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 Exhibition Keynote Lecture
F New Horizons in Coatings and Thin Films
G Surface Engineering - Applied Research and Industrial Applications
H Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes
HL Awards Convocation and Honorary Lecture
PL Plenary Lecture
SIT Special Interest Talks
TS Topical Symposia

Program Overview

Room /Time	California	Golden West	Grand Hall	Pacific Salon 1	Pacific Salon 2
MoPL					
MoM	B3-1-MoM: Deposition Technologies and Applications for Diamond-like Coatings I	B1-1-MoM: PVD Coatings and Technologies I		H2-1-MoM: Fatigue and Wear	D1-1-MoM: Surface Coating and Modification for Use in Biological Environments I
MoA	B3-2-MoA: Deposition Technologies and Applications for Diamond-like Coatings II	B1-2-MoA: PVD Coatings and Technologies II		H2-2-MoA: Nanoscale Plasticity	D1-2-MoA: Surface Coating and Modification for Use in Biological Environments II
TuM	B4-1-TuM: Properties and Characterization of Hard Coatings and Surfaces I	B1-3-TuM: PVD Coatings and Technologies III		H1-1-TuM: Spatially-resolved and In-Situ Characterization of Thin Films and Engineered	A1-1-TuM: Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling I
TuEx					
TuA	B4-2-TuA: Properties and Characterization of Hard Coatings and Surfaces II	B7-TuA: Plasma Diagnostics and Growth Processes		H1-2-TuA: Spatially-resolved and In-Situ Characterization of Thin Films and Engineered	A1-2-TuA: Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling II
TuSIT					
WeM	B4-3-WeM: Properties and Characterization of Hard Coatings and Surfaces III	C3+C1-WeM: Thin Films for Energy-related Applications I/Optical Metrology in Design,		H3-1-WeM: Variable Temperature Nanomechanics	A1-3-WeM: Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling III
WeSIT					
WeA	B4-4-WeA: Properties and Characterization of Hard Coatings and Surfaces IV	C2-WeA: Novel Oxide Films for Active Devices		H3-2-WeA: Degradation under Extreme Conditions	A3-WeA: Materials and Coatings for Solar Power Concentration Plants
WeHL					
ThM	B6-ThM: Coating Design and Architectures	TS2-ThM: Icephobic Surface Engineering		G1+G3-ThM: Advances in Industrial PVD, CVD, and PECVD Processes and Equipment/Innovative	A2-1-ThM: Thermal and Environmental Barrier Coatings I
ThA	B5-1-ThA: Hard and Multifunctional Nanostructured Coatings I	B2-1-ThA: CVD Coatings and Technologies I		G4+G5+G6-ThA: Pre-/Post-Treatment and Duplex Technology/Hybrid	A2-2-ThA: Thermal and Environmental Barrier Coatings II
ThP			Poster Sessions		
FrM	B5-2-FrM: Hard and Multifunctional Nanostructured Coatings II	B2-2-FrM: CVD Coatings and Technologies II		G2-FrM: Component Coatings for Automotive, Aerospace, Medical, and Manufacturing	

Program Overview

Room /Time	Pacific Salon 3	Pacific Salon 6-7	San Diego	Town & Country
MoPL				PL-MoPL: Plenary Lecture
MoM	TS4-1-MoM: Thin Film Materials for Flexible Electronics			
MoA	TS3+4-2-MoA: Surface Engineering for Lightweight Materials & Thin Film Materials for Flexible Electronics			
TuM	D3-TuM: Surfaces and Coatings to Promote Tailored Biological Responses	F1-TuM: Nanomaterials and Nanofabrication	E2-1-TuM: Mechanical Properties and Adhesion I	
TuEx				EX-TuEx: Exhibition Keynote Lecture
TuA	D2-TuA: Bio-corrosion and Bio-tribology	F3-TuA: 2D Materials: Synthesis, Characterization, and Applications	E2-2-TuA: Mechanical Properties and Adhesion II	
TuSIT				SIT1-TuSIT: Special Interest Session I
WeM	TS1-1-WeM: High Entropy and Other Multi-principal-element Materials I	F4-1-WeM: Functional Oxide and Oxynitride Coatings I	E3-WeM: Tribology of Coatings for Automotive and Aerospace Applications	
WeSIT				SIT2-WeSIT: Special Interest Talk II
WeA	TS1-2-WeA: High Entropy and Other Multi-principal-element Materials II	F4-2-WeA: Functional Oxide and Oxynitride Coatings II	E1-4-WeA: Friction, Wear, Lubrication Effects, and Modeling I	
WeHL				HL-WeHL: Bunshah Award Honorary Lecture
ThM	C3+C2+C1-ThM: Thin Films for Energy-related Applications II/Novel Oxide Films for Active Devices/Optical Metrology in	F2-1-ThM: HiPIMS, Pulsed Plasmas and Energetic Deposition I	E1-1-ThM: Friction, Wear, Lubrication Effects, and Modeling II	
ThA	C4-ThA: Fundamentals of Metallurgy in Thin Films and Coatings	F2-2-ThA: HiPIMS, Pulsed Plasmas and Energetic Deposition II	E1-2-ThA: Friction, Wear, Lubrication Effects, and Modeling III	
ThP				
FrM			E1-3-FrM: Friction, Wear, Lubrication Effects, and Modeling IV	

Special Events Monday

Special Events Monday

7:00 AM Conference Registration/Atlas Foyer
7:30 AM Short Course: Practical Thin Film Characterization/Atlas Foyer
7:30 AM Short Course: Reactive Magnetron Sputter Deposition/Atlas Foyer
8:00 AM Plenary Lecture/Town & Country
10:00 AM Technical Sessions/See Program/Mobile App
12:20 PM Anton Paar Focused Topic Session: "Latest Developments in Advanced Mechanical Surface Characterization"/Town & Country
5:45 PM Welcome Mixer/Atlas Foyer

Monday Morning, May 20, 2019

Plenary Lecture
Room Town & Country - Session PL-MoPL
Plenary Lecture
Moderators: Christopher Muratore, University of Dayton,
Michael Stüber, Karlsruhe Institute of Technology, Germany

8:00am		
8:20am		
8:40am	**INVITED: PL-MoPL-3** Soft Electronics for the Human Body***, John Rogers,*** Northwestern University, USA	
9:00am	Invited talk continues.	

	Hard Coatings and Vapor Deposition Technologies **Room Golden West - Session B1-1-MoM** **PVD Coatings and Technologies I** **Moderators: Frank Kaulfuss**, Fraunhofer Institute for Material and Beam Technology (IWS), **Jyh-Ming Ting**, National Cheng Kung University, **Qi Yang**, National Research Council of Canada	**Hard Coatings and Vapor Deposition Technologies** **Room California - Session B3-1-MoM** **Deposition Technologies and Applications for Diamond-like Coatings I** **Moderator: Klaus Böbel**, Bosch GmbH
10:00am		
10:20am		**B3-1-MoM-2** On the Deposition and Properties of Carbon-based Multilayer Systems Prepared by PLD, ***Steffen Weißmantel***, University of Applied Sciences Mittweida, Germany; *M Hess,* Fritz Stepper GmbH & Co. KG, Deutschland, Germany; *R Bertram, D Haldan, T Warnk, J Maus, S Rupp,* University of Applied Sciences Mittweida, Germany
10:40am	**B1-1-MoM-3** Structural, Optical and Wettability Properties of Thermally Evaporated CaF_2, MgF_2 and CaF_2/MgF_2 Films, ***Ravish Kumar Jain***, *J Kaur, A Khanna,* Guru Nanak Dev University Amritsar India, India	**B3-1-MoM-3** Improved Adhesion of a-C and a-C:H Films with a CrC Interlayer on 16MnCr5 by HiPIMS-Pretreatment, *W Tillmann,* ***Nelson Filipe Lopes Dias***, *D Stangier,* TU Dortmund University, Germany; *W Maus-Friedrichs, R Gustus,* Technical University Clausthal, Germany
11:00am	**B1-1-MoM-4** Metal / ScAlN / Interdigital Transducer (IDT)/ $LiNbO_3$ Multilayer Structure for High K^2 Surface Acoustic Wave Device, ***Yu Hsuan Huang,*** National Cheng Kung University, Taiwan; *S Wu,* Tung-Fang Design University, Taiwan; *J Huang,* National Cheng Kung University, Taiwan	**B3-1-MoM-4** Properties Of Diamond-Like Carbon Films With Incorporated CVD-Diamond Nanoparticles, ***Rebeca Falcão,*** Institute of Science and Technology, Federal University of São Paulo (UNIFESP), Brasil; *C Wachesk,* Federal University of São Paulo, Brazil, Brasil; *T Taiariol,* National Institute for Space Research, Brazil; *G Vasconcelos,* Instituto de Estudos Avançados, Brazil; *E Corat, V Trava-Airoldi,* National Institute for Space Research, Brazil
11:20am	**B1-1-MoM-5** Sputter Deposited W-HfO_2 for Solar Absorbers, ***Lih-Yang Chiu***, *J Ting,* National Cheng Kung University, Taiwan	**B3-1-MoM-5** Influence of the Argon as an Ignitor and an Agent on DLC Properties Growth at Pressure as Low as 3 x 10^{-4} mbar by Modified Pulsed-DC PECVD Method, ***Vladimir Jesus Trava-Airoldi***, *K Nass, E Corat,* National Institute for Space Research, Brazil; *N Fukumasu,* Sao Paulo University, Brazil; *M Ramirez,* University of Vale do Paraiba, Brazil; *G Capote,* National University of Bogota, Colombia
11:40am	**INVITED: B1-1-MoM-6** High Power Impulse Magnetron Sputtering using Deep Oscillatory Micro Pulses for Surface Engineering, ***Jianliang Lin***, Southwest Research Institute, USA	
12:00pm	Invited talk continues.	

	Coatings for Biomedical and Healthcare Applications **Room Pacific Salon 2 - Session D1-1-MoM** **Surface Coating and Modification for Use in Biological Environments I** **Moderator: Mathew T. Mathew**, University of Illinois College of Medicine at Rockford and Rush University Medical Center, USA	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Room Pacific Salon 1 - Session H2-1-MoM** **Fatigue and Wear** **Moderators: Olivier Pierron**, Georgia Institute of Technology, USA, **Timothy Rupert**, University of California, Irvine, USA
10:00am		**INVITED: H2-1-MoM-1** Acoustic Emission Measurements to Quantifying Damage Accumulation and Crack Initiation in Nickel Single Crystals during High Frequency *In Situ* Cyclic Loading Experiments*, S Lavenstein, **Jaafar El-Awady,*** Johns Hopkins University, USA
10:20am	**D1-1-MoM-2** Very Thin Gold Films Deposited on Collagen Fabric for Skin Cell Recover*, **Sheng-Yang Huang,*** Taichung Veterans General Hospital, Feng Chia University, Taiwan*; Y Chang,* Feng Chia University, Taiwan*; P Hsieh,* Institute of Plasma, Feng Chia University, Taiwan*; C Chou,* Taichung Veterans General Hospital, National Yang-Ming University, Taiwan*; C Chung,* Central Taiwan University of Science and Technology, Taiwan*; J He,* Feng Chia University, Taiwan	Invited talk continues.
10:40am	**D1-1-MoM-3** Effect of Calf Serum on Tribological Behavior of DLC Coating in Ti-6Al-4V / Ti-6Al-4V Contact for Application to STEM / NECK Contact of Modular Hip Implant*, H Ding, **Vincent Fridrici**, G Bouvard,* Ecole Centrale de Lyon, LTDS - Université de Lyon, France*; J Géringer,* Ecole des Mines de St-Etienne - Université de Lyon, France*; P Kapsa,* Ecole Centrale de Lyon, LTDS - Université de Lyon, France	**H2-1-MoM-3** A Data-driven Approach to Describe Fatigue Damage Evolution and Crack Initiation in a BCC Steel Microstructure*, A Durmaz, **Thomas Straub**, C Eberl,* Fraunhofer IWM, Germany
11:00am	**INVITED: D1-1-MoM-4** Accelerated Tests for Lifetime Prediction of Interlayers and Interfaces of Coated Implants in Body Fluid*, **Roland Hauert**, E Ilic, A Pardo-Perez, K Thorwarth, P Schmutz,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; S Mischler,* Institut des Matériaux IMX, EPFL, Lausanne, Switzerland	**H2-1-MoM-4** Low and High Cycle Fatigue Testing of Ni Microbeams*, **Alejandro Barrios**,* Georgia Institute of Technology, USA*; E Kakandar,* Cranfield University, UK*; X Maeder,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; G Castelluccio,* Cranfield University, UK*; O Pierron,* Georgia Institute of Technology, USA
11:20am	Invited talk continues.	**H2-1-MoM-5** Nanocrystalline Alloys with Disordered Complexions Probed by In Situ Mechanical Testing*, **Timothy Rupert**, J Wardini, J Schuler,* University of California, Irvine, USA
11:40am	**D1-1-MoM-6** Thin Film Metallic Glass Coating as an Effective Antiadhesion Coating for Platelet and Cancer Cells*, **Jinn P. Chu**,* National Taiwan University of Science and Technology (NTUST), Taiwan*; C Li, Y Chen, S Chyntara,* National Taiwan University of Science and Technology, Taiwan*; M Chen,* Mackay Medical College, Taiwan*; S Chang,* Mackay Memorial Hospital Tamsui Campus, Taiwan	**H2-1-MoM-6** Structural Evolution and Wear-rate Transitions in Nanocrystalline Alloys*, **Olivia Donaldson**, J Panzarino, T Rupert,* University of California, Irvine, USA
12:00pm	**D1-1-MoM-7** Improvement of Surface Properties of Nitinol Alloy through Deposition of Graphene by Electrophoretic Deposition Technique for Biomedical Applications*, **Madhusmita Mallick**, N Arunachalam,* Indian Institute of Technology Madras, India	**H2-1-MoM-7** Effects of Thermal Cycling on Nano-mechanical Properties of Thermal Barrier Coatings*, **Marco Sebastiani**,* Roma TRE University, Italy

Topical Symposia
Room Pacific Salon 3 - Session TS4-1-MoM
Thin Film Materials for Flexible Electronics
Moderators: Oleksandr Glushko, Erich Schmid Institute of Materials Science, **Nicholas Glavin**, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA

10:00am	**INVITED: TS4-1-MoM-1** 2D Materials Based Epidermal and Implantable Conformable Bioelectronics, ***Nanshu Lu***, University of Texas at Austin, USA	
10:20am	Invited talk continues.	
10:40am	**TS4-1-MoM-3** Performance Deterioration Characteristics of Silver-Nanoparticle-Printed Flexible Electric Wirings under Severe Bending Deformation, ***Shoji Kamiya***, *H Izumi,* Nagoya Institute of Technology, Japan; *T Sekine,* Yamagata University, Japan; *Y Haga, H Sugiyama,* Nagoya Institute of Technology, Japan; *N Shishido,* Green Electronics Research Institute, Kitakyushu, Japan; *M Koganemaru,* Kagoshima University, Japan	
11:00am	**TS4-1-MoM-4** Characterizing the Mechanical Reliability of Flexible and Stretchable Conductive Inks on Polymeric Substrates, ***Gabriel Cahn***, Georgia Institute of Technology, USA; *M Wolfe,* DuPont Photovoltaic and Advanced Materials, USA; *J Meth,* DuPont Electronics and Imaging, USA; *S Graham, O Pierron,* Georgia Institute of Technology, USA	
11:20am	**INVITED: TS4-1-MoM-5** Printed Hybrid Materials for Flexible Electronic and Optoelectronic Devices, *E List-Kratochvil,* ***Felix Hermerschmidt***, Humboldt-Universität zu Berlin, Germany	
11:40am	Invited talk continues.	

	Hard Coatings and Vapor Deposition Technologies **Room Golden West - Session B1-2-MoA** **PVD Coatings and Technologies II** **Moderators: Frank Kaulfuss**, Fraunhofer Institute for Material and Beam Technology (IWS), **Jyh-Ming Ting**, National Cheng Kung University, **Qi Yang**, National Research Council of Canada	**Hard Coatings and Vapor Deposition Technologies** **Room California - Session B3-2-MoA** **Deposition Technologies and Applications for Diamond-like Coatings II** **Moderator: Frank Papa**, Gencoa
1:40pm	**B1-2-MoA-1** Harlan™: High Rate-High Density Pulsed Magnetron Sputtering Source for Depositing Metal & Ceramic Coatings for Industrial Applications., *B Abraham,* ***Roman Chistyakov,*** Ionex Corp, USA	**B3-2-MoA-1** Transfer of DLC Coating Processes between Different Coating Machines Assisted by Plasma Simulation, ***Marcus Günther,*** *O Schmidt, W Dobrygin, G Schütze,* Robert Bosch GmbH, Germany
2:00pm	**B1-2-MoA-2** Arc Sources for Low Defect Coatings and High Target Utilization, ***Victor Bellido-Gonzalez,*** *D Monaghan, B Daniel, R Brown, J Price, A Azzopardi,* Gencoa Ltd, UK	**B3-2-MoA-2** Stress-Free ta-C Industrially Deposited by PLD for High Performance Stamping Applications: Results and Challenges of 1st Production Year, ***Martin Hess,*** Fritz Stepper GmbH & Co. KG, Deutschland, Germany; *S Weißmantel, R Bertram,* Hochschule Mittweida University of Applied Sciences, Germany
2:20pm	**B1-2-MoA-3** Cutting Tools in the Era of Industrial Internet of Things and Additive Manufacturing, ***Aharon Inspektor,*** *A Rollett, P Salvador,* Carnegie Mellon University, USA	**INVITED: B3-2-MoA-3** Hollow Cathode Discharges for Rapid DLC, ***Thomas Casserly,*** *S Gennaro, F Papa, A Tudhope,* Duralar Technologies, USA
2:40pm	**B1-2-MoA-4** Overstoichiometric Transition Metal Nitride Films, ***Zuzana Čiperová,*** *J Musil, Š Kos, M Jaroš,* European Centre of Excellence, University of West Bohemia, Czech Republic	Invited talk continues.
3:00pm	**B1-2-MoA-5** Introducing of New Hybrid LACS® Technology (Lateral ARC and Central Sputtering by Rotating Cathodes), ***Radek Zemlicka,*** *M Jílek (Sr.), M Jílek (Jr.), A Lümkemann, T Cselle, D Bloesch, V Krsek,* Platit AG, Switzerland	**B3-2-MoA-5** Hard Cr-doped DLC Coatings Deposited by Low-frequency HiPIMS with Enhanced Tribomechanical Behavior at High Temperature, ***José Antonio Santiago Varela,*** PVT Plasma und Vakuum Technik GmbH, Germany; *I Fernandez,* Nano4Energy SL, Spain; *A Wennberg,* Nano4Energy, Spain; *M Monclus, J Molina Aldareguia,* IMDEA Materials; *V Bellido-Gonzalez,* Gencoa Ltd, UK; *C Rojas, J Sanchez Lopez,* ICMSe CSIC, Spain; *R Gonzalez Arrabal,* Universidad Politécnica de Madrid, Spain; *N Dams, H Gabriel,* PVT Plasma und Vakuum Technik GmbH, Germany
3:20pm	**B1-2-MoA-6** Edge-related Effects During Arc-PVD Deposition Processes, ***Tim Krülle,*** *F Kaulfuss, O Zimmer, A Leson, C Leyens,* Fraunhofer Institute for Material and Beam Technology (IWS), Germany	
3:40pm	**B1-2-MoA-7** Reactive Sputtering for Highly Oriented HfN Film Growth on Si(100) Substrate, ***Yu-Siang Fang,*** *K Chiu, H Do, L Chang,* National Chiao Tung University, Taiwan	**B3-2-MoA-7** Effect of Pulse Shape and Plasma Composition (Ar + Ne) on the Properties of Hard DLC Films Deposited by HiPIMS: Correlation with Substrate Ion Fluxes, ***João Oliveira,*** *F Ferreira, R Serra,* University of Coimbra, Portugal; *T Kubart,* Uppsala University, Angstrom Laboratory, Sweden; *C Vitelaru,* National Institute for Optoelectronics, Romania; *A Cavaleiro,* University of Coimbra, Portugal
4:00pm	**INVITED: B1-2-MoA-8** Study of Orthorhombic $ZnSnN_2$ Fabricated using Zn–Sn_3N_4 Composition Spreads through Combinatorial Reactive Sputtering, ***Kao-Shuo Chang,*** National Cheng Kung University, Taiwan	**B3-2-MoA-8** The Comparison of Deposition Processes, Composition and Properties of Hydrogenated W-C:H Coatings Prepared by Different Sputtering Techniques, ***Frantisek Lofaj,*** *M Kabatova, L Kvetkova,* Institute of Materials Research of SAS, Slovakia; *J Dobrovodsky,* ATRI, Slovakia
4:20pm	Invited talk continues.	**B3-2-MoA-9** The Mechanism of Graphite Nucleation in Amorphous Carbon Films Deposited with the Condition of Energetic Bombardment and High Temperature, ***Di Zhang,*** *P Yi, L Peng, X Lai,* Shanghai Jiaotong University, China
4:40pm	**B1-2-MoA-10** Angular Resolved Mass-energy Analyses of Species Emitted from a d.c. Magnetron Sputtered NiW-target, ***Martin Rausch,*** Montanuniversität Leoben, Austria; *S Mraz, J Schneider,* RWTH Aachen University, Germany; *J Winkler,* Plansee SE, Austria; *C Mitterer,* Montanuniversität Leoben, Austria	
5:00pm	**B1-2-MoA-11** Effect Produced by Architecture of Nanolayer Composite Coatings Deposited with Filtered Cathodic Vacuum Arc Deposition (FCVAD) Technology on their Mechanical and Performance Properties, ***Alexey Vereschaka,*** *S Grigoriev,* Mstu Stankin, Russian Federation; *N Sitnikov,* National Research Nuclear University MEPhI, Russian Federation; *N Andreev,* National University of Science and Technology "MISiS", Russian Federation	
5:20pm	**B1-2-MoA-12** Effects of Nitrogen Flow Rate and Substrate Bias on Structure and Properties of Molybdenum Nitride Thin Film, ***Cho-Cheng Chou,*** *J Huang,* National Tsing Hua University, Taiwan	

Monday Afternoon, May 20, 2019

	Coatings for Biomedical and Healthcare Applications **Room Pacific Salon 2 - Session D1-2-MoA** **Surface Coating and Modification for Use in Biological Environments II** **Moderator: Mathew T. Mathew**, University of Illinois College of Medicine at Rockford and Rush University Medical Center, USA	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Room Pacific Salon 1 - Session H2-2-MoA** **Nanoscale Plasticity** **Moderators: Timothy Rupert**, University of California, Irvine, USA, **Olivier Pierron**, Georgia Institute of Technology, USA
1:40pm	**INVITED: D1-2-MoA-1** Recent Development of Biocompatible Thin Film Metallic Glass Materials, ***Jyh-Wei Lee,*** Ming Chi University of Technology, Taiwan; *B Lou,* Chang Gung University, Taiwan; *Y Yang,* National Taipei University of Technology, Taiwan; *C Lin,* National Taiwan University, Taiwan	**H2-2-MoA-1** Assessing the Mechanical Properties of Thin Organic Semiconductor Coatings, ***Steve Bull,*** Newcastle University, UK
2:00pm	Invited talk continues.	**H2-2-MoA-2** *In Situ* TEM Activation Volume Measurements, *S Gupta, S Stangebye, J Kacher,* ***Olivier Pierron,*** Georgia Institute of Technology, USA
2:20pm		**H2-2-MoA-3** In-situ Microscale Mechanical Testing of Metal/Ceramic Interfacial Regions, *X Zhang, Y Mu, S Shao,* ***Wen Jin Meng,*** Louisiana State University, USA
2:40pm	**D1-2-MoA-4** Antibacterial and Biocompatible Properties of Ga-doped TaON Thin Films, ***Jang-Hsing Hsieh,*** *Q Liu,* Ming Chi University of Technology, Taiwan; *C Li,* National Yang Ming University, Taiwan	**H2-2-MoA-4** Nano-wedging: A Novel Test Method to Combine Nanoscale Strain Mapping with Multiaxial Stress States, ***Thomas Edwards,*** Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *F Di Gioacchino, J Pürstl,* University of Cambridge, UK; *X Maeder,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *W Clegg,* University of Cambridge, UK; *J Michler,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland
3:00pm	**D1-2-MoA-5** TiO_2 Nanotubes Produced in Aqueous Electrolytes with CMC for Biomaterials Application, ***Robinson Aguirre Ocampo,*** *M Echeverry-Rendón, S Robledo, F Echeverría,* Universidad de Antioquia, Colombia	**H2-2-MoA-5** Micromechanical Characterisation of Ag/Au Multilayers by Means of Bulge and Nanoindentation Testing, ***Sebastian Krauß,*** *M Göken, B Merle,* Friedrich Alexander-University Erlangen-Nürnberg (FAU), Germany
3:20pm	**D1-2-MoA-6** Electrochemical Evaluation of Titanium Oxide Coatings Deposited on Magnesium Alloys, *B Millan-Ramos,* Universidad Nacional Autonoma de Mexico, México; *J Victoria-Hernandez, S Yi,* Magnesium Innovation Centre, Helmholtz-Zentrum, Germany; *D Letzig,* Magnesium Innovation Centre, Helmholtz-Zentrum, Germany, Germany; ***Phaedra Silva-Bermudez,*** Instituto Nacional de Rehabilitación, Mexico; *S Rodil,* Universidad Nacional Autonoma de Mexico, México	**H2-2-MoA-6** Size Effect on Superplastic Flow – In situ Micromechanical Characterization of Superplastic Zn-22% Al, ***Patrick Feldner,*** *M Göken,* University Erlangen-Nürnberg, Germany; *B Merle,* Friedrich Alexander-University Erlangen-Nürnberg (FAU), Germany
3:40pm		**INVITED: H2-2-MoA-7** Studies on the Mechanisms in Hexagonal Close Packed Metal Nanolaminates, ***Irene Beyerlein,*** University of California, Santa Barbara, USA
4:00pm	**D1-2-MoA-8** Metallization of Polymers for Medical Applications, ***Aarati Chacko,*** *H Hug,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; *S Gauter,* Christian-Albrechts-University Kiel, Germany; *K Thorwarth,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland	Invited talk continues.
4:20pm	**D1-2-MoA-9** Characteristics of a Composite Ceramic Coating Fabricated on Mg-1.2Zn-0.5Ca-0.5Mn Alloy Towards Biodegradable Bone Implants, ***Hamdy Ibrahim,*** University of Tennessee at Chattanooga, USA; *D Dean,* Ohio State University, USA; *M Elahinia,* University of Toledo, USA	**H2-2-MoA-9** Critical Assessment of the Criteria for Minimum Indentation Spacing, *S Pardhasaradhi,* ARCI, India; ***Warren Oliver,*** KLA-Tencor, USA
4:40pm		**H2-2-MoA-10** Surface Laboratory Assistant – The New Combination of Measurement Device and Analysis Software, ***Nick Bierwisch,*** *N Schwarzer,* SIO, Germany

Topical Symposia
Room Pacific Salon 3 - Session TS3+4-2-MoA
Surface Engineering for Lightweight Materials & Thin Film Materials for Flexible Electronics
Moderators: Klaus Böbel, Bosch GmbH, **Oleksandr Glushko**, Erich Schmid Institute of Materials Science, **Nicholas Glavin**, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA

1:40pm		
2:00pm		
2:20pm	**TS3+4-2-MoA-3** Electro-mechanical Reliability of Flexible Electronics: An Overview of Testing and Characterization Techniques, ***Oleksandr Glushko***, *M Cordill,* Erich Schmid Institute of Materials Science, Austria	
2:40pm	**TS3+4-2-MoA-4** Bending Fatigue of Al/Mo Bilayers on Polymer Substrates with Varied Al Layer Thickness, ***Patrice Kreiml***, *M Rausch, V Terziyska,* Montanuniversität Leoben, Austria; *J Winkler,* Plansee SE, Austria; *C Mitterer,* Montanuniversität Leoben, Austria; *M Cordill,* Austrian Academy of Sciences, Austria	
3:00pm	**TS3+4-2-MoA-5** Enabling High-Power Flexible Devices through Tailored Nanocomposite Interface Materials, ***Katherine Burzynski***, University of Dayton, USA; *N Glavin,* Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; *E Heller, M Snure, E Heckman,* Air Force Research Laboratory, Sensors Directorate, USA; *C Muratore,* University of Dayton, USA	
3:20pm	**INVITED: TS3+4-2-MoA-6** Plasma Polymers…A Family of Materials that is Full of Surprises, ***Rony Snyders***, University of Mons, Belgium	
3:40pm	Invited talk continues.	
4:00pm	**TS3+4-2-MoA-8** Environmental Challenges of Thin Film Systems on Polymer Substrates for Space Applications, ***Barbara Putz***, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; *G Milassin, C Semprimoschnig,* European Space Research and Technology Centre; *M Cordill,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	
4:20pm	**TS3+4-2-MoA-9** Sputtered Thin Film Sensors for Self-sensing Composite Materials, ***Florian Cougnon***, *A Lamberti, W Van Paepegem, D Depla,* Ghent University, Belgium	
4:40pm	**TS3+4-2-MoA-10** A New Method for Influencing Coating Properties on Polymer Substrates at Low Temperature: High Power Impulse Magnetron Sputtering (HIPIMS) with Positive Voltage Reversal, ***Ambiörn Wennberg***, Nano4Energy SL, Spain; *M Simmons,* Intellivation, USA; *F Papa,* GP Plasma, Spain; *I Fernandez,* Nano4Energy SL, Spain	
5:00pm	**INVITED: TS3+4-2-MoA-11** Tribological Challenges and Surface Engineering Solutions for Extreme Environments and Lightweight Materials, ***Andras Korenyi-Both***, Tribologix, Inc., USA	
5:20pm	Invited talk continues.	

Special Events Tuesday

Special Events Tuesday

7:00 AM Bruker Focused Topic Session: "Advanced Technologies for the In-Depth Characterization of Surfaces"/Town & Country
7:30 AM Conference Registration/Atlas Foyer
7:30 AM Short Course: Industrial Surface Engineering: Fundamentals, Practice and Applications/Atlas Foyer
7:30 AM Short Course: Thin Film Nucleation, Growth, and Microstructure Evolution/Atlas Foyer
8:00 AM Technical Sessions/See Program/Mobile App
11:00 AM Exhibition Keynote Lecture/Town & Country
12:00 PM Exhibit Hall - Light Lunch (While Supplies Last)/Grand Hall
12:00 PM Exhibition/Grand Hall
3:20 PM Session Break - Complimentary Refreshments in Exhibit Hall/Grand Hall
5:30 PM Exhibition Reception/Grand Hall
7:00 PM Special Interest Talk: Gregory Abadias/Town & Country

	Coatings for Use at High Temperatures **Room Pacific Salon 2 - Session A1-1-TuM** **Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling I** **Moderators: Justyna Kulczyk-Malecka**, Manchester Metropolitan University, **Lars-Gunnar Johansson**, Chalmers University of Technology, Sweden, **Shigenari Hayashi**, Hokkaido University	**Hard Coatings and Vapor Deposition Technologies** **Room Golden West - Session B1-3-TuM** **PVD Coatings and Technologies III** **Moderators: Frank Kaulfuss**, Fraunhofer Institute for Material and Beam Technology (IWS), **Jyh-Ming Ting**, National Cheng Kung University, **Qi Yang**, National Research Council of Canada
8:00am	**A1-1-TuM-1** Modeling the Influence of Heat Treatment and Base Alloy Composition on the Performance of Aluminide Coatings for High Performance Engine Valve Alloys, ***Rishi Pillai,*** *S Dryepondt, B Armstrong, Q Guo, K Unocic, G Muralidharan,* Oak Ridge National Laboratory, USA	**B1-3-TuM-1** PVD-AlTiN with High Al Content – How to Overcome the "Magic" 67%-Limit, ***Fred Fietzke,*** *T Modes, O Zywitzki,* Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Germany
8:20am	**A1-1-TuM-2** Fabrication, Characterisation and Testing of Cr Coated Zr Alloy Nuclear Fuel Cladding for Enhanced Accident Tolerance, *A Evans,* Manchester Metropolitan University, UK*; D Goddard,* National Nuclear Laboratory, UK*; A Cole-Baker,* Wood plc, UK*; G Obasi, M Preuss,* Manchester University, UK*; E Vernon,* National Nuclear Laboratory, UK*;* ***Peter Kelly,*** Manchester Metropolitan University, UK	**INVITED: B1-3-TuM-2** PVD Methods and Coatings for Protection of Aero Engine Components, ***Uwe Schulz,*** *R Naraparaju, R Braun, N Laska,* German Aerospace Center (DLR), Germany
8:40am	**A1-1-TuM-3** High-temperature Oxidation Resistance and Self-healing Capability of HiPIMS Cr-Al-C Coating on Zr-based Alloy, ***Michaël Ougier,*** *A Michau, F Lomello,* CEA, Université Paris-Saclay, France*; F Schuster,* CEA Cross-Cutting Program on Materials and Processes Skills, France*; H Maskrot, M Schlegel,* CEA, Université Paris-Saclay, France	Invited talk continues.
9:00am	**INVITED: A1-1-TuM-4** Ceramic Coatings for Protection of Ti and Zr Alloys at High Temperature, ***Ping Xiao,*** *Z Gao, X Zhang, H Liu,* University of Manchester, UK*; J Kulczyk-Malecka, P Kelly,* Manchester Metropolitan University, UK*; Z Zhang,* University of Manchester, UK	**B1-3-TuM-4** High-temperature Nanoindentation and Microcantilever Deflection Tests of CrAlN and CrAlSiN Hard Coatings, ***Aljaž Drnovšek,*** Montanuniversität Leoben, Austria*; H Vo,* University of California Berkeley, USA*; A Xia, M Rebelo de Figueiredo,* Montanuniversität Leoben, Austria*; S Koloszvári,* Plansee Composite Materials GmbH, Germany*; S Vachhani,* Bruker Nano Surfaces, Germany*; P Hosemann,* University of Californa at Berkeley, USA*; R Franz,* Montanuniversität Leoben, Austria
9:20am	Invited talk continues.	**B1-3-TuM-5** On Crystallization and Oxidation Behavior of $Zr_{54}Cu_{46}$ and $Zr_{27}Hf_{27}Cu_{46}$ Thin-film Metallic Glasses Compared to a Crystalline $Zr_{54}Cu_{46}$ Thin-film Alloy, ***Michaela Kotrlová,*** *M Zítek, P Zeman,* University of West Bohemia, Czech Republic
9:40am	**A1-1-TuM-6** Multi-functional AlZr-TiO_2 Bilayer Coatings Combining Anticorrosion and Antifouling Properties, ***Caroline Villardi de Oliveira,*** ICD-LASMIS, Université de Technologie de Troyes, France, Franç*e; A Alhussein,* University of Technology of Troyes (UTT), France*; C Jiménez,* Univ. Grenoble Alpes, CNRS, France*; Z Dong,* School of Materials Science and Engineering, Nanyang Technological University, Singapore*; F Schuster,* CEA, PTCMP, France*; S Narasimalu,* School of Materials Science and Engineering, Nanyang Technological University, Singapore*; M Schlegel,* CEA, Université Paris-Saclay, France*; F Sanchette,* Nogent International Center for CVD Innovation, LRC CEA-ICD LASMIS UMR6281, UTT, Antenne de Nogent, France	**B1-3-TuM-6** On the Origin of Multilayered Structure of W-B-C Coating Prepared by Non-Reactive Magnetron Sputtering from a Single Segmented Target, ***Michael Kroker,*** *P Soucek, M Fekete, L Zabransky, V Bursikova,* Masaryk University, Brno, Czech Republic*; P Zikan, A Obrusnik,* Plasma Solve, Brno, Czech Republic*; Z Czigany, K Balazsi,* Hungarian Academy of Sciences, Hungary*; P Vasina,* Masaryk University, Brno, Czech Republic
10:00am	**A1-1-TuM-7** The Oxidation Behavior of ZrO_2-Coated Zircaloy-4 with ZrN Interlayer, ***I-Sheng Ting,*** *J Huang,* National Tsing Hua University, Taiwan	
10:20am	**A1-1-TuM-8** Novel HIPIMS Deposited Nanostructured CrN/NbN Coatings for Environmental Protection of Steam Turbine Components., ***Papken Hovsepian,*** *A Ehiasarian, Y Purandare,* Sheffield Hallam University, UK*; P Mayr, K Abstoss,* Technische Universitat Chemnitz, Germany*; M Mosquera, W Schulz, A Kranzmann,* Federal Institute for Materials Research and Testing, Germany*; M Lasanta Carrasco, J Trujillo,* Universdad Complutense de Madrid, Spain	
10:40am	**A1-1-TuM-9** NiAl Coatings Deposited on Inconel 600 by Using an Arc Ion Plating Process, ***Yinan Li,*** University of Manchester, UK*; Y Hung,* Feng Chia University, Taiwan*; M Lin, A Matthews,* University of Manchester, UK*; J He,* Feng Chia University, Taiwan	

	Hard Coatings and Vapor Deposition Technologies **Room California - Session B4-1-TuM** **Properties and Characterization of Hard Coatings and Surfaces I** **Moderators: Naureen Ghafoor**, Linköping Univ., IFM, Thin Film Physics Div., **Ulrich May**, Robert Bosch GmbH, Diesel Systems, **Fan-Bean Wu**, National United University, Taiwan	**Coatings for Biomedical and Healthcare Applications** **Room Pacific Salon 3 - Session D3-TuM** **Surfaces and Coatings to Promote Tailored Biological Responses** **Moderators: Sandra Rodil**, Universidad Nacional Autónoma de México - Instituto de Investigaciones en Materiales, **Vincent Fridrici**, Ecole Centrale de Lyon - LTDS
8:00am		
8:20am	**INVITED: B4-1-TuM-2** Preparation and Characterization of Hard and Tough Coatings of Ion-assisted Co-sputtered Transition Metal Borides*,* ***Ming-Show Wong,*** National Dong Hwa University, Taiwan	
8:40am	Invited talk continues.	**D3-TuM-3** *In Vitro* Evaluation of Macrophage Response to Ionic Liquid-Coated Titanium:*,* ***Sutton Wheelis,*** *L Guida, D C. Rodrigues,* University of Texas at Dallas, USA
9:00am	**B4-1-TuM-4** Strategy for Increasing Both Hardness and Toughness in Transition-metal Diboride Thin Films*, B Bakhit,* Linköping Univ., IFM, Thin Film Physics Div., Sweden*; I Petrov,* University of Illinois, USA, Linköping University, Sweden, USA*; J Greene,* University of Illinois, USA, Linköping University, Sweden, National Taiwan Univ. Science & Technology, Taiwan*; L Hultman, J Lu, J Rosén, G Greczynski,* ***Naureen Ghafoor,*** Linköping Univ., IFM, Thin Film Physics Div., Sweden	**INVITED: D3-TuM-4** Materials To Control Biological Function*,* ***Karine Anselme,*** CNRS, France
9:20am	**B4-1-TuM-5** Tribocorrosion Resistance of Borided ASTM F1537 Alloy*, I Campos-Silva,* ***Angel Manuel Delgado-Brito,*** Instituto Politecnico Nacional Grupo Ingeniería de Superficies, México*; J Oseguera-Peña,* Tecnologico de Monterrey-CEM, México*; J Martinez-Trinidad,* Instituto Politecnico Nacional, Grupo Ingenieria de Superficies, México*; R Perez Pasten-Borja,* Instituto Politecnico Nacional, SEPI ENCB, Mexico*; D Lopez-Suero,* Instituto Politecnico Nacional, Grupo Ingenieria de Superficies, México*; A Mojica-Villegas,* Instituto Politecnico Nacional, ENCB, México	Invited talk continues.
9:40am	**B4-1-TuM-6** Corrosion Behavior of TiAlSiN Doped with Ag Coating Deposited by Co-sputtering in Physiological Fluids*,* ***Alvaro Danilo Caita Tapia****, S Rodriguez Arevalo, E Borja Goyeneche, J Olaya Florez, B Gamboa Mendoza,* Universidad Nacional de Colombia, Colombia	**D3-TuM-6** Comparison of Elution of Antibiotic and Biofilm Inhibitor from Manually Applied and Spray Deposited Phosphatidylcholine Coatings*,* ***Zoe Harrison****, R Awais, R Gopalakrishnan, J Jennings,* University of Memphis, USA
10:00am	**B4-1-TuM-7** Adhesion Strength of Titanium Carbide Thin Film Coatings on Surface Microstructure Controlled WC-Co*,* ***Takeyasu Saito****, C Tanaka, N Okamoto,* Osaka Prefecture University, Japan*; A Kitajima, K Higuchi,* Osaka University, Japan	**D3-TuM-7** *In vitro* Osseointegration Aanalysis of Bio-functionalized Titanium Samples in a Protein-rich Medium*, S Rao, S Hashemiastaneh, J Villanueva,* University of Illinois at Chicago, USA*; F Silva,* University of Minho, Portugal*; C Takoudis,* University of Illinois at Chicago, USA*; D Bijukumar,* University of Illinois College of Medicine, USA*; J Souza,* University of Illinois at Chicago, USA*;* ***Mathew T. Mathew,*** University of Illinois College of Medicine, USA
10:20am		**D3-TuM-8** Microstructural and Electrochemical Properties of TiAlN-(Ag,Cu) Nanocomposite Coatings Deposited by DC Magnetron Sputtering for Medical Applications*, H Mejía,* ***Aida Echavarría****, G Bejarano,* Universidad de Antioquia, Colombia

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room San Diego - Session E2-1-TuM** **Mechanical Properties and Adhesion I** **Moderators: Megan J. Cordill**, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, **Ming-Tzer Lin**, National Chung Hsing University & Chaoyang University of Technology	**New Horizons in Coatings and Thin Films** **Room Pacific Salon 6-7 - Session F1-TuM** **Nanomaterials and Nanofabrication** **Moderators: Ulf Helmersson**, Linköping University, **Vitezslav Stranak**, University of South Bohemia
8:00am	**INVITED: E2-1-TuM-1** Indentation Behavior of Metal-Ceramic Multilayer Coatings: Modeling vs. Experiment, ***Yu-Lin Shen,*** University of New Mexico, USA	**INVITED: F1-TuM-1** Single and Multi-component Nanomaterials Prepared by Means of Cluster Beam Deposition, ***Ondrej Kylian,*** Charles University, Czech Republic*; A Shelemin, D Nikitin,* Charles University, Czech Republic, Czechia*; P Pleskunov, J Hanus, P Solar, A Choukourov, A Kuzminova, M Cieslar, H Biederman,* Charles University, Czech Republic
8:20am	Invited talk continues.	Invited talk continues.
8:40am	**E2-1-TuM-3** Indentation Induced Delamination for Adhesion Measurements, ***Megan J. Cordill****, A Kleinbichler,* Erich Schmid Institute of Materials Science, Austria	**F1-TuM-3** Preparation of High Activity and Stability of Cobalt Carbide Nanoparticles for Hydrogen Evolution Reaction, ***Yi-Heng Lin,*** National Cheng Kung University, Taiwan*; S Wang,* Southern Taiwan University of Science and Technology, Taiwan*; J Huang,* National Cheng Kung University, Taiwan
9:00am	**E2-1-TuM-4** Intrinsic Stress in Polycrystalline Film: An Atomistic View, ***Enrique Vasco,*** Instituto de Ciencia de Materiales de Madrid, Spanish National Research Council (CSIC), Spain*; D Franco,* Departamento de Física de la Materia Condensada, Universidad Autónoma de Madrid, Spain*; E Michel, C Polop,* Departamento de Física de la Materia Condensada and Condensed Matter Physics Center (IFIMAC), Universidad Autónoma de Madrid, Spain	**F1-TuM-4** Nanocluster-Based Metal Oxide Films for Hydrogen Gas Sensing, ***Stanislav Haviar****, J Čapek, Š Batková, N Kumar,* University of West Bohemia, Czech Republic
9:20am	**E2-1-TuM-5** Development of a Methodology for Measuring the Elastic Constants of Anisotropic Coatings Using Impulse Excitation Technique, ***Elia Zgheib,*** University of Technology of Troyes (UTT) and Lebanese University (UL), France*; M Slim, A Alhussein,* University of Technology of Troyes (UTT), France*; K Khalil,* Lebanese University (UL), Lebanon*; M Francois,* University of Technology of Troyes (UTT), France	**F1-TuM-5** Depostion of Magnetic Thin Films by High Power Impulse Magnetron Sputtering, ***Jon Tomas Gudmundsson****, H Hajihoseini, M Kateb, S Ingvarsson,* University of Iceland, Iceland
9:40am		**F1-TuM-6** Fluorination of the Magnesium Particle Surface: Enhancing the Reactivity of Magnesium, *M Pantoya,* ***Shancita Islam,*** Texas Tech University, USA

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes
Room Pacific Salon 1 - Session H1-1-TuM
Spatially-resolved and In-Situ Characterization of Thin Films and Engineered Surfaces I
Moderators: Grégory Abadias, Institut Pprime - CNRS - ENSMA - Université de Poitiers, **Xavier Maeder**, Empa, Swiss Federal Laboratories for Materials Science and Technology, **Michael Tkadletz**, Montanuniversität Leoben

8:00am		
8:20am	**H1-1-TuM-2** Evolution of the Nanoporous Structure of Sintered Ag Joints at High Temperature using In-Situ X-ray Nanotomography, ***Xavier Milhet****, A Nait-Ali, D Tandiang, L Signor,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France*; M Legros,* Cemes - Cnrs, France*; Y Liu, D Van Campen,* Stanford Synchrotron Radiation Lightsource - SLAC National Accelerator Laboratory, USA	
8:40am	**INVITED: H1-1-TuM-3** Atom Probe Tomography to Help Understand Deformation Mechanisms in Metallic Alloys, ***Baptiste Gault****,* Max-Planck Institute for Iron Research, Düsseldorf, Germany*; P Kontis, S Makineni, J He, Z Peng,* Max-Planck Institut für Eisenforschung, Germany*; S Neumeier,* Friedrich Alexander-University Erlangen-Nürnberg (FAU), Germany*; J Cormier,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France*; D Raabe,* Max-Planck Institut für Eisenforschung, Germany	
9:00am	Invited talk continues.	
9:20am	**H1-1-TuM-5** On the Chemical Composition of TiAlN Thin Films - Comparison of Ion Beam Analysis and Laser-assisted Atom Probe Tomography with Varying Laser Pulse Energy, ***Marcus Hans****, J Schneider,* RWTH Aachen University, Germany	
9:40am	**H1-1-TuM-6** Microstructure and Oxidation States of Ni in Sub-Nanometric Layer Depending on its Seed-Layer (Zinc Oxide, Silver Layers): A Multi-Techniques Approach to Trespass Limits of Resolution, ***Justine Voronkoff****, H Montigaud,* Saint-Gobain Recherche/CNRS, France*; L Largeau,* CNRS/C2N, France*; S Grachev,* Saint-Gobain Recherche/CNRS, France	
10:00am	**H1-1-TuM-7** Nanomechanical Investigation on Lateral fcc-w Phase Fields of a Partially Decomposed and Transformed Nano–lamellar CVD fcc–$Ti_{0.2}Al_{0.8}N$ Coating, ***Michael Tkadletz****, A Lechner, N Schalk,* Montanuniversität Leoben, Austria*; B Sartory,* Materials Center Leoben Forschung GmbH (MCL), Austria*; C Mitterer,* Montanuniversität Leoben, Austria*; C Czettl,* CERATIZIT Austria GmbH, Austria	

Exhibition Keynote Lecture
Room Town & Country - Session EX-TuEx
Exhibition Keynote Lecture
Moderators: Christopher Muratore, University of Dayton,
Michael Stüber, Karlsruhe Institute of Technology, Germany

11:00am **INVITED: EX-TuEx-1** Advanced Performance of Tools in Sheet-metal Forming - The Synergy of Surface Technology and Tooling Material Selection, ***Farwah Nahif,*** voestalpine eifeler Vacotec GmbH, Germany

11:20am Invited talk continues.

	Coatings for Use at High Temperatures **Room Pacific Salon 2 - Session A1-2-TuA** **Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling II** **Moderators: Lars-Gunnar Johansson**, Chalmers University of Technology, Sweden, **Shigenari Hayashi**, Hokkaido University, **Justyna Kulczyk-Malecka**, Manchester Metropolitan University	**Hard Coatings and Vapor Deposition Technologies** **Room California - Session B4-2-TuA** **Properties and Characterization of Hard Coatings and Surfaces II** **Moderators: Naureen Ghafoor**, Linköping Univ., IFM, Thin Film Physics Div., **Ulrich May**, Robert Bosch GmbH, Diesel Systems, **Fan-Bean Wu**, National United University, Taiwan
1:40pm	**INVITED: A1-2-TuA-1** Nano Coatings To Achieve Cost Effective And Long Lifetime SOFC Interconnects, ***Jan-Erik Svensson***, Chalmers University of Technology, Sweden	**B4-2-TuA-1** Fracture Toughness Enhancement in Superlattice Hard Coatings, ***Rainer Hahn***[1], *M Bartosik, H Riedl,* TU Wien, Institute of Materials Science, Austria; *H Bolvardi,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *S Koloszvári,* Plansee Composite Materials GmbH, Germany; *P Mayrhofer,* TU Wien, Institute of Materials Science, Austria
2:00pm	Invited talk continues.	**B4-2-TuA-2** Simultaneous Topographical and Electrochemical Mapping using Scanning Ion Conductance Microscopy - Scanning Electrochemical Microscopy (SICM-SECM), *W Shi, G Mendoza,* ***Byong Kim***, *K Lee,* Park Systems Corporation, USA
2:20pm	**A1-2-TuA-3** Influence of Ta Content on Properties of TiAlTaN Films, ***Hongfei Shang***, *T Shao,* State Key Laboratory of Tribology, Tsinghua University, China	
2:40pm	**A1-2-TuA-4** Cr-Al-Si-N Quaternary Coating Applied on Zirconium Alloy: Combining Superior Resistance of High-temperature Steam Oxidation and Improved Mechanical Properties, ***Fangfang Ge***, *H Zhu, F Huang,* Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, China	
3:00pm		
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
3:40pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
4:00pm	**A1-2-TuA-8** Polyurethane Protective Coating with Self Polishing Property, ***Mohammad Mizanur Rahman***, King Fahd University of Petroleum and Minerals, Saudi Arabia	**B4-2-TuA-8** Performance Comparison of Two Diffusion Models for Describing the Growth Kinetics of Iron Boride Layers, *M Ortiz-Domínguez,* Universidad Autónoma del Estado de Hidalgo, México; *O Gómez-Vargas,* ***José Solis-Romero***, Instituto Tecnológico de Tlalnepantla, México; *G Ares de Parga,* Instituto Politécnico Nacional, México; *J Oseguera-Peña,* Tecnológico de Monterrey, México
4:20pm	**A1-2-TuA-9** Production of a Zinc Impregnated Stainless Steel Surface Utilizing Cathodic Plasma Electrolytic Deposition (CPED) for Retardation of Cobalt Ion Deposition in High Temperature Aqueous Conditions, ***Ciara Fox***, *F Scenini, A Yerokhin, N Laugel,* University of Manchester, UK; *R Wain,* Rolls-Royce, UK	**B4-2-TuA-9** Microstructure and Surface Strength of Chemically Modified WC-Co for Adhesive Strength Improvement, ***Daichi Kiyokawa***, *C Tanaka, T Saito, N Okamoto,* Osaka Prefecture University, Japan; *A Kitajima, K Higuchi,* Osaka University, Japan

[1] **Student Award Nominee**

	Hard Coatings and Vapor Deposition Technologies **Room Golden West - Session B7-TuA** **Plasma Diagnostics and Growth Processes** **Moderators: Arutiun P. Ehiasarian**, Sheffield Hallam University, **Yolanda Aranda Gonzalvo**, Consultant, USA	**Coatings for Biomedical and Healthcare Applications** **Room Pacific Salon 3 - Session D2-TuA** **Bio-corrosion and Bio-tribology** **Moderators: Jessica Jennings**, University of Memphis, USA, **Steve Bull**, Newcastle University
1:40pm	**B7-TuA-1** On the Growth of TiO_x Coatings by Reactive Magnetron Sputtering from Metallic and Ceramic ($TiO_{1.8}$) Targets: A Joint Modelling and Experimental Story, ***Romain Tonneau**, P Moskovkin,* University of Namur, Belgium*; W De Bosscher,* Soleras Advanced Energy, Belgium*; A Pflug,* Fraunhofer Institute for Surface Engineering and Thin Films, Germany*; S Lucas,* University of Namur, Belgium	**D2-TuA-1** Bio-Tribocorrosive Behavior of the Contact M30NW Stainless Steel against HDPE Reinforced with MoS_2 Particles. New Polymer Implant: Promising Material?*, A Salem, M Guezmil, W Bensalah, S Mezlini,* Université de Monastir, Tunisia*; **Jean Géringer**,* Mines Saint-Etienne, France
2:00pm	**B7-TuA-2** Titanium Atom and Ion Number Density Evolution in Reactive HiPIMS with Oxygen, Nitrogen and Acetylene Gas*, M Fekete,* Masaryk University, Brno, Czech Republic*; D Lundin,* Université Paris-Sud/CNRS, France*; K Bernatova, P Klein, J Hnilica, **Petr Vasina**,* Masaryk University, Brno, Czech Republic	**INVITED: D2-TuA-2** Evaluation of the Adhesion of Electrosprayed and Solution-Cast Chitosan Coatings on Titanium Surfaces*, V Suresh, E Chng, J Bumgardner, **Ranganathan Gopalakrishnan**,* University of Memphis, USA
2:20pm	**B7-TuA-3** Phase Formation during Sputtering of Copper in Argon/Oxygen Mixtures*, D Altangerel, **Diederik Depla**,* Ghent University, Belgium	Invited talk continues.
2:40pm	**INVITED: B7-TuA-4** Plasma Diagnostics During Growth of Transparent Conductive Oxide Thin Films by Magnetron Sputtering*, **Eugen Stamate**,* Technical University of Denmark, Denmark	**D2-TuA-4** Study of the Mechanical and Tribological Properties of the TaN with Ti Inclusion Multilayer Films on Si Substrate*, **Ernesto García**,* Cátedras-CONACyT, Universidad de Guadalajara, México*; J Berumen,* ITESO, Universidad Jesuita de Guadalajara, Tlaquepaque, Jalisco, México*; M Flores-Martinez,* Universidad de Guadalajara, México*; E Camps,* Instituto Nacional de Investigaciones Nucleares, México*; S Muhl,* Instituto de Investigaciones en Materiales-UNAM, México
3:00pm	Invited talk continues.	**D2-TuA-5** Enhancement of Tribocorrosion Properties of Ti6Al4V by Formation of a Carbide-Derived Carbon (CDC) Surface Layer*, **Kai-yuan Cheng**,* University of Illinois at Chicago, USA*; R Nagaraj, D Bijukumar, M Mathew,* University of Illinois College of Medicine, USA*; M McNallan,* University of Illinois at Chicago, USA
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
3:40pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
4:00pm		**INVITED: D2-TuA-8** Considerations when using Additive Manufacturing to make Medical Devices*, **Alejandro Espinoza Orías**,* Rush University Medical Center, USA
4:20pm	**B7-TuA-9** On Three Different Ways to Quantify the Degree of Ionization in Sputtering Magnetrons*, A Butler,* Université Paris-Sud, Université Paris-Saclay, France*; N Brenning,* Université Paris-Sud, Université Paris-Saclay, Sweden*; M Raadu,* KTH Royal Institute of Technology, Sweden*; J Gudmundsson,* University of Iceland, Iceland*; **Tiberiu Minea**, D Lundin,* Université Paris-Sud, Université Paris-Saclay, France	Invited talk continues.
4:40pm		**D2-TuA-10** Nanostructured Surfaces for (Bio)sensors*, **Vitezslav Stranak**,* University of South Bohemia, Czech Republic*; R Bogdanowicz,* Gdansk University of Technology, Poland*; P Sezemsky, V Prysiazhnyi, J Kratochvil,* University of South Bohemia, Czech Republic*; M Smietana,* Warsaw University of Technology, Poland*; O Kylian,* Charles University, Czech Republic*; Z Hubicka, M Cada,* Institute of Physics CAS, v. v. i., Czech Republic
5:00pm	**B7-TuA-11** Characterization of Microwave Surfatron Plasma-enhanced-ALD System for Low-temperature Deposition of Thin Oxide Films*, **Martin Cada**, D Tvarog,* Institute of Physics CAS, v. v. i., Czech Republic*; J Kim,* ISAC Research Inc., Republic of Korea*; A Poruba,* SVCS Process Innovation s.r.o., Czech Republic*; Z Hubicka,* Institute of Physics CAS, v. v. i., Czech Republic	

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room San Diego - Session E2-2-TuA** **Mechanical Properties and Adhesion II** **Moderators: Megan J. Cordill**, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, **Ming-Tzer Lin**, National Chung Hsing University & Chaoyang University of Technology	**New Horizons in Coatings and Thin Films** **Room Pacific Salon 6-7 - Session F3-TuA** **2D Materials: Synthesis, Characterization, and Applications** **Moderator: Eli Sutter**, University of Nebraska-Lincoln, USA
1:40pm		**INVITED: F3-TuA-1** Roll-to-roll Plasma Chemical Vapor Deposition for Scalable Graphene Production, ***Timothy Fisher,*** UCLA, USA*; M Alrefae,* Purdue University, USA
2:00pm	**E2-2-TuA-2** Mechanical Behavior Study of 50 nm-thick Thin Film of Gold Single Crystal with In situ X-ray Pole Figures Measurements, ***Pierre-Olivier Renault,*** Université de Poitiers, France*; J Drieu La Rochelle, P Godard, M Drouet, J Nicolai, M Beaufort,* University of Poitiers, France*; D Thiaudière, C Mocuta,* SOLEIL Synchrotron, France	Invited talk continues.
2:20pm	**E2-2-TuA-3** Evaluation of the Mechanical Properties in Antibacterial Multi-layer HA-Ag Coatings Deposited by RF Magnetron Sputtering, ***Julian Lenis,*** *M Gómez, F Bolívar,* University of Antioquia, Colombia	**F3-TuA-3** Magnetron Sputtered MoS_2/C Nanocomposites as Highly Efficient Electrocatalyst in Hydrogen Evolution Reaction, *S Rowley-Neale, M Ratova,* Manchester Metropolitan University, UK*; L Fugita,* University of Sao Paulo, Brazil*; G Smith,* University of Chester, UK*; A Gaffar,* ***Justyna Kulczyk-Malecka,*** *P Kelly, C Banks,* Manchester Metropolitan University, UK
2:40pm	**INVITED: E2-2-TuA-4** Mechanical Deformation in Metal and Ceramic Nano Multilayers, ***Andrea Hodge,*** University of Southern California, USA	**F3-TuA-4** HIPIMS Graphene on Copper for Heat Spreading, *C Chen, E Liao,* ***Ping-Yen Hsieh,*** *Y Chen, J He,* Feng Chia University, Taiwan
3:00pm	Invited talk continues.	**F3-TuA-5** Tailoring Optical Properties of Two-Dimensional Transition Metal Dichalcogenides Via Photonic Annealing, ***Rachel Rai,*** *K Gleibe,* University of Dayton, Air Force Research Laboratory, USA*; N Glavin,* Air Force Research Laboratory, Wright-Patterson AFB, USA*; R Wheeler,* UES, Inc., Air Force Research Laboratory, USA*; R Kim,* Air Force Research Laboratory, Wright-Patterson AFB, USA*; A Jawaid,* UES, Inc., Air Force Research Laboratory, USA*; L Bissell,* Air Force Research Laboratory, Wright-Patterson AFB, USA*; C Muratore,* University of Dayton, USA
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
3:40pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
4:00pm	**E2-2-TuA-8** Deposition of Highly Adhesive Ta Based Thin Films on a Biomedical Grade CoCrMo Alloy, ***Jesus Corona-Gomez,*** *Q Yang, Y Li,* University of Saskatchewan, Canada	**F3-TuA-8** Mechanism of Formation of Nitrogenated Doped Graphene Films, Investigated by In situ XPS During Thermal Annealing in Vacuum, ***Yannick Bleu,*** Univ. Lyon, Université Jean Monnet, France*; V Barnier, F Christien,* Laboratoire Georges Friedel, Ecole Nationale Supérieure des Mines, France*; F Bourquard,* Univ. Lyon, Laboratoire Hubert Curien, Université Jean Monnet, France*; J Avila,* Synchrotron SOLEIL & Université Paris-Saclay, France*; F Garrelie,* Univ. Lyon, Université Jean Monnet, France*; M Asensio,* Synchrotron SOLEIL & Université Paris-Saclay, France*; C Donnet,* Université de Lyon, Université Jean Monnet, France
4:20pm	**E2-2-TuA-9** DIC on FIB Ring-Core of Thin Films for Depth Sensing Residual Stress Measurement, ***Ming-Tzer Lin,*** *W Pan,* National Chung Hsing University, Taiwan*; T Chen, F Cheng,* National Cheng Kung University, Taiwan*; J Huang,* National Tsing Hua University, Taiwan	**INVITED: F3-TuA-9** Engineering Point and Extended Defects in Transition Metal Dichalcogenides, ***Hannu-Pekka Komsa,*** Aalto University, Finland
4:40pm	**E2-2-TuA-10** Metallic Glass/Crystalline Nanolayered Coatings with High Nanoscratch Resistance and Damage Tolerance, *M Abboud,* Middle East Technical University, Turkey*; A Motallebzadeh,* Koç University, Turkey*;* ***Sezer Özerinç,*** Middle East Technical University, Turkey	Invited talk continues.
5:00pm	**E2-2-TuA-11** Coatings Effect On Crack Initiation Behavior Of Ti Alloys, ***Xiaolu Pang,*** University of Science and Technology Beijing, China	**F3-TuA-11** Physicochemical and Mechanical Performance of Nylon 6.6 Coated Thin Free-standing Boron-doped Diamond Nanosheets, ***Robert Bogdanowicz,*** *M Ficek,* Gdansk University of Technology, Poland*; V Stranak, J Kratochvil,* University of South Bohemia, Czech Republic*; M Szkodo, J Ryl, M Sobaszek,* Gdansk University of Technology, Poland

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes
Room Pacific Salon 1 - Session H1-2-TuA
Spatially-resolved and In-Situ Characterization of Thin Films and Engineered Surfaces II
Moderators: Grégory Abadias, Institut Pprime - CNRS - ENSMA - Université de Poitiers, **Xavier Maeder**, Empa, Swiss Federal Laboratories for Materials Science and Technology, **Michael Tkadletz**, Montanuniversität Leoben

1:40pm	**H1-2-TuA-1** Complex Study of Thermally Induced Order Reactions in Cu-Au Thin Films, ***Alla Sologubenko,*** *M Volpi, P Okle, R Spolenak,* ETH Zürich, Switzerland	
2:00pm	**H1-2-TuA-2** Kinetics Dependence of Microstructure and Stress Evolutions in Polycrystalline Cu Films: Real-time Diagnostics and Atomistic Modelling, ***Clarisse Furgeaud***[1], *C Mastail, A Michel, L Simonot,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France*; E Chason,* Brown University, USA*; G Abadias,* Institut Pprime - CNRS - ENSMA - Université de Poitiers, France	
2:20pm	**H1-2-TuA-3** Understanding the Crystallization of Amorphous Films with Embedded Seed Crystals using High-resolution STEM Composition and Structural Mapping, ***Paul Rasmussen,*** *J Rajagopalan, R Berlia,* Arizona State University, USA	
2:40pm	**H1-2-TuA-4** *In-situ* Investigation of the Oxidation Behavior of Metastable CVD $Ti_{1-x}Al_xN$ Using Combined Synchrotron XRD and DSC, ***Christian Saringer,*** *M Tkadletz,* Montanuniversität Leoben, Austria*; A Stark,* Helmholtz Zentrum Geesthacht, Germany*; C Czettl,* Ceratizit Austria GmbH, Austria*; N Schalk,* Montanuniversität Leoben, Austria	
3:00pm	**H1-2-TuA-5** In-situ X-ray Characterization of Liquid-solid Transition Phase in Small Volume, ***Mohamed Kbibou,*** *L Barrallier,* Mechanics, Surfaces and Materials Processing Laboratory, France*; M El Mansori,* Arts et Métiers ParisTech d'Aix en Provence, Laboratory of Mechanics, Surface and Materials Processing (MSMP-EA7350), France*; L Heraud,* Mechanics, Surfaces and Materials Processing Laboratory, France	
3:20pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
3:40pm	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
4:00pm	**H1-2-TuA-8** Novel Quantitative Thin Film Thickness and Chemical State Analysis X-ray Techniques, ***Wenbing Yun,*** *B Stripe, S Shesadri, S Lewis, X Yang, R Qiao, S Lau,* Sigray, Inc., USA	
4:20pm	**H1-2-TuA-9** Effect of Heat Treatment on Microstructure of Erbia Film on Steel Substrate with Yittria Buffer Layer Fabricated by MOCVD, ***Kenji Matsuda,*** *M Tanaka, S Lee,* University of Toyama, Japan*; Y Hishinuma,* NIFS, Japan*; K Nishimura, T Tsuchiya,* University of Toyama, Japan	
4:40pm		
5:00pm	**H1-2-TuA-11** Study of Volmer-Weber Thin Film Growth Mechanisms by Coupling *in situ* Resistivity, Optical and Mechanical Measurements, ***Quentin Herault,*** *S Grachev, I Gozhyk, H Montigaud,* Saint-Gobain Recherche/CNRS, France*; R Lazzari,* Institut des Nano Sciences de Paris - Sorbonne Université, France	

[1] **Student Award Nominee**

Tuesday Evening, May 21, 2019

Special Interest Talks
Room Town & Country - Session SIT1-TuSIT
Special Interest Session I
Moderators: Christopher Muratore, University of Dayton,
Michael Stüber, Karlsruhe Institute of Technology, Germany

7:00pm	**INVITED: SIT1-TuSIT-1** Advanced Monitoring of Thin Film Growth from Real-time Diagnostics, ***Grégory Abadias***, Institut Pprime - CNRS - ENSMA - Université de Poitiers, France	
7:20pm	Invited talk continues.	

Special Events Wednesday

Special Events Wednesday

7:30 AM	Conference Registration/Atlas Foyer
7:30 AM	Short Course: Fundamentals of HiPIMS Plasmas for Thin Film Deposition/Atlas Foyer
7:30 AM	Short Course: In-Situ and Ex-Situ Ellipsometry Characterizations for Thin Film Deposition/Atlas Foyer
8:00 AM	Technical Sessions/See Program/Mobile App
10:00 AM	Exhibition/Grand Hall
10:00 AM	Session Break - Complimentary Coffee in Exhibit Hall/Grand Hall
12:20 PM	Exhibit Hall - Light Lunch (While Supplies Last)/Grand Hall
1:00 PM	Special Interest Talk: Ivan Petrov/Town & Country
5:45 PM	Awards Convocation/Town & Country
7:30 PM	Awards Buffet Reception/Golden Ballroom

	Coatings for Use at High Temperatures **Room Pacific Salon 2 - Session A1-3-WeM** **Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling III** **Moderators: Justyna Kulczyk-Malecka**, Manchester Metropolitan University, **Lars-Gunnar Johansson**, Chalmers University of Technology, Sweden, **Shigenari Hayashi**, Hokkaido University	**Hard Coatings and Vapor Deposition Technologies** **Room California - Session B4-3-WeM** **Properties and Characterization of Hard Coatings and Surfaces III** **Moderators: Naureen Ghafoor**, Linköping Univ., IFM, Thin Film Physics Div., **Ulrich May**, Robert Bosch GmbH, Diesel Systems, **Fan-Bean Wu**, National United University, Taiwan
8:00am		
8:20am	**A1-3-WeM-2** Corrosion Monitoring Of High-Temperature Protective Coatings Under Molten Salts Environments For CSP Applications, ***Francisco Javier Pérez Trujillo***, *V Encinas Sánchez, T de Miguel Gamo,* Universidad Complutense de Madrid, Spain*; M Lasanta Carrasco,* Universdad Complutense de Madrid, Spain*; G García-Martín,* Universidad Complutense de Madrid, Spain	**B4-3-WeM-2** Physical Properties of Nano-structured Chromium Nitride Hard Coatings obtained by RF Physical Vapor Dynamic Glancing Angle Deposition, *M Jimenez, V Antunes, S Cucatti, A Riul, L Zagonel,* UNICAMP, Brazil*; C Figueroa,* Universidade de Caxias do Sul, Brazil*; D Wisnivesky,* UNICAMP, Brazil*;* ***Fernando Alvarez****,* Instituto de Física, UNICAMP, Brazil
8:40am	**A1-3-WeM-3** Development of a Ti_xSi_y Protective Layer on TiAl48-2Cr-2Nb for Increased Oxidation Resistance, ***Josefina Crespo Villegas****, S Loquai, É Bousser,* École Polytechnique de Montréal, Canada*; M Cavarroc,* SAFRAN Tech, France*; S Knittel,* SAFRAN Aircraft Engines, France*; L Martinu, J Klemberg-Sapieha,* École Polytechnique de Montréal, Canada	**B4-3-WeM-3** Synthesis and Characterization of Sputter Deposited Hard Coatings within the Quasibinary System TiB_2–VB_2, ***Christian Mitterer****, V Terziyska, M Tkadletz, L Hatzenbichler, D Holec,* Montanuniversität Leoben, Austria*; V Moraes,* Institute of Materials Science and Technology, TU Wien, Austria*; A Lümkemann,* PLATIT AG Advanced Coating Systems, Switzerland*; M Morstein,* Hightech Zentrum Aargau AG, Switzerland*; P Polcik,* Plansee Composite Materials GmbH, Germany
9:00am	**A1-3-WeM-4** The Impact of Aluminide and MCrAlY Coatings on the Fatigue Properties of Ni-based Valve Alloys, ***Sebastien Dryepondt****, B Armstrong, G Muralidharan,* Oak Ridge National Laboratory, USA	**B4-3-WeM-4** Deposition-controlled Stabilization of Metastable fcc-(Al,Ti)N in CVD and PVD Coatings, ***Ulrike Ratayski****,* Technische Universität Bergakademie Freiberg, Germany*; M Höhn,* Fraunhofer IKTS, Germany*; B Scheffel,* Fraunhofer FEP, Germany*; F Fietzke,* Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, Germany*; M Motylenko, D Rafaja,* Technische Universität Bergakademie Freiberg, Germany
9:20am	**A1-3-WeM-5** High Temperature Oxidation of γ-TiAl Produced by Additive Manufacturing, ***Radoslaw Swadzba****,* Institute for Ferrous Metallurgy, Poland*; B Mendala, L Swadzba, B Witala, J Tracz,* Silesian University of Technology, Poland*; L Pyclik, K Marugi, S Sabbadini,* Avio Aero A GE Aviation Business, Poland	**B4-3-WeM-5** Oxidation Resistance of AIP Deposited AlCrN and AlTiN Coatings with High Al Compositions, ***Kenji Yamamoto****, H Nii,* Kobe Steel, Ltd., Japan
9:40am		**B4-3-WeM-6** Standing Contact Fatigue Behavior of Nitrided AISI 316L Steels, ***Daybelis Fernández-Valdés****, A Meneses-Amador, G Rodríguez-Castro, I Campos-Silva,* Instituto Politecnico Nacional Grupo Ingeniería de Superficies, México*; A Mouftiez,* ICAM Lille, Matériaux, France*; J Nava-Sánchez,* Tecnologico de Estudios Superiores de Chalco, México
10:00am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:40am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
11:00am	**A1-3-WeM-10** High Temperature Oxidation Protection of Gamma-based TiAl by Sputtered Al-O-F Films, ***Florence Bergeron****, S Loquai, É Bousser,* École Polytechnique de Montréal, Canada*; M Cavarroc,* SAFRAN Tech, France*; S Knittel,* SAFRAN Aircraft Engines, France*; L Martinu, J Klemberg-Sapieha,* École Polytechnique de Montréal, Canada	**B4-3-WeM-10** Effect of Composition on Toughening Mechanism of $V_{1-x}Mo_xN$ Nanocrystalline Thin Film, ***Yi-Qun Feng****, J Huang,* National Tsing Hua University, Taiwan
11:20am	**A1-3-WeM-11** Corrosion Behavior and Durability of Microstructure of Stainless Steel Rebars in Simulated Concrete Pore Solution Containing Chloride with Different Ph, ***Dhruba Babu Subedi****,* Chinese Academy of Sciences, China	**B4-3-WeM-11** Influence of Mo Contents on Elevated Temperature Tribological Characteristics of CrAlMoSiN Nanocomposite Coating, ***Yu-Chia Lin****, H Tao, J Duh,* National Tsing Hua University, Taiwan*; J Lee,* Ming Chi University of Technology, Taiwan
11:40am	**A1-3-WeM-12** High-temperature Sulfidation of Hot-dip Aluminized 9Cr-1Mo Steel, ***Muhammad Ali Abro****,* Mehran University of Engineering and Technology, Pakistan*; D Lee,* Sungkyunkwan University, Republic of Korea	**B4-3-WeM-12** Characterization of Cosputtered W –Si– N Coatings, ***Yu-Heng Liu****,* National Taiwan Ocean University, Taiwan*; L Chang,* Ming Chi University of Technology, Taiwan*; B Liu, Y Chen,* National Taiwan Ocean University, Taiwan
12:00pm		**B4-3-WeM-13** RF Input Power Effect on Microstructure and Mechanical Properties of TaSiN Coatings, ***Zheng-Xin Lin****, Y Liu, S Wang,* National United University, Taiwan*; M Guillon,* Polytech Lyon, France*; F Wu,* National United University, Taiwan

	Fundamentals and Technology of Multifunctional Materials and Devices **Room Golden West - Session C3+C1-WeM** **Thin Films for Energy-related Applications I/Optical Metrology in Design, Optimization, and Production of Multifunctional Materials** **Moderators: Per Eklund**, Linköpings Universitet, **Tushar Shimpi**, Colorado State University, USA	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room San Diego - Session E3-WeM** **Tribology of Coatings for Automotive and Aerospace Applications** **Moderators: John Curry**, Sandia National Laboratories, USA, **Christian Greiner**, Karlsruhe Institute of Technology (KIT), Institute for Applied Materials (IAM), **Oliver Hunold**, Oerlikon Balzers, Oerlikon Surface Solutions AG
8:00am		**INVITED: E3-WeM-1** Self-assembly of Ultra-high Strength Nanoporous Metals for Multifunctional Coatings and Free-standing Films, ***James Pikul,*** University of Pennsylvania, USA*; N Argibay, J Curry,* Sandia National Laboratories, USA*; Z Hsain,* University of Pennsylvania, USA
8:20am	**C3+C1-WeM-2** Avoiding Blistering of Magnetron Sputtered Thin Film CdTe Photovoltaic Devices*, J Walls, F Bittau, R Greenhalgh, A Abbas,* ***Peter Hatton****, R Smith,* Loughborough University, UK	Invited talk continues.
8:40am	**C3+C1-WeM-3** Electrochromic Device Based on WO_3/NiO Complementary Electrodes Prepared by Using Vacuum Cathodic Arc Plasma, ***Po-Wen Chen,*** Institute of Nuclear Energy Research, Taiwan	**E3-WeM-3** Elevated Temperature Sliding Wear of PEO-Chameleon Duplex Coating, ***Andrey A. Voevodin****, A Shirani,* University of North Texas, USA*; A Yerokhin,* The University of Manchester, UK*; A Korenyi-Both,* Tribologix Inc., USA*; D Berman,* University of North Texas, USA*; J Zabinski,* Army Research Laboratory, USA
9:00am	**C3+C1-WeM-4** Influence of Film Thickness on Growth, Structure and Properties of Magnetron Sputtered ITO Films, ***Andrius Subacius,*** Manchester University, UK*; É Bousser,* École Polytechnique de Montréal, Canada*; B Baloukas,* Polytechnique Montreal, Canada*; S Hinder, M Baker,* Surrey University, UK*; D Ngo,* Manchester University, UK*; C Rebholz,* Cyprus University, Cyprus*; A Matthews,* Manchester University, UK	**E3-WeM-4** Formation Mechanisms of Zn, Mo, S and P Containing Reaction Layers on a DLC Coating, *K Bobzin, T Brögelmann, C Kalscheuer,* ***Matthias Thiex****,* Surface Engineering Institute - RWTH Aachen University, Germany
9:20am	**INVITED: C3+C1-WeM-5** Metal/Semiconductor Superlattice Metamaterials: A New Paradigm in Solid-State Energy Conversion, ***Bivas Saha,*** Jawaharlal Nehru Centre for Advanced Scientific Research, India	**E3-WeM-5** ta-C Coatings for Tribological Applications*, J Becker,* Oerlikon Balzers Coating Germany GmbH, Germany*; N Beganovic,* ***Astrid Gies****, J Karner,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; J Vetter,* Oerlikon Balzers Coating Germany GmbH, Germany
9:40am	Invited talk continues.	
10:00am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:40am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
11:00am		**E3-WeM-10** Titanium Nitrides Coatings for Hard Chromium Replacement, ***Marjorie Cavarroc,*** Safran Tech, France*; B Giroire, L Teulé-Gay, D Michau, A Poulon-Quintin,* ICMCB, France
11:20am		**E3-WeM-11** Tribological Coating Solutions and Lubrication Strategies for Gas Turbine Engines, ***Pantcho Stoyanov,*** Pratt & Whitney, USA

	New Horizons in Coatings and Thin Films **Room Pacific Salon 6-7 - Session F4-1-WeM** **Functional Oxide and Oxynitride Coatings I** **Moderators: Anders Eriksson**, Oerlikon Balzers, Oerlikon Surface Solutions AG, **Marcus Hans**, RWTH Aachen University, **Jörg Patscheider**, Evatec AG	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Room Pacific Salon 1 - Session H3-1-WeM** **Variable Temperature Nanomechanics** **Moderators: Jeffrey M. Wheeler**, ETH Zürich, **James Gibson**, RWTH Aachen University
8:00am	**F4-1-WeM-1** Microstructure and Piezoelectric Properties of Hexagonal $Mg_xZn_{1-x}O$ and $Mg_xZn_{1-x}O$/ZnO Films at Lower Mg Compositions, ***Hsin Hung Chen,*** *C Liu, J Huang,* National Cheng Kung University, Taiwan	**H3-1-WeM-1** On the Activation of Slip in the Mg-Al-Ca Laves Systems: A Combined Study Using High Temperature Indentation, Micropillar Compression and TEM, ***James Gibson,*** *C Zehnder, S Sandlöbes, S Korte-Kerzel,* RWTH Aachen University, Germany
8:20am	**F4-1-WeM-2** Structure Optimization of Ta-O-N Films Prepared by Reactive HiPIMS for More Effective Water Splitting, ***Šárka Batková,*** Department of Physics and NTIS - European Centre of Excellence, University of West Bohemia, Czech Republic; *J Čapek, S Haviar, J Houška, R Čerstvý,* University of West Bohemia, Czech Republic; *M Krbal,* University of Pardubice, Czech Republic; *T Duchoň,* Charles University, Czech Republic	**H3-1-WeM-2** Recent Evolution of Instrumentation for Nanoindentation Measurements at Elevated Temperatures, ***Philippe Kempe,*** *V Haiblíková,* Anton Paar, Switzerland
8:40am	**INVITED: F4-1-WeM-3** A Sustainable and Viable Alternative to Low Cost Electronics based on Metal Oxides, ***Elvira Fortunato,*** *R Martins,* New University of Lisbon, Portugal	**H3-1-WeM-3** High Temperature Mechanical Characterization of Binary Cu-X Alloys Produced by Combinatorial Synthesis, ***Viswanadh Gowtham Arigela,*** Max-Planck Institut für Eisenforschung, Germany; *T Oellers, A Ludwig,* Ruhr Universitat Bochum, Germany; *C Kirchlechner, G Dehm,* Max-Planck Institut für Eisenforschung, Germany
9:00am	Invited talk continues.	**H3-1-WeM-4** Temperature and Strain-rate Dependence of the Mechanical Behavior of Freestanding Gold Thin Films, ***Benoit Merle,*** Friedrich Alexander-University Erlangen-Nürnberg (FAU), Germany
9:20am	**F4-1-WeM-5** Photocatalytic Study for Indium Tantalum Oxide Thin Film in Visible Light, ***Chuan Li,*** National Yang Ming University, Taiwan; *J Hsieh,* Ming Chi University of Technology, Taiwan; *P Hsueh,* National Central University, Taiwan	**INVITED: H3-1-WeM-5** In-situ Investigation on Mechanical Properties at the Micrometer Scale in Cryogenic Environment, ***Seok-Woo Lee,*** University of Connecticut, USA
9:40am	**F4-1-WeM-6** Tailoring the Microstructure of ZnO Thin Films for Antimicrobial Applications, *P Pereira-Silva, J Borges, A Costa-Barbosa, D Costa, M Rodrigues,* ***Filipe Vaz,*** *P Sampaio,* University of Minho, Portugal	Invited talk continues.
10:00am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
10:40am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**
11:00am	**F4-1-WeM-10** Exploring Thin Film Zn-Sn-O (ZTO) Composition Spreads Using Combinatorial Sputtering, ***Siang-Yun Li,*** *Y Shen, K Chang, J Ting,* National Cheng Kung University, Taiwan	
11:20am	**F4-1-WeM-11** Can Thin-Film Technology Help to Realize The Einstein Gravity Quantum Computer?, ***Norbert Schwarzer,*** SIO, Germany	

Topical Symposia
Room Pacific Salon 3 - Session TS1-1-WeM
High Entropy and Other Multi-principal-element Materials I
Moderators: Diederik Depla, Ghent University, **Ulf Jansson**, Uppsala University, Angstrom Laboratory

8:00am	**TS1-1-WeM-1** Effect of Nitrogen Content on the Microstructure and Mechanical and Tribological Properties of Magnetron Sputtered FeMnNiCoCr Nitride Coatings, ***Chuhan Sha***, *P Munroe,* University of New South Wales, Australia; *Z Zhou,* City University of Hong Kong, Hong Kong; *Z Xie,* University of Adelaide, Australia	
8:20am	**TS1-1-WeM-2** Reactive Sputtering of High Entropy Alloys with Nitrogen – The Effect of Enthalpy and Entropy, ***Robin Dedoncker***, *D Depla,* Ghent University, Belgium	
8:40am	**TS1-1-WeM-3** Compositional Variations and Resulting Structure-property Correlations in Multicomponent Al-Cr-Nb-Y-Zr-N Thin Films, *K Johansson, A Srinath,* Uppsala University, Sweden; *L Nyholm,* Uppsala University, Angstrom Laboratory, Sweden; ***Erik Lewin***, Uppsala University, Sweden	
9:00am	**TS1-1-WeM-4** Exploring High Entropy Alloy Core Effects in Multi-principal Transition Metal-Al-Si-N, and Multi-principal Boride PVD Thin Films, ***Kumar Yalamanchili***, *F Doris, M Arndt,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *H Rudigier,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Switzerland	
9:20am	**TS1-1-WeM-5** Mechanical Properties and Corrosion Resistance of Magnetron Sputtered Co-Cr-Fe-Mn-Ni-C Thin Films, ***León Zendejas Medina***, *P Berastegui,* Uppsala University, Sweden; *L Nyholm, U Jansson,* Uppsala University, Angstrom Laboratory, Sweden	
9:40am	**TS1-1-WeM-6** Thermal Property Evaluation of V-Nb-Mo-Ta-W and V-Nb-Mo-Ta-W-Cr-B High-entropy Alloy Thin Films, ***Sheng-Bo Hung***, *C Wang,* National Taiwan University of Science and Technology, Taiwan; *J Lee,* Ming Chi University of Technology, Taiwan	
10:00am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
10:20am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
10:40am	**COMPLIMENTARY REFRESHMENTS IN EXHIBIT HALL**	
11:00am	**TS1-1-WeM-10** Structure, Mechanical Properties and Thermal Stability of Magnetron Sputtered HfTaVWZr High-entropy Boride Coatings, ***Alexander Kirnbauer***, *C Koller,* TU Wien, Institute of Materials Science and Technology, Austria; *P Polcik,* Plansee Composite Materials GmbH, Germany; *P Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria	

Special Interest Talks
Room Town & Country - Session SIT2-WeSIT
Special Interest Talk II
Moderators: Christopher Muratore, University of Dayton,
Michael Stüber, Karlsruhe Institute of Technology, Germany

1:00pm **INVITED: SIT2-WeSIT-1** Linking Intrinsic Plasma Characteristics to the Microstructure and Properties of Thin Films, ***Ivan Petrov***, University of Illinois, USA, Linköping University, Sweden, USA; *G Greczynski, L Hultman,* Linköping Univ., IFM, Thin Film Physics Div., Sweden; *J Greene,* University of Illinois, USA, Linköping University, Sweden, National Taiwan Univ. Science & Technology, Taiwan

1:20pm Invited talk continues.

	Coatings for Use at High Temperatures **Room Pacific Salon 2 - Session A3-WeA** **Materials and Coatings for Solar Power Concentration Plants** **Moderators: Vladislav Kolarik**, Fraunhofer Institute for Chemical Technology ICT, **Gustavo García-Martín**, Universidad Complutense de Madrid	**Hard Coatings and Vapor Deposition Technologies** **Room California - Session B4-4-WeA** **Properties and Characterization of Hard Coatings and Surfaces IV** **Moderators: Naureen Ghafoor**, Linköping Univ., IFM, Thin Film Physics Div., **Ulrich May**, Robert Bosch GmbH, Diesel Systems, **Fan-Bean Wu**, National United University, Taiwan
2:00pm		**B4-4-WeA-1** Effect of Ti Interlayer on Stress Relief of ZrN/Ti Bilayer Thin Films on Si Substrate, ***Jia-Hong Huang,*** *T Zheng,* National Tsing Hua University, Taiwan
2:20pm		**B4-4-WeA-2** In-situ Observation of Stress Fields during Crack Tip Shielding in Loaded Soft-hard Micro-Cantilevers using Cross-sectional X-ray Nanodiffraction, ***Michael Meindlhumer,*** Montanuniversität Leoben, Department of Physical Metallurgy and Materials Testing, Austria; *J Todt, J Zálešák,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; *S Klima, N Jäger,* Montanuniversität Leoben, Department of Physical Metallurgy and Materials Testing, Austria; *M Rosenthal, M Burghammer,* ESRF Grenoble, France; *H Hruby,* voestalpine eifeler Vacotec GmbH, Germany; *C Mitterer, R Daniel,* Montanuniversität Leoben, Department of Physical Metallurgy and Materials Testing, Austria; *J Keckes,* Montanuniversität Leoben, Austria
2:40pm	**A3-WeA-3** Ductility and Creep Rupture Behavior of Diffusion Coatings Deposited on Grade 91 Steel for Concentrated Solar Power Applications, ***Ceyhun Oskay,*** *T Meissner, C Dobler, M Galetz,* DECHEMA-Forschungsinstitut, Germany	**B4-4-WeA-3** Experimentally Parameterized Simulation of an Instrumented Dry Milling Arrangement – Parameter Study Identifying Damage-relevant Coating Properties for End Mills, ***Andreas W. Nemetz,*** *W Daves, T Klünsner, W Ecker,* Materials Center Leoben Forschung GmbH, Austria; *C Praetzas,* Institute of Production Management, Technology and Machine Tools (PTW), Germany; *C Czettl, J Schäfer,* CERATIZIT Austria GmbH, Austria
3:00pm	**A3-WeA-4** Long-term Molten Salt Corrosion of Aluminide Coatings for Heat Storage in Concentrated Solar Power Plants, *P Audigié, S Rodríguez,* ***Alina Agüero,*** Instituto Nacional de Técnica Aeroespacial (INTA), Spain	**B4-4-WeA-4** Mechanical Properties and Cutting Performance of AlCrSiN and AlTiCrSiN Hard Coatings, ***Liang-Chan Chao,*** *Y Chang,* National Formosa University, Taiwan
3:20pm	**A3-WeA-5** Burn-in Heat Treatment to Form Aluminide Diffusion Coatings for Industrial Large Scale Application, ***Vladislav Kolarik,*** *M Juez Lorenzo, J Bermejo Sanz, S Weick,* Fraunhofer Institute for Chemical Technology ICT, Germany	**B4-4-WeA-5** Erosion, Corrosion Resistance and Hydrophobicity of Nano-layered and Multi-layered Nitride Coatings, ***Qi Yang,*** *L Zhao, P Patnaik,* National Research Council of Canada, Canada
3:40pm	**A3-WeA-6** High-Temperature Coatings For Protection of Steels in Contact with Molten Salt for CSP Technology, ***Gustavo García-Martín,*** REP-Energy Solutions, Spain; *V Encinas Sánchez,* Universidad Complutense de Madrid, Spain; *M Lasanta Carrasco,* Universdad Complutense de Madrid, Spain; *T de Miguel Gamo, F Pérez Trujillo,* Universidad Complutense de Madrid, Spain	**B4-4-WeA-6** Microstructure and Thermal Stability of Al-rich Ti-Al-Mo-N Protective Coatings, ***Christina Wüstefeld,*** Institute of Materials Science, TU Bergakademie Freiberg, Germany; *M Motylenko,* Technische Universität Bergakademie Freiberg, Germany; *S Berndorf,* Institute of Materials Science, TU Bergakademie Freiberg, Germany; *M Pohler, C Czettl,* CERATIZIT Austria GmbH, Austria; *D Rafaja,* Technische Universität Bergakademie Freiberg, Germany

Wednesday Afternoon, May 22, 2019

	Fundamentals and Technology of Multifunctional Materials and Devices **Room Golden West - Session C2-WeA** **Novel Oxide Films for Active Devices** **Moderators: Vanya Darakchieva**, Linkoping University, Sweden, **Alyssa Mock**, Naval Research Laboratory	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room San Diego - Session E1-4-WeA** **Friction, Wear, Lubrication Effects, and Modeling I** **Moderators: Nazlim Bagcivan**, Schaeffler Technologies GmbH & Co. KG, Germany, **Carsten Gachot**, Vienna University of Technology
2:00pm	**INVITED: C2-WeA-1** The Physics of Low Symmetry Metal Oxides with Special Attention to Phonons, Plasmons and Excitons, ***Alyssa Mock,*** Linköping University, Sweden	
2:20pm	Invited talk continues.	**E1-4-WeA-2** Surface Characteristics of the Chameleon/PEO Coating after Fretting Wear Tests, ***Mengyu Lin,*** *A Nemcova,* University of Manchester, UK*; A Voevodin,* University of North Texas, USA*; T Liskiewicz,* University of Leeds, UK*; A Matthews, A Yerokhin,* University of Manchester, UK
2:40pm	**INVITED: C2-WeA-3** Materials Interfaces for β-Ga_2O_3 Power Devices, ***Rebecca L. Peterson,*** University of Michigan, USA	**E1-4-WeA-3** Characterization of W Alloyed DLC Coatings Deposited by a Hybrid DC / HIPIMS Magnetron Sputtering Process, ***Manuel Evaristo,*** *A Cavaleiro,* SEG-CEMMPRE - University of Coimbra, Portugal
3:00pm	Invited talk continues.	
3:20pm	**INVITED: C2-WeA-5** Phase Selectivity in Heteroepitaxial Ga_2O_3 Thin Films, ***Virginia Wheeler,*** *N Nepal,* U.S. Naval Research Laboratory, USA*; L Nyakiti,* Texas A&M University at Galveston, USA*; D Boris, S Walton, D Meyer, B Downey, C Eddy Jr.,* U.S. Naval Research Laboratory, USA	
3:40pm	Invited talk continues.	**E1-4-WeA-6** Analysis of Tribomechanical Behavior of Low-Temperature Plasma Blued Tool Steels, ***Fernando Santiago,*** ITESM Estado de México, Mexico*; R Meza,* Termoinnova, S.A. de C.V., Mexico*; J Oseguera-Peña,* Tecnológico de Monterrey, México
4:00pm	**INVITED: C2-WeA-7** Exfoliated β-Ga_2O_3 Nano-layer based (Opto)electronic Devices, *J Kim,* ***Sooyeoun Oh,*** Korea University, Republic of Korea	
4:20pm	Invited talk continues.	
4:40pm	**C2-WeA-9** Towards Controlled Exfoliation of β-Ga_2O_3 through Ion Implantation, ***Michael E. Liao,*** *T Bai, Y Wang, M Goorsky,* UCLA, USA	
5:00pm		
5:20pm	**C2-WeA-11** Investigation on Microstructure and Piezoelectric Property of High Orientation Y-doped ZnO Thin Films via RF Magnetron Sputtering, ***Li-Cheng Cheng,*** *C Liu, J Huang,* National Cheng Kung University, Taiwan	

	New Horizons in Coatings and Thin Films **Room Pacific Salon 6-7 - Session F4-2-WeA** **Functional Oxide and Oxynitride Coatings II** **Moderators: Anders Eriksson**, Oerlikon Balzers, Oerlikon Surface Solutions AG, **Marcus Hans**, RWTH Aachen University, **Jörg Patscheider**, Evatec AG	**Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes** **Room Pacific Salon 1 - Session H3-2-WeA** **Degradation under Extreme Conditions** **Moderators: James Gibson**, RWTH Aachen University, **Jeffrey M. Wheeler**, ETH Zürich
2:00pm		**H3-2-WeA-1** Application of Micro-cantilever Bending to Probe the Fracture Behavior of Thin Film Interfaces*, J Kabel,* ***Peter Hosemann****,* University of Californa at Berkeley, USA*; T Koyanagi, Y Katoh,* Oak Ridge National Laboratory, USA
2:20pm		**H3-2-WeA-2** Probing Fatigue Resistance in Multilayer DLC Coatings by Micro-impact: Correlation to Erosion Tests*,* ***Ben Beake****,* Micro Materials Ltd, UK*; T Liskiewicz, S McMaster, A Neville,* University of Leeds, UK
2:40pm		**H3-2-WeA-3** Development of an In-Situ Ion Irradiation and Nanomechanics Scanning Electron Microscope*,* ***Khalid Hattar****, N Heckman, S Briggs, C Barr, A Monterrosa, C Chisholm, L Treadwell, B Boyce,* Sandia National Laboratories, USA
3:00pm	**F4-2-WeA-4** Structural, Optical and Electrochromic Properties of Nanocrystalline WO_3 Thin Films*,* ***Madhuri Venkat Kalapala****,* VFSTR University, India	**H3-2-WeA-4** Proton Radiation and He Implantation Effect on Radiation-resistant Zr/Nb Sputtered Multilayer Coatings*,* ***Tomas Polcar****,* Czech Technical University in Prague, Czech Republic*; M Callisti,* University of Cambridge, UK*; S Sen, H Yavas,* Czech Technical University in Prague, Czech Republic*; A Lider,* Tomsk State University, Czech Republic
3:20pm	**F4-2-WeA-5** Structure, Mechanical Characteristics and Thermal Stability of HS-PVD $(Al,Cr)_2O_3$ Coatings*, K Bobzin, T Brögelmann, C Kalscheuer,* ***Martin Welters****,* Surface Engineering Institute - RWTH Aachen University, Germany	**H3-2-WeA-5** Tracking the Temporal Oxidation Behavior in TiN Thin Films by In-situ Resistivity Measurements*,* ***Bastian Stelzer****, X Chen, J Sälker, J Schneider,* RWTH Aachen University, Germany
3:40pm	**F4-2-WeA-6** Reactive HiPIMS Deposition of γ -Al_2O_3 Thin Films using Transition Metal Doped Al Targets*,* ***Stefan Kagerer****, L Zauner,* TU Wien, Institute of Materials Science, Austria*; S Koloszvári,* Plansee Composite Materials GmbH, Germany*; J Čapek, T Kozák, P Zeman,* University of West Bohemia, Czech Republic*; H Riedl,* TU Wien, Institute of Materials Science, Austria*; P Mayrhofer,* Institute of Materials Science and Technology, TU Wien, Austria	**H3-2-WeA-6** Industrial XRF Coating Thickness Analyzer for Real Time Measurement of Aluminum Deposited on Rolled Steel*,* ***Jelena Hasikova****, A Sokolov, A Pecerskis, A Pone, V Gostilo,* Baltic Scientific Instruments, Latvia
4:00pm	**F4-2-WeA-7** Influence of V Content on Phase Evolution and Thermal Stability of Reactive Pulsed DC Magnetron Sputtered $(Al,V)_2O_3$*,* ***Ludvig Landälv****,* Linköping Univ., IFM, Thin Film Physics Div. and Sandvik Coromant R&D, Sweden*; C Carlström,* Sandvik Coromant R&D, Sweden*; J Lu,* Linköping Univ., IFM, Thin Film Physics Div., Sweden*; M Johansson-Jõesaar,* SECO tools AB, Sweden*; M Ahlgren, E Göthelid,* Sandvik Coromant R&D, Sweden*; B Alling, L Hultman, P Eklund,* Linköping Univ., IFM, Thin Film Physics Div., Sweden	**H3-2-WeA-7** *In situ* Characterization of Dual Phase Diamond-like Carbon (DLC) at Elevated Temperatures*,* ***Ming Chen****,* ETH Zürich, Switzerland*; C Liu, K Li,* City University of Hong Kong, China*; R Spolenak, J Wheeler,* ETH Zürich, Switzerland
4:20pm	**F4-2-WeA-8** Al Vacancies in Wurtzite Al-(Si-)(O-)N: Theory and Experimental Assessment*,* ***Maria Fischer****, M Trant, K Thorwarth, D Scopece, C Pignedoli, D Passerone, H Hug,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland	**H3-2-WeA-8** *In situ* micro-Tensile Testing of TiN Coating: Deformation and Fracture in Relation to Residual Stress*,* ***Erika Judith Herrera Jimenez****,* École Polytechnique de Montréal, Canada*; N Vanderesse,* École de Technologie Supérieure, Canada*; T Schmitt, É Bousser,* École Polytechnique de Montréal, Canada*; P Bocher,* École de Technologie Supérieure, Canada*; L Martinu, J Klemberg-Sapieha,* École Polytechnique de Montréal, Canada
4:40pm	**INVITED: F4-2-WeA-9** Thermal Atomic Layer Etching of Oxide and Nitride Thin Films*,* ***Steven M. George****,* University of Colorado at Boulder, USA	**H3-2-WeA-9** Small Scale Fracture of Mo_2BC Coatings*,* ***Hariprasad Gopalan****, R Soler, S Gleich, C Kirchlechner, C Scheu,* Max-Planck Institut für Eisenforschung, Germany*; J Schneider,* RWTH Aachen University, Germany*; G Dehm, V Arigela,* Max-Planck Institut für Eisenforschung, Germany
5:00pm	Invited talk continues.	**H3-2-WeA-10** The Effect of Selected Laser Beam Micromilling Parameters on the Surface Layer Structure of HVOF Sprayed WC-CoCr Coating*,* ***Aleksander Iwaniak****,* Silesian University of Technology, Poland*; L Norymberczyk,* ANGA Uszczelnienia Mechaniczne Sp. z o.o., Poland
5:20pm	**F4-2-WeA-11** Growth and Characterization ALD Films with a new Continuous Flow Process*,* ***Birol Kuyel****, A Alphonse, K Hong,* Nano-Master, Inc., USA	

Topical Symposia
Room Pacific Salon 3 - Session TS1-2-WeA
High Entropy and Other Multi-principal-element Materials II
Moderators: Diederik Depla, Ghent University, **Ulf Jansson**, Uppsala University, Angstrom Laboratory

2:00pm	**TS1-2-WeA-1** Structure and Mechanical Properties of Refractory Type High-entropy Alloy Thin Films Deposited by Vacuum-arc, ***Martin Kuczyk***, *U Nimsch, O Zimmer, J Kaspar, F Kaulfuss, A Leson, M Zimmermann, C Leyens,* Fraunhofer Institute for Material and Beam Technology (IWS), Germany	
2:20pm	**TS1-2-WeA-2** Templated Stacking of Organic/Inorganic Semiconductors Crystals Upon Coalescence, Assembly and Split Behaviors of High-entropy Ferroelectric Lamellar Crystals, ***Jr-Jeng Ruan***, *C Pan, J Ting, K Chang, Y Su,* National Cheng Kung University, Taiwan	
2:40pm	**TS1-2-WeA-3** Angular-dependent Deposition of High Entropy Alloy Thin Films by DCMS, HiPIMS and Cathodic Arc, ***Ao Xia***, Montanuniversität Leoben, Austria; *A Togni,* University of Modena and Reggio Emilia, Italy; *S Hirn,* Montanuniversität Leoben, Austria; *L Lusvarghib,* University of Modena and Reggio Emilia, Italy; *R Franz,* Montanuniversität Leoben, Austria	
3:00pm	**TS1-2-WeA-4** Combustion Synthesis of High Entropy Alloys Thin Films: AlCrFeNi, AlCrCuFeNi, and AlCoCrFeNi, ***Anni Wang***, *M Hopfeld, T Kups, D Flock, H Romanus, L Kellmann, H Rupapara, P Schaaf,* Technische Universität Ilmenau, Germany	
3:20pm	**TS1-2-WeA-5** Nanostructured Highly Concentrated Solid Solution Alloy Coatings on a Zirconium Based Alloy, *M Tunes, S Donnelly,* Institute for Materials Science, University of Huddersfield, UK; *P Edmondson,* Oak Ridge National Laboratory, USA; ***Vladimir Vishnyakov***, University of Huddersfield, UK	
3:40pm	**TS1-2-WeA-6** High Temperature Electrical Conductivity and Oxidation Resistance of V-Nb-Mo-Ta-W High Entropy Alloy Thin Films, ***Yen-Yu Chen***, Ming Chi University of Technology, Taiwan; *S Hung, C Wang, W Wei,* National Taiwan University of Science and Technology, Taiwan; *J Lee,* Ming Chi University of Technology, Taiwan	
4:00pm	**INVITED: TS1-2-WeA-7** Micro-mechanics of High Entropy Alloys: Size Effects and Rate Sensitivity, *Y Xiao, R Spolenak,* ***Jeffrey M. Wheeler***, ETH Zürich, Switzerland	
4:20pm	Invited talk continues.	
4:40pm	**TS1-2-WeA-9** Is the Entropy of High Entropy Ceramics High?, ***Jochen Michael Schneider***, *S Evertz, D Neuß, M Steinhoff, D Holzapfel,* RWTH Aachen University, Germany; *S Koloszvári,* Plansee Composite Materials GmbH, Germany; *P Polcik,* PLANSEE Composite Materials GmbH, Germany; *H Rueß,* RWTH Aachen University, Germany	
5:00pm	**TS1-2-WeA-10** Next Generation Entropy Stabilized Material, ***Jyh-Ming Ting***, *J Ting, K Chang, Y Su,* National Cheng Kung University, Taiwan	

Awards Convocation and Honorary Lecture
Room Town & Country - Session HL-WeHL
Bunshah Award Honorary Lecture

5:45pm		
6:05pm		
6:25pm	**INVITED: HL-WeHL-3** R.F. Bunshah Award and ICMCTF Lecture: Some Highlights from over Four Decades of Thin-film Science, ***Joe Greene***[1], University of Illinois, USA, Linköping University, Sweden, National Taiwan Univ. Science & Technology, Taiwan	
6:45pm	Invited talk continues.	

[1] **R.F. Bunshah Awardee**

Special Events Thursday

Special Events Thursday

7:30 AM	Conference Registration/Atlas Foyer
7:30 AM	Short Course: Plasmas in Physical Vapor Deposition, Including Arcs and HiPIMS/Atlas Foyer
7:30 AM	Short Course: Understanding and Control of Stresses in PVD Thin Films/Atlas Foyer
8:00 AM	Technical Sessions/See Program/Mobile App
12:20 PM	Elsevier Focused Topic Session: "The Art of Publishing"/Golden West
12:20 PM	ICMCTF 2020 Informational Meeting/California
5:00 PM	Poster Session/Grand Hall
6:00 PM	Poster Reception/Grand Hall

	Coatings for Use at High Temperatures **Room Pacific Salon 2 - Session A2-1-ThM** **Thermal and Environmental Barrier Coatings I** **Moderators: Sabine Faulhaber**, University of California, San Diego, USA, **Kang N. Lee**, NASA Glenn Research Center, USA, **Pantcho Stoyanov**, Pratt & Whitney, USA	**Hard Coatings and Vapor Deposition Technologies** **Room California - Session B6-ThM** **Coating Design and Architectures** **Moderators: Shou-Yi Chang**, National Tsing Hua University, **Paul Heinz Mayrhofer**, Institute of Materials Science and Technology, TU Wien, Austria
8:00am	**INVITED: A2-1-ThM-1** Mechanical Characterization and Modelling Issues for Thermal Barrier Coating Lifetime Assessment, ***Vincent Maurel***, *V Guipont,* Mines-ParisTech, France	**B6-ThM-1** The Mechanical and Tribological Properties of Boron Based Films Grown by HiPIMS Under Different N_2 Contents, *A Keleş,* ***Ihsan Efeoğlu***, *Y Totik,* Ataturk University, Turkey
8:20am	Invited talk continues.	**B6-ThM-2** Peculiar Oscillations in Nano-scale AlN/TiN and Other Nitride-based Superlattices, ***Nikola Koutna***, Institute of Materials Science and Technology, TU Wien, Austria; *P Řehák,* Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Czech Republic; *Z Zhang,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; *M Černý,* Central European Institute of Technology, CEITEC VUT, Brno University of Technology, Czech Republic; *M Bartosik,* Institute of Materials Science and Technology, TU Wien, Austria; *M Friák, M Šob,* Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Czech Republic; *P Mayrhofer,* Institute of Materials Science and Technology, TU Wien, Austria; *D Holec,* Department of Physical Metallurgy and Materials Testing, Montanuniversität Leoben, Austria
8:40am	**A2-1-ThM-3** The Effect of Bond Coat Asperity Removal on the Lifetime of Atmospheric Plasma Sprayed Thermal Barrier Coatings, ***Kenneth Kane***, Oak Ridge National Laboratory, USA; *M Sweet,* Praxair, USA; *M Lance, B Pint,* Oak Ridge National Laboratory, USA	**B6-ThM-3** Impact Fatigue and Mechanical Properties of AlTiCrN and AlTiCrSiN Hard Coatings with Optimal Design of Interlayers, ***Yu-Ju Yang***, *Y Chang, S Weng,* National Formosa University, Taiwan
9:00am	**A2-1-ThM-4** Effect of Superalloy Substrate on the Lifetime of Electron Beam Physical Vapour Deposited Thermal Barrier Coatings, ***Chen Liu***, *Y Chen, P Xiao,* University of Manchester, UK	**B6-ThM-4** Improvement of CrMoN/ SiN_x Multilayered Coatings on Mechanical and High Temperature Tribological Properties, ***Wei-Li Lo***, *L Yeh-Liu, J Lee, J Duh,* National Tsing Hua University, Taiwan
9:20am	**A2-1-ThM-5** Self-Healing Thermal Barrier Coatings Produced by Laser Processing, ***Bowen Wei***, *J Gu, S Joshi, T Huang, N Dahotre, S Aouadi,* University of North Texas, USA	**B6-ThM-5** Tuning the Hardness–toughness Relationship by Combining MoN with TaN, *F Klimashin, N Koutna, L Lobmaier,* TU Wien, Institute of Materials Science and Technology, Austria; *D Holec,* Montanuniversität Leoben, Austria; ***Paul Heinz Mayrhofer***, TU Wien, Institute of Materials Science and Technology, Austria
9:40am	**A2-1-ThM-6** Influence of Heat Treatment on Thermal Cyclic Fatigue Lifetime of TBC System, ***Jianhong He***, *T Sharobem,* Oerlikon Metco, USA	**B6-ThM-6** Microstructure, Mechanical and Tribological Performance of Complex TiAlTaN-[TiAlN/TaN_n] Coatings: Understanding the Effect of Volume Fraction, ***Elbert Contreras***, *J Cortínez,* Universidad de Antioquia, Colombia; *A Hurtado,* Centro de Investigación en Materiales Avanzados CIMAV, Mexico; *M Gómez,* Universidad de Antioquia, Colombia
10:00am		**INVITED: B6-ThM-7** Plastic Deformation in Transition-Metal Nitrides and Carbides via Density-Functional Molecular Dynamics, ***Davide Sangiovanni***, Linköping University, Sweden, Ruhr-Universität Bochum, Germany
10:20am	**A2-1-ThM-8** Effects of Chemical Modification on Bond Coat Oxidation and Internal Stresses in $Yb_2Si_2O_7$ Environmental Barrier Coatings, ***Benjamin Herren***, California Institute of Technology, USA; *J Almer,* Argonne National Laboratory, USA; *K Lee,* NASA Glenn Research Center, USA; *K Faber,* California Institute of Technology, USA	Invited talk continues.
10:40am	**A2-1-ThM-9** Thermal Shock and CMAS Resistant Tunable Self-Healing Thermal Barrier Coatings, ***Jingjing Gu***, *B Wei, T Huang, S Bakkar, D Berman, R Reidy, S Aouadi,* University of North Texas, USA	**B6-ThM-9** Phase Evolution and Mechanical Properties of Isostructural Decomposing $W_{1-x}M_xB_2$ Thin Films, ***Vincent Moraes***, *L Zauner,* TU Wien, Institute of Materials Science, Austria; *H Bolvardi,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *P Polcik,* Plansee Composite Materials GmbH, Germany; *H Riedl, P Mayrhofer,* TU Wien, Institute of Materials Science, Austria
11:00am	**A2-1-ThM-10** Variables Affecting Steam Oxidation Kinetics of Environmental Barrier Coatings, ***Kang N. Lee***, NASA Glenn Research Center, USA	**B6-ThM-10** Van der Waals Layer Promoted Heteroepitaxy in Sputter-deposited Thin Films, ***Koichi Tanaka***, *P Arias, M Liao, Y Wang, H Zaid, A Aleman, M Goorsky, S Kodambaka,* University of California, Los Angeles, USA
11:20am	**A2-1-ThM-11** High Temperature Investigations of Thermochemistry and Phase Stability in the ZrO_2-Y_2O_3-Ta_2O_5 System, ***Maren Lepple***, DECHEMA Forschungsinstitut, Technische Universität Darmstadt, Germany; *S Ushakov, K Lilova,* University of California, Davis, USA; *C Macauley, C Levi,* University of California, Santa Barbara, USA; *A Navrotsky,* University of California, Davis, USA	**B6-ThM-11** Improvement of Tribological Properties for Hard Coatings by Stress Control, ***Tianmin Shao***, State Key Laboratory of Tribology, Tsinghua University, China
11:40am		**B6-ThM-12** Is WB_{2-z} a Proper Base System for Designing Ternary Diboride based Thin Films?, ***Helmut Riedl***, *V Moraes, C Fuger, H Euchner, R Hahn, T Wojcik,* TU Wien, CDL AOS at the Institute of Materials Science, Austria; *M Arndt,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *P Polcik,* Plansee Composite Materials GmbH, Germany; *P Mayrhofer,* TU Wien, Institute of Materials Science, Austria

	Fundamentals and Technology of Multifunctional Materials and Devices **Room Pacific Salon 3 - Session C3+C2+C1-ThM** **Thin Films for Energy-related Applications II/Novel Oxide Films for Active Devices/Optical Metrology in Design, Optimization, and Production of Multifunctional Materials** **Moderators: Per Eklund**, Linköpings Universitet, **Tushar Shimpi**, Colorado State University, USA	**Tribology and Mechanical Behavior of Coatings and Engineered Surfaces** **Room San Diego - Session E1-1-ThM** **Friction, Wear, Lubrication Effects, and Modeling II** **Moderators: Nazlim Bagcivan**, Schaeffler Technologies GmbH & Co. KG, Germany, **Carsten Gachot**, Vienna University of Technology, **Tomas Polcar**, Czech Technical University in Prague, Czech Republic
8:00am		
8:20am		
8:40am	**C3+C2+C1-ThM-3** Nanoflaky Titanium Dioxide Grown on Titanium Foil for Capacitive Deionization Purpose, ***Jung-Ta Huang***, *P Hsieh, J He,* Feng Chia University, Taiwan	**E1-1-ThM-3** Sliding Wear Resistance of Nickel Boride Layers on Inconel 718 Superalloy, *I Campos-Silva,* Instituto Politecnico Nacional Grupo Ingeniería de Superficies, México; ***Alan Daniel Contla-Pacheco***, Instituto Politecnico Nacional, Grupo Ingeniería de Superficies, México; *U Figueroa-Lopez,* Tecnologico de Monterrey-CEM, Mexico; *J Martinez-Trinidad, A Ruiz-Rios, M Ortega-Aviles,* Instituto Politecnico Nacional Grupo Ingeniería de Superficies, México
9:00am	**C3+C2+C1-ThM-4** Mixed-oxide Coated Ni Foam for High Performance Supercapacitor, ***Kuang-Cheng Lin***, National Cheng Kung University, Taiwan	**E1-1-ThM-4** A Study of the Wear Mechanism of PTFE: The Effects of Temperature and Environment on its Mechanical and Tribological Properties, ***Vilayvone Saisnith***, *V Fridrici,* Ecole Centrale de Lyon, LTDS - Université de Lyon, France
9:20am	**INVITED: C3+C2+C1-ThM-5** Wavefront Shaping: A New Tool in Optics, ***Moussa N'Gom***, University of Michigan, USA	**E1-1-ThM-5** Harness Intrinsic Friction in Transition Metal Dichalcogenides, ***Antonio Cammarata***, Czech Technical University in Prague, Czech Republic; *T Polcar,* University of Southampton, UK
9:40am	Invited talk continues.	**E1-1-ThM-6** Static Friction at High Temperature: from Methodology to Severe-Service Valve Application, ***Thomas Schmitt***, *J Schmitt,* Polytechnique Montréal, Canada; *É Bousser,* École Polytechnique de Montréal, Canada; *M Azzi,* Tricomat, Canada; *F Khelfaoui, V Najarian, L Vernhes,* Velan; *J Klemberg-Sapieha,* Polytechnique Montréal, Canada
10:00am	**C3+C2+C1-ThM-7** Optical Optimisation of Semi-transparent a-Si:H Solar Cells for Photobioreactor Application, ***Agathe Brodu***, *C Ducros,* Univ. Grenoble Alpes, CEA, France; *C Dublanche-Tixier,* Univ. Limoges, France; *C Seydoux, G Finazzi,* Univ. Grenoble Alpes, CNRS, CEA, France	**INVITED: E1-1-ThM-7** Coating Development, Characterization and Application-oriented Tests, ***Lars Pleth Nielsen***, *K Almtoft, B Christensen, S Louring,* Danish Technological Institute, Denmark; *H Ronkainen, T Hakala,* VTT Technical Research Centre of Finland, Finland; *D Drees,* FALEX Tribology, Belgium
10:20am	**C3+C2+C1-ThM-8** Properties of Highly Transparent AlN/SiOx Multilayer Systems, ***Chelsea Appleget***, *A Sáenz-Trevizo, A Hodge,* University of Southern California, USA	Invited talk continues.
10:40am	**C3+C2+C1-ThM-9** Tailoring the Optical Properties of Highly Porous Superlattice-type Si-Au Slanted Columnar Heterostructure Thin Films, *U Kilic,* University of Nebraska-Lincoln, USA; *A Mock,* Linköping University, Sweden; *R Feder,* The Fraunhofer Institute for Microstructure of Materials and Systems (IMWS), Germany; *D Sekora, M Hilfiker, R Korlacki,* ***Eva Schubert***, *C Argyropoulos, M Schubert,* University of Nebraska Lincoln, USA	
11:00am	**C3+C2+C1-ThM-10** Microstructures and Optoelectronic Properties of Cu_3N Thin Films and its Diode Rectification Characteristics, ***Yin-Hung Chen***, *S Chen, S Sakalley, S Huang, A Paliwal,* Ming Chi University of Technology, Taiwan; *M Liao,* National Taiwan University, Taiwan; *H Sun,* Shandong University at Weihai, China; *S Biring,* Ming Chi University of Technology, Taiwan	
11:20am	**C3+C2+C1-ThM-11** Effects of the Frequency of Pulsed DC Sputtering Power on Amorphous Carbon Film used for Metallic Bipolar Plates in Proton Exchange Membrane Fuel Cells, ***Xiaobo Li***, *P Yi, L Peng, X Lai,* Shanghai Jiaotong University, China	
11:40am	**C3+C2+C1-ThM-12** On the Mechanisms of Halloysite Nanotubes Incorporation in the Surface Layer of Forsterite Grown by Plasma Electrolytic Oxidation, *B Mingo, Y Guo, A Němcova, A Gholinia, A Matthews,* ***Aleksey Yerokhin***, The University of Manchester, UK	
12:00pm	**C3+C2+C1-ThM-13** Inorganic-Organic Perovskites: Handle with Care, Properties May Depend on It, ***Nikolas Podraza***, *B Subedi, M Junda, K Ghimire,* University of Toledo, USA	

	New Horizons in Coatings and Thin Films **Room Pacific Salon 6-7 - Session F2-1-ThM** **HiPIMS, Pulsed Plasmas and Energetic Deposition I** **Moderators: Jon Tomas Gudmundsson**, University of Iceland, **Tiberiu Minea**, Université Paris-Sud	**Surface Engineering - Applied Research and Industrial Applications** **Room Pacific Salon 1 - Session G1+G3-ThM** **Advances in Industrial PVD, CVD, and PECVD Processes and Equipment/Innovative Surface Engineering for Advanced Cutting and Forming Tool Applications** **Moderators: Ladislav Bardos**, Uppsala University, Sweden, **Emmanuelle Göthelid**, Sandvik Machining Solutions, **Ali Khatibi**, Oerlikon Balzers, Oerlikon Surface Solutions AG, **Christoph Schiffers**, CemeCon AG, Germany
8:00am		**G1+G3-ThM-1** Predicting Coating Uniformity and Cathode Utilization in Magnetron Sputtering Applications using Numerical Simulation, ***Adam Obrusnik**, P Zikan,* Plasma Solve, Brno, Czech Republic
8:20am		**G1+G3-ThM-2** Multinary HiPIMS, *T Leyendecker, W Koelker, S Bolz,* ***Christoph Schiffers**,* CemeCon AG, Germany
8:40am	**INVITED: F2-1-ThM-3** Recent Insights into HiPIMS Physics via Coherent and Incoherent Thomson Scattering, ***Sedina Tsikata**,* CNRS, ICARE, France*; T Minea,* Université Paris-Sud/CNRS, France*; B Vincent,* CNRS, France*; A Revel,* Université Paris-Sud/CNRS, France	**G1+G3-ThM-3** From Small Parts to Particles – Experiences in Bulk Coating, ***Heidrun Klostermann**, F Fietzke, B Kraetzschmar,* Fraunhofer FEP, Germany
9:00am	Invited talk continues.	**G1+G3-ThM-4** A Novel Industrial Coating System for the Deposition of Smooth Hard Coatings Combining HiPIMS V+ and Rotatable Magnetrons, ***Herbert Gabriel**, J Santiago Varela,* PVT Plasma und Vakuum Technik GmbH, Germany*; I Fernandez,* N4E Nano4Energy S.L.N.E, Spain*; N Dams,* PVT Plasma und Vakuum Technik GmbH, Germany*; A Wennberg,* N4E Nano4Energy S.L.N.E, Spain*; J Lu,* PVT Harbin Coating Ltd, China
9:20am	**F2-1-ThM-5** Process Gas Rarefaction and Other Transport Phenomena in High Power Impulse Magnetron Sputtering Discharges Studied by Particle Simulations, ***Tomas Kozák**,* University of West Bohemia, Czech Republic	**INVITED: G1+G3-ThM-5** From DCMS to HiPIMS: A Giant Leap for Cutting Tools?, ***Bastian Gaedike**,* Hartmetall-Werkzeugfabrik Paul Horn GmbH, Germany
9:40am	**F2-1-ThM-6** Insight on the Sputtered Material in HiPIMS by 2D PIC-MCC Modeling, ***Adrien Revel**,* Université Paris-Sud/CNRS, France*; T Minea,* Université Paris-Sud, Université Paris-Saclay, France	Invited talk continues.
10:00am	**F2-1-ThM-7** Spoke Formation in Large Scale Rectangular Magnetrons, ***Arutiun P. Ehiasarian**,* Sheffield Hallam University, UK	**G1+G3-ThM-7** Application of Twin-Roll PECVD for Surface Functionalization on Flexible Substrate, *Y Isomura, Y Ikari,* ***Tadao Okimoto**,* Kobe Steel, Ltd., Japan
10:20am	**F2-1-ThM-8** The Use of Bipolar-HiPIMS for the Design of Ion Energies in Thin Film Growth, ***Ulf Helmersson**, J Keraudy, R Viloan,* Linköping University, Sweden*; N Brenning, M Raadu,* KTH Royal Institute of Technology, Sweden*; D Lundin,* Université Paris-Sud, Université Paris-Saclay, France*; I Petrov,* University of Illinois, USA, Linköping University, Sweden, USA*; J Greene,* University of Illinois, USA, Linköping University, Sweden, National Taiwan Univ. Science & Technology, Taiwan*; J Gudmundsson,* University of Iceland, Iceland	**G1+G3-ThM-8** A New System Platform for Ultrafast Nitriding and Diamond Like Carbon (DLC) Deposition Based on a Hollow Cathode Discharge, ***Frank Papa**, T Casserly, A Tudhope, S Gennaro,* Duralar Technologies, USA
10:40am	**F2-1-ThM-9** Latest Developments in HIPIMS with Positive Pulsing, ***Ivan Fernandez**,* Nano4Energy, Spain*; A Wennberg,* Nano4Energy SL, Spain*; F Papa,* GP Plasma, Spain	**INVITED: G1+G3-ThM-9** Combinatorial Development of Nitride and Oxide Thin Films on an Industrial Scale, ***Rainer Cremer**,* KCS Europe GmbH, Germany
11:00am	**F2-1-ThM-10** HIPIMS- Advantages of a Positive Kick Pulse, ***Jason Hrebik**,* Kurt J. Lesker Company, USA	Invited talk continues.
11:20am	**F2-1-ThM-11** Plasma Parameter Determination in a HiPIMS Discharge Using Laser Thomson Scattering, *P Ryan,* ***James Bradley**, M Bowden,* University of Liverpool, UK	**G1+G3-ThM-11** Protective, Tribological and Decorative PECVD Coatings Deposited with a New Microwave Source: Plasma and Layer Characterization for Appropriate Applications, ***Rolf Schäfer**, T Radny, K Nauenburg,* robeko GmbH & Co.KG, Germany*; S Ulrich,* Karlsruhe Institute of Technology (KIT), IAM, Germany
11:40am		**G1+G3-ThM-12** Complex Coating Technique for Smallest Part of Advanced Powertrain Fuel System, ***Sung Chul Cha**, H Park, J Lee,* Hyundai Motor Group-Hyundai Kefico, Republic of Korea*; K Ko, C Shin,* Dongwoo HST Co. Ltd., Republic of Korea

Topical Symposia
Room Golden West - Session TS2-ThM
Icephobic Surface Engineering
Moderators: Alina Agüero Bruna, Instituto Nacional de Técnica Aeroespacial (INTA), **Jolanta-Ewa Klemberg-Sapieha**, École Polytechnique de Montréal, Canada

8:00am		
8:20am	**TS2-ThM-2** Synthesis And Characterization Of Amphiphobic Hybrid Coatings For Industrial Applications, ***Giulio Boveri***, *M Raimondo, F Veronesi,* Institute of Science and Technology for Ceramics, Italy	
8:40am	**TS2-ThM-3** *In situ* Ice Growth Kinetics on Water-repellent Coatings in Atmospheric Icing Conditions, ***Jacques Lengaigne***, *P Xing, É Bousser,* École Polytechnique de Montréal, Canada; *A Dolatabadi,* Concordia University, Canada; *L Martinu, J Klemberg-Sapieha,* École Polytechnique de Montréal, Canada	
9:00am	**TS2-ThM-4** Icephobic Elastomeric Surfaces?, ***Pablo Francisco Ibáñez***, *F Montes Ruiz-Cabello, M Rodríguez Valverde, M Cabrerizo Vílchez,* Universidad de Granada, Spain	
9:20am	**INVITED: TS2-ThM-5** Design and Fabrication of Superhydrophobic, Ice-phobic Coatings for High Voltage (HV) Power Lines Application, ***Mariarosa Raimondo***, *G Boveri, F Veronesi,* ISTEC CNR - Institute of Science and Technology for Ceramics, Italy	
9:40am	Invited talk continues.	
10:00am	**TS2-ThM-7** Energy Saving Strategy for the Development of Icephobic Coating and Surface, *Y Zheng, J Wang, J Liu, K Choi,* ***Xianghui Hou***, The University of Nottingham, UK	
10:20am	**TS2-ThM-8** Anti-Icing Hard Steel Coating Modified With Polymer Particles, *P García,* ***Julio Mora***, *A Agüero,* Instituto Nacional de Técnica Aeroespacial (INTA), Spain	
10:40am	**INVITED: TS2-ThM-9** Development of Superhydrophobic and Icephobic Coatings by Suspension Plasma Spraying, ***Ali Dolatabadi***, *N Sharifi, R Attarzadeh, C Moreau, M Pugh,* Concordia University, Canada	
11:00am	Invited talk continues.	
11:20am	**TS2-ThM-11** Minimum Required Thickness of a Hydrophobic Topcoat to withstand Cycling in an Icing Wind Tunnel, ***Stephen Brown***, Ecole Polytechnique de Montreal, Canada; *J Lengaigne,* Polytechnique Montréal, Canada; *N Sharifi,* Concordia University, Canada; *L Martinu, J Klemberg-Sapieha,* Ecole Polytechnique de Montreal, Canada	

	Coatings for Use at High Temperatures **Room Pacific Salon 2 - Session A2-2-ThA** **Thermal and Environmental Barrier Coatings II** **Moderators: Sabine Faulhaber**, University of California, San Diego, USA, **Kang N. Lee**, NASA Glenn Research Center, USA, **Pantcho Stoyanov**, Pratt & Whitney, USA	**Hard Coatings and Vapor Deposition Technologies** **Room Golden West - Session B2-1-ThA** **CVD Coatings and Technologies I** **Moderators: Kazunori Koga**, Kyushu University, Japan, **Francis Maury**, CNRS-CIRIMAT
1:20pm	**INVITED: A2-2-ThA-1** Design of Multiphase Environmental Barrier Coatings: Toward Multifunctional Molten Deposit Resistance, ***David Poerschke,*** University of Minnesota, USA	**B2-1-ThA-1** Impact of HfO_2 as a Buffer Layer on the Electrical and Ferroelectric Memory Characteristics of Metal/Ferroelectric/High-K/Semiconductor Gate Stack for Nonvolatile Memory Applications, *R Jha, P Singh,* ***Manish Goswami,*** Indian Institute of Information Technology Allahabad, India*; B Singh,* Park Systems, India
1:40pm	Invited talk continues.	**B2-1-ThA-2** Studies on Properties and Cutting Performance of Al-rich AlTiN Coating with Controlled Orientation via LP-CVD, ***Yasuki Kido****, A Paseuth, S Okuno, S Imamura,* Sumitomo Electric Hardmetal Corp., Japan
2:00pm	**A2-2-ThA-3** Comparison of Oxidation Procedures of MCrAlY Coatings Deposited by PVD Cathodic Arc Evaporation, *X Maeder, J Ast,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; M Polyakov,* EMPA - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; M Döbeli,* ETH Zürich, Switzerland*; A Neels, A Dommann,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland*; B Widrig,* ***Oliver Hunold****, J Ramm,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein	**B2-1-ThA-3** Effects of Al Content and Growth Orientation on Mechanical Properties of AlTiN Coatings Prepared by CVD Method, ***Kosuke Yanagisawa****, T Ishigaki, H Nakamura, H Homma,* Mitsubishi Materials Corporation, Japan
2:20pm	**A2-2-ThA-4** Effect of APS Flash Bond Coatings and Curvature on Furnace Cycle Lifetime of Rods, ***Michael Lance****, J Haynes, B Pint,* Oak Ridge National Laboratory, USA*; E Gildersleeve, S Sampath,* Stony Brook University, USA	**B2-1-ThA-4** Thermal Crack Network Formation in CVD TiCN/α-Al_2O_3 Coatings, ***Nina Schalk****, R Stylianou, M Gassner,* Montanuniversität Leoben, Austria*; D Velic, W Daves, W Ecker,* Materials Center Leoben Forschung GmbH, Austria*; M Tkadletz,* Montanuniversität Leoben, Austria*; C Czettl,* CERATIZIT Austria GmbH, Austria*; C Mitterer,* Montanuniversität Leoben, Austria
2:40pm	**A2-2-ThA-5** Investigation of Thermally Grown Oxide Stress in Plasma-spray Physical Vapor Deposition and Electron-beam Physical Vapor Deposition Thermal Barrier Coatings via Photoluminescence Spectroscopy, ***Linda Rossmann****, M Northam,* University of Central Florida, USA*; V Viswanathan,* Praxair Surface Technologies, USA*; B Harder,* NASA Glenn Research Center, USA*; S Raghavan,* University of Central Florida, USA	
3:00pm	**A2-2-ThA-6** Thermally Conductive and Electrically Insulating Epoxy Nanocomposites with Intercalation of Aluminum Nitride Nanoparticles into Exfoliated Graphite, ***Che Juei Wu****,* National Cheng Kung University, Taiwan	**B2-1-ThA-6** Structural and Piezoelectric Properties of Chemical Vapor Deposited AlN Films on Metallic Substrates, ***Juan Su****, M Pons, F Mercier, D Chen, R Boichot,* Université Grenoble Alpes, CNRS, France
3:20pm	**A2-2-ThA-7** Effect of Feedstock Species on Thermal Durability of Thermal Barrier Coatings, ***Sangwon Myoung****, B Yang, I Kim,* Doosan Heavy Industries and Construction, Republic of Korea*; Y Jung,* Changwon National University, Republic of Korea	**B2-1-ThA-7** Aluminum Nitride Based Coatings for High Temperature Solar Receiver Systems, ***DanYing Chen****,* Université Grenoble Alpes, CNRS, France*; J Colas,* PROMES-CNRS, France*; J Su,* Université Grenoble Alpes, CNRS, France*; L Charpentier, M Balat-Pichelin,* PROMES-CNRS, France*; F Mercier, M Pons,* Université Grenoble Alpes, CNRS, France
3:40pm	**A2-2-ThA-8** Development of Environmental Barrier Coatings for SiC/SiC Ceramic Matrix Composites via CVD, ***Till König****, M Galetz,* DECHEMA-Forschungsinstitut, Germany	**B2-1-ThA-8** Residual Stress and Quantitative Texture of CVD Al_2O_3 Coatings, ***Zhenyu Liu,*** Kennametal Inc., USA*; S Tan,* University of Pittsburgh, USA*; D Banerjee,* Kennametal Inc., USA
4:00pm		**INVITED: B2-1-ThA-9** Gas Source Chemical Vapor Deposition of Wafer-scale Mono- and few-layer MX_2 (M=W or Mo and X=S or Se) and Their Alloys, ***Mikhail Chubarov****, T Choudhury, D Reifsnyder Hickey, S Bachu, N Alem, J Redwing,* The Pennsylvania State University, USA
4:20pm		Invited talk continues.
4:40pm		**B2-1-ThA-11** The Effect of Dopants and Bilayer Period on Microstructure and Mechanical Properties of CVD Ti(B,C)N Hard Coatings, ***Christina Kainz****, N Schalk, M Tkadletz, C Mitterer,* Montanuniversität Leoben, Austria*; C Czettl,* CERATIZIT Austria GmbH, Austria

	Hard Coatings and Vapor Deposition Technologies **Room California - Session B5-1-ThA** **Hard and Multifunctional Nanostructured Coatings I** **Moderators: Tomas Kozak**, University of West Bohemia, **Helmut Riedl**, TU Wien, Institute of Materials Science and Technology	**Fundamentals and Technology of Multifunctional Materials and Devices** **Room Pacific Salon 3 - Session C4-ThA** **Fundamentals of Metallurgy in Thin Films and Coatings** **Moderators: Karsten Woll**, Karlsruhe Institute of Technology (KIT), **Ibrahim Gunduz**, Purdue University, USA
1:20pm		
1:40pm		**C4-ThA-2** Analytical Modelling of Propagation Velocity in Electron Transparent Nanolaminates, ***Michael Abere,*** Sandia National Laboratories, USA; *G Egan,* Lawrence Livermore National Laboratory, USA; *D Adams,* Sandia National Laboratories, USA
2:00pm	**B5-1-ThA-3** Interfaces and Mechanisms: A Molecular Dynamics Approach to Fine Tuning Manipulation of Mechanical Properties, ***Alberto Fraile,*** *H Yavas, E Frutos,* Department of Control Engineering, Faculty of Electrical Engineering, Czech Technical University in Prague, Czech Republic; *T Huminiuc,* Engineering Science, Faculty of Engineering and the Environment, University of Southampton, Southampton, UK; *T Polcar,* Czech Technical University in Prague, Czech Republic	
2:20pm	**B5-1-ThA-4** Preparation of Hard Yet Fracture Resistant W-B-C Coatings Using High Power Impulse Magnetron Sputtering, ***Pavel Soucek,*** *M Polacek, P Klein, L Zabransky, V Bursikova, M Stupavska,* Masaryk University, Brno, Czech Republic; *Z Czigany, K Balazsi,* Hungarian Academy of Sciences, Hungary; *P Vasina,* Masaryk University, Brno, Czech Republic	
2:40pm	**B5-1-ThA-5** Analytical Modelling of Misfit Dislocation Formation in Superlattice Coatings and its Effect on the Fracture Toughness, ***Antonia Wagner,*** TU Wien, Institute of Materials Science and Technology, Austria; *D Holec,* Montanuniversität Leoben, Austria; *M Todt,* TU Wien, Institute of Lightweight Design and Structural Biomechanics, Austria; *P Mayrhofer, M Bartosik,* TU Wien, Institute of Materials Science and Technology, Austria	**C4-ThA-5** Twin-Wire Arc Coatings for Repair of Structural Components, *C Jasien,* ***Nicole Wagner,*** Cal Poly Pomona, USA
3:00pm	**B5-1-ThA-6** The Electrical Response of PVD Deposited Nanocrystallited Carbon Film in Magnetic Field, ***Chao Wang,*** *J Guo, X Dai,* Institute of Nanosurface Science and Engineering, College of Mechatronics and Control Engineering, Shenzhen University, China	**C4-ThA-6** Unstable Propagating Reactions in Sputter-Deposited Nanolaminates, ***David Adams,*** *M Abere,* Sandia National Laboratories, USA
3:20pm	**INVITED: B5-1-ThA-7** Aluminium Nitride Based Piezoelectric MEMS: From Material Aspects to Low Power Devices, ***Ulrich Schmid,*** *M Schneider,* TU Wien - Institute of Sensor and Actuator Systems, Austria	**C4-ThA-7** Synthesis of Reactive Ni-Al Composites Using High Pressure Torsion, *O Renk,* Austrian Academy of Sciences, Austria; *M Tkadletz, N Kostoglou,* Montanuniversität Leoben, Austria; *I Gunduz,* Naval Postgraduate School, USA; *C Doumanidis,* Nazarbayev University, Astana, Kazakhstan; *R Pippan,* Austrian Academy of Sciences, Austria; *C Mitterer,* Montanuniversität Leoben, Austria; ***Claus Rebholz,*** University of Cyprus, Cyprus
3:40pm	Invited talk continues.	
4:00pm	**B5-1-ThA-9** Superamphiphobic Surface Produced by Femtosecond Laser Patterning and Pulsed Plasma Polymerization, ***Cheng-Wei Lin,*** Feng Chia University; Central Taiwan University of Science and Technology, Taiwan; *G Lu, X Chang, P Hsieh,* Feng Chia University, Taiwan; *C Chou,* Department of Surgery, Taichung Veterans General Hospital, National Yang-Ming University, Taiwan; *C Chung,* Central Taiwan University of Science and Technology, Taiwan; *J He,* Feng Chia University, Taiwan	

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room San Diego - Session E1-2-ThA** **Friction, Wear, Lubrication Effects, and Modeling III** **Moderators: Nazlim Bagcivan**, Schaeffler Technologies GmbH & Co. KG, Germany, **Carsten Gachot**, Vienna University of Technology, **Tomas Polcar**, Czech Technical University in Prague, Czech Republic	**New Horizons in Coatings and Thin Films** **Room Pacific Salon 6-7 - Session F2-2-ThA** **HiPIMS, Pulsed Plasmas and Energetic Deposition II** **Moderators: Jon Tomas Gudmundsson**, University of Iceland, **Tiberiu Minea**, Université Paris-Sud
1:20pm		
1:40pm	**E1-2-ThA-2** Exploring the Nanomechanical Properties of Transition Metal Dichalcogenides using Density Functional Theory, ***Benjamin Irving***, *P Nicolini,* Czech Technical University in Prague, Czech Republic; *T Polcar,* University of Southampton, UK	
2:00pm	**INVITED: E1-2-ThA-3** Mechanics, Materials, and Design Problems in Medical Device Technology and Information Storage, ***Frank E. Talke***, University of California, San Diego, USA	**F2-2-ThA-3** HiPIMS Deposition of W Thin Films, ***Alison Engwall***, *S Shin, Y Wang,* Lawrence Livermore National Laboratory, USA
2:20pm	Invited talk continues.	**F2-2-ThA-4** Study and Development of Thermochromic VO_2 Thin Films Deposited by HiPIMS, ***Jean-Louis Victor***, *C Marcel,* CEA Le Ripault, France; *A Rougier,* CNRS, France; *L Sauques,* DGA, France
2:40pm	**E1-2-ThA-5** Frictional Anisotropy of MoS_2 During Sliding: A Molecular Dynamics Study on the Atomistic Understanding of Frictional Mechanisms, ***Victor Claerbout***, *P Nicolini,* Czech Technical University in Prague, Czech Republic	**INVITED: F2-2-ThA-5** A Paradigm Shift in Thin Film Growth by Magnetron Sputtering: from Gas-ion to Metal-ion-controlled Irradiation, ***Grzegorz Greczynski***, Department of Physics, Linköping Univ., Sweden; *I Petrov,* University of Illinois, USA, Linköping University, Sweden, USA; *J Greene,* University of Illinois, USA, Linköping University, Sweden, National Taiwan Univ. Science & Technology, Taiwan; *L Hultman,* Department of Physics, Linköping Univ., Sweden
3:00pm	**E1-2-ThA-6** Effect of the Presence of Small Molecules on the Entangled Electronic and Dynamic Features in Layered MX_2 Transition Metal Dichalcogenides: Systematic Quantum Mechanic Ab Initio Smulations, ***Jamil Missaoui***, *A Cammarata,* Czech Technical University in Prague, Czech Republic	Invited talk continues.
3:20pm	**E1-2-ThA-7** Nanoscale Frictional Properties of Ordered and Disordered MoS_2, *E Serpini, A Rota,* Università di Modena e Reggio Emilia, Italy; *S Valeri,* Istituto CNR-NANO S3, Italy; *E Ukraintsev,* Academy of Science of the Czech Republic, Czech Republic; *B Rezek,* Czech Technical University in Prague, Czech Republic; *T Polcar,* University of Southampton, UK; ***Paolo Nicolini,*** Czech Technical University in Prague, Czech Republic	**F2-2-ThA-7** In Vitro and In Vivo Biocompatibility Evaluation of Zr-Ti-Si and Fe-Zr-Nb Thin Film Metallic Glasses, ***Ai Ju Chen***, *J Wang, Y Yang,* National Taipei University of Technology, Taiwan; *B Lou,* Chang Gung University, Taiwan; *J Lee,* Ming Chi University of Technology, Taiwan
3:40pm	**E1-2-ThA-8** Electrical Tuning of Vibrational Modes in Transition Metal Dichalcogenides, ***Florian Belviso***, Advanced Material Group, Czech Technical University in Prague, Czech Republic	**F2-2-ThA-8** Microstructural and Tribological Properties of Sputtered AlCrSiWN Films Deposited with Segmented Powder Metallurgic Target Materials, *W Tillmann,* ***Alexander Fehr***, *D Stangier,* TU Dortmund University, Germany
4:00pm	**E1-2-ThA-9** On the In-situ Formation of Transition Metal Disulphides in Lubricated WN or WC Coating Contacts, ***Bernhard Kohlhauser***, TU Wien, Institute of Materials Science and Technology, Austria; *M Rodríguez Ripoll,* AC2T research GmbH, Austria; *H Riedl, C Koller, N Koutna,* TU Wien, Institute of Materials Science and Technology, Austria; *G Ramirez, A Erdemir,* Argonne National Laboratory, USA; *C Gachot,* TU Wien, Institute for Engineering Design and Logistics Engineering, Austria; *P Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria	**F2-2-ThA-9** Linking an Atmospheric-pressured Arc Reactor to a Magnetron Sputter Device to Synthesize Novel Nanostructured Thin Films, *W Tillmann,* ***David Kokalj***, *D Stangier,* TU Dortmund University, Germany; *Q Fu, E Kruis,* University of Duisburg-Essen, Germany
4:20pm	**E1-2-ThA-10** Tribological Investigations of Coated Roller Finger Followers using Application Oriented Valve Train Test, ***Ricardo H. Brugnara***, *E Schulz, L Dobrenizki, N Bagcivan, C Geers,* Schaeffler AG, Germany	
4:40pm	**E1-2-ThA-11** Physical Understanding to Nano-friction of C:H/D Thin Films: Coupling Mechanism by Atomic-scale Vibration Damping, *F Echeverrigaray, S de Mello,* Universidade de Caxias do Sul, Brazil; *F Alvarez,* Universidade Estadual de Campinas, Brazil; *A Michels,* ***Carlos Figueroa***, Universidade de Caxias do Sul, Brazil	

Surface Engineering - Applied Research and Industrial Applications
Room Pacific Salon 1 - Session G4+G5+G6-ThA
Pre-/Post-Treatment and Duplex Technology/Hybrid Systems, Processes and Coatings/Application-Driven Collaborations between Industry and Research Institutions
Moderators: Heidrun Klostermann, Fraunhofer FEP, **Kumar Yalamanchili**, Oerlikon Balzers, Oerlikon Surface Solutions AG, **Tobias Brögelmann**, Surface Engineering Institute - RWTH Aachen University, **Hana Barankova**, Uppsala University, Sweden

1:20pm	**INVITED: G4+G5+G6-ThA-1** From Detailed Understanding to In Operando Studies of Coated Cutting Tools: A Successful and Long Term Collaboration between Industry and Universities, ***Jon Anderson,*** Seco Tools AB, Sweden	
1:40pm	Invited talk continues.	
2:00pm	**G4+G5+G6-ThA-3** Electrolytic Plasma Polishing of Titanium Alloys, ***Nicolas Laugel,*** *A Yerokhin, A Matthews,* University of Manchester, UK	
2:20pm	**G4+G5+G6-ThA-4** Characterization of Surface Modification Mechanisms for Boron Nitride Films under Plasma Exposure, *T Higuchi,* Kyoto University, Japan; *M Noma,* Shinko Seiki Co., Ltd, Japan; *M Yamashita,* Hyogo Prefectural Institute of Technology, Japan; *K Urabe,* Kyoto University, Japan; *S Hasegawa,* Osaka University, Japan; ***Koji Eriguchi,*** Kyoto University, Japan	
2:40pm	**G4+G5+G6-ThA-5** Ultra-fast Decoating Method for PVD Coatings, *B Wittel, C Buechel, T Cselle,* Platit AG, Switzerland; ***Bo Torp,*** Platit Scandinavia, Denmark; *A Lümkemann, D Bloesch,* Platit AG, Switzerland	
3:00pm	**G4+G5+G6-ThA-6** Development of an Omni-phobic Spray Coating for the Oil and Gas Industry, ***Carol Ellis-Terrell,*** *R Wei, R McKnight,* Southwest Research Institute, USA; *X Huang, K Lin,* Beijing Sanju Environmental Protection & New Materials Co., Ltd., China	
3:20pm	**INVITED: G4+G5+G6-ThA-7** Hybrid Reactive High Power Impulse Magnetron Sputtering System Combined with Electron Cyclotron Wave Resonance ECWR Plasma used for the Deposition of Semiconducting Thin Films., ***Zdenek Hubicka,*** *M Cada,* Institute of Physics CAS, v. v. i., Czech Republic; *S Kment,* Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic; *V Stranak, R Hippler,* Institute of Physics, Academy of Sciences of the Czech Republic; *J Olejnicek,* Institute of Physics CAS, v. v. i., Czech Republic	
3:40pm	Invited talk continues.	
4:00pm	**INVITED: G4+G5+G6-ThA-9** Pre- and Post-Surface Treatments using Electron Beam Technology for Load-Related Application of Thermochemical and PVD Hard Coatings on Soft Substrate Materials, ***Anja Buchwalder,*** *R Zenker,* TU Bergakademie Freiberg, Germany	
4:20pm	Invited talk continues.	
4:40pm	**G4+G5+G6-ThA-11** Black Oxide and Carbon-Based Coatings for Roller Bearing Applications, ***Esteban Broitman,*** *X Zhou,* SKF Research & Technology Development Center, Netherlands	

Coatings for Use at High Temperatures
Room Grand Hall - Session AP-ThP
Coatings for Use at High Temperatures (Symposium A) Poster Session
5:00pm

AP-ThP-2 High Temperature Performance of CrAlN Coating on Stainless Steel Substrates in Simulated Diesel Exhaust Environment, *S Yang,* Miba Coating Group. Teer Coatings Ltd., UK; *V Vishnyakov,* Institute for Materials Science, University of Huddersfield, UK; *P Navabpour,* Miba Coating Group. Teer Coatings Ltd., UK; *J Allport,* Institute for Materials Science, University of Huddersfield, UK; ***Hai Lin Sun,*** Miba Coating Group. Teer Coatings Ltd., UK

AP-ThP-3 e-Poster Presentation: Improvement of the Robustness of Time to Failure Assessment in Tbc System, *M Theveneau, B Marchand, V Guipont,* Mines ParisTech, PSL Research University, MAT - Centre des Matériaux, France; *F Coudon,* SAFRAN Tech, France; ***Vincent Maurel,*** Mines ParisTech, PSL Research University, MAT - Centre des Matériaux, France

AP-ThP-5 Wear Resistance Performance of AlCrN and TiAlN Coated H13 Tools during Friction Stir Welding of A2124/SiC Composite, ***Akeem Adesina***, *F Al-Badour, Z Gasem,* King Fahd University of Petroleum and Minerals, Saudi Arabia

AP-ThP-6 Diffusion Model for Estimating the Iron Boride Layer Thicknesses, ***Oscar Armando Gómez-Vargas,*** Instituto Tecnológico de Tlalnepantla, México; *M Ortiz-Domínguez,* Universidad Autónoma del Estado de Hidalgo, México; *J Solis-Romero,* Instituto Tecnológico de Tlalnepantla, México; *M Flores-Rentería, I Morgado-Gonzalez, E Cardoso-Legorreta,* Universidad Autónoma del Estado de Hidalgo, México; *M Elias-Espinosa,* Tecnológico de Monterrey, México; *A Cruz Avilés,* Universidad Autónoma del Estado de Hidalgo, México

AP-ThP-7 STEM Investigations of Oxide Scales formed during Pre-oxidation of γ-TiAl, ***Radoslaw Swadzba,*** Institute for Ferrous Metallurgy, Poland

AP-ThP-9 Microstructure of MCrAlY Coatings Deposited Using HVOF after Heat Treatment and Aluminizing, *L Swadzba,* ***Aleksander Iwaniak,*** *R Swadzba, B Witala, B Mendala,* Silesian University of Technology, Poland; *G Wieclaw, P Lubaszka,* Certech Sp. z o.o., Poland

AP-ThP-10 Effect of Vanadium Content on the High-temperature Tribo-mechanical Properties of Cr-Al-V-N Coatings Deposited by DC UBMS, *H Kim,* ***In-Wook Park,*** Korea Institute of Industrial Technology (KITECH), Republic of Korea

AP-ThP-11 Tensile Behavior of Air Plasma Spray MCrAlY Coatings: Role of High Temperature Aging and Process Defects, *C Cadet,* Mines ParisTech, PSL Research University, France; ***Thomas Straub,*** Fraunhofer Institute for Mechanics of Materials IWM, Germany; *D Texier,* Mines Albi, ISAE-SUPAERO, France; *C Eberl,* Fraunhofer Institute for Mechanics of Materials IWM, Germany; *V Maurel,* Mines ParisTech, PSL Research University, France

AP-ThP-13 Influence of Si-Al Coating on Mechanical Properties of EBMed TiAl Alloy, ***Lukasz Pyclik,*** Avio Aero A GE Aviation Business, Poland; *L Swadzba, B Mendala, B Witala, J Tracz, R Swadzba,* Silesian University of Technology, Poland; *K Marugi,* Avio Aero A GE Aviation Business, Poland

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Hard Coatings and Vapor Deposition Technologies
Room Grand Hall - Session BP-ThP
Hard Coatings and Vapor Deposition Technologies (Symposium B) Poster Session
5:00pm

BP-ThP-1 Low Stress AlTiN-Based Coating Systems, *C Charlton,* Kennametal Inc., USA; ***Joern Kohlscheen,*** Kennametal GmbH, Germany; *D Banerjee,* Kennametal Inc., USA

BP-ThP-2 Multi-Target Co-Sputtering Deposition and Mechanical Properties of Ti-Zr-Based High-Entropy Alloy and Nitride Coatings, ***Shou-Yi Chang,*** *Y Hsiao,* National Tsing Hua University, Taiwan; *S Lin,* National Formosa University, Taiwan

BP-ThP-3 $(Ti_{1-x}Y_x)B_{2+\Delta}$ Thin Films - Structural Evolution and Mechanical Properties, ***Martin Truchlý,*** *B Grancic,* Comenius University in Bratislava, Slovakia; *P Švec Jr.,* Slovak Academy of Sciences, Bratislava, Slovakia; *T Roch, L Satrapinskyy, V Izaii,* Comenius University in Bratislava, Slovakia; *M Harsani,* Staton s.r.o., Slovakia; *O Kohulak, P Kus, M Mikula,* Comenius University in Bratislava, Slovakia

BP-ThP-4 Post-annealing of (Ti,Al,Si)N Coatings deposited by High-Speed Physical Vapor Deposition (HS-PVD), *K Bobzin, T Brögelmann, C Kalscheuer, T Liang,* ***Martin Welters,*** Surface Engineering Institute - RWTH Aachen University, Germany

BP-ThP-6 Discrete Thin-film Multilayer Structures of TiB_2 and ZrB_2 Ceramics for Super-hard and Tough Coating, *A Ghimire,* National Tsing Hua University, National Dong Hwa University, Taiwan; ***Ming-Show Wong,*** National Dong Hwa University, Taiwan; *S Chang,* National Tsing Hua University, Taiwan

BP-ThP-7 Effect of Bias Voltage on Mechanical Properties of Zr–Si–N Films Fabricated through HiPIMS/RFMS Cosputtering, ***Yung-I Chen,*** *Y Zheng,* National Taiwan Ocean University, Taiwan; *L Chang,* Ming Chi University of Technology, Taiwan

BP-ThP-11 The Effects of Pulse Frequency on the Growth of Diamond Using Pulse Microwave Plasma CVD, ***Yi Zeng,*** *Y Sakamoto, T Maruko,* Chiba Institute of Technology, Japan

BP-ThP-12 Analysis of Reaction Gas States on Synthesis of Boron Doped Diamond by HF-CVD, ***Takuya Maruko,*** *Y Sakamoto,* Chiba Institute of Technology, Japan

BP-ThP-13 Effects of Boronizing Pretreatment on the Adhesion of B-doped Diamond on Ti Substrates, ***Yuuta Izu,*** Chiba institute of Technology, Japan; *T Sakuma,* Ogura Jewel Industry, Japan; *A Suzuki, T Maruko,* Chiba Institute of Technology Graduate School, Japan; *M Imamiya, Y Sakamoto,* Chiba Institute of Technology, Japan

BP-ThP-14 High Entropy Nitride Thin Film $(Cr_{0.35}Al_{0.25}Nb_{0.12}Si_{0.08}V_{0.20})N_x$ for Tribological Characteristics at High Temperature, ***Yu-Chia Lin,*** *J Duh,* National Tsing Hua University, Taiwan

BP-ThP-15 Search of New $(Al_{0.25}Cr_{0.3}Nb_{0.1}Si_{0.08}Ti_{0.1}Mo_{0.17})N_x$ Coatings for Feasible Application at High Temperature, ***Wei-Li Lo,*** *J Duh,* National Tsing Hua University, Taiwan

BP-ThP-18 e-Poster Presentation: The Role of Vacancies in the W-N System, *F Klimashin,* ***Paul Heinz Mayrhofer,*** TU Wien, Institute of Materials Science and Technology, Austria

BP-ThP-19 Probing Defected Layers of MoN/TaN and TiN/WN Superlattices, ***Nikola Koutna,*** *J Buchinger, R Hahn,* Institute of Materials Science and Technology, TU Wien, Austria; *J Zálešák,* Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; *M Bartosik,* Institute of Materials Science and Technology, TU Wien, Austria; *M Friák, M Šob,* Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Czech Republic; *D Holec,* Montanuniversität Leoben, Austria; *P Mayrhofer,* Institute of Materials Science and Technology, TU Wien, Austria

BP-ThP-20 Investigation of CVD Stability Windows for Tungsten Carbide Phases, ***Katalin Böör,*** *J Gerdin,* Uppsala University, Sweden; *R Qiu,* Chalmers University of Technology, Sweden; *M Boman,* Uppsala University, Sweden; *E Lindahl,* Sandvik Coromant R&D, Sweden

BP-ThP-22 Photocatalytic Activity of Metal Oxide Thin Films Deposited by MS-PVD and Layer-by-Layer for Hydrogen Production by Water Splitting, *P Rivero,* Public University of Navarra, Spain; ***Jose Antonio Garcia,*** Universidad Publica de Navarra, Spain; *R Rodriguez,* Public University of Navarra, Spain; *J Esparza,* AIN, Ingeniería Avanzada de Superficies, Spain; *G Garcia Fuentes,* Public University of Navarra, Spain

BP-ThP-23 Nanocomposite (Ti,Al,Cr,Si)N HPPMS Coatings for High Performance Cutting Tools, *K Bobzin, T Brögelmann, N Kruppe, M Carlet,* ***Matthias Thiex,*** RWTH Aachen University, Germany

BP-ThP-26 Low Temperature Titanium Boron-Carbide Based Thin Film Coatings by Plasma Enhanced Chemical Vapor Deposition on Surface Microstructure Controlled WC-Co, ***Takeyasu Saito,*** *D Kiyokawa, K Fuji, N Okamoto,* Osaka Prefecture University, Japan; *A Kitajima, K Higuchi,* Osaka University, Japan

BP-ThP-27 Performance of the CrAlSiN and Hydrogen free DLC Combined Hard Coatings Deposited on Micro Tools Cutting Printed Circuit Board, *D Wang,* MingDao University, Taiwan; ***Li-Chi Hsu,*** *J Hung,* Aurora Scientific Corp., Canada; *W Chen, W Ho,* MingDao University, Taiwan

BP-ThP-28 Study and Characterization of the Vanadium Carbide Interlayer Deposited by Laser Cladding over Carbon Steel for CVD Diamond Growth, *D Damm, R Pinheiro, J Gomez,* National Institute for Space Research (INPE), Brazil; *A Contin,* Federal University of Goiás (UFG), Brazil; *R Correia,* Federal University of São Paulo (UNIFESP), Brazil; *R Volu,* Institute for Advanced Studies (IEAV), Brazil; ***Vladimir Jesus Trava-Airoldi,*** National Institute for Space Research (INPE), Brazil; *G de Vasconselos,* Institute for Advanced Studies (IEAV), Brazil; *D Barquete,* Santa Cruz State University (UESC), Brazil; *E Corat,* National Institute for Space Research (INPE), Brazil

BP-ThP-30 Optimization for Adhesion Properties of c-BN Films Coated with HiPIMS, ***Ihsan Efeoğlu,*** *Y Totik, A Keleş,* Ataturk University, Turkey

BP-ThP-31 Si-DLC Films Prepared by Magnetron Sputtering under Different Working Pressure, ***Chaoqian Guo,*** *S Lin, Q Shi, C Wei, H Li, W Wang, M Dai,* Guangdong Institute of New Materials, China

BP-ThP-32 Multielement Rutile-structured AlCrNbTaTi-oxide Coatings Synthesised by Reactive Magnetron Sputtering, ***Alexander Kirnbauer***, *C Koller,* TU Wien, Institute of Materials Science and Technology, Austria*; S Koloszvári,* Plansee Composite Materials GmbH, Germany*; P Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Austria

BP-ThP-33 Magnetron Sputtering of Tungsten-containing /TiNxOy Multilayered Solar Selective Coatings, ***Siang-Yun Li***, *Y Shen, K Chang, J Ting,* National Cheng Kung University, Taiwan

BP-ThP-34 Electron-configuration Stabilized (W,Al)B_2 Solid Solutions, *R Hahn,* ***Vincent Moraes***, *P Mayrhofer,* Institute of Materials Science and Technology, TU Wien, Austria*; A Limbeck,* Institute of Chemical Technologies and Analytics, TU Wien, Austria*; P Polcik,* Plansee Composite Materials GmbH, Germany*; H Euchner,* Helmholtz Institute for Electrochemical Energy Storage, Germany

BP-ThP-35 Apparent Fracture Toughness of TiN Coatings with Alternating Stress Fields, ***Antonia Wagner***, *J Buchinger,* TU Wien, Institute of Materials Science and Technology, Austria*; M Todt,* TU Wien, Institute of Lightweight Design and Structural Biomechanics, Austria*; D Holec,* Montanuniversität Leoben, Austria*; P Mayrhofer, M Bartosik,* TU Wien, Institute of Materials Science and Technology, Austria

BP-ThP-36 Synthesis and Structural Characterization of Nanostructured $CN_{0.1}$ Films Deposited by RF Magnetron Sputtering at Different Bias Voltajes, ***Arturo Lousa***, *D Cano, C Villabos, J Esteve,* University of Barcelona, Spain

BP-ThP-37 An X-ray Diffraction Study on CrAlN and CrAlSiN PVD Coatings, ***Jan Latarius***, *D Stangier, C Albers, K Berger, M Elbers, A Sparenberg, G Surmeier, M Paulus, C Sternemann, W Tillmann, M Tolan,* TU Dortmund University, Germany

BP-ThP-41 Influence of Oxygen Addition on Microstructure and Properties of TiAlN, ***Damian Mauritius Holzapfel***, *M Hans,* RWTH Aachen University, Germany*; A Eriksson, M Arndt,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein*; D Primetzhofer,* Uppsala University, Sweden*; J Schneider,* RWTH Aachen University, Germany

BP-ThP-42 An Investigation on Synthesis of Novel Oxide-Based Superhard Cr-Zr-O Coatings, *M Mohammadtaheri, Q Yang, Y Li,* ***Jesus Corona-Gomez***, University of Saskatchewan, Canada

BP-ThP-43 Study of Erosion on Metals and Ceramic Coated Metals Using Magnetron Sputtering Process, *S Hill, D Mihut, A Afshar, Z Grantham, S Sanchez-Lara,* ***Christopher D. Raffield***, *N Cordista, S Sanchez Lara,* Mercer University, USA

Fundamentals and Technology of Multifunctional Materials and Devices
Room Grand Hall - Session CP-ThP
Fundamentals and Technology of Multifunctional Materials and Devices (Symposium C) Poster Session
5:00pm

CP-ThP-1 Comparison of SiC_xN_y Barriers using Different Precursors Deposited on Porous Low-Dielectric-constant SiCOH Dielectric Films, *Y Cheng, Y Lin,* ***Chih-Yen Lee***, National Chi-Nan University, Taiwan

CP-ThP-2 Stretchable Ultrasonic Transducer Arrays for Three-Dimensional Imaging on Complex Surfaces, ***Hongjie Hu***, *X Zhu, C Wang, L Zhang, S Xu,* University of California, San Diego, USA

CP-ThP-6 Fabrication and Characterization of Ni-coated Ag Nanowire Electrodes with Bubble-like Random Meshes, ***Jong-Seol Park***, *R Yoo, T Park, J Park,* Hanyang University, Republic of Korea

CP-ThP-13 Study of Stress-electrical Properties of ITO Film Deposited on Stretchable Substrate, ***Pierre-Olivier Renault***, Université de Poitiers, France*; C Grossias, P Goudeau, P Godard, F Paumier, S Hurand,* University of Poitiers, France*; D Thiaudière,* SOLEIL Synchrotron, France*; P Guerin,* University of Poitiers, France

CP-ThP-18 Dual Box Model based *In situ* Ellipsometry Growth Characterization: Oxygen Plasma Enhanced Atomic Layer Deposition of Metal Oxide Ultra-thin Films, *U Kilic,* University of Nebraska-Lincoln, USA*; A Mock,* Linköping University, Sweden*; D Sekora, N Ianno,* ***Eva Schubert***, *M Schubert,* University of Nebraska Lincoln, USA

CP-ThP-19 Controlled Release of Encapsulated Agents Deposited on Plasma Electrolytic Oxidation (PEO) Coatings for Corrosion Resistance and Biomedical Applications, *Y Guo, B Mingo, A Matthews,* ***Aleksey Yerokhin***, The University of Manchester, UK

CP-ThP-21 Influence of Substrate Temperature on the Growth of Molybdenum Trioxide Thin Films, ***Madhuri Venkat Kalapala***, VFSTR University, India

CP-ThP-22 Evaluation of the Influence of Pre-carburisation on the In-situ Performance of Chromized 304 Stainless Steel Bipolar Plate, ***Atinuke Oladoye***, University of Lagos, Nigeria*; J Carton, J Stokes,* Dublin City University, Ireland*; A Olabi,* University of the West of Scotland, UK

CP-ThP-23 Piezo- and Thermo-resistive Thin Films Integrated into a Polymer Injection Mold to Control Dynamically the Pressure and Temperature of the Injection Process, ***Filipe Vaz***, *A Ferreira, M Barbosa,* University of Minho, Portugal*; J Larangeira,* Moldit, Portugal

CP-ThP-25 Investigation of Sb_2Se_3 Ultra-thin Hole-transporting Material for Perovskite/ Sb_2Se_3 Heterojunction Solar Cells, ***Gwomei Wu***, Chang Gung University, Chang Gung Memorial Hospital, Taiwan

CP-ThP-27 Fabrication of a Thermoelectric Generator Device by Suspension Plasma Spray Technique, ***Fabian Ambriz-Vargas***, *C Moreau,* Concordia University, Canada

CP-ThP-31 Morphology Controlled of Silver/Silver Oxide Nanoparticles-MnO2 Nanocomposites for Supercapacitor Application, *F Sari,* ***Kuang-Cheng Lin***, *J Ruan, J Huang, J Ting,* National Cheng Kung University, Taiwan

Coatings for Biomedical and Healthcare Applications
Room Grand Hall - Session DP-ThP
Coatings for Biomedical and Healthcare Applications (Symposium D) Poster Session
5:00pm

DP-ThP-4 Development of Multilayer HA-Ag and TiN-HA-Ag Coatings Deposited by RF Magnetron Sputtering with Potential Application in the Biomedical Field, ***Julian Lenis***, *G Gaitán,* University of Antioquia, Medellín, Colombia*; P Rico, J Ribelles,* Universitat Politècnica de València, Spain*; F Bolívar,* University of Antioquia, Medellín, Colombia

DP-ThP-5 Electrochemical Activated Iridium Oxide Film as a Bio-interface Electrode for Neurostimulation Applications, *Y Chiu, P Chen,* National Taipei University of Technology, Taiwan*;* ***Chien-Ming Lei***, Chinese Culture University, Taiwan*; P Wu,* National Chiao Tung University, Taiwan

DP-ThP-6 HIPIMS Titanium Dioxide on Laser Roughened PEEK Surface for Biomedical Application, *P Hsieh,* Institute of Plasma, Department of Materials Science and Engineering, Feng Chia University, Taiwan*;* ***Chi-Jen Chung***, Central Taiwan University of Science and Technology, Taiwan*; H Tsou,* Taichung Veterans General Hospital, Taiwan*; H Chen,* China Medical University Hospital, Taiwan*; J He,* Institute of Plasma, Department of Materials Science and Engineering, Feng Chia University, Taiwan

DP-ThP-7 Corrosion Property and Biocompatibility Evaluation of Fe-Zr-Nb Thin Film Metallic Glasses, *B Lou,* Chang Gung University, Taiwan*; T Lin,* ***Jyh-Wei Lee***, Ming Chi University of Technology, Taiwan*; J Wang, Y Yang,* National Taipei University of Technology, Taiwan

DP-ThP-9 Bone-like Nano-hydroxyapatite Coating on Low-modulus Ti-5Nb-5Mo Alloy Using Hydrothermal and Post-heat Treatments, *H Hsu, S Wu, S Hsu,* Central Taiwan University of Science and Technology, Taiwan*;* ***Wen-Fu Ho***, National University of Kaohsiung, Taiwan

DP-ThP-10 Surface Characteristics and Structure of Porous TNM Alloy for Biomedical Applications, *W Ho,* National University of Kaohsiung, Taiwan*; S Wu, S Hsu, W Hsiao,* ***Hsueh-Chuan Hsu***, Central Taiwan University of Science and Technology, Taiwan

DP-ThP-11 In vitro Wear Tests of the Dual-layer Grid Blasting-plasma Polymerized Superhydrophobic Coatings on Substrates Made into Dental Stainless Archwires, ***Cheng-Wei Lin***, Feng Chia University, Central Taiwan University of Science and Technology, Taiwan*; C Chou,* Taichung Veterans General Hospital, National Yang-Ming University, Taiwan*; C Chung,* Central Taiwan University of Science and Technology, Taiwan*; J He,* Feng Chia University, Taiwan

DP-ThP-19 Obtaining of CVD Nanodiamonds and Evaluation of the Cytotoxicity in B16f10 Cells for Treatment of Melanoma, *C Wachesk,* Federal University of São Paulo (UNIFESP), Brasil*; C Hurtado,* Institute of Science and Technology, Federal University of São Paulo (UNIFESP), Brazil*;* ***Rebeca Falcão***, Institute of Science and Technology, Federal University of São Paulo (UNIFESP), Brasil*; D Arruda,* University of Mogi das Cruzes, Brasil*; D Tada,* Institute of Science and Technology, Federal University of São Paulo (UNIFESP), Brasil*; V Airoldi,* National Institute for Space Research (INPE), Brasil

DP-ThP-22 Tantalum Oxynitride PVD Coatings a Potential Candidate for Dental Implants Application, *O Banakh,* University of Applied Sciences (HES-SO), Switzerland*;* ***Pierre-Albert Steinmann***, Positive Coating SA, Switzerland

DP-ThP-25 Influence of Ag-Cu Nanoparticles on the Microstructural and Bactericidal Properties of TiAlN- (Ag,Cu) Coatings Deposited by DC Magnetron Sputtering for Medical Applications, *H Mejía, G Bejarano,* ***Aida Echavarría,*** Universidad de Antioquia, Colombia

DP-ThP-26 Antibacterial Activity of Conductive Thin Films Deposited on Water Filter Paper, *D Mihut, A Afshar, S Hill, L Khang,* ***Nicholas Cordista,*** Mercer University, USA

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces
Room Grand Hall - Session EP-ThP
Tribology and Mechanical Behavior of Coatings and Engineered Surfaces (Symposium E) Poster Session
5:00pm

EP-ThP-2 Deposition of DLC/Si-N Composite Films Synthesized by Sputtering-PBII Hybrid System and Their Thermal Stability, ***Anas Melih,*** *K Yamada, S Watanabe,* Nippon Institute of Technology, Japan

EP-ThP-3 Mechanical and Tribological Performance of TiAlN, TaN and Nanolayered TiAlN/TaN Coatings Deposited by DC Magnetron Sputtering, ***Elbert Contreras,*** *J Cortínez, M Gómez,* Universidad de Antioquia, Colombia; *A Hurtado,* Centro de Investigación en Materiales Avanzados CIMAV, Mexico

EP-ThP-4 Development of Catalytically Active Nano-Composite Coating for Severe Boundary Lubricated Conditions of Hydraulic Fluids, *V DaSilva,* ***Osman Levent Eryilmaz,*** *A Erdemir,* Argonne National Laboratory, USA

EP-ThP-5 Size-Independent High Strength of CuTi/Ti Metallic Glass/Crystalline Nanolayers, *M Abboud,* Middle East Technical University, Turkey; *A Motallebzadeh,* Koç University, Turkey; ***Sezer Özerinç,*** Middle East Technical University, Turkey

EP-ThP-6 Extended Crack-free Tensile Deformation of Ultrathin Metallic Glass Films Due to an Intrinsic Size Effect, ***Oleksandr Glushko,*** Erich Schmid Institute of Materials Science, Austria; *M Mühlbacher,* Montanuniversität Leoben, Austria; *C Gammer, M Cordill,* Erich Schmid Institute of Materials Science, Austria; *C Mitterer,* Montanuniversität Leoben, Austria; *J Eckert,* Erich Schmid Institute of Materials Science, Austria

EP-ThP-11 Effect of Surface Treatments on AISI H13 Steels, ***Marco Antonio Doñu Ruiz,*** Universidad Politecnica del Valle de México, Mexico, México; *M Buenrostro Arvizu,* Universidad Autonoma Metropolitana Azcapotzalco, Mexico; *N Lopez Perrusquia,* Universidad Politecnica del Valle de México, Mexico, México; *V Cortés Suárez,* Universidad Autonoma Metropolitana Azcapotzalco, Mexico; *C Torres San Miguel,* Instituto Politecnico Nacional, Mexico; *G Pérez Mendoza,* Universidad Politecnica del Valle de Mexico

EP-ThP-12 Mechanical Properties and Fretting Corrosion of Zr/ZrN/CNx Hierarchical Multilayers Deposited by HIPIMS on Ti Biomedical Alloy, ***Martin Flores,*** *J Perez, O Jiménez, L Flores,* Universidad de Guadalajara, Mexico

EP-ThP-13 Quantum Tools for Life-Time Prediction of Coatings and Thin Films, ***Norbert Schwarzer,*** SIO, Germany

EP-ThP-16 Structure and Fretting Wear Behavior of CuNiIn/MoS_2-Ti Multilayers Fabricated by Magnetron Sputtering Method, ***Chunbei Wei,*** *Q Li, S Lin, H Hou, M Dai,* Guangdong Institute of New Materials, China

EP-ThP-17 Contact-focusing Electron Flow (CFEF) Induced Near-zero Running-in for Low Friction of Carbon-steel contact Interface, ***Dongfeng Diao,*** Institute of Nanosurface Science and Engineering, Shenzhen University, China

EP-ThP-18 Misinterpreting Size-effects during Coating Nanoindentation, ***Esteban Broitman,*** SKF Research & Technology Development Center, Netherlands

EP-ThP-19 e-Poster Presentation: Think You Have Produced DLC? Think Again!, ***Arman Mohammad Khan,*** *H Wu, Y Chung, Q Wang,* Northwestern University, USA

EP-ThP-20 Mechanical and Tribological Properties of Cr-Al-Si-N-O Coatings Prepared by Arc Ion Plating for Cutting Tools, ***Jun-Ho Kim,*** *W Kim,* Korea Institute of Industrial Technology (KITECH), Republic of Korea

EP-ThP-22 Friction Property of Si-DLC with Scratch Damage Before and After Local Repairing Deposition to the Scratch Scar, *H Takamatsu, K Tanaka,* ***Akihiko Ito,*** *H Kousaka, T Furuki,* Gifu University, Japan

EP-ThP-23 Raman Scattering Characterizes Thermally Annealed HiPIMS Sputtered MoS2 Coatings, ***Henning Moldenhauer,*** *W Tillmann, A Wittig, D Kokalj, D Stangier, A Brümmer, J Debus,* TU Dortmund University, Germany

EP-ThP-24 Friction Reduction in Sliding Between Si-DLC vs. Steel Ball by Ar Plasma Irradiation Using Microwave-excited Atmospheric Pressure Plasma Jet, *T Hibino,* ***Hiroyuki Kousaka,*** *T Furuki,* Gifu University, Japan; *J Kim, H Sakakita,* National Institute of Advanced Industrial Science and Technology (AIST), Japan

EP-ThP-27 Taguchi Method to Study Effects of Plasma Surface Texturing on Friction Reduction of Cast Iron at High Speed Sliding Lubricated Conditions, *W Zha, C Zhao, R Cai,* ***Xueyuan Nie,*** University of Windsor, Canada

EP-ThP-30 Test Rig Development For Static Friction Assessment At High Temperature, *M Azzi,* Lebanese University (UL), Lebanon; *E Bitar-Nehme,* Tricomat, Canada; *J Schmitt, T Schmitt, L Martinu,* ***Jolanta-Ewa Klemberg-Sapieha,*** École Polytechnique de Montréal, Canada

New Horizons in Coatings and Thin Films
Room Grand Hall - Session FP-ThP
New Horizons in Coatings and Thin Films (Symposium F) Poster Session
5:00pm

FP-ThP-3 Influencing the Cubic to Wurtzite Phase Transition in Ti-Al-N by Reactive HiPIMS Deposition, *L Zauner,* TU Wien, CDL AOS at the Institute of Materials Science, Austria; ***Helmut Riedl,*** TU Wien, Institute of Materials Science, Austria; *T Kozák, J Čapek,* University of West Bohemia, Czech Republic; *T Wojcik,* TU Wien, Institute of Materials Science, Austria; *H Bolvardi,* Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *S Koloszvári,* Plansee Composite Materials GmbH, Germany; *P Mayrhofer,* TU Wien, Institute of Materials Science, Austria

FP-ThP-5 e-Poster Presentation: Vacancies to Compensate for Electronic Imbalances in Crystals, ***Maria Fischer,*** *D Scopece, M Trant, C Pignedoli, K Thorwarth, D Passerone, H Hug,* Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland

FP-ThP-6 Role of the Thermalized Ions in the Reduction of the Atomic Shadowing Effect in HiPIMS, ***João Oliveira,*** *F Ferreira,* University of Coimbra, Portugal; *A Anders,* Leibniz Institute of Surface Engineering, Germany; *A Cavaleiro,* University of Coimbra, Portugal

FP-ThP-7 Study of the Self-organizing Structures in Magnetron Plasma by a Pseudo 3D Model, ***Adrien Revel,*** Université Paris-Sud/CNRS, France; *T Minea,* Université Paris-Sud, Université Paris-Saclay, France; *M George, B Vincent,* CNRS, France; *S Tsikata,* CNRS, ICARE, France

FP-ThP-9 Point Ion Beam Sputtering for Novel Applications, ***Victor Bellido-Gonzalez,*** *D Monaghan, R Brown,* Gencoa Ltd, UK; *D Perry,* Quorum Technologies, UK; *J Brindley, A Azzopardi,* Gencoa Ltd, UK

FP-ThP-10 Reducing the Intrinsic Stress of TiN Films in HiPIMS, *F Cemin,* LPGP, Université Paris-Sud, Orsay, France; ***Grégory Abadias,*** Institut Pprime - CNRS - ENSMA - Université de Poitiers, France; *T Minea, D Lundin,* LPGP, Université Paris-Sud, Orsay, France

FP-ThP-11 Study on Tribological Behavior of ZrB_2-Zr Coatings Deposited on Ti6Al4V and CoCrMo Alloys by HiPIMS, ***Luis Flores-Cova,*** *O Jiménez, M Flores, J Pérez-Alvarez,* Universidad de Guadalajara, Mexico

FP-ThP-16 Detecting the Direction of a Magnetic Field with a Nanocrystallited Carbon Film by Using its Anisotropic Magnetoresistance and Hall Effect, ***Chao Wang,*** *T Huang, W Zhang, J Guo, X Dai,* Institute of Nanosurface Science and Engineering, College of Mechatronics and Control Engineering, Shenzhen University, China

FP-ThP-17 Effect of Synchronized Bias on the Oxygen Content in r-HiPIMS Deposited γ-Al_2O_3 Thin Films, ***Stefan Kagerer,*** TU Wien, Institute of Materials Science, Austria; *S Koloszvári,* Plansee Composite Materials GmbH, Germany; *T Kozák, J Čapek, P Zeman,* University of West Bohemia, Czech Republic; *H Riedl,* TU Wien, Institute of Materials Science and Technology, Austria; *P Mayrhofer,* TU Wien, Institute of Materials Science and Technology, Österreich, Austria

Surface Engineering - Applied Research and Industrial Applications
Room Grand Hall - Session GP-ThP
Surface Engineering - Applied Research and Industrial Applications (Symposium G) Poster Session
5:00pm

GP-ThP-1 Effect of Plasma Nitriding and Modulation Structure on the Adhesion and Corrosion Resistance of CrN/Cr_2O_3 Coating, *C Huang, F Yang, Y Tsai,* ***Chi-Lung Chang,*** Ming Chi University of Technology, Taiwan

GP-ThP-2 Study on SiN and SiCN Film Production using PE-ALD Process with High-density Multi-ICP Source at Low Temperature, ***Hohyun Song***, *H Chang,* Korea Advanced Institute of Science and Technology, Republic of Korea

GP-ThP-3 PEO Coatings for Adhesive Bonded Aluminium Structures, ***Dominic Shore***, *A Rogov, A Matthews, A Yerokhin,* The University of Manchester, UK

GP-ThP-5 Hydrogen Barrier Coatings Deposited by Magnetron Sputtering: A Study of Different Oxide Materials and Their Microstructure on the Hydrogen Permeability Properties, ***Sofia Gimeno***, Fersa Bearings, Spain; *J Garcia,* Universidad Publica de Navarra, Spain; *I Quintana, L Mendizabal, C Zubizarreta,* Physic of Surfaces and Materials Unit, IK4 – TEKNIKER, Spain

GP-ThP-6 Process for Obtaining TiO_2/SiO_2 Systems using Magnetron Sputtering RF from Ceramic Targets: Studies on their Anti-Reflective Response, ***Dario Zambrano***, *R Villarroel, R Espinoza,* Universidad de Chile, Chile

GP-ThP-7 Microstructure Evolution of Overlay Welded Duplex Stainless Steel Joints, ***Paola Andressa Luchtenberg***, *R Torres, P Soares, P Campos,* Pontificia Universidade Católica do Paraná, Brazil

GP-ThP-11 Ion Beam Assisted Deposition of DLC for Sheet Metal Forming Tools, ***Lars Pleth Nielsen***, *K Almtoft, C Jeppesen, C Mathiasen, P Pedersen,* Danish Technological Institute, Denmark

GP-ThP-13 Effect of Interaction between Microbial Fluid and Electrode on Performance, ***Yu-Chen Liu***, *Y Yang,* National Taipei University of Technology, Taiwan

GP-ThP-15 Design of Low-Pressure Chemical Vapor Deposition Reactors Using Vertical Cavity Surface Emitting Lasers, ***Seungho Park***, *Y Noh, Y Kim,* Hongik University, Seoul, Republic of Korea; *B Kim, H Kim,* Viatron Technologies, Republic of Korea

GP-ThP-16 Optical, Mechanical and Anti-corrosive Property Investigation of Tantalum Oxynitride Thin Films for Hard Coating Applications, ***Jignesh Hirpara***, *R Chandra,* Indian Institute of Technology Roorkee, India

GP-ThP-17 Synthesis and Properties of Two-dimensional Zirconium Phosphate/Polyimide Nanocomposites as Anticorrosion Coatings, *G Lai,* National Chin-Yi University of Technology, Taiwan; *I Tseng,* Feng Chia University, Taiwan; *T Huang, P Tsai,* ***Mei-Hui Tsai***, National Chin-Yi University of Technology, Taiwan

GP-ThP-18 Improvement of the Corrosion Resistance in the ASTM F75 Alloy by Ball Burnishing, ***Eric Noe Hernandez-Rodrigues***, *D SilviaAlvarez, A Marquez Herrera, A Saldana Rovles, J Moreno Palmerin,* University of Guanajuato, Mexico

GP-ThP-19 Surface Modification of Sputter Deposited γ-WO3 Thin Film for Scaled Electrochromic Behaviour, *R Chandra,* ***Gaurav Malik***, *S Mourya, J Jaiswal,* IIC, IIT Roorkee, India; *J Hirpara,* Indian Institute of Technology Roorkee, India

GP-ThP-21 Nanotexturization and Passivation of Single Crystalline Silicon Surface for Passivated Emitter and Rear Contact Solar Cells, *C Hsu,* Xiamen University of Technology, China; *S Liu,* Da-Yeh University, Taiwan , Taiwan; ***Wan-Yu Wu***, Da-Yeh University, Taiwan; *S Lien,* Xiamen University of Technology, China

GP-ThP-24 Optical Performances of Antireflective Moth-Eye Structures under Thermal and Humid Stress – Application to Outdoor Lighting LEDs., *C Ducros,* ***Agathe Brodu***, *G Lorin, F Emieux, A Pereira,* Univ. Grenoble Alpes, CEA, France

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes
Room Grand Hall - Session HP-ThP
Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes (Symposium H) Poster Session
5:00pm

HP-ThP-1 Cyclic Tensile Deformation of Freestanding, Nanocrystalline NiTi Films using MEMS Stages, ***Paul Rasmussen***, *R Sarkar, J Rajagopalan,* Arizona State University, USA

HP-ThP-3 Ion Irradiation Behavior of a Nanocrystalline BCC High-Entropy Alloy, *Y Xiao, H Ma, A Sologubenko, R Spolenak,* ***Jeffrey M. Wheeler***, ETH Zürich, Switzerland

HP-ThP-4 Evaluation of Properties in Steel with Hard Coating under Hydrogen, ***Noe Lopez Perrusquia***, Universidad Politecnica Del Valle De México, México; *M Doñu Ruiz,* Universidad Politecnica del Valle de México, México; *C Torres San Miguel,* Sección de Estudios de Posgrado e Investigación de la Escuela Superior de Ingeniería Mecánica y Eléctrica Unidad Zacatenco, Mexico; *V Cortés Suárez, J Garcia Sanchez,* Universidad Autonoma Metropolitana Azcapotzalco, Mexico; *L Sánchez Fuentes,* Universidad Politecnica del Valle de México, Mexico

HP-ThP-6 Coatings and Interfaces Characterization: Depth Profiling from the First Nanometer down to the Substrate using RF GD-OES, ***Philippe Hunault***, HORIBA Instruments, USA; *M Chausseau, K Savadkouei,* HORIBA Scientific, USA; *P Chapon, S Gaiaschi,* HORIBA Scientific, France

HP-ThP-7 *In situ* Measurement Setup for DC Magnetron Sputtering Thin Film Deposition, ***Quentin Herault***, *S Grachev, I Gozhyk, H Montigaud,* Saint-Gobain Recherche/CNRS, France; *R Lazzari,* Institut des Nano Sciences de Paris - Sorbonne Université, France

HP-ThP-8 Preparation and Physical Properties of Multiferroic $CaMn_7O_{12}$ Thin Films, ***Yu-Chin Tseng***, National Chiao Tung University, Taiwan; *S Jian,* I-Shou University, Taiwan; *C Lin,* National Tsing Hua University, Taiwan; *J Juang,* National Chiao Tung University, Taiwan

HP-ThP-9 SIO X-Ray: View Inside your Material with Contact Experiments, ***Nick Bierwisch***, *N Schwarzer,* SIO, Germany

HP-ThP-11 Glow Discharge Optical Emission Spectroscopy: Advances toward Quantitative Coating Compositional Depth Profiling, ***Amir Tavakoli***, *F Li,* Air Liquide - Balazs NanoAnalysis Laboratory, USA

Topical Symposia
Room Grand Hall - Session TSP-ThP
Topical Symposia (TS) Poster Session
5:00pm

TSP-ThP-1 Surface Modification of Multiwalled Carbon Nanotubes for Electro-Thermal Heating in Ice Protection, ***Francesco Zangrossi***, *F Xu, N Warrior, X Hou,* University of Nottingham, UK

TSP-ThP-2 Nanostructured a-C:H:SiOx Coatings with Superhydrophobic Properties, ***Damian Batory***, Lodz University of Technology, Poland; *J Lengaigne,* Ecole Polytechnique de Montreal, Canada; *A Jedrzejczak,* Lodz University of Technology, Poland; *S Brown, J Klemberg-Sapieha,* Ecole Polytechnique de Montreal, Canada

TSP-ThP-4 Structural Investigation of the Stability in Temperature of Some High Entropy Alloys, ***Monique Calvo-Dahlborg***, University of Rouen Normandie-CNRS, France, Swansea University, UK; *U Dahlborg, J Cornide,* University of Rouen Normandie-CNRS, France; *S Mehraban,* College of Engineering, Swansea University, UK; *R Wunderlich,* University of Ulm, Germany; *N Lavery,* College of Engineering, Swansea University, UK; *S Brown,* Swansea University, UK

TSP-ThP-6 Cu-nanoparticles /Polyfluoroacrylate Emulsion Nanocomposite Coating for Icephobic Applications, *T Barman, H Chen, J Liu,* ***Xianghui Hou***, The University of Nottingham, UK

TSP-ThP-7 Surface Characteristics and Diffusion Phenomenon of $Ni_2FeCoCrAl_x$ Alloys Treated by Atmospheric Pressure Plasma, ***Chi-Ruei Huang***, National United University, Taiwan; *J Duh,* National Tsing Hua University, Taiwan; *F Wu,* National United University, Taiwan

TSP-ThP-8 Development of Microwave Remote Plasma Source for New Surface Functionalization, *Y Isomura, Y Ikari,* ***Tadao Okimoto***, *Y Tauchi, K Nishiyama,* Kobe Steel, Ltd., Japan; *H Toyoda, H Suzuki,* Nagoya University, Japan

Special Events Friday

Special Events Friday

7:30 AM	Conference Registration/Atlas Foyer
8:00 AM	Technical Sessions/See Program/Mobile App
12:00 PM	Thank You, See You Next Year Party!/Lion Fountain Courtyard

Friday Morning, May 24, 2019

	Hard Coatings and Vapor Deposition Technologies Room Golden West - Session B2-2-FrM CVD Coatings and Technologies II **Moderators: Kazunori Koga**, Kyushu University, Japan, **Francis Maury**, CNRS-CIRIMAT	Hard Coatings and Vapor Deposition Technologies Room California - Session B5-2-FrM Hard and Multifunctional Nanostructured Coatings II **Moderators: Tomas Kozak**, University of West Bohemia, **Helmut Riedl**, TU Wien, Institute of Materials Science and Technology
8:00am		
8:20am		
8:40am		
9:00am		**B5-2-FrM-4** Microstructural and Mechanical Stability of TaCu Composite Coatings*, A Bahrami, C Onofre, A Delgado,* Universidad Nacional Autonoma de México, México*; T Huminiuc, T Polcar,* University of Southampton, UK*;* ***Sandra Rodil,*** Universidad Nacional Autonoma de México, México
9:20am	**B2-2-FrM-5** Scale up of the DLI-MOCVD Process to Treat 16 Nuclear Fuel Cladding Segments in Parallel with a Protective CrC_x Coating*, A Michau, F Addou,* CEA, Université Paris-Saclay, France*; Y Gazal, F Maury,* ***Thomas Duguet,*** CIRIMAT, France*; R Boichot, M Pons,* Université Grenoble Alpes, CNRS, France*; E Monsifrot,* Dephis, France*; F Schuster,* CEA, PTCMP, France	
9:40am	**B2-2-FrM-6** Assessment of Low Temperature CVD Routes to MAX Phases in the Cr-Si-C System*, A Michau,* CEA, Université Paris-Saclay, France*;* ***Francis Maury,*** CIRIMAT, France*; F Schuster,* CEA Cross-Cutting Program on Materials and Processes Skills, France*; T Duguet,* CIRIMAT, France*; E Monsifrot,* Dephis, France	**INVITED: B5-2-FrM-6** Tantalum Alloying - Improvement of Thermal Stability and Mechanical Properties of Ternary and Quaternary Transition Metal Nitrides*,* ***Branislav Grancic,*** Comenius University in Bratislava, Slovakia*; D Sangiovanni,* Linköping University, Sweden, Ruhr-Universität Bochum, Germany*; T Roch, M Truchlý, M Mikula,* Comenius University in Bratislava, Slovakia
10:00am	**B2-2-FrM-7** Towards CVD of Hard Coatings Using Hetero-Metallic Precursors*,* ***Sebastian Öhman,*** *M Ek,* Uppsala University, Angstrom Laboratory, Sweden*; R Brenning,* Sandvik Coromant R&D, Sweden*; M Boman,* Uppsala University, Angstrom Laboratory, Sweden	Invited talk continues.
10:20am	**B2-2-FrM-8** CVD of Tungsten, Tungsten Nitride and Tungsten Carbide Multilayers*, J Hulkko, K Böör,* Uppsala University, Angstrom Laboratory, Sweden*; R Qiu,* Chalmers University of Technology, Sweden*; E Lindahl,* Sandvik Coromant R&D, Sweden*;* ***Mats Boman,*** Uppsala University, Angstrom Laboratory, Sweden	**B5-2-FrM-8** Interface Characteristics Between PVD- AlTiN and Electroplated Hard Chrome by Duplex Process*, D Wang,* MingDao University, Taiwan*;* ***Li-Chi Hsu,*** *J Hung,* Aurora Scientiftic Corp., Canada*; C Chen, H Liu,* Surftech Corp., Taiwan*; W Ho,* MingDao University, Taiwan
10:40am	**B2-2-FrM-9** Deposition of Carbon Nanoparticles Using Multi-Hollow Discharge Plasma CVD for Synthesis of Carbon Nanoparticle Composite Films*,* ***Kazunori Koga,*** *S Hwang,* Kyushu University, Japan*; T Nakatani,* Okayama University of Science, Japan*; J Oh,* Osaka City University, Japan*; K Kamataki, N Itagaki, M Shiratani,* Kyushu University, Japan	**B5-2-FrM-9** Manipulation of Bimodal Matrix in Plasma Sprayed Nanostructured YSZ Coating and Its Effect on the Microstructure*,* ***Pavan Bijalwan,*** Tata Steel Limited, India*; A Islam, K Pandey,* Indian Institute of Technology, India*; A Pathak, M Dutta,* Tata Steel Limited, India*; A Keshri,* Indian Institute of Technology, India
11:00am	**B2-2-FrM-10** Hot Filament CVD Diamond Coating Technology for Cutting Tool Applications*,* ***Michael Woda,*** *W Puetz, M Frank, C Schiffers, W Koelker, O Lemmer, T Leyendecker,* CemeCon AG, Germany	

Friday Morning, May 24, 2019

	Tribology and Mechanical Behavior of Coatings and Engineered Surfaces **Room San Diego - Session E1-3-FrM** **Friction, Wear, Lubrication Effects, and Modeling IV** **Moderators: Nazlim Bagcivan**, Schaeffler Technologies GmbH & Co. KG, Germany, **Carsten Gachot**, Vienna University of Technology, **Tomas Polcar**, Czech Technical University in Prague, Czech Republic	**Surface Engineering - Applied Research and Industrial Applications** **Room Pacific Salon 1 - Session G2-FrM** **Component Coatings for Automotive, Aerospace, Medical, and Manufacturing Applications** **Moderators: Tetsuya Takahashi**, Kobe Steel, Ltd., **Etienne Bousser**, Ecole Polytechnique, Canada, **Satish Dixit**, Plasma Technology Inc., USA
8:00am	**E1-3-FrM-1** Numerical and Experimental Analyses on the Influence of Irregular Columnar Boundaries on Mechanical and Tribological Behavior of a WC/C Coating, ***Cassiano Bernardes**, N Fukumasu, R Souza, I Machado,* University of São Paulo, Brazil	
8:20am	**E1-3-FrM-2** Structure, Mechanical and Tribological Properties of Mo-S-N Solid Lubricant Coatings, ***Tomáš Hudec**,* University of Southampton, UK*; M Mikula, L Satrapinskyy, T Roch, M Truchlý,* Comenius University in Bratislava, Slovakia*; P Švec Jr.,* Slovak Academy of Sciences, Bratislava, Slovakia*; T Huminiuc, T Polcar,* University of Southampton, UK	
8:40am	**INVITED: E1-3-FrM-3** Superlubricity with Carbon Coatings Lubricated by Organic Friction Modifiers, ***Michael Moseler**,* Fraunhofer IWM, Germany	**INVITED: G2-FrM-3** YKK's Sustainable Development: Reduction of Mold Cleaning Load by Diecast Mold Coating and Release Agent, ***Mai Mizubayashi**, T Sakuragi, N Watanabe, M Ishida,* YKK Corporation, Japan*; K Matsuda,* University of Toyama, Japan*; M Nose,* Hokuriku Polytechnic College, Japan
9:00am	Invited talk continues.	Invited talk continues.
9:20am	**E1-3-FrM-5** Multipass and Reciprocating Microwear Study of TiN Based Films, ***Roberto Carlos Vega-Morón**,* Instituto Politecnico Nacional Grupo Ingeniería de Superficies, Mexico, México*; D Melo-Máximo,* Tecnologico de Monterrey-CEM, México*; G Rodríguez-Castro,* Instituto Politecnico Nacional, Grupo Ingenieria de Superficies, Mexico, México*; J Oseguera-Peña,* Tecnologico de Monterrey-CEM, Mexico, México*; A Bahrami,* Institute for Metallic Materials, Leibniz-Institute for Solid State and Materials Research Dresden, Germany*; S Muhl,* Instituto de Investigaciones en Materiales-UNAM, México	**G2-FrM-5** Effect of Plasma Electrolytic Oxidation Process on Surface Characteristics and Tribological Behavior, ***Ran Cai**, C Zhao, X Nie,* University of Windsor, Canada
9:40am	**E1-3-FrM-6** Correlation Between Wear Resistance of Ti/TiN Based Films and Deposition Temperature, ***Fernanda Toledo-Romo**, R Vega-Morón,* Instituto Politecnico Nacional, Grupo Ingenieria de Superficies, México*; G Rodríguez-Castro,* Instituto Politecnico Nacional, Grupo Ingenieria de Superficies, Mexico, México*; D Melo-Máximo, J Oseguera-Peña, L Melo-Máximo,* Tecnologico de Monterrey-CEM, México*; V Araujo-Monsalvo,* Laboratorio de Biomecánica, Instituto Nacional de Rehabilitación "Luis Guillermo Ibarra Ibarra", México	**G2-FrM-6** Effectiveness of Electromagnetic Interference Shielding of Sputtered Nitrogen-Doped Carbon Thin Films, ***Dian-Hao Liu**, Y Lai,* National United University Miaoli, Taiwan
10:00am	**E1-3-FrM-7** Microstructure Evolution and Deposition Parameter Control on Sputtering MoSiN Coating, ***Yu-Cheng Liu**, Z Lin, S Wang, F Wu,* National United University, Taiwan	**G2-FrM-7** Challenges for Surface Solutions for Automotive Applications, ***Jörg Vetter**, J Becker,* Oerlikon Balzers Coating Germany GmbH, Germany*; P Ernst,* Oerlikon Metco AG, Switzerland*; J Crummenauer,* Oerlikon Balzers Coating Germany GmbH, Germany*; A Müller,* Oerlikon Surface Solutions AG, BTS, Balzers, Liechtenstein
10:20am	**E1-3-FrM-8** Influence of Ag Content on the Tribological and Oxidation Behaviour of TISIN(AG) Thin Films Deposited by HIPIMS, ***Diogo Cavaleiro**, F Fernandes, S Carvalho,* University of Minho, Portugal*; A Cavaleiro,* University of Coimbra, Portugal	**G2-FrM-8** Hard Turning with PVD Coated p-cBN, *C Charlton,* Kennametal Inc., USA*; **Joern Kohlscheen**,* Kennametal GmbH, Germany*; D Banerjee,* Kennametal Inc., USA*; C Bareiss,* Kennametal GmbH, Germany
10:40am	**E1-3-FrM-9** Wear Resistance of Titanium Oxynitride Coatings as a Function of the Relative Humidity, *C Rojo-Blanco,* IIM-UNAM, Mexico*; **Stephen Muhl**,* Instituto de Investigaciones en Materiales-UNAM, México	**G2-FrM-9** Arc PVD (Cr,Al,Mo)N and (Cr,Al,Cu)N Coatings for Mobility Applications, *K Bobzin, T Brögelmann, **Christian Kalscheuer**,* RWTH Aachen University, Germany
11:00am	**E1-3-FrM-10** Thermo-mechanical/chemical Contact Behavior of DLC Film under Molecularly Thin Lubricants, ***Shahriar Mufid Rahman**,* Texas Tech University, USA*; J Song,* Molex. USA, USA*; C Yeo,* Texas Tech University, USA	
11:20am	**E1-3-FrM-11** Investigation of the Wear Resistance of TiN/TiAlN, CrN/TiAlN and CrAlN/TiAlN Double Layer Coated Stainless Steel at Elevated Temperatures, ***Akeem Adesina**, A Sorour,* King Fahd University of Petroleum and Minerals, Saudi Arabia	**G2-FrM-11** Ion Beam Stripping Process for Cutting Tools Reconditioning, ***Alexey Remnev**,* ITAC Ltd., Group of ShinMaywa Industries, Japan

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