

Program Key

Conference Topics

- A Coatings for Use at High Temperatures
- B Hard Coatings and Vapor Deposition Technologies
- C Fundamentals and Technology of Multifunctional Materials and Devices
- 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
- H Advanced Characterization Techniques for Coatings and Thin Films
- HL Bunshah Award Honorary Lecture
- PL Plenary Lecture
- SIT1-5 Special Interest Talks 1-5
- TS Topical Symposia:
 - TS1-Thermal and Kinetic Spray Deposition
 - TS2-High Entropy and Other Multi-principal-element Materials
 - TS3-Coating of Synthetic Materials – Engineering for the Future
 - TS4-Materials Modeling and Simulation
 - TS5-Anti- and De-icing Surface Engineering

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:

- We suggest that you verify all the technical sessions starting times both morning and afternoon.
- Monday the technical sessions begin at 10:00 am following the completion of the 8:00 am Plenary Session.
- Daily Morning sessions begin at 8:00 am. On some days the starting times may vary.
- Daily afternoon sessions generally start at 1:30 pm except on Tuesday and Wednesday the afternoon sessions have varying starting times, 1:30 - 2:10 pm to allow you time in the Exhibition Hall. Check the daily schedule pages for starting times.
- Invited speakers (marked as such in the program book) are allotted 40 minutes. Contributed speakers are allotted 20 minutes

Please verify your presentation time as is printed in this program book's schedule, thank you

If you are making an oral presentation:

All technical session rooms are equipped with computers, LCD projectors, screens, laser pointers and microphones. Please test your presentation materials to be certain that they are compatible with the equipment being provided in the technical session rooms. The Presenter's Preview Screening room is the Dover Room (DO). 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.

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

If you are making a poster presentation:

Boards will be available for posting materials at 11:00 am until 4:00 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 4:00 pm. Any poster boards that do not have presentation materials posted by 4:00 pm will have their titles removed; their presentation deleted from the program, and the author will be listed as a No-Show. All presenters are required to be at their poster presentation during the entire session (5:00 - 7:00 pm), in order to promote discussion and for the author to answer attendee questions.

Be forewarned, all poster materials will be discarded if not removed from the boards by 9:00 pm Thursday evening.

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

Monday Morning, April 23, 2018

Plenary Lecture

Room Town & Country

8:00-9:45 am

Plenary Lecture Session

Predictive Synthesis and Characterization of Oxide Films with Metastable Structures

Prof. Gregory S. Rohrer

Head and W.W. Mullins Professor

Department of Materials Science and Engineering

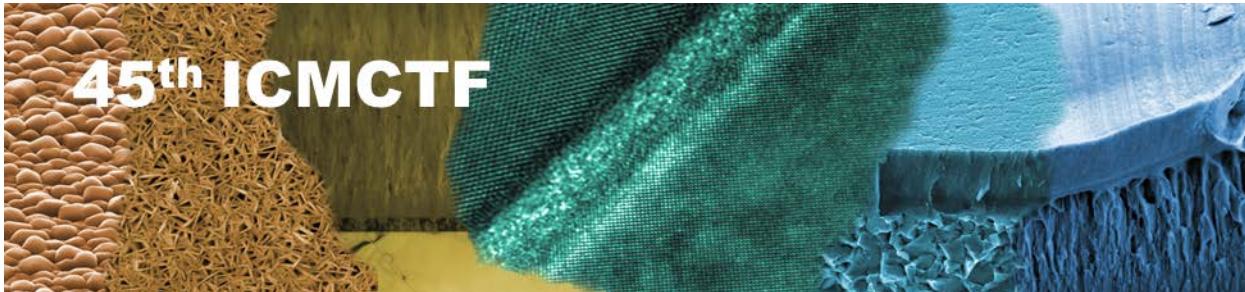
Carnegie Mellon University, USA



The directed synthesis methods that access specific crystalline polymorphs are of great interest in crystal growth, materials design, and the production of useful coatings. This plenary presentation will describe how a new method, called combinatorial substrate epitaxy (CSE), can be used to understand the preferred epitaxial orientations of a wide range of heteroepitaxial structures and to fabricate various novel metastable materials. In this approach, the target compound is deposited on polished polycrystalline substrates, rather than commercial single crystals or buffer layers. It has been demonstrated that each surface grain in the polycrystalline substrate can be treated as the equivalent of a single-crystal surface in a traditional film growth experiment, therefore providing every combination of substrate orientation in a single experiment. The method has the unique advantage of not being restricted to the use of commercially available single crystals. The local structures of the growth products are analyzed using electron backscatter diffraction (EBSD). In this talk, the CSE method will be described in detail as will the analysis of EBSD data from thin film polymorphs. Examples of how the method has been used to grow metastable polymorphs will be described and a prognosis for the use of CSE for the development of new coatings will be discussed.

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Prof. Gregory S. Rohrer is the Head and W.W. Mullins Professor of the Department of Materials Science and Engineering at Carnegie Mellon University. He received his Bachelor's degree in Physics from Franklin and Marshall College, his Doctoral degree from the University of Pennsylvania (where he also conducted post-doctoral research) and joined the faculty at Carnegie Mellon in 1990. Prof. Rohrer's research has the objective of developing structure/property relationships for polycrystalline materials used in structural, electrical, and catalytic applications. He is currently involved in research on crystal growth, surface photochemical reactions, and the relationship between interface properties and the microstructures of ceramics and metals. Prof. Rohrer is a fellow of the American Ceramic Society and his research has been recognized by a number of awards including the Richard M. Fulrath Award, the Robert B. Sosman Award, and the W. David Kingery Award, all of the American Ceramic Society. In 2011, he served as chair of the University Materials Council.



Please continue to enjoy the exciting ICMCTF 2018 program this week.

Monday Morning, April 23, 2018

Hard Coatings and Vapor Deposition Technologies Room Golden West - Session B5-1 Hard and Multifunctional Nanostructured Coatings Moderators: Jiri Capek, University of West Bohemia, Czech Republic; Helmut Riedl, TU Wien, Institute of Materials Science and Technology, Austria		Coatings for Biomedical and Healthcare Applications Room California - Session D1-1 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, USA
10:00am	B5-1-1 Effect of Boron on the Mechanical Properties, especially Fracture Toughness, of TiN, <i>R. Hahn</i> , CDL-AOS at TU Wien, Austria; <i>M. Bartosik</i> , <i>A. Tymoszuk</i> , TU Wien, Austria; <i>P. Polcik</i> , Plansee Composite Materials GmbH, Germany; <i>M. Arndt</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>P.H. Mayrhofer</i> , TU Wien, Austria	D1-1-1 Highly Porous Scaffolds on TNZT Alloys for Bone Implant Applications, <i>S. Aouadi</i> , <i>E. Blackert</i> , <i>S. Murguia</i> , <i>M. Kramer</i> , <i>S. Bakkar</i> , <i>M. Young</i> , University of North Texas, USA
10:20am	B5-1-2 Evolution of Structure, Residual Stresses and Wear Resistance of Multi-layered AlTiSiN-AlCrN Coatings upon Thermal Loading Revealed by Cross-sectional X-ray Diffraction and Tribological Testing, <i>S. Klima</i> , Montanuniversität Leoben, Austria; <i>N. Jäger</i> , <i>M. Meindlhummer</i> , Montanuniversität Leoben, Austria; <i>H. Hruby</i> , eifeler-Vacotec GmbH, Germany; <i>C. Mitterer</i> , <i>J. Keckes</i> , <i>R. Daniel</i> , Montanuniversität Leoben, Austria	D1-1-2 Improving Cellular Proliferation on the Ti-6Al-4V Alloy by the Formation of Crystalline Nanotubes of Titanium Oxide, <i>I.P. Torres-Avila</i> , Instituto Politécnico Nacional-Upibi, Mexico; <i>E. Hernández-Sánchez</i> , <i>J.L. Castrejón-Flores</i> , Instituto politécnico Nacional-UPIBI, Mexico; <i>J.C. Velazquez</i> , Instituto Politécnico Nacional-ESIQIE, Mexico; <i>R. Carrera-Espinoza</i> , Universidad de las Américas Puebla, Mexico; <i>U. Figueiroa-López</i> , Tecnológico de Monterrey, Campus Estado de México, Mexico
10:40am	INVITED: B5-1-3 Plasma Tailoring for Controlled Compositional and Microstructural Evolution of TiB ₂ Coatings from Magnetron Sputtering Techniques and DC Vacuum Arc, <i>J. Rosen</i> , Linköping Univ., IFM, Thin Film Physics Div., Sweden; <i>N. Nedfors</i> , <i>I. Zhirkov</i> , Linköping University, IFM, Thin Film Physics Division, Sweden	D1-1-3 Effects of Nb and Ti on the Corrosion and Biocompatibility Behavior of Zr-based and Fe-based Thin Film Metallic Glasses, <i>J.B. Wang</i> , <i>Y.C. Yang</i> , National Taipei University of Technology, Taiwan; <i>J.W. Lee</i> , Ming Chi University of Technology, Taiwan
11:00am	Invited talk continues.	D1-1-4 Tribological Behavior of Nanotubes Grown on Ti-35Nb Alloy by Anodization, <i>A.R. Luz</i> , UFPR, Brazil; <i>C.M. Lepienski</i> , Universidade Tecnológica Federal do Paraná, Brazil; <i>C.J.M. Siqueira</i> , Universidade Federal do Paraná, Brazil; <i>G.B. Souza</i> , Universidade Estadual de Ponta Grossa, Brazil; <i>N. Kuromoto</i> , Universidade Federal do Paraná, Brazil
11:20am	B5-1-5 Development of Novel Gradient C-CrAlSiN Based Cathodic Arc PVD Coatings for High Speed/dry Machining Applications, <i>P. Chandran</i> , <i>V. Krishna</i> , International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), India; <i>A. VenuGopal</i> , NIT Warangal, India	INVITED: D1-1-5 Designing Hydrogels to Enhance Biomedical Implant Performance, <i>S. Bryant</i> , University of Colorado, Boulder, USA, United States of America
11:40am		Invited talk continues.
12:00pm	Anton Paar: Focused Topic Session “Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation” Pierre Morel and Gregory Favaro 12:15-1:15 pm Town and Country Room	D1-1-7 Fabrication and Properties of Ca, P Containing Coating on Magnesium Alloy by Micro-arc Oxidation, <i>H.T. Tang</i> , University of Electronic Science and Technology of China, China

Monday Morning, April 23, 2018

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Room Royal Palm 4-6 - Session E2-1 Mechanical Properties and Adhesion Moderators: Gerhard Dehm, MPI für Eisenforschung GmbH, Germany, Megan Cordill, Erich Schmid Institute of Materials Science, Austria, Ming-Tzer Lin, National Chung Hsing University, Taiwan		New Horizons in Coatings and Thin Films Room San Diego - Session F2-1 HiPIMS, Pulsed Plasmas and Energetic Deposition Moderators: Tiberiu Minea, Université Paris-Sud, France, Jon Tomas Gudmundsson, University of Iceland, Iceland
10:00am	INVITED: E2-1-1 In-situ Mechanical Testing of Hierarchical and Gradient Nanostructures, <i>J. Wardini, O. Donaldson, T. Rupert</i> , University of California, Irvine, USA	F2-1-1 On Recycling in High Power Impulse Sputtering Magnetrons, <i>J.T. Gudmundsson</i> , University of Iceland, Iceland; <i>N. Brenning, M.A. Raadu</i> , KTH-Royal Institute of Technology, Sweden; <i>T.J. Petty, T. Minea, D. Lundin</i> , Université Paris-Sud, France
10:20am	Invited talk continues.	F2-1-2 Electron Density at the Sheath Edge of a HiPIMS Plasma, <i>A. Hecimovic, J. Held, V. Schulz-von der Gathen, W. Breilmann, C. Maszl, A. von Keudell</i> , Ruhr-Universität Bochum, Germany
10:40am	E2-1-3 Mechanical Properties of Molybdenum Incorporated β -Ga ₂ O ₃ Nanocrystalline Films for Extreme Environment Applications, <i>A.K. Battu, S. Manandhar, R. Chintalapalle</i> , University of Texas at El Paso, USA	F2-1-3 Spatially Resolved Investigation of Transport and Redeposition Processes during HiPIMS by Means of Optical Diagnostics and In-vacuum XPS Analysis of Magnetron Targets, <i>S. Monje, V. Layes, A. von Keudell</i> , Ruhr-University Bochum, Germany; <i>T. de los Arcos</i> , University Paderborn, Germany; <i>V. Schulz-von der Gathen, C. Corbella</i> , Ruhr-University Bochum, Germany
11:00am	E2-1-4 Study of the Mechanisms of Built-up Edge Formation during Machining of Super Duplex Stainless Steel, <i>Y. Seid Ahmed, G. Fox-Rabinovich, B. Bose, D. Covelli, J.M. Paiva, G. Dosbaeva, S. Veldhuis</i> , McMaster University, Canada	F2-1-4 Time-resolved Ion Energy and Charge Distributions in Pulsed Cathodic Arc Plasmas of Nb-Al Cathodes in High Vacuum., <i>S. Zoehler</i> , Montanuniversität Leoben, Austria; <i>A. Anders</i> , Lawrence Berkeley National Laboratory, USA, and now at Leibniz Institute of Surface Engineering (IOM), Germany; <i>R. Franz</i> , Montanuniversität Leoben, Austria
11:20am	E2-1-5 Experimental Characterization and Finite Element Simulation of Damage in Thin Hard DLC Coatings, <i>A. Choleridis</i> , Ecole Nationale Supérieure des Mines de St-Etienne, France; <i>C. Héau, M. Leroy</i> , Institut de Recherche en Ingénierie des Surfaces, Groupe HEF, France; <i>S. Sao-Joao, G. Kermouche</i> , Ecole Nationale Supérieure des Mines de St-Etienne, France; <i>C. Donnet</i> , Université de Lyon, Université Jean Monnet, France; <i>H. Klöcker</i> , Ecole Nationale Supérieure des Mines de St-Etienne, France	F2-1-5 Investigations on the Substrate Bias Influence on Reactive High Performance Plasmas, <i>K. Bobzin, T. Brögelmann, N.C. Kruppe, M. Engels</i> , Surface Engineering Institute - RWTH Aachen University, Germany
11:40am	Anton Paar: Focused Topic Session “Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation” Pierre Morel and Gregory Favaro 12:15-1:15 pm Town and Country Room	F2-1-6 The Impact of a Positive Pulse in HIPIMS Films, <i>J. Hrebik</i> , Kurt J. Lesker Company, USA

Monday Morning, April 23, 2018

Surface Engineering - Applied Research and Industrial Applications

Room Sunset - Session G4

Pre-/Post-Treatment and Duplex Technology

Moderators: Hiroshi Tamagaki, The New Industry Research Organization (NIRO), Japan, Wan-Yu Wu, Da-Yeh University, Taiwan, Chris Stoessel, Eastman Chemical Company, Inc., USA

		Five Special Interest Talks
10:00am	G4-1 Mechanical Pretreatment before Electroplating of Aluminium Alloy AlSi12, <i>E. Uhlmann, R. Jaczkowski</i> , Technische Universität Berlin, Germany	Monday, 4:50-5:30 pm, Sunset Room Papken Hovsepian, Sheffield Hallam University, UK "Nanoscale Multilayer PVD Coatings to Serve in Demanding Environments"
10:20am	G4-2 Microstructure Characterization and Mechanical Properties of Gradient AlCrSiN hard Coatings Using Ternary Alloy Targets, <i>Y.-Y. Chang, L.C. Chao</i> , National Formosa University, Taiwan	Monday, 5:35-7:35 pm, San Diego Room Joe Greene, University of Illinois, USA, "Tracing the Recorded History of Thin-film Sputter Deposition: From the 1800s to 2018"
10:40am	G4-3 Integrated Shot Peening, Plasma Nitriding and Gradient PVD TiAlSiN Coating on AISI H13 Molds for Al Die Casting, <i>V.D. Mascariñas</i> , University of the Philippines, Philippines; <i>T. Quinto</i> , Beta Nanocoating Philippines Inc., Philippines; <i>A. Salvador</i> , University of the Philippines, Philippines	Wednesday, 11:20am-12:00 pm, San Diego Room Jochen Schneider, RWTH Aachen, Germany, "Combinatorial Thin Film Materials Science: Limitations and Opportunities for Combining Experiments and DFT Based Theory"
11:00am	G4-4 Effect of Nano-penning Surface Texturing on Self-clean Function, <i>N. Coniglio</i> , Arts et Métiers ParisTech d'Aix-en-Provence, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France; <i>S. Mezghani</i> , Arts et Métiers ParisTech de Châlons-en-Champagne, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France; <i>M. El Mansori</i> , Arts et Métiers ParisTech d'Aix en Provence, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France; <i>J. Cabrero</i> , Saint Gobain, CREE, France	Thursday, 11:20 am - 12:00 pm, San Diego Room Christian Mitterer, Montanuniversität Leoben, Austria, "Synthesis and Characterization of Molybdenum-based Thin Films for Flexible Electronics"
11:20am	INVITED: G4-5 Hard Coating and Surface Modification Technologies for Piston Ring, <i>H. Kamiyama</i> , Nippon Piston Ring Co., Ltd., Japan	Thursday, 4:10-4:50 pm, San Diego Room Paul Mayrhofer, TU Wien, Austria, "Materials Design Guidelines for Improved Strength, Ductility, and Stability."
11:40am	Invited talk continues.	Anton Paar: Focused Topic Session "Latest Developments in Advanced Surface Mechanical Property Characterization Instrumentation" Pierre Morel and Gregory Favaro 12:15-1:15 pm Town and Country Room

Monday Afternoon, April 23, 2018

Hard Coatings and Vapor Deposition Technologies Room Golden West - Session B5-2 Hard and Multifunctional Nanostructured Coatings Moderators: Jiri Capek, University of West Bohemia, Czech Republic; Helmut Riedl, TU Wien, Institute of Materials Science and Technology, Austria		Coatings for Biomedical and Healthcare Applications Room California - Session D1-2 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, USA
1:30pm	B5-2-1 Mechanical and Optical Properties of Nanoscale Transparent Metal Oxide Multilayers, <i>C. Appleget, A.M. Hodge</i> , University of Southern California, USA	D1-2-1 Optimisation of Antimicrobial Silver Nanocomposite Coatings on Orthopaedic Grade Cobalt Chromium Alloys and the Related Simulator Analyses in Knee Surgery, <i>L. Yang, Wallwork Cambridge Ltd, UK; L. Richards, MatOrtho Limited, UK; J.C. Shelton, Queen Mary University of London, UK; H. Hothi, University College London, UK; S. Collins, MatOrtho Limited, UK; J. Housden, Wallwork Cambridge Ltd, UK; A. Hart, University College London, UK; L. Espitalier, Wallwork Cambridge Ltd, UK</i>
1:50pm	B5-2-2 Structure and Properties of Nanocluster Composite Arc Coatings for Hot Die Forging, <i>M. Morstein, T. Schär, J. Wehrs, PLATIT AG Advanced Coating Systems, Switzerland; M. Collander, Chalmers University of Technology, Sweden; J.P. Best, University of New South Wales, Australia; M. Polyakov, J. Michler, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland</i>	D1-2-2 Structure and Properties of Novel Hydrophobic Cr-Ag Antibacterial Coatings Deposited by Closed-field Unbalanced Magnetron Sputtering, <i>M.S. Kabir, University of New South Wales, Australia; A. Karami, University of Adelaide, Australia; P. Munroe, University of New South Wales, Australia; Z. Zhou, City University of Hong Kong, Hong Kong; Z. Xie, University of Adelaide, Australia</i>
2:10pm	B5-2-3 New Insights in High Temperature Properties and Oxidation Behaviour of AlCrSi _x N Coatings, <i>N. Jäger, Montanuniversität Leoben, Austria; S. Klima, Montanuniversität Leoben, Austria; M. Meindlhumer, Montanuniversität Leoben, Austria; H. Hruby, eifeler-Vacotec GmbH, Germany; C. Mitterer, J. Keckes, R. Daniel, Montanuniversität Leoben, Austria</i>	D1-2-3 Thin Film Metallic Glass : A Lubricated Coating on Medical Needle for Reducing Fracture Toughness and Damage of Phantom Materials, <i>B.A. Gebru, J.P. Chu, C.C. Yu, National Taiwan University of Science and Technology (NTUST), Taiwan</i>
2:30pm	B5-2-4 Magnetron Sputtered High-temperature Hf-B-Si-X-C-N (X = Y, Ho, Mo) Films with Controlled Optical Transparency and Electrical Conductivity, <i>M. Prochazka, V. Simova, J. Vlček, M. Kotrlova, R. Čerstvý, J. Houska, University of West Bohemia, Czech Republic</i>	D1-2-4 Biocompatibility and Antimicrobial Performance of a Durable Super-hydrophobic Surface Modified Stainless Steel, <i>C.W. Lin, Feng Chia University; Central Taiwan University of Science and Technology, Taiwan; C.M. Chou, Taichung Veterans General Hospital; National Yang-Ming University, Taiwan; C.J. Chung, Central Taiwan University of Science and Technology, Taiwan; J.L. He, Feng Chia University, Taiwan</i>
2:50pm	INVITED: B5-2-5 Holistic Design of Multifunctional Nitrides, Oxides, and Oxynitrides, <i>D. Music, J.M. Schneider, RWTH Aachen University, Germany</i>	D1-2-5 Immobilization of Carboxylic Acid Groups on Polymeric Substrates by Plasma-enhanced Chemical Vapor or Atmospheric Pressure Plasma Deposition of Acetic Acid, <i>W.Y. Chen, A. Matthews, University of Manchester, UK; F.R. Jones, University of Sheffield, UK; K.S. Chen, Tatung University, Taiwan</i>
3:10pm	Invited talk continues.	D1-2-6 Coatings Deposition by RF Magnetron Sputtering of Loosely Packed Hydroxyapatite Powder Target, <i>L. Lukosevicius, The University of Manchester, UK; S. Mráz, J.M. Schneider, RWTH Aachen University, Germany; A. Matthews, The University of Manchester, UK</i>
3:30pm	B5-2-7 Improved Mechanical Properties and Thermal Stability of Ti-Al-N through Alloying with La-borides, <i>H. Asanuma, Mitsubishi Materials Corporation, Austria; P. Polcik, S. Kolozsvari, Plansee Composite Materials GmbH, Germany; F.F. Klimashin, H. Riedl, P.H. Mayrhofer, TU Wien, Institute of Materials Science and Technology, Austria</i>	INVITED: D1-2-7 Advanced Medical Biosensing Systems with Soft/Stretchable Materials and Assemblies, <i>J. Rogers, R. Ghaffari, Northwestern University, USA</i>
3:50pm	B5-2-8 Thermal Evolution of Nanometallic Multilayers, <i>J.S. Riano Z., A.M. Hodge, University of Southern California, USA</i>	Invited talk continues.
4:10pm	B5-2-9 Nanostructured TiAlN/TaN Multilayer Coatings Deposited by DC Magnetron Sputtering: Effect of Bilayer Period, <i>E. Contreras, M. Gómez, Universidad de Antioquia, Colombia</i>	D1-2-9 Cyclic Voltammetry Study of Electrolytic Plasma Processing of Porous Ti, <i>M. Shbe, University of Sheffield, UK; A. Yerokhin, University of Manchester, UK; R. Goodall, University of Sheffield, UK</i>
4:30pm	B5-2-10 The Relationship between Mechanical Property and Phase Composition of Cr-Al-C Coating, <i>J.Z. Liu, P.L. Ke, A.Y. Wang, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</i>	D1-2-10 Corrosion and Degradation Behavior of daph pre-treated PCL Composite Coatings on Pure Magnesium, <i>Y.Y. Yang, Institute for Corrosion Science and Surface Technology, China; K. Zheng, Institute of Biomaterials, Germany; G. Jin, X.F. Cui, Institute for Corrosion Science and Surface Technology, China; S. Virtanen, Institute for Surface Science and Corrosion, Germany; A.R. Boccaccini, Institute of Biomaterials, Germany</i>
4:50pm	B5-2-11 Microstructure and Mechanical Properties of Ta-Si-N Coatings Prepared by Reactive Magnetron Sputtering, <i>A. Zaman, Y. Shen, E.I. Meletis, University of Texas at Arlington, USA</i>	Welcome Mixer 7:40-9:00 pm Lion Fountain Courtyard
5:10pm	B5-2-12 Five Typical Mistakes during the Nanoindentation of Coatings, <i>E. Broitman, SKF Engineering and Research Centre, Netherlands</i>	

Monday Afternoon, April 23, 2018

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Room Royal Palm 4-6 - Session E2-2 Mechanical Properties and Adhesion Moderators: Gerhard Dehm , MPI für Eisenforschung GmbH, Germany; Megan Cordill , Erich Schmid Institute of Materials Science, Austria; Ming-Tzer Lin , National Chung Hsing University, Taiwan		New Horizons in Coatings and Thin Films Room San Diego - Session F2-2 HiPIMS, Pulsed Plasmas and Energetic Deposition Moderators: Tiberiu Minea , Université Paris-Sud, France; Jon Tomas Gudmundsson , University of Iceland, Iceland
1:30pm	E2-2-1 Controlling the Chemomechanical Effects in Sapphire by Ion-implantation, <i>S.J. Bull, A. Yadav</i> , Newcastle University, UK	F2-2-1 Effect of Bias Voltage during Deposition by Deep Oscillation Magnetron Sputtering of AlN Films for Acoustic Biosensors, <i>L. Melo-Máximo, IESM-CEM, Mexico; J.L. Lin, Southwest Research Institute, USA; A.E. Murillo, O. Salas, J. Oliva-Ramírez, J. Oseguera, B. García-Farrera, IESM-CEM, Mexico; D.V. Melo-Máximo, Tecnológico de Monterrey-Campus Estado de México, Mexico</i>
1:50pm	E2-2-2 Magnetron Sputtering of Refractory Metal Thin Films on NiTi Shape Memory Alloy Sheets, <i>F. Seifried</i> , Karlsruhe Institute of Technology (KIT), Germany; <i>H. Riedl</i> , Technische Universität Wien, Austria; <i>S. Baumgaertner, H. Leiste, R. Schwaiger, S. Ulrich, H.J. Seifert</i> , Karlsruhe Institute of Technology (KIT), Germany; <i>P.H. Mayrhofer</i> , Technische Universität Wien, Austria; <i>M. Stüber</i> , Karlsruhe Institute of Technology (KIT), Germany	F2-2-2 Modification of Niobium Surface Properties by High-temperature Nitrogen Plasma based Ion Implantation Aiming Aerospace Applications, <i>R.M. Oliveira, O.D. Aquiar</i> , National Institute for Space Research - INPE, Brazil; <i>A.C. Oliveira</i> , Federal University of São Paulo, Brazil; <i>L. Hoshida</i> , Plasma Laboratory, Brazil; <i>M. Araújo, M.M.N.F. Silva, C.B. Mello, E.C. Ferreira</i> , National Institute for Space Research - INPE, Brazil; <i>V. Liccardo</i> , Aeronautical Institute of Technology, Brazil
2:10pm	INVITED: E2-2-3 Quantitative <i>In Situ</i> SEM MEMS High Cycle Fatigue: the Critical Role of Oxygen on the Nanoscale-Void-Driven Nucleation and Propagation of Small Cracks in Ni Microbeams, <i>A. Barrios Santos, S. Gupta</i> , Georgia Institute of Technology, USA; <i>G. Castelluccio</i> , Cranfield University, UK; <i>O. Pierron</i> , Georgia Institute of Technology, USA	F2-2-3 High-Power Impulse Magnetron Sputtering COATINGS for EXTREME environments., <i>F. Schuster</i> , CEA, France; <i>A. Ferrec</i> , Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, CNRS, France; <i>J. Wang</i> , Nanyang Technological University, Singapore; <i>M. Ougier</i> , CEA, France; <i>A. Quenardel</i> , Institut des Matériaux Jean Rouxel (IMN), Université de Nantes, CNRS, France; <i>M. Sall, M. Schlegel, F. Lomello, A. Michau, H. Maskrot, F. Balbaud</i> , CEA, France
2:30pm	Invited talk continues.	F2-2-4 Reactive High-power Impulse Magnetron Sputtering of Al-O-N Films with Tunable Composition and Properties, <i>J. Vlček, A. Belosludtsev, J. Houska, R. Čerstvý, S. Havíar</i> , University of West Bohemia, Czech Republic
2:50pm	E2-2-5 Role of Microstructure on the Interface Stability of Copper Thin Films on Brittle Substrates, <i>A. Lassnig</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; <i>V. Terzyska</i> , Montanuniversität Leoben, Austria; <i>C. Gammer</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; <i>D. Kiener, C. Mitterer</i> , Montanuniversität Leoben, Austria; <i>M.J. Cordill</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria	F2-2-5 Fabrication of Ti BC N Coatings using a Superimposed HiPIMS and MF Deposition System, <i>Y.W. Su, J.W. Lee</i> , Ming Chi University of Technology, Taiwan
3:10pm	E2-2-6 Mechanical Reliability of Barrier Films for Flexible Electronics, <i>K. Kim, H. Luo, T. Zhu, S. Graham, O. Pierron</i> , Georgia Institute of Technology, USA	F2-2-6 Effect of Peak Current on the Ti-Cu Thin Film Deposition by High Power Impulse Magnetron Sputter Deposition, <i>Y.C. Chen, Y.C. Lin</i> , National Changhua University of Education, Taiwan; <i>W.Y. Wu</i> , Da-Yeh University, Taiwan
3:30pm	E2-2-7 Molecularly Grafted, Structurally Integrated Multifunctional Polymer Thin Films with Improved Adhesion, <i>A. Lassnig</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; <i>P. Smith</i> , Carnegie Mellon University, USA; <i>M.J. Cordill</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; <i>B.R. Jayan</i> , Carnegie Mellon University, USA	F2-2-7 Deposition of Ag-Cu Thin Film on Flexible Substrate using High Power Impulse Magnetron Sputtering, <i>Y.H. Hsu, W.Y. Wu</i> , Da-Yeh University, Taiwan
3:50pm	E2-2-8 Thin-film Adhesion Characterization by Colored Picosecond Acoustics, <i>A. Devos</i> , IEMN UMR CNRS 8520 / MENAPiC, France; <i>P. Emery</i> , MENAPiC, 41 Bd Vauban, France	F2-2-8 Preparation of Anatase TiO ₂ Thin Films by Reactive HiPIMS, <i>F. Cemin</i> , Université Paris-Sud, France; <i>J. Keraudy</i> , Linköping University, Sweden; <i>T. Minea</i> , Université Paris-Sud, France; <i>D. Lundin</i> , Université Paris-Sud/CNRS, France
4:10pm	E2-2-9 Imaging Thin Film Adhesion with Picosecond Ultrasonics, <i>A. Abbas, X. Tridon, J. Michelon</i> , Neta, France	INVITED: F2-2-9 Vapor Phase Nanoparticle Synthesis, Guiding and Self-assembly, <i>U. Helmersson</i> , Linköping University, Sweden
4:30pm	E2-2-10 Mechanical Property Evaluation of Zr-Ti-Fe Thin Film Metallic Glasses, <i>Y.J. Liao</i> , Ming Chi University of Technology, Taiwan; <i>D.Y. Tseng, T.Y. Wu, M.T. Lin</i> , National Chung Hsing University, Taiwan; <i>J.W. Lee</i> , Ming Chi University of Technology, Taiwan	Invited talk continues.
4:50pm	E2-2-11 Mechanical Properties Measurement of Submicron Ti-Ni Shape Memory Alloys Thin Films, <i>T.Y. Wu, M.T. Lin</i> , National Chung Hsing University, Taiwan; <i>T.-C. Chen</i> , Chaoyang University of Technology, Taiwan; <i>T.-T. Lin</i> , National Chung Hsing University, Taiwan	Welcome Mixer 7:40-9:00 pm Lion Fountain Courtyard

Monday Afternoon, April 23, 2018

Surface Engineering - Applied Research and Industrial Applications Room Sunset - Session G3 Innovative Surface Engineering for Advanced Cutting and Forming Tool Applications Moderators: Heidrun Klostermann , Fraunhofer FEP, Germany, Holger Gerdes , Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany, Mirjam Arndt , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein		Topical Symposia Room Sunrise - Session TS4 Materials Modeling and Simulation Moderators: Thomas Mussenbrock , BTU Cottbus, Germany, David Holec , Montanuniversität Leoben, Austria
1:30pm	INVITED: G3-1 On the Synergies Between Coating and Tool Material Substrate: A Strategy to Optimize Coated Tools Performance in Cold Forming. <i>D. Casellas</i> , Fundació CTM Centre Tecnològic, Spain; <i>A. Mueller</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>G. Ramirez</i> , <i>M. Vilaseca</i> , Fundació CTM Centre Tecnològic, Spain	INVITED: TS4-1 From the Atomic Interaction to Thermodynamic and Mechanical Properties of Materials, <i>R. Drautz</i> , Ruhr-Universität Bochum, Germany
1:50pm	Invited talk continues.	Invited talk continues.
2:10pm	G3-3 Deposition of ta-C Coating by Arc Ion Plating for Machining of Al Alloys, <i>Y. Isomura</i> , <i>T. Takahashi</i> , <i>S. Kujime</i> , Kobe Steel, Ltd., Japan	TS4-3 Molecular Dynamics Study of Titanium Oxynitride Surface Properties, <i>T. Gergs</i> , <i>J. Trieschmann</i> , Ruhr University Bochum, Germany; <i>T. Mussenbrock</i> , BTU Cottbus, Germany
2:30pm	G3-4 Laser Structured High Performance PVD Coatings for Injection Molds, <i>K. Bobzin</i> , <i>T. Brögelmann</i> , <i>N.C. Kruppe</i> , <i>M. Naderi</i> , Surface Engineering Institute - RWTH Aachen University, Germany	TS4-4 Distribution of O Atoms on Partially Oxidized Metal Surfaces According to Ab-initio Calculations, and the Consequences for Sputtering of Individual Metal Oxides, <i>J. Houska</i> , <i>T. Kozak</i> , University of West Bohemia, Czech Republic
2:50pm	G3-5 Effect of Layer Sequence on Wear Behavior of AlTiSiN Hard Coatings, <i>J. Kohlscheen</i> , <i>C. Bareiss</i> , Kennametal GmbH, Germany; <i>C. Charlton</i> , <i>D. Banerjee</i> , Kennametal Inc., USA	TS4-5 First-principles Study of Adsorption and Diffusion of Oxygen on the Surface of TiN, ZrN, HfN and the Effect of Al on Oxidation Resistance of TiN Coatings, <i>F.Y. Guo</i> , Central South University, China
3:10pm	G3-6 Structural, Mechanical, and Cutting Properties of AlCrN Coatings Deposited by Arc Ion Plating, <i>N. Ohba</i> , <i>T. Takahashi</i> , <i>S. Kujime</i> , Kobe Steel, Ltd., Japan	TS4-6 Metastable Phase Formation of Pt-X (X= Ir, Au) Thin Films, <i>A. Saksena</i> , <i>Y. Chien</i> , <i>K. Chang</i> , <i>P. Kuemmerl</i> , <i>M. Hans</i> , RWTH Aachen University, Germany; <i>B. Völker</i> , Max-Planck-Institut für Eisenforschung GmbH, Austria; <i>J.M. Schneider</i> , RWTH Aachen University, Germany
3:30pm	G3-7 Physical Properties and Cutting Performances Relation to Coating Conditions of AlCrN Coating Deposited by HiPIMS and Cathodic Arc, <i>K. Tanaka</i> , <i>S. Imamura</i> , <i>M. Setoyama</i> , <i>H. Fukui</i> , Sumitomo Electric Hardmetal Corp., Japan	INVITED: TS4-7 From Plasmas Towards Surfaces: How Plasma Simulation Supports Materials Development, <i>M.J. Kushner</i> , University of Michigan, USA
3:50pm		Invited talk continues.
4:10pm		TS4-9 Numerical Estimation of Intrinsic Stress in Physical Vapor Deposited Thin-Films, <i>A. Chakraborty</i> , <i>R. Anderson</i> , <i>J. Ash</i> , South Dakota School of Mines and Technology, USA; <i>F. Kustas</i> , Arbegast Materials Processing and Joining Laboratory (AMP), USA; <i>S.P. Ahrenkiel</i> , South Dakota School of Mines and Technology, USA
4:30pm		TS4-10 Modeling of UHMWPE Surface Texture for Reducing Wear on a Knee Prosthesis, <i>T. De la Mora Ramírez</i> , Universidad Autónoma Metropolitana, Mexico; <i>I. Hilario Cruz</i> , Universidad Autónoma Metropolitana- Azcapotzalco, Mexico; <i>M.A. Doñí Ruiz</i> , Universidad Politécnica del Valle de Mexico, Mexico; <i>N. Lopez Perrusquia</i> , Universidad Politecnica Del Valle De Mexico, Mexico; <i>E.D. García Bustos</i> , Universidad de Guadalajara, CUCEI, Mexico, México; <i>D. Maldonado Onofre</i> , Tecnológico de Estudios Superiores de Jocotitlán, Mexico
4:50pm		TS4-11 Perturbation Analysis Of Glassy Alloy Film Formation, <i>R. Basu</i> , Adarsha Institute of Technology, VTU, India
5:10pm	Special Interest Talk 1 Nanoscale Multilayer PVD Coatings to Serve in Demanding Environments, <i>P. Hovsepian</i> , <i>A.P. Ehasarian</i> , Sheffield Hallam University, UK	TS4-12 First Principles Study of the Nb-Al Intermetallic System, <i>D. Holec</i> , Montanuniversität Leoben, Austria; <i>N. Koutna</i> , TU Wien, Institute of Materials Science and Technology, Austria; <i>K. Preininger</i> , <i>S. Zoehrer</i> , <i>R. Franz</i> , Montanuniversität Leoben, Austria
5:30pm	Invited talk continues. (See page 9 for full abstract)	Welcome Mixer 7:40-9:00 pm Lion Fountain Courtyard

Monday Afternoon, April 23, 2018

Topical Symposia

Room Royal Palm 1-3 - Session TS5

Anti- and De-icing Surface Engineering

Moderators: Alina Agüero Bruna, Instituto Nacional de Técnica Aeroespacial (INTA), Spain, Jolanta Klemberg-Sapieha, Polytechnique Montréal, Canada

1:30pm	TS5-1 Multi-step Modification of Ti-Alloy and Stainless Steel Surfaces for Icephobic Applications, <i>S. Brown, J. Lengaigne, A. Riera, L. Martinu, J.E. Klemberg-Sapieha</i> , Polytechnique Montreal, Canada	(Cont'd from page 8) P. Hovsepian Special Interest Talk 1 Superlattices were discovered in 1925 by Johansson and Linde as periodic structures of layers of two (or more) materials. In 1970 J.S. Koehler theoretically predicted that if these materials were selected to be with high and low elastic constants a super strong man made material could be produced. Various theories and models have been put forward to explain the super hardening and super toughening effects and a large variety of coatings have been explored both on laboratory and industrial scale. This work summarises results on the properties and performance of novel nanoscale multilayer structured coatings produced by High Power Impulse Magnetron Sputtering, (HIPIMS) dedicated to serve in demanding environments. To protect Gamma-TiAl components used in automotive and aero engines against environmental attack dense oxide forming elements such as Cr and Al were combined to produce CrAlN/CrN nanoscale multilayer coatings. Coatings with very low layer waviness and strongly improved density have been successfully grown by HIPIMS. These coatings provide excellent oxidation resistance up to 850°C and reduce the fatigue deficit of the aerospace turbine blade material to less than 9%. TiAlCN/VCN represents a new class of superlattice coatings where enhanced performance is achieved by lateral segregation of small atom material (in this case Carbon) at the interfaces between the individual layers producing low shear strength interfaces. These coatings provide excellent tool protection against build-up edge formation during machining of Aluminium alloys, Titanium alloys and MMCs widely used in aerospace and automotive applications.
1:50pm	TS5-2 Design and Characterization of Super-low Ice Adhesion Surfaces, <i>Z.L. Zhang</i> , Norwegian University of Science and Technology (NTNU), Norway	
2:10pm	TS5-3 Icephobic Nanocomposites for Aeronautics, <i>F. Martin, S. Larumbe, M. Monteserin, G. Garcia Fuentes</i> , Asociación de Industria Navarra, Spain; <i>J. Mora Nogues, P. García Gallego, A. Agüero Bruna, R. Atienza</i> , INTA, Spain	
2:30pm	TS5-4 Development of Hydrophobic/icephobic Poly (Dimethylsiloxane) Based Composite Coating for Application in Ice Protection, <i>J. Liu, J. Wang</i> , University of Nottingham, UK; <i>H. Memon</i> , University of Nottingham, UK; <i>T. Barman, B. Turnbull, K. Choi, X. Hou</i> , University of Nottingham, UK	In Me doped Carbon films a unique nanoscale multilayer structure was produced by unconventional method of coating growth based on dynamic segregation driven by intensive ion irradiation. By varying the ion energy and ionisation degree, layered structures with bi-layer period of up to 25 nm were grown. With Cr/C and Mo-W doped Carbon nanoscale multilayer films enhanced tribological performance in boundary lubricated conditions at elevated temperatures, (up to 200°C) was achieved. Smart material selection allowed <i>in-situ</i> formation of lubricious phases at the asperity contacts due to tribochemical reactions between the dopants and the oil and improved the coatings high temperature stability.
2:50pm	TS5-5 Correlation Between Room Temperature Characteristics and Ice Adhesion, <i>J.Y. He</i> , Norwegian University of Science and Technology (NTNU), Norway	CrN/NbN combining the electrochemically stable Nb with the wear resistant Cr was initially developed as a replacement of hard Cr, however its unique properties allowed the coating to be used in many other demanding applications described here. CrN/NbN provided reliable protection against high pressure, (50 bar), high temperature, (600°C) pure steam attack on P92 steel used in steam turbines and showed high resistance against water droplet erosion. Furthermore, the coating did not deteriorate the mechanical properties such as Ultimate Tensile, Low Cycle Fatigue and Creep Strength, which is of paramount importance in turbine blade applications.
3:10pm	TS5-6 Impact Dynamics and Icing Behavior of Supercooled Water Microdroplets on Surfaces of Different Wettabilities Ranging from Superhydrophilic to Superhydrophobic, <i>J. Lengaigne</i> , Polytechnique Montreal, Canada; <i>E. Bousser</i> , Polytechnique Montreal, UK; <i>A. Riera</i> , Polytechnique Montreal, Canada; <i>D. Batory</i> , Lodz University of Technology, Poland; <i>S. Brown</i> , Polytechnique Montreal, Canada; <i>A. Dolatabadi</i> , Concordia University, Canada; <i>L. Martinu, J.E. Klemberg-Sapieha</i> , Polytechnique Montreal, Canada	The performance of medical implants was enhanced by the application of CrN/NbN coatings. Metal ion release studies showed a reduction in Co, Cr and Mo release at physiological and elevated temperatures to undetectable levels (<1 ppb). Thorough <i>in vitro</i> biological, cytotoxicity, genotoxicity and sensitisation testing proved the safety of the coating in biological environment.
3:30pm	TS5-7 Quasicrystalline Coatings by HVOF to Improve the Ice Accretion and Durability in Aerostructures Components, <i>R. Muelas Gamo, J. Mora Nogues, P. García Gallego, A. Agüero Bruna</i> , Instituto Nacional de Técnica Aeroespacial (INTA), Spain	Welcome Mixer 6:40-9:00 pm Lion Fountain Courtyard

Monday Afternoon, April 23, 2018

Special Interest Talk
Room San Diego

5:35pm	<p>Special Interest Talk 2 Tracing the Recorded History of Thin-Film Sputter Deposition: from the 1800s to 2018, <i>J.E. Greene</i>, University of Illinois at Urbana-Champaign, USA</p> <p>Thin films, ubiquitous in today's world, have a documented history of more than 5000 years. However, thin-film growth by sputter deposition, which required the development of vacuum pumps and electrical power in the 1600s and 1700s, is a much more recent phenomenon. First reported in the early 1800s, sputter deposition already dominated the optical-coating market by 1880. Preferential sputtering of alloys, sputtering of liquids, multi-target sputtering, and optical spectroscopy for process characterization were all described in the 1800s. Measurements of threshold energies and yields were carried out in the late 1800s, and results in reasonable agreement with modern data were reported in the 1930s. Roll-to-roll sputter coating on flexible substrates was introduced in the mid-1930s and the earliest demonstration of sustained self-sputtering (i.e., sputtering without the introduction of gas) occurred in 1970.</p> <p>The term magnetron dates to 1921 and the results of the first magnetron sputtering experiments were published in the late 1930s. The earliest descriptions of a parallel-plate magnetron were provided in a patent filed in 1962, rotatable magnetrons appeared in the early 1980s, and tunable "unbalanced" magnetron sputtering was developed in 1992. Two additional forms of magnetron sputtering evolved during the 1990s, both with the goal of efficiently ionizing sputter-ejected metal atoms: ionized-magnetron sputtering and HIPIMS, the latter now available in several variants.</p> <p>rf glow discharges were reported in 1891, with the first results from rf deposition and etching experiments published in the 1930s. Modern capacitively-coupled rf sputtering systems were developed and modeled in the early 1960s and a patent was filed in 1975 that led to pulsed-dc and mid-frequency-ac sputtering.</p> <p>The purposeful synthesis of metal-oxide films goes back to at least 1907, leading to early metal-oxide and nitride sputtering experiments in 1933, although the term "reactive sputtering" was not used in the literature until 1953. The effect of target oxidation on secondary-electron yields and sputtering rates was reported in 1940. The first kinetic models of reactive sputtering appeared in the 1960s; high-rate reactive sputtering, based on partial-pressure control, was developed in the early 1980s.</p> <p>While abundant experimental and theoretical evidence already existed in the late 1800s to early 1900s demonstrating that the sputtering process is due to momentum transfer through near-surface collision cascades, the concept of sputtering due to local "impact evaporation" continued in the literature into the 1960s. Modern sputtering theory is based upon a linear-transport model published in 1969.</p> <p>No less than eight Nobel Laureates in Physics and Chemistry played major roles in the evolution of modern sputter deposition.</p>
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Welcome Mixer follows **in the Lion Fountain Courtyard**

New Tuesday Morning FTS
Bruker Focused Topic Session
"Key Technologies for the Advanced
Characterization of Surfaces"
Giovanni Ramirez, Ph.D. and Ian Armstrong, Ph.D.
Tuesday *Morning,* April 24th
Town & Country Room, 7:00-8:00am**
refreshments will be served

The Exhibition Hall opens on
Tuesday
Grand Hall
12:00-7:00 pm
Enjoy Light Luncheon Refreshments
in the Exhibition Hall 12:15 pm

Tuesday Morning, April 24, 2018

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, Qi Yang, National Research Council of Canada, Canada, Jyh-Ming Ting, National Cheng Kung University, Taiwan		Hard Coatings and Vapor Deposition Technologies Room California - Session B2-1 CVD Coatings and Technologies Moderators: Michel Pons, Université Grenoble Alpes, CNRS, Grenoble INP, SIMaP, France, Makoto Kambara, The University of Tokyo, Japan
8:00am	INVITED: B1-1-1 Boon and Bane of Internal Interfaces and Microstructure Defects, <i>D. Rafaja</i> , TU Bergakademie Freiberg, Germany	B2-1-1 Microstructure Investigation on CVD $Ti_{1-x}Al_xN$ Hard Coatings, <i>R. Qiu, O. Bäcke, M.B. Hassine, M. Halvarsson</i> , Chalmers University of Technology, Sweden; <i>D. Stiens, T. Manns, J. Kümmel, V. Janssen</i> , Walter AG, Germany
8:20am	Invited talk continues.	B2-1-2 Elaboration and Characterization of (Ti,Al)N Coatings Deposited by Thermal CVD for Protection in Severe In-service Conditions, <i>F. Uny, S. Achache, S. Lamri, G. Raine</i> , Nogent International Center for CVD Innovation, LRC CEA-ICD LASMIS UMR6281, UTT, Antenne de Nogent, France; <i>Z. Dong</i> , Nanyang Technological University, Singapore; <i>M. Pons, E. Blanquet</i> , Université Grenoble Alpes, CNRS, Grenoble INP, SIMaP, France; <i>F. Schuster</i> , Commissariat à l'Energie Atomique et aux énergies alternatives (CEA) Saclay - Nogent International Center for CVD Innovation, France; <i>F. Sanchezette</i> , Nogent International Center for CVD Innovation, LRC CEA-ICD LASMIS UMR6281, UTT, Antenne de Nogent, France
8:40am	B1-1-3 The Material (in) Dependency of Impurity Affected Thin Film Growth, <i>F. Cougnon, D. Altangerel, R. Dedoncker, D. Depla</i> , Ghent University, Belgium	INVITED: B2-1-3 Investigation of CVD-AlTiN Films with High Al Content, <i>K. Sato, S. Tatsuoka, K. Yanagisawa, T. Ishigaki, K. Yamaguchi</i> , Mitsubishi Materials Corporation, Japan
9:00am	B1-1-4 Stress in Sputtered Metal Thin Films: Dependence on Growth Rate and Pressure, <i>T.M. Kaub</i> , University of Alabama, USA; <i>Z. Rao</i> , Brown University, USA; <i>G.B. Thompson</i> , University of Alabama, USA; <i>E. Chason</i> , Brown University, USA	Invited talk continues.
9:20am	B1-1-5 Improved Ionization Fraction and Film Quality Using a Serpentine Linear Magnetron and a Modified HiPIMS Waveform, <i>I. Haeahnlein, B. Wu, I. Schelkanov</i> , University of Illinois at Urbana-Champaign, USA; <i>J. McLain</i> , Starfire Industries LLC, USA; <i>D. Patel</i> , University of Illinois at Urbana-Champaign, USA; <i>B. Jurczyk</i> , Starfire Industries LLC, USA; <i>D. Ruzic</i> , University of Illinois at Urbana-Champaign, USA	B2-1-5 Microstructural Investigation of CVD Titanium Aluminium Nitride – Kappa Alumina Coatings, <i>O. Bäcke, M. Halvarsson, H. Petersson</i> , Chalmers University of Technology, Sweden; <i>D. Stiens, T. Manns, J. Kümmel</i> , Walter AG, Germany
9:40am	B1-1-6 Microstructural, Mechanical and Erosion Properties of Cylindrical Magnetrons Sputter Deposited TiSiCN, TiAlVN and TiAlVSiCN Coatings on Inner Surface of Cylinder, <i>R. Wei, E. Langa, J.L. Lin</i> , Southwest Research Institute, USA; <i>W. Zhao, L. Li</i> , Beijing Sanju Enviro. Protect. & New Matls., China	B2-1-6 Deep Electron Microscopy Investigation of $Ti_{1-x}Al_xN/TiCN$ Multilayer CVD Coatings, <i>M. Ben Hassine, O. Bäcke</i> , Chalmers University of Technology, Sweden; <i>D. Stiens, T. Manns, J. Kümmel, V. Janssen</i> , Walter AG, Germany; <i>M. Halvarsson</i> , Chalmers University of Technology, Sweden
10:00am	B1-1-7 Template Effect on Texture Evolution of VN Thin Films Deposited by Unbalanced Magnetron Sputtering, <i>P.C. Su, J. Huang, G.P. Yu</i> , National Tsing Hua University, Taiwan	B2-1-7 Some Guidelines for the Determination of Texture Coefficients in CVD α - Al_2O_3 Coatings, <i>R.P. Stylianou, M. Tkadletz</i> , Montanuniversität Leoben, Austria; <i>M. Penoy</i> , CERATIZIT Luxembourg S.à r.l., Luxembourg; <i>C. Czettl</i> , CERATIZIT Austria GmbH, Austria; <i>C. Mitterer</i> , Montanuniversität Leoben, Austria
10:20am	B1-1-8 IN SITU High Resolution Stress Measurement Coupled with Interrupted Deposition in Case of Völmer-Weber Thin Film Growth, <i>Q. Herault, S. Grachev, J. Wang, I. Gozyk</i> , Saint-Gobain Recherche, France; <i>R. Lazzari</i> , Université Pierre et Marie Curie, France	B2-1-8 Hot Filament CVD Diamond and HIPIMS-Diamond Coating Technology on Cemented Carbide Substrates for Cutting Tool Applications, <i>M. Woda, W. Puetz, M. Frank, S. Bolz, W. Koelker, O. Lemmer, T. Leyendecker</i> , CemeCon AG, Germany
10:40am	B1-1-9 High-Frequency Properties of Soft Ferromagnetic Films on Cemented Carbide Substrates an Approach for Sensor Applications, <i>S. Beirle, K. Seemann, H. Leiste, S. Ulrich</i> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany	
	Bruker Focused Topic Session "Key Technologies for the Advanced Characterization of Surfaces" Giovanni Ramirez, Ph.D. and Ian Armstrong, Ph.D. Tuesday *Morning,* April 24. 2018 Town & Country Room 7:00-8:00am ** refreshments will be served	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 24, 2018

Coatings for Biomedical and Healthcare Applications Room Royal Palm 1-3 - Session D2 Bio-corrosion, Bio-tribology, and Bio-tribocorrosion Moderators: Anna Igual Munoz, Universitat Politècnica de València UPV, Spain, Steve Bull, Newcastle University, UK, Nuria Espallargas, Norwegian University of Science and Technology (NTNU), Norway		Coatings for Biomedical and Healthcare Applications Room Royal Palm 1-3 - Session D3 Medical Devices, Biosensors, and Biodegradation Moderators: Jessica Jennings, University of Memphis, USA, Robin Pourzal, Rush University Medical Center, USA
8:00am INVITED: D2-1 Magnetic Abrasive Finishing of Additively Manufactured Components for Biomedical Applications, <i>H. Yamaguchi</i> , University of Florida, USA		Bruker Focused Topic Session "Key Technologies for the Advanced Characterization of Surfaces" Giovanni Ramirez, Ph.D. and Ian Armstrong, Ph.D. Tuesday *Morning, * April 24. 2018 Town & Country Room 7:00-8:00am ** refreshments will be served
8:20am Invited talk continues.		
8:40am D2-3 Investigating Some New Coatings to Improve the Modular Junction of Total Hip Prostheses, <i>S. Ehsani-Majd</i> , Mines Saint-Etienne, France; <i>V. Fridrici</i> , Ecole centrale de Lyon, LTDS, France; <i>C. Desrayaud</i> , Mines Saint-Etienne, France; <i>P. Kapsa</i> , Ecole centrale de Lyon, LTDS, France; <i>A. Boyer</i> , <i>J. Geringer</i> , Mines Saint-Etienne, France		
9:00am D2-4 Tribological Coatings on Titanium Alloy (Ti6Al4V) for Orthopedic Applications., <i>K.Y. Cheng</i> , University of Illinois at Chicago, USA; <i>N. Pagan</i> , Auburn High School, USA; <i>M. McNallan</i> , University of Illinois at Chicago, USA; <i>D. Bijukumar</i> , <i>M. Mathew</i> , University of Illinois College of Medicine, USA		
9:20am		INVITED: D3-5 Osteochondral Tissue Regeneration into Porous PCL Scaffolds With and Without Chitosan Coatings of 98% or 80% Degree of Deacetylation, <i>C.D. Hoermann</i> , George Mason University, USA; <i>J. Guzmán-Morales</i> , <i>G. Chen</i> , <i>J. Rodriguez-Gonzales</i> , <i>E. Jalali Dil</i> , <i>B.D. Favis</i> , Ecole Polytechnique de Montreal, Canada; <i>J.E. Henderson</i> , McGill University, Canada
9:40am		Invited talk continues.
10:00am Exhibition Hall Opens Today Grand Hall 12:00-7:00 pm Enjoy Light Luncheon Refreshments In the Exhibition Hall 12:15 pm		D3-7 Vancomycin-Phosphatidylcholine Spray Coatings for Delivery of Antimicrobials from Implants, <i>R. Awais</i> , <i>B. Barr</i> , <i>R. Gopalakrishnan</i> , <i>J. Jennings</i> , University of Memphis, USA

Tuesday Morning, April 24, 2018

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Room Royal Palm 4-6 - Session E1-1 Friction, Wear, Lubrication Effects, and Modeling Moderators: Albano Cavaleiro , University of Coimbra, Portugal, Carsten Gachot , Vienna University of Technology, Austria, Nazlim Bagcivan , Schaeffler AG, Germany		New Horizons in Coatings and Thin Films Room San Diego - Session F2-3 HIPIMS, Pulsed Plasmas and Energetic Deposition Moderators: Tiberiu Minea , Université Paris-Sud, France, Jon Tomas Gudmundsson , University of Iceland, Iceland
8:00am	E1-1-1 Tribologically Induced Oxidation of High-purity Copper as a Function of Sliding Distance, <i>C. Greiner, S. Becker, C. Haug</i> , Karlsruhe Institute of Technology (KIT), Germany	F2-3-1 Ultra-thick CrN/AlN Superlattice Coatings Deposited by a Combination of Plasma Enhanced Magnetron Sputtering and High Power Impulse Magnetron Sputtering, <i>J.L. Lin, R. Wei</i> , Southwest Research Institute, USA
8:20am	E1-1-2 Investigation on the Reason for Low Friction between Diamond-like Carbon Coating and Ti-6Al-4V under Fretting Conditions, <i>H.H. Ding, V. Fridrici, P. Kapsa</i> , Ecole centrale de Lyon, LTDS, France	F2-3-2 Deposition of DLC Coatings by HIPIMS to Arc Mixed Mode, <i>H. Gerdes, R. Bandorf, J. Rösler, M. Vergöhl, G. Braeuer</i> , Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany
8:40am	E1-1-3 Tribological and Wettability Evaluation of Magnetron Sputtered WS-C/F Coatings, <i>S.P. Rodrigues</i> , University of Coimbra, Portugal; <i>S. Carvalho</i> , University of Minho, Portugal; <i>A. Cavaleiro</i> , University of Coimbra, Portugal Graduate Student Nominee	F2-3-3 Performance Improvements of Tungsten and Zinc Doped Indium Oxide Thin Film Transistor by Fluorine Based Mixing Plasma Treatment with a High-K Gate Dielectric, <i>Y.C. Chiu, P.T. Liu, D.B. Ruan, M.C. Yu, K.J. Gan, T.C. Chien, Y.H. Chen, P.Y. Kuo, S.M. Sze</i> , National Chiao Tung University, Taiwan
9:00am	E1-1-4 Tribological Properties and Oxidation Resistance of WN _x Thin Films at High Temperatures up to 500°C, <i>D. Javodšák, J. Musil, Z. Soukup, R. Čerstvý, S. Havíar, J. Houska</i> , University of West Bohemia, Czech Republic	F2-3-4 Effect Of Craters Formation On Deep Hardening Under Pulsed Electron Beam Treatment, <i>T. Grosdidier</i> , LABoratoire d'Excellence Design des Alliages Métalliques pour Allégement de Structures (Labex DAMAS), France; <i>Y. Samih</i> , Laboratoire d'Etude des Microstructures et de Mécanique des Matériaux (LEM3), France; <i>C. Dong</i> , Key Laboratory of Materials Modification, Dalian University of Technology, China
9:20am	E1-1-5 Correlation between Evolution of Roughness Parameters and Micropitting of Carburized Steel Surfaces under Boundary Lubrication Condition, <i>S. Roy, D. White, S. Sundararajan</i> , Iowa State University, USA	F2-3-5 Mechanical Property Evaluation of ZrCN Films Deposited by a Hybrid Superimposed High Power Impulse- Middle Frequency Sputtering System, <i>Q.L. Tang, Y.C. Wu</i> , National Taipei University of Technology, Taiwan; <i>J.W. Lee</i> , Ming Chi University of Technology, Taiwan
9:40am	E1-1-6 The Influence of Temperature on the Wear Mechanisms of a Cobalt-based Alloy Contact Subjected to Fretting: from an Abrasive Tribooxydation Process to the Glaze Layer Response, <i>A. Dreano, S. Fouvré, G. Guillonneau</i> , LTDS - Ecole Centrale de Lyon, France	
10:00am	INVITED: E1-1-7 Coated Surface Wear Resistance Design by Computational Modelling, <i>K. Holmberg, A. Laukkonen, T.J. Hakala</i> , VTT Technical Research Centre of Finland Ltd, Finland	
10:20am	Invited talk continues.	
	Bruker Focused Topic Session "Key Technologies for the Advanced Characterization of Surfaces" Giovanni Ramirez, Ph.D. and Ian Armstrong, Ph.D. Tuesday *Morning,* April 24. 2018 Town & Country Room 7:00-8:00am ** refreshments will be served	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 24, 2018

Surface Engineering - Applied Research and Industrial Applications Room Sunset - Session G2 Component Coatings for Automotive, Aerospace, Medical, and Manufacturing Applications Moderators: Osman Levent Eryilmaz , Argonne National Laboratory, USA; Jolanta Klemburg-Sapieha , Polytechnique Montréal, Canada		Topical Symposia Room Sunrise - Session TS3 Coating of Synthetic Materials – Engineering for the Future Moderators: Klaus Böbel , Robert Bosch GmbH, Germany; Fred Fietzke , Fraunhofer FEP, Germany
8:00am	G2-1 The Effects of Temperature and Gas Mixture Composition on the Microstructure and Tribological Properties of the Plasma Nitrocarburized DIN 100 CR6 Steel, <i>M.A. Fontes</i> , Federal University of Sao Carlos, Brazil; <i>V.H. Baggio-Scheid</i> , Sao Jose dos Campos, Brazil; <i>D.S. Machado</i> , Tecumseh Products Company, Brazil; <i>L.C. Casteletti</i> , University of Sao Paulo, Brazil; <i>P.A.P. Nascente</i> , Federal University of Sao Carlos, Brazil	TS3-1 Development of PVD Coatings by R2R on Basis of Ti/AG, Ti/ZN and Ti/AG/ZN on Textile Fabrics, <i>M. Fenker</i> , <i>H. Kappl</i> , FEM Forschungsinstitut Edelmetalle & Metallchemie, Germany
8:20am	G2-2 Selected Aspects of Industrial Applications of Hydrogen Free DLC Coatings Deposited by CVAE, <i>J. Vetter</i> , Oerlikon Balzers Coating Germany GmbH, Germany; <i>J. Karner</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>J. Becker</i> , <i>M. Markus</i> , Oerlikon Balzers Coating Germany GmbH, Germany; <i>N. Beganic</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>E. Billot</i> , Oerlikon Balzers Coating Germany GmbH, Germany; <i>H. Rudigier</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, Switzerland	TS3-2 Coating of Plastic Components by Electron-beam Evaporation, <i>F. Fietzke</i> , <i>H. Klostermann</i> , <i>J.-P. Heinß</i> , Fraunhofer FEP, Germany
8:40am	G2-3 Erosion Resistant PVD Coatings for Gas Turbine Compressor Blades, <i>L. Shang</i> , <i>C. Acikgoz</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>S. Moser</i> , <i>G. Sznydelman</i> , Oerlikon Metco AG, Switzerland; <i>O. Jarry</i> , Oerlikon Balzers, Oerlikon Balzers Coating Germany GmbH, Germany; <i>M. Arndt</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	INVITED: TS3-3 Aspects of Coatings on Plastic products for Decorative and automotive parts., <i>R. Tietema</i> , IHI Hauzer Techno Coating BV, Netherlands; <i>D. Doerwald</i> , <i>C. Trivedi</i> , <i>I. Kolev</i> , <i>J. Landsbergen</i> , IHI Hauzer Techno Coating B.V., Netherlands
9:00am	G2-4 Synthesis and Characterization of Ta-C, Hf-C and Ta-Hf-C Coatings Obtained by Cathodic Magnetron Sputtering in Reactive Conditions, <i>A. de Monteynard</i> , Nogent International Center for CVD Innovation, LRC CEA-ICD LASMIS UMR6281, UTT, Antenne de Nogent, France; <i>A. Billard</i> , Institut FEMTO-ST, CNRS, UTBM, Univ. Bourgogne Franche-Comté, Site de Montbéliard, France; <i>F. Sanchez</i> , Nogent International Center for CVD Innovation, LRC CEA-ICD LASMIS UMR6281, UTT, Antenne de Nogent, France	Invited talk continues.
9:20am	INVITED: G2-5 Thin and Thick Coatings and Applications in Aerospace Industry, <i>S. Dixit</i> , Plasma Technology Inc., USA	INVITED: TS3-5 Combined Impact and Sliding Testing for Evaluation of Surfaces on Different Materials, <i>C. Rebholz</i> , University of Cyprus, Cyprus
9:40am	Invited talk continues.	Invited talk continues.
10:00am	G2-7 HNT-Containing Ceramic PEO Coatings for Active Corrosion Protection of Magnesium Alloys, <i>B. Mingo</i> , <i>Y. Guo</i> , <i>A. Matthews</i> , <i>A. Yerokhin</i> , The University of Manchester, UK	TS3-7 Interfacial Stability of the Aluminium-Polyimide Interface Against Thermal Treatments, <i>B. Putz</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; <i>G. Milasin</i> , <i>Y. Butenko</i> , European Space Research and Technology Centre, Netherlands; <i>B. Völker</i> , <i>C. Gammer</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; <i>C. Semprimoschnig</i> , European Space Research and Technology Centre, Netherlands; <i>M.J. Cordill</i> , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Monanuniversität Leoben, Austria Graduate Student Nominee
	Bruker Focused Topic Session "Key Technologies for the Advanced Characterization of Surfaces" Giovanni Ramirez, Ph.D. and Ian Armstrong, Ph.D. Tuesday *Morning, * April 24. 2018 Town & Country Room 7:00-8:00am ** refreshments will be served	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 24, 2018

Exhibitors Keynote Lecture

Room Town and Country

11:00 am-12:00 pm

Nazlim Bagcivan

Enabling Mobility for Tomorrow with Surface Technology

Director, Coating Center at Schaeffler AG
Herzogenaurach, Germany



Among the focus areas of future transportation needs are the development of environmentally-friendly vehicle drive components including the engine, transmission, and axles. Environmentally-friendly vehicle drive systems are one of the major factors determining energy efficiency and the environmental compatibility of transportation. Therefore, development of energy-efficient drive systems is a high priority. In addition to other measures, improvement of tribological conditions along the entire drive systems of passenger cars and commercial vehicles will provide longer component lifetimes and decreased vehicle emissions.

With modern surface technology, the properties of vehicle drive system components can be adjusted in order to minimize friction losses and meet more stringent environmental requirements. Innovative vacuum coating technology has the ability to reduce vehicle CO₂ emissions by lightweight design, reduce friction losses in all drive system components, and therefore provide improved fuel efficiency.

A sustainable reduction of CO₂ emission can only be achieved if friction reduction is ensured during the entire lifetime of the coated product. Therefore, the goal can be summarized as "minimum friction at highest wear resistance." For innovative products, it is extremely important to consider coatings as design elements and integrate them into the product development process at a very early stage. Development of tribological coatings has to be accomplished within a holistic and design-oriented context.

Close collaboration between research and production teams, industry, and academia is required to achieve such a challenging goal. In the future, the role of coatings as a vital design element will also increase in many other technical applications.

Nazlim Bagcivan is currently director of the Coating Center at Schaeffler AG headquarter in Herzogenaurach, Germany. His responsibilities cover the Schaeffler-wide development of new coating technologies including coating materials and processes, the introduction of new coating technologies into serial applications, the Schaeffler-wide supervision of serial coating processes and technical qualification of all coating suppliers. Prior to joining Schaeffler in 2014 he was senior engineer and deputy head of Surface Engineering Institute (IOT) at RWTH Aachen University. His R&D-work was focused on thin film technologies and thermal spraying for corrosion protection and tribology in components and tools for various applications. He received his doctorate in surface engineering from RWTH Aachen University in 2008 and his diploma in mechanical engineering and aeronautics and space engineering from RWTH Aachen University in 2003. He has more than 150 publications and holds several patents. He served as reviewer for many scientific journals and was involved in the organization committees of international conferences. He gives lectures at RWTH Aachen University in "Coating Technology for Mobility Applications". He is a member of the board of the European Society for Thin Films (EFDS) and head of the scientific advisory board of EFDS.

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

Exhibition Reception 5:30-7:00 pm

Tuesday Afternoon, April 24, 2018

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, Qi Yang, National Research Council of Canada, Canada, Jyh-Ming Ting, National Cheng Kung University, Taiwan		Hard Coatings and Vapor Deposition Technologies Room California - Session B2-2 CVD Coatings and Technologies Moderators: Michel Pons, Université Grenoble Alpes, CNRS, Grenoble INP, SIMaP, France, Makoto Kambara, The University of Tokyo, Japan
1:30pm		
1:50pm	B1-2-2 Impact Analysis of Power Source Operating Parameters on Hardness, Adhesion and Film Composition of TiN Functional Coatings, <i>K. Ruda, W. Gajewski, J. Świątnicki, A.W. Oniszczuk</i> , TRUMPF Huettinger Sp. z o.o., Poland	B2-2-2 Highly Efficient Light trapping by Fractal, MOCVD Processed CoO-based Surfaces on Polymers, <i>E. Amin-Chalhoub, O. Debieu, D. Samelot, T. Duguet, C. Vahlas</i> , CIRIMAT, CNRS - University of Toulouse, France
2:10pm	B1-2-3 Performance and Characterization of Ultrathin Carbon Layer in Multilayered Ti-C Coatings used on Metallic Bipolar Plates in PEMFCs, <i>F. Bi, D. Zhang, P. Yun, L. Peng, X. Lai</i> , Shanghai Jiao Tong University, China	B2-2-3 Deposition Kinetics, Gas Phase Analysis and Film Characterization of Silicon Carbide by Low Pressure Chemical Vapor Deposition using Vinyltrichlorosilane and Hydrogen, <i>A. Desenfant</i> , LCTS-University of Bordeaux, France; <i>G. Laduye</i> , AIR LIQUIDE, Paris-Saclay Research & Development, France; <i>C. Descamps</i> , Safran Ceramics, France; <i>G.L. Vignoles, G. Chollon</i> , LCTS-University of Bordeaux, France
2:30pm	B1-2-4 Substitution of Commercially Coated Tungsten Carbide Tools in Dry Cylindrical Turning Process by HiPIMS Coated Niobium Carbide Cutting Inserts, <i>E. Uhlmann, D. Hinzmamn, K. Kropidlowski</i> , Institute for Machine Tools and Factory Management - Technical University Berlin, Germany; <i>P. Meier</i> , Institute for Machine Tools and Factory Management - Technical University Berlin; <i>L. Prasol</i> , Institute for Machine Tools and Factory Management - Technical University Berlin, Germany; <i>M. Woydt</i> , BAM Berlin, Germany	B2-2-4 Hydrothermal Corrosion Behaviors of CVD Silicon Carbides and Cr-based Alloy Coated CVI SiC/SiC Composites, <i>J.H. Shin, D.J. Kim, H.G. Lee, J.H. Park, J.Y. Park, W.J. Kim</i> , Korea Atomic Energy Research Institute, Republic of Korea
2:50pm	INVITED: B1-2-5 Controlled Deposition of Alpha, Beta, and FCC Tantalum Thin Films by Magnetron Sputtering, <i>Q. Yang, S. Shiri</i> , University of Saskatchewan, Canada	B2-2-5 Temperature Driven Microstructural Evolution of Nano-lamellar CVD $Ti_{1-x}Al_xN$, <i>M. Tkadletz, C. Hofer</i> , Montanuniversität Leoben, Austria; <i>C. Wüstefeld</i> , Technische Universität Bergakademie Freiberg, Germany; <i>N. Schalk</i> , Montanuniversität Leoben, Austria; <i>M. Motyleenko</i> , Technische Universität Bergakademie Freiberg, Gustav-Zeuner-Straße 5, 09599 Freiberg, Germany; <i>C. Giacobbe, C. Dejolie</i> , ESRF, France; <i>H. Holzschuh, W. Bürgin</i> , SuCoTec AG, Switzerland; <i>B. Sartory</i> , Materials Center Leoben Forschung GmbH (MCL), Austria; <i>C. Mitterer</i> , Montanuniversität Leoben, Austria; <i>C. Czettl</i> , CERATIZIT Austria GmbH, Austria
3:10pm	Invited talk continues.	B2-2-6 Dense, Uniform, Transparent SiO_2/TiO_2 Coatings Derived from a Single Precursor Source of Tetrabutyl Titanate Modified Perhydropolysilazane, <i>Z. Zhang</i> , Institute of Chemistry, Chinese Academy of Science, China; <i>D. Wang</i> , University of Chinese Academy of Sciences, China; <i>Y. Luo, C. Xu</i> , Institute of Chemistry, Chinese Academy of Sciences, China
3:30pm	B1-2-7 High Power Impulse Plasma Magnetron Sputtering: Review of Critical Parameters Ensuring Successful Industrialization, <i>W. Gajewski, P. Różański, P. Lesiuk, P. Ozimek</i> , TRUMPF Huettinger Sp. z o.o., Poland	B2-2-7 Emerging Photoluminescence in Chemical Vapor Deposition Grown $MoSe_2/h\text{-}BN$ Van der Waals Heterostructure, <i>P. Nayak</i> , Indian Institute of Technology Madras, India; <i>S. Ahn, C.H. Hyun, K.Y. Ma, H.S. Shin</i> , Ulsan National Institute of Science and Technology (UNIST), Republic of Korea
3:50pm	B1-2-8 Investigation of the Formation of Ni-Ti Intermetallic Layers Produced by Cathodic Arc Electron-metal Ion Treatment, <i>N. Sezgin, E. Kacar, K. Kazmanli, M. Urgen</i> , Istanbul Technical University, Turkey	B2-2-8 Innovative Concepts for Advanced CVD Carbide Coatings Grown by Direct Liquid Injection of Metalorganic Precursors, <i>F. Maury</i> , CIRIMAT, CNRS - University of Toulouse, France; <i>A. Michau</i> , CEA Saclay, France; <i>G. Boisselier</i> , CIRIMAT, France; <i>F. Schuster</i> , CEA Saclay, France
4:10pm	B1-2-9 Exploring the High-temperature Stability of Nanocrystalline Cu-W Coatings, <i>Y. Du</i> , Northwestern University, USA; <i>L. Li</i> , Northwestern Polytechnical University, China; <i>J.M. Pureza</i> , Universidade do Estado de Santa Catarina, Brazil; <i>Y.W. Chung</i> , Northwestern University, USA; <i>K.G. Pradeep, S. Sen, J.M. Schneider</i> , RWTH Aachen University, Germany	B2-2-9 Computational Fluid Dynamics (CFD) Simulation of CVD Process for $(Ti, Si)_x(C, N)_y$ Coating, <i>L. Qiu</i> , Central South University, China; <i>S. Wang</i> , Shijiazhuang Tiedao University, China; <i>Y. Du, Z. Zhong</i> , Central South University, China; <i>H. Shi</i> , Ganzhou Achteck Tool Technology Co., Ltd., China; <i>L. Albir</i> , Layrous Consulting Ltd., Israel
4:30pm	B1-2-10 Governing the Wettability Properties of the Nanostructured Surfaces of Metallic Coatings Fabricated by Thermal Annealing, <i>F.G. Alzubi, A. Alkandary</i> , Kuwait Institute for Scientific Research, Kuwait	B2-2-10 Tribological Evaluation and Behavior of DLC Coatings on Steel in PE-CVD System with TiO_2 Over Layer using ALD Technique, <i>M.A. Ramirez R., Univap, Brazil; E. Saito</i> , Federal University of São Paulo, Brazil; <i>N. Fukumasu</i> , University of São Paulo, Brazil
	Exhibition Hall opens Today Grand Hall 12:00-7:00 pm Exhibition Reception 5:30-7:00 pm	

Tuesday Afternoon, April 24, 2018

Fundamentals and Technology of Multifunctional Materials and Devices Room Sunrise - Session C1 Optical Metrology in Design, Optimization, and Production of Multifunctional Materials Moderators: Nikolas Podraza, University of Toledo, USA, Juan Antonio Zapien, City University of Hong Kong, Hong Kong		Coatings for Biomedical and Healthcare Applications Room Royal Palm 1-3 - Session D4 Biointerfaces: Improving the Cell Adhesion and Avoiding Bacteria Adhesion. What Kinds of Coatings Should be Used? Moderators: Marcela Bilek, The University of Sydney, Australia, Margaret Stack, University of Strathclyde, UK, Vincent Fridrici, Ecole centrale de Lyon, LTDS, France
1:30pm		
1:50pm	C1-2 Design Principles for Binary and Multicomponent Conductive Nitrides for Applications in Electronics Plasmonics and Photonics, <i>P. Patsalas</i> , Aristotle University of Thessaloniki, Greece; <i>N. Kalfagiannis</i> , Nottingham Trent University, UK; <i>S. Kassavetis</i> , Aristotle University of Thessaloniki, Greece; <i>G. Abadie</i> , Université de Poitiers, France	
2:10pm	INVITED: C1-3 Tip Enhanced Optical Microscopy and Spectroscopy Based on Near Field Force Detection – a Review, <i>H.K. Wickramasinghe</i> , University of California, Irvine, USA	INVITED: D4-3 Titanium Oxide Coatings to Improve Cell Adhesion and Differentiation, <i>V. Garcia-Perez, A. Almaguer-Flores</i> , Universidad Nacional Autónoma de México, Mexico; <i>R. Olivares-Navarrete</i> , Virginia Commonwealth University, USA; <i>A. Fonseca-Garcia, S.E. Rodil</i> , Universidad Nacional Autónoma de México, Mexico
2:30pm	Invited talk continues.	Invited talk continues.
2:50pm	C1-5 Crystallite Grain Orientation Manipulation through Deposition Flux Angle and Composition in CdSe _{1-x} Te _x , <i>D. Adhikari, M.M. Junda, C. Grice, P. Koirala, Y. Yan, R. Collins, N. Podraza</i> , University of Toledo, USA	D4-5 Antibacterial Thin Films with Controlled Antibiotics Release Based on Plasma Polymer, <i>V. Stranak, J. Kratochvil, D. Kahoun, J. Sterba, H. Langansova, J. Lieskovska</i> , University of South Bohemia, Czech Republic; <i>J. Hanus, J. Kousal, A. Kuzminova, O. Kylian</i> , Charles University in Prague, Czech Republic
3:10pm	C1-6 Durable Electrochromic Coating Systems for Advanced Smart Windows and Security Devices, <i>F. Blanchard, B. Baloukas, S. Loquai, J.E. Klemburg-Sapieha, L. Martinu</i> , Polytechnique Montréal, Canada	D4-6 Development of a Microfluidic Based Multianalyte Biosensor Device for Medical Diagnostics, <i>E. MacHugh</i> , Dublin Institute of Technology, Centre for Research in Engineering Surface Technology (CREST), Ireland; <i>B. Duffy, M. Oubaha</i> , Centre for Research in Engineering Surface Technology (CREST), Ireland
3:30pm	C1-7 From "n" and "k" to Solar Cell Functionality: The Importance of Optical Property Characterization, <i>N. Podraza, M.M. Junda, I. Subedi, K. Ghimire</i> , University of Toledo, USA	D4-7 Bactericidal Activity and Cytotoxicity of a Zinc Doped PEO Titanium Coating, <i>L. Santas</i> , Pontifícia Universidade Católica do Paraná, Brazil; <i>K. Popat</i> , Colorado State University, USA; <i>P. Soares</i> , Pontifícia Universidade Católica do Paraná, Brazil
3:50pm	C1-8 Bipolar Resistive Switching Performance of MoS ₂ Based ReRAM Devices using WN as Bottom Electrode for Non-volatile Memory Application, <i>R. Prakash, S. Sharma, D. Kaur</i> , Indian Institute of Technology Roorkee, India	D4-8 Antibacterial Effects of Titanium Embedded with Silver Nanoparticles Based on Electron-Transfer-Induced Reactive Oxygen Species, <i>G. Wang, W. Jin, A.M. Qasim, A. Gao, X. Peng, W. Li, H. Feng, P.K. Chu</i> , City University of Hong Kong, Hong Kong
4:10pm		D4-9 Tribocorrosion and Cytotoxicity of FeB-Fe ₂ B Layers on AISI 316 L Steel, <i>I.E. Campos-Silva</i> , Instituto Politecnico Nacional, Surface Engineering Group, Mexico; <i>M.E. Palomar-Pardavé</i> , Universidad Autonoma Metropolitana-A, Mexico; <i>R. Perez Pasten-Borja</i> , Instituto Politecnico Nacional, ENCB Zacatenco, Mexico; <i>O. Kahvecioglu</i> , Argonne National Laboratory, USA; <i>D. Bravo-Bárcenas</i> , Universidad Autonoma Metropolitana-A, Mexico; <i>C. López-García, R. Reyes-Helguera</i> , Instituto Politecnico Nacional, Surface Engineering Group, Mexico
4:30pm		D4-10 Optical Spectroscopic study for Atmospheric Pressure Plasma by Radio Frequency Power, <i>C. Li</i> , National Yang Ming University, Taiwan; <i>J.H. Hsieh</i> , Ming Chi University of Technology, Taiwan; <i>C.T. Yu</i> , National Yang Ming University, Taiwan
	Exhibition Hall opens Today Grand Hall 12:00-7:00 pm Exhibition Reception 5:30-7:00 pm	

Tuesday Afternoon, April 24, 2018

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Room Royal Palm 4-6 - Session E1-2 Friction, Wear, Lubrication Effects, and Modeling Moderators: Albano Cavaleiro , University of Coimbra, Portugal, Carsten Gachot , Vienna University of Technology, Austria, Nazlim Bagcivan , Schaeffler AG, Germany		New Horizons in Coatings and Thin Films Room San Diego - Session F1 Nanomaterials and Nanofabrication Moderators: Ulf Helmersson , Linköping University, Sweden, Vitezslav Stranak , University of South Bohemia, Czech Republic
1:30pm		
1:50pm		F1-2 Kinetic Engineering of Crystal Phases in Core-shell Nanowires: Heteroepitaxial Radial Growth of Wurtzite and Zincblende Structured AlSb Shells on InAs Nanowires, <i>H. Kindlund, R. Zamani, A.R. Persson, S. Lehmann, L.R. Wallenberg, K.A. Dick</i> , Lund University, Sweden
2:10pm	E1-2-3 Physical Mechanisms for Nanoscale Friction of a-C:H/D Thin Films, <i>F.G. Echeverrigaray, S.R.S. de Mello</i> , UCS, Brazil; <i>F. Alvarez</i> , UNICAMP, Brazil; <i>A.F. Michels, C.A. Figueroa</i> , UCS, Brazil	F1-3 Understanding the Friction of Sub-nanometer Thick Ionic Liquids (Ils), <i>A. Lertola, I. Li</i> , University of Pittsburgh, USA
2:30pm	E1-2-4 Relocation Profilometry of Micro-tribology Experiments of Uncoated and DLC Coated Steel, <i>M.G. Gee, J.W. Nunn, L. Crocker</i> , National Physical Laboratory, UK; <i>K. Holmberg</i> , VTT Technical Research Centre of Finland Ltd, Finland; <i>L. Li</i> , City University of Hong Kong, Hong Kong; <i>G. Stachowiak</i> , Curtin University, Australia; <i>C. Gachot</i> , Vienna University of Technology, Austria; <i>T. Fry</i> , National Physical Laboratory, UK	F1-4 Facile Synthesis of MoSe ₂ Nanoplates on Black Phosphorus Nanosheets for Enhanced Hydrogen Evolution Reaction Performance, <i>W. Li</i> , City University of Hong Kong, Hong Kong; <i>D. Liu, J. Wang</i> , Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; <i>M. Huang</i> , City University of Hong Kong, Hong Kong; <i>N. Yang</i> , Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; <i>L. Liu</i> , Peking University Shenzhen Graduate School, China; <i>X. Peng, G. Wang</i> , City University of Hong Kong, Hong Kong; <i>X. Yu</i> , Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China; <i>P.K. Chu</i> , City University of Hong Kong, Hong Kong
2:50pm	E1-2-5 Microstructural Design of Self-lubricating Laser Claddings for use in High Temperature Sliding Applications, <i>C. Gachot</i> , TU Wien, Austria; <i>M. Rodriguez Ripoll, H. Torres</i> , AC ² T Research GmbH, Austria; <i>B. Prakash</i> , Lulea University of Technology, Sweden	F1-5 Synthesis and Magnetic Properties of Mn _x Zn _y Fe _{3-x-y} O ₄ Nanoparticles Prepared using a Co-precipitation Method, <i>K.W. Chen, J.M. Ting</i> , National Cheng Kung University, Taiwan
3:10pm	E1-2-6 Fretting Wear Behavior of Duplex PEO-Chameleon Coating on an Al Alloy, <i>A.A. Voevodin</i> , University of North Texas, USA; <i>Y.-F. Liu</i> , University of Leeds, UK; <i>A. Yerokhin</i> , University of Manchester, UK; <i>A. Korenyi-Both</i> , Tribologix, Inc., USA; <i>M. Lin</i> , University of Manchester, UK; <i>J.S. Zabinski</i> , Army Research Laboratory, USA; <i>A. Matthews</i> , University of Manchester, UK; <i>T. Liskiewicz</i> , University of Leeds, UK	F1-6 Effects of Nano Particles on the Thermal Stability and Scratch Resistances of Epoxy Coatings, <i>M. Boumaza, K. Rawai</i> , King Saud University, Saudi Arabia
3:30pm	INVITED: E1-2-7 Lubricant/Coating Interactions and Their Effect on Tribological Performance: In-situ XAS Analysis of a Dynamic Lubricated Interface, <i>A. Morina</i> , University of Leeds, UK	F1-7 Corrosion Study of Silane-functionalized Graphene Oxide Coatings on Copper, <i>M.A. Raza, Z. Rehman, F.A. Ghauri</i> , University of the Punjab, Lahore, Pakistan
3:50pm	Invited talk continues.	F1-8 Growth of MnO ₂ on Carbon Materials for Electrochemical Capacitor, <i>C.J. Tu, M.J. Wu</i> , National Changhua University of Education, Taiwan; <i>W.Y. Wu</i> , Da-Yeh University, Taiwan
4:10pm	E1-2-9 Friction and Wear Mechanism of MoS ₂ /C Composite Coatings under Atmospheric Environment, <i>P.L. Ke, S. Cai, A.Y. Wang</i> , Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China	F1-9 Fabrication of a CMOS Compatible Ferroelectric Tunnel Junction Memory, <i>F. Ambriz-Vargas</i> , Énergie, Matériaux et Télécommunications, Canada; <i>G. Kolhatkar</i> , Institut National De La Recherche Scientifique, Canada; <i>R. Nouar, A. Sarkissian</i> , PLASMINIQUE Inc, Canada; <i>M.A. Gauthier, A. Ruediger</i> , Institut National De La Recherche Scientifique, Canada
4:30pm	E1-2-10 Adhesion and Mechanical Properties of Ti Films Deposited by DC Magnetron Sputtering, <i>R.C. Vega-Morón, G.A. Rodríguez-Castro</i> , Instituto Politécnico Nacional, Surface Engineering Group, Mexico; <i>D.V. Melo-Máximo</i> , Tecnológico de Monterrey-Campus Estado de México, Mexico; <i>J.V. Méndez-Méndez</i> , Instituto Politécnico Nacional, Mexico; <i>L. Melo-Máximo</i> , Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico; <i>J. Oseguera</i> , Tecnológico de Monterrey-Campus Estado de México, Mexico	
4:50pm	INVITED: E1-2-11 Tribology of New Surface Modifications for Cold Rolling Mill Rolls, <i>H.L. Costa</i> , Universidade Federal do Rio Grande, Brazil; <i>J.L. Gonçalves Jr., J.D.B. de Mello</i> , Universidade Federal de Uberlândia, Brazil	Exhibition Hall opens Today Grand Hall 12:00-7:00 pm Exhibition Reception 5:30-7:00 pm
5:10pm	Invited talk continues.	

Tuesday Afternoon, April 24, 2018

Surface Engineering - Applied Research and Industrial Applications

Room Sunset - Session G6

Application-driven Cooperation Between industry and Research Institutions

Moderators: Tobias Brögelmann, Surface Engineering Institute - RWTH Aachen University, Germany, Joern Kohlscheen, Kennametal GmbH, Germany, S.P. Kumar Yalamanchili, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein

1:30pm		
1:50pm	G6-2 Performance Evaluation of Precious Metal Coatings in Precision Glass Molding. <i>M. Friedrichs, A. Saksena, M. Hans, RWTH Aachen University, Germany; O. Dambon, Fraunhofer Institute for Production Technology IPT, Germany; J.M. Schneider, F. Klocke, RWTH Aachen University, Germany</i>	
2:10pm	G6-3 Plasma-dependent Phase Formation of TiAlN Coatings. <i>A.O. Eriksson, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; M. Hans, S. Mráz, J.M. Schneider, RWTH Aachen University, Germany; M. Arndt, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein</i>	
2:30pm	G6-4 Reactive HiPIMS Deposition of Ti-Al-N: How to Adjust the Cubic to Wurtzite Transition. <i>H. Riedl, L. Zauner, P. Ertelthaler, CDL-AOS at TU Wien, Austria; T. Wojcik, TU Wien, Institute of Materials Science and Technology, Austria; H. Bolvardi, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; S. Kolozsvári, Plansee Composite Materials GmbH, Germany; P.H. Mayrhofer, TU Wien, Institute of Materials Science and Technology, Austria</i>	
2:50pm	G6-5 AlTiN Coatings deposited by HIPIMS: A Study of Mechanical Properties, Tribological and Wear Performance during Machining of Superduplex Stainless Steel. <i>J.M. Paiva, E. Locks, Y. Ahmed, P. Stolf, J. Dosbaeva, McMaster University, Canada; C. Bark, IF Sul - Federal Institute Sul-rio-grandense, Brazil; G. Fox-Rabinovich, S. Veldhuis, McMaster University, Canada</i>	
3:10pm	G6-6 FunMat-II – an Industry-Academia Competence Center for Research on Coating Materials for Advanced Applications. <i>L. Rogström, M. Odén, I.A. Abrikosov, G. Greczynski, P. Eklund, E.M. Björk, Linköping University, IFM, Sweden</i>	
3:30pm	G6-7 Oxygen Diffusion Pathways in High Temperature Oxidation Resistant Ti-Al-N/Mo-Si-B Multilayer Coatings. <i>E. Aschauer, CDL-AOS at TU Wien, Austria; P. Felfer, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; M. Arndt, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; P. Polcik, Plansee Composite Materials GmbH, Germany; H. Riedl, CDL-AOS at TU Wien, Austria; P.H. Mayrhofer, Institute of Materials Science and Technology, TU Wien, Austria</i>	
3:50pm	G6-8 The Enhancement of Graphitization and Compactness of Amorphous Carbon Films by Silver and Chromium Doping for Metallic Bipolar Plates in Proton Exchange Membrane Fuel Cells. <i>D. Zhang, Shanghai Jiao Tong University, China</i>	
4:10pm	INVITED: G6-9 Application-driven Cooperation Between Industry and Research Institutions: Success Factors, Obstacles and Success Stories. <i>O. Lemmer, W. Koelker, CemeCon AG, Germany</i>	
4:30pm	Invited talk continues.	<p style="text-align: center;">Exhibition Hall opens Today Grand Hall 12:00-7:00 pm Exhibition Reception 5:30-7:00 pm</p>
4:50pm	G6-11 Novel ta-C Coatings with Outstanding Tunable Properties Deposited by Industrially Scaled PLD. <i>MH. Hess, Fritz Stepper GmbH & Co. KG, Germany; S. Weißmantel, R. Bertram, Hochschule Mittweida, Germany</i>	

Wednesday Morning, April 25, 2018

Coatings for Use at High Temperatures Room Royal Palm 1-3 - Session A2 Thermal and Environmental Barrier Coatings Moderators: Kang Lee, NASA Glenn Research Center, USA, Lars-Gunnar Johansson, Chalmers University of Technology, Sweden, Pantcho Stoyanov, Pratt & Whitney, USA		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, Qi Yang, National Research Council of Canada, Canada, Jyh-Ming Ting, National Cheng Kung University, Taiwan
8:00am	INVITED: A2-1 Corrosion Degradation of High Temperature Coatings: Similarities and Differences for Marine and Aero-Turbine Applications, <i>D.R. Mumm</i> , University of California, Irvine, USA	
8:20am	Invited talk continues.	B1-3-2 High Quality Oxide Films Deposited at Room Temperature by Ion Beam Sputtering, <i>G.E. Henein</i> , National Institute of Standards and Technology, USA; <i>J. Topolancik</i> , Roche Sequencing Solutions, USA
8:40am	A2-3 Evolution of Microstructures and Interfaces in Doped, Layered, and Composite Coatings Exposed to Sand Laden Flows in a Gas Turbine Engine, <i>A. Nieto</i> , <i>M. Walock</i> , <i>A. Ghoshal</i> , <i>M. Murugan</i> , US Army Research Laboratory, USA; <i>D. Zhu</i> , NASA Glenn Research Center, USA; <i>W. Gamble</i> , <i>J. Swab</i> , <i>B. Barnett</i> , <i>M. Pepi</i> , US Army Research Laboratory, USA; <i>R. Pegg</i> , <i>C. Rowe</i> , US Navy Naval Air Systems Command, USA	INVITED: B1-3-3 van der Waals Oxide Heteroepitaxy, <i>Y.H. Chu</i> , National Chiao Tung University, Taiwan
9:00am	A2-4 The Effect of HVOF Bond Coating with APS Flash Coating on TBC Performance, <i>M. Lance</i> , <i>J.A. Haynes</i> , <i>B.A. Pint</i> , Oak Ridge National Laboratory, USA	Invited talk continues.
9:20am	A2-5 Influence of Process Conditions and Ceramic Doping on the Performances of Advanced TBCs Based on Al Slurry, <i>G. Boissonnet</i> , <i>B. Grégoire</i> , <i>J. Balamain</i> , <i>G. Bonnet</i> , <i>F. Pedraza</i> , University of La Rochelle, France	B1-3-5 Color Controllable TiO_xN_y Coatings Deposited by Magnetron Sputtering, <i>T.Y. Chang</i> , <i>J.M. Ting</i> , National Cheng Kung University, Taiwan
9:40am	A2-6 Synthesis and Characterization of Combined Oxides and Ni Superalloy Coatings by Cathodic Arc Evaporation for Bond Coat Application, <i>X. Maeder</i> , <i>J. Ast</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; <i>M. Döbeli</i> , ETH Zurich, Switzerland; <i>K. von Allmen</i> , <i>A. Neels</i> , <i>A. Dommann</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; <i>H. Rudigier</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, Switzerland; <i>B. Widrig</i> , <i>J. Ramm</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	B1-3-6 $SiO_2/Sc_{0.31}Al_{0.69}N/LiNbO_3$ Multilayer Structure for SAW Device Applications, <i>C.T. Shen</i> , National Cheng Kung University, Taiwan; <i>S. Wu</i> , Tung-Fang Design University, Taiwan; <i>J.L. Huang</i> , National Cheng Kung University, Taiwan
10:00am	A2-7 Steam Oxidation Behavior of $Yb_2Si_2O_7$ -Based Environmental Barrier Coatings, <i>K. Lee</i> , NASA Glenn Research Center, USA	B1-3-7 Self-lubricant CrO -Ag Coatings for Machining Tools, <i>F. Fernandes</i> , University of Minho, Portugal; <i>A. Cavaleiro</i> , University of Coimbra, Portugal
10:20am	A2-8 Advanced Multi-Component Rare Earth-Silicate and HfO_2 -Silicon Based Environmental Barrier Coating Systems for SiC/SiC Ceramic Matrix Composites, <i>D. Zhu</i> , <i>B. Harder</i> , <i>G. Costa</i> , <i>N. Bansal</i> , <i>V. Wiesner</i> , <i>J. Hurst</i> , NASA Glenn Research Center, USA	Exhibition Hall Closes Today Grand Hall 10:00-2:00 pm
10:40am	A2-9 Crack Propagation Behavior of Thermal Barrier Coatings with Cyclic Thermal Fatigue Tests, <i>D.W. Song</i> , <i>T. Song</i> , Hanyang University, Republic of Korea; <i>H.M. Park</i> , <i>Y.G. Jung</i> , Changwon National University, Republic of Korea; <i>J. Zhang</i> , Indiana University Purdue University Indianapolis, USA	Enjoy Light Luncheon Refreshments In the Exhibition Hall 12:15 pm

Wednesday Morning, April 25, 2018

Hard Coatings and Vapor Deposition Technologies Room California - Session B6 Coating Design and Architectures Moderators: Nina Schalk, Montanuniversität Leoben, Austria, Shou-Yi Chang , National Tsing Hua University, Taiwan		Fundamentals and Technology of Multifunctional Materials and Devices Room Sunrise - Session C3 Thin Films for Energy-related Applications Moderator: Per Eklund, Linköpings Universitet, Sweden
8:00am	B6-1 Ab Initio Inspired Design of Ternary Boride Thin Films, <i>V. Moraes, D. Holec, CDL-AOS at TU Wien, Austria; H. Bolvardi, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; P. Polcik, Plansee Composite Materials GmbH, Germany; H. Riedl, P.H. Mayrhofer, CDL-AOS at TU Wien, Austria</i> Graduate Student Nominee	C3-1 Synthesis and Optical Characterization of Cds Thin Film Obtained by Colloidal Technique, <i>L. Reyes, C. Villa, R. Villa, B. Valdez, D. Mateos, M. Curiel, S. Romero, Instituto de Ingeniería, Universidad Autónoma de Baja California, Mexico</i>
8:20am	B6-2 Enthalpy/Entropy-driven Segregation of Solute Elements of Cu Alloy Films to Self-form < 2 nm Unitary V to Quinary V-Nb-Mo-Ta-W Diffusion Barrier Layers, <i>Y.T. Hsiao, S.Y. Chang</i> , National Tsing Hua University, Taiwan	C3-2 Electrochemical Characteristics of Ni _x N Thin Films Deposited by DC and HIPIMS Reactive Magnetron Sputtering, <i>J. Keraudy, L. Athouel, J. Hamon, IMN - Nantes, France; B. Girault, D. Gloaguen, GeM - Saint-Nazaire, France; M. Richard-Plouet, IMN - Nantes, France; P-Y. Jouan, Univ. de Nantes, CNRS, France</i>
8:40am	B6-3 Mechanical Properties of V _{0.5} Mo _{0.5} N _{1-x} O _x Thin Films, <i>D. Edström, D.G. Sangiovanni, L.L. Landålv, L. Hultman</i> , Linköpings Universitet, Sweden; <i>I. Petrov, J.E. Greene</i> , University of Illinois, USA; <i>P. Eklund, V. Chirita</i> , Linköpings Universitet, Sweden	C3-3 Photovoltaic Properties of Cu ₂ O-based Heterojunction Solar Cells using n-type Oxide Thin Films Prepared by Magnetron Sputtering System with Loading Chamber, <i>K. Watanabe, H. Tokunaga, T. Miyata, T. Minami</i> , Kanazawa Institute of Technology, Japan
9:00am	B6-4 Hard Transparent Coatings in the Al-Si-O-N System, <i>M. Fischer, M. Trant, K. Thorwarth</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; <i>J. Patscheider</i> , Ruebsteinstrasse 25, 8706 Meilen, Switzerland; <i>D. Scopece, C.A. Pignedoli, D. Passerone, H.J. Hug</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland	C3-4 Synthesis of Tungsten Bronze by a Solution-based Chemical Route and the Near-Infrared Shielding Properties of Tungsten Bronze Thin Films, <i>P.J. Wu</i> , National Cheng Kung University, Taiwan; <i>H.H. Lu</i> , National Chin-Yi University of Technology, Taiwan; <i>S. Brahma, J.L. Huang</i> , National Cheng Kung University, Taiwan
9:20am	INVITED: B6-5 Exploitation of Surface Modification and Architecture Control for Multi-Functional Coatings via Nano-Composite, Multilayer, Hybrid Organic/Inorganic and Bio-Inspired Approach, <i>J. Lee, H.W. Chen, J.W. Lee, P.Y. Chen, J.G. Duh</i> , National Tsing Hua University, Taiwan	C3-5 ZnO Nano-structures Growth and Investigation, <i>A. Axelevitch, I. Lapsker</i> , Holon Institute of Technology (HIT), Israel
9:40am	Invited talk continues.	C3-6 Nitrogen Doping of ZnO Films by Decomposition of NO Gas using Heated Ir Wire in Catalytic Reaction-assisted CVD, <i>Y. Adachi, S. Ono, A. Kato</i> , Nagaoka University of Technology, Japan; <i>A. Hashim</i> , MJIT, Universiti Teknologi Malaysia, Malaysia; <i>K. Yasui</i> , Nagaoka University of Technology, Japan
10:00am	B6-7 The Effect of Hybrid PVD Process on the Mechanical and Antistatic Properties of TiO ₂ Based Nanocomposite Thin Film, <i>D.S. Wang, M.S. Leu, T.S. Chen, H.J. Lai, J.J. Chang, J.D. Shih</i> , Industrial Technology Research Institute, Taiwan	C3-7 Morphology-Controlled Growth of ZnO Nanorods by Chemical Bath Deposition and Seed Layer Dependence on Their Structural and Optical Properties, <i>T. Terasako, S. Obara, S. Sakaya, M. Tanaka, R. Fukuoka</i> , Ehime University, Japan; <i>M. Yagi</i> , National Institute of Technology, Kagawa College, Japan; <i>J. Nomoto, T. Yamamoto</i> , Kochi University of Technology, Japan
10:20am	B6-8 Optical, Electrical and Structural Characteristics of Mg-doped CuCrO ₂ Transparent Conductive Thin Films, <i>R.S. Yu, C. Chu</i> , Asia University, Taiwan	C3-8 Piezoelectric Coefficient and Morphology Investigation of the Wurtzite Ga-doped MgZnO Thin Films via RF Magnetron Sputtering, <i>P.H. Lee, C.P. Liu, J.L. Huang</i> , National Cheng Kung University, Taiwan
10:40am	B6-9 Brittle Film-induced Cracking of Ductile Substrates, <i>X.L. Pang</i> , University of Sceience and Technology Beijing, China	INVITED: C3-9 Growth of Al _{1-x} Sc _x N Thin Films for Pyroelectric and Piezoelectric Applications, <i>A. Žukauskaitė, Y. Lu</i> , Fraunhofer Inst. for Applied Solid State Physics IAF, Germany; <i>N. Kurz</i> , IMTEK, Univ. of Freiburg, Germany; <i>M. Reusch, A. Ding, L. Kirste, V. Lebedev, V. Cimalla</i> , Fraunhofer Inst. for Applied Solid State Physics IAF, Germany Invited talk continues.
11:00am	B6-10 Ultra-high Vacuum dc Magnetron Sputter-deposition and Microstructural Characterization of Zr and ZrC _x Thin Films, <i>H. Zaid, K. Tanaka, J. Fankhauser, A. Aleman</i> , UCLA, USA; <i>M. Mato</i> , Nagoya Univ., Japan; <i>D. Yu, A. Ebnonnasir, C. Li</i> , UCLA, USA; <i>M. Kobashi</i> , Nagoya Univ., Japan; <i>M.S. Goorsky, S. Kodambaka</i> , UCLA, USA	C3-11 A Simple Non-toxic Simultaneous Selenization/Sulfurization Process for the Cu _{(In,Ga)(S,Se)} ₂ Thin Film Solar Cells, <i>H.J. Wei, Y.C. Liang, Y.C. Lin</i> , National Changhua University of Education, Taiwan
11:20am	Exhibition Hall Closes Today Grand Hall 10:00-2:00 pm Enjoy Light Luncheon Refreshments In the Exhibition Hall 12:15 pm	
11:40am		C3-12 Thin Films for Transparent Thermoelectric Modules, <i>F. Correia, J. Ribeiro, P. Salvador</i> , University of Minho, Portugal; <i>A. Mendes</i> , University of Porto, Portugal; <i>C. Tavares</i> , University of Minho, Portugal
12:00pm		C3-13 Efficiency Enhancement in Dye Sensitized Solar Cells using Silver Ion Embedded TiO ₂ Photoanodes, <i>N. Kaur, A. Mahajan</i> , Guru Nanak Dev University, Amritsar, India; <i>F. Singh</i> , Inter University Accelerator Center, India; <i>S. Kumar, D.P. Singh</i> , Guru Nanak Dev University, Amritsar, India

Wednesday Morning, April 25, 2018

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Room Royal Palm 4-6 - Session E1-3 Friction, Wear, Lubrication Effects, and Modeling Moderators: Albano Cavaleiro , University of Coimbra, Portugal, Carsten Gachot , Vienna University of Technology, Austria, Nazlim Bagcivan , Schaeffler AG, Germany		New Horizons in Coatings and Thin Films Room San Diego - Session F4-1 Functional Oxide and Oxynitride Coatings Moderators: Jörg Patscheider , Evatec AG, Switzerland, Anders Eriksson , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein, Marcus Hans , RWTH Aachen University, Germany
8:00am	E1-3-1 A Study on the Tribological Behavior of the AISI 316L Steel Exposed to Boriding to Reduce its Friction Coefficient and Enhance its Wear Resistance, E. Hernández- Sánchez , Instituto politécnico Nacional-UPIBI, Mexico; J.C. Velazquez , Instituto Politécnico Nacional-ESIQIE, Mexico; A. Chino-Ulloa , Instituto politécnico Nacional-UPIBI, Mexico; I.P. Torres-Avila , Instituto Politecnico Nacional-UPIBI, Mexico; J.L. Castrejón-Flores , Instituto politécnico Nacional-UPIBI, Mexico; H. Herrera-Hernández , Universidad Autónoma del Estado de Mexico, Mexico	INVITED: F4-1-1 Self-healing Thermal Barrier Coating System for Prolonged Lifetime, W.G. Sloof , Delft University of Technology, Netherlands Invited talk continues.
8:20am	E1-3-2 Immersion Time-affected Tribocorrosion Behavior of Cr/GLC Multilayer Coating in Artificial Seawater, L. Li, L.L. Liu, P.L. Ke, A.Y. Wang , Chinese Academy of Sciences, China	
8:40am	E1-3-3 A Comparison of the Galling Wear Behaviour of PVD Cr and Electroplated Hard Cr Thin Films, J. Daure, P. Shipway, D.G. McCartney , The University of Nottingham, UK	F4-1-3 TiO ₂ Thin Films Deposited onto PET by High Power Impulse Magnetron Sputtering for Photocatalytic Degradation of Carbendazim, R.B.P. Marcelino , Universidade Federal de Minas Gerais, UFMG, Brazil; M. Ratova, B. Delfour-Peyrethon , Manchester Metropolitan University, UK; C.C. Amorim , Universidade Federal de Minas Gerais, UFMG, Brazil; P.J. Kelly , Manchester Metropolitan University, UK
9:00am	E1-3-4 Microstructural Evolution of Cold-sprayed Copper Coating during Reciprocating Sliding Wear, Y. Zhang , McGill University, Canada; C. Greiner , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany; D. Chern, R.R. Chromik , McGill University, Canada	F4-1-4 Thermal Stability of Structure and Enhanced Properties of Zr-Ta-O Films with Low and High Ta Content, P. Zeman, S. Zuzjakova, J. Vlček, J. Rezek, R. Čerstvý, J. Houska, S. Havíř , University of West Bohemia, Czech Republic
9:20am	E1-3-5 Scratch Adhesion Resistance of Nickel Boride Layers on Inconel 718 Superalloy, I.E. Campos-Silva, A.D. Contla-Pacheco, A. Ruiz-Rios, J. Martínez-Trinidad, G.A. Rodríguez-Castro, A. Meneses-Amador, W.D. Wong-Angel , Instituto Politecnico Nacional, Surface Engineering Group, Mexico	F4-1-5 Electrophysical Properties of Nanoparticle-Added PEO Coatings on Aluminium, N. Yaakop, B. Mingo, L. Qiang, Z. Wang, A. Yerokhin, A. Matthews , University of Manchester, UK
9:40am	E1-3-6 Comparison of Surface Treatments for Adhesive Force Measurements Between Magnetron Sputtered TiW Thin Films and Alumina Substrates, B. Atabay, E. Apaydin , Aselsan Inc., Turkey	F4-1-6 Titania Films Deposited by Constant Current High Power Impulse Magnetron Sputtering, A.P. Ehasarain, D.A. Loch , Sheffield Hallam University, UK; A. Heisig, J. Neidhardt , Von Ardenne Anlagen Technik, Germany
10:00am	E1-3-7 Influence Of Microstructure on Wear of Boroaluminized-Hot-Work Tool Steels, U. Mishigdorzhiiyn, N. Ulakhanov , East Siberia State University of Technology and Management, Russian Federation; Y. Chen, H. Liang , Texas A&M University, USA	F4-1-7 Study on Silicon Carbide Based Metal Oxide Semiconductor Capacitor with Magnetron Sputtered ZrO ₂ High-k Gate Dielectric, S. Mourya, J. Jaiswal, G. Malik, B. Kumar, R. Chandra , Indian Institute Of Technology Roorkee, India
10:20am		F4-1-8 On the Importance of the Energy of Negative Ions in Achieving Uniform and High-quality Magnetron Sputtered AZO Films, F. Meng , Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences,, China
10:40am		
11:00am		
11:20am	Exhibition Hall Closes Today Grand Hall 10:00-2:00 pm	Special Interest Talk 3 Combinatorial Thin Film Materials Science: Limitations and Opportunities for Combining Experiments and DFT Based Theory, J.M. Schneider , RWTH Aachen University, Germany
11:40am	Enjoy Light Luncheon Refreshments In the Exhibition Hall 12:15 pm	Invited talk continues. (See page 23 for abstract)

Wednesday Morning, April 25, 2018

Surface Engineering - Applied Research and Industrial Applications

Room Sunset - Session G1

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

Moderators: Emmanuelle Göthelid, Sandvik Coromant R&D, Sweden, Ladislav Bardos, Uppsala University, Sweden

8:00am	G1-1 Enhanced PVD Process Control by Online Substrate Temperature Measurement, <i>K. Bobzin, T. Brögelmann, N.C. Kruppe</i> , RWTH Aachen University, Germany	(Cont'd from previous page 22) J.M. Schneider Special Interest Talk 3 Nanocrystalline coatings are harder than their bulk or microcrystalline counterparts due to their grain size. Their hardness tends to degrade with increasing temperature due to grain growth. It has been suggested that introduction of proper alloying elements can provide thermal stabilization of the nanoscale grain structure, even at elevated temperatures. To this end, Cu-W coatings were synthesized by magnetron sputtering to investigate the grain boundary stabilization by W segregation.
8:20am	G1-2 A Compact, Symmetrical and Efficient Filtered Cathodic Arc Source that uses Permanent Magnets, <i>P. Sathrum</i> , Fluxion Inc., USA	
8:40am	G1-3 HiPIMS Meets Diamond, <i>T. Leyendecker, O. Lemmer, W. Kölker, C. Schiffers</i> , CemeCon AG, Germany	
9:00am	G1-4 Functional DLC by HiPIMS and Pulsed DC-magnetron Sputtering in an Industrial Coating System, <i>I. Fernandez Martinez, A. Wennberg</i> , Nano4energy, Spain; <i>F. Papa</i> , Gencoia, Ltd, USA, Spain; <i>J.A. Santiago</i> , Nano4energy, Spain; <i>N. Dams</i> , PVT GmbH, Germany; <i>H. Gabriel</i> , PVT Plasma und Vakuum technik GmbH, Germany	The thickness of the coatings is around 800 nm. The room-temperature hardness of the as-deposited coatings based on nanoindentation is 3.7 ± 0.3 GPa. Annealed at 400°C , these coatings exhibit hardness decrease of 3 % after 20 minutes, probably due to stress relaxation. The hardness achieves a stable value of 3.6 GPa after two hours. The average grain size was barely changed after this extended annealing, with an average value of 36.5 nm after two hours. Atom probe tomographic analysis shows the segregation of W to the grain boundaries of Cu. These results validate the strategy for designing thermally stable nanocrystalline coatings.
9:20am	INVITED: G1-5 Microwave Assisted PVD and PECVD Systems for Carbon-Based Nano Composites, <i>S. Ulrich, C. Poltorak, M. Rinke, H. Leiste, M. Stüber</i> , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany	
9:40am	Invited talk continues.	
10:00am	G1-7 Correlation Between Plasma Nitriding of Several Steels and Active Nitrogen Concentration Correlated through Optical Emission Spectroscopy and Atomic Nitrogen Partial Pressure, <i>F. Papa</i> , Gencoia, Spain; <i>J. Oseguera</i> , TRAMES S.A. de C.V., Mexico	
10:20am	G1-8 CVD Technology & Machinery – Tribological Applications and High Temperature Potential, <i>H. Strakov, V. Papageorgiou, M. Auger</i> , IHI Ionbond AG, Switzerland	
10:40am	G1-9 Vacuum Barrel Coating: An Opportunity to Performance Increase for Various Small Parts, <i>H. Klostermann, B.G. Kraetzschmar, F. Fietzke</i> , Fraunhofer FEP, Germany	
11:00am	G1-10 Scaling Up Graphene-like Carbon Film: Insights into the Deposition Process in a Roll-to-roll rf Plasma CVD System, <i>M. Alrefae, A. Kumar, D. Zemlyanov</i> , Purdue University, USA; <i>T.S. Fisher</i> , UCLA, USA	Exhibition Hall Closes Today Grand Hall 10:00-2:00 pm
11:20am	G1-11 TAOS Based Cu/TiW/IGZO/Al ₂ O ₃ /Pt Bilayer CBRAM for Low-power Display Technology, <i>K.J. Gan, P.T. Liu, W.C. Chang, D.B. Ruan, T.C. Chien, Y.C. Chiu, S.M. Sze</i> , National Chiao Tung University, Taiwan	Enjoy Light Luncheon Refreshments In the Exhibition Hall 12:15 pm

Wednesday Afternoon, April 25, 2018

Coatings for Use at High Temperatures Room Royal Palm 1-3 - Session A3 Materials and Coatings for Solar Power Concentration Plants Moderators: Vladislav Kolarik, Fraunhofer ICT, Germany, Gustavo García-Martín, REP-Energy Solutions, Spain		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, Qi Yang, National Research Council of Canada, Canada, Jyh-Ming Ting, National Cheng Kung University, Taiwan
1:30pm		
1:50pm		
2:10pm		B1-4-3 Particles in PVD-Coatings: Imperfection or Functional Add-on Feature?, <i>U. Beck, J. Baier, M. Sahre, M. Weise, G. Hidde, BAM Berlin, Germany</i>
2:30pm	A3-4 Corrosion Impact Of Alkali Carbonate At 750°C On Nickel Base, Stainless Steel And Alumina Forming Ferritic Steels, <i>C. Geers</i> , Chalmers University of Technology, Sweden	B1-4-4 Gradient Coating for NIF Double Shell Targets, <i>H. Xu</i> , General Atomics, USA
2:50pm	INVITED: A3-5 Challenges of New Materials and Coatings for Solar Receivers and Reflectors in Concentrated Solar Power Plants, <i>F. Sutter</i> , German Aerospace Center (DLR), Spain; <i>Y. Binyamin</i> , Brightsource Industries, Israel; <i>A. Agüero Bruna</i> , Instituto Nacional de Técnica Aeroespacial (INTA), Spain; <i>CH. Hildebrandt</i> , Fraunhofer ISE, Germany; <i>D. Fähsing</i> , DECHEMA Forschungsinstitut, Germany; <i>A. Morales, A. Fernandez-Garcia</i> , CIEMAT, Spain; <i>F.J. Pérez-Trujillo</i> , Universidad Complutense de Madrid, Spain	B1-4-5 Growth Morphology and Piezoelectric Properties of AlN Thin Films Deposited by Reactive DC Magnetron Sputtering, <i>M. Trant, M. Fischer, K. Thorwarth, H.J. Hug</i> , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
3:10pm	Invited talk continues.	B1-4-6 Plasma Generation and Coating Composition from Ti-C, Ti-Al, and Ti-W Cathodes used in DC Vacuum Arc, <i>I. Zhirkov</i> , Linköping University, Sweden; <i>P. Polcik, S. Kolozsvári</i> , Plansee Composite Materials GmbH, Germany; <i>J. Rosen</i> , Linköping University, Sweden
3:30pm	A3-7 Corrosion Testing of Diffusion-coated Steel in Molten Salt for Concentrated Solar Power Plants, <i>D. Fähsing, T. Meissner, M.C. Galetz</i> , DECHEMA-Forschungsinstitut, Germany	B1-4-7 Improved Adhesion Strength of the Gradient Zn-Mg Coating on TRIP Steel, <i>M.K. Song, J.H. La, H.K. Kim, S.Y. Lee</i> , Korea Aerospace University, Republic of Korea
3:50pm	A3-8 High Temperature Molten Salt Corrosion Behavior of Aluminide and Nickel-aluminide Coatings for Heat Storage in Concentrated Solar Power Plants, <i>P. Audigié, S. Rodriguez, M. Gutiérrez</i> , Instituto Nacional de Técnica Aeroespacial (INTA), Spain; <i>V. Encinas-Sánchez, F.J. Pérez-Trujillo</i> , Complutense University of Madrid, Spain; <i>A. Agüero Bruna</i> , Instituto Nacional de Técnica Aeroespacial (INTA), Spain	Awards Convocation 5:45 pm Town & Country Room Honorary Lecture: Allan Matthews "A Retrospective View of Plasma-assisted PVD Innovations since the 1960's" Awards Reception will follow the Convocation at 7:30 pm poolside near the Tiki Pavilion
4:10pm	A3-9 High-Temperature Coatings for Protection of Steels in Contact with a Novel Molten Salt under Static and Flow-Accelerated Conditions for CSP Technology, <i>V. Encinas-Sánchez, M.I. Lasanta, M.T. de Miguel, G. García-Martín, F.J. Pérez-Trujillo</i> , Complutense University of Madrid, Spain	

Wednesday Afternoon, April 25, 2018

Hard Coatings and Vapor Deposition Technologies Room California - Session B3 Deposition Technologies and Applications for Diamond-like Coatings Moderators: Frank Papa, Genco, Spain, Konrad Fadenberger, Robert Bosch GmbH, Germany		Fundamentals and Technology of Multifunctional Materials and Devices Room Sunrise - Session C4 Energetic Materials and Microstructures for Nanomanufacturing Moderators: Karsten Woll, Karlsruhe Institute of Technology (KIT), Germany, Ibrahim Emre Gunduz, Purdue University, USA
1:30pm	INVITED: B3-1 Tribology of Diamondlike Carbons in Various Application Environments, <i>G.L. Doll</i> , University of Akron, USA	
1:50pm	Invited talk continues.	
2:10pm	B3-3 Synthesis and Comparison of Highly Tetrahedral Amorphous Carbon by Arc-mixed HiPIMS and Arc-free HiPIMS Modes, <i>H.J. Hug, R. Ganesan, K. Thorwarth</i> , EMPA Swiss Federal Laboratories for Materials Science and Technology, Switzerland; <i>M. Tucker, N. Marks</i> , Curtin University, Australia; <i>M. Stüber, S. Ulrich</i> , Karlsruhe Institute of Technology (KIT), Germany; <i>D.R. McKenzie, M.M. Bilek</i> , The University of Sydney, Australia; <i>S. Guirmond, M. Arndt</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	C4-3 High Surface Area Silicon Quantum Dots for Energetic Materials, <i>P.M. Guerrieri, N.W. Piekiel, S.K. Adams, M.H. Ervin, C.J. Morris</i> , U.S. Army Research Laboratory, USA
2:30pm	B3-4 Evaluation of Superhard ta-C Coatings for the Machining of Synthetic Materials, <i>F. Kaufuss</i> , Fraunhofer Institute for Material and Beam Technology (IWS), Germany; <i>D. Hoesel</i> , Fraunhofer Institute for Machine Tools and Forming Technology (IWFU), Germany; <i>V. Weihnacht, A. Leson</i> , Fraunhofer Institute for Material and Beam Technology (IWS), Germany	C4-4 Investigating Transport Processes in Multilayer Films, <i>D.P. Adams, M.J. Abere</i> , Sandia National Laboratories, USA; <i>S.C. Lin, M.C. Yu</i> , Sandia National Laboratories, USA, Taiwan; <i>C. Sobczak</i> , Sandia National Laboratories, USA
2:50pm	B3-5 Selection of DLC Coatings for Application in Wrist-watch Mechanisms, <i>S.E. Franklin</i> , Steve Franklin Consultancy, Netherlands	C4-5 Analytical Modelling of Propagation Velocity in Non-stoichiometric and Impact Compressed Nanolaminates, <i>M.J. Abere, D.P. Adams</i> , Sandia National Laboratories, USA
3:10pm	B3-6 The Role of HIPIMS and Discharges with a Positive Voltage Reversal on Coating Properties in Industrial Applications such as Hard Coatings and DLC, <i>I. Fernandez, A. Wennberg, F. Papa</i> , Nano4energy SL, Spain; <i>G. Eichenhofer</i> , HiP-V, Germany	C4-6 On the Fly Mixing and 3D Printing of Al/CuO Thermite for Controlling Reactivity, <i>A. Golobic, M.M. Durban</i> , Lawrence Livermore National Laboratory, USA; <i>E. Duoss</i> , Lawrence Livermore National Laboratory, USA, US; <i>A. Gash, K. Sullivan</i> , Lawrence Livermore National Laboratory, USA
3:30pm	INVITED: B3-7 Towards New Horizon for DLC Coating Technology for Automotive Components, <i>T. Takahashi</i> , Kobe Steel, Ltd., Japan	C4-7 Tin-based Composites Combined with Reduced Graphene Oxide via a Simple Chemical Treatment as Anode Material for Rechargeable Lithium Ion Batteries, <i>Y.Z. Wu</i> , National Cheng Kung University, Taiwan; <i>C.C. Chang</i> , National University of Tainan, Taiwan; <i>S. Brahma, J.L. Huang</i> , National Cheng Kung University, Taiwan
3:50pm	Invited talk continues.	C4-8 Additive Manufacturing of a Composite Solid Propellant with High Solids Loadings, <i>M. McClain, I. Gunduz, S. Son</i> , Purdue University, USA
4:10pm	B3-9 DC/Pulsed Cathodic Arc Discharge for Deposition of ta-C Coatings, <i>X.B. Tian, P.F. Wan, H.Y. Liu, C.Z. Gong</i> , State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology, China	C4-9 Manufacturing and Characterization of Nanocomposite WC-based Powders, <i>A. Alhazza, L. Al-Hajji, S. El-Eskandarani, A. Al-Rowayyeh</i> , Kuwait Institute for Scientific Research, Kuwait
4:30pm	B3-10 A General Engineering Applicable Superlubricity: Hydrogenated Amorphous Carbon Film Containing Nano Diamond Particles, <i>J.Y. Zhang, Z.Y. Cao</i> , State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China	INVITED: C4-10 Ternary Reactive Ru/Al/X Multilayers - The Effect of Stacking Sequence on Ignition, Propagation and Microstructure Evolution, <i>C. Pauly</i> , Saarland University, Germany; <i>K. Woll</i> , Karlsruhe Institute of Technology (KIT), Germany; <i>I. Gallino</i> , Saarland University, Germany; <i>M. Stüber</i> , Karlsruhe Institute of Technology (KIT), Germany; <i>F. Mücklich</i> , Saarland University, Germany
4:50pm		Invited talk continues.
	Awards Convocation 5:45 pm Town & Country Room Honorary Lecture: Allan Matthews "A Retrospective View of Plasma-assisted PVD Innovations since the 1960's" Awards Reception will follow the Convocation at 7:30 pm poolside near the Tiki Pavilion	

Wednesday Afternoon, April 25, 2018

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Room Royal Palm 4-6 - Session E3 Tribology of Coatings for Automotive and Aerospace Applications Moderators: Sebastien Guimond , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; Nicolas Argibay , Sandia National Laboratories, USA; Christian Greiner , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany		New Horizons in Coatings and Thin Films Room San Diego - Session F4-2 Functional Oxide and Oxynitride Coatings Moderators: Jörg Patscheider , Evatec AG, Switzerland; Anders Eriksson , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; Marcus Hans , RWTH Aachen University, Germany
1:30pm		
1:50pm		F4-2-2 On the Thermal Stability of Cathodic Arc Evaporated $(Al_{1-x}Cr_x)_2O_3$ Thin Films, V. Dalbauer , CDL-AOS at TU Wien, Austria; J. Ramm , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; S. Kolozsvári , Plansee Composite Materials GmbH, Germany; C.M. Koller , CDL-AOS at TU Wien, Austria; P.H. Mayrhofer , Institute of Materials Science and Technology, TU Wien, Austria
2:10pm	E3-3 Cladding Tribaloy T400 on Steel Substrates using a High Power Nd:YAG Laser, W. Ya , B. Pathiraj , D. Matthews , University of Twente, Netherlands; M. Bright , Tata Steel, Netherlands; S. Melzer , Tata Steel Research & Development, Netherlands	F4-2-3 Phase Evolution of RF Magnetron Sputtered Cr-rich $(Cr,Zr)_2O_3$ Coatings Studied by <i>In-Situ</i> Synchrotron Experiments during Annealing in Air or Vacuum Conditions, L.L. Landälv , Linköping Univ., IFM, Thin Film Physics Div. and Sandvik Coromant R&D, Sweden; J. Lu , Linköping Univ., IFM, Thin Film Physics Div., Sweden; D. Ostach , Zentrum für Material- und Küstenforschung GmbH, Germany; M. Ahlgren , E. Göthelid , Sandvik Coromant R&D, Sweden; B. Alling , Linköping Univ., IFM, Theoretical Physics division and Zentrum für Material- und Küstenforschung GmbH, Sweden; L. Hultman , Linköping Univ., IFM, Thin Film Physics Div., Sweden; M. Stüber , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), Germany; J. Birch , P. Eklund , Linköping Univ., IFM, Thin Film Physics Div., Sweden
2:30pm	E3-4 Tribological Properties of HVOF-Sprayed WCCoCr Coatings for Applying to Sliding Rings of Mechanical Seals, A. Iwaniak , Silesian University of Technology, Poland; G. Wieclaw , Certech Sp. z o.o., Poland; L. Norymberczyk , ANGA Sp. z o.o., Poland	F4-2-4 Thick HS-PVD $\gamma-Al_2O_3$ Coatings for Challenging Cutting and Die Casting Applications, K. Bobzin , T. Brögelmann , C. Kalscheuer , M. Welters , Surface Engineering Institute - RWTH Aachen University, Germany
2:50pm	E3-5 The Effects of Relative Humidity on Fretting Corrosion Behaviors of Silver-plated Electrical Contacts, F. Pompanon , S. Fouvy , LTDS, CNRS UMR 5513, Ecole Centrale de Lyon, Ecully, France; O. Alquier , PSA, Vélizy – Villacoublay, France	F4-2-5 HiPIMS Deposition of Ta-O-N Coatings for Water Splitting Application, J. Čapek , S. Batková , J. Houska , S. Havíar , University of West Bohemia, Czech Republic; T. Duchoň , Charles University, Czech Republic
3:10pm	E3-6 Evaluation of Solid Particle Erosion Resistant Coatings for Gas Turbine Engine Applications, Q. Yang , National Research Council of Canada, Canada	F4-2-6 Evolution of Microstructure and Mechanical Properties of Graded TiAlON Thin Films Investigated by Cross-sectional Characterization Techniques, N. Schalk , M. Tkadletz , V. Terziyska , Montanuniversität Leoben, Austria; M. Deluca , Materials Center Leoben Forschung GmbH, Austria; J. Keckes , C. Mitterer , Montanuniversität Leoben, Austria
3:30pm	E3-7 Influence of Sliding Induced Defects on the Frictional Properties of Molybdenum Disulfide (MoS_2) and Graphene, Z. Yang , S. Bhowmick , G. Sun , University of Windsor, Canada; F. Sen , Argonne National Laboratory, USA; A. Alpas , University of Windsor, Canada	INVITED: F4-2-7 Hard Transition Metal Oxynitride Thin Films: From Synthesis to Applications, F. Vaz , J. Borges , Minho University, Portugal
3:50pm	E3-8 Analysis of Tribomechanical Behavior of a Low Temperature Plasma Nitrided Austenitic 316L Stainless Steel, J. Oseguera , ITESM-CEM, Mexico; R. Meza , TEROMINNOVA, Finland; F. Santiago , ITESM-CEM, Mexico	Invited talk continues.
4:10pm	INVITED: E3-9 Tribological Systems Solutions for Gas Turbine Engines, P. Stoyanov , A. Wusatowska-Sarnek , T. Kasprow , Pratt & Whitney, USA	Awards Convocation 5:45 pm Town & Country Room Honorary Lecture: Allan Matthews "A Retrospective View of Plasma-assisted PVD Innovations since the 1960's" Awards Reception will follow the Convocation at 7:30 pm poolside near the Tiki Pavilion
4:30pm	Invited talk continues.	
4:50pm	E3-11 The Friction and Wear Performance of DLC Coatings Deposited on Plasma Nitrided AISI 4140 Steel by Magnetron Sputtering under Air and Vacuum Conditions, H. Kovaci , Ataturk University, Turkey; O. Baran , Erzincan University, Turkey; A.F. Yetim , Erzurum Teknik University, Turkey; Y.B. Bozkurt , L. Kara , Erzincan University, Turkey; A. Çelik , Ataturk University, Turkey	

Wednesday Afternoon, April 25, 2018

Surface Engineering - Applied Research and Industrial Applications

Room Sunset - Session G5

Hybrid Coatings and Hybrid System Processes

Moderators: **Hana Barankova**, Uppsala University, Sweden,
Sang-Yul Lee, Korea Aerospace University, Republic of Korea

1:30pm		
1:50pm	G5-2 Propagation of Electric Field Waves in a DC Magnetron Plasma, R.A. Broughton , S.R. Kirkpatrick, Rose-Hulman Institute of Technology, USA	
2:10pm	INVITED: G5-3 From Surface to Coating - Tools for Surface Engineering, F. Papa , Gencoia Ltd, USA, Spain; V. Bellido-Gonzalez , Gencoia Ltd, UK; I. Fernandez Martinez , Nano4energy SLNE, Spain; F. Meyer , H. Li , D. Monaghan , T. Sgrilli , Gencoia Ltd, UK	
2:30pm	Invited talk continues.	
2:50pm	G5-5 Nb – Doped TiO ₂ Deposited by Hybrid HIPIMS – CVD Process, J. Kulczyk-Malecka , Manchester Metropolitan University, UK; D. Donaghy , University of Liverpool, UK; B. Delfour-Peyrethon , Manchester Metropolitan University, UK; P.R. Chalker , J.W. Bradley , University of Liverpool, UK; P.J. Kelly , Manchester Metropolitan University, UK	
3:10pm	G5-6 Potential of Sequent and Simultaneous PVD PeCVD Hybrid Technology Combination. Investigations Aside Well-known Technologies in Duplex DLC and Co-deposition by Simultaneous Arc, Sputtering Evaporation, P. Collignon , R. Scheibe , PD2i Europe GmbH, Germany	
3:30pm	G5-7 TiN Deposition using the Magnetized Hollow Cathode Activated Magnetron, H. Barankova , L. Bardos , Uppsala University, Sweden	Awards Convocation 5:45 pm Town & Country Room Honorary Lecture: Allan Matthews "A Retrospective View of Plasma-assisted PVD Innovations since the 1960's" Awards Reception will follow the Convocation at 7:30 pm poolside near the Tiki Pavilion
3:50pm	G5-8 Structural and Tribological Properties of Mixed Iron-titanium Borides Produced with Cathodic Arc Assisted Alloying and Electrochemical Boriding, E. Kacar , C. Yelkarasi , S. Timur , M. Urgen , Istanbul Technical University, Turkey	

Wednesday Afternoon, April 25, 2018

Bunshah Award Honorary Lecture

Room Town & Country 5:45-7:00 pm

2018 R.F. Bunshah Annual Award & Honorary Lecture Professor Allan Matthews

Professor, Surface Engineering and Tribology, School of Materials, University of Manchester, UK
Director of the BP-sponsored International Centre for Advanced Materials, (ICAM), University of Manchester, UK
Editor-in Chief of the Elsevier Science journal "Surface and Coatings Technology"

Allan Matthews, **the 2018 ICMCTF laureate**, is recognized for "for outstanding contributions to surface engineering and coatings tribology".



Allan Matthews joined the School of Materials at the University of Manchester in 2016 as Professor of Surface Engineering and Tribology. Earlier this year he also became Director of the BP-sponsored International Centre for Advanced Materials. He has been active in the coatings field for over 40 years, having researched the ion plating process at the University of Salford during his first degree and then (following a period in the UK aerospace industry) for his PhD. Upon taking an academic post at Hull University, he established the Research Centre in Surface Engineering (RCSE) in the 1980's, and then successfully relocated that Centre to Sheffield University before moving to Manchester. He and his team have published over 350 scientific journal papers and he has edited, contributed Chapters to, and written many well-regarded books in the field (including Coatings Tribology, co-authored with Kenneth Holmberg) and is named on 12 core patents in the surface coating field. He is Editor-in Chief of the Elsevier Science journal "Surface and Coatings Technology", having been appointed as an Editor in 1987. He has helped organise and establish conferences such as the International Conference on Plasma Surface Engineering and the International Vacuum Congress, acting as a Programme Committee Member and Proceedings Editor. He served three terms as a British Vacuum Council representative in the Vacuum Metallurgy Division of the International Vacuum Science Society (IUVSTA), including periods as Vice-Chair, Treasurer and Secretary. For many years he was a Symposium Committee member of the International Conference on Metallurgical Coatings and Thin Films (ICMCTF) and a Proceedings Editor on six occasions. He has also served as Program Chair and General Chair of ICMCTF. Amongst several positions within learned societies, he served as Chair of the AVS Advanced Surface Engineering Division Executive Committee and was for some years an elected member of the Board of the Society of Vacuum Coaters. He is a recipient of the Donald Julius Groen Prize in Tribology from the IMechE and in 2011 was awarded the Gold Medal of the IoMMM for his research contributions in the field of advanced coatings. He is a Fellow of the Royal Academy of Engineering.

Abstract: A Retrospective View of Plasma-assisted PVD Innovations since the 1960's

Since the first plasma-assisted PVD processes for the deposition of engineering coatings first became available in the 1960's, there have been several distinct waves of development, created by innovators whose work opened-up new possibilities for these processes. The first systems were DC diode type "ion plating" processes for the production of metallic coatings, used mostly for corrosion and wear protection. The next wave involved enhanced plasma systems which augmented the diode systems with ionisation-enhancing modifications and permitted the deposition of ceramic coatings as well as improved metallic ones. The third wave involved additional ion and vapour source developments to further optimise processes, especially for multi-component, layered, nanocomposite and duplex systems. We have now entered the fourth wave, led mostly by development teams at companies, who are designing deposition systems to meet the challenges posed by the need to coat commercial products for industrial applications in a manufacturing world which is becoming increasingly digitalised. This often requires high-volume continuous and semi-continuous coating processes, with enhanced process monitoring and control.

This talk will be a personal perspective on some of the key innovations throughout these four waves of development, concentrating on the first three and highlighting some of the many individuals who have led the innovations and the key ideas which they brought forward, drawing from the speaker's own experience over the period, including his interactions with some of those innovators.

****Please plan to attend the ICMCTF Awards Convocation,
Wednesday, 5:45 pm, Town and Country Room****

Thursday Morning, April 26, 2018

<p>Special Interest Talk</p> <p>Room California - Session A1-1</p> <p>Coatings to Resist High Temperature Oxidation, Corrosion, and Fouling</p> <p>Moderators: Vladislav Kolarik, Fraunhofer ICT, Germany, Shigenari Hayashi, Hokkaido University, Japan, Sébastien Dryepondt, Oak Ridge National Laboratory, USA</p>		<p>Hard Coatings and Vapor Deposition Technologies</p> <p>Room Golden West - Session B4-1</p> <p>Properties and Characterization of Hard Coatings and Surfaces</p> <p>Moderators: Ulrich May, Robert Bosch GmbH, Germany, Fan-Bean Wu, National United University, Taiwan, Farwah Nahif, Eifeler-Vacotec GmbH, Germany</p>	
8:00am	INVITED: A1-1-1 Degradation of Protective Coatings at High Temperatures, M. Schütze , DECHEMA-Forschungsinstitut, Germany	B4-1-1 Contact Fatigue Performance of Cobalt Boride Coatings, A. Meneses-Amador, D. Sandoval-Juárez, G.A. Rodríguez-Castro, D. Fernández-Valdés, I.E. Campos-Silva, IPN, Mexico; A. Mouftiez, ICAM Lille, Matériaux, France; J.L. Arciniega-Martínez, IPN, Mexico	
8:20am	Invited talk continues.	B4-1-2 Revisiting the Nanocomposite Structure of Sputtered TiSiN Films, F. Fernandes, University of Coimbra, Portugal; S. Calderon Velasco, P.J. Ferreira, International Iberian Nanotechnology Laboratory, Portugal; A. Cavaleiro, University of Coimbra, Portugal	
8:40am	A1-1-3 Development of a New Slurry Coating Design for the Surface Protection of Gas Turbine Components, B. Grégoire , G. Bonnet, F. Pedraza, University of La Rochelle, France	INVITED: B4-1-3 Nanostructured Functional Coatings – From Process Diagnostics in High Power Pulsed Plasmas to Coating Properties and Performance, T. Brögelmann , K. Bobzin, N.C. Kruppe, M. Arghavani, M. Engels, Surface Engineering Institute - RWTH Aachen University, Germany	
9:00am	A1-1-4 Slurry Formulation for Industrial Large Scale Aluminum Diffusion Coatings, M. Kimmich , Fraunhofer ICT, Germany; V. Kolarik , Fraunhofer Institute for Chemical Technology ICT, Germany; <i>none</i> . Bermejo Sanz, M. Juez Lorenzo, Fraunhofer ICT, Germany	Invited talk continues.	
9:20am	A1-1-5 Structural Properties of Hybrid Sol-gel Coatings for Corrosion Protection of Low-carbon Steel, M.-J. Menu , CIRIMAT, Université de Toulouse UPS INP CNRS, France; C. Lavallee, R. Noiville, M. Gressier, CIRIMAT, France; J. Garcia, J.-M. Sobrino, CETIM, France	B4-1-5 Mechanical and Tribological Properties of Gradient and Multilayered CrVN/CrMoN Coatings, Y.-Y. Chang , C.C. Chuang , National Formosa University, Taiwan	
9:40am	A1-1-6 Diffusion Coatings for Corrosion Protection of Ferritic-martensitic Steels for Co-firing Combustion Plants, T. Meissner , D. Fähsing, M.C. Galetz, DECHEMA-Forschungsinstitut, Germany	B4-1-6 Synthesis and Characterization of Multilayered Coatings in the Ti-Al-N System by a Reactive Gas Pulsing Process, A. El Mouatassim , M.J. Pac, P. Henry, LPMT, France; C. Rousselot, FEMTO-ST, France; C. Tromas, F. Pailloux, T. Cabiac'h, SP2MI, France	
10:00am	A1-1-7 Effect of Vacuum Annealing on Corrosion Behavior of Cathodic Arc CrAlN and TiAlN Coatings, Z. Gasem , A. Adesina, M. Kumar, King Fahd University of Petroleum and Minerals, Saudi Arabia	B4-1-7 Tribological Behavior of Transition Metal Nitride Films with Crystalline and Noncrystalline Tailored Multilayer Structure, Z.X. Lin , F.B. Wu , National United University, Taiwan	
10:20am	A1-1-8 In-situ Post-Annealing of Si-Al Coatings for the Oxidation Protection of y-TiAl, K. Bobzin , T. Brögelmann, C. Kalscheuer, T. Liang , Surface Engineering Institute - RWTH Aachen University, Germany	B4-1-8 Investigation of Microstructure and Properties of Magnetron Sputtered Zr-Si-N Thin Films with Different Si Content, D. Fernandez , Universidade Federal de Sergipe, Brazil; F.G.R. Freitas, Universidade Federal de Sergipe, Brazil, Brasil; L. Félix, A. Terto, Universidade Federal de Sergipe, Brazil; A. Junior, Universidade Federal do Rio Grande do Sul, Brazil; F. Mendes, Instituto Nacional de Tecnologia, Brazil; E.K. Tentardini, Universidade Federal de Sergipe, Brazil	
10:40am	A1-1-9 Fatigue Performance of Bare and Coated 31V Alloy, S. Dryepondt , B.L. Armstrong, Oak Ridge National Laboratory, USA; Y. Zhang, Tennessee Technological University, USA; S. Sampath, Stony Brook University, USA; J.A. Haynes, Oak Ridge National Laboratory, USA	INVITED: B4-1-9 Low Temperature Surface Modification on Selected Thin Films Using HIPIMS for Antibacterial and Bio Applications, W.Y. Wu , Da-Yeh University, Taiwan	
11:00am	A1-1-10 Effects of Water Vapor on High Temperature Cyclic Oxidation on Inconel 718-Aluminide Coatings, P. Koech , C.J. Wang, National Taiwan University of Science and Technology (NTUST), Taiwan	Invited talk continues.	
11:20am	A1-1-11 Biomass Corrosion Behavior of Steels and Coatings in Contact with KCl/K ₂ SO ₄ at 550°C: a Screening Laboratory Test, M. Gutiérrez , A. Agüero Bruna , I. Baraibar, Instituto Nacional de Técnica Aeroespacial (INTA), Spain; M. Hernández, Instituto Nacional de Técnica Aeroespacial (INTA), Spain; R. Muelas Gamo, S. Rodríguez, Instituto Nacional de Técnica Aeroespacial (INTA), Spain	B4-1-11 Using Nano-impact Method to Predict Erosion Performance of Advanced DLC Coating Systems, S. McMaster , T. Liskiewicz, A. Neville, University of Leeds, UK; B. Beake, Micro Materials Ltd, UK	
11:40am	Elsevier Focused Topic Session "The Art of Publishing" Carina Arasa Cid, Elsevier and Samir Aquadi, UNT, USA 12:15-1:15 pm Golden West Room	2019 ICMCTF Informational Meeting 12:15 -1:15 pm California Room	B4-1-12 A Novel Methodology for Damage Characterization in Thin Hard Coatings Submitted to Extreme Loadings, A. Choleridis , Ecole Nationale Supérieure des Mines de St-Etienne, France; C. Héau, M. Leroy, Institut de Recherche en Ingénierie des Surfaces, Groupe HEF, France; S. Sao-Jao, G. Kermouche, Ecole Nationale Supérieure des Mines de St-Etienne, France; C. Donnet, Université de Lyon, Université Jean Monnet, France; H. Klöcker, Ecole Nationale Supérieure des Mines de St-Etienne, France

Thursday Morning, April 26, 2018

Fundamentals and Technology of Multifunctional Materials and Devices Room Sunrise - Session C2-1 Novel Oxide Films for Active Devices Moderators: Marko Tadjer, Naval Research Laboratory, USA, Vanya Darakchieva, IFM, Linkoping University, Sweden		New Horizons in Coatings and Thin Films Room San Diego - Session F3 2D Materials: Synthesis, Characterization, and Applications Moderators: Eli Sutter, University of Nebraska-Lincoln, USA, Liping Wang, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China
8:00am	C2-1-1 Characteristic of the bionic synapse on Lithium Aluminate Non-Volatile Resistive Random Access Memory, <i>W.C. Su, T.C. Chang, Y.H. Hung, B.H. Yan, S.P. Huang, Y.C. Tsao, T.M. Tsai</i> , National Sun Yat-Sen University, Taiwan	F3-1 Crystallization Kinetics of Photonically Annealed Two Dimensional Materials and Heterostructures, <i>R.A. Vila</i> , Stanford University, USA; <i>R.S. Rao, B. Maruyama</i> , Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; <i>E. Bianco</i> , Air Force Research Laboratory, Materials and Manufacturing Directorate/Rice University, USA; <i>N. Glavin</i> , Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; <i>C. Muratore</i> , University of Dayton, USA
8:20am	C2-1-2 Compared with the Different Thickness of Switch Layer on Resistive Random Access Memory, <i>C.C. Yang, T.C. Chang, W.C. Chen, C.C. Lin, H.X. Zheng, Y.C. Chien</i> , National Sun Yat-Sen University, Taiwan	F3-2 The Application of Pulsed Laser Deposited a-BN for Temperature and Oxidation Resistance of 2D MoTe ₂ Semiconducting Devices, <i>B. Sirota</i> , University of North Texas, USA, United States of America; <i>N. Glavin</i> , Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; <i>C. Muratore</i> , University of Dayton, USA; <i>S. Krylyuk, A. Davydov</i> , National Institute of Standards and Technology, USA; <i>A.A. Voevodin</i> , University of North Texas, USA
8:40am	C2-1-3 Investigating Abnormal Hump Under Positive Bias Temperature Stress for Hydrogenated a-InGaZnO Thin Film Transistors, <i>Y.C. Chien, T.C. Chang, T.M. Tsai, H.C. Chiang, Y.C. Yang, Y.C. Tsao, M.C. Tai</i> , National Sun Yat-Sen University, Taiwan	F3-3 A Predictive Thermokinetic Model of Friction in MoS ₂ , <i>J. Curry, A. Hinkle</i> , Sandia National Laboratories, USA; <i>T. Babuska, B. Krick</i> , Lehigh University, USA; <i>M. Dugger, N. Argibay, M. Chandross</i> , Sandia National Laboratories, USA
9:00am	C2-1-4 Optical and Electronic Properties of Monoclinic Ga ₂ O ₃ Unravelled, <i>M. Schubert</i> , Linkoping University, Sweden, USA; <i>A. Mock, R. Korlacki, S. Knight</i> , University of Nebraska-Lincoln, USA; <i>V. Darakchieva</i> , Linköping University, Sweden; <i>B. Monemar</i> , Linkoping University, Sweden; <i>Y. Kumagai</i> , Tokyo University of Agriculture and Technology, Japan; <i>K. Goto</i> , Tamura Corp., Japan; <i>M. Higashiwaki</i> , National Institute of Information and Communications Technology, Japan	F3-4 Supercritical Fluid Assisted Synthesis of V ₂ O ₅ /VS ₂ Nanocomposites for use in Supercapacitor, <i>Y.C. Liu, J.M. Ting</i> , National Cheng Kung University, Taiwan
9:20am	INVITED: C2-1-5 Ga ₂ O ₃ for Ultra-High Power Rectifiers and MOSFETs, <i>S. Pearson, F. Ren, J. Yang, P. Carey</i> , University of Florida, USA; <i>M. Tadjer, M. Mastro</i> , Naval Research Laboratory, USA	INVITED: F3-5 2D and Layered Metal Chalcogenide Semiconductors: Growth, Electronic Structure, Light-Matter Interactions, <i>P. Sutter</i> , University of Nebraska-Lincoln, USA
9:40am	Invited talk continues.	Invited talk continues.
10:00am	C2-1-7 Fabrication and Characterization of Pulsed-Laser Deposited Ba _{0.8} Ca _{0.2} Ce _x Ti _{1-x} O ₃ (BCCT) Thin Films, <i>C. Grijalva</i> , The University of Texas at El Paso, USA; <i>J. Jones</i> , Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; <i>R. Chintalapalle</i> , The University of Texas at El Paso, USA	F3-7 Fabrication and Photocatalytic Application of Functional group Modification of Carbon Nitride Derivatives nanosheets, <i>C.H. Chen, K.S. Chang</i> , National Cheng Kung University (NCKU), Taiwan
10:20am	C2-1-8 Thermo-Chemical Stability Evaluation of Titanium Doped β-Ga ₂ O ₃ Thin Films, <i>S. Manandhar, A.K. Battu, R. Chintalapalle</i> , University of Texas at El Paso, USA	F3-8 Enhanced Photocatalytic Performance for g-C ₃ N ₄ through the Addition of α-MoO ₃ Nanobelts and Mesoporous TiO ₂ Beads, <i>Y. Duong, J.M. Ting</i> , National Cheng Kung University, Taiwan
10:40am	(Cont'd from column at right) C. Mitterer SIT Mechanical failure of thin metal films on compliant substrates presents a considerable challenge in the development of flexible electronics. In particular, this applies for sputter-deposited molybdenum thin films, which are frequently used as back electrode materials in flexible solar cells, as electrode materials in flexible piezoelectric micro- and nano-electromechanical systems, in the metallization of thin film transistors, e.g. as gate and source/drain electrodes, as adhesion promotion, diffusion barrier and ohmic contact layers due to their attractive combination of functional properties.	F3-9 Fabrication of Nanostructured MoS ₂ Thin Films on Porous Silicon Substrate for Ammonia Gas Sensing Properties, <i>S. Sharma, A. Kumar, D. Kaur</i> , Indian Institute of Technology Roorkee, India
11:00am	Within this work, different strategies for film synthesis and alloying are proposed to design Mo-based thin films on polymer substrates with enhanced fracture resistance. The fracture properties of pure Mo films can be tailored by their compressive residual stress state, enabling a considerable improvement in crack onset strain. Moreover, both fracture strength and crack onset strain of Mo thin films scale with their thickness. Since all Mo thin films exhibit a distinctly brittle fracture behavior, alloying with Re and Cu was explored as feasible concept to overcome their poor ductility. A substantial toughness improvement with rising Re content up to the solubility limit was obtained, which stems from the increased plasticity and bond strengthening in the Mo-Re solid solution. Furthermore, it was observed that Cu addition to Mo results in an increased ductility, which was rationalized by the low shear resistant bonding in the Mo-Cu solid solution. In general, both concepts proved to be promising in order to enable utilization of Mo based thin films in flexible electronics.	F3-10 Wettability, Structural and Optical Examination of Sputtered Zirconium Oxide Thin Films, <i>U.P. Patel</i> , McMaster University, Canada; <i>P.D. Dave</i> , Gujarat forensic science university, India; <i>K.C. Chauhan</i> , Charotar University of Science and Technology (CHARUSAT), India; <i>S.K. Rawal</i> , McMaster University, Canada
11:20am		Special Interest Talk 4 Synthesis and Characterization of Molybdenum-based Thin Films for Flexible Electronics, <i>T. Jörg</i> , Montanuniversität Leoben, Austria; <i>M.J. Cordill, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; D. Music</i> , RWTH Aachen University, Germany; <i>R. Franz</i> , Montanuniversität Leoben, Austria; <i>H. Köstenbauer, J. Winkler</i> , Plansee SE, Austria; <i>J.M. Schneider</i> , RWTH Invited talk continues.
11:40am		(See full abstract in column at left)

Thursday Morning, April 26, 2018

Advanced Characterization Techniques for Coatings and Thin Films Room Royal Palm 1-3 - Session H1 Spatially-resolved Characterization of Thin Films and Engineered Surfaces Moderators: Xavier Maeder, EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland, Michael Tkadletz, Montanuniversität Leoben, Austria		Topical Symposia Room Royal Palm 4-6 - Session TS1 Thermal and Kinetic Spray Deposition Moderators: Andrew Vackel, Sandia National Laboratories, USA, Charles Kay, ASB Industries, Inc., USA
8:00am		INVITED: TS1-1 Latest Developments for Turbomachinery Coatings, K. Bobzin, L. Zhao, F. Linke, S. Wiesner, B. Yildirim, T. Liang, M. Welters , Surface Engineering Institute - RWTH Aachen University, Germany
8:20am		Invited talk continues.
8:40am		INVITED: TS1-3 Repair of Nickel Base Superalloys by Cold Spray, R. Vaßen, R. Singh, T. Kalfhaus, G. Mauer, O. Guillon , Forschungszentrum Jülich GmbH, Germany; J. Gibmeier , Karlsruhe Institute of Technology (KIT), Germany
9:00am	H1-4 Spatially Resolved Depth Profiling Of Residual Stress By Micro-Ring-Core Method, M. Sebastiani , Roma TRE University, Italy	Invited talk continues.
9:20am	H1-5 Quantitative Depth Profiling from the First Nanometers Down to the Substrate within Minutes using RF GD-OES, P. Hunault , HORIBA Instruments, USA; M.F. Chausseau, K. Savadkouei , HORIBA Scientific, USA; P. Chapon, S. Gaiaschi , HORIBA Scientific, France	TS1-5 Multi-layer Metallization of Polymer Materials via Thermal Spray, A. Vackel, M. Smith, A. Miller , Sandia National Laboratories, USA; B. Peter, B. Post , Oak Ridge National Laboratories, USA
9:40am	H1-6 Analysis of Thin Film Surface Stress Distribution using Raman Spectroscopy near Cohesive Cracks During Bending Tests, N. Fukumasu, G.C. Francisco, R.M. Souza , University of São Paulo, Brazil	TS1-6 Dielectric Ceramic Thick Films produced via Aerosol Deposition, E.A. Patterson , ASEE Postdoc, US Naval Research Lab, USA; S.D. Johnson, E.P. Gorzkowski , U.S. Naval Research Laboratory, USA
10:00am	INVITED: H1-7 <i>In situ</i> Nanomechanical Characterization of Transition Metal Carbides, M. Chen , ETH Zurich, Laboratory for Nanometallurgy, Switzerland; D.G. Sangiovanni , Linköping University, IFM, Germany, Sweden; J.M. Wheeler , ETH Zurich, Laboratory for Nanometallurgy, Switzerland; S. Kodambaka , G. Po , University of California Los Angeles, USA	INVITED: TS1-7 Tribological Properties of Cold Sprayed Metal Matrix Composite Coatings, R.R. Chromik , McGill University, Canada
10:20am	Invited talk continues.	Invited talk continues.
10:40am		TS1-9 Assessment of Magnetic Orientation of Barium Hexaferrite Thick Films Deposited by Aerosol Deposition with <i>in situ</i> Magnetic Field, S.D. Johnson , Naval Research Laboratory, USA; D.-S. Park , Korean Institute of Material Science, Korea; A. Hauser, S. Ranjit, K. Law , University of Alabama, USA; H. Newman, S. Shin, S. Qadri, E.P. Gorzkowski , Naval Research Laboratory, USA
11:00am		TS1-10 Development of Repair Methods for Nickel Based Super Alloys using Cold Gas Spray, T. Kalfhaus, R. Vaßen , Forschungszentrum Jülich GmbH, Germany
11:20am		TS1-11 Microstructure-scale Simulations of High-rate Loading of Porous, Thermally-sprayed Metal Coatings, C.C. Battaile, N.W. Moore, S.J. Owen , Sandia National Laboratories, USA
11:40am		TS1-12 Simulation and Visualization of the Aerosol Deposition Process, E.P. Gorzkowski, S.D. Johnson, T. Martin, R. Saunders , U.S. Naval Research Laboratory, USA; A. Borgdorff , U.S. Naval Academy, USA; D.A. Schwer , U.S. Naval Research Laboratory, USA; E.A. Patterson , ASEE Postdoc, U.S. Naval Research Laboratory, USA
	Elsevier Focused Topic Session "The Art of Publishing" Carina Arasa Cid, Elsevier and Samir Aouadi, UNT, USA 12:15-1:15 pm Golden West Room	2019 ICMCTF Informational Meeting 12:15 -1:15 pm California Room

Thursday Afternoon, April 26, 2018

Coatings for Use at High Temperatures Room California - Session A1-2 Coatings to Resist High Temperature Oxidation, Corrosion, and Fouling Moderators: Vladislav Kolarik, Fraunhofer ICT, Germany, Shigenari Hayashi, Hokkaido University, Japan, Sebastien Dryepondt, Oak Ridge National Laboratory, USA		Hard Coatings and Vapor Deposition Technologies Room Golden West - Session B4-2 Properties and Characterization of Hard Coatings and Surfaces Moderators: Ulrich May, Robert Bosch GmbH, Germany, Fan-Bean Wu, National United University, Taiwan, Farwah Nahif, Eifeler-Vacotec GmbH, Germany
1:30pm	INVITED: A1-2-1 Effect of Pre- and Post-Coat Processing on the Fatigue Life of Coated Disk Alloys, <i>J. Nesbitt, T. Gabb, B. Puleo</i> , NASA Glenn Research Center, USA; <i>R. Miller</i> , Vantage Partners, USA	B4-2-1 Target Race Track Chemistry is Different to What you Think: XPS Findings from Reactive dc and High Power Impulse Magnetron Sputtering Experiments, <i>G. Greczynski</i> , Linköping University, IFM, Thin Film Physics Division, Sweden; <i>S. Mráz</i> , RWTH Aachen University, Germany; <i>L. Hultman</i> , Linköping University, IFM, Thin Film Physics Division, Sweden; <i>J.M. Schneider</i> , RWTH Aachen University, Germany
1:50pm	Invited talk continues.	B4-2-2 Measurement of Residual Stress on TiN/Ti Bilayer Thin Films using Average X-ray Strain (AXS) Combined with Nanoindentation Methods, <i>J. Huang, S. Lei</i> , National Tsing Hua University, Taiwan; <i>H. Chen</i> , National Chiao Tung University, Taiwan
2:10pm	A1-2-3 High-temperature Oxidation Resistance of Chromium-based Coatings Deposited by DLI-MOCVD for Enhanced Protection of the Inner Surface of Long Tubes, <i>A. Michau</i> , CEA, France; <i>F. Maury</i> , CIRIMAT, France; <i>F. Schuster, J.-C. Brachet, E. Rouesne, M. Le Saux</i> , CEA, France; <i>R. Boichot, M. Pons</i> , SIMaP, France	INVITED: B4-2-3 Challenges and Recent Progress in the Development of Arc Evaporated $(\text{Al}_{1-x}\text{Cr}_x)_2\text{O}_3$ Coatings, <i>C.M. Koller, A. Kirnbauer, V. Dalbauer, R. Raab</i> , CDL-AOS at TU Wien, Austria; <i>S. Kolozsvári</i> , Plansee Composite Materials GmbH, Germany; <i>J. Ramm</i> , Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; <i>P.H. Mayrhofer</i> , TU Wien, Institute of Materials Science and Technology, Austria
2:30pm	A1-2-4 A New Process to Produce Localized Chrome Coating and Platinum-Modified Chrome Coating for Protection against Type II Hot Corrosion, <i>Z. Tang, J. McConnell, K. Garing, S. Sweeney</i> , Praxair Surface Technologies, Inc., USA	Invited talk continues.
2:50pm	A1-2-5 Characterization of Films Fabricated on AZ31 Magnesium Alloy by Heat Treatment and Immersion Methods, <i>H. Jeong</i> , Pohang Iron and Steel Company (POSCO), Republic of Korea	B4-2-5 Steel Doctor Blade Deposited by HIPIMS-CrN for Protection Purpose, <i>J.H. Zhou, Y.D. Liou, Y.H. Chen, J.L. He</i> , Feng Chia University, Taiwan
3:10pm	A1-2-6 Degradation Processes of LSM Based Interconnector Coatings under the Conditions of Pressurized Steam Electrolysis, <i>M. Juez Lorenzo, V. Kolarik, V. Kuchenreuther-Hummel</i> , Fraunhofer ICT, Germany; <i>M. Pötschke, D. Schimanke</i> , Sunfire GmbH, Germany	B4-2-6 In-Line HIPIMS-TiNxOy to Produce Colorful Decorative Coatings, <i>Y.D. Liou, Y.H. Chen, J.L. He</i> , Feng Chia University, Taiwan
3:30pm	A1-2-7 The Hot Corrosion Resistance of Hot-dip Aluminized Low Carbon Steel with Nickel Interlayer under Static Load, <i>H.C. Liang, C.J. Wang</i> , National Taiwan University of Science and Technology, Taiwan	B4-2-7 Property of AIP Deposited Thick TiAlN Coating and Application to Actual Steam Turbine for Solid Particle Erosion Protection, <i>K. Yamamoto, J. Munemasa</i> , Kobe Steel Ltd., Japan; <i>Y.L. Liang</i> , National Cheng Kung University, Taiwan; <i>T. Abe</i> , Toshiba Corporation, Japan; <i>S. Takada, T. Takazawa, Y. Iwai</i> , University of Fukui, Japan
3:50pm	A1-2-8 Advanced Hybrid Coatings for Combating Corrosive Properties of existing Magnesium Alloys, <i>S. Dutta</i> , BITS-Pilani Hyderabad Campus, India; <i>N Reddy</i> , BITS-Pilani, India	B4-2-8 Stress Evolution during Cr_2AlC Film Growth, <i>A. Subacius, A. Matthews</i> , University of Manchester, UK; <i>M. Hans, S. Mráz, J.M. Schneider</i> , RWTH Aachen University, Germany
4:10pm		B4-2-9 Composition and Temperature Influence on ZrAlN/TiN Multilayer Structure: In-situ X-ray Scattering during Growth, and Transmission Electron Microscopy Studies, <i>N. Ghafoor</i> , Linköping Univ., IFM, Thin Film Physics Div., Sweden; <i>H.T. Wang</i> , Linköping Univ., IFM, Thin Film Physics Div. and Max-Planck-Institut für Eisenforschung GmbH, Sweden; <i>J. Muhammad, L. Rogström, J. Schroeder</i> , Linköping Univ., IFM, Thin Film Physics Div., Sweden; <i>D. Ostach, N. Schell</i> , Helmholtz-Zentrum Geesthacht, Germany; <i>J. Birch</i> , Linköping Univ., IFM, Thin Film Physics Div., Sweden
4:30pm		B4-2-10 Self-toughening in the TiAlN System, <i>M. Bartosik</i> , TU Wien, Institute of Materials Science and Technology, Austria; <i>C. Rumeau, R. Hahn</i> , TU Wien, Austria; <i>Z. Zhang</i> , Austrian Academy of Sciences, Austria; <i>P.H. Mayrhofer</i> , TU Wien, Austria
4:50pm	Poster Session 5:00-7:00 pm Grand Hall Reception begins at 6:00 pm	B4-2-11 Load Sensing Characterization of Silicon Oxide Coatings, <i>T. Liskiewicz</i> , Leeds University, UK; <i>I. Kolev</i> , Hauzer Techno Coating, Netherlands; <i>E. McNulty, A. Neville</i> , Leeds University, UK
5:10pm		B4-2-12 The Mechanical and Tribological Properties of TiZrNbN and $\text{TiZrNbN}-\text{Cu}$ Films, <i>I. Efeoglu</i> , Ataturk University, Turkey; <i>H.A. Aghdam, A. Keles</i> , Ataturk University, Turkey; <i>O. Baran</i> , Erzincan University, Turkey; <i>Y. Totik</i> , Ataturk University, Turkey

Thursday Afternoon, April 26, 2018

Fundamentals and Technology of Multifunctional Materials and Devices Room Sunrise - Session C2-2 Novel Oxide Films for Active Devices Moderators: Marko Tadjer , Naval Research Laboratory, USA, Vanya Darakchieva , IFM, Linkoping University, Sweden		Advanced Characterization Techniques for Coatings and Thin Films Room Royal Palm 1-3 - Session H2 Advanced Mechanical Testing of Surfaces, Thin Films and Coatings Moderators: Benoit Merle , Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany, Marco Sebastiani , Roma TRE University, Italy
1:30pm	C2-2-1 Investigation of Negative Bias Temperature Instability under Illumination on P-type Low Temperature Poly-crystalline Silicon Thin Film Transistors, S.P. Huang , T.C. Chang , A.K. Chu , W.C. Su , W.C. Chen , National Sun Yat-Sen University, Taiwan; Y.A. Chen , Y.S. Shih , National Taitung University, Taiwan; Y.Z. Zheng , Y.X. Wang , National Sun Yat-Sen University, Taiwan	H2-1 In Situ Observation of Strain Transfer and Crack Formation in Evaporated and Printed Thin Films and Devices on Compliant Substrates, P.A. Gruber , Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM-WBM), Germany
1:50pm	C2-2-2 Mechanism of Reset Process with Varying Compliance Current in High-k Spacer Resistance Random Access Memory, Y.T. Tseng , T.C. Chang , W.C. Huang , Y.X. Guo , T.Y. Chang , W.C. Chen , National Sun Yat-Sen University, Taiwan	H2-2 Comparison of Different Methods for the Investigation of Thin Film Adhesion, F. Schiebel , Fraunhofer Institute for Mechanics of Materials IWM, Germany; C. Eberl , University of Freiburg, Germany
2:10pm	C2-2-3 Improve Reliability of Complementary Resistive Switching Induced by Carbon Dopant in Indium-Tin-Oxide as The Insulator in Resistive Random Access Memory, C.C. Lin , T.C. Chang , W.C. Chen , Y.T. Tseng , S.P. Huang , H.X. Zheng , National Sun Yat-Sen University, Taiwan	H2-3 Electro-Mechanical Characterization of Functional Thin Film Metallic Glasses, M. Mühlbacher , Montanuniversität Leoben, Austria; O. Glushko , C. Gammer , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; C. Mitterer , J. Eckert , Montanuniversität Leoben, Austria
2:30pm	C2-2-4 Study on the Characteristic of Cobalt Silicide Electrode Resistive Random Access Memory, W.C. Chen , T.C. Chang , T.M. Tsai , Y.C. Zhang , S.P. Huang , Y.S. Lin , C.C. Lin , H.X. Zheng , National Sun Yat-Sen University, Taiwan	H2-4 New Pull-off Tensile Tests for Adherence Assessment in Concrete-formwork Coated and Uncoated Contacts, N. Spitz , Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France; N. Coniglio , M. El Mansori , Arts et Métiers ParisTech d'Aix-en-Provence, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France; A. Montagne , Arts et Métiers ParisTech de Lille, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France; S. Mezghani , Arts et Métiers ParisTech de Châlons-en-Champagne, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France
2:50pm	INVITED: C2-2-5 Material and Device Engineering for Gallium Oxide Electronics, S. Rajan , The Ohio State University, USA	INVITED: H2-5 In-situ-squared: Combined Electro-mechanical Behavior of Thin Films with One Experiment, M.J. Cordill , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria
3:10pm	Invited talk continues.	Invited talk continues.
3:30pm	C2-2-7 The Ultra-violet Light Effect on the Off-state Current of InGaZnO Thin Film Transistor with the Different Structure, Y.C. Tsao , T.C. Chang , Y.L. Tsai , W.C. Su , S.P. Huang , Y.C. Chien , National Sun Yat-Sen University, Taiwan	H2-7 Mechanical Behavior of Ductile/Brittle Multilayers Studied with In-situ Straining Methods, P. Kreiml , M. Rausch , V. Terziyska , Montanuniversität Leoben, Austria; H. Köstenbauer , J. Winkler , Plansee SE, Austria; C. Mitterer , Montanuniversität Leoben, Austria; M.J. Cordill , Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria
3:50pm	C2-2-8 Study on the Characteristics of Device in Copper Ion Movement during Operation Process in Conductive-Bridging Random Access Memory, M.H. Wang , T.C. Chang , Y.T. Tseng , H.X. Zheng , C.H. Wu , S.P. Huang , National Sun Yat-Sen University, Taiwan	H2-8 Fracture Behavior of Nanocrystalline BCC High-Entropy Alloys, Y. Xiao , H. Ma , R. Spolenak , J.M. Wheeler , ETH Zurich, Laboratory for Nanometallurgy, Switzerland
4:10pm	C2-2-9 The Degradation Mechanism of Tungsten Electrode on HfO ₂ -based Resistance Random Access Memory (RRAM), H.X. Zheng , T.C. Chang , T.Y. Chu , M.H. Wang , C.C. Lin , C.C. Yang , National Sun Yat-Sen University, Taiwan	INVITED: H2-9 Recent Advanves in Microcantilever Bending Experiments, K. Durst , Physical Metallurgy, TU Darmstadt, Germany; M. Göken , University Erlangen-Nürnberg, Germany; J. Ast , EMPA (Swiss Federal Laboratories for Materials Science and Technology), Switzerland
4:30pm	Poster Session 5:00-7:00 pm Grand Hall Reception begins at 6:00 pm	Invited talk continues.
4:50pm		H2-11 Temperature and Loading Rate Influence in Micro-Scale Fracture Experiments, J. Ast , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; J. Schwedrzik , EMPA, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; J. Wehrs , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; J. Michler , EMPA, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; X. Maeder , Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
5:10pm		H2-12 Investigating the Local Fatigue Properties of Materials in Small Dimensions by Dynamic Micropillar Compression, B. Merle , Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany

Thursday Afternoon, April 26, 2018

Special Interest Talk 4
Room San Diego

	<p>5:00-7:00 pm Demonstrations of Three Enhanced Poster Presentations</p>	<p>Poster Session 5:00-7:00 pm Grand Hall Reception begins at 6:00 pm</p>
	<p>AP-6 "Integral vs. Local Chemical Composition of (coating) Materials: Is your Solid Solution a Solid Solution? <i>J.M. Schneider</i>, RWTH Aachen University, Germany</p>	<p>(Cont'd from left column) P.H. Mayrhofer Special Interest Talk 5</p>
	<p>CP-24 "Numerical Ellipsometry: Extension of Concepts of n-k Plane Solutions from Isotropic to Anisotropic Films <i>F. Urban</i>, Florida International University, USA</p>	<p>Whenever mechanical attack is dominating the loading profile of materials in industrial applications, nitrides are highly preferred, whereas oxide materials provide best protection against high temperature corruptions. Thus, when mechanical and thermal loading is combined, the nitrides used should also provide an excellent stability against temperature as well as corrosive attack (such as oxidation). How nitride materials can be developed – implementing computational and experimental materials science – to withstand high mechanical as well as thermal loading, is the focus of this talk.</p>
	<p>CP-27 "Challenges and Limitations for the Optical Characterization of Sub-micron Temperature Fields in Plasmonic Metamaterials" <i>J. A. Zapien</i>, City University of Hong Kong, Hong Kong</p>	<p>We will use recent developments – where we applied alloying and architecture concepts (e.g., composition and/or phase modulated layers) to transition metal nitrides, for optimizing their properties – to derive important materials design guidelines for improved strength, ductility, but also stability. Especially the stability (here, we concentrate on phase stability with respect to chemistry and temperature, but also on the stability against oxidation) of nitrides is an extremely interesting task, as for example the face centered cubic (fcc) structure of TiN_x is rather insensitive to small (or even large) variations in chemistry and alloying elements (TiN even allows for the substitution of 66% Ti with Al to still crystallize in the fcc structure). Contrary, the preferred crystal structure of other transition metal nitrides (like MoN_x and TaN_x) is extremely sensitive to small chemical variations, even if only the vacancy content changes. Nevertheless, especially Ta is extremely versatile in increasing strength, but also ductility, as well as the thermal stability and oxidation resistance of Ti-Al-N coatings, which are still an extremely important material class.</p>
		<p>With the help of various superlattice coatings, we show that also with such architectural concepts, strength and ductility (here, basically obtained by in-situ micromechanical cantilever bending tests) can be improved simultaneously. Additionally, we also give an example of transformation induced plasticity mechanisms, which can be implemented in nitride materials as well.</p>
4:10pm	<p>Special Interest Talk 5 Materials Design Guidelines for Improved Strength, Ductility, and Stability, <i>P.H. Mayrhofer</i>, TU Wien, Institute of Materials Science and Technology, Austria (See full abstract in column at right)</p>	<p>The individual concepts will allow designing materials to meet the ever-growing demand for further improved coatings, tailor made for specific applications.</p>

Thursday Afternoon Poster Sessions, April 26, 2018

Coatings for Use at High Temperatures

Room Grand Hall - Session AP

Symposium A Poster Session

5:00pm

AP-1

Feasibility of using Rare-earth (La and Ce) Sulfates as Functional Embedding Agents for Thermal Barrier Coatings, *D.W. Song, T. Song*, Hanyang University, Republic of Korea; *H.M. Park, Y.G. Jung*, Changwon National University, Republic of Korea; *J. Zhang*, Indiana University Purdue University Indianapolis, USA

AP-2

Lifetime Performance of Yb-Gd-Y-based Thermal Barrier Coatings with Buffer Layer in Thermally Graded Mechanical Fatigue Environments, *B.G. Kim*, School of Materials Science and Engineering, Changwon National University, Republic of Korea; *G.L. Lyu, S.H. Jung, H.M. Park, Y.G. Jung*, Changwon National University, Republic of Korea; *J. Zhang*, Changwon National University, Republic of Korea, USA

AP-3

Thermal Durability of Thermal Barrier Coatings – Effect of Purity and Monoclinic Phase in Feedstock Powder, *Y.G. Jung, H.M. Park, S.H. Jeon, G.L. Lyu, S.H. Jung*, Changwon National University, Republic of Korea; *K.Y. Park, I.S. Kim, B.I. Yang*, Doosan Heavy Industries and Construction, Republic of Korea; *J. Zhang*, Indiana University, USA

AP-6

Integral vs. Local Chemical Composition of (coating) Materials: Is your Solid Solution a Solid Solution?, *J.M. Schneider*, RWTH Aachen University, Germany

AP-7

Coating Generation and Study for Materials Protection used in Extreme Atmosphere: Sustainability and Energy Efficiency, *A. Illana*, Universidad Complutense de Madrid, Spain; *M. Gutiérrez, I. Baraibar*, Instituto Nacional de Técnica Aeroespacial (INTA), Spain; *S. Mato*, Universidad Complutense de Madrid, Spain; *R. Muelas Gamo*, Instituto Nacional de Técnica Aeroespacial (INTA), Spain; *M. Benito, A. Bahillo*, Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT), Spain; *F.J. Pérez-Trujillo*, Universidad Complutense de Madrid, Spain; *A. Agüero Bruna*, Instituto Nacional de Técnica Aeroespacial (INTA), Spain

AP-8

The Influence of Reactive Elements on Thermogravimetric Behaviour of New Co-Ni-Al-W Superalloys Dedicated to Bond-coat Deposition, *G. Moskal, A. Tomaszewska, D. Migas*, Silesian University of Technology, Poland

AP-9

Study the Surface-aluminizing Coating to Enhance High-temperature Oxidation Resistance of T91 Boiler-used Steel, *W. Kai, Y.T. Chen, C.L. Chung*, National Taiwan Ocean University, Taiwan

AP-10

New Insights into the Oxidation Behaviour of AlCrSiN Coatings and an Approach to Avoid Trans-interface Diffusion at Elevated Temperatures, *N. Jäger, S. Klima, M. Meindlhummer*, Montanuniversität Leoben, Austria; *H. Hruby*, eifeler-Vacotec GmbH, Germany; *J. Keckes, R. Daniel*, Montanuniversität Leoben, Austria

AP-11

NiAl Coatings Deposited on Inconel 600 by using an Arc Ion Plating Process, *Y.N. Li*, University of Manchester, UK; *Y.L. Hung*, Feng Chia University, Taiwan; *A. Matthews*, University of Manchester, UK; *J.L. He*, Feng Chia University, Taiwan

AP-12

Gradient SiBCN Ceramic Coating for High-temperatuue Anti-oxidation Protection of Carbon-carbon Composite, *Z. Zhang*, Institute of Chemistry, Chinese Academy of Science, China

Hard Coatings and Vapor Deposition Technologies

Room Grand Hall - Session BP

Symposium B Poster Session

5:00pm

BP-1

Electrical and Reliability Characteristics of Dielectric Stack with Low Dielectric Constant SiCOH and Capping SiCNH Films, *C.Y. Lee*, National Chi-Nan University, Taiwan; *W.J. Hung, Y.L. Cheng*, National Chi Nan University, Taiwan

BP-3

Adhesion And Durability Of Multi-Interlayered Diamond-Like Carbon Film Deposited On An Aluminum Alloy, *H. Maruno, A. Nishimoto*, Kansai University, Japan

BP-4

The Effect of Cu on Fatigue Properties of TiZrNbN Coatings, *H.A. Aghdam, A. Keles*, Ataturk University, Turkey; *O. Baran*, Erzincan University, Turkey; *Y. Totik*, Ataturk University, Turkey; *I. Efeoglu*, Ataturk University, Turkey

BP-5

Thermal Stability of Ni-B/ La₂O₃ Coatings by Electro-brush Plating Technique, *D. Zhang, X.F. Cui, G. Jin, X. Cai, M. Dong*, Harbin Engineering University, China

BP-6

Properties of CrN_x thin films deposited in plasma activated polymers by reactive magnetron sputtering, *M. Rodrigues, P. Pedrosa*, Minho University, Portugal; *A. Ferreira, L. Godinho, M. Amaral*, PRIREV, Portugal; *M. Neto, F. Oliveira, R. Silva*, Universidade de Aveiro, Portugal; *J. Borges, F. Vaz*, Minho University, Portugal

BP-9

Influence of Ti on the Phase Stability of Magnetron Sputtered Mo-Si-B Thin Films, *E. Aschauer, H. Riedl*, CDL-AOS at TU Wien, Austria; *H. Bolvardi*, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *P. Polcik*, Plansee Composite Materials GmbH, Germany; *P.H. Mayrhofer*, Institute of Materials Science and Technology, TU Wien, Austria

BP-10

Carbide Layer Coating on Titanium by Spark Plasma Sintering Technique, *A. Nishimoto, C. Nishi*, Kansai University, Japan

BP-13

Growth Kinetics of Boride Coatings on AISI W2 Steel, *M.A. Doñu Ruiz*, Universidad Politécnica del Valle de Mexico, Mexico; *N. Lopez Perrusquia*, Universidad Politecnica Del Valle De Mexico, Mexico; *V. Serna Lara, V.J. Cortés Suárez*, Universidad Politécnica del Valle de Mexico, Mexico

BP-15

Study on Steels Boronizing Immersed in Diesel, *N. Lopez Perrusquia, M.A. Doñu Ruiz, G.J. Perez Mendoza*, Universidad Politecnica Del Valle De Mexico, Mexico; *V.J. Cortés Suárez*, Universidad Autónoma Metropolitana- Azcapotzalco, Mexico; *C.R. Torres San Miguel*, Instituto Politécnico Nacional - ESIME, Mexico

BP-17

Deposition of Nanodiamond Coatings on Steel Implant Materials with CrN/Al Interlayer, *Y. Li, F. Ye, C. Zhang, M. Taheri, J. Corona, Q. Yang*, University of Saskatchewan, Canada

BP-18

MoN/TaN Superlattices: from a Computer Design to a Realization, *N. Koutra*, TU Wien, Institute of Materials Science and Technology, Austria; *R. Hahn*, CDL-AOS at TU Wien, Austria; *J. Zalesak*, Montanuniversität Leoben, Austria; *M. Friek*, IPM, Academy of Science, Czech Republic; *M. Bartosik*, TU Wien, Institute of Materials Science and Technology, Austria; *M. Sob*, Masaryk University, Czech Republic; *J. Keckes*, Montanuniversität Leoben, Austria; *P.H. Mayrhofer*, TU Wien, Institute of Materials Science and Technology, Austria; *D. Holc*, Montanuniversität Leoben, Austria

BP-20

Effect of Mo Concentration on Structure and Properties of Zr-Mo-N Thin Films Deposited by Reactive Magnetron Sputtering, *A. Junior, D. Fernandez, L. Félix*, Universidade Federal de Sergipe, Brazil; *R. Hubler*, Pontifícia Universidade Católica do Rio Grande do Sul, Brazil; *F. Mendes*, Instituto Nacional de Tecnologia, Brazil; *G. Brito*, Universidade Federal de Sergipe, Brazil; *E.K. Tentardini*, Universidade Federal de Sergipe, Brazil, Brasil

BP-21

Anti-staining Coatings on PET Fabrics by Using a Spraying/ Plasma-Polymerization Duplex Technique, *C.W. Lin*, Feng Chia University; Central Taiwan University of Science and Technology, Taiwan; *J.L. He*, Feng Chia University, Taiwan

BP-22

Fracture Resistance of Nanocomposite/Metal Nitride Multilayers: Role of Interfaces, *N. Ghafoor, P. Persson*, Linköping Univ., IFM, Thin Film Physics Div., Sweden; *I. Petrov*, Linköping University, IFM, Thin Film Physics Division, Sweden, USA; *J. Barrero, F. Mücklich*, Saarland University and Materials Engineering Center Saarland, Germany; *J. Birch*, Linköping Univ., IFM, Thin Film Physics Div., Sweden; *W.J. Clegg*, Cambridge University, UK

BP-23

Vacancies in Al-O-N Crystallites, *M. Fischer, D. Scopuce, C.A. Pignedoli, D. Passerone, H.J. Hug*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

BP-25

The Fatigue Behavior of TiCrAlTaSiN Coated and Uncoated Titanium Alloys, *B.A. Lerch, D. Zhu, S. Kalluri*, NASA Glenn Research Center, USA

Thursday Afternoon Poster Sessions, April 26, 2018

BP-26

Effects of Bias Voltage on Microstructure and Properties of Al-doped Hydrogenated Amorphous Carbon Films Prepared by a Hybrid Deposition Technique, *S. Lin, W. Xu, H. Li, M. Dai, Q. Shi, C. Wei, H. Wang, K. Zhou*, Guangdong Research Institution of New Materials, China

BP-27

Comparison of Chromium Carbide Thin Films Grown by Different Power Supply Systems, *Z.L. Li, C.J. Wang*, National Taiwan University of Science and Technology, Taiwan; *B.S. Lou*, Chang Gung University, Taiwan; *J.W. Lee*, Ming Chi University of Technology, Taiwan

BP-28

Self-organized Formation of Different Nanostructure in Carbon-metal Films Prepared by Reactive Magnetron Sputtering, *H.X. Li, W.Q. Wang, L. Ji*, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

BP-29

Anticorrosive Properties of (Zr-Si-Ti-N)Ni Thin Films Deposited by Co-Sputtering, *E.N. Borja Goyeneche, J.J. Olaya*, Universidad Nacional De Colombia, Colombia

BP-30

Corrosion Resistance of Stainless Steel Coatings With and Without Silver Deposited by Sputtering, *C.L. España, J.J. Olaya*, Universidad Nacional De Colombia, Colombia; *A.A. Candido Recco*, Universidade do Estado de Santa Catarina, Brazil

BP-31

Evolution of Structure and Mechanical Properties of Nanocrystalline Multi-layered Arc-evaporated AlCrN-AlTiN Coatings upon Thermal Loading Revealed by X-ray Nanodiffraction and Tribological Testing, *S. Klama, N. Jäger, M. Meindlhuber*, Montanuniversität Leoben, Austria; *H. Hruba*, eifeler-Vacotec GmbH, Germany; *J. Keckes, R. Daniel*, Montanuniversität Leoben, Austria

BP-32

Corrosive Resistance of Nanostructured ZrSiN-Ag Films Deposited by Reactive Sputtering, *H.S. Vanegas Parra, J.J. Olaya, J.E. Alfonso*, Universidad Nacional De Colombia, Colombia; *S. Calderon*, International Iberian Nanotechnology Laboratory, Portugal; *S. Carvalho*, University of Minho, Portugal

BP-33

Mechanical Properties of ZrSiN-Ag Thin Films Deposited by Reactive Magnetron Sputtering, *H.S. Vanegas Parra, J.E. Alfonso, J.J. Olaya*, Universidad Nacional De Colombia, Colombia; *S. Calderon*, International Iberian Nanotechnology Laboratory, Portugal; *S. Carvalho*, University of Minho, Portugal

BP-34

Hardness and Adhesion of AlSiN Thin Films Deposited by the Simultaneous Laser Ablation of Two Targets, *E. Camps, L.P. Rivera, E. Campos*, Instituto Nacional de Investigaciones Nucleares, Mexico; *S. Muhl*, Universidad Nacional Autonoma de Mexico, Mexico

BP-35

Plasma Enhanced Chemical Vapor Deposition of Carbon Film into a Small Hole 100 μm in Diameter with MVP and Source Gas Blowing, *R. Ota*, Nagoya University, Japan; *H.K. Kousaka*, Gifu University, Japan; *L.L. Raja*, University of Texas at Austin, USA; *N. Umehara, M. Murashima, T. Tokoroyama*, Nagoya University, Japan

BP-37

Effect of Silicon Content on Structure and Properties of AlCrSiN Coatings Prepared by Arc Ion Plating for Milling Tools, *W.R. Kim, S. Heo*, Korea Institute of Industrial Technology (KITECH), Republic of Korea; *Y.H. Kim, J.W. Kim*, KORLOY, Republic of Korea; *I.-W. Park*, Korea Institute of Industrial Technology (KITECH), Republic of Korea

BP-38

Coatings and Performance Evaluation of Ti-Al-Si-N-O Coated Cutting Tools, *S. Heo, H. Kim, U.C. Jung*, Korea Institute of Industrial Technology (KITECH), Republic of Korea; *Y.H. Kim, J.W. Kim*, KORLOY, Republic of Korea; *I.-W. Park*, Korea Institute of Industrial Technology (KITECH), Republic of Korea

BP-39

Transparent and Low Resistance Hard Amorphous Carbon Thin Films by HiPIMS for Electronic Applications, *K. Thorwarth, R. Ganeshan, A. Chacko*, EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *M. Grein, R. Bandorf*, Fraunhofer Institute for Surface Engineering and Thin Films, Germany; *D.R. McKenzie, M.M. Bilek*, The University of Sydney, Australia; *H.J. Hug*, EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland

BP-40

Reactive Magnetron Sputter Deposition of Bismuth Tungstate Coatings for Water Treatment Applications under Natural Sunlight, *M. Ratova, P.J. Kelly*, Manchester Metropolitan University, UK; *R.B.P. Marcelino, C.C. Amorim, P.P. de Souza*, Federal University of Minas Gerais, Brazil

Fundamentals and Technology of Multifunctional Materials and Devices

Room Grand Hall - Session CP

Symposium C Poster Session

5:00pm

CP-2

Effect of Nitrogen Content on Structure and Properties of MoN_x Coatings, *J.W. Wang*, University of New South Wales, Australia

CP-3

Stress Metrology for G6 and Larger Flat Panel Displays, *W. Walecki*, Frontier Semiconductor, USA; *W. Hung*, Frontier Semiconductor, USA, United States of America; *D.K. Kim*, Sejong University, Korea

CP-4

Hydrogen Barrier Properties of Diamond-like Carbon Coatings, *M. Tamura*, University of Electro-Communications, Japan

CP-5

Effect of N₂ Flow Rate on the Properties of TiN film on Si Substrate for Thermal Detector Application, *Y.C. Huang, K.L. Lin, Y.S. Lai*, National Nano Device Laboratories, National Applied Research Laboratories, Taiwan

CP-6

Gradated Multilayer Thin Film of BaTiO₃/PVDF with High Energy Storage Density, *X.H. Wang*, Tsinghua University, China

CP-7

Synthesis of Bi₂O₃:TiO₂ Nano Structured Thin Films for Photocatalytic Applications, *M. Calheiros, F. Correia, J. Marques, C. Tavares*, University of Minho, Portugal

CP-8

Improvement of Mechanical Properties in 3D Printed Ceramic Core, *H.Y. Park, B.G. Kim, G.H. Cho, E.H. Kim, Y.G. Jung*, Changwon National University, Republic of Korea; *J. Zhang*, Indiana University-Purdue University Indianapolis, USA

CP-9

Enhanced Efficiency of Perovskite Solar Cells with Ferroelectricity, *T. Nguyen, S.G. Shin, S. Kim, H.W. Choi, C.W. Bark*, Gachon University, Republic of Korea

CP-10

Improvement in Hygroscopicity of Inorganic Binder through Dual Coating Process, *H.H. Choi, H.J. Lee, G.H. Cho, E.H. Kim, Y.G. Jung*, Changwon National University, Republic of Korea; *J. Zhang*, Indiana University-Purdue University Indianapolis, USA

CP-11

Synthetic Parameter Influence on Morphological and Electrochemical Properties of Porous NiO Thin Films Prepared by Chemical Bath Deposition, *J.H. Yu, H.E. Yang, R.H. Jeong, J.W. Lee, D.I. Kim, K.H. Hwang, H.J. Seo, S.H. Nam, J.H. Boo*, Sungkyunkwan University, Republic of Korea

CP-12

Characteristics of Perovskite Solar Cells Fabricated by using Lead Free Perovskite, *S.G. Shin, C.W. Bark, H.W. Choi*, Gachon University, Republic of Korea

CP-14

The Influence of Disordered Grain Boundaries on Carrier Transport in Degenerated Polycrystalline AZO Thin Films Deposited by Magnetron Sputtering, *H. Tokunaga, T. Miyata, T. Minami*, Kanazawa Institute of Technology, Japan

CP-15

Physical and Electrochromic Behavior of the ZnWO₄ Active Layer synthesized by Co-sputtering Technique for the Energy Harvesting Devices, *G. Malik, S. Mourya, J. Jaiswal, R. Chandra*, Indian Institute Of Technology Roorkee, India

CP-16

The Influence on Electrical Characteristics of Amorphous Indium Tungsten Oxide Thin Film Transistors with Multi-Stacked Active Layer Structure, *K.J. Gan, P.T. Liu, D.B. Ruan, Y.C. Chiu, M.C. Yu, T.C. Chien, Y.H. Chen, P.Y. Kuo, S.M. Sze*, National Chiao Tung University, Taiwan

CP-17

Assessment of Structural and Magnetic Properties of Cobalt-Iron-Nickel Thick Films on Copper Formed by Electroforming, *S.D. Johnson, C. Joye, H. Newman, N. Nepal, A. Kozen, S. Shin*, Naval Research Laboratory, USA

Thursday Afternoon Poster Sessions, April 26, 2018

CP-18

Sputter-deposited Nanostructured Metal-Oxide Films for Hydrogen Gas Sensing, *S. Havar, J. Čapek, N. Kumal, S. Batková, M. Fialová, R. Čerstvý*, University of West Bohemia, Czech Republic; *T. Duchoň, F. Dvořák*, Charles University, Czech Republic

CP-19

A Library of Broadband Reference Dielectric Functions, Valence Band Spectra and Raman Spectra of Epitaxial Conductive Nitride Films Grown on MgO, *S. Kassavetis, T. Zorba, J. Arvanitidis, D. Christofilos*, Aristotle University of Thessaloniki, Greece; *G. Abadie*, Université de Poitiers, France; *D. Gall*, Rensselaer Polytechnic Institute, USA; *P. Patsalas*, Aristotle University of Thessaloniki, Greece

CP-21

Electrical Properties of Molybdenum Doped β -Ga₂O₃ Thin Films, *J. Galindo, A.K. Battu, R. Chintalapalle*, University of Texas at El Paso, USA

CP-22

Electron Beam Deposition and Characterization of Transparent WO₃/Al/WO₃ Multilayer Thin Films, *A. Leyva, K. Makeswaran, R. Chintalapalle*, University of Texas at El Paso, USA

CP-24

Numerical Ellipsometry: Extension of Concepts of n-k Plane Solutions from Isotropic to Anisotropic Films, *F. Urban, D. Barton*, Florida International University, USA

CP-25

Piezophotocatalytic and Piezoelectric Performance of Titanium Zinc Nitride Nanorod, *H.Y. Lee, K.S. Chang*, National Cheng Kung University (NCKU), Taiwan

CP-26

Well-alignment ZnSnO₃ by Epitaxially Oriented PVDF and Synergistic Piezo-related Performance of the ZnSnO₃/PVDF Nanocomposites, *C.H. Chou, K.S. Chang*, National Cheng Kung University (NCKU), Taiwan

CP-27

Challenges and Limitations for the Optical Characterization of Sub-micron Temperature Fields in Plasmonic Metamaterials, *J.A. Zapien*, City University of Hong Kong, Hong Kong

CP-28

The Modification of Refractive Index by using Solid State Diffusion, *H.P. Chen, W.H. Cho*, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan; *C.C. Lee*, National Central University, Taiwan; *Y.W. Lin*, National Tsing Hua University, Taiwan; *W.C. Chen*, Instrument Technology Research Center, Taiwan

CP-29

Effect of Silicon Content on the Structural, Optical and Electrical Characteristics of SiO_x Films Prepared by Sputtering, *K. Morfil Leyva, A.S.L. Salazar Valdez*, Benemérita Universidad Autónoma de Puebla, Mexico; *A. Morales Sánchez*, Centro de Investigación en Materiales Avanzados SC, Mexico; *J.A. Luna López, M.A. Domínguez Jiménez, A.L. Muñoz Zurita*, Benemérita Universidad Autónoma de Puebla, Mexico

CP-30

Optical Properties of the TiO₂ Films Grown by Atomic Layer Deposition using Tetrakis(Dimethylamino)Titanium and H₂O, *W.H. Cho, P.H. Huang, C.L. Chen, Y.S. Yu, C.Y. Yang, C.C. Kei*, Instrument Technology Research Center, National Applied Research Laboratories, Taiwan

CP-31

Fractal Analysis of Titanium Nitride Films with Different Morphologies and Evaluation for the Direct Methanol Fuel Cell Applications, *K.-L. Chuang, M.-T. Tsai, Y.C. Tsai, F.H. Lu*, National Chung Hsing University, Taiwan

CP-32

Growth Kinetics Behavior and Morphology of Multicomponent Coating on Zirconium Hydride during Oxidizing Atmosphere, *G.Q. Yan, J.D. Zhang, L.J. Wang, S. Bai*, GRINM company, China

Coatings for Biomedical and Healthcare Applications

Room Grand Hall - Session DP

Symposium D Poster Session

5:00pm

DP-2

Ti-Nb COATINGS Deposited on AISI 316L Stainless Steel by Magnetron Sputtering for Biomedical Applications, *E.D. Gonzalez, D.A. Tallarico*, Federal University of Sao Carlos, Brazil; *A.L. Gobbi*, Brazilian Center for Research in Energy and Materials, Brazil; *C.R.M. Afonso, P.A.P. Nascente*, Federal University of Sao Carlos, Brazil

DP-4

Investigation of High Performance Hydroxylapatite Coated PEEK Composite Materials for Biomedical Applications, *J.Y. Su*, Chang Gung Memorial Hospital, Taiwan; *C.J. Chen, G.M. Wu*, Chang Gung University, Taiwan

DP-5

Structural and Morphological Properties of PEO Films Grown on Ti-10Nb and Ti-20Nb and their Cellular Viability, *C.M. Lepienski*, Universidade Tecnológica Federal do Paraná, Brazil; *A.R. Luz*, UFPR, Brazil; *N. Kuromoto*, Universidade Federal do Paraná, Brazil; *G.G. Lima*, Athlone Institute of Technology, Ireland; *B.L. Pereira*, Universidade Federal do Paraná, Brazil; *M.J.C. Sá, D.B. Lima*, Universidade Federal de Campina Grande, Brazil

DP-6

Tribocorrosion Behavior of SiC Films with and without TiO₂ Nanoparticles on AISI 316L for Prosthesis Application, *A.A. Vieira, T.B. Santos*, Univap, Brazil; *P.A. Radi*, ITA, Brazil; *S.A. Silva*, IEAv, Brazil; *A.C.A.S. da Silva*, Univap, Brazil; *G. de Vasconcelos*, IEAv, Brazil; *M.A. Ramirez R.*, Universidade do Vale do Paraíba (UNIVAP), Brazil; *L. Vieira*, Univap, Brazil

Tribology and Mechanical Behavior of Coatings and

Engineered Surfaces

Room Grand Hall - Session EP

Symposium E Poster Session

5:00pm

EP-1

Ni-Nb-Si Composite Coatings Fabricated on Copper by Laser Cladding, *P.L. Zhang*, Shanghai University of Engineering Science, China

EP-2

Effect of Power on Soft Magnetic and Tribological Properties of Fe-Co based Coating by Laser Cladding, *X. Yang, X.F. Cui, G. Jin, J. Liu*, Harbin Engineering University, China

EP-3

Tribological Behavior of the FeB Phase in Boron Coating Formed on an AISI L6 Steel using Ball On Disc with Dry Conditions, *D. Sanchez Huerta*, CBI, Universidad Autónoma Metropolitana unidad Azcapotzalco, Mexico; *I. Hilerio Cruz*, Universidad Autónoma Metropolitana unidad Azcapotzalco, Mexico; *N. Lopez Perrusquia*, Universidad Politécnica Del Valle De Mexico, Mexico; *E.D. García Bustos*, Catedras CONACYT, Mexico, México; *M.A. Doñu Ruiz*, Universidad Politécnica del Valle de Mexico, Mexico; *M. Flores Martinez*, Universidad de Guadalajara, CUCEI, Mexico

EP-4

Tribocorrosion Behavior of Boronized AISI 4140 Steel, *S. Aichholz, R. Torres, M. Meruvia, P. Soares*, PUCPR, Brazil

EP-5

Influence of Sputter Power Ratio on Microstructure, Mechanical and Tribological Properties of Ti-B-C Coatings Deposited onto AISI M2 Steel, *E. Contreras, M. Gómez*, Universidad de Antioquia, Colombia

EP-6

Structural and Mechanical Properties of W-doped HfO₂ Thin Films, *A.M. Uribe, M. García, R. Chintalapalle, C. Orozco*, University of Texas at El Paso, USA

EP-7

Tribological Studies on Self-Lubricating (Cr,Al)N/MoS_x Coatings at Elevated Temperature, *K. Bobzin, T. Brögelmann, N.C. Kruppe, D.C. Hoffmann*, Surface Engineering Institute - RWTH Aachen University, Germany; *F. Klocke, P. Mattpfeld, D. Trauth, R. Hild*, Laboratory for Machine Tools and Production - RWTH Aachen University, Germany

EP-8

Role of Carbon Nanotubes in Reducing Friction between Steel/Steel Contacts, *Z. Yang, S. Bhowmick*, University of Windsor, Canada; *F. Sen*, Argonne National Laboratory, USA; *A. Alpas*, University of Windsor, Canada

EP-10

Macro-Tribological Behaviors of Graphene and Graphene-nanostructured Carbon Films in Vacuum, *J.M. Chen, L. Ji, H. Song*, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

EP-11

Microstructure Change, Element Diffusion and Tribological Properties of Chromium Oxide from RT to 1000 °C, *H.D. Zhou, N.R. He, X.H. Liu*, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Thursday Afternoon Poster Sessions, April 26, 2018

EP-12

Sliding Wear Behaviour of Infiltrated Self-lubricating Polymer Matrix Composites Studied by in-situ Tribometry, *Y. Zhang*, McGill University, Canada; *R. Schulz*, Hydro-Québec Research Institute (IREQ), Canada; *R.R. Chromik*, McGill University, Canada

EP-13

Sputtered B-C-W-Coatings: Composition – Properties – Stability, *H. Klostermann*, Fraunhofer FEP, Germany; *J. Poetschke*, Fraunhofer IKTS, Germany; *O. Zyowitzki*, Fraunhofer FEP, Germany

EP-14

Comparison of Tribological and Electrochemical Properties of Titanium Oxidized Films Produced on Cp-Ti by Sol-Gel and Silar Methods, *O. Çomaklı*, Erzincan University, Turkey; *M. Yazıcı*, Erzurum Technical University, Turkey; *H. Kovaci*, Ataturk University, Turkey; *T. Yetim*, Erzurum Technical University, Turkey; *A.F. Yetim*, Erzurum Teknik University, Turkey; *A. Çelik*, Ataturk University, Turkey

EP-18

Mechanical and Tribological Properties of W–C–N Films Using Unbalanced Magnetron Sputtering Assisted by Linear Ion Source, *H. Kim*, *S. Heo*, *E. An*, *I.-W. Park*, Korea Institute of Industrial Technology (KITECH), Republic of Korea

EP-19

The Influence of Feedstock Powders on Microstructure and Tribological Properties of WC-Co-Cr HVAF Coatings, *K. Szymański*, *G. Moskal*, *D. Niemiec*, *A. Iwaniak*, *J. Wieczorek*, Silesian University of Technology, Poland

EP-20

Microstructure and Mechanical Properties of CuSn10 Alloy Coating Manufactured by Cold Spraying, *W. Liu*, *J. Cao*, *Z. Yin*, *H. Li*, *G. Gao*, Shanghai Jiao Tong University, China

EP-21

Room and Elevated Temperature Sliding Wear Behavior and Mechanisms of a Cold Sprayed Ni-WC Composite Coating, *T.B. Torgerson*, *M. Harris*, University of North Texas, USA; *S.A. Alidokht*, McGill University, Canada; *T.W. Scharf*, *S. Aouadi*, University of North Texas, USA; *R.R. Chromik*, McGill University, Canada; *J.S. Zabinski*, Army Research Laboratory, USA; *A.A. Voevodin*, University of North Texas, USA

EP-22

Scratch Induced Thin Film Buckling for Quantitative Adhesion Measurements, *A. Kleinbichler*, KAI – Kompetenzzentrum Automobil- und Industrielektronik GmbH, Austria; *J. Zechner*, KAI – Kompetenzzentrum Automobil- und Industrielektronik GmbH, Austria; *M.J. Cordill*, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria

New Horizons in Coatings and Thin Films

Room Grand Hall - Session FP

Symposium F Poster Session

5:00pm

FP-2

Adjusting the Oxidation Behaviour of Arc Evaporated $\text{Al}_{1-x}\text{Cr}_x$ Intermetallics and Substoichiometric Oxides, *V. Dalbauer*, CDL-AOS at TU Wien, Austria; *J. Ramm*, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *S. Kolozsvári*, Plansee Composite Materials GmbH, Germany; *C.M. Koller*, CDL-AOS at TU Wien, Austria; *P.H. Mayrhofer*, Institute of Materials Science and Technology, TU Wien, Austria

FP-3

Distribution of Dislocations in ZnO Thin Films Grown on a-plane Sapphire Substrates using a Reaction Between Dimethylzinc and High-temperature H_2O Generated by a Catalytic Reaction, *T. Saito*, *R. Ibe*, *A. Kato*, Nagaoka University of Technology, Japan; *A. Hashim*, MJIIT, Universiti Teknologi Malaysia, Malaysia; *K. Yasui*, Nagaoka University of Technology, Japan

FP-4

Structural and Optical Properties of ZnO Films Grown on Ion-Plated Ga-Doped-ZnO-Based Buffer Layers by Atmospheric-Pressure Chemical Vapor Deposition using Zn and H_2O as Source Materials, *T. Terasako*, *Y. Ochi*, Ehime University, Japan; *M. Yagi*, National Institute of Technology, Kagawa College, Japan; *J. Nomoto*, *T. Yamamoto*, Kochi University of Technology, Japan

FP-5

Synthesis and Optical Characterization of Nickel Oxide Thin Film obtained by SOL-GEL Method using Nickel Acetate and Citric Acid as Precursors, *J. Castillo*, *D. Mateos*, *B. Valdez*, *N. Nedev*, *M. Curiel*, *N. Rosas*, *O. Pérez*, Universidad Autónoma de Baja California, Mexico

FP-7

Integrated Experimental Approach for Alloying of Surface Layer Titanium Alloy and Boron Carbide ($\text{Ti}6\text{Al}4\text{V}+\text{B}_4\text{C}$) Metal Matrix Composites using Laser Treatment, *M. Ogunlana*, University of Johannesburg, South Africa

FP-8

Exploring the Visible Light Photocatalytic Activity of the ZnO - RGO Hybrid - Nanostructures by Sol-gel Process, *C.C. Wang*, National Chung Hsing University, Taiwan; *H.C. Shih*, Chinese Culture University, Taiwan

FP-9

Suppression of Moisture-induced Electrical Instabilities in High-mobility ZnON TFTs Fabricated from HiPIMS-made ZnON Films, *K. Thorwarth*, *R. Ganeshan*, EMPA Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *M. Trant*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *H.J. Hug*, EMPA Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *M.M. Bilek*, *D.R. McKenzie*, The University of Sydney, Australia

FP-12

Tribo-mecanical Characterization of Ti/TiN/AlN Thin Film Produced by HiPIMS, *J. Oseguera*, *D.V. Melo-Máximo*, ITESM-CEM, Mexico; *L. Melo*, TRAMES S.A. de C.V., Mexico

FP-13

Synthesis and Characterization of Bismuth Cuprate Thin Films Produced by Co-Sputtering, *D. Franco-Pelaez*, *O. Depablos-Rivera*, *S.E. Rodil*, Universidad Nacional Autonoma de Mexico, Mexico

FP-14

Synthesis of Zn /ZnO Nanoparticles using Atmospheric Plasma Discharge in Solution to Mitigate the Stress Corrosion Cracking in the Simulated Primary Water Environment, *S.Y. Lee*, *S.C. Kim*, *M.K. Song*, Korea Aerospace University, Republic of Korea; *S.M. Kim*, Korea Institute of Industrial technology, Republic of Korea; *J.W. Kim*, University of Incheon, Republic of Korea

FP-15

Vanadium Nitride Thin Films Grown by High Power Impulse Magnetron Sputtering, *H. Hajihoseini*, *J.T. Gudmundson*, University of Iceland, Iceland

Surface Engineering - Applied Research and Industrial Applications

Room Grand Hall - Session GP

Symposium G Poster Session

5:00pm

GP-2

Laser-clad Induced Reaction Synthesis of TiC/WC Reinforced Co-based Composite Coatings on Copper Alloy, *H. Yan*, *P.L. Zhang*, *Z.S. Yu*, Shanghai University of Engineering Science, China

GP-5

The Study of Mechanical Strength on the Injection Molding Parameters of PMMA/TG Composite Bipolar Plates, *A.H. Chiou*, National Formosa University, Taiwan

GP-6

Real-time Analysis of Neutral Species from Atmospheric Plasma, *P.J. Hatton*, *A. Rees*, *C. Greenwood*, *S. Bort*, Hiden Analytical Ltd, UK

GP-8

Correlation of HPPMS Plasma and Coating Properties using Artificial Neural Networks, *K. Bobzin*, *T. Brögelmann*, *N.C. Kruppe*, *M. Engels*, Surface Engineering Institute - RWTH Aachen University, Germany

GP-9

Linking Erosion and Sputter Performance of a Rotatable Target to Microstructure and Properties of Mo Thin Films, *A. Hofer-Röblyek*, *K-H. Pichler*, Montanuniversität Leoben, Austria; *C. Linke*, Plansee SE, Austria; *R. Franz*, Montanuniversität Leoben, Austria; *J. Winkler*, Plansee SE, Austria; *C. Mitterer*, Montanuniversität Leoben, Austria

GP-10

Surface Profile Analysis as an Investigative Tool for Electrolytic Plasma Polishing, *N. Laugel*, *A. Matthews*, *A. Yerokhin*, University of Manchester, UK

GP-11

Evaluation of the Oxidation of Cr-W-N Coating on Ferritic Steel as Bipolar Plates for Solid Oxide Fuel Cell, *S.-M. Yang*, *C.-J. Tsan*, National University of Kaohsiung, Taiwan; *Y.-Y. Chang*, National Formosa University, Taiwan; *Y.-T. Pan*, China Steel Corporation, Taiwan; *D.-Y. Lin*, National University of Kaohsiung, Taiwan

Thursday Afternoon Poster Sessions, April 26, 2018

Advanced Characterization Techniques for Coatings and

Thin Films

Room Grand Hall - Session HP

Symposium H Poster Session

5:00pm

HP-1

Temperature Dependence of Nanocrystalline Aluminum Thin Film Elastic Constants by In-situ Brillouin Light Scattering and Picosecond Ultrasonics: Comparison to Molecular Dynamics, *P. Djemia*, LSPM-CNRS, France; *L. Belliard*, INSP-UPMC, France; *H.-J. Zhang, Q.-M. Hu*, IMR-CAS, China; *F. Challali, N. Girodon-Boulandet, D. Faurie*, LSPM-CNRS, France

HP-2

High Resolution Full-field Curvature Measurement, *S. Grachev, Q. Herault, J. Wang, I. Gozhyk*, Saint-Gobain Recherche, France; *R. Lazzari*, INSP-UPMC, France

HP-4

In-situ High Temperature Characterization of DLC Films Using an Integrated Synchronized System, *M. Rouhani*, National Chung Cheng University, Taiwan; *F.C.N. Hong*, National Cheng Kung University, Taiwan; *Y.R. Jeng*, National Chung Cheng University, Taiwan

HP-6

Novel Methodology for the Evaluation of Mechanical Properties of Specific Crystalline Phases Present in Alumina Layers Formed by Plasma Electrolytic Oxidation (PEO) of Aluminium Alloys, *E. Bousser, A. Yerokhin, A. Ghoshnia, P.J. Withers, A. Matthews*, University of Manchester, UK

HP-7

In situ High Temperature Fracture Toughness Evaluation of Hard Thin Ceramic Coatings by Means of a Micro-pillar Splitting Technique, *J. Wehrs*, Platin AG, Switzerland; *J.P. Best*, University of New South Wales, Australia; *M. Polyakov, X. Maeder*, EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *J.M. Wheeler*, ETH Zürich, Switzerland; *M. Morstein, B. Torp*, Platin AG, Switzerland; *J. Michler*, EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland

Topical Symposia

Room Grand Hall - Session TSP

Symposium TS Poster Session

5:00pm

TSP-1

Enhanced Hardening and Damage-tolerance Nanotwinned Medium Entropy Alloy CoCrNi Coatings Deposited by Magnetron Sputtering, *F. Cao, P. Munroe*, University of New South Wales, Australia; *Z. Zhou*, City University of Hong Kong, China, Hong Kong; *Z. Xie*, University of Adelaide, Australia

TSP-4

Hvof Coatings Modified With Polymers To Reduce Ice Accretion For Use In Aerostructures Components, *R. Muelas Gamo, A. Agüero Bruna, J. Mora Nogues, P. García Gallego*, Instituto Nacional de Técnica Aeroespacial (INTA), Spain

TSP-5

The Electro-Mechanical Properties of Cathodic Arc Deposited High Entropy Alloy Thin Films on Polymer Substrates, *A. Xia*, Montanuniversität Leoben, Austria; *O. Glushko, M.J. Cordill*, Erich Schmid Institute of Materials Science, Austria; *R. Franz*, Montanuniversität Leoben, Austria

TSP-6

Synthesis and Characterization of Multicomponent Nitrides in the Al-Cr-Nb-Y-Zr System, *K. Johansson*, Uppsala University, Sweden; *P. Soucek*, Masaryk University, Czech Republic; *A. Srinath, D. Rehnlund, E. Lewin*, Uppsala University, Sweden

Friday Morning, April 27, 2018

Coatings for Use at High Temperatures Room California - Session A1-3 Coatings to Resist High Temperature Oxidation, Corrosion, and Fouling Moderators: Vladislav Kolarik, Fraunhofer ICT, Germany, Shigenari Hayashi, Hokkaido University, Japan, Sebastien Dryepondt, Oak Ridge National Laboratory, USA		Hard Coatings and Vapor Deposition Technologies Room Golden West - Session B4-3 Properties and Characterization of Hard Coatings and Surfaces Moderators: Ulrich May, Robert Bosch GmbH, Germany, Fan-Bean Wu, National United University, Taiwan, Farwah Nahif, Eifeler-Vacotec GmbH, Germany
8:00am	A1-3-1 A Framework for Modelling the Nanomechanical and Nanotribological Properties of High Temperature HfB _x C _y Coatings, <i>M. Humood, T. Ozkan, Texas A&M University, USA; E. Mohimi, J.R. Abelson, University of Illinois at Urbana-Champaign, USA; A.A. Polycarpou, Texas A&M University, USA</i>	B4-3-1 Nano-Structural Ni Matrix Films Synthesized by Electrochemical/Chemical Composite Depositions, <i>Z. Zeng, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</i>
8:20am	A1-3-2 Characterization of Thermal Properties of Different Pyrochlore Ceramic Materials Dedicated for Application as an Insulation Layers in Thermal Barrier Systems, <i>M. Mikusiewicz, D. Migas, G. Moskal, Silesian University of Technology, Poland</i>	B4-3-2 NbC-Ni Coatings Deposited by DC Magnetron Sputtering: Effect of Ni Content on Mechanical Properties, Thermal Stability and Oxidation Resistance, <i>L.B. Varela, University of São Paulo, Brazil; F. Fernandes, A. Cavaleiro, University of Coimbra, Portugal; A.P. Tschiptschin, University of São Paulo, Brazil</i>
8:40am	A1-3-3 Development of High Performance Corrosion Resistant Coatings using Graphene, <i>A. Khanna, K.S. Aneja, IIT Bombay, India</i>	B4-3-3 Stress-Dependent Elasticity of TiAlN Coatings, <i>M. Hans, RWTH Aachen University, Germany; U.D. Hangen, Bruker Nano GmbH, Germany; L. Patterer, D.M. Holzapfel, D. Music, S. Evertz, RWTH Aachen University, Germany; V. Schnabel, Laboratory for Nanometallurgy, ETH Zurich, Switzerland; A.O. Eriksson, 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</i>
9:00am	A1-3-4 Wide-range and Enhanced Filtration of Polyacrylonitrile Membrane for Water Purification by Coating with Thin Film Metallic Glass, <i>S.T. Kassa, Y.C. Liao, J.P. Chu, J.-K. Chen, National Taiwan University of Science and Technology (NTUST), Taiwan</i>	B4-3-4 Evaluation of the Open Porosity of PVD-Coatings through Electrochemical Iron Detection, <i>J. Vega, H. Scheerer, G. Andersohn, M. Oechsner, Technische Universität Darmstadt, Germany</i>
9:20am	A1-3-5 The Effect of Surface Aluminizing to Enhance High-temperature Air-oxidation Resistance of Equimolar FeCoNi and FeCoNiCr Alloy, <i>W. Kai, F.P. Cheng, F.C. Chien, R.T. Huang, National Taiwan Ocean University, Taiwan; J.J. Kai, National Tsing Hua University, Taiwan</i>	B4-3-5 Structural and Optical Properties of Si-Nb-N Composite Thin Films, <i>C. Orozco, University of Texas at El Paso, USA; N. Murphy, L. Sun, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; R. Chintalapalle, University of Texas at El Paso, USA</i>
9:40am	A1-3-6 TEM Study of Hf-B-Si-C-N Coatings Microstructure at High Temperatures, <i>Y. Shen, M. Zhang, J. Jiang, University of Texas at Arlington, USA; J. Vlček, University of West Bohemia, Czech Republic; E.I. Meletis, University of Texas at Arlington, USA</i>	B4-3-6 HIPIMS Cr/CrN Multilayer Structure for Corrosion Resistant Decorative Coating, <i>Y.C. Liu, S.N. Hsiao, W.C. Lo, Y.H. Chen, J.L. He, Feng Chia University, Taiwan</i>
10:00am	A1-3-7 Oxidation Behavior of Zr-1Nb in Air at 400°C after Titanium Plasma Immersion Ion Implantation, <i>A. Obrovov, Brandenburg Technical University, Germany; A.N. Sutygina, E.B. Kashkarov, National Research Tomsk Polytechnic University, Russian Federation; S. Weiß, Brandenburg Technical University, Germany</i>	B4-3-7 Hardness-independent Extraordinary Wear Resistance in Magnetron Sputtered Cr-Si-N Coatings: The Importance of Fracture Toughness, <i>F. Huang, F. Ge, C. Jia, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, China</i>
	2019 ICMCTF May 20-24, 2019	2019 Abstract Submission Deadline: October 1, 2018
	Thank you see you Next Year Party Trellis Courtyard near Pool 12:00-1:00 PM	2019 Awards Nominations Deadline: October 1, 2018

Friday Morning, April 27, 2018

Fundamentals and Technology of Multifunctional Materials and Devices Room Sunrise - Session C2-3 Novel Oxide Films for Active Devices Moderators: Marko Tadjer , Naval Research Laboratory, USA, Vanya Darakchieva , IFM, Linkoping University, Sweden		Advanced Characterization Techniques for Coatings and Thin Films Room Royal Palm 1-3 - Session H3 Characterization of Coatings in Harsh Environments Moderators: Jeffrey M. Wheeler , ETH Zürich, Switzerland, James Gibson , RWTH Aachen University, Germany
8:00am	C2-3-1 Improved the PI Transmittance and ITO Conductivity by Supercritical CO ₂ Fluid Treatment, G.F. Chen, C.Y. Lin, T.C. Chang , National Sun Yat-Sen University, Taiwan; S.C. Lin, M.C. Yu, Y.C. Chuang , HannStar Display Corp, Taiwan	H3-1 Zr/Nb Nano-multilayers – Structural and Mechanical Response to Radiation Damage, M. Callisti , University of Cambridge, UK; T. Polcar , University of Southampton, UK
8:20am	C2-3-2 Improving Performance by Inserting an In ₂ O ₃ Layer into HfO ₂ -Based Resistive Random Access Memory, C.H. Wu , National Sun Yat-Sen University, Taiwan; S.K. Lin , National Tsing Hua University, Taiwan; T.C. Chang, T.M. Tsai, Y.S. Lin, Y.T. Tseng , National Sun Yat-Sen University, Taiwan	H3-2 Nanoindentation of Commercial PVD Hard Coatings at Elevated Temperatures, W.C. Oliver , Nanomechanics, Inc., USA; M. Romach , Advanced Coating Service (ACS), USA; R. Anthony, K. Johanns , Nanomechanics, Inc., USA
8:40am	INVITED: C2-3-3 Halide Vapor Phase Epitaxy of Ga ₂ O ₃ , K. Goto, Q. Thieu, D. Wakimoto, K. Sasaki , Novel Crystal Technology, Inc., Japan; K. Konishi, H. Murakami, Y. Kumagai , Tokyo University of Agriculture and Technology, Japan; A. Kuramata , Novel Crystal Technology, Inc., Japan; S. Yamakoshi , Tamura Corporation, Inc., Japan	H3-3 Elevated Temperature Micro-impact Testing of TiAlSiN Coatings, B. Beake, A. Bird , Micro Materials Ltd, UK; L.I. Arrom , Cranfield University, UK; F. Jiang , Huqiao University, China
9:00am	Invited talk continues.	H3-4 Fracture Testing of Transition Metal (Oxy)Nitride Coatings, J. Gibson, S. Rezaei, H. Rueß, M. Hans, D. Music, O. Hunold, S. Wulfinghoff, J.M. Schneider, S. Reese, S. Korte-Kerzel , RWTH Aachen University, Germany
9:20am	C2-3-5 Severe Positive Bias Temperature Instability in N-type MOS Device with Dipole Doped HfO ₂ Dielectric Layer, F.Y. Jin, T.C. Chang, H.W. Liu, C.Y. Lin , National Sun Yat-Sen University, Taiwan; J.C. Liao , National Tsing Hua University, Taiwan; F.M. Ciou, W.C. Hung , National Sun Yat-Sen University, Taiwan	INVITED: H3-5 In-situ Study of Deformation and Fracture Processes in Nanostructured Metals at Elevated Temperatures, D. Kiener , Montanuniversität Leoben, Austria
9:40am	C2-3-6 Physical Mechanisms of Negative Bias Illumination Stress in InGaZnO Thin Film Transistors with Different Metal Gate Structure, C.I. Yang , National Chiao Tung University, Taiwan; T.C. Chang , National Sun Yat-Sen University, Taiwan; W.C. Chou , National Chiao Tung University, Taiwan	Invited talk continues.
10:00am	C2-3-7 Fabrication of MSM UV Photodetector Based on ZnO/TFMG/UNCD Nanostructures, M.M. Yenesew, B.R. Huang , National Taiwan University of Science and Technology, Taiwan; J.P. Chu , National Taiwan University of Science and Technology (NTUST), Taiwan	H3-7 Cryogenic Micropillar Compression Transient Tests at the Lower Limit of Crystallinity Case Study: Nanocrystalline Palladium-Gold, J. Wehrs , Platit AG, Switzerland; J. Schwiedrzik , EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; M. Deckarm , Universität des Saarlandes, Germany; J.M. Wheeler , ETH Zürich, Switzerland; X. Maeder , EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; R. Birringer , Universität des Saarlandes, Germany; J. Michler , EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland
10:20am	C2-3-8 Effect of Cadmium Chloride Treatment on Poly-crystalline Thin Films of CdTe/Cd-Zn-Te/CdTe Structures, T. Shimpia, C. Reich, K. Barth, W. Sampath , Colorado State University, USA	H3-8 Surface Roughness Effects of Hard Coatings under Three-body Abrasive Sliding Conditions, R. Gheisari, A.A. Polycarpou , Texas A&M University, USA
	2019 ICMCTF May 20-24, 2019	2019 Abstract Submission Deadline: October 1, 2018
	Thank you see you Next Year Party Trellis Courtyard near Pool 12:00-1:00 PM	2019 Awards Nominations Deadline: October 1, 2018

Friday Morning, April 27, 2018

Topical Symposia

Room Royal Palm 4-6 - Session TS2

High Entropy and Other Multi-principal-element Materials

Moderators: **Ulf Jansson**, Uppsala University, Angstrom Laboratory, Sweden, **Diederik Depla**, Ghent University, Belgium

8:00am		
8:20am		
8:40am		
9:00am	TS2-4 Novel Properties and Nitriding Behavior of CoCrMnFeNi High-Entropy Alloy Prepared via Mechanical Alloying and Spark Plasma Sintering, <i>A. Nishimoto, T. Karimoto, C. Nishi</i> , Kansai University, Japan	
9:20am	TS2-5 Structural, Phase Stability, Thermodynamic and Elastic Properties of CoCrCuFeNi-(Nb, Al) High-entropy and Other Thin Films: Experimental and Ab Initio Investigations, <i>C.-H. Li</i> , LSPM-CNRS, France; <i>B. Braeckman, R. Dedoncker</i> , Ghent University, Belgium; <i>Q.-M. Hu</i> , IMR-CAS, China; <i>L. Belliard</i> , INSP-UPMC, France; <i>L. Vitos</i> , KTH - Royal Institute of Technology, Sweden; <i>D. Depla</i> , Ghent University, Belgium; <i>P. Djemia</i> , LSPM-CNRS, France	
9:40am	TS2-6 Carbon-containing High Entropy Alloys - A New Pathway to High-performance Materials?, <i>S. Fritze, P. Malinovskis, L. Riekehr, D. Rehnlund, L. Nyholm, E. Lewin, U. Jansson</i> , Uppsala University, Angstrom Laboratory, Sweden	
10:00am	TS2-7 Radiation Hardness Of FeCrMnNi High-Entropy Thin Films, <i>V. Vishnyakov, M. Tunès, G. Greaves, S. Donnelly</i> , University of Huddersfield, UK	
10:20am	TS2-8 Reactive Sputtering of High Entropy Alloys with Nitrogen – Tuning the Unit Cell, <i>R. Dedoncker, D. Depla</i> , Ghent University, Belgium; <i>G. Radnóczki</i> , Centre for Energy Research, Hungarian Academy of Sciences, Hungary	
10:40am	TS2-9 Improved Resistance of Senary AlCrTaTiZrRu Under Bump Metallization to Interdiffusion and Reaction at Solder Joints, <i>W.Y. Chen</i> , National Tsing Hua University, Taiwan; <i>K.E. Cheng</i> , National Chung Hsing University, Taiwan; <i>S.Y. Chang</i> , National Tsing Hua University, Taiwan	
11:00am	INVITED: TS2-10 High Entropy Materials: Challenge of First-principle Quantum Mechanical Modelling, <i>L. Vitos</i> , KTH - Royal Institute of Technology, Sweden	
11:20am	Invited talk continues.	
	2019 ICMCTF May 20-24, 2019	2019 Abstract Submission Deadline: October 1, 2018
	Thank you see you Next Year Party Trellis Courtyard near Pool 12:00-1:00 PM	2019 Awards Nominations Deadline: October 1, 2018

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