Magnetic Behaviors of Aurivillius  $\text{Bi}_5\text{Ti}_3\text{Fe}_{0.5}\text{Mn}_{0.5}\text{O}_{15}$  Thin Films Prepared by Chemical Solution Deposition Route, **X.T. ZHU**, East China Normal University, China

## CP-28

UV Photosensitivity in Metal-Oxide-Semiconductor Structures based on  $\text{SiO}_x$  Films containing Si Nanoparticles, **M.C. CURIEL**, **O.M. PEREZ**, N. NEDEV, Universidad Autónoma de Baja California, Mexico, D. NESHEVA, Institute of Solid State Physics, Mexico, B. VALDEZ, Universidad Autónoma de Baja California, Mexico, E. MANOLOV, Institute of Solid State Physics, Mexico, A. ARIAS, D. MATEOS, Universidad Autónoma de Baja California, Mexico, O.E. CONTRERAS, Universidad Nacional Autónoma de México, V. DZHURKOV, Institute of Solid State Physics, Mexico, R. NEDEV, Universidad Politécnica de Baja California, Mexico, J.M. PAZ, Universidad Autónoma de Baja California, Mexico

## Coatings for Biomedical and Healthcare Applications

Room: Grand Exhibit Hall - Session DP

### Symposium D Poster Session

5:00 pm

#### DP-2

Bone-like Nano-hydroxyapatite Coating on Low-modulus Ti-5Nb-5Mo Alloy Using Hydrothermal and Post-heat Treatments, **H.C. HSU**, **S.C. WU**, **S.K. HSU**, Central Taiwan University of Science and Technology, Taiwan, C.W. HSU, Da-Yeh University, Taiwan, **W.F. HO**, National University of Kaohsiung, Taiwan

#### DP-3

Niobium Oxide Scaffolds on Nb and on TNZT for use in Bone Implants, **A. KRAMER**, University of North Texas, USA, E. LEVEQUE, University of Rouen, France, J. BARCLAY, S.M. AOUADI, M. YOUNG, University of North Texas, USA

#### DP-6

Multi-functional Porous TaOxNy Film Deposited on Ta/TaN-Ag Layers Prepared by Co-sputtering and De-alloying Approach, **J.H. HSIEH**, **C.C. HSU**, Y.C. LIN, Ming Chi University of Technology, Taiwan

#### DP-7

Increased Ag+ Dissolution Rate of TaN-Ag Nanocomposite Thin Films by Air Atmospheric Pressure Plasma Jet, **J.H. HSIEH**, **Y.Z. YANG**, C.Y. LIN, Ming Chi University of Technology, Taiwan

#### DP-8

Tribocorrosion Behaviour of DLC-Coated Ti-6Al-4V Alloy Deposited by PIID and PEMS+PIID Techniques for Biomedical Applications, **A. HATEM**, Pontificia Universidade Católica do Paraná, Brazil, J.L. LIN, R. WEI, Southwest Research Institute, USA, R. TORRES, C. LAURINDO, P. SOARES, Pontificia Universidade Católica do Paraná, Brazil

#### DP-9

Fluorine-Incorporated Hydrogen-free Amorphous Carbon Thin Film for Artificial Heart (Ventricular Assist Device), **S. MAEGAWA**, Keio University, Japan, T. HASEBE, Tokai university, Japan, M. NAKAYAMA, K. BITO, Y. YAMATO, Keio University, Japan, T. MINE, T. MATSUMOTO, Tokai university, Japan, A. HOTTA, T. SUZUKI, Keio University, Japan

#### DP-10

A Sustainability Investigation on the Hemocompatibility of Heparin/Dopamine and Heparin/Collagen Self-Assembled Multilayers Coated on a Titanium Substrate, **W.-J. CHERNG**, Chang Gung Memorial Hospital, Taiwan, **C.-C. CHOU**, Y.-H. PAN, National Taiwan Ocean University, Taiwan, C.-H. YEH, Chang Gung Memorial Hospital, Taiwan, T.-C. WU, Z.-S. DONG, J.-J. HO, National Taiwan Ocean University, Taiwan

#### DP-11

Wear Characteristics of Total Ankle Joint Prosthesis with Their Surface Roughness, **Y.H. JEONG**, **J.W. YANG**, K.M. PARK, S.W. LEE, T.G. JUNG, Osong Medical Innovation Foundation, Republic of Korea

#### DP-12

2D Materials for Bioelectronic Sensing, **W. LAI**, University of Dayton/Sensors Directorate, Air Force Research Laboratory, USA, A. STROUD, Institute for Micromanufacturing/Physics Program, Louisiana Tech University, USA, R.J. BERRY, Materials and Manufacturing Directorate, Air Force Research Laboratory, USA, P. DEROSA, Institute for Micromanufacturing/Physics Program, Louisiana Tech University, USA, R.R. NAIK, Human Effectiveness Directorate, Air Force Research Laboratory, USA, **C. MURATORE**, University of Dayton, USA

#### DP-13

Study of  $\text{TiO}_2$ -MgO Composites to Improve the Corrosion Resistance of Mg for Development of Biodegradable Orthopedic Implants, **E. HERNÁNDEZ-RODRÍGUEZ**, C.F. VICENCIO-ACOSTA, C.M. ÍÑIGUEZ-CONTRERAS, A.J. BALVANTÍN-GARCÍA, J.A. DIOSDADO-DE LA PEÑA, DICIS, University of Guanajuato, Mexico, R. MIS-FERNÁNDEZ, J.L. PEÑA-CHAPA, CINVESTAV-IPN Mérida, Mexico, M.G. ZAPATA-TORRES, CICATA-IPN Legaria, Mexico, A. MÁRQUEZ-HERRERA, DICIVA, University of Guanajuato, Mexico

#### DP-15

Fabrication and Characterization of Magnesium Incorporated Hydroxyapatite on the Titanium Substrates via Electrochemical Deposition, **Y.W. CHOR**, National Taipei University of Technology, Taiwan, **CM. LEI**, Chinese Culture University, Taiwan, S.F. CHEN, K.Y. HUANG, P.C. CHEN, National Taipei University of Technology, Taiwan

#### DP-16

Electrochemical Characteristics of RF-sputtered Zn and Si Coatings on HA Coated Ti-6Al-4V by PEO Treatment, **I.J. HWANG**, H.C. CHOE, Chosun University, Republic of Korea

#### DP-17

RF-sputtered Si and Mg Coatings on the Hydroxyapatite Film Formed Ti-29Nb-xHf Alloys by Plasma Electrolyte Oxidation, **S.Y. PARK**, H.C. CHOE, Chosun University, Republic of Korea

# Thursday Afternoon Poster Sessions

## DP-18

Nucleation and Growth of Bone-like Apatite Formation on Ti-6Al-4V in Solution Containing Mn, Mg, and Si Ions after Plasma Electrolytic Oxidation, **S.G. LIM**, H.C. CHOE, Chosun University, Republic of Korea

## DP-19

Ion Release of Zn, Si, Mn-doped Hydroxyapatite Films Formed on the Ti-6Al-4V Alloy by Plasma Electrolytic Oxidation, **M.G. PARK**, H.C. CHOE, Chosun University, Republic of Korea

## DP-20

Nanotube Shape Changes on Ti-30Nb-xTa Alloys with Continuously Changed Potentials, **H.C. CHOE**, Chosun University, Republic of Korea

## DP-21

Shapes of Bone-like Apatite Formation on Sr and Si-doped Hydroxyapatite Surface of Ti-6Al-4V Alloy after Plasma Electrolytic Oxidation, **J.M.Y. YU**, H.C. CHOE, Chosun University, Republic of Korea

## DP-22

Chemical Bonding Characteristics of Biocompatible TiO<sub>2</sub> Oxide Multilayer by the XPS Depth Analysis, **J.M. JANG**, Gwangju Nambu University, Republic of Korea, T.E. PARK, Eco-Tech Korea, Republic of Korea, H.C. CHOE, Chosun University, Republic of Korea

## DP-23

Biocompatible Coatings Produced by Plasma Electrolytic Oxidation on Coarse Grain and Nanostructured Titanium Implants, **E. PARFENOV**, **V. MUKAEVA**, G. DYAKONOV, Ufa State Aviation Technical University, Russian Federation, K. DANILKO, Bashkir State Medical University, Russian Federation, R. VALIEV, Ufa State Aviation Technical University, Russian Federation

## DP-25

Corrosion and Antibacterial Properties of Micro-Arc Oxidized Biodegradable Mg-Sr Alloys for Biomedical Applications, **M. YAZICI**, Ondokuz Mayıs University, Turkey, E. GULEC, Gebze Technical University, Turkey, M. GURBUZ, Ondokuz Mayıs University, Turkey, Y. GENCER, M. TARAKCI, Gebze Technical University, Turkey

## Tribology and Mechanical Behavior of Coatings and Engineered Surfaces

Room: Grand Exhibit Hall - Session EP

## Symposium E Poster Session

5:00 pm

### EP-2

Clarification of the Relationship between Friction Behavior and Tribo-electrical Performance of Triboelectric Nanogenerator, **W.Q. ZHANG**, Key Laboratory of Education Ministry for Modern Design and Rotor-Bearing System, Xi'an Jiaotong University, China, **P.F. WANG**, D.F. DIAO, Institute of Nanosurface Science and Engineering, Shenzhen University, China

### EP-4

Effect of Cr Content and Various Interlayers on Mechanical Properties of CrAIN Coatings Synthesized by UBMS, **H.K. KIM**, J.H. LA, M.G. SONG, S.Y. LEE, Y.S. HONG, Korea Aerospace University, Republic of Korea

### EP-5

Effect of Boride Coating on Hydrogen Embrittlement of AISI 8620 Steels, **M.A. DOÑU RUIZ**, N. LOPEZ PERRUSQUIA, Universidad Politecnica Del Valle De Mexico, J.V. CORTES SUAREZ, J. ROMERO SERRANO, Universidad Autónoma Metropolitana, Mexico, M.G. REYES CORTES, Universidad Politecnica Del Valle De Mexico

### EP-6

Characterization and Wear of Co-Cr-Mo-Si Alloy Coatings at High Temperatures, **L. AMARAL**, Universidade Federal do Paraná, Brazil, E. NASCIMENTO, Universidade Técnica Federal do Paraná, Brazil, **A.S. D'OLIVEIRA**, Universidade Federal do Paraná, Brazil

### EP-7

Influence of Nitrogen Content on the Properties of CNx Coatings Deposited onto AISI H13 Steel by DC Magnetron Sputtering, **E. CONTRERAS**, F. BOLÍVAR, M. GÓMEZ, Universidad de Antioquia, Colombia

### EP-9

Modelling of IN 738 LC Alloy Mechanical Properties based on Microstructural Evolution Simulations for Different Heat Treatment Conditions, **M.T. BOYRAZ**, **B. IMER**, Middle East Technical University, Turkey

### EP-10

Influence of EP Additive Containing Lubricants on the in-situ Formation of Low Friction Tribofilms on Tungsten Based Coatings, **B. KOHLHAUSER**, H. RIEDL, Institute of Materials Science and Technology, TU Wien, Austria, M.R. RIPOLL, AC2T Research GmbH, Austria, P.H. MAYRHOFER, Institute of Materials Science and Technology, TU Wien, Austria

### EP-12

Effect of the Addition of Ta in the Structure and Mechanical Properties of Cr Coatings, **J. PÉREZ-ALVAREZ**, Instituto de Investigación en Materiales-UNAM, Mexico, A. BAHRAMI, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Ciudad Universitaria, Mexico, **R. MIRABAL-ROJAS**, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico, O. DEPABLOS-RIVERA, A FONSECA, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Ciudad Universitaria, Mexico, A. VALENCIA-VELAZCO, A. RUIZ-RAMIREZ, Universidad Nacional Autónoma de México, Ciudad Universitaria, Mexico, S.E. RODIL, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico

### EP-13

Laser Cladding Ni-based Alloy/nano-Ni Encapsulated h-BN Self-lubricating Composite Coatings, **H. YAN**, P.L. ZHANG, Q.S. GAO, Y. QIN, Shanghai University of Engineering Science, China, R.D. LI, Central South University, China

### EP-14

Leather Treated with Ag/TiO<sub>2</sub> Nanoparticles for Footwear Industry: Tribological and Antimicrobial Activity, **I. CARVALHO**, University of Coimbra, Portugal, S. FERDOV, **C.F. ALMEIDA ALVES**, University of Minho, Portugal, M.A. CERQUEIRA, INL-International Iberian Nanotechnology Laboratory, Portugal, R. FRANZ, Montanuniversität Leoben, Austria, C. GAIDAU, INC-DTP-Leather and Footwear Research Institute Division, Romania, S. CARVALHO, University of Minho, Portugal

### EP-15

First-principle Simulation and Calculations for Microstructure Evolution Mechanical Properties of Ti-6Al-4V Alloy Doped with Molybdenum and Nickel by Double Glow Plasma Surface Alloying Technique, **C.M. LIN**, W.Y. KAI, National Taipei University of Technology, Taiwan

### EP-17

An Oliver&Pharr Method for Lateral-Force Nanoindenters, **N. SCHWARZER**, SIO, Germany

# Thursday Afternoon Poster Sessions

## EP-18

Investigation of Tribological Properties of Aluminium-Titanium Diboride (Al/TiB<sub>2</sub>) MMC under Dry Sliding Condition, A. SHEELWANT, S.K.R. NARALA, BITS Pilani Hyderabad Campus, India, P. SHAILESH, Methodist College of Engineering and Technology, India

## EP-20

Tribological Characterization of Thin Films based on Residual Stress, Volume of Wear, Micro-abrasive Wear Modes and Coefficient of Friction, R. COZZA, J. WILCKEN, S. DELIJAICOV, G. DONATO, University Center of FEI – Educational Foundation of Ignatius "Padre Sabóia de Medeiros", Brazil

## EP-22

Frictional Behavior of Bismuth-based Soft Coatings, B. PILOTTI, G. PRIETO, Universidad Nacional del Sur, Argentina, E. BROITMAN, Esteban Broitman Engineering Consulting, Sweden, W.R. TUCKART, Universidad Nacional del Sur, Argentina

## EP-24

Compositional and Mechanical Characterization of Ti-Ta Coatings Prepared by Confocal Dual Magnetron Co-Sputtering, A. BAHRAMI, Universidad Nacional Autónoma de México, Universidad Nacional Autónoma de México, Mexico, J. PÉREZ ALVAREZ, R. MIRABAL-ROJAS, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico, O. DEPABLOS-RIVERA, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Ciudad Universitaria, Mexico, A. RUIZ-RAMIREZ, A. VALENCIA-VELAZCO, Universidad Nacional Autónoma de México, Ciudad Universitaria, Mexico, S.E. RODIL, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico

## New Horizons in Coatings and Thin Films

Room: Grand Exhibit Hall - Session FP

## Symposium F Poster Session

5:00 pm

### FP-3

Monolayer Controlled Deposition of ZnO Thin Films by Catalytic Reaction-assisted Chemical Vapor Deposition, S. ONO, T. SAITOU, R. TAJIMA, Y. TAMAYAMA, K. YASUI, Nagaoka University of Technology, Japan

### FP-6

Optical and Electronic Properties of MoS<sub>2</sub>: Joint Theoretical/Experimental Study, M. EATON, H. SIRIKUMARA, H. SAMASSEKOU, D. MAZUMDAR, Southern Illinois University, USA, L. LIYANAGE, M. NARDELLI, University of North Texas, USA, T. JAYASEKERA, Southern Illinois University, USA

### FP-7

Possibility of Selective and Morphology-Controlled Growth of CuO and Cu<sub>2</sub>O Films, T. TERASAKO, K. OHNISHI, H. OKADA, S. OBARA, Ehime University, Japan, M. YAGI, National Institute of Technology, Kagawa College, Japan

### FP-8

Thermal Stability of Arc Evaporated Oxide, Nitride, Oxinitride, and Oxide/Nitride Coatings within the Systems Al-Cr-N and Al-Cr-O, R. RAAB, CDL-AOS TU Wien, Austria, C.M. KOLLER, TU Wien, Austria, S. KOLOZSVÁRI, Plansee Composite Materials GmbH, Germany, J. RAMM, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, P.H. MAYRHOFER, TU Wien, Austria

### FP-9

Parametric Study of TiN Thin Films Deposited on 316 L Substrates by HiPIMS, L. MELO-MÁXIMO, ITESM-CEM, Mexico, F.F. ESTRADA-MARTINEZ, Termoinnova S.A. de C.V., Mexico, D.V. MELO-MAXIMO, TRAMES S.A. de C.V., Mexico, J. OSEGUERA, ITESM-CEM, Mexico

### FP-11

Transition Metal Dichalcogenides for Next Generation Semiconductor Devices, B. SIROTA, University of North Texas, USA, A. WAITE, N. GLAVIN, Air Force Research Laboratory, USA, C. MURATORE, University of Dayton, USA, S. KRYLYUK, A. DAVYDOV, National Institute of Standards and Technology, USA, A.A. VOEVODIN, University of North Texas, USA

### FP-13

Microscopic Barrier Mechanisms and Interface Damage Behavior of Two-dimensional Nanomaterials, P. JIBIN, L. WANG, J. XUE, Key Laboratory of Marine New Materials and Related Technology, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, China

### FP-14

Corrosion Performance of Waterborne Epoxy Coating using Non-covalent Dispersion of Graphene as Inhibitor, S. LIU, H. ZHAO, P. JIBIN, L. WANG, Key Laboratory of Marine Materials and Related Technologies, Zhejiang Key Laboratory of Marine Materials and Protective Technologies, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China

### FP-16

Production and Testing of Enhanced Photocatalytic Coatings onto Nanoparticles by Magnetron Sputtering, P.J. KELLY, M. RATOVA, G.T. WEST, Manchester Metropolitan University, UK

### FP-17

3D Printing of Metal Oxide Semiconductor?, C.L. NGUYEN, University of Auckland, New Zealand, J. LEVENEUR, GNS Science, New Zealand, M.P. TAYLOR, J.B. METSON, University of Auckland, New Zealand

### FP-18

A Proposal for Laser Annealing Process with Continuous Wave Nd:YAG Laser ( $\lambda_0 = 532$  nm) for Photovoltaic CIGS Thin Films: Effect of Laser Annealing Time on Optical and Electrical Properties, M.H. YOO, D.J. LEE, Chosun University, Republic of Korea, Y.K. JUN, Hyobin Jeongbo Co., Inc., Republic of Korea, P.J. KO, N.H. KIM, Chosun University, Republic of Korea

### FP-20

Production of Ag Clusters by Plasma Gas Condensation and their Incorporation in an a:C Sputtered Matrix, I. CARVALHO, University of Coimbra, Portugal, S. CARVALHO, University of Minho, Portugal, A. CAVALEIRO, University of Coimbra, Portugal

### FP-22

Biocompatible Thin Film Intermetallic Ti<sub>3-x</sub>AuO<sub>x</sub>, V.M. VISHNYAKOV, University of Huddersfield, UK, B.D. BEAKE, Micro Materials Ltd, UK, J. DEVITT, University of Huddersfield, UK

# Thursday Afternoon Poster Sessions

**FP-24**

Features of Incident Particle Flux determining Growth Rates and Electrical Properties of Indium Tin Oxide Films Deposited by Ion-plating with dc Arc Discharge, **H. KITAMI**, T. SAKEMI, Y. AOKI, Sumitomo Heavy Industries, Ltd., Japan

**FP-25**

Development and Microstructure Characterization of Single and Duplex Nitriding of UNS S31803 Duplex Stainless Steel, L.B. VARELA, University of São Paulo, Brazil, C. PINEDO, Heat Tech & University of Mogi das Cruzes, Brazil, H. DONG, X. LI, University of Birmingham, UK, **A. TSCHIPTSCHIN**, University of São Paulo, Brazil

## Surface Engineering - Applied Research and Industrial Applications

**Room: Grand Exhibit Hall - Session GP**

### Symposium G Poster Session

**5:00 pm**

**GP-2**

Oxidation Resistance of Cr<sub>2</sub>N and Cr<sub>2</sub>WN Coatings Deposited on Ferritic Stainless Steel, S.-M. YANG, **Y.-T. HUANG**, National University of Kaohsiung, Taiwan, Y.-Y. CHANG, National Formosa University, Taiwan, D.-Y. LIN, National University of Kaohsiung, Taiwan

**GP-4**

Synergetic Effect Improved Deposition of Titanium Nitride Films, C. CHANG, Ming Chi University of Technology, Taiwan, H. HO, MingDao University, Taiwan, C. CHEN, Da-Yeh University, Taiwan, W.C. CHEN, D.Y. WANG, MingDao University, Taiwan, **W. WU**, Da-Yeh University, Taiwan

**GP-5**

Fuel Cell Hot Runner-layer Composite Carbon Bipolar Plates, S.D. WU, MingDao University, Taiwan, **A.H. CHIOU**, National Formosa University, Taiwan, Y. HUANG, Fujian University Of Technology, China

**GP-6**

Oxinitride Coatings for Milling Tools, **J. KOHLSCHIEEN**, Kennametal GmbH, Germany, V.H. DERFLINGER, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein

**GP-8**

Phase Composition, Microstructure Evolution and Wear Behavior of Ni-Mn-Si Coatings on Copper by Laser Cladding, **P.L. ZHANG**, X.P. LIU, H. YAN, Shanghai University of Engineering Science, China

**GP-9**

Assessment of Surface Integrity During Machining of Superduplex Stainless Steel Obtained With Three Different PVD Hard Coatings, **E. LOCKS JUNIOR**, Católica SC, Brazil, S.P. STOLF, M. MARTINS, Centro Universitário Católica de Santa Catarina - CATÓLICA -SC, Brazil, F. AMORIM, R. DIEGO TORRES, Pontifícia Universidade Católica do Paraná - PUCPR, Brazil, J.M. PAIVA, Centro Universitário Católica de Santa Catarina - CATÓLICA - SC, Brazil

**GP-11**

Surface and Interface Characteristics of CeO<sub>2</sub> doped Al<sub>2</sub>O<sub>3</sub> Coating on Solution Treated and Peak Aged AZ91 Mg Alloy, **s. KUMAR**, D. KUMAR, J. JAIN, Indian Institute of Technology Delhi, India

**GP-14**

Vacancies in MONTAN – a mechanism for tuning the hardness–toughness relationship, **F.F. KLIMASHIN**, CDL-AOS TU Wien, Austria, M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, P. POLCIK, Plansee Composite Materials GmbH, Germany, L. LOBMAIER, N. KOUTNÁ, TU Wien, Austria, D. HOLEC, Montanuniversität Leoben, Austria, P.H. MAYRHOFER, TU Wien, Austria

# Thursday Afternoon Poster Sessions

## Advanced Characterization Techniques for Coatings and Thin Films

Room: Grand Exhibit Hall - Session HP

### Symposium H Poster Session

5:00 pm

#### HP-2

How Can the Icephobicity of an Engineered Surface be Screened by Means of Simple Laboratory Testing and Characterization?, G.F. DE LA FUENTE, L.A. ANGUREL, CSIC-Universidad de Zaragoza, Spain, C. LÓPEZ-SANTOS, V. RICO, A. BORRÁS, A.R. GONZÁLEZ-ELIPE, Instituto de Ciencia de Materiales de Sevilla (CSIC), Spain, J. MORA, P. GARCÍA, A. AGÜERO, Instituto Nacional de Técnica Aeroespacial (INTA), Spain

#### HP-3

Pushing the Envelope in Variable Temperature Nanoindentation: High and Cryogenic Temperature Measurements, N.X. RANDALL, M. CONTE, Anton Paar TriTec, Switzerland, J. SCHWIEDRZIK, J. MICHLER, EMPA, Switzerland

#### HP-4

Surface and Sub-Surface Damage in Si and Ge Crystals after Nano-Machining, J. KECKES, Montanuniversität Leoben, Austria, Z. ZAPRAZNY, D. KORYTAR, M. JERGEL, Y. HALAHOVETS, P. SIFFALOVIC, Slovak Academy of Sciences, Slovakia, C. FERRARI, C. FRIGERI, CNR-IMEM Institute Parma, Italy, I. MATKO, J. DRGA, Slovak Academy of Sciences, Slovakia, P. VAGOVIČ, DESY, Center for Free-Electron Laser Science, Germany

#### HP-6

Influence of Post-deposition Annealing on the Electrical Properties of Thin SiO<sub>2</sub>/a-Si:H/SiO<sub>2</sub> Structures Obtained by Electron Cyclotron Resonance, D. MATEOS, Universidad Autónoma de Baja California, Mexico, J. DINIZ, University of Campinas, Brazil, N. NEDEV, B. VALDEZ, M.C. CURIEL, Universidad Autónoma de Baja California, Mexico, M. MEDEROS, Renato Archer Center for Information Technology, Brazil, O. PÉREZ, A. ARIAS, Universidad Autónoma de Baja California, Mexico

#### HP-7

Comparison of Three Methods for Ellipsometry Characterization of Thin Absorbing Films, F. URBAN, Florida International University, USA, D. BARTON, Retired, USA

## Topical Symposia

Room: Grand Exhibit Hall - Session TSP

### Symposium TS Poster Session

5:00 pm

#### TSP-1

Improved Electron Field Emission Characteristics of Amorphous Carbon Film Embedded with Graphene Nanocrystallites, K. SUN, L. YANG, Xi'an Jiaotong University, China, D.F. DIAO, Shenzhen University, China

#### TSP-2

Zirconium Carbide Based Self-Healing Ceramics, A. YANG, University of North Texas, USA, P. PETRY, University of Rouen, France, I. HAMMOOD, R.F. REIDY, S.M. AQUADI, University of North Texas, USA

# Friday Morning, April 28, 2017

<b>Hard Coatings and Vapor Deposition Technologies</b> <b>Room: Golden West - Session B7</b>  <b>Plasma Diagnostics and Growth Processes</b> <b>Moderators: Ante Hecimovic, Ruhr-Universität Bochum, Germany,</b> <b>Peter Bruggeman, University of Minnesota, USA</b>		<b>Fundamentals and Technology of Multifunctional Materials and Devices</b> <b>Room: Royal Palm 1-3 - Session C4</b> <b>Energetic Materials and Microstructures for Nanomanufacturing</b> <b>Moderators: Karsten Woll, Karlsruhe Institute of Technology (KIT), (IAM-WBM), Germany, Ibrahim Gunduz, Purdue University, USA</b>	
8:00 am	<b>B7-1</b> Plasma Surface Interaction Model for Titanium Nitride Thin Film Growth, <b>T. GERGS</b> , J. TRIESCHMANN, Ruhr University Bochum, Germany, M. HANS, D. MUSIC, J.M. SCHNEIDER, RWTH Aachen University, Germany, T. MUSSENBRÖCK, Ruhr University Bochum, Germany	<b>C4-1 Invited</b> Investigation of Dynamic Processes in Energetic Materials by Ultrafast Transmission Electron Microscopy at the Nanoscale, <b>V. ORTALAN</b> , Purdue University, USA	
8:20 am	<b>B7-2</b> Correlation of the Debye Sheath Thickness and (Cr,Al)N Coating Properties for HPPMS, dcMS and PCAE Processes, <b>K. BOBZIN</b> , T. BRÖGELMANN, N.C. KRUPPE, M. ARGHAVANI, <b>M. ENGELS</b> , Surface Engineering Institute - RWTH Aachen University, Germany	Invited talk continued.	
8:40 am	<b>B7-3</b> The Study of Spoke Merging and Splitting in HiPIMS Plasma, <b>J. HNILICA</b> , P. KLEIN, Masaryk University, Czech Republic, F. LOCKWOOD-ESTRIN, University of Liverpool, UK, P. VAŠINA, Masaryk University, Czech Republic, J.W. BRADLEY, University of Liverpool, UK	<b>C4-3</b> A Closer Look at Determining Flame Speeds with Imaging Diagnostics, <b>R. BRATTON</b> , M. PANTOYA, <b>C. WOODRUFF</b> , Texas Tech University, USA	
9:00 am	<b>B7-4</b> Al <sub>2</sub> O <sub>3</sub> - ZrO <sub>2</sub> Composite Coatings on Aluminum through a Hybrid Plasma Electrolytic- Electrophoretic Process, <b>N. BARATI</b> , E. MELETIS, University of Texas at Arlington, USA	<b>C4-4</b> Modeling and Experimental Study of Propagating Exothermic Reactions in Al/Pt Multilayers, <b>D.P. ADAMS</b> , M.J. ABERE, R. REEVES, C. SOBCZAK, Sandia National Laboratories, USA	
9:20 am	<b>B7-5 Invited</b> Low-temperature Atmospheric Pressure Plasma Processing and its Diagnostics for a Healthcare Device, <b>M. HORI</b> , Institute of Innovation for Future Society, Nagoya University, Japan	<b>C4-5</b> Sub-critical Hotspots to Quench Reactions in Ni-Al Nanofolds, <b>I. GUNDUZ</b> , <b>M. BEASON</b> , Purdue University, USA	
9:40 am	Invited talk continued.	<b>C4-6</b> Laser Pulse Duration Dependence on Ignition of Al/Pt Reactive Multilayers, <b>M.J. ABERE</b> , C.D. YARRINGTON, D.P. ADAMS, Sandia National Laboratories, USA	
10:00 am	<b>B7-7</b> Effects of Incident Particle Fluxes on the Growth and Properties of Ga-doped ZnO Films Deposited by Ion-plating with dc Arc Discharge, <b>H. KITAMI</b> , Sumitomo Heavy Industries, Ltd., Japan, J. NOMOTO, Kochi University of Technology, Japan, T. SAKEMI, Sumitomo Heavy Industries, Ltd., Japan, H. MAKINO, Kochi University of Technology, Japan, Y. AOKI, Sumitomo Heavy Industries, Ltd., Japan, T. YAMAMOTO, Kochi University of Technology, Japan	<b>C4-7</b> Microstructural Evolution during Thermal Ignition of Self-Propagating Reactions in Ru/Al Multilayers, <b>K. WOLL</b> , Karlsruhe Institute of Technology (KIT), (IAM-WBM), Germany, C. PAULY, F. MUECKLICH, Saarland University, Germany	
10:20 am	<b>B7-8</b> Mapping Potential of an Ionization Zone in Magnetron Plasma, <b>M. PANJAN</b> , Jozef Stefan Institute, Slovenia, A. ANDERS, Lawrence Berkeley National Laboratory, USA	<b>C4-8</b> Waves of Crystallization in Amorphous Metallic Glass Films obtained by Spinning of Melts, <b>A. ROGACHEV</b> , National University of Science and Technology "MISIS", Russian Federation, S.G. VADCHENKO, A.S. ARONIN, Russian Academy of Sciences, Russian Federation, A. MUKASYAN, University of Notre Dame, USA	
<b>2018 ICMCTF</b> <b>April 23-27, 2018</b>		<b>2018 Abstract Submission Deadline</b> <b>October 1, 2017</b>	
<b>Thank You &amp; See You Next Year Party</b> <b>Trellis Courtyard Near Pool</b> <b>12:00-1:00 pm</b>		<b>2018 Awards Nominations Deadline</b> <b>October 1, 2017</b>	

## Friday Morning, April 28, 2017

<b>Tribology and Mechanical Behavior of Coatings and Engineered Surfaces</b> <b>Room: San Diego - Session E1-3</b> <b>Friction, Wear, Lubrication Effects, and Modeling</b> <b>Moderators:</b> Albano Cavaleiro, University of Coimbra, Portugal, Carsten Gachot, Vienna University of Technology, Austria, Giovanni Ramirez, Argonne National Laboratory, USA		<b>Surface Engineering - Applied Research and Industrial Applications</b> <b>Room: Sunrise - Session G1</b> <b>Advances in Industrial PVD, CVD, and PCVD Processes and Equipment</b> <b>Moderators:</b> Emmanuelle Gothelid, Sandvik Coromant R&D Materials and Processes, Sweden, Ladislav Bardos, Uppsala University, Angstrom Laboratory, Sweden	
8:00 am	<b>E1-3-1</b> Comparing of Adhesion Properties of TiNbVN Coatings Deposited on Different Substrates, <b>I. EFEGLU</b> , Y. TOTIK, Ataturk University, Turkey, O. BARAN, Erzincan University, Turkey, H. CICEK, Erzurum Technical University, Turkey, A. KELES, Ataturk University, Turkey	G1-1 Invited	Industrialized HiPIMS, <b>S. KRASSNITZER</b> , D. KURAPOV, M. ARNDT, W. KALSS, H. RUDIGIER, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein
8:20 am	<b>E1-3-2</b> Buckling of Ductile Thin Films on Rigid Substrate, <b>N. BEN DAHMANE</b> , G. PARRY, R. ESTEVEZ, SIMaP, University of Grenoble Alpes, CNRS, France, C. COUPEAU, Institut P', Université de Poitiers-UPR 3346 CNRS-ENSMA, France	Invited talk continued.	
8:40 am	<b>E1-3-3</b> Study of Multi-cracking of Brittle Thin Films and Brittle/ductile Multilayers on Compliant Substrate, <b>I. BEN CHEIKH</b> , CNRS, Université de Grenoble-Alpes, France, G. PARRY, Laboratoire de Science et Ingénierie des Matériaux et Procédés (SIMaP), Université de Grenoble-Alpes, France, D. DALMAS, CNRS, Laboratoire de Tribologie et Dynamique des Systèmes (LTDs), Ecole centrale de Lyon, France, R. ESTEVEZ, Laboratoire de Science et Ingénierie des Matériaux et Procédés (SIMaP), Université de Grenoble Alpes, France	G1-3	Pure HiPIMS Coatings with 2 µm/hour for Cutting Tool Coatings, <b>C. SCHIFFERS</b> , T. LEYENDECKER, O. LEMMER, W. KÖLKER, CemeCon AG, Germany
9:00 am	<b>E1-3-4</b> Tribological Behaviors of UHMWPE Composites with Different Counter Surface Morphologies, <b>Y. WANG</b> , Z. YIN, H. LI, G. GAO, Shanghai Jiaotong University, China	G1-4	Deposition of Acrylic Acid on Argon or Air Atmospheric Pressure Plasma Treated Silicon using a Novel Chamber Design, <b>W.Y. CHEN</b> , University of Sheffield, UK, A. MATTHEWS, University of Manchester, UK, F. JONES, University of Sheffield, UK
9:20 am	<b>E1-3-5</b> Evaluation of Friction and Wear Characteristics of Electrostatic Solid Lubricant at Different Sliding Conditions, <b>R.K. GUNDA</b> , S.K.R. NARALA, BITS Pilani Hyderabad campus, India	G1-5	Reactive Deposition in the Magnetized Hollow Cathode Activated Magnetron, <b>H. BARANKOVA</b> , L. BARDOS, Uppsala University, Angstrom Laboratory, Sweden
9:40 am	<b>E1-3-6</b> Evaluation of Friction and Wear Properties of Al-TiC <sub>p</sub> Metal Matrix Composite under Cryogenic Condition, <b>S. JOSYULA</b> , BITS-Pilani, Hyderabad Campus, India, S.K.R. NARALA, BITS Pilani Hyderabad Campus, India	G1-6	Ionisation Enhancement Control for Magnetron Sputtering Processes, <b>V. BELLIDO-GONZALEZ</b> , F. MEYER, T. SGRILLI, H. LI, <b>F. PAPA</b> , Genco Ltd., USA, J. HOUSDEN, L. ESPITALIER, S. BANFIELD, Wallwork Cambridge Ltd, UK
10:00 am		G1-7	Bipolar Sputtering - Waveform Adaptability in Plasma Applications, <b>W. GAJEWSKI</b> , K. RUDA, J. SWIATNICKI, P. OZIMEK, TRUMPF Huettinger Sp. z o.o., Poland
10:20 am		G1-8	New Hauzer CARC+ Technology Dedicated to Nitriding, Etching and Coating Process, <b>J. ZHU</b> , G. NEGREA, M. EERDEN, D. DOERWALD, <b>R. TIETEMA</b> , IHI Hauzer Techno Coating, Netherlands
10:40 am		G1-9	Characterization of Advanced Coating Architectures Deposited by the HI3 Process, <b>J. VETTER</b> , Oerlikon Balzers Coating Germany GmbH, Germany, K. KUBOTA, M. ISAKA, Mitsubishi Hitachi Tool Engineering, Japan, J. MUELLER, T. KRIENKE, Oerlikon Balzers Coating Germany GmbH, Germany, H. RUDIGIER, Oerlikon Surface Solutions AG, Liechtenstein
11:00 am		G1-10	Mechanical Property and Thermal Stability of Multicomponent AlTiSiN and AlTiBN Hard Coatings using Ternary Alloy Arc Sources, <b>M.C. CAI</b> , Y.-Y. CHANG, National Formosa University, Taiwan
<b>2018 ICMCTF</b> <b>April 23-27, 2018</b>		<b>2018 Abstract Submission Deadline</b> <b>October 1, 2017</b>	
<b>Thank You &amp; See You Next Year Party</b> <b>Trellis Courtyard Near Pool</b> <b>12:00-1:00 pm</b>		<b>2018 Awards Nominations Deadline</b> <b>October 1, 2017</b>	



# Friday Morning, April 28, 2017

## Advanced Characterization Techniques for Coatings and Thin Films

Room: Royal Palm 4-6 - Session H1

## Advanced Microstructural Characterization of Thin Films and Engineered Surfaces

**Moderators:** **Xavier Maeder**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, **Michael Tkadletz**, Montanuniversität Leoben, Austria

## Topical Symposia

Room: California - Session TS1

## Biointerfaces

**Moderators:** **Jinju Chen**, Newcastle University, UK, **Tianyu Zhang**, Montana State University, USA

8:00 am	<b>H1-1 Invited</b> Imaging Cross-sectional Structure-property Relationship in Thin Films, <b>J. KECKES</b> , Montanuniversität Leoben, Austria	<b>TS1-1</b> The Investigation of Mechanisms about Bacteria-Hydrogels Interactions, <b>N. KANDEMIR</b> , W. VOLLMER, N. JAKUBOVICS, J. CHEN, Newcastle University, UK
8:20 am	Invited talk continued.	<b>TS1-2</b> How Nanostructure on Ti Alloy Surface would Affect Bacterial Adhesion and Biofilm Formation?, <b>Y. CAO</b> , Newcastle University, UK, <b>B. SU</b> , University of Bristol, UK, <b>S.B. CHINNARAJ</b> , N. JAKUBOVICS, J. CHEN, Newcastle University, UK
8:40 am	<b>H1-3</b> Synchrotron and Transmission Kikuchi Diffraction Characterization of Deformed Multilayer Thin Films on Polyimide, <b>M. POLYAKOV</b> , X. MAEDER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland, P. GRUBER, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-AWP), Germany, J. MICHLER, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	<b>TS1-3 Invited</b> First Contact: Surface Sensing, Motility Appendages, and Hydrodynamics in Bacterial Interactions with Surfaces, <b>G. WONG</b> , California NanoSystems Institute, UCLA, USA
9:00 am	<b>H1-4</b> Advanced EBSD and <i>in-situ</i> EBSD Techniques for Microstructure, Crack, Fatigue, and Plastic Deformation Characterization in Metals and Thin Films, <b>J. AST</b> , Y. GUO, M. POLYAKOV, J. SCHWIEDRZIK, G. MOHANTY, J. MICHLER, <b>X. MAEDER</b> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	Invited talk continued.
9:20 am	<b>H1-5</b> Characterization of the Porosity of Silicon Nitride Thin Layers, <b>T. BARRÈS</b> , H. MONTIGAUD, Saint-Gobain Recherche, France, O. STEPHAN, Université Paris-Sud, France, B. TRIBOLLET, Université Pierre et Marie Curie, France, Y. COHIN, Saint-Gobain Recherche, France, M. BOINET, Saint-Gobain, USA	<b>TS1-5</b> How Surface Physical Properties of Polymer Carrier Materials would Affect Wastewater Biofilm Formation?, <b>S. CHARLTON</b> , M. BROWN, R. DAVENPORT, J. CHEN, Newcastle University, UK
9:40 am	<b>H1-6</b> Microsecond-Scale Chemical Reactions at Interfaces in Thermal Spray Coatings, <b>A. TRAN</b> , M. HYLAND, The University of Auckland, New Zealand	<b>TS1-6</b> Evaluating the Electrochemical Corrosion and Immune Cell Activation Behaviour of Nano-crystalline Thin Films of Chromium Nitride Prepared by Reactive Magnetron Sputtering, <b>S. RAHMAN</b> , A. OGWU, A. CRILLY, University of the West of Scotland, UK
10:00 am	<b>H1-7</b> Thermal Stability of Expanded Austenite formed on a DC Plasma Nitrided 316L Austenitic Stainless Steel, <b>A. TSCHIPSCHIN</b> , A. NISHIKAWA, L.B. VARELA, University of São Paulo, Brazil, C. PINEDO, Heat Tech & University of Mogi das Cruzes, Brazil	<b>TS1-7</b> The Graphene Oxide Biopolymers (Polystyrene Sulfonate, PSS and Heparin), and PEDOT were Electrochemically Polymerized in the SUS316L Stainless Steel, <b>H.M. TSOU</b> , T.Y. LIU, Ming Chi University of Technology, Taiwan
<div>2018 ICMCTF April 23-27, 2018</div> <div>Thank You &amp; See You Next Year Party Trellis Courtyard Near Pool 12:00-1:00 pm</div>		2018 Abstract Submission Deadline October 1, 2017
		2018 Awards Nominations Deadline October 1, 2017

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