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.
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<thead>
<tr>
<th>Time</th>
<th>Session A1-1</th>
<th>Session A1-3</th>
<th>Session B1-1</th>
<th>Session B1-3</th>
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<tbody>
<tr>
<td>10:00</td>
<td>Invited</td>
<td>Coatings for Use at High Temperatures</td>
<td>Tunable Low Energy Ion Bombardment and its Influence on AlN Thin Films Deposited in Confocal DC Magnetron Sputtering</td>
<td>Invited</td>
</tr>
<tr>
<td>10:20</td>
<td>Invited talk continued.</td>
<td>High-resolution Studies of Phase Transformations in Metal/oxide Composite Films for High-temperature Applications</td>
<td></td>
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</tr>
<tr>
<td>10:40</td>
<td>A1-1-1</td>
<td>High Temperature Corrosion Of Ni-Base Coatings For Boiler Applications - A Microstructural Study</td>
<td>A1-1-3</td>
<td>Invitation to Beam Designed Thin Film Metasurfaces</td>
</tr>
<tr>
<td>11:00</td>
<td>A1-1-4</td>
<td>Coatings for Oxidation and Hot Corrosion Protection of Disk Alloys</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:20</td>
<td>A1-1-5</td>
<td>High Temperature Oxidation Protection of γ-Titanium Aluminide using Amorphous (Cr,Al)/ON Coatings Deposited by High Speed Physical Vapor Deposition</td>
<td>B1-1-5</td>
<td>Mechanical and Thermal Behavior of Magnetron Sputtered Zr–Cu and Zr–Hf–Cu Metallic Glasses</td>
</tr>
<tr>
<td>11:40</td>
<td>A1-1-6</td>
<td>Cyclic Oxidation and Hot Corrosion Behaviour of Plasma Sprayed CoCrAlY/WC-Co Coating on Turbine Alloys</td>
<td>B1-1-6</td>
<td>The Development of Ultrathin Zr-Cu-Ni-Al-N Thin Film Metallic Glass as a Diffusion Barrier for Cu-Si Interconnect</td>
</tr>
</tbody>
</table>

**Monday Morning, April 24, 2017**

**Coatings for Use at High Temperatures**  
*Room: San Diego - Session A1-1*  
Coatings to Resist High Temperature Oxidation, Corrosion and Fouling  
*Moderators: Vladislav Kolarik, Fraunhofer Institute for Chemical Technology ICT, Germany, Prabhakar Mohan, Solar Turbines, USA, Anton Chyrkin, Forschungszentrum Jülich GmbH, Germany*

**Hard Coatings and Vapor Deposition Technologies**  
*Room: Golden West - Session B1-1*  
PVD Coatings and Technologies  
*Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan*

Anton Paar: Focused Topic Session  
“Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation”  
12:15-1:15 pm  
Town & Country Room
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<tr>
<th>Time</th>
<th>Session B5-1</th>
<th>Session C2-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 am</td>
<td><strong>Synthesis and Characterization of HfNbTiVZr High Entropy Alloy Thin Films</strong></td>
<td><strong>Application of Gallium Oxide for High-Power Electronics.</strong></td>
</tr>
<tr>
<td>10:20 am</td>
<td><strong>Structural Stability of ZrN/SiN, Multilayered Coatings under Harsh Environments.</strong></td>
<td>Invited talk continued.</td>
</tr>
<tr>
<td></td>
<td>G. ABADIAS, Institut P’, Université de Poitiers-UPR 3346 CNRS-ENSMA, France, I. SALADUKHIN, V. UGLOV, S. ZLOTSKI, V. SHYMASNKI, Belarusian State University, Belarus</td>
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<tr>
<td>10:40 am</td>
<td><strong>Magnetron Sputtered High-Temperature Hf-B-Si-C-N Films with Controlled Electrical Conductivity and Optical Transparency.</strong></td>
<td><strong>Phenomenon of Oxygen Ion Migration in Ir_2O_3-Based Resistive Random Access Memory.</strong></td>
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<td>V. SIMOVA, J. VLČEK, S. ZUZJAKOVA, R. ČERSTVÝ, J. HOUSKA, University of West Bohemia, Czech Republic</td>
<td>C.-H. WU, T.C. CHANG, T.M. TSAI, National Sun Yat-sen University, Taiwan</td>
</tr>
<tr>
<td>11:00 am</td>
<td><strong>Reactively Sputtered Multicomponent (TiZrHfVNb)N Thin Films</strong></td>
<td><strong>Vapor-Liquid-Solid Growth of SnO_2 Nanowires Utilizing Alternate Source Supply and Their Photoluminescence Properties.</strong></td>
</tr>
<tr>
<td></td>
<td>K. JOHANSSON, E. LEWIN, Uppsala University, Angstrom Laboratory, Sweden</td>
<td>T. TERASAKO, K. KOHNO, Ehime University, Japan, M. YAGI, National Institute of Technology, Kagawa College, Japan</td>
</tr>
<tr>
<td>11:20 am</td>
<td><strong>Deposition of Fluor-doped WS_2-C Coatings on Nanostructured Anodized Aluminum Alloy Substrates for Wettability Control.</strong></td>
<td><strong>Endurance Improvement and Resistance Stabilization of Transparent Multilayer ReRAM with Oxygen Deficient WO_3 Layer and Heat Dissipating AlN Buffer Layer.</strong></td>
</tr>
<tr>
<td></td>
<td>S. RODRIGUES, SEG-CEMUC, Portugal, S. CARVALHO, University of Minho and University of Porto, Portugal, A. CAVALLEIRO, SEG-CEMUC, Portugal</td>
<td>Y.H. LIN, National Chiao Tung University, Taiwan, D.C. HUANG, Peking University, China, T.Y. TSENG, National Chiao Tung University, Taiwan</td>
</tr>
<tr>
<td>11:40 am</td>
<td><strong>Application and ISO Standard on PVD Multi-layer Hard Films.</strong></td>
<td><strong>Mechanism of Selectivity Increased during Operation on Vanadium Oxide Based Selector.</strong></td>
</tr>
<tr>
<td></td>
<td>S.H. ZHANG, Anhui University of Technology, China</td>
<td>C.H. LIN, T.C. CHANG, K.C. CHANG, T.M. TSAI, C.H. PAN, National Sun Yat-sen University, Taiwan, J.C. LIAO, 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</td>
</tr>
</tbody>
</table>

**Monday Morning, April 24, 2017**

**Anton Paar: Focused Topic Session**

“Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation”

12:15-1:15 pm

Town & Country Room
### Monday Morning, April 24, 2017

**Room: Sunrise - Session D2**

#### Bio-corrosion, Bio-tribology, and Bio-tribocorrosion

**Moderator:** Anna Igual Munoz, École Polytechnique Federale de Lausanne, Switzerland

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors/Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 am</td>
<td>Evaluation of Tribocorrosion Kinetics and Biocompatibility of Electrochemically Induced Tribolayer for Hip Implants</td>
<td>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, Northweswern University, USA, M. MATHEW, University of Illinois College of Medicine at Rockford, and Rush University Medical Center, USA</td>
</tr>
<tr>
<td>10:20 am</td>
<td>Study of the Dynamic Behavior of a Tribocorrosion System</td>
<td>A. RODA BUHCH, A. DALMAU, A. ROVIRA, Universitat Politècnica de València UPV, Spain, A. IGUAL MUNOZ, École polytechnique federale de lausanne, Switzerland</td>
</tr>
<tr>
<td>10:40 am</td>
<td>Invited Tribocorrosion from Nano to Macroscale – the Effect of Proteins on Friction of CoCrMo Biomedical Alloy</td>
<td>ESPALLARGAS, NTNU, Norway</td>
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<tr>
<td>11:00 am</td>
<td>Invited talk continued.</td>
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<tr>
<td>11:20 am</td>
<td>Fretting Corrosion of Biomaterials Dedicated to Dental Implants: Quantitative and Qualitative Insights</td>
<td>P. CORNE, A-S. VAILLANT-CORROY, P. DE MARCH, F. CLEYMAND, Institut Jean Lamour, France, J. GERINGER, Mines Saint Etienne, France</td>
</tr>
<tr>
<td>11:40 am</td>
<td>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</td>
<td>N.-E. WU, W.-H. WU, C.-C. CHOUD, National Taiwan Ocean University, Taiwan, R. WU, National Institute for Materials Science, Japan, J.W. LEE, Ming Chi University of Technology, Taiwan</td>
</tr>
</tbody>
</table>

**Room: Royal Palm 1 - Session F1**

#### New Horizons in Coatings and Thin Films

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

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<thead>
<tr>
<th>Time</th>
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<th>Authors/Institutions</th>
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<tbody>
<tr>
<td>10:00 am</td>
<td>Sculptured Thin Films by Ion Beam Sputtering</td>
<td>B. RAUSCHENBACH, C. GRÜNER, Leibniz Institute of Surface Modification, Germany</td>
</tr>
<tr>
<td>10:20 am</td>
<td>The Effect of Thermal Treatment on the Structure and Surface Plasmon Resonance of Ag-coated ZnO Nanoparticles by Sol-gel Method</td>
<td>c.c. WANG, National Chung Hsing University, Taiwan, H.C. SHIH, Chinese Culture University, Taiwan</td>
</tr>
<tr>
<td>10:40 am</td>
<td>In-situ Electron Microscopy of Synthesis, Chemistry and Self-Assembly of Colloidal Nanostructures</td>
<td>E. SUTTER, University of Nebraska-Lincoln, USA</td>
</tr>
<tr>
<td>11:00 am</td>
<td>Invited talk continued.</td>
<td></td>
</tr>
<tr>
<td>11:20 am</td>
<td>Deposition of PTFE – TiO2 Composite Coatings Combining Supercapacitive and Photocatalytic Properties by Reactive pDC Magnetron Sputtering from a Blended Powder Target</td>
<td>M. RATOVA, P.J. KELLY, G.T. WEST, Manchester Metropolitan University, UK</td>
</tr>
<tr>
<td>11:40 am</td>
<td>The Mechanisms of Growth of Zr-Fe-O Whiskers</td>
<td>J. GU, 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</td>
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**Anton Paar: Focused Topic Session**

**“Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation”**

**12:15-1:15 pm**

**Town & Country Room**
Monday, April 24, 2017

Coatings for Use at High Temperatures
Room: San Diego - Session A1-2
Coatings to Resist High Temperature Oxidation, Corrosion and Fouling
Moderators: Vladislav Kolarik, Fraunhofer Institute for Chemical Technology ICT, Germany, Prabhakar Mohan, Solar Turbines, USA, Anton Chyrkin, Forschungszentrum Jülich GmbH, Germany

1:30 pm A1-2-1
Pt Effect on Oxidation Resistance and Durability of β-NiAl Coatings: A Coupled ab initio and Physics-based Modeling. P. PATNAIK, Gas Turbine Laboratory, Aerospace Portfolio, National Research Council, Canada. K. CHEN, Structures, Materials and Manufacturing Laboratory, Aerospace Portfolio, National Research Council, Canada

1:50 pm A1-2-2

2:10 pm A1-2-3
High Temperature Binary or Doped Nickel Aluminide Coatings on Superalloys: An Industrial Approach. V. PAPAGEORGIOU, S. VOGIATZIS, H. STRAKOV, A.A. ZAINAL, M. AUGER, IHI Ionbond AG, Switzerland

2:30 pm A1-2-4

2:50 pm A1-2-5
Effect of the Microstructure on Corrosion and Deformation Behavior of Zn-Mg Coatings on Steel Substrate. J.H. LA, K.T. BAE, S.M. KIM, S.Y. LEE, Y.S. HONG, Korea Aerospace University, Republic of Korea

3:10 pm A1-2-6
A Comparative Analysis of Ternary Element Addition on Corrosion Behavior of Aluminide Coatings in Harsh Environmental Conditions. U. ERTURK, B. IMER, Middle East Technical University, Turkey

3:30 pm A1-2-7

3:50 pm A1-2-8
Sol-gel ZrO2-Y2O3 Coatings Validated in Molten Salt Environment for CSP Applications. V. ENCINAS SÁNCHEZ, M.I. LASANTA, M.T. DE MIGUEL, G. GARCÍA MARTÍN, F.J. PÉREZ TRUJILLO, Complutense University of Madrid, Spain

4:10 pm A1-2-9
A study of Preferred Orientation of VN Thin Film on Si Substrate Deposited by Unbalanced Magnetron Sputtering. C.H. LIN, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan

4:30 pm A1-2-10
Structure and Mechanical Property of AlN Deposited (AlxCr100-x)N Coatings with X > 70 at%. K. YAMAMOTO, H. NII, M. ABE, Kobe Steel Ltd., Japan. S. TAKADA, Y. IWAI, University of Fukui, Japan

4:50 pm A1-2-11
Control of Elastic-Plastic Deformability and Hardness in Nitride Hard Coatings on Cubic Boron Nitride Sintered Compact Cutting Tool. M. TAKAHASHI, S. SATO, T. MAEKAWA, Mitsubishi Materials Corporation, Japan

5:10 pm A1-2-12
Effect of Preferred Orientation on the Fracture Toughness of VN Hard Coatings. L.R. WEI, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan

Hard Coatings and Vapor Deposition Technologies
Room: Golden West - Session B1-2
PVD Coatings and Technologies
Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan

1:30 pm B1-2-1
Invited Air-based Deposition of Oxynitride Thin Films. F.H. LU, National Chung Hsing University, Taiwan

2:30 pm B1-2-3

2:50 pm B1-2-5
Non-reactive and Reactive dc Magnetron Sputter Deposition of Molybdenum Oxide Thin Films. J.M. PACHLHOFER, R. FRANZ, Montanuniversität Leoben, Austria. E. FRANZKE, Plansee SE, Austria. A. TARAZAGA-MARTIN-LUENGO, Johannes Kepler University, Austria. H. KÖSTENBAUER, J. WINKLER, Plansee SE, Austria. A. BONANNI, Johannes Kepler University, Austria. C. MITTERER, Montanuniversität Leoben, Austria

3:10 pm B1-2-6
Piezoelectric Coefficient Enhancement in Low Mg Content Wurtzite Mg2Zn1-xFilm. Y.J. CHEN, S. BRAHMA, C.P. LIU, J.L. HUANG, National Cheng Kung University, Taiwan

3:30 pm B1-2-7
Ternary and Quaternary Hard Transparent Thin Films Made from Al, Si, O and N. M. FISCHER, M. TRANT, K.F. THOLO, Mitsubishi Materials Corporation, Japan. S. SATO, T. MAEKAWA, Mitsubishi Materials Corporation, Japan

3:50 pm B1-2-8
Characteristics of TiAlSiN Having a Hexagonal Structure. S. INAGAKI, A. KAWANA, Japan Coating Center Co., Ltd., Japan

4:10 pm B1-2-9
A study of Preferred Orientation of VN Thin Film on Si Substrate Deposited by Unbalanced Magnetron Sputtering. C.H. LIN, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan

4:30 pm B1-2-10
Structure and Mechanical Property of AlN Deposited (AlxCr100-x)N Coatings with X > 70 at%. K. YAMAMOTO, H. NII, M. ABE, Kobe Steel Ltd., Japan. S. TAKADA, Y. IWAI, University of Fukui, Japan

4:50 pm B1-2-11
Control of Elastic-Plastic Deformability and Hardness in Nitride Hard Coatings on Cubic Boron Nitride Sintered Compact Cutting Tool. M. TAKAHASHI, S. SATO, T. MAEKAWA, Mitsubishi Materials Corporation, Japan

5:10 pm B1-2-12
Effect of Preferred Orientation on the Fracture Toughness of VN Hard Coatings. L.R. WEI, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan

Welcome Mixer
5:30-7:00 pm
Lion Fountain Courtyard
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<th>Session</th>
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<th>Organization</th>
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<tr>
<td>1:30</td>
<td>B5-2</td>
<td>Hard and Mo Coatings Characterization regarding Stamping Dies Application</td>
<td>Polytechnic of Porto, Portugal, R. ALEXANDRE, TeamD - Technology, Engineering and Materials, S.A., Portugal, A. BAPTISTA, INEGI, -- Instituto de Ciencia y Innovaci\n\n\n</td>
</tr>
<tr>
<td>2:10</td>
<td>B5-3</td>
<td>Ultra-thick, Superhard Nanocomposite Coatings Deposited using Plasma Enhanced Magnetron Sputtering (PEMS) and their Practical Applications</td>
<td>University of West Bohemia, Czech Republic</td>
</tr>
<tr>
<td>2:30</td>
<td>B5-5</td>
<td>Role of Interfaces in Determining the Fracture Resistance of Nanocomposite/Metal Nitride Multilayers</td>
<td>Linköping University, IFM, Thin Film Physics Division, Sweden</td>
</tr>
<tr>
<td>3:10</td>
<td>B5-6</td>
<td>Tribocorrosion Behaviour of Nanocomposite TiSiCN Coatings Tested in PBS Solution</td>
<td>Pontificia Universidade Catolica do Rio de Janeiro, Brazil, J. MUSIL, R. ČERST, J.W. GERLACH, North Carolina State University, USA</td>
</tr>
<tr>
<td>3:30</td>
<td>B5-7</td>
<td>Carbon Supersaturated Fe-Cr-Ni-C Thin Films with a Unique Nanocolumnar Structure</td>
<td>University of Technology, Poland, J. MORGIEL, Institute of Metalurgy and Materials Science of Polish Academy of Sciences, Poland</td>
</tr>
<tr>
<td>4:10</td>
<td>B5-9</td>
<td>Achieving High Hardness and Wear Resistance in V-Ai-N Coatings by Low-temperature Magnetron Sputter Deposition</td>
<td>Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td>4:30</td>
<td>B5-10</td>
<td>Novel Cr/V/TiN Nanoscale Multilayer Coatings Deposited by DC Magnetron Sputtering</td>
<td>Universidad de Antioquia, Colombia</td>
</tr>
<tr>
<td>5:00</td>
<td>B5-11</td>
<td>Ion Etching Induced Cross-linking: Origin of High Hardness for Nanocrystalline Carbon Films</td>
<td>Shenzhen University, China</td>
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<tr>
<td>5:10</td>
<td>B5-12</td>
<td>Temperature Dependence of the Raman Spectra of Graphene Nanocrystallized Carbon Film grown under Electron Irradiation</td>
<td>Shenzhen University, China</td>
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Welcome Mixer
5:30-7:00 pm
Lion Fountain Courtyard
### Monday Afternoon, April 24, 2017

**Coatings for Biomedical and Healthcare Applications**  
**Room: Sunrise - Session D1**  
**Surface Coatings and Surface Modifications in Biological Environments**

**Moderators:** Kerstin Thorwarth, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland,  
Mathew T. Mathew, University of Illinois College of Medicine at Rockford and Rush University Medical Center, USA,  
Argelia Almaguer-Flores, Universidad Nacional Autonoma de Mexico, Mexico

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<tr>
<th>Time</th>
<th>Session D1</th>
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<tr>
<td>1:30 pm</td>
<td>D1-1 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, J.D. HETTINGER, Rowan University, USA</td>
</tr>
<tr>
<td>1:50 pm</td>
<td>D1-2 Nanostructured Surfaces based on Tantalum Oxide for Osseointegrated Metallic Implants, C.F. ALMEIDA ALVES, 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</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>D1-3 Development of a Biocompatible Titanium Niobium Alloy Coating as a Buffer for Rigid Coatings on Polyetheretherketone, M. KÖNIG, K. BERGER, H. SCHEERER, G. ANDERSOHN, M. OECHSNER, TU Darmstadt, Germany</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>D1-4 Development of Novel Long-Lasting S-Phase based Anti-Bacterial Coatings, D. FORMOSA, X. LI, H. DONG, The University of Birmingham, UK</td>
</tr>
<tr>
<td>2:50 pm</td>
<td>D1-5 Invited Single-step, Environmentally-Friendly, Biological Functionalisation through Radicals generated by Plasma Surface Modification of Biomedical Devices, M.M. BILEK, 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</td>
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<td>3:30 pm</td>
<td>D1-8 Oral Bacteria Adhesion on Saliva Coated and Uncoated Stainless Steel Surfaces: Experimental Characterisation and Modelling, J. CHEN, S.B. CHINNARAJ, Y. AMMAR, J. PAHALA GEDARA, N. JAKUBOVICS, Newcastle University, UK</td>
</tr>
<tr>
<td>3:50 pm</td>
<td>D1-9 Towards Antibacterial yet Biocompatible and Bioactive Surfaces, D.V. SHTANSKY, I.V. SUKHORUKOVA, A.N. SHEVEYKO, E.A. LEVASHOV, National University of Science and Technology &quot;MISIS&quot;, Russian Federation</td>
</tr>
<tr>
<td>4:10 pm</td>
<td>D1-10 Characteristics of Plasma Polymerization Films using HMDSO Precursor on 316L Stainless Steel, S. WANG, J.W. LEE, Y. LEE, Ming Chi University of Technology, Taiwan, B.S. LOU, Chang Gung University, Taiwan</td>
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<tr>
<td>4:30 pm</td>
<td>D1-11 Structure and Biocompatibility of Fluorine-containing TaCN Thin Films, J.H. HSIEH, H.T. LIN, Ming Chi University of Technology, Taiwan, S.L. LIU, National Taipei University of Technology, Taiwan</td>
</tr>
<tr>
<td>4:50 pm</td>
<td>D1-12 Effect of Zn on the Improvement of Corrosion Performance of MAO Coated Biodegradable Mg-Sr-Zn Alloys, M. YAZICI, Ondokuz Mayis University, Turkey, Y. AZAKLI, S. CENGIZ, Y. GENCER, M. TARKCI, Gebze Technical University, Turkey</td>
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**Welcome Mixer**  
5:30-7:00 pm  
Lion Fountain Courtyard
<table>
<thead>
<tr>
<th>Time</th>
<th>Session F1-2</th>
<th>Session F3</th>
<th>Session F3 immediately prior to Session F3</th>
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<tbody>
<tr>
<td>1:30 pm</td>
<td>Invited</td>
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<td>1:40 pm</td>
<td>Accelerated Development of CuSb(S, Se) Thin Film Photovoltaic Device Prototypes, C. Wolden, Colorado School of Mines, USA</td>
<td>Tunable MoS₂ and MoS₃-based Electrocatalysts by Hot-injection Method for Hydrogen Evolution Reaction, C.L. Wu, P.C. Huang, S. Brahma, J.L. Huang, National Cheng Kung University, Taiwan, S.C. Wang, Southern Taiwan University of Science and Technology, Taiwan</td>
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<tr>
<td>2:00 pm</td>
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<td>Development and Characterisation of Cost-Effective Graphene Oxide-Nickel Nanocomposite Coatings, S. Qi, X. Li, H. Dong, The University of Birmingham, UK</td>
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<td>2:50 pm</td>
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<td>Fabrication of Functional Graphene Reinforced Polyurethane Nanocomposite Coatings with Regular Textures for Corrosion Inhibition, W.J. Zhao, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</td>
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<td>Fabrication of Functional Graphene Reinforced Polyurethane Nanocomposite Coatings with Regular Textures for Corrosion Inhibition, W.J. Zhao, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</td>
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<td>3:50 pm</td>
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<td>Structure and Tribological Properties of TiSiCN Coatings Incorporated with Layered Structure of MAX Phase in Artificial Seawater, J.L. Li, Y. Wang, C.Q. Dang, L.P. Wang, Q.J. Xue, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</td>
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<td>4:10 pm</td>
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<td>Graphene: Improving Material Performance by Keeping the Surface Cleaning, H. Liu, University of Pittsburgh, USA</td>
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<td>Time</td>
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<td>8:00 am</td>
<td>A1-3-1</td>
<td>Thin Co and Ce/Co Coatings on Ferritic Stainless Steel Interconnects for Solid Oxide Fuel Cells, H. FALK, WINDISCH, M. SATTAI, L.-G. JOHANSSON, J.E. SVENSSON, J. FROITHEIM, Chalmers University of Technology, Sweden</td>
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<tr>
<td>8:20 am</td>
<td>A1-3-2</td>
<td>Long-term Oxidation of MCrAlY Coatings at 1000 °C and an AI-activity Based Coating Life Criterion, P. ZHANG, K. KANG, R. LIN, PENG, Linköping University, Sweden, X.-H. LI, Siemens Industrial Turbomachinery AB, Sweden, S. JOHANSSON, Linköping University, Sweden</td>
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<td>8:40 am</td>
<td>A1-3-3</td>
<td>The Preparation of Ti₂AlN MAX Phase Coatings and its Oxidation Mechanism under Different Atmosphere, Z.Y. WANG, 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</td>
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<td>9:00 am</td>
<td>A1-3-4</td>
<td>Effect of Coating Architecture on the Corrosion Behavior of Ti-NiCr-N Multilayer Coatings, Y.S. YANG, National Kaohsiung First University of Science and Technology, Taiwan</td>
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<td>9:20 am</td>
<td>A1-3-5</td>
<td>Effects of Encapsulating Material and Healing Agent Ratio on Crack Propagation Behavior for Thermal Barrier Coatings, S.H. JEON, S.S. LEE, S.H. JUNG, H.M. PARK, Y.G. JUNG, Changwon National University, Republic of Korea, J. ZHANG, Purdue University, USA</td>
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<td>9:40 am</td>
<td>A1-3-6</td>
<td>Comparative Study of Monolayer and Multilayer CrAlSiN PVD Coatings Behavior at High Temperature in Steam Atmosphere, A. ILLANA, S. MATO, Complutense University of Madrid, Spain, E. ALMANGOZ, G. GARCÍAS FUENTES, Navarra Industry Association, Spain, F.J. PÉREZ TRUJILLO, M.I. LASANTA, Complutense University of Madrid, Spain</td>
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<td>10:00 am</td>
<td>A1-3-7</td>
<td>Material Validation in Molten Salt Environment under Dynamic Conditions Using a Novel Pilot Plant Facility, M.I. LASANTA, G. GARCÍA MARTÍN, V. ENCINAS SÁNCHEZ, M.T. DE MIGUEL, F.J. PÉREZ TRUJILLO, Complutense University of Madrid, Spain</td>
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<td>10:20 am</td>
<td>A1-3-8</td>
<td>Phase Formation in Sputter Deposited Tantalum Coatings, G.T. WEST, M. RATOVA, P.J. KELLY, Manchester Metropolitan University, UK</td>
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<tr>
<td>10:20 am</td>
<td>B1-3-1</td>
<td>Invited talk continued. Symphony and Applications of High-precision Thin Film Multilayers, A. LEON, S. BRAUN, P. GAWILITZA, C. GRUHNE, A. KUBEK, M. MENZEL, Fraunhofer Institute for Material and Beam Technology, Germany</td>
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<tr>
<td>10:20 am</td>
<td>B1-3-2</td>
<td>Invited talk continued. Synthesis and Applications of High-precision Thin Film Multilayers, A. LEON, S. BRAUN, P. GAWILITZA, C. GRUHNE, A. KUBEK, M. MENZEL, Fraunhofer Institute for Material and Beam Technology, Germany</td>
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**Tuesday Morning, April 25, 2017**

Coatings for Use at High Temperatures  
**Room:** San Diego - Session A1-3  
Coatings to Resist High Temperature Oxidation, Corrosion and Fouling  
**Moderators:** Vladislav Kolarik, Fraunhofer Institute for Chemical Technology ICT, Germany, Prabhakar Mohan, Solar Turbines, USA, Anton Chyrkin, Forschungszentrum Jülich GmbH, Germany  

Hard Coatings and Vapor Deposition Technologies  
**Room:** Golden West - Session B1-3  
PVD Coatings and Technologies  
**Moderators:** Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan

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**Exhibition Hall Opens Today**  
**Grand Hall**  
12:00-7:00 pm  
Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm
### 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*

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<tr>
<th>Time</th>
<th>Session B4-1</th>
<th>Session C1 - Invited</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>Thermal Stability and Mechanical Properties of Sub-stoichiometric TiAlN Thin Films. K.M. Calamba, Linköping University, Sweden, I. Schramm, Saarland University, Sweden, M.P. Johansson-Jøesaa, SECO Tools, Sweden, J.F. Pierson, University of Lorraine, France, M. Odén, Linköping University, Sweden</td>
<td>Metamaterials: from Design and Modeling to the Experimental Confirmation of their Optical Performance. M. Lequime, Institut Fresnel, France</td>
</tr>
<tr>
<td>8:20 am</td>
<td>Microstructure and Hardness of Ti-B-N-C Nanocomposites Deposited from Ti and B-C targets. C. Wüstefeld, Institute of Materials Science, TU Bergakademie Freiberg, Germany, M. Sima, M. Jilek, SHM Ltd., Czech Republic, D. Rafaja, Institute of Materials Science, TU Bergakademie Freiberg, Germany</td>
<td>Invited talk continued.</td>
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<td>8:40 am</td>
<td>Strategies for Fracture Toughness Enhancement of Nanostructured Films by Microstructural and Grain-boundary Design: The Role of Microstructure, Stress and Property Heterogeneity. R. Daniel, C. Mitterer, J. Keckes, Montanuniversität Leoben, Austria</td>
<td>Use of FDTD Method for Data Analysis of Spectroscopic Ellipsometry Data of Non-periodic sub-wavelength Structures. J.A. Zapien, Y. Foo, City University of Hong Kong</td>
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<tr>
<td>9:00 am</td>
<td>Invited talk continued.</td>
<td>Analysis Procedures for Multiple Sets of Ellipsometric Spectra. N.J. Podrza, K. Ghimire, P. Upret, M.M. Junda, University of Toledo, USA</td>
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<tr>
<td>9:20 am</td>
<td>Epitaxial Growth of HfN Films using Synchronized Pulsed Substrate Bias during HiPIMS Discharge. M. Villamayor, Linköping University, (IFM), Sweden, T. Shimizu, Tokyo Metropolitan University, Japan, J. Keraudy, I. Rey, Linköping University, (IFM), Sweden, D. Lundin, LGPG, France, U. Helmersson, Linköping University, (IFM), Sweden</td>
<td>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</td>
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<tr>
<td>10:00 am</td>
<td>Correlation of Plasma Parameters and Thin Film Properties of HiPIMS Al-Cr-N films using a Combinatorial Approach. L. Banko, D. Grochla, S. Ries, P. Awakowicz, A. Ludwig, Ruhr-Universität Bochum, Germany</td>
<td>In-situ Metrology for Surface Topography and Stress Characterization. W. Walecki, Frontier Semiconductor, USA</td>
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<td>10:20 am</td>
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<td>Scratch Failure vs Residual Stress: a Relationship Applied to Optical Coatings. T. Poirie, T. Schmitt, Polytechnique Montreal, Canada, E. Bousser, University of Manchester, UK, L. Martinu, J.E. Sapieha, Polytechnique Montreal, Canada</td>
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<tr>
<td>10:40 am</td>
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<td>Fast Characterization of nm Thin to Thick Coatings using Pulsed-RF Glow Discharge Optical Emission Spectrometry. P. Hunaault, M. Chausseau, K. Savadkoohi, HORIBA Scientific, USA, P. Chapon, S. Gaiaschi, HORIBA Scientific, France</td>
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**Exhibition Hall Opens Today**  
**Grand Hall**  
**12:00-7:00 pm**  
**Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm**
## Tuesday Morning, April 25, 2017

### Coatings for Biomedical and Healthcare Applications

**Room: Sunrise - Session D3**

**Medical Devices, Biosensors, and Biodegradation**

**Moderators:** Jessica Jennings, University of Memphis, USA, Robin Pourzal, Rush University Medical Center, USA

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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</table>
| 8:00 am | D3-1 Challenges for Polymeric Orthopedic Implants - Enhanced Surface Functionalities using coatings deposited by HIPIMS. | K.F. THORWARTH, 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

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<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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</table>
| 8:20 am | D3-2 Alginate Coatings on Silver-decorated Calcium Phosphate nanospheres as an Antimicrobial coating component. | A. JENNINGS, C. NELSON, S. MISHRA, M. GHIMIRE, J. BUMGARDNER, University of Memphis, USA

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<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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| 8:40 am | D3-3 Invited Manufacturing, Testing, and Regulatory Aspects of Implant Coatings. | D. SCHOLVIN, J.P. MOSELEY, Wright Medical, USA

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<td>9:00 am</td>
<td>Invited talk continued.</td>
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<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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</table>
| 9:20 am | D3-5 Implant Alloy Microstructure can Enable Cell Induced Corrosion in Total Hip Replacements. | R. POURZAL, D.J. HALL, R.M. URBAN, S.M. MCCARTHY, Rush University Medical Center, USA, J. EHRICH, A. FISCHER, University of Dusseldorf, Germany, J.J. JACOBS, Rush University Medical Center, USA

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<tr>
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| 10:00 am | D3-7 Effect of Processing on the Structure and Biofunctionalization of AlN Thin Films Produced by r.f. Reactive Magnetron Sputtering. | A.E. MURILLO, O. SALAS, L. MELO-MAXIMO, B. GARCÍA, D.V. MELO-MAXIMO, Tecnológico de Monterrey-CMM, Mexico, K. GARCÍA, Tecnológico de Monterrey-CMM, Mexico, J. OSEGUERA, Tecnológico de Monterrey-CMM, Mexico

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<th>Time</th>
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| 10:20 am | D3-8 Molybdenum Thin Films Deposited by High Power Impulse Magnetron Sputtering. | A.P. EHIASARIAN, D.A.L. LOCH, Sheffield Hallam University, UK

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<th>Time</th>
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<th>Speaker(s)</th>
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</table>
| 10:40 am | D3-9 Epitaxial Growth of Copper Thin Films on Si(001) by HIPIMS. | F. CEMIN, Université Paris Sud, France, G. ABADIAS, Université de Poitiers, France, D. LUNDIN, T. MINEA, Université Paris-Sud, France

### New Horizons in Coatings and Thin Films

**Room: Royal Palm 1-3 - Session F2-1**

**HIPIMS, Pulsed Plasmas and Energetic Deposition**

**Moderators:** Tiberiu Minea, Université Paris-Sud, France, Tomas Kubart, Uppsala University, Sweden

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<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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</table>
| 8:00 am | F2-1-1 An Ionization Region Model of the Reactive Ar/O2 High Power Impulse Magnetron Sputtering Discharge. | J.T. GUDMUNDDSSON, University of Iceland, Iceland, D. LUNDIN, CNRS, Université Paris-Sud, France, N. BRENNING, M.A. RAADU, C.G. HUO, KTH - Royal Institute of Technology, Sweden, T. MINEA, CNRS, Université Paris-Sud, France

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<th>Time</th>
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</table>
| 8:20 am | F2-1-2 Residual Stress Control of Al-rich (Ti,Al)N Hard Coatings by Pulse Duration in High Power Impulse Magnetron Sputtering. | T. SHIMZU, 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

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| 8:40 am | F2-1-3 Invited Energetic Deposition of Electronic Materials. | J.G. PARTRIDGE, 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

Invited talk continued.

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<th>Time</th>
<th>Topic</th>
<th>Speaker(s)</th>
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| 9:00 am | F2-1-4 Controlled Reactive HIPIMS of Thermochromic VO2 Films at a Low Deposition Temperature (300 °C). | D. KOLENATY, J. VLCEK, T. KOZAK, J. HOUŠKA, R. ČERSTVÝ, University of West Bohemia, Czech Republic

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| 10:00 am | F2-1-7 Comparison of CrN from Planar and Rotating Target using Highly Ionized Processes. | H. GERDES, A. THEMELIS, R. BANDORF, M. VERGOHL, G. BRAEUER, Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany

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| 10:20 am | F2-1-8 Molybdenum Thin Films Deposited by High Power Impulse Magnetron Sputtering. | A.P. EHIASARIAN, D.A.L. LOCH, Sheffield Hallam University, UK

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| 10:40 am | F2-1-9 Epitaxial Growth of Copper Thin Films on Si(001) by HIPIMS. | F. CEMIN, Université Paris Sud, France, G. ABADIAS, Université de Poitiers, France, D. LUNDIN, T. MINEA, Université Paris-Sud, France

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**Exhibition Hall Opens Today**

**Grand Hall**

**12:00-7:00 pm**

Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm
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.
Tuesday Afternoon, April 25, 2017

Coatings for Use at High Temperatures
Room: Sunrise - Session A2-1
Thermal and Environmental Barrier Coatings
Moderators: Lars-Gunnar Johansson, Chalmers University of Technology, Sweden, Kang Lee, NASA Glenn Research Center, USA

Hard Coatings and Vapor Deposition Technologies
Room: Golden West - Session B1-4
PVD Coatings and Technologies
Moderators: Joerg Vetter, Oerlikon Balzers Coating Germany GmbH, Germany, Jyh-Ming Ting, National Cheng Kung University, Taiwan

1:30 pm
A2-1-3 Property Comparisons of Air Plasma Sprayed and Dense Homogeneous Yttrium Disilicate. C. PARKER, R. GOLDEN, E. OPIILA, University of Virginia, USA

B1-4-2 Combinatorial Exploration of the High Entropy Alloy System Fe-Mn-Ni-Co-Cr. A. KAUFFMANN, 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. SZABÓ, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WK), B. GÖRR, 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

1:50 pm
A2-1-4 Performance of Vacuum Plasma Spray Bond Coatings. M. LANCE, J.A. HAYNES, B.A. PINT, Oak Ridge National Laboratory, USA

B1-4-4 Towards High-Rate Magnetron Sputter Deposition: Influence of Discharge Power on Deposition Process and Coating Properties. C. SARRINGER, R. FRANZ, Montanuniversität Leoben, Austria, K. ZORN, MBA High Tech Coatings, Austria, C. MITTERER, Montanuniversität Leoben, Austria

2:10 pm

B1-4-5 High Temperature Solid PVD Lubricants Based on Vanadium. V. SOCHORA, M. JILEK, JR., O. ZINDULKA, SHM, s.r.o., Czech Republic

2:50 pm
A2-1-7 Engineered Architectures of Gadolinium Zirconate/YSZ based TBCs Subjected to Hot Corrosion Test. S. MAHADE, 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

B1-4-7 Nanoeengineering Periodically Structured SiC Thin Film Anodes for Rechargeable LIBs. B.D. POLAT KARAHAN, B. BILICI, Istanbul Technical University, Turkey, O.L. ERYILMAZ, K. AMINE, Argonne National Laboratory, USA, O. KELES, Istanbul Technical University, Turkey

3:10 pm
Invited talk continued.

B1-4-8 Grain Size-Dependent Metastable Phase Formation. M. HANS, 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

Graduate Student Finalist

3:30 pm
A2-1-8 Thermal Barrier Coatings: The Next Generation. M. GELL, E. JORDAN, R. KUMAR, University of Connecticut, USA, C. JIANG, J. WANG, B. NAIR, HiFunda LLC, USA

B1-4-9 Thin Film Metallic Glass: Novel Coating Providing High Toughness and Low Friction. C.C. YU, J.P. CHU, National Taiwan University of Science and Technology, Taiwan, Y.L. SHEN, University of New Mexico, USA

Graduate Student Finalist

3:50 pm

A2-1-10 Current Environmental Barrier Coatings Research at NASA. K. LEE, D. WATERS, NASA Glenn Research Center, USA

Session B2-1 will follow immediately after B1-4 in the Golden West Room—see following page 15

4:10 pm
A2-1-11 CMAS Infiltration Prediction for 7YSZ TBCs Deposited by EB-PVD. J. GOMEZ, 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

4:30 pm
Exhibition Hall Opens Today
Grand Hall
12:00-7:00 pm

Exhibition Reception
Grand Hall
5:30-7:00 pm

5:10 pm
A2-1-12 Oxidation Behavior of CrN, AlCrN, and AlTiN Cathodic Arc PVD Coatings. Z. GASEM, A. ADESINA, King Fahd University of Petroleum and Minerals, Saudi Arabia
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>Invited</td>
<td>Measurement of Residual Stress on Transition Metal Nitride Hard Coatings by Combining Average X-ray Strain Method and Nanoindentation</td>
<td>J.H. HUANG, A.-N. WANG, G.P. YU, National Tsing Hua University, Taiwan</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>Invited</td>
<td>Investigation of the Tribocatalysis Mechanisms involved in the Extraction of Amorphous Carbon Boundary Films from Base Oils</td>
<td>G. RAMIREZ, O.L. ERYILMAZ, B. NARAYANAN, Y. LIAO, G. KAMATH, S. SANKARANARAYANAN, A. ERDEMIR, Argonne National Laboratory, USA</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Invited</td>
<td>Phase Stability and Strain Evolution in TiZrAIN Coatings During Annealing</td>
<td>L. ROGSTRÖM, R. PILEMALM, N. GHAFOOR, 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</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>Invited</td>
<td>Gas Inlet and Input Power Modulated Sputtering Molybdenum Nitride Thin Films</td>
<td>J.Y. XIANG, National United University, Taiwan</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Invited</td>
<td>Transition Metal Nitrides Deposition by HiPIMS in DOMS Mode</td>
<td>J.C. OLIVEIRA, F. FERREIRA, R. SERVERA, F. FERNANDES, A. CAVALLEIRO, University of Coimbra, Portugal</td>
</tr>
<tr>
<td>3:50 pm</td>
<td>Invited</td>
<td>Determining of the Critical Loads of Transition Metal Nitrides on Steels</td>
<td>A. KELES, Ataturk University Faculty of Engineering, Turkey, H. CICEK, Erzurum Technical University, Turkey, O. BARAN, Erzincan University, Turkey, Y. TOTIK, I. EFEÖGLU, Ataturk University, Turkey</td>
</tr>
<tr>
<td>4:10 pm</td>
<td>Invited</td>
<td>Microstructural Investigation of CVD Titanium Aluminium Nitride Coatings</td>
<td>H. BETTERSSON, O. BÄCKE, Chalmers University of Technology, Sweden, D. STIENS, Walter AG, Germany, M. HALVARSSON, Chalmers University of Technology, Sweden</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>Invited</td>
<td>Fabrication of Boron-doped Diamond Films on Cemented Tungsten Carbide</td>
<td>K. SAKOTO, 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</td>
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**Exhibition Hall Opens Today**
Grand Hall
12:00-7:00 pm

**Exhibition Reception**
Grand Hall
5:30-7:00 pm
### Tuesday Afternoon, April 25, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Location</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>C2-3</td>
<td>High Dielectric Constant of Polymer-inorganic Nanocomposites as Gate Dielectrics for Organic Thin Film Transistor Applications</td>
<td>Royal Palm 4-6 - Session C2-3</td>
<td>C. H. Yang, Y. Y. Yu, C. T. Chiu, Ming Chi University of Technology, Taiwan</td>
</tr>
<tr>
<td>1:50 pm</td>
<td>C2-3-2</td>
<td>Cross-sectional Investigation of Microstructure and Mechanical Properties of Graded Ti/(N,B) Coatings</td>
<td>Session E2-1</td>
<td>M. Tkadletz, N. Schalk, C. Mitteler, C. Hofer, J. Keckes, Montanuniversitat Leoben, Austria, M. Delucar, Materials Center Leoben Forschung GmbH, Austria, M. Pohler, C. Czettil, Ceratizit Austria GmbH, Austria</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>C2-3-3</td>
<td>A Retina Prosthesis based on Organic Thin Films</td>
<td>Session E2-1</td>
<td>G. Lanzani, F. Benfenati, Italian Institute of Technology, Italy, G. Pertile, Ospedale Sacro Cuore, Italy</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>C2-3-4</td>
<td>Invited talk continued.</td>
<td>Session E2-1</td>
<td></td>
</tr>
<tr>
<td>2:50 pm</td>
<td>C2-3-5</td>
<td>Different Nitridation Condition Influence NBTI in FinFETs</td>
<td>Session E2-1</td>
<td>H. W. Liu, T. C. Chang, National Sun Yat-Sen University, Taiwan</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>C2-3-6</td>
<td>Analysis of Abnormal Transconductance in Body-tied PD SOI n-MOSFETs</td>
<td>Session E2-1</td>
<td>C. Y. Lin, T. C. Chang, National Sun Yat-sen University, Taiwan</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>C2-3-7</td>
<td>Influence of the Ammonia Hardening on the Properties of Sol-Gel Thin Film Coatings</td>
<td>Session E2-1</td>
<td>C. Boschker, J. Avice, H. Piombini, X. Dieudonné, P. Belleville, K. Vallee, CEA, France</td>
</tr>
<tr>
<td>3:50 pm</td>
<td>C2-3-8</td>
<td>Miniaturized Shape Memory (SMA) Bimorph Actuators with Polymer Layers</td>
<td>Session E2-1</td>
<td>C. R. Knick, G. L. Smith, N. R. Jankowski, C. J. Morris, US Army Research Laboratory, USA</td>
</tr>
<tr>
<td>4:10 pm</td>
<td>C2-3-9</td>
<td>Investigating Degradation Behaviors Induced by Hot Carriers in the ESL in Amorphous InGaZnO TFTs with Different Electrode Materials and Structure</td>
<td>Session E2-1</td>
<td>C. I. Yang, National Chiao Tung University, Taiwan, T. C. Chang, National Sun Yat-Sen University, Taiwan</td>
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**Exhibition Hall Opens Today**

**Grand Hall**

**12:00-7:00 pm**

**Exhibition Reception**

**Grand Hall**

**5:30-7:00 pm**
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>F2-2-2</td>
<td>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.</td>
<td>H. RUES, RWTH Aachen University, Germany, M. TO BABEN, GTT-Technologies, Germany, L. SHANG, RWTH Aachen University, Germany, P. POLCIK, S. KOLOZSVARI, Plansee Composite Materials GmbH, Germany, M. HANS, RWTH Aachen University, Germany, D. PRIMETZOFER, Uppsala University, Sweden, J.M. SCHNEIDER, RWTH Aachen University, Germany.</td>
</tr>
<tr>
<td>1:50 pm</td>
<td>F2-2-3</td>
<td>Adherent and Hard DLC Coatings Deposited by HiPIMS in Deep Oscillations Magnetron Sputtering (DOMS) Mode.</td>
<td>F. FERREIRA, University of Coimbra, Portugal, A. AIJAZ, T. KUBART, Uppsala University, Angstrom Laboratory, Sweden, A. CAVALEIRO, J.C. OLIVEIRA, University of Coimbra, Portugal.</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>F2-2-4</td>
<td>Variation of Local Chemical Compositions of (Ti, Al)N Films on Inner Wall of Small Hole deposited by High Power Impulse Magnetron Sputtering.</td>
<td>H. KOMIYA, T. SHIMIZU, Tokyo Metropolitan University, Japan, Y. TERANISHI, K. MORIKAWA, M. YANG, Tokyo Metropolitan Industrial Technology Research Institute, Japan.</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>F2-2-6</td>
<td>Deposition of Ultra-thick Yttrium Film for Medical Isotope Targeting Application by using HiPIMS.</td>
<td>D.Y. WANG, M.H. SHIH, W.Y. HO, W.C. CHEN, MingDao University, Taiwan, J. WANG, J.H. HUNG, Aurora Scientific Corp, Canada.</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Session</td>
<td>Session F2-2 will be held immediately prior to F5.</td>
<td></td>
</tr>
<tr>
<td>4:10 pm</td>
<td>F5-9</td>
<td>Direct Laser Deposition of High Entropy Alloy Coatings on High Temperature Alloys.</td>
<td>H. DABUJANIC, Q. CHAO, Deakin University, Australia, T. JARVIS, X. WU, Monash University, Australia, P. HODGSON, Deakin University, Australia.</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>F5-10</td>
<td>In-situ Impedance Spectroscopy Evaluation of Electrolytic Plasma Polishing Process for Stainless Steels.</td>
<td>V. MUKAEVA, E. PARFENOV, R. NEVYANTSEVA, Ufa State Aviation Technical University, Russian Federation, A. MATTHEWS, A. YEROKHIN, University of Manchester, UK.</td>
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**Exhibition Hall Opens Today**
Grand Hall
12:00-7:00 pm

**Exhibition Reception**
Grand Hall
5:30-7:00 pm
**Wednesday Morning, April 26, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>B4-3-1</td>
<td>Invited: Aspects of Thermal Stability of TiAlN and ZrAlN, M. Oden, Linköping University</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>8:20 am</td>
<td>Invited</td>
<td>talk continued.</td>
<td></td>
</tr>
<tr>
<td>8:40 am</td>
<td>B4-3-2</td>
<td>Effects of Treatment Temperature and Gas Blow Velocity of IH Nitriding on Microstructure of Titanium Alloy, S. Takesue, Keio University, Japan, S. Kikuchi, Kobe University, Japan, H. Akebono, Hiroshima University, Japan, K. Fukazawa, Netsuren Co., Ltd., Japan, J. Komotori, Keio University, Japan</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>9:00 am</td>
<td>B4-3-3</td>
<td>Oblique Angle Deposition of Nanostructured ZrC Thin Film by Reactive Magnetron Sputtering and its Effect on Structure and Mechanical Property, S. Shanmugam, A. Sharma, M. Gowravaram, S. Suwas, Indian Institute of Science, India</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>9:20 am</td>
<td>B4-3-4</td>
<td>The Influence of AI Content on Characteristics of CVD-Aluminum Titanium Nitride Films, K. Satoh, T. Tatsukoa, K. Yanagisawa, T. Ishigaki, K. Yamaguchi, N. Ishida, Mitsubishi Materials Corporation, Japan</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>9:40 am</td>
<td>B4-3-5</td>
<td>Wear Resistance Capabilities of B-C-W Coatings, H. Klostermann, M. Friedemann, Fraunhofer FEP, Germany, M. Ottersbach, D. Schraknepper, Fraunhofer IPT, Germany, J. Poetschke, M. Mayer, Fraunhofer IKTS, Germany, F. Fietzek, O. Zywtizki, Fraunhofer FEP, Germany</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>10:00 am</td>
<td>B4-3-6</td>
<td>Micromechanical Properties and Wear Resistance of Quaternary TiAl(X)N Alloys (X=Nd, Cr or V), Y.H. Chen, L. Rogström, Nanostructured Materials, IFM, Linköping University, Sweden, J.J. Roa, Universitat Politècnica de Catalunya, Spain, M.P. Johansson-Jöesaar, SECO Tools, Sweden, M. Anglada, Universitat Politècnic de Catalunya, Spain, M. Oden, Nanostructured Materials, IFM, Linköping University, Sweden</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>10:20 am</td>
<td>B4-3-7</td>
<td>High Resolution Lateral Force-displacement Measurements as a Tool for the Determination of Lateral Contact Stiffness and Poisson’s Ratio, T. Chudoba, ASMEC GmbH, Germany</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>10:40 am</td>
<td>B4-3-8</td>
<td>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, V.J. Trava-Airoldi, Institute for Space Research, Brazil</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>11:00 am</td>
<td>B4-3-9</td>
<td>Reactive Magnetron Sputtering of Transition Metal Nitrides for Electronic and Opto-Electronic Applications, A. Reed, 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. Cetenar, B. Howe, Air Force Research Laboratory, USA</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>11:20 am</td>
<td>B4-3-10</td>
<td>Comparative Investigation of Zr-B-(N), Zr-Si-B-(N), and Zr-Al-Si-B-(N) Hard Coatings, P.V. Kyrulkhorskyy, M. Lenesheva, I. Yatsyuk, D.V. Shintskiy, E.A. Levashov, National University of Science and Technology “MISiS”, Russian Federation</td>
<td>California - Session B4-3</td>
</tr>
<tr>
<td>11:40 am</td>
<td>B4-3-11</td>
<td>Multiphysics Modelling and Experimental Investigation on the Characteristics of Laser Deposited Al-Si Coatings on Ti6Al4V Alloy, O.S. Fatoba, University of Johannesburg, South Africa, A. Popoola, Tshwane University of Technology, South Africa, E.T. Akinnibi, University of Johannesburg, South Africa</td>
<td>California - Session B4-3</td>
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**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces**

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<tbody>
<tr>
<td>8:00 am</td>
<td>E2-1</td>
<td>Study of Bauschinger Effect in Ni Thin Metallic Films Submitted to Cyclic Deformation, P.O. Renault, W. He, P. Godard, E. Le Bourhis, P. Goudeau, Université de Poitiers, France</td>
<td>San Diego - Session E2-2</td>
</tr>
<tr>
<td>8:40 am</td>
<td>E2-3</td>
<td>Rate Sensitive and Creep Behavior of Thin Metallic and Oxide Films: on Chip Testing and Activation Volume Analysis, T. Paro, G. Lemoine, H. Idrissi, Université Catholique de Louvain, Belgium, D. Schryvers, Université d’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</td>
<td>San Diego - Session E2-2</td>
</tr>
<tr>
<td>9:00 am</td>
<td>E2-4</td>
<td>Intrinsic Stresses - New Methods to Evaluate Them Using Enhancing Indentation Methods and New Models to Optimize Them, N. Bierwisch, N. Schrader, SIG, Germany</td>
<td>San Diego - Session E2-2</td>
</tr>
<tr>
<td>9:40 am</td>
<td>E2-6</td>
<td>Characterization of Thin Films by Nanoindentation: Avoiding Mistakes during the Measurement and Data Analysis, E. Broitman, Engineering Consulting, Sweden</td>
<td>San Diego - Session E2-2</td>
</tr>
<tr>
<td>10:00 am</td>
<td>E2-7</td>
<td>Plasma Electrolytic Oxidation Coatings on AZ31 Magnesium Alloys with SiN Nanoparticle Additives, Y.Y. Lin, J.W. Lee, C.M. Tseng, Ming Chi University of Technology, Taiwan, B.S. Lou, Chang Gung University, Taiwan</td>
<td>San Diego - Session E2-2</td>
</tr>
<tr>
<td>10:40 am</td>
<td>E2-9</td>
<td>Combined XPS and Adhesion Studies of Metal - Polymer Interfaces for Space Applications, B. Putz, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Montanuniversität Leoben, Austria, G. Milassin, Y. Butenko, C. Semprimosching, 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</td>
<td>San Diego - Session E2-2</td>
</tr>
</tbody>
</table>
Wednesday Morning, April 26, 2017

New Horizons in Coatings and Thin Films
Room: Royal Palm 1-3 - Session F4-1

Functional Oxide and Oxynitride Coatings
Moderators: Michael Stueber, Karlsruhe Institute of Technology (KIT), Germany, Anders Eriksson, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein

F4-1-1
Development of Microstructure, Phase Composition and Residual Stresses during Plasma Electrolytic Oxidation (PEO) of Aluminium Alloys, E. BOUSSIER, A. YEROKHIN, The Univ. of Manchester, UK, T. SCHMITT, École Polytechnique de Montréal, Canada, A. GHOULIA, J. DONOHUE, 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

F4-1-2

F4-1-3
On the Phase Evolution of Al-Cr-based Intermetallics and Oxides Formed by Cathodic Arc Evaporation, V. DALBAUER, C.M. KOLLER, R. RAAB, CDL-AOS TU Wien, Austria, S. KOLOSZVAR, Plansee Composite Mat. GmbH, Germany, J. RAMM, Oerlikon Surface Solutions AG, Liechtenstein, M. BARTOSIK, P.H. MAYRHOFER, TU Wien, Austria

F4-1-4
Synthesis of Local Epitaxial α-(Cr,Al2)O3 Thin Films (0.08 ≤ x ≤ 0.16) on α-Al2O3 Substrates by R.F. Magnetron Sputtering, Y.G. GAO, H. LEISTE, M. STÜBER, S. ULRICH, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-AWP), Germany

F4-1-5
Thermal Stability of Arc Evaporated Oxide, Nitride, Oxynitride, and Oxide/Nitride Coatings within the Systems Al2O3-N and Al2O3-Cr, R. RAAB, CDL-AOS TU Wien, Austria, C.M. KOLLER, TU Wien, Austria, S. KOLOSZVAR, Plansee Composite Materials GmbH, Germany, J. RAMM, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, P.H. MAYRHOFER, TU Wien, Austria

F4-1-6
Structural Evolution in Reactive RF Magnetron Sputtered Cr2O3 Thin Films, J. TOWALD, Linköping Univ., IFM, Thin Film Physics Div. and Sandvik, Sweden, P. WIERTZ, I. BROTHSCH, M. STÖBER, D. PRIMETZHOFER, TU Wien, Austria

F4-1-7
Ternary Oxide Coatings as High-temperature Solid Lubricants, S.M. AOUADI, J. GU, D.S. STONE, University of North Texas, USA, Y. GAO, A. MARTINI, University of California Merced, USA

F4-1-8
Invited talk continued.

F4-1-9
High-rate Reactive High-power Impulse Magnetron Sputtering of Hi-O-N Films with Tunable Composition and Properties, J. VLECK, A. BELOSLUDTSEV, S. HAVIAR, J. HOUŠKA, R. ČERSTVÝ, J. REZEK, University of West Bohemia, Czech Republic

F4-1-10

F4-1-11
Diffusion between Silica Thin Film Deposited by Reactive Magnetron Sputtering and Glass Substrate during Annealing at High Temperature, J.T. FONNÉ, E. GOUILLE, E. Burov, H. MONTAGAUD, S. GRACHEV, Joint unit CNRS/Saint-Gobain UMR 125 - Surface of Glass and Interfaces, France, D. VANDERMIBROUcq, UMR 7636 CNRS/ESPCI/Paris 6 UPMC/Paris 7 Diderot - Physics and Mechanics of Heterogeneous Media Laboratory, France

F4-1-12
Investigation of Sputtered Zirconium Oxide Thin Films Deposited at Different Oxygen Partial Pressure, N. PATEL, Sandar Patel College of Engineering, India, V. CHAUHAN, Chandnabai S. Patel Institute of Technology (CSPIT), Charotar University of Science and Technology (CHARUSAT), India, S. RAWAL, McMaster University, Canada

Advanced Characterization Techniques for Coatings and Thin Films
Room: Royal Palm 4-6 - Session H3-1

Characterization of Coatings in Harsh Environments
Moderators: David Armstrong, University of Oxford, UK, Jeff Wheeler, Laboratory for Nanometallurgy, ETH Zürich, Switzerland

H3-1-1
Invited Small-Scale Mechanical Testing on Ion Beam Surface-Modified Engineering Materials, P. HOSEMAN, University of California at Berkeley, USA

H3-1-2
High Temperature Nanoindentation up to 800°C: Experimental Optimization, N.X. RANDALL, M. CONTE, Anton Pair TecTec, Switzerland, J. SCHWEDRZIK, J. MICHLER, EMPA, Switzerland

H3-1-3
Size-dependent Nanoscale Plasticity in Oxidation-strengthened Zr/Nb Multilayers, M. CALLISTI, Univ. of Southampton, UK, M. MONCLUS, IMDEA Materials Inst. , Spain, J. LLORCA, Polytechnic Univ. of Madrid, Spain, J. MOLINA-ALDAREGÜIÁ, IMDEA Materials Institute, Madrid, Spain, T. POLCAR, University of Southampton, UK

H3-1-4
High Temperature Mechanical Properties Characterization of DLC Films, M. ROUHANI, National Chung Cheng University, Taiwan, F.C.N. HONG, National Cheng Kung University, Taiwan, Y.R. JENG, National Chung Cheng University, Taiwan

H3-1-5
Aluminide Coatings on Thin-Walled Sheets – Mechanical Properties and Thermo-physical behaviour, J.T. BAUER, DECEHEMA-Forschungsinstitut, Germany, H. ACKERMANN, De-Waerme-Institut, Germany, M.C. GALETZ, DECEHEMA-Forschungsinstitut, Germany

H3-1-6
Variable Temperature Micropillar Compression Transient Tests on Nanocrystalline Palladium-Gold: Probing Activation Parameters at the Lower Limit of Crystallinity, J. WEHRS, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

H3-1-7
Temperature-dependent Interfacial Layer Formation during Sputter-deposition of Zr Thin Films on Al2O3, K. TANAKA, K. 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. KODAIRA, Univ. of California, Los Angeles, USA

H3-1-8
Temperature-dependent Interfacial Layer Formation during Sputter-deposition of Zr Thin Films on Al2O3(0001), K. TANAKA, K. 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. KODAIRA, Univ. of California, Los Angeles, USA

Exhibition Hall Closes Today
Grand Hall
Open 10:00 am-2:00 pm
Enjoy Light Luncheon Refreshments in the Exhibition Hall 12:15 pm
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>Invited</td>
<td>Coatings Selection Criteria for WC/Co Cutting Tools.</td>
<td>P. SALVADOR, Carnegie Mellon University, USA</td>
<td>room: Golden West - Session B3-1</td>
</tr>
<tr>
<td>1:50 pm</td>
<td>Invited</td>
<td>Invited talk continued.</td>
<td></td>
<td>room: Golden West - Session B3-1</td>
</tr>
<tr>
<td>2:10 pm</td>
<td>B3-1-3</td>
<td>New Pathways for Improving Adhesion of DLC on Steel in Low Temperatures.</td>
<td>L. LEIDENS, UCS and CAPES, Brazil, A. CRESPI, UCS, Brazil, F. ALVAREZ, IFGW-UNICAMP, Brazil, C. FIGUEROA, UCS, Brazil</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>B3-1-4</td>
<td>Stress Evolution of Diamond-like Carbon Films via Controlled Metal Doping.</td>
<td>A.Y. WANG, X. U, L. SUN, P. GUO, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>2:50 pm</td>
<td>B3-1-5</td>
<td>Influence of Alloying Metals on Tribological Properties of Diamond-like Carbon Films Synthesized by Metal Plasma Activated Deposition Process.</td>
<td>O. HUNOLD, P. KEUTER, P. BIED, D. MUSIC, F. WITTMERS, A.L. RAVENSBURG, RWTH Aachen University, Germany, D. PRIMETZHOFER, Uppsala University, Sweden, J.M. SCHNEIDER, RWTH Aachen University, Germany</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>3:10 pm</td>
<td>B3-1-6</td>
<td>Thick Diamond Like Carbon Coatings Deposited by Deep Oscillation Magnetron Sputtering for Automotive Applications.</td>
<td>J.L. LIN, P. LEE, R. WEI, K. COULTER, Southwest Research Institute, USA</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>B3-1-7</td>
<td>Deposition of ta-C by Filtered and Unfiltered Laser-arc Technique – Actual Status.</td>
<td>V. WEHNACHT, G. ENGLBERGER, A. LESON, Fraunhofer IWS, Germany</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>3:50 pm</td>
<td>Invited</td>
<td>Invited talk continued.</td>
<td></td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>4:10 pm</td>
<td>B3-1-9</td>
<td>Wear Behavior of CoCrMo Alloy Coated with Highly Adhesive N-Doped DLC by ICP-CVD.</td>
<td>J. CORONA GOMEZ, Q. YANG, University of Saskatchewan, Canada</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>4:30 pm</td>
<td>B3-1-10</td>
<td>Carbon-Based Coatings on Nanofabric by Using HIPIMS for Possible EAOPs Applications.</td>
<td>P.W. WANG, C.M. TSEN, C.W. LIU, J.L. HE, Feng Chia University, Taiwan</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>5:10 pm</td>
<td>B3-1-12</td>
<td>Tribolological Behavior of MoBCN-MoSx Coating under Elevated Temperature.</td>
<td>X.D. ZHU, Q.Y. LI, L.S. QIU, K.W. XU, Xian Jiaotong University, China</td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Exhibition Hall Closes Today</td>
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<td></td>
<td>room: California - Session B4-4</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Grand Hall</td>
<td>Open 10:00 am-2:00 pm</td>
<td></td>
<td>room: California - Session B4-4</td>
</tr>
</tbody>
</table>
| 5:45 pm | Awards Convocation | Awards Convocation 5:45 pm Town & Country Room  
Honorary Lecturer: John A. Woollam  
"History and Basics of Ellipsometry with Examples"  
Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion |                                                                        | room: California - Session B4-4 |
Wednesday Afternoon, April 26, 2017

1:30 pm

Invited talk continued.

1:50 pm

E3-2

Bending Fatigue Property Enhancements of Metallic Substrates by Thin Film Metallic Glass Coatings. C.H. CHANG, J.P. CHU, National Taiwan University of Science and Technology, Taiwan

F4-2-2

After-arc Plasma Technique to Modify Chemical States of Surface and Grain Boundaries of 50-mm-thick Conductive ZNO Films to Achieve a Fast-response Hydrogen Sensor. T. YAMAMOTO, J. NOMOTO, H. MAKINDO, Koki University of Technology, Japan, H. KITAMI, T. SAKEMI, Y. AOKI, Sumitomo Heavy Industries, Ltd., Japan, K. KOBAYASHI, Koki University of Technology, Japan, S. KISHIMOTO, Koki National College of Technology, Japan

2:10 pm

E3-3

Optimization of the Tribological Contact between Piston Ring and Cylinder Wall with Oxide Coatings. C. BOHNEIDO, P. ERNSTM, P. LUETHY, Oerlikon Metco AG, Switzerland, J. RAMM, H. RUDIGIER, F. SEIBERT, B. WIDRIG, Oerlikon Surface Solutions AG, Liechtenstein

F4-3

Microstructure and Corrosion Resistance of PVD Hf-coated Mg Alloy after Thermal Oxidation Treatment. D. ZHANG, Z. QI, B. WEI, Z. WANG, Xiamen University, China

2:30 pm

E3-4


F4-4

HiPIMS Deposition of Ta-O-N Coatings with Modified Surface by Cu Nanoclusters for Water Splitting Application. J. CAPEK, S. BATKOVÁ, S. HAVIAR, J. HOUSKA, University of West Bohemia, Czech Republic

2:50 pm

E3-5

Invited talk continued.

F4-4-5

Invited

New Oxides and Oxynitrrides for Thermoelectrics and Hard, Transparent Coatings. P. EKLUND, Linköping University, IFM, Sweden

3:10 pm

Invited talk continued.

3:30 pm

E3-7

Effect of Test Atmosphere on the Tribological Behaviour of the Fluorinated Tetrahedral Amorphous Carbon (ta-C:F) Coatings against Steel. M.Z.U. KHAN, S. BHOWMICK, A.T. ALPAS, University of Windsor, Canada

F4-7

Reactive Magnetron Sputter Deposition of NbO, Thin Films. R. LORENZ, Montanuniversität Leoben, Austria, M. O’SULLIVAN, D. SPRENGER, B. LANG, Plantee SE, Austria, C. MITTERER, Montanuniversität Leoben, Austria

3:50 pm

E3-8

Laser-based Process for Polymeric Tribological Coatings on Lightweight Components. H. SAENKEDE, J. STOLLERENWERK, Fraunhofer Institute for Laser Technology, Germany, P. LOOSEN, Chair for Technology of Optical Systems TOS, Germany

F4-8

Electrical Properties of BiNbO Thin Films Deposited by Dual Co-sputtering. O. DEPABLOS-RIVERA, 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

E3-9

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. A. IWANIUK, R. SWADOBA, Silesian University of Technology, Poland, G. WIECLAW, CerTech Sp. z o.o., Poland, L. NORYMBERZIK, ANGA Uszczelnienia Mechaniczne Sp. z o.o., Poland

F4-9

Structure and Properties of Magnetron-sputtered Manganese Ferrite Films. F. PIETZKE, O. ZYWITZKI, Fraunhofer FEP, Fraunhofer Institute for Organic Electronics, Germany

4:30 pm

E3-10

Role of Oxygen in High Temperature Sliding Behaviour of W Containing Diamond-like Carbon (W-DLC). S. BHOWMICK, M. LOU, A.T. ALPAS, University of Windsor, Canada

F4-10

On the Importance of Optimized Energy of the Bombarding Negative Ions in Magnetron Sputtered High Quality AZO Films. F. MENG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China

4:50 pm

E3-11

Wear Mechanisms and Tribological Characterisation of Novel Nanocomposite Coated Cutting Tool Material for High Temperature Applications. P. JADHAV, S.K.R. NARALA, BITS Pilani Hyderabad campus, India

F4-11

A Combined Optical and Electronic Structure Analysis of ZnO:Al Films: Bandgap Renormalization and the Burstein – Moss Effects. N. TRINDADE, Sao Paulo Federal Institute, Brazil, N. MARANA, M. JUNIOR, J. SAMBRANO, A. TABATA, J.H. SILVA, J.R. BOROTOLETO, Sao Paulo State University, Brazil

Exhibition Hall Closes Today

Grand Hall
Open 10:00 am-2:00 pm
**Surface Engineering - Applied Research and Industrial Applications**

**Room: Sunrise - Session G2**

**Components Coatings**

Moderators: Kenji Yamamoto, Kobe Steel Ltd., Japan, Osama L. Eryilmaz, Argonne National Laboratory, USA, Jolanta Klemberg-Sapieha, Polytechnique Montreal, Canada

1:30 pm  

1:50 pm  
Invited talk continued.

2:10 pm  
G2-3 Invited Coatings for the Aerospace Industry, J.R. LINCE, The Aerospace Corporation, USA

2:30 pm  
Invited talk continued.

2:50 pm  
G2-5 Tribactive CrAlN+X Hybrid dcMS/HPPMS PVD Nitride Hard Coatings for Friction and Wear Reduction on Components. K. BOBZIN, T. BRÖGELMANN, C. KALSCHEUER, Surface Engineering Institute - RWTH Aachen University, Germany

3:00 pm  
Session G2 will be held immediately prior to G6

3:10 pm  
Session G6 will begin immediately after G2

3:30 pm  
G6-7 Invited Research Behind a High Performance Metal Cutting Tool. J. SJÖLÉN, SECO Tools, Sweden

3:50 pm  
Invited talk continued.

4:10 pm  
G6-9 Residual Stress Measurement Technique for Static and Dynamic Coating Processes using Micro-machined Stress Sensors for Scientific and Industrial Applications. L. BANKO, D. GROCHLA, A. LUDWIG, Ruhr-Universität Bochum, Germany

4:30 pm  

4:50 pm  

5:10 pm  
G6-12 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. C.M. LIN, W.Y. KAI, National Taipei University of Technology, Taiwan

**Exhibition Hall Closes Today**

**Grand Hall**

Open 10:00 am-2:00 pm

**Awards Convocation 5:45 pm**

**Town & Country Room**

Honorary Lecturer: John A. Woollam  
“History and Basics of Ellipsometry with Examples”

Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion
# Wednesday Afternoon, April 26, 2017

**Advanced Characterization Techniques for Coatings and Thin Films**  
Room: Royal Palm 4-6 - Session H3-2  
Characterization of Coatings in Harsh Environments  
Moderators: David Armstrong, University of Oxford, UK; Jeff Wheeler, Laboratory for Nanometallurgy, ETH Zürich, Switzerland

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<th>Time</th>
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</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>H3-3</td>
<td>Recent Advances in Nanomechanical Testing of Thin Films: Variable Temperature, Ultra-high Strain Rates, in-situ EBSD Experiments</td>
<td>J. BEST, J. WEHRS, J. SCHWESRZIK, G. MOHANTY, J. AST, X. NAEBER, K. THOMAS, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; J.M. WHEELER, Laboratory for Nanometallurgy, Department of Materials Science, ETH Zürich, Switzerland</td>
</tr>
<tr>
<td>1:50 pm</td>
<td>H3-2-3 Invited</td>
<td>The Oxidation Resistance of ZrO$_2$-Coated and Vacuum Annealed ZrN-Coated Zircaloy-4</td>
<td>I.S. TING, J.H. HUANG, G.P. YU, National Tsing Hua University, Taiwan</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>H3-2-5</td>
<td>Combined Size and Texture-dependent Deformation and Strengthening Mechanisms in Zr/Nb Nano-multilayers in Harsh Environments</td>
<td>T. POLCAR, M. CALLISTI, University of Southampton, UK</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>H3-2-6</td>
<td>Effect of Using Dissimilar Substrate Materials on Interfacial Properties of HVOF Deposited Inconel 718 Alloy</td>
<td>S. ABUALIGALEDARI, M. SALIMI, F. AZARMI, Y. HUANG, North Dakota State University, USA</td>
</tr>
<tr>
<td>2:30 pm</td>
<td>Invited talk continued.</td>
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<tr>
<td>2:50 pm</td>
<td>H3-2-7</td>
<td>Sublimation and Self Freezing of Planar Surfaces in Rarefied Atmospheres</td>
<td>R. BASU, Adarsha Institute of Technology, India</td>
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<tr>
<td>3:00 pm</td>
<td>H3-2-8</td>
<td>Invited talk continued.</td>
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<tr>
<td>3:10 pm</td>
<td>H3-2-9</td>
<td>The Sublimation and Self Freezing of Planar Surfaces in Rarefied Atmospheres</td>
<td>R. BASU, Adarsha Institute of Technology, India</td>
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<tr>
<td>3:20 pm</td>
<td>H3-2-10</td>
<td>Invited talk continued.</td>
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<tr>
<td>3:30 pm</td>
<td>H3-2-11</td>
<td>The Sublimation and Self Freezing of Planar Surfaces in Rarefied Atmospheres</td>
<td>R. BASU, Adarsha Institute of Technology, India</td>
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<tr>
<td>3:40 pm</td>
<td>H3-2-12</td>
<td>Invited talk continued.</td>
<td></td>
</tr>
<tr>
<td>3:50 pm</td>
<td>H3-2-13</td>
<td>The Sublimation and Self Freezing of Planar Surfaces in Rarefied Atmospheres</td>
<td>R. BASU, Adarsha Institute of Technology, India</td>
</tr>
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</table>

### Awards Convocation

**Awards Convocation 5:45 pm**  
Town & Country Room  
Honorary Lecturer: John A. Woollam  
“History and Basics of Ellipsometry with Examples”  
Awards Reception will follow the Convocation at 7:30 pm Poolside near Tiki Pavilion

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

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Exhibition Hall Closes Today

Grand Hall

Open 10:00 am-2:00 pm
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<tr>
<th>Time</th>
<th>Session/Topic</th>
<th>Speaker/Contributors</th>
<th>Location/Room</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>B3-2-1 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, Crik Co., Ltd., Japan</td>
<td>Nanosurface Science and Engineering, Shenzhen University, China, W.Q. ZHANG, Xi’an Jiaotong University, China, D.F. DIAO, Shenzhen University, China</td>
<td>Golden West - Session B3-2</td>
</tr>
<tr>
<td>8:20 am</td>
<td>B3-2-2 Tribological Behavior of DLC Coatings on AISI 4340 Steel Deposited in PECVD DC-Pulsed Technique with Additional Cathode for Automotive Applications, M.A. RAMIREZ, D.C. LUGO, National Institute for Spacial Research INPE, Brazil, N.K. FUKUMASU, T.F. MACHADO, Surface Phenomena Laboratory - Polytechnic School - University of Sao Paulo - Brazil, E.M. MITMA, P. Y. TRAVA, A. ARLODI, National Institute for Spacial Research INPE, Brazil</td>
<td>Low Friction of Graphene Nanocrystalline Embedded Carbon Nitride Substrates, Harbin Institute of Technology, China</td>
<td>Golden West - Session B3-2</td>
</tr>
<tr>
<td>9:00 am</td>
<td>B3-2-4 Effects of Carbon Content and Argon Flow Rate on the Triboperformance of Self-lubricating WS2/a-C Sputtered Coating, H.T. CAO, J. TH.M DE HOSSON, Y.T. PEI, University of Groningen, Netherlands</td>
<td>Tribological Performance of Self lubricating WS2/a-C Sputtered Coating, Invited talk continued.</td>
<td>Golden West - Session B3-2</td>
</tr>
<tr>
<td>9:20 am</td>
<td>B3-2-5 Invited talk continued.</td>
<td>Invited talk continued.</td>
<td>Golden West - Session B3-2</td>
</tr>
<tr>
<td>10:00 am</td>
<td>B3-2-7 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</td>
<td>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 Cheng Kung University, Taiwan</td>
<td>Golden West - Session B3-2</td>
</tr>
<tr>
<td>10:40 am</td>
<td>B3-2-9 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</td>
<td>Bombardment of Tungsten Oxide Thin Layers by Low Energy of He and D Ions, H. HUJAZI, Y. ADDAB, Aix-Marseille Université, France, A. MAAN, J. DURAN, D. DONOVAN, University of Tennessee-Knoxville, USA, C. PARDANAUD, M. CABIE, Aix-Marseille Université, France, F.W. MEYER, M.E. BANNISTER, Oak Ridge National Laboratory, USA, R. PASCAL, C. MARTIN, Aix-Marseille Université, France</td>
<td>Golden West - Session B3-2</td>
</tr>
</tbody>
</table>

**Thursday Morning, April 27, 2017**

**2018 ICMCTF Informational Meeting**

**12:15-1:15 pm**
**California Room**

Elsevier Authors FTS: Focused Topic Session

“How to Get Your Paper Published & How to Review a Paper”
**12:15-1:15 pm**
**Golden West Room**
Thursday Morning, April 27, 2017

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces
Room: San Diego - Session E1-1
Friction, Wear, Lubrication Effects, and Modeling
Moderators: Albano Cavaleiro, University of Coimbra, Portugal,
Carsten Gachot, Vienna University of Technology, Austria, Giovanni Ramirez, Argonne National Laboratory, USA

8:00 am E1-1-1 Stress and Friction Modelling for Improved Nano-scratch Testing of Hard Coatings. B.D. BEAKE, Micro Materials Ltd, UK, V.M. VISHNYAKOV, University of Huddersfield, UK, T. LISKIEWICZ, University of Leeds, UK

8:20 am E1-1-2 Wear Resistance and Solid Lubricity of Nanolayered Molybdenum Containing Nitride Coatings Deposited using Cathodic Arc Technique. q. YANG, National Research Council of Canada

8:40 am E1-1-3 Invited Exploring Tribological Interactions – from Molecules to Engineering Applications. D. DINI, Imperial College London, UK

9:00 am Invited talk continued.

9:20 am E1-1-5 Mechanical Stability under Sliding Contact of Thin Multilayer with Weak Adhesion. A. QUARRÉ DE BOYR, Joint unit CNRS/Saint-Gobain UMR 125 - Surface of Glass and Interfaces, France, D. DALMAS, École Centrale de Lyon – Laboratoire de Tribologie et Dynamique des Systèmes, France, J.-Y. FADOU, J. TEISSIEIRE, Saint-Gobain Recherche, France

9:40 am E1-1-6 Tribomechanical Behavior with the Incorporation of Silice in a Matrix of V$_2$O$_5$. M. MIRABAL, O. BARAN, Erzurum Technical University, Turkey

10:00 am E1-1-7 Tribochemical Investigation of Hydrogenated DLC Films of Different Roughness by Means of Vacuumtribology Accompanied by Mass Spectrometry. M. KACHEL, Fraunhofer Institute for Mechanics of Materials IWM, Germany

10:20 am E1-1-8 Plasma-Assisted Lubrication for the Sliding between Polymer and Diamond-Like Carbon. S. OKUMURA, Nagoya University, Japan, T. HIBINO, H. KOUSAKA, Gifu University, Japan, N. UMEDA, Nagoya University, Japan

10:40 am E1-1-9 Integrated Multiscale Material Modelling of Topographical Effects on Wear and Friction in Sliding DLC Contacts. K. HOLMBERG, A. LAUKKANEN, VTT Technical Research Centre, Finland, T.J. HAKALA, VTT Technical Research Centre of Finland Ltd, Finland, R. HONKINEN, VTT Technical Centre of Lyon – Laboratoire d’Ingénierie des Matériaux et des Surfaces, France, G. STACHOWIAK, P. PODSIADLO, M. WOLSKI, Curtin University, Australia, M. GEE, NPL National Physical Laboratory, UK, C. GACHOT, Saarland University, Germany, L. LI, Hong Kong City University, Hong Kong

11:00 am E1-1-10 A Comparative Study of Fatigue Properties of TiVN and TiNbN Thin Films Deposited On Different Substrates. H. CICEK, Erzurum Technical University, Turkey, O. BARAN, Erzincan University, Turkey, A. KELES, Y. TOTIK, I. EFEQOGLU, Ataturk University, Turkey

11:20 am E1-1-11 The Mechanical and Tribological Properties of Nanocomposite CrMoSixN Coatings. Y.C. LU, National Tsing Hua University, Taiwan

11:40 am E1-1-12 Comparative Studies on Tribological Behaviors of a Magnetron Sputtered CrS$_3$N Coating Under the Environments of Air and Water. F. GE, J. CONGCONG, S. TAO, L. PENG, F. FENG, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China

12:00 pm E1-1-13 The Mechanical and Tribological Properties of Ti [Nb, V] N Films on the 2024 Al-alloy. O. BARAN, Erzincan University, Turkey, A. KELES, Ataturk University, Turkey, H. CICEK, Erzurum Technical University, Turkey, Y. TOTIK, I. EFEQOGLU, Ataturk University, Turkey

Session G5 will be held immediately prior to Session G4 (see following page 27)

Surface Engineering - Applied Research and Industrial Applications
Room: Sunrise - Session G4
Pre-/Post-Treatment and Duplex Technology
Moderators: Hiroshi Tamagaki, Kobeico, Co. Ltd., Japan, Wan-Yu Wu, Da-Yeh University, Taiwan, Chris Stoessel, Eastman Chemical Company, Inc., USA

8:00 am G4-3 Nitriding and DLC Coating of Aluminum Alloy Using High Current Pressure-Gradient-Type Plasma Source. R. NISHIMOTO, Kansai University, Japan, E. FURUYA, K. KOUSAKA, Chugai Ro Co., Ltd., Japan

8:20 am G4-4 Towards Hard yet Tough Ceramic Coatings. S. ZHANG, Nanyang Technical University, Singapore

8:40 am G4-5 Invited Flash Lamp Annealing (FLA) for Post-deposition Treatment at High Throughput. T.R. GEBEL, University of Applied Sciences Mittweida, Germany, M. NEUBERT, ROVAK GmbH, Germany, W. SKORUPA, Helmholtz Zentrum Dresden-Rossendorf, Germany

9:00 am Invited talk continued.

9:20 am G4-6 Evaluating the Effect of Titanium-Based PVD Metallic Thin Films on Nitrogen Diffusion Efficiency in Duplex Plasma Diffusion/Coating Systems. G. YUMUSAK, A. LEYLAND, University of Sheffield, UK, A. MATTHEWS, University of Manchester, UK

9:40 am G4-7 Properties of Surface Passivation at Si/Al$_2$O$_3$ Interface Annealed in Different Gas Ambient. C.H. YANG, National Chung-Hsing University, Taiwan, C.W. HUANG, C.H. HSU, Da-Yeh University, Taiwan, C.Y. KUNG, National Chung-Hsing University, Taiwan, S.Y. LIEN, Da-Yeh University, Taiwan, W.Z. ZHU, X.G. MENG, X.Y. ZHANG, Xiamen University of Technology, China

10:00 am G4-8 High Performance Solar Selective Coatings based on TiNxOy. C.Y. LEE, J.M. TING, National Cheng Kung University, Taiwan

10:20 am G4-9 Diagnostics of Surface Roughness during Electrolytic Plasma Polishing Pre-treatment for Stainless Steels. V. MUKAEVA, E. PARFENOV, R.G. FARRAKHOV, M.S. GROMOVA, Ufa State Aviation Technical University, Russia

10:40 am G4-10 Invited talk continued.

11:00 am G4-11 Invited talk continued.

2018 ICMCTF Informational Meeting
12:15-1:15 pm California Room

Elsevier Authors FTS: Focused Topic Session
“How to Get Your Paper Published & How to Review a Paper”
12:15-1:15 pm Golden West Room
### Thursday Morning, April 27, 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Details</th>
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</table>
| 8:00 am | **G5-1 Invited**  
Radiofrequency Cold Plasma Jets Generated at Atmospheric Pressure: from Principles to Applications.  
|       | **H2-1 Invited**  
Controlling Disorder in Vapor-deposited Metallic Thin Films and its Influence on Mechanical Behavior.  
D.J. MAGNAGNOSCI, University of Pennsylvania, USA, G. BALBUS, University of California Santa Barbara, USA, G. FENG, Villanova University, USA, D.S. GIANOLA, University of California Santa Barbara, USA |
| 8:20 am | Invited talk continued.                                                          |
| 8:40 am | **Session G4 will begin immediately after G5 (see previous page 26)** |
| 9:00 am | **H2-1-3**  
Influence of Microstructure on the Cyclic Electro-mechanical Behavior of Ductile Films on Polymer Substrates.  
M.J. CORDELL, O. GLUSHKO, Erich Schmidt Institute of Materials Science, Austrian Academy of Sciences; Monanuniversität Leoben, Austria, D.M. TÖBBENS, Helmholtz-Zentrum Berlin für Materialien und Energie, Germany, C. KIRCHLECHNER, Max-Planck-Institut für Eisenforschung GmbH, Germany |
| 9:20 am | **H2-1-5**  
A Novel Method for the Preparation of Tensile Thin Film Specimens for In-situ Mechanical Testing in the TEM.  
B. MERLE, J.P. LIEBIG, M. GÖKEN, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany |
| 9:40 am | **H2-1-6**  
Liquid Metal Embrittlement at the Micro-scale: Gallium FIB vs. Xenon FIB.  
Y. XIAO, Laboratory for Nanometallurgy, ETH Zurich, Switzerland, J.M. WHEELER, Laboratory for Nanometallurgy, ETH Zürich, Switzerland |
| 10:00 am | **H2-1-7**  
Quantum Contact Mechanics for Tribology, Wear and Erosion.  
N. SCHWARZER, SIO, Germany |
| 10:20 am | **H2-1-8**  
Textile Nanocharacterization: Topography, Phase Imaging, and Nanomechanical Property Investigation of Polyester Yarn Interaction with Silicon Matrix.  
B. KIM, G. PASCUAL, K. LEE, Park Systems Corporation, USA |
| 10:40 am | **H2-1-9**  
A Nanoindentation System with Equivalent Capabilities in Both Normal to and Parallel to the Sample Surface.  
W.C. OLIVER, Nanomechanics, Inc., USA, P.S. PHANI, International Advanced Research Centre for Powder Metallurgy & New Materials, India, K. JOHANNES, Nanomechanics, Inc., USA, J.B. PETHICA, CRANN, Trinity College Dublin, Ireland, K. PARKS, Nanomechanics, Inc., USA |
| 11:00 am | **H2-1-10**  
The Effects of TIP Sharpness and Substrate Properties on Nanohardness Measurement in Thin Hard Coatings by FEM.  
F. LOFAJ, D. NEMETH, Institute of Materials Research of SAS, Slovakia |
| 11:20 am | **H2-1-11**  
Small Punch Testing for Mechanical Characterisation of a Free-standing CoNiCrAlY Coating.  
H. CHEN, University of Nottingham, China |
| 11:40 am | **H2-1-12**  
Brittle Film-induced Cracking of Ductile Substrates.  
X.L. PANG, T. GUO, L.J. QIAO, University of Science and Technology Beijing, China |

### 2018 ICMCTF Informational Meeting

**12:15-1:15 pm**  
California Room  
**Elsevier Authors FTS: Focused Topic Session**  
“How to Get Your Paper Published & How to Review a Paper”  
12:15-1:15 pm  
Golden West Room
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>TS2-1</td>
<td>Topical Symposia</td>
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<td>8:20 am</td>
<td>TS2-1</td>
<td>Thermal, Cold, and Kinetic Sprayed Surface Coatings</td>
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<td>8:40 am</td>
<td>TS2-1</td>
<td>Moderators: Pylin Sarobol, Sandia National Laboratories, USA,</td>
<td>Moderators: Pylin Sarobol, Sandia National Laboratories, USA, USA</td>
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<td>Charles Kay, ASB Industries, Inc., USA</td>
<td>Charles Kay, ASB Industries, Inc., USA</td>
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<tr>
<td>9:00 am</td>
<td>TS2-1-4</td>
<td>Thermally Sprayed Alumina and Ceria-doped-Alumina Coatings on AZ91 Mg</td>
<td>S. KUMAR, ITMMEC, Indian Institute of Technology Delhi, India, D.</td>
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<td>Alloy</td>
<td>KUMAR, J. JAIN, Indian Institute of Technology Delhi, India</td>
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<td>9:20 am</td>
<td>TS2-1-5</td>
<td>Langmuir–Blodgett Colloidal Assembly: Challenges and Solutions</td>
<td>H.L. NIE, Donghua University, China, J. HUANG, Northwestern University, USA</td>
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<td>9:40 am</td>
<td>TS2-1-6</td>
<td>Mechanical Properties of Thermal Spray Coatings on Carbon-fiber-</td>
<td>R. KAINDL, Joanneum Research, Austria, M. KRÄUTER, Graz</td>
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<td>reinforced Plastic</td>
<td>University of Technology, Austria, P. ANGERER, Materials Center Leoben</td>
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<td>Forschung GmbH (MCL), Austria, W. STÖGER, SECAR Technology GmbH, Austria,</td>
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<td>M. TRÄXLER, BVT Beschichtungs- und Verschleißtechnik GmbH, Austria,</td>
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<td>J.M. LACKNER, W. WALDHÄUSER,</td>
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<td>Joanneum Research, Austria</td>
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<td>10:00 am</td>
<td>TS2-1-7</td>
<td>Invited developments in the understanding of the fundamental growth</td>
<td>S.D. JOHNSON, Naval Research Laboratory, USA, D.-S. PARK, Korean Institute</td>
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<td></td>
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<td>Mechanisms of Aerosol Deposition</td>
<td>of Material Science, Korea, Y.-S. PARK, Pukong National University, Korea,</td>
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<td>D. SCHWER, E.P. GORZKOWSKI, Naval Research Laboratory, USA</td>
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<tr>
<td>10:20 am</td>
<td>TS2-1-9</td>
<td>Aerosol Deposition as a Method of Room Temperature Thick-Film</td>
<td>J. ADAMCZYK, P. SAROBOL, A. VACKEL, T. HOLMES, Sandia National Laboratories,</td>
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<td></td>
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<td>Deposition</td>
<td>USA, P. FUJERER, New Mexico Institute of Mining and Technology, USA</td>
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<tr>
<td>11:00 am</td>
<td>TS2-1-10</td>
<td>Residual Stress Measurement of Aerosol Deposited Films</td>
<td>A. VACKEL, J. ADAMCZYK, T. HOLMES, P. SAROBOL, Sandia National Laboratories,</td>
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<td>USA</td>
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<td>11:20 am</td>
<td>TS2-1-11</td>
<td>Microstructure and Properties of Room Temperature, Aerosol Deposited</td>
<td>E. PATTERSON, ASEE, USA, S.D. JOHNSON, E.P. GORZKOWSKI, Naval Research</td>
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<td></td>
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<td>Thick BaTiO₃ Dielectric Films</td>
<td>Laboratory, USA</td>
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<tr>
<td>11:40 am</td>
<td>TS2-1-12</td>
<td>Dielectrics Produced via Aerosol Deposition</td>
<td>Elsevier Authors FTS: Focused Topic Session</td>
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**2018 ICMCTF Informational Meeting**

12:15-1:15 pm
California Room
Thursday Afternoon, April 27, 2017

Room: Golden West - Session B6

Coating Design and Architectures
Moderators: Nina Schalk, Montanuniversität Leoben, Austria, Shou-Yi Chang, National Tsing Hua University, Taiwan

1:30 pm B6-1 Radial Symmetry of the Compound Layer Growth in Plasma Nitriding of Pure Iron, F. CASTILLO, J. OSEGUERA, E. HERNÁNDEZ, J. OTERO, D.V. MELO-MAYORO, A. JIMENEZ, Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico

1:50 pm B6-2 Self-assembled Nano-lamellar Ti$_{1-x}$Al$_x$N LP-CVD Coatings: Development and Analysis, J. ZALESAK, J. TODT, Montanuniversität Leoben, Austria, I. MATKO, Institute of Physics, Slovak Academy of Sciences, Slovakia, M. PETRENEC, Tescan Brno s.r.o, Brno, Czech Republic, B. SARTORY, Materials Center Leoben Forschung GmbH (MCL), Austria, R. PITHONAK, Bühlerit GmbH & Co KG, Austria, R. DANIEL, J. KECKES, Montanuniversität Leoben, Austria

2:10 pm B6-3 Invited Fundamental Properties of TM Nitrides: Materials Design Strategies for Extreme Properties, J.E. GREENE, University of Illinois at Urbana-Champaign, USA

2:30 pm Invited talk continued.

3:00 pm B6-5 Stabilisation of Cubic MoN and TaN Systems: the Role Point Defects, D. HOLEC, Montanuniversität Leoben, Austria, N. KOUTNÁ, F.F. KLMASHIN, P.H. MAYRHOFER, TU Wien, Austria

3:30 pm B6-6 Vacancy Induced Mechanical Stabilization of Cubic Tungsten Nitride, K. BALASUBRAMANIAN, Rensselaer Polytechnic Institute, USA

3:50 pm B6-7 Nitrides and the Impact of Entropy on their Phase Stability, P.H. MAYRHOFER, TU Wien, Austria, D. HOLEC, Montanuniversität Leoben, Austria, F.F. KLMASHIN, N. KOUTNÁ, TU Wien, Austria

4:10 pm B6-8 Molecular Dynamics Simulations of TiN/TiN(001) Growth, D. EDSTRÖM, D.G. SANGIOVANNI, L. HULTMAN, Linköping University, IFM, Sweden, I. PETROV, J.E. GREENE, University of Illinois at Urbana-Champaign, USA, V. CHIRITA, Linköping University, IFM, Sweden

4:30 pm B6-9 Development of Reliable Interaction Potential for and Results of Molecular Dynamics Simulations of ZrO$_2$ Film Growth, J. KOUŠKA, University of West Bohemia, Czech Republic

4:50 pm B6-10 Experimental Validation of Metal-on-insulator Thin Film Growth Theory, B. LÜ, L. SOQUI, V. ELOFSSON, K. SARAKINOS, Linköping University, Sweden

5:10 pm B6-11 Surface Roughening Mechanism on the Epitaxial Growth of Si$_3$N$_4$-Ge$_{1-x}$ Coating on Si Nanowire Substrate, Y.Y. GAO, D.F. DAO, Shenzhen University, China

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 C3-2-1 P-Type Cu$_2$O Modified by NiO$_2$ as a Photocathode for Efficient Hydrogen Production in Photoelectrochemical Water Splitting, C. LIN, J.M. TING, National Cheng Kung University, Taiwan

1:50 pm C3-2-2 High Temperature Resistant Molybdenum Thin Film Metal Mesh Electrode as Replacement for ITO, N.B. BÖNNINGHOFF, National Taiwan University of Science and Technology, Taiwan

2:10 pm C3-2-3 Invited Piezoelectric and Pyroelectric Materials and Systems for Energy Harvesting, C. BOWEN, M. XIE, Y. ZHANG, D. ZABEK, J. ROSCOW, University of Bath, UK

2:30 pm Invited talk continued.

3:00 pm C3-2-5 Ion-aided Growth of Compound Thin Films for Energy-related Applications, T. KUBART, A. AJAZ, Uppsala University, Sweden

3:30 pm C3-2-6 Growth and Characterization of Thin Film CaMnO$_x$ and CaMn$_x$Ta$_{1-x}$O$_3$ Thermoelectrics, E. EKSTRÖM, B. PAUL, F. ERIKSSON, P. EKLUND, Linköping University, IFM, Sweden

3:50 pm C3-2-7 3D-Painted Solid Oxide Fuel Cells: A New Approach to Functional Multi-Ceramic Construct Fabrication, N.R. GEISENDORFER, A.E. JAKUS, H. WANG, Z. GAO, S.A. BARNETT, R.N. SHAH, Northwestern University, USA

4:10 pm C3-2-8 Nanoengineering Periodically Structured SiCu Thin Film Anodes for Rechargeable LIBs, B.D. POLAT KARAHAN, B. BILICI, Istanbul Technical University, Turkey, O.L. ERYILMAZ, K. AMINE, Argonne National Laboratory, USA, O. KELES, Istanbul Technical University, Turkey

Graduate Student Finalist

4:30 pm C3-2-9 A Mesoporous CuAlO2 Hole Transport Layer for Perovskite Solar Cell, W.J. SUN, J. TING, P. CHEN, National Cheng Kung University, Taiwan

4:50 pm C3-2-10 Fabrication of Hybrid Perovskite Solar Cells based on Low Temperature Solution Process, T.W. TSAI, Y.Y. YU, C.F. TENG, Ming Chi University of Technology, Taiwan

5:10 pm C3-2-11 Improved Thermoelectric Performance of V-VI Thermoelectric Films by Electrochemical Deposition via Band Engineering, J. KIM, Korea Institute of Materials Science, Republic of Korea, N. MYUNG, UC Riverside, USA, J.H. LIM, 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

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces
Room: San Diego - Session E1-2
Friction, Wear, Lubrication Effects, and Modeling
Moderators: Albano Cavaleiro, University of Coimbra, Portugal, Carsten Gachot, Vienna University of Technology, Austria, Giovanni Ramirez, Argonne National Laboratory, USA

1:30 pm E1-2-1 Invited
Surface Engineering for Increasing Performance of Injection Molding Tools, L. PLETH NIELSEN, Danish Technological Institute, Denmark, S. HENGBERGER, Institute of Applied Plastics Research at Engineering College Fribourg, Switzerland, K. PAGH ALMTOFT, B. HOLM CHRISTIENSEN, Danish Technological Institute, Denmark

1:50 pm Invited talk continued.

2:10 pm E1-2-3 Invited

3:10 pm E1-2-5 Invited
Investigation on Tribological Behavior of Boron Doped Diamond Coated Cemented Tungsten Carbide for Cutting Tool Applications, R. KANNAN, A. NARAYANAPURAMAL, R. RAO, Indian Institute of Technology Madras, India

2:30 pm E1-2-4 Invited
Effect of Cr Additions on the Structure, Oxidation, Tribological and Machining Performance of Multilayered TiAlN/CrAlN Films Deposited by Sputtering, F. FERNANDES, Instituto Pedro Nunes, Portugal, M. DANEK, Czech Technical University, Czech Republic, T. POLCAR, University of Southampton, UK.

2:50 pm E1-2-6 Invited
Influence of Base-lubricating Non-metal Phase on the Erosion and Wear Behavior of Ni-based Abradable Coatings, P. STOYANOV, A. WUSATOWSKA-SARNIK, Pratt & Whitney, USA

3:30 pm E1-2-7 Invited

3:50 pm E1-2-8 Invited

4:10 pm E1-2-9 Invited
Tuning Run-in Friction Behavior of Carbon Film with Graphene Nanocrystallite Structure, C. CHEN, S. QIU, D.F. DIAO, Shenzhen University, China

4:30 pm E1-2-10 Invited
Surface Charge Lubricity of Multi-layer Graphene: Quantum Entrapment, X. ZHANG, D.F. DIAO, Shenzhen University, China

G3-1 Invited
Degradation Mechanisms of Protective Coatings in Precision Glass Molding, M. FRIEDRICH, O. DAMBON, F. KLOCKE, Fraunhofer Institute for Production Technology, Germany

G3-2 Invited
Nanolayered Coatings for Advanced Fine Blanking Applications, M. MORSTEIN, T. SCHÄR, Platt Ag, Switzerland, B. TORP, PLATIT, Inc., USA, T. KLÜNSNER, Materials Center Leoben Forschung GmbH (MCL), Austria

G3-3 Invited
Growth of Low-defect-density Ti_{x}Al_{1-x}N Thin Films by Cathodic Arc Evaporation under Industrial Conditions, M. SARAIVA, L. JOHNSON, Sandvik Coromant R&D, Sweden

G3-5 Invited
A Contribution to Explain the Mechanisms of Adhesive Wear in the Plastics Processing by the Example of Polycarbonate, K. BOBZIN, T. BRÖGELMANN, Surface Engineering Institute - RWTH Aachen University, Germany, G. GRUNDMEIER, T. DE LOS ARCOS, M. WIESING, University Paderborn, Germany, N.C. KRUPPE, Surface Engineering Institute - RWTH Aachen University, Germany

G3-6 Invited
Enhanced Replication Ratio of Injection Molded Plastics Parts by using an Innovative Combination of Laser-Structuring and PVD Coating, K. BOBZIN, Surface Engineering Institute - RWTH Aachen University, Germany, CH. HOPPMANN, Institute of Plastics Processing, RWTH Aachen University, Germany, A. GILLNER, Chair for Laser Technology, Aachen, Germany, T. BRÖGELMANN, N.C. KRUPPE, M. NADERI, Surface Engineering Institute - RWTH Aachen University, Germany, M. ORTH, Institute of Plastics Processing, RWTH Aachen University, Germany, M. STEGER, Chair for Laser Technology, Aachen, Germany

G3-7 Invited
The Solution to Crack Hard Nuts -- the Right Combination of Substrate, Tool Geometry, Pretreatment and Advanced PVD Coatings for Milling Hardened Steels Successfully, P. IMICH, U. SCHUNK, U. KRETZSCHMANN, LMT Fette Werkzeugtechnik, Germany, C. KRIEG, LMT Kieringer, Germany, A. LUKMANN, M. MORSTEIN, B. TORP, T. CSELLE, Platt Ag, Switzerland

G3-8 Invited
Performance Evaluation of HSS Cutting Tool Coated with Hafnium and Vanadium Nitride Multilayers, by Temperature Measurement and Surface Inspection, on Machining AISI 1020 Steel, J.H. NAVARRO-DEVIA, W. APARADOR, Universidad Militar Nueva Granada, Colombia, C. AMAYA, CDI-ASTIN SENA, Colombia, J.C. CAICEDO, Universidad del Valle, Colombia

G3-9 Invited
High Temperature Oxidation and Cutting Performance of AlCrN, TiVN and Multilayered AlCrN/TiVN Hard Coatings, S.Y. WENG, Y.-Y. CHANG, National Formosa University, Taiwan

G3-10 Invited
Sophisticated Wear Resistant Coatings used in Cold Sheet Metal Forming of AHSS Sheet Metals, A. KHATIBI, M. ARNDT, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein

Poster Session
5:00-7:00 pm Grand Hall
Reception begins at 6:00 pm
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<tr>
<th>Time</th>
<th>Session H2-2</th>
<th>Session TS2-2</th>
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<tr>
<td>1:30 pm</td>
<td>H2-2-1 Invited Mechanical Properties of High-strength Low-weight Truss Structures Fabricated by 3D Direct Laser Writing, R. SCHWAIGER, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WBM), Germany</td>
<td>TS2-2-1 Influence of Bondcoat and Substrate Chemistry on Lifetime in Suspension Plasma Sprayed Thermal Barrier Coatings, M. GUPTA, N. MARKOC, Sandia National Laboratories, USA, H. ZHANG, S. PALMIES, R. XU, L. MANGOLINI, National Institute for Standards and Technology, USA, J. KECKES, University of Sussex, UK, H. LI, Siemens Industrial Turbomachinery AB, Sweden</td>
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<td>1:50 pm</td>
<td>Invited talk continued.</td>
<td>TS2-2-2 a-Oxide-Induced Grain Growth in Ligand-Free CZTS Nanoparticle Coatings, S.A. EXARIOS, E. PALMIES, R. XU, L. MANGOLINI, University of California, Riverside, USA</td>
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<td>2:10 pm</td>
<td>H2-2-3 An improved Nanoindentation Method to Measure Residual Stress and Elastic Moduli of Freestanding Multilayer Thin Films, M. SEBASTIANI, M. GHIDELLI, Roma TRE University, Italy</td>
<td>TS2-2-3 CaviTec HVOF Coatings for Protection against Cavitation Erosion, S. LAVIGNE, Polytechnique Montreal, Canada</td>
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<tr>
<td>3:30 pm</td>
<td>H2-2-7 Fundamental Mechanical Properties of Simple- and Pt/ Ir-modified-Alumine Diffusion Coatings after Thermocyclic Exposure, C. O’SKAY, M.C. GALETZ, DEHEMA-Forschungsinstitut, Germany, H. MURAKAMI, National Institute for Materials Science, Japan</td>
<td>TS2-2-7 Metallization and Selective Metallization of Silver by Spraying, D. STAELENS, Jet Metal Technologies, France</td>
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Thursday Afternoon, April 27, 2017

Poster Session
5:00-7:00 pm Grand Hall
Reception begins at 6:00 pm
### Thursday Afternoon Poster Sessions

#### Symposium A Poster Session

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

**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/La2Zr2O7 and 7YSZ/Gd2O3 Quadruple Layer EB-PVD Thermal Barrier Coatings. K. BOBZIN, T. BROGELMANN, C. KALSCHEUER, 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. GOLIADEH, P.V. KIRYUKHANTSEV-KORNEEV, National University of Science and Technology "MISIS", Russian Federation

**AP-10**

**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/Na2SO4 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 ZrO2-10%Y2O3-16%TiO2 Coatings Produced by Plasma Spray. S. LICANO, 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 ZrO2 Coating Doped with MgO. A. IWANIAK, Silesian University of Technology, Poland, A. MOSCICKI, Joana Myk Silesian University of Technology, Poland, G. WIECLAW, Krzysztof Rosner Czertoch, Poland

#### Symposium B Poster Session

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

**5:00 pm**

**BP-9**
Advanced Deposition of Hard a-C:Me Coatings by HPPMS using Ne as Process Gas. K. BOBZIN, T. BROGELMANN, N.C. KRUPPE, M. ENGELS, Surface Engineering Institute - RWTH Aachen University, Germany

**BP-10**
Plasma Deformation Behavior of Nanostructured CrN/AlN Multilayer Coatings Deposited by Hybrid dMeSH/HPPMS, K. BOBZIN, T. BROGELMANN, N.C. KRUPPE, M. ARSINI, Surface Engineering Institute - RWTH Aachen University, Germany

**BP-13**
Control and Characterization of Texture in CVD a-Al2O3 Coatings. C. CHEN, P. LEICHT, R. COOPER, Z. LIU, D. BANEJEE, 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. SALÁS, D.V. MELO-MÁXIMO, 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. WEIMANTEL, University of Applied Sciences Mittweida, Germany

**BP-22**
Elastic Constants of Epitaxial Cubic Tantalum Nitride: Thin Film Growth and ab initio Calculations. G. ABDADIAH, Institut P., Université de Poitiers-UFR 3346 CNRS-ENSMA, France, P. DJEMIA, C. LI, Laboratoire des Sciences des Procédés et des Matériaux (LSPM), France, O-M. HU, Shenyang National Laboratory for Materials Science, China, L. BELLIER, Université Pierre et Marie Curie-INSF, France, F. TASNADI, Linköping University, (IFM), Sweden

**BP-24**
Mechanical and Structural Properties of CrN/AIN 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. MAYRHOFER, TU Wien, Austria

**BP-25**
Characterization of the Hard Coating on Gray Cast Iron Under Hydrogen Charging. N. LOPEZ PERRUQUIA, M.A. DONUZ, M.G. REYES CORTES, Universidad Politecnica del Valle De Mexico, C.R. TORRES SAN MIGUEL, Instituto Politecnico Nacional - ESIME, Mexico, J.V. CORTES SUARES, Universidad Autonoma 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, Japan, P. MAYRHOFER, TU Wien, Austria

**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

CP-25
The Annealing Temperature Dependence of the Structure, Electrical and Magnetic Behaviors of Aurivillius BiTi2FeO4Mn0.5O1.5 Thin Films Prepared by Chemical Solution Deposition Route. K.T. ZHU, East China Normal University, China

CP-26
UV Photosensitivity in Metal-Oxide-Semiconductor Structures based on SiO2 Films containing Si Nanoparticles. M.C. CURIEL, O.M. PEREZ, N. NEDEV, Universidad Autónoma de Baja California, Mexico, D. NESHEVA, 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 Mexico, V. DZHURKOV, Institute of Solid State Physics, Mexico, R. NEDEV, Universidad Politecnica 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 Kaohsing, Taiwan

DP-3
Nobium Oxide Scaffolds on Nb and on TNZT for use in Bone Implants. A. KRAME, 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
Tribo-corrosion Behaviour of DLC-Coated Ti-6Al-4V Alloy Deposited by PIID and PEM5+PIID Techniques for Biomedical Applications. A. HATEM, Pontificia Universidade Catolica do Parana, Brazil, J.L. LIN, R. WEI, Southwest Research Institute, USA, R. TORRES, C. LAURINDO, P. SOARES, Pontificia Universidade Catolica do Parana, 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. DEROUS, 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 TiO2-MgO Composites to Improve the Corrosion Resistance of Mg for Development of Biodegradable Orthopedic Implants. E. HERNÁNDEZ-RODRÍGUEZ, C.F. VICENCIOS-COSTA, C.M. IÑIGUEZ-CONTERRAS, A.J. BALVANTIN-GARCÍA, J.A. DODOSADO-DE-LA PEÑA, DICIS, University of Guanajuato, Mexico, R. MIS-FERNÁNDEZ, J.L. PEÑA-CHAPA, CINVESTAV-IPI Mérida, Mexico, M.G. ZAPATA-TORRES, CICATA-IPI Legaria, Mexico, A. MARQUEZ-HERRERA, DICIVA, University of Guanajuato, Mexico

DP-15
Fabrication and Characterization of Magnesium Incorporated Hydroxyapatite on the Titanium Substrates via Electrochemical Deposition. Y. CHOR, National Taiwan University of Technology, Taiwan, C.M. 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-13Ta-46V 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 TiO2 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. MUKEVA, G. DYAKONOV, Ufa State Aviation Technical University, Russian Federation, K. DANILOKO, Bashkir State Medical University, Russian Federation, R. VALEV, 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 Mayis University, Turkey, E. GULEC, Gebze Technical University, Turkey, M. GURBUZ, Ondokuz Mayis University, Turkey, Y. GENCER, M. TAYRACI, Gebze Technical University, Turkey

**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-3**
Effect of Cr Content and Various Interlayers on Mechanical Properties of CrAlN 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. DONU RUIZ, N. LOPEZ PERRUSQUI, Universidad Politécnica Del Valle De Mexico, J.V. CORTES SUAREZ, J. ROMERO SERRANO, Universidad Autónoma Metropolitana, Mexico, M.G. REYES CORTES, Universidad Politécnica Del Valle De Mexico

**EP-6**
Identification 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 IN738 LC Alloy Mechanical Properties based on Microstructural Evolution Simulations for Different Heat Treatment Conditions, M.T. BOYRAZ, B. DÖRNER, Middle East Technical University, Turkey

**EP-10**

**EP-12**
Effect of the Addition of Ta in the Structure and Mechanical Properties of Cr Coatings, J. PÉREZ-ALVAZ, 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. VALENCE-VELAZCO, A. RUIZ-RAMÍREZ, 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/TiO2 Nanoparticles for Footwear Industry: Tribological and Antimicrobial Activity, I. CARVALHO, University of Coimbra, Portugal, S. FERDOS, C.F. ALMEIDA ALVES, University of Minho, Portugal, M.A. CERQUEIRA, INL-International Iberian Nanotechnology Laboratory, Portugal, R. FRANZI, Montanuniversität Leoben, Austria, C. GAUDU, INCIDP-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 Taiwan University of Technology, Taiwan

**EP-17**
An Oliver&Pharr Method for Lateral-Force Nanodenters, N. SCHWARZER, SIO, Germany
Thursday Afternoon Poster Sessions

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. SAITO, R. TAJIMA, Y. TAMAYAMA, K. YASU, Nagasaki University of Technology, Japan

FP-6
Optical and Electronic Properties of MoS2: Joint Theoretical/Experimental Study; M. EATON, H. SIRIKUMARA, H. SAMASSEKOU, D. MAZUMDAR, Southern Illinois University, USA, L. LIYANAGE, M. NARBETTI, University of North Texas, USA, T. JAYASEKERA, Southern Illinois University, USA

FP-7
Possibility of Selective and Morphology-Controlled Growth of CuO and Cu2O 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, Oxinitrile, 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. KOLOZZAVI, 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-MAXIMO, ITESM-CEM, Mexico, F.F. ESTRADA-MARTINEZ, Termonova 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 Material 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

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 Ti3-xAuOx, 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, Y. 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

Symposium G Poster Session
5:00 pm

GP-2
Oxidation Resistance of CrN and Cr2WN 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. 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. KOHLSCHEEN, 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 CeO2 doped Al2O3 Coating on Solution Treated and Peak Aged AZ91 Mg Alloy. S. KUMAR, D. KUMAR, J. JAIN, Indian Institute of Technology Delhi, India

GP-14
### 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. BORRAS, A.R. GONZALEZ-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**  

**HP-5**  
Influence of Post-deposition Annealing on the Electrical Properties of Thin SiO2/a-Si:H/SiO2 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

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**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. AOUADI, University of North Texas, USA
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<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors/Institutions</th>
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<tr>
<td>8:00 am</td>
<td>B7-1</td>
<td>Plasma Surface Interaction Model for Titanium Nitride Thin Film Growth</td>
<td>T. GERGS, J. TRIESCHMANN, Ruhr-University Bochum, Germany, M. HANS, D. MUSIC, J.M. SCHNEIDER, RWTH Aachen University, Germany, T. MUSSENBROCK, Ruhr University Bochum, Germany</td>
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<td>8:20 am</td>
<td>B7-2</td>
<td>Correlation of the Debye Sheath Thickness and (Cr,Al)N Coating Properties for HPPMS, dCMS and PACE Processes</td>
<td>K. BOIZIN, T. BROGENLANN, N.C. KRUPPE, M. ARGHAVANI, M. ENGELS, Surface Engineering Institute - RWTH Aachen University, Germany</td>
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<tr>
<td>8:40 am</td>
<td>B7-3</td>
<td>The Study of Spoke Merging and Splitting in HiPIMS Plasma</td>
<td>J. HNILICA, P. KLEIN, Masaryk University, Czech Republic, F. LOCKWOOD-ESTRIN, University of Liverpool, UK, P. VASIŅA, Masaryk University, Czech Republic, J.W. BRADLEY, University of Liverpool, UK</td>
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<tr>
<td>9:00 am</td>
<td>B7-4</td>
<td>AlOx-ZrO2 Composite Coatings on Aluminium through a Hybrid Plasma Electrolytic-Electrophoretic Process</td>
<td>N. BARATI, E. MELETIS, University of Texas at Arlington, USA</td>
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<tr>
<td>9:20 am</td>
<td>B7-5</td>
<td>Invited Low-temperature Atmospheric Pressure Plasma Processing and its Diagnostics for a Healthcare Device</td>
<td>M. HORI, Institute of Innovation for Future Society, Nagoya University, Japan</td>
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<tr>
<td>10:00 am</td>
<td>B7-6</td>
<td>Effects of Incident Particle Fluxes on the Growth and Properties of Ga-doped ZnO Films Deposited by Ion-plating with dc Arc Discharge</td>
<td>H. KITAM, 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. AKI, Sumitomo Heavy Industries, Ltd., Japan, T. YAMAMOTO, Kochi University of Technology, Japan</td>
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<tr>
<td>10:20 am</td>
<td>B7-8</td>
<td>Mapping Potential of an Ionization Zone in Magnetron Plasma</td>
<td>M. PANJAN, Jozef Stefan Institute, Slovenia, A. ANDERS, Lawrence Berkeley National Laboratory, USA</td>
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**Friday Morning, April 28, 2017**

- **Hard Coatings and Vapor Deposition Technologies**
  - **Room:** Golden West - Session B7
  - **Plasma Diagnostics and Growth Processes**
  - **Moderators:** Ante Hecimovic, Ruhr-Universität Bochum, Germany, Peter Bruggeman, University of Minnesota, USA

- **Fundamentals and Technology of Multifunctional Materials and Devices**
  - **Room:** Royal Palm 1-3 - Session C4
  - **Energetic Materials and Microstructures for Nanomanufacturing**
  - **Moderators:** Karsten Woll, Karlsruhe Institute of Technology (KIT), Russian Federation, S.G. VADCHENKO, A.S. ARONIN, Russian Academy of Sciences, Russian Federation, A. MUKASYAN, University of Notre Dame, USA

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2018 ICMCTF
April 23-27, 2018

Thank You & See You Next Year Party
Trellis Courtyard Near Pool
12:00-1:00 pm

2018 Abstract Submission Deadline
October 1, 2017

2018 Awards Nominations Deadline
October 1, 2017
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<td>8:00 am</td>
<td>E1-3-1</td>
<td>Comparing of Adhesion Properties of TiNbVN Coatings Deposited on Different Substrates</td>
<td>I. EFOGLU, Y. TOTIK, Ataturk University, Turkey, O. BARAN, Erzincan University, Turkey, H. CICEK, Erzurum Technical University, Turkey, A. KELES, Ataturk University, Turkey</td>
</tr>
<tr>
<td>8:20 am</td>
<td>E1-3-2</td>
<td>Buckling of Ductile Thin Films on Rigid Substrate</td>
<td>N. Ben DAHMANE, G. PARRY, R. ESTEVEZ, SIMaP, University of Grenoble Alpes, CNRS, France, C. COUPEAU, Institut P., Université de Poitiers-UPR 3346 CNRS-ENSMA, France</td>
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<td>8:40 am</td>
<td>E1-3-3</td>
<td>Study of Multi-cracking of Brittle Thin Films and Brittle ductile Multilayers on Compliant Substrate</td>
<td>I. BEN CHEIKH, CNRS, Université de Grenoble-Alpes, France, D. DALMAS, CNRS, Laboratoire de Tribologie et Dynamique des Système (LTDS), Ecole centrale de Lyon, France, R. ESTEVEZ, Laboratoire de Science et Ingénierie des Matériaux et Procédés (SIMaP), Université de Grenoble Alpes, France</td>
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<tr>
<td>9:00 am</td>
<td>E1-3-4</td>
<td>Tribological Behaviors of UHMWPE Composites with Different Counter Surface Morphologies</td>
<td>Y. WANG, Z. YIN, H. LI, G. GAO, Shanghai Jiaotong University, China</td>
</tr>
<tr>
<td>9:20 am</td>
<td>E1-3-5</td>
<td>Evaluation of Friction and Wear Characteristics of Electrostatic Solid Lubricant at Different Sliding Conditions</td>
<td>R.K. GUNDA, S.K.R. NARALA, BITS Pilani Hyderabad campus, India</td>
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<tr>
<td>9:40 am</td>
<td>E1-3-6</td>
<td>Evaluation of Friction and Wear Properties of Al-TiC&lt;sub&gt;p&lt;/sub&gt; Metal Matrix Composite under Cryogenic Condition</td>
<td>S. JOSYULA, BITS-Pilani, Hyderabad Campus, India, S.K.R. NARALA, BITS Pilani Hyderabad campus, India</td>
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**Friday Morning, April 28, 2017**

**Session E1-3**

**Room: San Diego - Session E1-3**

**Friction, Wear, Lubrication Effects, and Modeling**

**Moderators:** Albano Cavaleiro, University of Coimbra, Portugal, Giovanni Ramirez, Argonne National Laboratory, USA

**E1-3-1**

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

**E1-3-2**

Buckling of Ductile Thin Films on Rigid Substrate. N. BEN DAHMANE, G. PARRY, R. ESTEVEZ, SIMaP, University of Grenoble Alpes, CNRS, France, C. COUPEAU, Institut P., Université de Poitiers-UPR 3346 CNRS-ENSMA, France

**E1-3-3**

Study of Multi-cracking of Brittle Thin Films and Brittle ductile Multilayers on Compliant Substrate. I. BEN CHEIKH, CNRS, Université de Grenoble-Alpes, France, D. DALMAS, CNRS, Laboratoire de Tribologie et Dynamique des Système (LTDS), Ecole centrale de Lyon, France, R. ESTEVEZ, Laboratoire de Science et Ingénierie des Matériaux et Procédés (SIMaP), Université de Grenoble Alpes, France

**E1-3-4**

Tribological Behaviors of UHMWPE Composites with Different Counter Surface Morphologies. Y. WANG, Z. YIN, H. LI, G. GAO, Shanghai Jiaotong University, China

**E1-3-5**


**E1-3-6**

Evaluation of Friction and Wear Properties of Al-TiC<sub>p</sub> Metal Matrix Composite under Cryogenic Condition. S. JOSYULA, BITS-Pilani, Hyderabad Campus, India, S.K.R. NARALA, BITS Pilani Hyderabad campus, India

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**Session G1**

**Room: Sunrise - Session G1**

**Advances in Industrial PVD, CVD, and PCVD Processes and Equipment**

**Moderators:** Emmanuelle Goethelid, Sandvik Coromant R&D Materials and Processes, Sweden, Ladislav Bardos, Uppsala University, Angstrom Laboratory, Sweden

**G1-1**

Invited talk continued.

**G1-3**

Pure HiPIMS Coatings with 2 μm/hour for Cutting Tool Coatings. C. SCHIFFERS, T. LEYENDECKER, O. LEMMER, W. KOLKER, CemeCon AG, Germany

**G1-4**

Deposition of Acrylic Acid on Argon or Air Atmospheric Pressure Plasma Treated Silicon using a Novel Chamber Design. W.Y. CHEN, University of Sheffield, UK, A. MATTHEWS, University of Manchester, UK, F. JONES, University of Sheffield, UK

**G1-5**

Reactive Deposition in the Magnetized Hollow Cathode Activated Magnetron. H. BARANKOVA, L. BARDOS, Uppsala University, Angstrom Laboratory, Sweden

**G1-6**

Ionisation Enhancement Control for Magnetron Sputtering Processes. V. BELLIDO-GONZALEZ, F. MEYER, T. SGRILLI, H. LI, F. PAPA, Gencoa Ltd., USA, J. KUBOTA, M. ISAKA, Mitsubishi Hitachi Tool Engineering, Japan

**G1-7**


**G1-8**


**G1-9**


**G1-10**

Mechanical Property and Thermal Stability of Multicomponent AlTiSiN and AlTiBN Hard Coatings using Ternary Alloy Arc Sources. M.C. CAI, Y.-Y. CHANG, National Formosa University, Taiwan

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**2018 ICMCTF**

April 23-27, 2018

**2018 Abstract Submission Deadline**

October 1, 2017

Thank You & See You Next Year Party

Trellis Courtyard Near Pool

12:00-1:00 pm

**2018 Awards Nominations Deadline**

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<td>TS1-1 The Investigation of Mechanisms about Bacteria-Hydrogels Interactions, N. Kandemir, W. Vollmer, N. Jakubovics, J. Chen, Newcastle University, UK</td>
</tr>
<tr>
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<tr>
<td>10:00 am</td>
<td>H1-7 Thermal Stability of Expanded Austenite formed on a DC Plasma Nitrided 316L Austenitic Stainless Steel, A. Tschipitschin, A. Nishikawa, L.B. Varela, University of São Paulo, Brazil, C. Pinedo, Heat Tech &amp; University of Mogi das Cruzes, Brazil</td>
<td>TS1-7 The Graphene Oxide Biopolymers (Polystyrene Sulfonate, PSS and Heparin), and PEDOT were Electrochemically Polymerized in the SUS316L Stainless Steel, H.M. Tsou, T.Y. Liu, Ming Chi University of Technology, Taiwan</td>
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**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

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**Biointerfaces**

**Room: California - Session TS1**

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

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**2018 ICMCTF**

**April 23-27, 2018**

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**2018 Abstract Submission Deadline**

**October 1, 2017**

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**Thank You & See You Next Year Party**

**Trellis Courtyard Near Pool**

**12:00-1:00 pm**

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**2018 Awards Nominations Deadline**

**October 1, 2017**

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**2018 Abstract Submission Deadline**

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