

Monday Morning, April 26, 2021

<p>Live Session Room Live - Session LI-MoM1 Coatings for Flexible Electronics and Bio Applications Live Session Moderators: Dr. Jean Geringer, Ecole Nationale Supérieure des Mines, France, Dr. Grzegorz (Greg) Greczynski, Linköping University, Sweden, Dr. Christopher Muratore, University of Dayton, USA, Dr. Barbara Putz, Empa, Switzerland</p>		
10:00am	<p>LI-MoM1-1 ICMCTF Chairs' Welcome Address, G. Greczynski, Linköping University, Sweden; C. Muratore, University of Dayton, USA</p>	
10:15am	<p>INVITED: LI-MoM1-2 Plenary Lecture: Organic Bioelectronics – Nature Connected, M. Berggren, Linköping University, Norrköping, Sweden</p>	
10:30am		
10:45am		
11:00am	BREAK	
11:15am	<p>INVITED: LI-MoM1-6 Flexible Printed Sensors for Biomechanical Measurements, T. Ng, University of California San Diego, USA</p>	
11:30am		
11:45am	<p>INVITED: LI-MoM1-8 Flexible Electronics: From Interactive Smart Skins to In vivo Applications, D. Makarov, Helmholtz-Zentrum Dresden-Rossendorf e. V. (HZDR), Institute of Ion Beam Physics and Materials Research, Germany</p>	
12:00pm		
12:15pm	<p>INVITED: LI-MoM1-10 Biomimetic Extracellular Matrix Coating for Titanium Implant Surfaces to Improve Osteointegration, S. Ravindran, P. Gajendrareddy, J. Hassan, C. Huang, University of Illinois at Chicago, USA</p>	
12:30pm		
12:45pm	<p>LI-MoM1-12 Closing Remarks & Thank You!, C. Muratore, University of Dayton, USA; G. Greczynski, Linköping University, Sweden, USA</p>	

Monday Morning, April 26, 2021

<p>Live Session Room Live - Session LI-MoM2 New Horizons in Boron-Containing Coatings Live Session Moderators: Mr. Marcus Hans, RWTH Aachen University, Germany, Dr. Helmut Riedl, TU Wien, Institute of Materials Science and Technology, Austria</p>		
11:00am	<p>LI-MoM2-1 Welcome & Thank You to Sponsors, M. Hans, RWTH Aachen University, Germany; H. Riedl, TU Wien, Institute of Materials Science and Technology, Austria</p>	
11:15am	<p>INVITED: LI-MoM2-2 Insights in the Structure, Defects and Stability of Mo₂BC Thin Films by Advanced Characterization Methods, S. Gleich, R. Soler, B. Breitbach, Max-Planck-Institut für Eisenforschung GmbH, Germany; H. Bolvardi, J. Achenbach, J. Schneider, RWTH Aachen University, Germany; G. Scheu, C. Scheu, Max-Planck-Institut für Eisenforschung GmbH, Germany</p>	
11:30am		
11:45am	<p>INVITED: LI-MoM2-4 Metal Diborides Everywhere: Conformal Coating, Infilling, and Alloying by Low Temperature CVD, J. Abelson, University of Illinois at Urbana-Champaign, USA</p>	
12:00pm		
12:15pm	<p>INVITED: LI-MoM2-6 A Progress Report on Bulk MAB Phases, M. Barsoum, Drexel University, USA; S. Kota, Drexel University, USA</p>	
12:30pm		
12:45pm	<p>LI-MoM2-8 Closing Remarks and Sponsor Thank You!, H. Riedl, TU Wien, Institute of Materials Science and Technology, Austria; M. Hans, RWTH Aachen University, Germany</p>	

Tuesday Morning, April 27, 2021

<p>Live Session Room Live - Session LI-TuM1 Surface Engineering - Applied Research and Industrial Applications Live Session Moderators: Dr. Satish Dixit, Plasma Technology Inc., USA, Dr. Christoph Schiffers, CemeCon AG, Germany</p>	
10:00am	<p>LI-TuM1-1 Award Chair's Welcome Address, Introductions, & Thank You to Sponsors, <i>I. Petrov</i>, University of Illinois at Urbana-Champaign, USA</p>
10:15am	<p>LI-TuM1-2 Student Award Finalist Talk: Enhanced High-temperature Oxidation Resistance of Hard TiB₂-rich Ti_{1-x}Al_xB_y Thin Films, <i>B. Bakht</i>¹, Linköping University, Sweden; <i>I. Petrov, J. Greene</i>, University of Illinois, USA, Linköping University, Sweden, USA; <i>L. Hultman, J. Rosen, G. Greczynski</i>, Linköping University, Sweden</p>
10:30am	<p>LI-TuM1-3 Student Award Finalist Talk: The Magneto-Plasmonic Properties of Ag-Co Composite Nanostructures, <i>H. Luong</i>¹, <i>T. Nguyen, Y. Zhao</i>, University of Georgia, USA</p>
10:45am	<p>LI-TuM1-4 Student Award Finalist Talk: Nanoscale Stress and Microstructure Distributions across Scratch Track Cross-Sections in a Brittle-Ductile CrN-Cr Bilayer Film on Steel Revealed by X-ray Nanodiffraction, <i>M. Meindlhuber</i>², Montanuniversität Leoben, Austria; <i>J. Todt, J. Zalesak</i>, Austrian Academy of Sciences, Austria; <i>M. Rosenthal</i>, ESRF, Grenoble, France; <i>H. Hruby</i>, eifeler-Vacotec GmbH, Germany; <i>C. Mitterer, R. Daniel, J. Keckes</i>, Montanuniversität Leoben, Austria</p>
11:00am	BREAK
11:15am	<p>INVITED: LI-TuM1-6 Silicon in Cutting Tools, <i>A. Layyous</i>, Layyous Consulting, Israel; <i>L. Qiu</i>, Central South University, China</p>
11:30am	
11:45am	<p>INVITED: LI-TuM1-8 Stabilization of FCVAS Based Hybrid System for Deposition of Thick Tetrahedral Amorphous Carbon Films and its Applications, <i>J. Kim, Y. Jang</i>, Korea Institute of Materials Science (KIMS), Korea, Republic of Korea; <i>D. Kim, Y. Kang</i>, Korea Institute of Materials Science (KIMS), Korea; <i>J. Kim</i>, Korea Institute of Materials Science (KIMS), Korea, Republic of Korea</p>
12:00pm	
12:15pm	<p>INVITED: LI-TuM1-10 Low Interfacial Toughness Materials for Effective Large-scale Deicing, <i>K. Golovin</i>, University of British Columbia, Canada</p>
12:30pm	
12:45pm	<p>LI-TuM1-12 Closing Remarks & Sponsor Thank You's!, <i>S. Dixit</i>, Plasma Technology, Inc., USA; <i>C. Schiffers</i>, CemeCon AG, Germany</p>

¹ Student Award Nominee

Tuesday Morning, April 27, 2021

<p>Live Session Room Live - Session LI-TuM2 Tribology and Mechanical Behavior of Coatings and Engineered Surfaces Live Session Moderators: Dr. Michael Chandross, Sandia National Laboratories, USA, Dr. Giovanni Ramirez, Oxford Instruments , USA</p>	
11:00am	<p>LI-TuM2-1 Welcome, Announcements, & Thank You to Sponsors, G. Ramirez, Oxford Instruments , USA</p>
11:15am	<p>INVITED: LI-TuM2-2 PVD Coatings Interaction with the Environment and Influence of Substrate on Coating Performance, B. Podgornik, Institute of Metals and Technologies, Slovenia</p>
11:30am	
11:45am	<p>INVITED: LI-TuM2-4 Insights into Indentation-Induced Cracking via 3D-FIB Tomography and HR-EBSD, B. Li, University of Oxford, UK</p>
12:00pm	
12:15pm	<p>INVITED: LI-TuM2-6 Photon Beam and Plasma Cloud – Programmable Surfaces, A. Buling, J. Zerrer, ELB Eloxalwerk Ludwigsburg GmbH, Germany</p>
12:30pm	
12:45pm	<p>LI-TuM2-8 Closing Remarks & Thank You's, M. Chandross, Sandia National Laboratories, USA</p>

Wednesday Morning, April 28, 2021

<p>Live Session Room Live - Session LI-WeM1 In-Silico Design of Novel Materials by Quantum Mechanics and Classical Methods Live Session Moderators: Dr. David Holec, Montanuniversität Leoben, Austria, Dr. Davide G. Sangiovanni, Linköping University, Sweden</p>		
10:00am	<p>LI-WeM1-1 Program Chair's Welcome and Introduction of our Special Interest Talk, G. Greczynski, Linköping University, Sweden</p>	
10:15am	<p>INVITED: LI-WeM1-2 Special Interest Talk: Materials Discoveries at Extreme Conditions: A Path Towards New Advanced Materials, I. Abrikosov, Linköping Univ., IFM, Theoretical Physics Div., Sweden</p>	
10:30am		
10:45am		
11:00am	BREAK	
11:15am	<p>INVITED: LI-WeM1-6 Are Protective Coatings Predictable?, J. Schneider¹, RWTH Aachen University, Germany</p>	
11:30am		
11:45am	<p>INVITED: LI-WeM1-8 Controlling Phase and Microstructure of Ti-Cr-Al-N System Deposited by Arc Ion Plating, K. Yamamoto, Kobe Steel Ltd., Japan</p>	
12:00pm		
12:15pm	<p>INVITED: LI-WeM1-10 Theoretical Insights into Transition Metal Nitrides for Thermoelectric and Piezoelectric Applications, B. Alling, Linköping Univ., IFM, Theoretical Physics Div., Sweden</p>	
12:30pm		
12:45pm	<p>LI-WeM1-12 Closing Remarks & Thank You's, D. Sangiovanni, Ruhr University Bochum, Germany</p>	

Wednesday Morning, April 28, 2021

Live Session Room Live - Session LI-WeM2 Advanced Characterization Techniques Live Session Moderators: Prof. Dr. Diederik Depla, Ghent University, Belgium, Dr. Prabhakar Mohan, Solar Turbines, USA		
11:00am	LI-WeM2-1 Welcome, Announcements & Sponsor Thank You's, <i>P. Mohan</i> , Solar Turbines, Inc. , USA	
11:15am	INVITED: LI-WeM2-2 Influence of the Microstructural Evolution of YSZ TBCs on their Thermal Insulation Potential, <i>G. Boissonnet, G. Bonnet, F. Pedraza</i> , Université de La Rochelle, France	
11:30am		
11:45am	INVITED: LI-WeM2-4 High-Entropy Ceramic Thin Films; A Case Study of Nitrides, Oxides and Diborides, <i>P. Mayrhofer, A. Kirnbauer, R. Hahn</i> , TU Wien, Institute of Materials Science and Technology, Austria; <i>P. Polcik</i> , Plansee Composite Materials GmbH, Germany	
12:00pm		
12:15pm	INVITED: LI-WeM2-6 Characterization of Defects and their Dynamics using Transmission Scanning Electron Microscopy, <i>D. Gianola</i> , University of California Santa Barbara, USA	
12:30pm		
12:45pm	LI-WeM2-8 Closing Remarks and Thank You's, <i>D. Depla</i> , Ghent University, USA	

Thursday Morning, April 29, 2021

<p>Live Session Room Live - Session LI-ThM1 Hard Coatings and Vapor Deposition Technologies Live Session Moderators: Dr. Tiberiu Minea, Université Paris-Sud, France, Dr. Farwah Nahif, eifeler-Vacotec GmbH, Germany</p>	
10:00am	<p>LI-ThM1-1 General Chair's Welcome, C. Muratore, University of Dayton, USA; F. Nahif, voestalpine eifeler-Vacotec GmbH, Düsseldorf, Germany</p>
10:15am	<p>INVITED: LI-ThM1-2 Exhibition Keynote Lecture: Carbon based Coatings in Industrial Scale for Sustainable Surface Solutions, J. Vetter, Oerlikon Balzers Coating Germany GmbH, Bergisch Gladbach, Germany</p>
10:30am	
10:45am	
11:00am	BREAK
11:15am	<p>INVITED: LI-ThM1-6 Impact of Nitrogen Deficiency on the Phase Transformation of (Ti,Al)N Thin Films at Elevated Temperatures, I. Schramm, Sandvik Coromant R&D, Sweden</p>
11:30am	
11:45am	<p>INVITED: LI-ThM1-8 Air-based Sputtering Deposition of Gradient Oxynitride Coatings, F. Lu, National Chung Hsing University, Taiwan; Y. Liou, Y. Lee, M. Chan, National Chung-Hsing University, Taiwan</p>
12:00pm	
12:15pm	<p>INVITED: LI-ThM1-10 Optimizing Ionization and Deposition Rate in High Power Impulse Magnetron Sputtering, D. Lundin, Linköping University, Sweden</p>
12:30pm	
12:45pm	<p>LI-ThM1-12 Closing Remarks & Thank You's, T. Minea, Université Paris-Saclay, France</p>

Thursday Morning, April 29, 2021

<p>Live Session Room Live - Session LI-ThM2 Thin Films for Energy Applications Live Session Moderators: Dr. Peter Kelly, Manchester Metropolitan University, UK, Dr. Glen West, Manchester Metropolitan University, UK</p>	
11:00am	<p>LI-ThM2-1 Welcome and Thank You to our Sponsors!, P. Kelly, Manchester Metropolitan University, UK</p>
11:15am	<p>INVITED: LI-ThM2-2 Advanced Nanomaterials for Energy-Related Applications, E. Schubert, C. Briley, U. Kilic, M. Hilfiker, University of Nebraska-Lincoln, USA; D. Sekora, Honeywell Inc.; M. Schubert, University of Nebraska-Lincoln, USA</p>
11:30am	
11:45am	<p>INVITED: LI-ThM2-4 Photocatalytic Bismuth Oxide Coatings and their Potential for Water Treatment Applications, M. Ratova, J. Redfern, Manchester Metropolitan University, UK; C. Amorim, Universidade Federal de Minas Gerais, Brazil; P. Kelly, Manchester Metropolitan University, UK</p>
12:00pm	
12:15pm	<p>INVITED: LI-ThM2-6 High Entropy Materials for Energy Applications, J. Ting, National Cheng Kung University, Taiwan</p>
12:30pm	
12:45pm	<p>LI-ThM2-8 Closing Remarks & Thank You's!, G. West, Manchester Metropolitan University, UK</p>

Friday Morning, April 30, 2021

<p>Live Session Room Live - Session LI-FrM Awards Session Live Moderators: Dr. Ivan G. Petrov, University of Illinois at Urbana-Champaign, USA, Dr. Andrey Voevodin, University of North Texas, USA</p>		
10:00am		
10:15am	<p>INVITED: LI-FrM-2 Special Interest Talk: Design, Metallurgy and Manufacturing Technologies of Targets for Hard Coating and Tribological Applications, P. Polcik, Plansee Composite Materials GmbH, Germany</p>	
10:30am		
10:45am		
11:00am	BREAK	
11:15am	<p>INVITED: LI-FrM-6 Bill Sproul Award and Honorary ICMCTF Lecture: Transition Metal Nitride Layers: New Phases and New Properties, D. Gall¹, Rensselaer Polytechnic Institute, USA</p>	
11:30am		
11:45am	BREAK	
12:00pm	<p>INVITED: LI-FrM-9 R.F. Bunshah Award and ICMCTF Honorary Lecture: From a Sparkling Brass Chain and Twitching Frog Legs: The Astonishing Path to Plasma-Based Advanced Coatings, A. Anders², Leibniz Institute of Surface Engineering (IOM), Felix Bloch Institute, Leipzig University, Germany</p>	
12:15pm		
12:30pm		
12:45pm	<p>LI-FrM-12 Closing Remarks and Thank You's, A. Voevodin, University of North Texas, USA</p>	

¹ 2021 Bill Sproul Awardee

² R.F. Bunshah Awardee

Coatings for Use at High Temperatures

Room On Demand - Session A1

Coatings to Resist High-temperature Oxidation, Corrosion, and Fouling

1:00pm

A1-1

PVD Cr Coatings to Mitigate Corrosion of SiC-SiC_r Composite for LWR Applications, *K. Quillin, H. Yeom, T. Dabney, J. Lacy, T. Kim*, University of Wisconsin - Madison, USA; *S. Chemerisov*, Argonne National Laboratory, USA; *A. Couet, K. Sridharan*, University of Wisconsin - Madison, USA

A1-2

High Temperature Molten Salt Corrosion Behavior of Nickel and Nickel-Molybdenum Coatings for Molten Salt Reactor (MSR), *K. Sandhi, J. Szpunar*, University of Saskatchewan, Canada

A1-3

Laser Cladding NiTi on the Magnesium Alloy Substrate With the Intermediated Aluminum Layer, *C. Zhang, Y. Yang, X. Cui, G. Jin, W. Zheng*, Harbin Engineering University, China

A1-4

Early Detection and in-situ Monitoring of the Oxidation of an MCrAlY Coating by Thermoreflectometry, *M. Ecohard, B. Javaudin, R. Gilblas, D. Texier, T. Sentenac*, ICA, France

A1-5

Intrinsic and Extrinsic Size Effects on the High Temperature Oxidation of APS and HVOF MCrAlY Coatings, *D. Texier, M. Ecohard*, ICA, France; *T. Gheno*, ONERA, France; *M. Salem, P. Lours*, ICA, France

A1-6

Effects of Temperature and the KCl + K₂SO₄ Load on the Behavior of Several Aluminide Coatings on Ferritic Steels Tested under a Biomass Combustion Atmosphere, *A. Agüero, M. Gutiérrez*, Instituto Nacional de Técnica Aeroespacial (INTA), Spain

INVITED:

A1-7

INVITED TALK: PGM based Diffusion Coatings for Ni-based Superalloys by a Paste Method, *H. Murakami*, National Institute for Materials Science (NIMS), Japan; *D. Tue, A. Ishira, L. Hongliu*, National Institute for Materials Science (NIMS), Japan

A1-9

Effect of Nickel Percentage on the Morphology, Wear and Corrosion Resistance of Zn-Ni Alloy Coating, *A. Farooq, S. Ahmad*, University of the Punjab, Pakistan; *K. Deen*, University of British Columbia, Canada

Coatings for Use at High Temperatures

Room On Demand - Session A2

Thermal and Environmental Barrier Coatings

1:00pm

A2-1

Improvement of TBC Coating Resistance to Simultaneous Attacks by Sulfur and Vanadium Compounds, *J. He*, Oerlikon Metco, USA; *T. Sharobem, G. Dwivedi*, Oerlikon Metco, USA

A2-2

High-Temperature Corrosion of Sintered Er₂Si₂O₇ With CMAS for Environmental Barrier Coatings, *S. Kim*, Kyushu University, Japan; *N. Nagashima, Y. Matsushita*, National Institute for Materials Science, Japan; *B. Jang*, Kyushu University, Japan

A2-3

Experimental and Modelling Analysis of the Driving Force for TBC Damage During Thermal Cycling With Consideration of Temperature Gradients, *L. Mahfouz, V. Maurel, V. Guipont, B. Marchand*, Mines ParisTech, PSL Research University, France; *F. Coudon*, Safran Tech, Safran SA, France

A2-4

Effect of Varying APS Flash Bond Coating Thickness on Furnace Cycle Lifetime, *M. Lance, K. Kane, J. Haynes, B. Pint*, Oak Ridge National Laboratory, USA; *E. Gildersleeve, S. Sampath*, Stony Brook University, USA

A2-5

Electrodeposited Thin La₂O₃ Based Chromium Barrier Coating for Interconnectors in Solid Oxide Electrolysis, *V. Kolarik, M. Juez Lorenzo, E. Walschburger*, Fraunhofer Institute for Chemical Technology ICT, Germany

A2-6

Effects of Mo Interlayer on the Oxidation Behaviour and Degradation Mechanism of Amorphous SiAlN Coating at 1000 °C in Steam Environment, *Z. Gao*, The University of Manchester, UK; *J. Malecka, P. Kelly*, Manchester Metropolitan University, UK; *P. Xiao*, The University of Manchester, UK

A2-7

Laser Processing of Freeze Casted Yttria Stabilized Zirconia / Gadolinia Thermal Barrier Coatings to Mitigate CMAS Attack, *S. Bakkar, E. Cairns, M. Vu, M. Young, D. Berman*, University of North Texas, USA; *T. Hassain*, Ceriumlabs, USA; *J. Moldenhauer, E. Steinmiller, W. Flanagan*, University of Dallas, USA; *S. Aouadi*, University of North Texas, USA

A2-8

Corrosion Resistance and Fatigue Behavior of Bare and Coated Ni-based Superalloys, *S. Dryepondt, R. Pillai, J. Kurley*, Oak Ridge National Laboratory, USA

Coatings for Use at High Temperatures

Room On Demand - Session A3

Materials and Coatings for Solar Power Concentration

Plants

1:00pm

A3-1

Biodegradable Polyurethane Antifouling Coating, *M. Rahman*, King Fahd University of Petroleum and Minerals, Saudi Arabia

A3-2

Aluminide Coating for Inconel 625 Prepared by Additive Manufacturing: Investigation of the Surface Reactivity of the Substrate, *N. Ramenatte, L. Portebois, S. Mathieu, L. Aranda, M. Vilasi*, University of Lorraine, France

A3-3

High-Temperature Protective Coatings against Molten Nitrate Salts for CSP Technology, *G. García Martín*, REP-Energy Solutions, Spain; *V. Encinas Sánchez, M. Lasanta Carrasco, T. De Miguel Gamo, F. Pérez Trujillo*, Universidad Complutense de Madrid, Spain

Coatings for Use at High Temperatures

Room On Demand - Session AP

Coatings for Use at High Temperatures (Symposium A)

Poster Session

1:00pm

AP-3

Microstructural Growth and Oxidation Performance of Ti_xSi_y on γ-TiAl, *J. Crespo Villegas, S. Brown, E. Bousser*, Polytechnique Montreal, Canada; *M. Cavarroc*, Safran Tech, France; *S. Knittel*, Safran Aircraft Engines, France; *L. Martinu, J. Klemberg-Sapieha*, Polytechnique Montreal, Canada

AP-4

Lowering Costs by Improving Efficiencies in Biomass Fueled Boilers: New Materials and Coatings to Reduce Corrosion (BELENUS), *A. Illana, V. Encinas-Sánchez, M. de Miguel, M. Lasanta, G. García-Martín, F. Pérez Trujillo*, Universidad Complutense de Madrid, Spain

Hard Coatings and Vapor Deposition Technologies

Room On Demand - Session B1

PVD Coatings and Technologies

1:00pm

B1-1

On Electron Heating and Ion Recycling in the High Power Impulse Magnetron Sputtering Discharge, *J. Gudmundsson*, University of Iceland; *D. Lundin*, Linköping University, Sweden; *M. Raadu*, KTH Royal Institute of Technology, Sweden; *T. Petty, T. Minea*, LPGP, Université Paris-Sud, France; *N. Brenning*, KTH Royal Institute of Technology, Sweden

B1-2

Tailoring the Chemical Composition and Microstructure of Cr_xN Deposited by HiPIMS through Duty-cycle Modifications, *M. Cedeño-Vente, G. Mondragón-Rodríguez, N. Camacho, A. Gómez-Ovalle, J. González-Carmona, J. Alvarado-Orozco, D. Espinosa-Arbeláez*, Centro de Ingeniería y Desarrollo Industrial (CIDESI), Mexico

B1-3

New Approaches for AlCrN-Based Coatings for High Speed Applications, **M. Schenkel**, voestalpine Eifeler Vacotec GmbH, Düsseldorf, Germany; *S. Spor*, voestalpine Eifeler Vacotec GmbH, Düsseldorf, Germany, Austria; *N. Gerhards, U. Zimmermann, F. Nahif*, voestalpine Eifeler Vacotec GmbH, Düsseldorf, Germany

B1-4

Investigation of the Influence of the Thickness of Nanolayers in Wear-resistant Layers of Ti-TiN-(Ti,Cr,Al)N Coating on Destruction in the Cutting and Wear of Carbide Cutting Tools, **A. Vereschaka**, *S. Grigoriev*, MSTU Stankin, Russian Federation; *N. Shtnikov*, National Research Nuclear University MEPhI, Russian Federation; *J. Bublikov, Ikti Ran*, Russian Federation

INVITED:
B1-5

INVITED TALK: Industrial Scale ta-C Coating Using Laser Arc Technology, **W. Fukarek**, *B. Gebhardt*, VTD Vakuumtechnik Dresden GmbH, Germany; *V. Weinhacht, F. Kaufuss*, Fraunhofer IWS, Germany

B1-7

Key Importance of the Controlled Reactive HiPIMS for Low-temperature Preparation of Tunable Oxynitrides and Thermo-chromic Oxides, **J. Vlček**, *J. Houška*, University of West Bohemia, Czech Republic

B1-8

Monitoring Tantalum Nitride Thin Films Structure by Reactive HiPIMS Magnetron Sputtering: From Microstructure to Properties, **A. Poulon-Quintin**, *A. Achille*, ICMCB-CNRS, France; *D. Michau*, Univ. Bordeaux, ICMCB, France; *M. Cavarroc*, Safran Tech, France

INVITED:
B1-9

INVITED TALK: Multilayer nano-composite Oxidation-resistant Coatings for Accident-tolerant Nuclear Fuel Cladding using Reactive HiPIMS with Positive Kick and Precision Ion Energy Control, **B. Jurczyk**, *R. Stubbers, I. Shchelkanov, T. Houlahan*, Starfire Industries LLC, USA

B1-12

Multifunctional Coatings with Antifouling Properties, **J. Castro**, *I. Carvalho, M. Henriques, S. Carvalho*, University of Minho, Portugal

B1-13

How to Deposit a Porous Thin Film by Magnetron Sputtering ?, **D. Depla**, *R. De Doncker*, Ghent University, Belgium

B1-14

Evolution of the Microstructure of Sputter Deposited TaAlON Thin Films with Increasing Oxygen Partial Pressure, **N. Schalk**, *C. Saringer*, Montanuniversität Leoben, Austria; *A. Fian*, Joanneum Research Forschungsgesellschaft mbH, Austria; *V. Terziyska, M. Tkadletz*, Montanuniversität Leoben, Austria

B1-15

Towards Knowledge-based Design of Multi-element Target Materials, **M. Golizadeh**, Montanuniversität Leoben, Austria; *A. Anders*, Leibniz Institute of Surface Engineering (IOM), and Felix Bloch Institute, Leipzig University, Germany; *C. Mitterer, R. Franz*, Montanuniversität Leoben, Austria

INVITED:
B1-16

INVITED TALK: Coating Design and Mechanical Properties of Multicomponent AlTi(X)N Hard Coatings, **Y. Chang**, National Formosa University, Taiwan

Hard Coatings and Vapor Deposition Technologies

Room On Demand - Session B2

CVD Coatings and Technologies

1:00pm

B2-1

In-situ Investigation of the Oxidation Behaviour of Chemical Vapour Deposited Zr(C,N) Hard Coatings Using Synchrotron X-ray Diffraction, **F. Frank**, *M. Tkadletz, C. Saringer*, Montanuniversität Leoben, Austria; *A. Stark, N. Schell*, Helmholtz-Zentrum Geesthacht, Germany; *C. Czettl*, CERATIZIT Austria GmbH, Austria; *N. Schalk*, Montanuniversität Leoben, Austria

B2-3

Ti-Si-B-C-N PECVD Nanocomposite Coatings for Tribological Applications at Elevated Temperatures, **A. Nienhaus**, TU Braunschweig, Institute for Surface Technology, Germany

INVITED:
B2-4

INVITED TALK: Atomic Layer Deposition for Complex-Shape and Temperature Sensitive Objects: Towards New Functions and Products, **F. Mercier**, Univ. Grenoble Alpes, CNRS, France

INVITED:
B2-6

INVITED TALK: Plasma-assisted Deposition using Microdroplets, **T. Ito**, *K. Nitta, K. Terashima*, The University of Tokyo, Japan

B2-8

High Throughput Deposition of Hydrogenated Amorphous Carbon Films using High-Pressure Ar+CH₄ Plasmas, **K. Koga**, *S. Hwang, K. Kamataki, N. Itagaki, M. Shiratani*, Kyushu University, Japan

B2-9

Influence of Co-enriched Surface Zones in WC-Co Cemented Carbides on the Microstructure and Mechanical Properties of TiC_{0.6}N_{0.4}/α-Al₂O₃ Coatings, **F. Konstantiniuk**, *M. Tkadletz*, Montanuniversität Leoben, Austria; *C. Czettl*, CERATIZIT Austria GmbH, Austria; *N. Schalk*, Montanuniversität Leoben, Austria

B2-10

CVD Alumina-based Nanocomposite Coatings, **Z. Liu**, Kennametal Inc., USA

B2-11

Compatibility of a CoCrFeNi Multi-principal Element Alloy Substrate with Halide-based Thermal CVD Processes for TiN Deposition, **K. Böör**, Uppsala University, Sweden; *R. Qiu*, Chalmers University of Technology, Sweden; *A. Forslund*, KTH Royal Institute of Technology, Sweden; *O. Bäcke*, Chalmers University of Technology, Sweden; *H. Larsson*, KTH Royal Institute of Technology, Sweden; *E. Lindahl*, Sandvik Coromant R&D, Sweden; *M. Halvarsson*, Chalmers University of Technology, Sweden; *M. Boman*, Uppsala University, Sweden; *L. von Flieandt*, Sandvik Coromant R&D, Sweden

B2-12

Silicon Carbide Coatings for High Temperature Receiver of Concentrated Solar Power Plants, **M. Pons**, *D. Chen*, University of Grenoble Alpes, France; *J. Colas*, PROMES-CNRS, France; *F. Mercier*, University Grenoble-Alpes, France; *L. Charpentier, M. Balat-Michelin*, PROMES-CNRS, France

B2-13

Hot Filament CVD Diamond Coatings for Hard-to-machine Materials, **M. Woda**, *W. Puetz, M. Frank, W. Koelker, C. Schiffers, O. Lemmer*, CemeCon AG, Germany

B2-14

Ald-Pvd Multilayers: Deposition, Thermal Stability And Mechanical Properties, **T. Edwards**, *T. Xie, L. Petho, S. Büchel, X. Maeder, B. Putz, J. Michler*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland

B2-15

Investigation of Diamond Coating Characteristics on Chrome-Plated AISI 4140 Steel by Hot-Filament Chemical Vapour Deposition Process, **R. Vignesh, S. Boominatha Sellarajan**, *J. Rajaguru, N. Arunachalam, M. Ramachandra Rao*, Indian Institute of Technology Madras, India

B2-16

The Challenge and Strategy of a-Si CVD Coating on Aluminum Alloys, **M. Yuan**, SilcoTek Corporation, USA

Hard Coatings and Vapor Deposition Technologies

Room On Demand - Session B3

Deposition Technologies and Applications for Diamond-like Coatings

1:00pm

B3-1

Hydrogenated Amorphous Carbon from Magnetized Hollow Cathode Discharges, **J. Miller**, *A. Ceballos-Sanchez, S. Elhadj, S. Kucheyev, B. Bayu Aji, S. Falabella*, Lawrence Livermore National Laboratory, USA

B3-2

Effect of Mechanical and Thermochemical Tool Steel Substrate Pre-treatment on DLC Coating Durability, **D. Tabola**, Łukasiewicz Research Network - Krakow Institute of Technology, Poland; *T. Liskiewicz*, Manchester Metropolitan University, UK; *L. Yang*, Leeds University, UK; *T. Khan*, Manchester Metropolitan University, UK; *Ł. Boron*, Łukasiewicz Research Network - Krakow Institute of Technology, Poland

B3-3

Stress Free ta-C Coatings by means of Up-Scaled Pulsed Laser Deposition for Industrial Applications, **H. Gruettner**, *D. Haldan, J. Maus*, Hochschule Mittweida - University of Applied Sciences, Germany; *M. Nieher*, Hochschule Mittweida - University of Applied Sciences, Germany; *S. Weissmantel*, Hochschule Mittweida - University of Applied Sciences, Germany

B3-4

DLC Coatings Deposited by Novel Doping Strategies with HiPIMS, *J. Santiago Varela*, *I. Fernández-Martínez*, *A. Wennberg*, Nano4Energy SL, Spain; *M. Monclús*, *J. Molina-Aldareguia*, IMDEA Materials Institute, Spain; *V. Bellido-Gonzalez*, Gencoa Ltd, UK; *M. Panizo-Laiz*, Universidad Politécnica de Madrid, Spain; *J. Sánchez-Lopez*, *T. Rojas*, CSIC, Spain; *S. Goel*, Cranfield University, UK; *J. Endrino*, IKERBASQUE, Spain

B3-5

Preparation of Hybrid ta-C/MoS₂-Films by using Laser Arc Technology, *F. Kaulfuss*, *F. Hofmann*, *Y. Han*, *F. Schaller*, Fraunhofer IWS, Germany; *T. Kruelle*, Fraunhofer IWS, Germany; *S. Makowski*, *V. Weihnacht*, *A. Leson*, *L. Lorenz*, *M. Zawischa*, Fraunhofer IWS, Germany

B3-6

Effects of Target Poisoning Ratios on the Microstructure, Mechanical Properties and Corrosion Resistance of WC_x Coatings Fabricated by Superimposed HiPIMS and MF System, *I. Moirangthem*, Ming Chi University of Technology, Taiwan; *S. Chen*, National Taiwan University, Taiwan; *J. Lee*, Ming Chi University of Technology, Taiwan

B3-7

The Influence of Different Power Supply Systems on the Microstructure, Mechanical and Corrosion Properties of Titanium Carbide Coatings, *H. Yu - Tung*, Ming Chi University of Technology, Taiwan, Republic of China; *C. Li-Chun*, Ming Chi University of Technology, Taiwan; *L. Bih-Shaw*, Chang Gung University, Taiwan; *L. Jyh-Wei*, Ming Chi University of Technology, Taiwan

Hard Coatings and Vapor Deposition Technologies Room On Demand - Session B4 Properties and Characterization of Hard Coatings and Surfaces 1:00pm

B4-1

Investigating the Influence of Nanocomposite Structure on the Thermal Stability of Ag in VSiCN-Ag Coatings, *F. Thompson*, South Dakota School of Mines and Technology, USA; *F. Kustas*, NanoCoatings, Inc., USA; *G. Crawford*, South Dakota School of Mines and Technology, USA

B4-2

Spinodal Decomposition of Reactively Sputtered VAIN Thin Films, *M. Hans*, *H. Rueß*, RWTH Aachen University, Germany; *Z. Czigány*, Centre for Energy Research, Hungary; *J. Krause*, *P. Ondračka*, *D. Music*, *S. Evertz*, *D. Holzapfel*, RWTH Aachen University, Germany; *D. Primetzhofer*, Uppsala University, Sweden; *J. Schneider*, RWTH Aachen University, Germany

B4-3

Effect of Functionally Graded Layers on Tribological Behavior of TiZrN Coatings on AISI D2 Steel, *J. Huang*, *B. Tsai*, National Tsing Hua University, Taiwan

B4-4

Thin Film Characterization by Picosecond Ultrasonics on High Curvature Surfaces, *F. Faese*, *J. Michelon*, *X. Tridon*, Neta, France

B4-5

Fatigue Behaviour of Thin Coating and the Influences of Plastic Deformation of Harden-case using Irreversible Cohesive Zone Model, *J. Feng*, Manchester Metropolitan University, UK; *Y. Qin*, University of Strathclyde, UK; *T. Liskiewicz*, Manchester Metropolitan University, UK; *B. Beake*, Micro Materials Ltd, UK

B4-6

Microstructure and Oxidation Behaviour of Arc Evaporated TiSiN Coatings Investigated by *in-situ* Synchrotron X-ray Diffraction, *Y. Moritz*, *C. Saringer*, *M. Tkadletz*, Montanuniversität Leoben, Austria; *A. Stark*, *N. Schell*, Helmholtz-Zentrum Geesthacht, Germany; *M. Pohler*, CERATIZIT Austria GmbH, Austria; *N. Schalk*, Montanuniversität Leoben, Austria

B4-7

High Temperature Tribology of Hf Doped c-Al_{0.67}Ti_{0.33}N Cathodic Arc PVD Coatings Deposited on M2 Tool Steel, *G. Mondragón Rodríguez*, *A. Gómez Ovalle*, *J. Alvarado Orozco*, *J. González Carmona*, *C. Ortega Portilla*, *J. Hernández Mendoza*, CIDESI, Mexico

B4-8

Cross-sectional X-ray Nanodiffraction Characterization of Radiation Damage, Stresses, and Microstructure in Tungsten Coatings, *K. Hlushko*, Montanuniversität Leoben, Austria; *A. Mackova*, Nuclear Physics Institute of the Czech Academy of Sciences; *J. Toth*, Erich Schmid Institute for Material Science, Austrian Academy of Sciences, Austria; *R. Daniel*, Christian Doppler Laboratory for Advanced Synthesis of Novel Multifunctional Coatings at the Department of Materials Science, Montanuniversität Leoben, Leoben, Austria; *J. Keckes*, Montanuniversität Leoben, Austria

B4-9

Combinatorial Approach for the Synthesis of Thermally Stable High Si-containing Nanocomposite AlCrSiN Coatings, *M. Zitek*, *N. Jäger*, *M. Meindlhuber*, Montanuniversität Leoben, Austria; *F. Nahif*, voestalpine eifeler-Vacotec GmbH, Düsseldorf, Germany; *C. Mitterer*, *R. Daniel*, Montanuniversität Leoben, Austria

B4-10

In-plane Texturing of Silver Thin Films, *F. Corbella*, Saint-Gobain Recherche/CNRS, France

INVITED:

B4-12

INVITED TALK: Modern Analytical Methods for Characterizing the Tribological Material Properties of Coatings, *D. Schorr*, Cooperate State University in Karlsruhe, Germany

INVITED:

B4-14

INVITED TALK: Metal Oxynitride Thin Films: A Review on Synthesis Developments, Performance, and Applications, *S. Ali*, Linnaeus University, Sweden

B4-16

Influence of the Period of the Substrate Oscillation on Thin CrN Films Obtained by RF Physical Vapor Dynamic Glancing Angle Deposition Technique, *M. Jimenez*, *F. Cemin*, *A. Riul*, *L. Zagonel*, UNICAMP, Brazil; *C. Figueroa*, Universidade de Caxias do Sul, Brazil; *D. Wisnivesky*, UNICAMP, Brazil; *F. Alvarez*, Instituto de Física-UNICAMP, Brazil

B4-17

Fabrication and Microstructure Evolution of Sputtering Single Element Transition Metal Nitride Multilayers, *K. Liu*, *Y. Yang*, *J. Xiang*, *Z. Lin*, *F. Wu*, National United University, Taiwan

B4-18

Numerical Evaluation of the Contact Fatigue Resistance of AlCrN, N and AlCrN/N Coatings on AISI 4140 Steel, *A. Ballesteros-Arguello*, *F. Ramírez-Reyna*, *A. Meneses-Amador*, *G. Rodríguez-Castro*, *D. Fernández-Valdés*, *O. Reyes-Carcaño*, National Polytechnic Institute, Mexico

B4-19

Low Temperature Deposition of TiB-based Hard Coating Films by Pulsed DC Plasma CVD, *T. Saito*, *H. Matsushima*, *K. Fuji*, *D. Kiyokawa*, *N. Okamoto*, Osaka Prefecture University, Japan

Hard Coatings and Vapor Deposition Technologies Room On Demand - Session B5 Hard and Multifunctional Nanostructured Coatings 1:00pm

INVITED:

B5-1

INVITED TALK: PVD of Hard Nanocomposite Coatings Using Multiphase SHS Cathodes - Evolution and New Horizons, *P. Kiryukhantsev-Korneev*, *E. Levashov*, National University of Science and Technology "MISIS", Russian Federation

B5-3

On the Structure and Mechanical Properties of X₂BC Coatings Prepared by High Power Impulse Magnetron Sputtering at Different Temperatures, *P. Soucek*, *M. Polacek*, *L. Zabransky*, *M. Stupavska*, *P. Vasina*, Masaryk University, Brno, Czech Republic

B5-4

Ammonium Thiosulfate Precursor for Coating Molybdenum Disulfide onto the Surface of Porous Metal for High Anti-Wearing Application in the Machinery Industry, *L. Hu*, National Sun Yat-Sen University, Taiwan; *P. Chen*, Southern Taiwan University of Science and Technology, Taiwan

B5-5

Optimization of TiSiCN Coating Properties Obtained by RF Magnetron Sputtering and High Power Impulse Magnetron Sputtering, *J. Matthey*, Haute Ecole Arc Ingenierie HES-SO, Switzerland Ecole Arc Ingenierie, Switzerland; *O. Banakh*, *R. Constantin*, *F. Bisoffi*, *M. Erard*, Haute Ecole Arc Ingenierie HES-SO, Switzerland

B5-6

Characteristics of Hf(M)SiBCN (M = Y, Ho, Ta, Mo) Coatings: Role of the M Choice, *M. Matas*, *M. Prochazka*, *J. Vlcek*, *J. Houska*, University of West Bohemia, Czech Republic

B5-7

Thermal Stability of Nanostructured TiAl(Si,B)N Coatings Deposited by HiPIMS with Positive Pulses, *Á. Méndez Fernández*, *J. Santiago*, *I. Fernández-Martínez*, *A. Wennberg*, Nano4Energy SL, Spain; *M. Panizo-Laiz*, Universidad Politécnica de Madrid, Spain; *M. Monclús*, *J. Molina-Aldareguia*, IMDEA Materials Institute, Spain

B5-8

Tuning Fracture Characteristics of Superhard Tm Carbide Coatings by Nitrogen Alloying, **T. Glechner**, R. Hahn, TU Wien, CDL-SEC, Austria; *D. Primetzhofer*, Uppsala University, Sweden; *H. Zaid*, S. Kodambaka, University of California Los Angeles, USA; *D. Holec*, Montanuniversität Leoben, Austria; *P. Mayrhofer*, TU Wien, Austria; *S. Kolozsvári*, Plansee Composite Materials GmbH, Germany; *J. Ramm*, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *H. Riedl*, TU Wien, CDL-SEC, Austria

B5-9

Improved Ti–Al–Ta–N Coatings by Doping with LaB₆ and CeSi₂, **A. Kirnbauer**, S. Kagerer, 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

B5-10

Dislocation Confinement in Core-Shell Nanostructures: A Molecular Dynamics Study, **D. Fleming**, Arkansas State University, USA

B5-11

Tribocorrosion Behaviors in Seawater of TiSiCN Coatings Deposited by High Power Impulse Magnetron Sputtering: In-situ Electrochemical Response, **Y. Ou**, Beijing Radiation Center, China; *H. Wang*, Beijing Normal University, China; *J. Luo*, Beijing Radiation Center, China; *B. Liao*, *X. Zhang*, Beijing Normal University, China; *W. Wang*, Beijing Radiation Center, China; *X. Ouyang*, Northwest Nuclear Technology Institute

Hard Coatings and Vapor Deposition Technologies

Room On Demand - Session B6

Interplay Between Computational and Experimental Design of Coatings and Processes I

1:00pm

B6-1

Data-driven Assessment of Chemical Vapor Deposition of MoS₂: a Meta-Study Based on Published Growth Experiments, **A. Costine**, University of Virginia, USA; *P. Delsa*, Louisiana School for Math, Science, and the Arts, USA; *T. Li*, **P. Reinke**, *P. Balachandran*, University of Virginia, USA

B6-2

Kinetic Monte Carlo Simulations of Residual Stress Evolution, **E. Chason**, A. Bower, Brown University, USA

B6-3

Maximum N Content in a-CN, and other Amorphous Nitrides, **J. Houska**, University of West Bohemia, Czech Republic

B6-4

Transition Metal Carbonitride based Thin Films: A Critical Review on Thermal and Elastic Properties of Group IV to VI TMC_{1-x}N_x, **T. Glechner**, TU Wien, CDL-SEC, Austria; *P. Mayrhofer*, TU Wien, Austria; *S. Kodambaka*, University of California Los Angeles, USA; *R. Hahn*, TU Wien, CDL-SEC, Austria; *D. Holec*, Montanuniversität Leoben, Austria; *T. Wojcik*, TU Wien, Institute of Materials Science and Technology, Austria; *M. Arndt*, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *S. Kolozsvári*, Plansee Composite Materials GmbH, Germany; **H. Riedl**, TU Wien, CDL-SEC, Austria

INVITED:

B6-5

INVITED TALK: Weakest Links in Superlattices: Insights from Ab Initio Modelling, **D. Holec**, Montanuniversität Leoben, Austria; *N. Koutná*, TU Wien, Austria; *L. Löfler*, *L. Hantzenbichler*, Montanuniversität Leoben, Austria; *P. Řehák*, Central European Institute of Technology (CEITEC), Brno University of Technology, Czech Republic; *M. Bartosik*, TU Wien, Austria; *M. Friák*, Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic; *M. Černý*, Central European Institute of Technology (CEITEC), Brno University of Technology, Czech Republic; *P. Mayrhofer*, TU Wien, Institute of Materials Science and Technology, Austria

B6-7

Superlattice Design for Superior Thin Films, **N. Koutná**, *R. Hahn*, *J. Buchinger*, TU Wien, Institute of Materials Science and Technology, Austria; *D. Sangiovanni*, Linköping University, Sweden; *M. Bartosik*, TU Wien, Institute of Materials Science and Technology, Austria; *D. Holec*, Montanuniversität Leoben, Austria; *P. Mayrhofer*, TU Wien, Institute of Materials Science and Technology, Austria

Hard Coatings and Vapor Deposition Technologies

Room On Demand - Session B7

Plasma Surface Interactions, Diagnostics and Growth

Processes

1:00pm

INVITED:

B7-1

INVITED TALK: Energy and Momentum Fluxes at Plasma Processing of Materials, **H. Kersten**, *T. Trottenberg*, *M. Klette*, *L. Hansen*, *A. Spethmann*, *F. Schlichting*, IEAP, U Kiel, Germany

B7-3

A Force Probe as a Tool to obtain Directionally Resolved Momentum Characteristics during Sputter Processes, **M. Klette**, *T. Trottenberg*, *M. Maas*, *H. Kersten*, Kiel University, Kiel, Germany

B7-4

Erosion and Cathodic Arc Plasma of Nb–Al Cathodes: Composite vs. Intermetallic, *S. Zöhrer*, *M. Golizadeh*, Montanuniversität Leoben, Austria; *N. Koutná*, TU Wien, Austria; *D. Holec*, Montanuniversität Leoben, Austria; *A. Anders*, Leibniz Institute of Surface Engineering (IOM), Germany; **R. Franz**, Montanuniversität Leoben, Austria

B7-5

Oxygen Diffusion Barrier On Interfacial Layer Formed With Remote Nh3 Plasma Treatment, **F. Chu**, *K. Chang-Liao*, *D. Ruan*, *H. Yeh*, *S. Yi*, *Y. Chien*, National Tsing Hua University, Taiwan

Hard Coatings and Vapor Deposition Technologies

Room On Demand - Session B8

HiPIMS, Pulsed Plasmas and Energetic Deposition

1:00pm

INVITED:

B8-1

INVITED TALK: Evolution of Ionization Fraction of Sputtered Species in Standard, Multi-pulse and Reactive HiPIMS, *M. Fekete*, *K. Bernatova*, *P. Klein*, *J. Hnilica*, **P. Vasina**, Masaryk University, Brno, Czech Republic

B8-3

Dynamics of the Titanium Ground State Atoms and Ions in HiPIMS Discharge, **J. Hnilica**, *P. Klein*, *P. Vasina*, Masaryk University, Brno, Czech Republic; *R. Snyders*, *N. Britun*, University of Mons, Belgium

B8-4

The Single-Shot Spatial-Resolved OES of the Spoke in Non-Reactive HiPIMS, **M. Šlapanská**, *M. Kroker*, *J. Hnilica*, *P. Klein*, *P. Vašina*, Masaryk University, Czechia

B8-5

Understanding and Influencing the Energy Delivered to the Film in Bipolar HiPIMS, **T. Kozak**, *A. Pajdarova*, *J. Capek*, University of West Bohemia, Czech Republic; *M. Cada*, *Z. Hubicka*, Institute of Physics, Academy of Sciences of the Czech Republic; *P. Mares*, HVM Plasma, s.r.o., Czech Republic

B8-6

The Use of HiPIMS with Positive Pulses to Tailor Film Ion Assistance and the Resulting Microstructural Properties, **I. Fernandez**, *J. Santiago*, *A. Wennberg*, *A. Mendez*, Nano4Energy SL, Spain; *F. Papa*, GP Plasma, USA

B8-7

Measurements and Modeling of Residual Stress in Sputtered Nitride Films: Dependence on Growth Rate and Gas Pressure, **Z. Rao**, *E. Chason*, Brown University, USA

B8-9

Wafer-scale Metallic Nanotube Arrays (MeNTAs): Fabrication and Application, **A. Altama**, *J. Chu*, National Taiwan University of Science and Technology, Taiwan; *A. Purniawan*, *S. Wicaksono*, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

B8-10

Plasma Chemistry, Crystal Growth and Mechanical Properties of CrAlYN / CrN Nanoscale Multilayer Coatings Deposited by High Power Impulse Magnetron Sputtering, **A. Ehasarian**, *A. Sugumaran*, *P. Hovsepian*, Sheffield Hallam University, UK

B8-12

On the Influence of the Micropulse on Nb Thin Films Deposited by MPPMS and DOMS: A Comparative Study, **Y. Li**, *Z. Jiang*, *H. Yuan*, *N. Pan*, *M. Lei*, Dalian University of Technology, China

B8-13

The Effect of Metal Transition Dopants on Mechanical Properties TiBCN Based Coatings Deposited by CFUBMS-HiPIMS, *I. Efeoglu*, Ataturk University, Turkey; *N. Aksakalli*, Atatürk University, Turkey; *B. Gumus, E. Tan*, Aselsan Inc., Turkey

Hard Coatings and Vapor Deposition Technologies
Room On Demand - Session BP
Hard Coatings and Vapor Deposition Technologies
(Symposium B) Poster Session
1:00pm
BP-1

Investigation of Ionized Density Fraction in Reactive Hipims, *K. Bernátová*, Masaryk University, Czechia

BP-2

Increasing Oxidation Resistance of Reactive Magnetron Sputtered (Al_xCr_wNb_xTa_yTi_z)N Thin Films by Si-alloying, *A. Kretschmer*, TU Wien, Institute of Materials Science and Technology, Austria; *K. Yalamanchili, H. Rudigier*, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *P. Mayrhofer*, TU Wien, Institute of Materials Science and Technology, Austria

BP-3

Properties of Boron Carbide Thin Films Deposited by Pulsed Laser Deposition, *F. Jahn, S. Weissmantel*, Laserinstitut Hochschule Mittweida, Germany

BP-4

In-situ Analysis of B-doped Diamond Synthesis using Hot Filament CVD, *R. Tanaka, M. Takuya*, Chiba Institute of Technology Graduate School, Japan; *Y. Sakamoto*, Chiba Institute of Technology, Japan

BP-5

Behavior of Partially Oxidized Metal Targets, *J. Houska, T. Kozak*, University of West Bohemia, Czech Republic

BP-6

Phase Formation, Thermal Stability and Mechanical Properties of Nb-B-C Thin Films Prepared by Magnetron Sputtering Using a Combinatorial Approach, *S. Debnarova, P. Soucek, V. Bursikova*, Masaryk University, Czechia; *S. Mraz, M. Hans, J. Schneider, D. Holzappel*, RWTH Aachen University, Germany; *P. Vasina*, Masaryk University, Czechia

BP-7

Mechanical and Tribological Performance of V-C-N Coatings Deposited by RF Magnetron Sputtering, *A. Alhussein*, Université de Technologie de Troyes (UTT), France; *L. Aissani*, Khenchela University, Larbi Ben M'Hidi University, Algeria; *C. Nouveau*, CER Arts et Metiers Paris Tech, France

BP-8

Radiation Stability of nc- ZrN/a-ZrCu Multilayered Films after He Implantation, *G. Abadias*, Institut Pprime - CNRS - ENSMA - Université de Poitiers, France; *V. Uglov, S. Zlotski, I. Saladukhin*, Belarusian State University, Belarus

BP-9

Physical and Mechanical Properties of Cr-Al-N and Cr-v-N Ternary Systems, *A. Belgroune*, University of Technology of Troyes, France; *L. Aissani*, University of Abbes Laghrour, Algeria; *A. Alhussein*, University of Technology of Troyes, France

BP-10

Understanding Residual Stress in Thin Films: Analyzing the Stress Evolution Using a Kinetic Model for Ag, Cu, Ni, Fe, Ti, and Cr, *Z. Rao, S. Berman*, Brown University, USA; *D. Depla*, Ghent University, Belgium; *E. Chason*, Brown University, USA

BP-11

Effect of Target Poisoning Ratios on the Fabrication of TiO_x Coatings Using Superimposed HiPIMS and MF System, *W. Chen*, Ming Chi University of Technology, Taiwan; *B. Lou*, Chang Gung University, Taiwan; *. Lee*, Ming Chi University of Technology, Taiwan

BP-12

The Role of Oxygen Flow Rate on the Structure and Stoichiometry of Cobalt Oxide Films Deposited by DC Reactive Sputtering, *N. Francelosi Azevedo Neto, L. Affonco*, São Paulo State University, Brazil; *C. Stegemann, D. Marcel Gonçalves Leite*, Aeronautics Institute of Technology, Brazil; *J. Humberto Dias da Silva*, São Paulo State University, Brazil

BP-13

e-Poster Presentation: Bipolar HiPIMS for Tailoring Ion Energies in Thin Film Deposition, *D. Lundin, R. Vilooan*, Linköping University, Sweden; *M. Zanáška*, Linköping University; *H. Du*, Guizhou University, China; *R. Boyd*, Linköping University, Sweden; *T. Shimizu*, Tokyo Metropolitan University, Japan; *U. Helmersson*, Linköping University, Sweden

BP-14

Nb-C Thin Films Prepared by DC-MS and HiPIMS: Synthesis, Structure and Tribo-mechanical Properties, *N. Sala, M. Abad*, Institut Químic de Sarrià, Universitat Ramon Llull, Spain; *J. Sánchez-López*, Instituto de Ciencia de Materiales de Sevilla, CSIC-Universidad de Sevilla, Spain; *J. Caro*, Eurecat, Centre Tecnològic de Catalunya, Spain; *C. Colominas*, Institut Químic de Sarrià, Universitat Ramon Llull, Flubetech S.L., Spain

BP-15

Impact of Stacking Sequence with InWzNOx/InWzNOy Bilayer Conductive Bridge Random Access Memory, *C. Hsu, P. Liu, K. Gan, D. Ruan, Y. Chiu*, National Chiao Tung University, Taiwan; *S. Sze*, National Chiao Tung University, Taiwan

Fundamentals and Technology of Multifunctional Materials and Devices
Room On Demand - Session C1
Optical Materials: Design, Synthesis, Characterization, and
Applications
1:00pm
INVITED:
C1-1

INVITED TALK: Measurement of Feature Dimension and Shape for Nanowire Test Structures Using Mueller Matrix Spectroscopic Ellipsometry based Scatterometry and Small Angle X-Ray Scattering, *A. Diebold*, SUNY Polytechnic Institute Albany, USA

C1-3

Optical Probing of Vanadium Oxide Thin Film Composition and Phase, *M. Junda, N. Podraza*, University of Toledo, USA

INVITED:
C1-4

INVITED TALK: Metrology for Emerging Semiconductor Devices and Processes, *N. Orji*, National Institute of Standards and Technology (NIST), USA

C1-6

Chemical Bath Deposition of ZnO Nanorods on Ion-plated ZnO:Ga Seed Layers and Their Structural, Photoluminescence and UV Light Detecting Properties, *T. Terasako, S. Obara, N. Hashikuni, S. Namba*, Ehime University, Japan; *M. Yagi*, National Institute of Technology (KOSEN), Kagawa College, Japan; *Y. Furubayashi, T. Yamamoto*, Research Institute, Kochi University of Technology, Japan

C1-7

IR Mirror Coating for Evacuated Thermal Collectors: Design and Optical Characterization, *D. De Luca*, UniNa and CNR-ISASI, Italy; *E. Di Gennaro*, UniNa Università degli studi di Napoli "Federico II", Italy; *C. D'Alessandro, A. Caldarelli, D. De Maio, E. Gaudino*, UniNa and CNR-ISASI, Italy; *M. Musto*, UniNa Università degli studi di Napoli "Federico II", Italy; *R. Russo*, CNR-ISASI, Italy

Fundamentals and Technology of Multifunctional Materials and Devices
Room On Demand - Session C2
Functional Coatings and Thin Films for Electronic Devices
1:00pm
C2-1

Interference Signal Induced by Ultra-Thin Amorphous Carbon Films Over Flexible Copper Foils Demonstrated by Electromagnetic Boundaries Calculations, *Á. Crespi, C. Ballage, M. Hugon, J. Robert*, Université Paris Saclay, France; *D. Lundin*, Linköping University, Sweden; *T. Minea*, Université Paris Saclay, France

INVITED:
C2-2

INVITED TALK: High k Dielectrics for MIM Architecture: From Capacitors to Non-volatile Memories Applications, *C. Vallee*, SUNY POLY, Albany, USA; *P. Gonon, M. Bonvalot, A. Bsiesy*, UGA-LTM, France

C2-4

Study of Polycrystalline BiMnO₃ Thin Films Grown by Radio-Frequency Magnetron Sputtering, **G. Umoh**, *J. Holguín-Momaca*, *R. Talamantes*, Centro de Investigación en Materiales Avanzados, S.C. (CIMAV), Mexico; *G. Herrera-Pérez*, Centro de Investigación en Materiales Avanzados, S.C. (CIMAV), USA; *S. Olive-Méndez*, *A. Hurtado-Macias*, Centro de Investigación en Materiales Avanzados, S.C. (CIMAV), Mexico

C2-5

Nanostructured Multifunctional Architectural Glass Glazing for Future Green Cities, *S. Woodward-Gagne*, *R. Beaini*, *B. Baloukas*, *O. Zabeida*, **L. Martinu**, Polytechnique Montreal, Canada

C2-6

Effect of Substrate Bias on Properties and Microstructure of Nanotwinned Copper Thin Films Deposited by Magnetron Sputtering System, **T. Lin**, NTHU, Taiwan; *S. Chang*, +886-3-5715131 ext 34321, Taiwan; *F. Ouyang*, NTHU, Taiwan

C2-7

Nanostructured CuO/WO₃ Thin Films for Hydrogen Gas Sensing Prepared by Advanced Magnetron Sputtering Techniques, **N. Kumar**, *S. Haviar*, *J. Čapek*, *Š. Batková*, *P. Zeman*, *P. Baroch*, University of West Bohemia, Czech Republic

C2-8

Study of Thermal Stability of Highly (111)-Oriented Nanotwinned Ag Films by Using Unbalanced Magnetron Sputtering, **P. Wu**, *Y. Hao*, *L. Chang*, *F. Ouyang*, National Tsing Hua University, Taiwan

C2-9

Enhanced Reliability and Uniformity for Ge pMOSFET with Low Temperature Supercritical Fluid Treatment, **B. Kuo**, *K. Chang-Liao*, National Tsing Hua University, Taiwan; *D. Ruan*, National Tsing Hua University, China; *J. Li*, National Tsing Hua University, Taiwan

C2-11

Printed Polymer Heat Sinks for High-Power, Flexible Electronics, **K. Burzynski**¹, University of Dayton and Air Force Research Laboratory, USA; *N. Glavin*, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; *E. Heckman*, Air Force Research Laboratory, Sensors Directorate, USA; *C. Muratore*, University of Dayton, USA

C2-12

High-performance Thermochromic VO₂-based Coatings Prepared on Glass by a Low-temperature Scalable Deposition, **T. Bárta**, *J. Vlček*, *D. Kolenatý*, *J. Rezek*, *J. Houška*, *S. Haviar*, University of West Bohemia, Czech Republic

C2-13

Investigation of Resistive Switching in TAOs-Based Memristor With Ultraviolet Irradiation, **Y. Li**, *P. Liu*, *C. Hsu*, *K. Gan*, *D. Ruan*, *Y. Chiu*, National Chiao Tung University, Taiwan

Fundamentals and Technology of Multifunctional Materials and Devices

Room On Demand - Session C3

Thin Films for Energy Applications: Solar, Thermal, and Photochemical

1:00pm

C3-1

Au and Ag Nanoparticle Effects on the Electrical Properties of Pulsed Laser Deposited CdTe/Cds Photovoltaic Thin Films, **M. Sahiner**, *J. Emerson*, *F. Akinlade*, *M. Herington*, *V. Castillon*, Seton Hall University, USA

C3-2

Transparent Thermoelectric TiO₂:Nb Thin Films, *J. Ribeiro*, *F. Correia*, **C. Tavares**, University of Minho, Portugal

C3-3

Multilayers for Efficient Thermal Energy Conversion in High Vacuum Flat Solar Thermal Panels, *D. De Maio*, UniNa and CNR-ISASI, Italy; *C. D'Alessandro*, *A. Caldarelli*, *E. Gaudino*, UniNa and CNR-ISASI, Italy; *M. Musto*, UniNa - Università degli studi di Napoli "Federico II", Italy; *D. De Luca*, UniNa and CNR-ISASI, Italy; *E. Di Gennaro*, UniNa - Università degli studi di Napoli "Federico II", Italy; **R. Russo**, CNR - ISASI, Italy

C3-4

Development of Efficient Perovskite Solar Cells Under Ambient Conditions via Fine Tuning of Compact TiO₂ Layer, **N. Bhagat**, Guru Nanak Dev University, India; *V. Saxena*, Bhabha Atomic Research Centre, India; *A. Mahajan*, Guru Nanak Dev University, India

¹ 2020 Student Award Finalist

On Demand available April 26 - June 30, 2021

Fundamentals and Technology of Multifunctional Materials and Devices

Room On Demand - Session CP

Fundamentals and Technology of Multifunctional Materials and Devices (Symposium C) Poster Session

1:00pm

CP-1

Freestanding ZnO Nanowire For Multifunctional Application in RRAM Memory and Gas Sensing, **P. Singh**, National Taiwan University of Science and Technology, Taiwan; *T. Tseng*, National Chiao Tung University, Taiwan; *J. Chu*, National Taiwan University of Science and Technology, Taiwan

CP-2

Introducing Thin HfO₂ Layer to Inhibit the Power Consumption of InWZnO CBRAM, **Y. Li**, *P. Liu*, *C. Hsu*, *K. Gan*, *D. Ruan*, *Y. Chiu*, National Chiao Tung University, Taiwan

CP-3

Improved Electrical Performance for Indium Tungsten Oxide Thin-Film Transistor with Asymmetric Source and Drain Electrode Material, **C. Lin**, *P. Liu*, National Chiao Tung University, Taiwan; *D. Ruan*, National Chiao Tung University, China; *K. Gan*, *Y. Chiu*, *C. Hsu*, National Chiao Tung University, Taiwan; *S. Sze*, National Chiao Tung University, USA

Coatings for Biomedical and Healthcare Applications

Room On Demand - Session D1

Surface Coating and Surface Modification in Biological Environments

1:00pm

D1-1

Physical Vapor Deposition for Growth of Large Area Molecular Sensor Arrays, *N. Glavin*, *D. Austin*, *D. Moore*, *M. Motala*, Air Force Research Laboratory, Materials and Manufacturing Directorate, USA; **C. Muratore**, University of Dayton, USA

D1-2

Mesenchymal Stem Cells Response to Metal Oxide Thin Films, **P. Silva-Bermudez**, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Mexico; *M. Fernández-Lizárraga*, Escuela Nacional de Ciencias Biológicas, Instituto Politécnico Nacional, Mexico; *S. Rodil*, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico; *J. García-Lopez*, *R. Sanchez-Sanchez*, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Mexico

D1-3

Behavior of a-C:H with Different fs-laser Micro-Patterns against Diamond Tip in Hyaluronic Acid, **A. Dörner-Reisel**, Schmalkalden University of Applied Sciences, Germany; *S. Svoboda*, Schmalkalden University of Applied Sciences, Germany; *A. Engel*, University of Applied Sciences Mittweida; *C. Schürer*, Consultant Chemnitz; *S. Weißmantel*, University of Applied Sciences Mittweida, Germany

D1-4

Analysis of a Drug Coated Polymer Stent with XPS and Argon Cluster Depth Profiling, **D. Surman**, Kratos Analytical Inc., USA; *J. Counsell*, Kratos Analytical Ltd., UK; *M. Alexander*, University of Nottingham, UK

D1-5

Flexible Plasma Jet Source for Biomedical Applications, **C. Corbella**, *S. Portal*, *L. Lin*, *M. Keidar*, George Washington University, USA

INVITED:

D1-6

INVITED TALK: Embroidery of Conductive E-Threads: Opportunities and Challenges in Healthcare, *Z. Dalisky*, *S. Alharbi*, *V. Mishra*, **A. Kiourti**, *K. Guido*, The Ohio State University, USA

Coatings for Biomedical and Healthcare Applications

Room On Demand - Session D2

Bio-corrosion, Bio-tribology and Bio-Tribocorrosion-Additive Manufacturing Impact 1:00pm

INVITED:

D2-1

INVITED TALK: Behavior Of Additively Manufactured 316L Stainless Steel Fabricated By Selective Laser Melting In Comparison To Wrought 316L And 317 L Stainless Steels, **M. Salasi, K. Wang, E. Hornus**, Curtin University, Australia; **M. Pabbruwe**, Curtin University, Royal Perth Hospital, Australia, Australia; **T. Pojtanabuntoeng**, Curtin University, Australia, Australia; **M. Iannuzzi, Z. Quadir, W. Rickard**, Curtin University, Australia; **M. Salem, P. Lours**, Ecole de Mines Albi, France; **J. Bougoure**, Curtin University, Australia, Australia; **P. Guagliardo**, Curtin University, Australia

D2-3

Sputtered Thin Film Systems As Anode Materials for Biodegradable Battery, **W. Haider**, Central Michigan University, USA

D2-4

In Vitro Degradation of ZrO₂ Coated Magnesium Alloys, **B. Millan**, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México; **O. Debablos-Rivera**, Universidad Nacional Autónoma de México, México; **P. Silva-Bermudez**, Instituto Nacional de Rehabilitación Luis Guillermo Ibarra, Mexico; **S. Rodil**, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico

D2-5

In Solution, A New Representation to Link the Corrosion Degradation Consistent with Wear: Smooth and Hard Coatings are Well Discriminated., **J. Geringer, A. Boyer**, Mines Saint-Etienne, France; **H. Ding, V. Fridrici, P. Kapsa**, Ecole Centrale de Lyon, Ecully, France; **T. Tayler, L. Semetse, P. Olubambi**, University of Johannesburg, South Africa

Coatings for Biomedical and Healthcare Applications

Room On Demand - Session D3

Biointerfaces: Improving the Cell Adhesion and Avoiding Bacteria. What Kinds of Coatings/Surfaces Should be Used? 1:00pm

D3-1

Very Thin Gold Films Deposited Collagen to Improve Skin Wound Healing in Animal Study, **S. Huang**, Feng Chia University, Taichung Veterans General Hospital, Taiwan; **P. Hsieh, R. Chang**, 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

D3-2

New Cytocompatible and Antibacterial Porous Ta₂O₅ Surface: Dental Implant Prototype, **L. Fialho**, University of Minho, Portugal; **L. Grenho**, university of Porto, Portugal; **M. Fernandes**, University of Porto, Portugal; **L. Forte Martins**, Private dental practice - Dental Verde clinic, Portugal; **S. Carvalho**, University of Minho, Portugal

Coatings for Biomedical and Healthcare Applications

Room On Demand - Session DP

Coatings for Biomedical and Healthcare Applications (Symposium D) Poster Session 1:00pm

DP-1

Optimisation of Electrolytic Plasma Oxidation (PEO) Coatings Formed on Magnesium for Biological Applications, **Y. Guo, A. Rogov, B. Mingo, A. Matthews, A. Yerokhin**, The University of Manchester, UK

DP-2

The Property of Adhesion and Biocompatibility of Silicon and Fluorine Doped Amorphous Carbon Films, **M. Toyonaga**, Keio University, Japan; **T. Hasebe**, Keio University, Tokai University Hachioji Hospital, Japan; **S. Maegawa**, Tokai University Hachioji Hospital, Japan; **T. Matsumoto**, Keio University, Tokai University Hachioji Hospital, Japan; **A. Hotta, T. Suzuki**, Keio University, Japan

DP-3

In Vitro Study of Very Thin Gold Film Deposited Collagen Fabric, **S. Huang, Hsieh**, Feng Chia University, Taichung Veterans General Hospital, Taiwan; **R. Chang**, 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

DP-4

e-Poster Presentation: Metallization of Polymers for Medical Applications using HiPIMS, **A. Chacko, K. Thorwarth, R. Crockett, U. Müller, H. Hug**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

DP-5

TiZrSiN Coatings, Structural Characterization, and Corrosion Resistance in Ringer's Lactate, **C. Mejía Villagrán**, Universidad Nacional de Colombia; **M. Chellali**, Karlsruhe Institute of Technology (KIT), Libya; **C. Garzón Ospina**, Universidad Nacional de Colombia; **H. Hahn**, Karlsruhe Institute of Technology (KIT), Germany; **J. Olaya Flórez**, Universidad Nacional de Colombia; **L. Velasco Estrada**, Karlsruhe Institute of Technology (KIT), Germany

DP-6

A Novel Synthesis Method of Carbide Derived Carbon (CDC) Surface Modification for Hip Implants, **Y. Sun**, University of Illinois at Chicago, USA; **K. Cheng, M. Mathew**, UIC College of Medicine at Rockford, USA; **M. McNallan**, University of Illinois at Chicago, USA

DP-7

Enhancing Osseointegration on PEEK Spinal Implant by Using Laser Surface Roughening and HIPIMS Titanium Coating, **P. Hsieh**, Feng Chia University, Taiwan; **H. Tsou**, Taichung Veterans General Hospital, Taiwan; **C. Chung**, Central Taiwan University of Science and Technology, Taiwan; **J. He**, Feng Chia University, Taiwan

DP-8

Superamphiphobic Stainless Steel Surface Prepared by Femtosecond Laser Patterning and Pulsed Plasma-Polymerization, **C. Lin**, 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-9

Light-activated High Efficiency Antimicrobial and Antiviral Coatings, **V. Bellido-Gonzalez, P. Killen, T. Sgrilli, D. Monaghan**, Gencoa Ltd, UK; **O. Hernandez-Rodriguez**, IK4-TEKNIKER, Spain

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces

Room On Demand - Session E1

Friction, Wear, Lubrication Effects, and Modeling 1:00pm

E1-1

Multi-sensing Nano-wear with Electrical Contact Resistance and Friction Measurement, **B. Beake**, Micro Materials Ltd, UK; **T. Liskiewicz**, Manchester Metropolitan University, UK; **A. Harris**, Micro Materials Ltd.; **S. McMaster, A. Neville**, University of Leeds, UK

E1-2

Interlayer Design to Increase Adhesion of a-C Coatings onto C17200 Copper-Beryllium Alloy Surface, **M. dos Santos, N. Fukumasu**, Polytechnic School of the University of Sao Paulo, Brazil; **A. Tschiptschin**, Metallurgical and Materials Engineering Department, University of Sao Paulo, Sao Paulo, Brazil; **R. de Souza, I. Machado**, Polytechnic School of the University of Sao Paulo, Brazil

E1-3

Tribologically Enhanced Self-healing of Niobium Oxide Surfaces, **S. Aouadi, A. Shirani, J. Gu, B. Wei, D. Berman**, University of North Texas, USA

E1-4

Computer Simulations of FCC Alloys Subjected to Dry Sliding as Basis for a Near-Surface Deformation Mechanism Map, **S. Eder, M. Rodriguez Ripoll, U. Cihak-Bayr**, AC2T Research GmbH, Austria; **D. Dini**, Imperial College London, UK; **C. Gachot**, TU Wien, Austria

E1-5

From Surface to Sub-surface Contributions to Friction at the Nanoscale, **C. Menezes**, UFSC, Brazil; **V. Pavinato, L. Leidens**, UCS - Caxias do Sul University, Brazil; **F. Echeverrigaray, F. Alvarez, UNICAMP**, Brazil; **A. Michels, C. Figueroa**, UCS - Caxias do Sul University, Brazil

E1-6

Ni-based Self-Lubricating Laser Claddings for Hot Forming and High Temperature Vacuum Applications, **H. Torres**, AC2T Research GmbH, Austria; **B. Prakash**, Lulea University of Technology, Sweden; **M. Rodriguez Ripoll**, AC2T Research GmbH, Austria

INVITED:

E1-7

INVITED TALK: The Thinnest of The Thin: Friction and Adhesion Behavior of Graphene and other Two-Dimensional Materials, **R. Carpick**, University of Pennsylvania, USA

E1-9

Tribological Properties of Vanadium-doped Coatings via Reactive Molecular Dynamic Simulations, *I. Ponomarev, T. Polcar, P. Nicolini*, Czech Technical University in Prague, Czech Republic

E1-11

Tribological Properties of Duplex PEO/Chameleon Coating on Aluminum Alloys, *A. Voevodin, J. Shittu, A. Shirani*, University of North Texas, USA; *A. Yerokhin*, University of Manchester; *A. Korenyi-Both*, Colorado School of Mines, USA; *J. Magonye*, Army Research Laboratories, USA; *D. Berman, S. Aouadi*, University of North Texas, USA

E1-13

Analysis of Coating Layers and Defects Using Atomic Force Microscopy, *S. Kaemmer, G. Mendoza*, Park Systems Corporation, USA

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces

Room On Demand - Session E2

Mechanical Properties and Adhesion

1:00pm

E2-1

Structural, Nanomechanical and Tribological Properties of Manganese Phosphate Coatings, *E. Broitman, I. Nedelcu*, SKF Research & Technology Development Center, Netherlands; *T. von Schleinitz*, SKF Research & Technology Development Center, Germany

INVITED:

E2-2

INVITED TALK: Controlled Spalling of Microscale, Single-Crystal Films of High-Quality, High-Value Semiconductors, *C. Packard*, Colorado School of Mines, USA

E2-4

Industrial Applied Measurement Method of Localized Coating Property and Stress Profiles Within a Calotte Wear Crater via Nano-Indentation, *T. vom Braucke*, GP Plasma, Canada; *F. Papa*, GP Plasma, USA; *A. Harris, B. Beake*, Micro Materials Ltd, UK; *J. Gutiérrez, I. Martínez, A. Wennberg*, Nano4Energy, Spain; *C. Shin, J. Yun*, DONGWOO HST CO., Korea (Democratic People's Republic of); *N. Bierwisch, N. Schwarzer*, Saxonian Institute of Surface Mechanics SIO, Germany

E2-5

Nanostructured CVD W/WC Coating with Enhanced Resistance to Water Droplet Erosion and Cavitation, *Y. Zhuk*, Hardide Plc, UK

E2-6

Toughening Magnetron Sputtered S-phase Stainless Steel Coatings by Cycling the N₂ Gas Flow Rate, *C. Garzon*, Universidad Nacional de Colombia - Bogotá, Colombia; *A. Recco*, Universidade do Estado de Santa Catarina, Brazil

E2-7

Thin-film Adhesion: A Comparative Study Between Colored Picosecond Acoustics and the Stressed Overlayer technique, *A. Devos*, Iemr, Umr Cnrs, France; *M. Cordill*, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria

E2-8

Comparing the Residual Stress Gradient Measurement of ZrN using FIB-DIC and Xray Diffraction, *W. Lin, Y. Zhou*, National Chung Hsing University, Taiwan; *J. Huang*, National Tsing Hua University, Taiwan; *M. Lin*, National Chung Hsing University, Taiwan

E2-9

Investigation of Deformation Behavior Under Different Loading Directions in Transition Metal Thin Films, *M. Schoof*, RWTH Aachen University, Germany

E2-10

Study of Corrosion-Resistance Behavior and Tribological Properties of Electrophoretically Deposited Graphene Coatings on Titanium Substrate for Marine Applications, *M. Mallick, A. N.*, IIT Madras, India

E2-12

Effect of Residual Stress on the Mechanical Properties of Nitride-Based Protective Coatings Deposited by Pulsed-Plasma Sputtering Techniques, *E. Bousser, E. Herrera-Jimenez, L. Martinu, J. Klemberg-Sapieha*, Polytechnique Montreal, Canada

E2-13

Hyperelasticity and Viscoelasticity in Thin Organic Semiconductor Coatings, *S. Bull*, Newcastle University, UK; *A. Yadav, H. Gonabadi*, Newcastle University

E2-14

Abrasion Wear Resistance of Low Temperature Plasma Nitrided Inconel 625 Superalloy, *L. Varela, M. Ordoñez*, University of São Paulo, Brazil; *C. Pinedo*, Heat Tech & University of Mogi das Cruzes, Brazil; *A. Tschiptschin*, University of São Paulo, Brazil

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces

Room On Demand - Session E3

Tribology of Coatings for Automotive and Aerospace Applications

1:00pm

E3-1

Coating Properties and Wear Resistance of ta-C Deposited by Arc Ion Plating (AIP) Technique, *Y. Isomura, T. Takahashi, J. Fujita*, Kobe Steel Ltd., Japan; *S. Kujime*, Kobe Steel Ltd., Japan

E3-2

Numerical Study of Cracking in Thin Hard Coating Layers Using a Cohesive Phase-Field Model and Experimental Validation, *A. Rajaei Harandi*, RWTH Aachen, Germany; *S. Rezaei*, Technical University of Darmstadt, Germany; *S. Karimi Aghda, T. Brepols, J. Schneider, S. Reese*, RWTH Aachen University, Germany

E3-3

Duplex TiN and TiAlN Coatings on Ti-6Al-4V Alloy Formed by a Combination of Plasma Nitriding and Cathodic Arc Evaporation, *V. Pankov, Q. Yang*, National Research Council of Canada

E3-4

Determination of Method for Tribological Experiment on Ultra-Hard Coatings in Low-Viscosity Fuels, *K. Jacques*, University of North Texas, USA; *S. Berkebile, N. Murthy, J. Magonye*, Army Research Laboratories, USA; *S. Dixit*, Plasma Technology Inc., USA; *D. Berman, T. Scharf*, University of North Texas, USA

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces

Room On Demand - Session EP

Tribology and Mechanical Behavior of Coatings and Engineered Surfaces (Symposium E) Poster Session

1:00pm

EP-1

About the Impossibility of a Mathematical Relationship between Hardness Values Measured by Vickers and Instrumented Nanoindentation Techniques, *E. Broitman*, SKF Research & Technology Development Center, Netherlands

EP-2

Substrate Influence on the Adhesion of Metallic Films, *M. Cordill*, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria; *P. Kreiml*, Erich Schmid Institute for Material Science, Austrian Academy of Sciences, Austria

EP-3

Effects of Sputtering Gas Systems on the Preparation of a-BN Films using RF Sputtering, *Y. Yamada, T. Markuko*, Chiba Institute of Technology Graduate School, Japan; *M. Imamiya, Hana Saidan, Japan; Y. Sakamoto*, Chiba Institute of Technology, Japan

EP-4

Tribological Properties of Sputter-deposited Mo Films on Polyimide, *E. Kobierska, S. Hirn*, Montanuniversität Leoben, Austria; *M. Cordill*, Erich Schmid Institute for Material Science, Austrian Academy of Sciences, Austria; *R. Franz, M. Rebelo de Figueiredo*, Montanuniversität Leoben, Austria

EP-5

Tribocorrosion Behavior of Boride Coating on CoCrMo Alloy Produced by Thermochemical Process in 0.35% NaCl Solution, *A. Rentería*, Universidad de Guadalajara, México; *M. Doñu-Ruiz*, Universidad Politécnica del Valle de México, México; *M. Flores-Martinez*, Universidad de Guadalajara, México; *S. Muhl*, Universidad Nacional Autónoma de México, México; *N. Lopez-Perrusquia*, Universidad Politécnica del Valle de México, México; *E. García*, CONACYT - Universidad de Guadalajara, México

EP-6

Composite Coating on Cu Prepared by Plasma Electrolytic Aluminating, *C. Zhao, J. Sun, R. Cai, X. Nie*, University of Windsor, Canada; *J. Tjong*, Ford Motor Company, Canada; *D. Matthews*, University of Twente, Netherlands

EP-7

A Numerical-Experimental Study of Borided AISI 316L Steel Under Cyclic Contact Loading, **D. FERNÁNDEZ**, O. DE LA ROSA, G. Rodríguez-Castro, A. Meneses-Amador, National Polytechnic Institute, Mexico; A. LÓPEZ-LIÉVANO, A. Ocampo-Ramírez, Instituto Sanmiguelense, Mexico

EP-9

Novel Micromechanical Approaches to Understand the Influence of Hydrogen on Materials Behavior, **J. Duarte Correa**, J. Rao, Max-Planck-Institut für Eisenforschung GmbH, Germany; X. Fang, Technische Universität Darmstadt, Germany; G. Dehm, Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany

EP-10

Enhancement in Dry Cutting Performance and Tribological Characteristics of Amorphous Carbon and Bimetal Nitride Coatings Deposited by HiPIMS Technology With Positive Pulses, **D. Matthews**, University of Twente, Netherlands; R. Ganesan, University of Sydney, Australia; I. Fernandez-Martinez, Nano4Energy, Spain; M. Stueber, S. Ulrich, Karlsruhe Institute of Technology (KIT), Germany; D. McKenzie, M. Bilek, University of Sydney, Australia

New Horizons in Coatings and Thin Films

Room On Demand - Session F1

Nanomaterials and Nanofabrication

1:00pm

F1-1

Theory and Applications of Inverted Fireballs, **G. Eichenhofer**, 4A-PLASMA, Germany; J. Gruenwald, G-Labs, Austria

F1-2

Pulsed Aerosol Assisted Plasma Deposition: Influence of the Injection Parameters on ZnO/DLC Nanocomposite Thin Films, **A. Girardeau**, LAPLACE, LCC, France; G. Carnide, LAPLACE, LCC, IMRCP, France; A. Mingotaud, IMRCP, France; M. CAVARROC, Safran Tech, France; M. Kahn, LCC, France; R. Clergeaux, LAPLACE, France

F1-3

Design of Functional Nanoporous Ceramic Coatings via Infiltration of Polymer Templates, **D. Berman**, University of North Texas, USA

F1-4

Improvement of Adhesion between NiTi Alloy and Diamond-like Carbon Film by Bayesian Optimization, **M. Toyonaga**, Keio University, Japan; T. Hasebe, Keio University, Tokai University Hachioji Hospital, Japan; S. Maegawa, Tokai University Hachioji Hospital, Japan; T. Matsumoto, Keio University, Tokai University Hachioji Hospital, Japan; A. Hotta, T. Suzuki, Keio University, Japan

F1-5

Novel Type of Bent-Lattice Nanostructure in Crystallizing Amorphous Films Revealed by TEM: From Transrotational Microcrystals to Strain Nanoengineering and Novel Amorphous Models, **V. Kolosov**, Ural Federal University, Russian Federation

F1-6

Deposition of Cu and Pt Metallic Clusters onto Titanium Dioxide Nanoparticles by DC Magnetron Sputtering for Hydrogen Production, **G. West**, Manchester Metropolitan University, UK; M. Bernareggi, G. Chiarello, E. Selli, University of Milan, Italy; A. Ferretti, ISTM-CNR Lab Nanotechnology, Italy; M. Ratova, P. Kelly, Manchester Metropolitan University, UK

F1-7

Manipulation of Thin Films and Nanostructures on Weakly-interacting Substrates by Selective Surfactant Deployment, **A. Jamnig**, Linköping University, IFM, Nanoscale Engineering Division, Sweden; N. Pliatsikas, M. Konpan, Linköping University, IFM, Nanoscale Engineering Division; J. Lu, Linköping University, IFM, Thin Film Physics Division, Sweden; J. Kovac, Josef Stefan Institute; G. Abadias, University of Poitiers, PPRIME Institute, CNRS, 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, USA; K. Sarakinos, Linköping University, Sweden

New Horizons in Coatings and Thin Films

Room On Demand - Session F2

High Entropy and Other Multi-principal-element Materials

1:00pm

F2-1

Combinatorial Design of High Entropy Alloys: A Rational Approach in Thin Film, **E. Garel**, H. Van Landeghem, R. Boichot, SIMAP, Grenoble-INP, CNRS, France

F2-2

Systematic Investigation of the Impact of Pure Metal Addition on AlCuMgZn Multi Principal Element Alloys, **J. Kirschner**, R. Gaschl, Vienna University of Technology, Austria; J. Bernardi, USTEM, Vienna Technical University, Austria; C. Eisenmenger-Sittner, Vienna University of Technology, Austria; C. Simson, LKR Leichtmetallkompetenzzentrum Ranshofen, Austria

F2-3

Improving Phase Stability, Hardness and Oxidation Resistance of Reactive Magnetron Sputtered (Al_xCr_wNb_yTa_zTi_n)N Thin Films by Si-alloying, **A. Kretschmer**, Institute of Materials Science and Technology, TU Wien, Austria; K. Yalamançhili, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; H. Rudigier, OC Oerlikon Management AG, Switzerland, Liechtenstein; P. Mayrhofer, TU Wien, Institute of Materials Science and Technology, Austria

F2-4

Carbon Containing Multicomponent Alloys with High Hardness, Ductility and Corrosion Resistance, **L. Zendejas Medina**, Uppsala University, Sverige; G. Lindwall, KTH - Royal Institute of Technology, Sweden; E. Pascaldou, Uppsala University, Sweden; L. Riekehr, Uppsala University, Angstrom Laboratory, Sweden; M. Tavares da Costa, Uppsala University, Sweden; S. Fritze, Uppsala University, Angstrom Laboratory, Sweden; K. Gamstedt, Uppsala University, Sweden; L. Nyholm, U. Jansson, Uppsala University, Angstrom Laboratory, Sweden

F2-5

Structural and Mechanical Properties of AlTiTaZr(-N) Medium Entropy Films (MEF) Obtained by DC Magnetron Sputtering in Dynamic Mode, **M. El Garah**, S. Achahe, LASMIS, CNRS- Université Technologique de Troyes, France; A. Michau, F. Schuster, CEA, Université Paris-Saclay, France; F. Sanchette, LASMIS, CNRS- Université Technologique de Troyes, France

F2-6

Mechanical Properties of Multilayered NbMoTaW Alloy Films with Cyclic Gradient Concentration, **Y. Chen**, **C. Chen**, National Taiwan Ocean University, Taiwan

F2-7

Unveiling Microplasticity Mechanisms in Metallic Glasses with the Help of Polymer-supported Thin Films, **O. Glushko**, Montanuniversität Leoben, Leoben, Austria; C. Mitterer, J. Eckert, Montanuniversität Leoben, Austria

F2-8

Phase Formation and Structural Properties of AlSiTaTiZr Multicomponent Thin Film Alloys, **F. Cemin**, M. Jimenez, UNICAMP, Brazil; L. Leidens, Universidade de Caxias do Sul, Brazil; R. Merlo, UNICAMP, Brazil; C. Figueroa, Universidade de Caxias do Sul, Brazil; F. Alvarez, UNICAMP, Brazil

F2-9

XPS Core-Level Shifts, Local Lattice Distortions and Charge Transfer in HfNbTiVZr Refractory High Entropy Alloy, **L. Casillas-Trujillo**, Linköping University, IFM, Sweden; B. Osinger, R. Lindblad, D. Karlsson, S. Fritze, K. von Feandt, Uppsala University, Angstrom Laboratory, Sweden; B. Alling, Linköping University, IFM, Sweden; U. Jansson, Uppsala University, Angstrom Laboratory, Sweden; I. Abrikosov, Linköping University, IFM, Sweden; E. Lewin, Uppsala University, Angstrom Laboratory, Sweden

New Horizons in Coatings and Thin Films

Room On Demand - Session F3

2D Materials: Synthesis, Characterization, and Applications

1:00pm

F3-1

Low-Temperature Synthesis of Vertically Standing Graphene by Microwave-Chemical Vapour Deposition, **I. Vasconcelos Joviano dos Santos**, **J. Kulczyk-Malecka**, S. Rowley-Neale, C. Banks, P. Kelly, Manchester Metropolitan University, UK

F3-2

Better than Homoepitaxy? van der Waals Layer Assisted Growth of Thin Films, **K. Tanaka**, University of California Los Angeles, USA; K. Hajo, Nagoya University, Japan; A. Deshpande, P. Arias, M. Liao, Y. Wang, H. Zaid, A. Aleman, M. Goorsky, S. Kodambaka, University of California Los Angeles, USA

F3-3

Graphene Deposition on Copper Using Concentrated Solar-Thermal Heating, **A. Alghfeli**, M. Abuseada, T. Fisher, University of California at Los Angeles, USA

New Horizons in Coatings and Thin Films

Room On Demand - Session FP

New Horizons in Coatings and Thin Films (Symposium F)

Poster Session

1:00pm

FP-1

Optical, Structural and Morphological Properties of NiO_x Thin Films Obtained by E-Beam, **J. Castillo**, Universidad Autónoma de Baja California, Colombia; **N. Nedev**, Universidad Autónoma de Baja California, Bulgaria; **B. Valdez**, Universidad Autónoma de Baja California, Mexico; **M. Bernechea**, University of Zaragoza, Spain; **M. Mendivil**, Centro de Investigación en Materiales Avanzados (CIMAV, Mexico); **M. Curiel**, Universidad Autónoma de Baja California, Mexico

FP-2

Characterization and Photoluminescence of Al- and Ga-doped V₂O₅ Nanostructures Synthesized by Thermally Activated Process, **C. Wang**, National Chung Hsing University, Taiwan; **C. Lu**, Chinese Culture University, Taiwan; **F. Shieu**, National Chung Hsing University, Taiwan; **H. Shih**, Chinese Culture University, Taiwan

FP-3

On the Grain Size Dependence on Film Thickness, **D. Altangerel**, **R. Dedoncker**, **F. Cougnon**, **D. Depla**, Ghent University, Belgium

FP-4

Structural and Photoluminescence Properties of ZnO Nanorods Grown on Various TCO Seed Layers by Chemical Bath Deposition, **T. Terasako**, **K. Hamamoto**, Ehime University, Japan; **M. Yagi**, National Institute of Technology (KOSEN), Kagawa College, Japan; **Y. Furubayashi**, **T. Yamamoto**, Research Institute, Kochi University of Technology, Japan

FP-5

Superior Hydrophilicity in a Magnetron Sputtered Fe-Cr-Ni Thin Film With Nano-Pyramid Surface Structure, **P. Yiu**, **J. You**, **S. Wang**, **J. Chu**, National Taiwan University of Science and Technology, Taiwan

FP-6

Synergistic Effect of Ultra-thin Ag Film Coupled ITO Sandwich Structures, **Y. Gao**, **H. Song**, **W. Wu**, Da-Yeh University, Taiwan

FP-7

Development of Hydrogen Barrier Coatings based on Tungsten-doped Alloys, **I. Lakdhar**, **A. Alhusein**, Université de Technologie de Troyes (UTT), France; **J. Creus**, LASIE, CNRS-Université de La Rochelle, France

FP-8

Structure and Mechanical Properties of ZrB_{2+x} and ZrAlB_{2+x} Hard Coatings, **T. Fiantok**, **T. Roch**, **M. Truchlý**, Comenius University in Bratislava, Slovakia; **P. Švec**, Slovak Academy of Sciences, Slovakia; **M. Zahoran**, **M. Mikula**, Comenius University in Bratislava, Slovakia

FP-10

Fabrication of Nanocomposite Thin Films of Metallic Nano Particles in Amorphous Carbon, **S. Muhl**, **F. Maya**, Universidad Nacional Autónoma de México, México; **S. Rodil**, Universidad Nacional Autónoma de México, México; **R. Calderon**, Universidad Nacional Autónoma de México, México; **A. Perez**, Unidad de Investigación y Desarrollo Tecnológico (UIDT-CCADET), Hospital General de México, México

FP-11

Growth and Characterization of Ga₂O₃/Ag-Cu /Ga₂O₃ Multilayers by High Power Impulse Magnetron Sputtering, **S. Lin**, **W. Wu**, **D. Wu**, **J. Chiang**, **H. Sung**, Da-Yeh University, Taiwan

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session G1

Advances in Industrial PVD, CVD and PCVD Processes and Equipment

1:00pm

INVITED:

G1-1

INVITED TALK: Deposition of Functional Nano-Coatings Using Atmospheric Pressure Plasmas, **D. Pappas**, **A. Aref**, **A. Sy**, Plasmatreat USA, Inc., USA

G1-3

Parametric Analysis of the Selective GTAW Remelting Process for WC-10Co-4Cr Coating by HVOF, **H. Santos**, Universidade Federal do Pampa, Brazil; **N. Mayhassen**, Instituto Tecnológico de Aeronáutica, Brazil; **A. Miranda**, **H. SVOBODA**, Universidad de Buenos Aires, Argentina; **A. Oliveira**, Universidade Federal do Pampa, Brazil

G1-4

HIPIMS –Ready on Industrial Scale for Modern Production, **P. Immich**, **G. Negrea**, **D. Doerwald**, **R. Jacobs**, **M. Eerden**, **R. Ganesan**, **L. Tegelaers**, IHI Hauser Techno Coating B.V., Netherlands

G1-5

Carbon coating on Three-dimensional Anodically Oxidized Titanium Foam with Hierarchical Nanostructure for Capacitive Deionization Electrode, **J. Huang**, **P. Hsieh**, **J. He**, Feng Chia University, Taiwan

G1-6

Digital Twin PVD Coater Matsight - State-of-the-Art and Future Outlook, **A. Obrušnik**, **P. Zikan**, **M. Kubecka**, PlasmaSolve s.r.o., Czechia

G1-7

Oxygen-Controlled Crystal Structures and Properties of SnO₂ Infrared Transparent Conducting Films, **L. Xu**, **L. Yang**, Harbin Institute of Technology, China; **J. Zhu**, Key Laboratory of Micro-systems and Micro-structures Manufacturing, China

INVITED:

G1-8

INVITED TALK: New Developments in Magnetron Sputtering Devices, **D. Monaghan**, **V. Bellido-Gonzalez**, **T. Sgrilli**, **R. Brown**, **J. Brindley**, **B. Daniel**, Gencoa Ltd, UK

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session G2

Surface Modification of Components in Automotive, Aerospace and Manufacturing Applications

1:00pm

INVITED:

G2-1

INVITED TALK: Enhancing TiAl Oxidation Resistance at High Temperature: A Challenge for the Aerospace Industry, **M. Cavarroc**, Safran Tech, France

G2-3

Electrolytic Plasma Polishing as Post-Treatment for Additively Manufactured Stainless Steel, **N. Laugel**, **A. Matthews**, **A. Yerokhin**, The University of Manchester, UK

G2-4

PEO Coatings for Adhesive Bonded AA6060 Components, **D. Shore**, The University of Manchester, UK; **J. Avelar-Batista Wilson**, BCW Manufacturing Group Ltd, UK; **A. Matthews**, **A. Yerokhin**, The University of Manchester, UK

G2-5

Cobalt-based Thin Films as Electrocatalysts for Water Recombination Applications, **C. Linder**, Linköping University, IFM, Nanostructured Materials, Sweden; **S. Gangaprasad Rao**, **A. Le Febvrier**, Linköping Univ., IFM, Thin Film Physics Div., Sweden; **S. Munktel**, Swerim AB, Sweden; **P. Eklund**, Linköping Univ., IFM, Thin Film Physics Div., Sweden; **E. Björk**, Linköping University, IFM, Nanostructured Materials, Sweden

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session G3

Innovative Surface Engineering for Advanced Cutting and Forming Tool Applications

1:00pm

G3-1

Enhancing the Performance of Rake and Flank Surface Textured Ceramic Tool Filled With Solid Lubricants, **S. Nagarajan**, **S. Venkata Sai Prabhu**, **S. G. A. G. S. N.**, Sastra Deemed University, India

G3-2

Characterization of Different AlCrN PVD Coatings Deposited into H13 Steel for Lube-free Aluminum Die Casting Application, **N. Delfino de Campos Neto**, **A. Korenyi-Both**, **S. Midson**, **M. Kaufman**, Colorado School of Mines, USA

G3-3

12 µm in PVD with HiPIMS, *C. Schiffrers, T. Leyendecker, W. Kölker, CemeCon AG, Germany*

G3-4

Cross-sectional Characterization of Microstructural, Phase and Elemental Changes during High-Temperature Oxidation of AlCrSiN Coatings, *N. Jäger*, Christian Doppler Laboratory for Advanced Synthesis of Novel Multifunctional Coatings at the Department of Materials Science, Montanuniversität Leoben, Leoben, Austria; *S. Spor*, voestalpine eifeler-Vacotec GmbH, Düsseldorf, Germany; *M. Meindlhuber*, Christian Doppler Laboratory for Advanced Synthesis of Novel Multifunctional Coatings at the Department of Materials Science, Montanuniversität Leoben, Austria; *H. Hruby*, *F. Nahif*, voestalpine eifeler-Vacotec GmbH, Düsseldorf, Germany; *C. Mitterer*, Montanuniversität Leoben, Austria; *J. Keckes*, Erich Schmid Institute for Materials Science, Austrian Academy of Sciences, Leoben, Austria; *R. Daniel*, Christian Doppler Laboratory for Advanced Synthesis of Novel Multifunctional Coatings at the Department of Materials Science, Montanuniversität Leoben, Austria

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session G4

Pre-/Post-Treatment and Duplex Technology

1:00pm

INVITED:

G4-1

INVITED TALK: Comprehensive Characterization of Surface Modification Mechanisms in Boron Nitride Films Prepared by a Reactive Plasma-assisted Coating Technique, *K. Eriguchi*, 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

G4-3

Notable Difference between Rapid-Thermal and Microwave Annealing on Ge pMOSFETs, *F. Chu*, *K. Chang-Liao*, National Tsing Hua University, Taiwan; *D. Ruan*, National Tsing Hua University, China; *S. Yi*, National Tsing Hua University, Taiwan

G4-4

Characterization of Tungsten-doped InZnO Thin Films with Plasma Treatment for Conductive-bridge RAM Applications, *C. Hsu*, National Chiao Tung University, Taiwan; *P. Liu*, *K. Gan*, *D. Ruan*, *Y. Chiu*, *S. Sze*, National Chiao Tung University, Taiwan

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session G5

Hybrid Systems, Processes and Coatings

1:00pm

INVITED:

G5-1

INVITED TALK: Frontiers of Surface Engineering for Ultra-low Friction and Wear, *A. Erdemir*, Texas A&M University, USA

G5-3

From *On-line* Sensor Validation to *in-situ* Monitoring of Layer Growth: Coatings around Fiber-Bragg-Gratings, *U. Beck*, *A. Mitzkus*, *M. Sahre*, *T. Lange*, *M. Weise*, *M. Bartholmai*, *V. Schukar*, *F. Basedau*, *D. Hofmann*, *E. Köppe*, BAM Berlin, Germany

G5-4

Characterization of the Combination of Microwave and Laser Ablation Plasmas, *E. Camps*, *E. Campos-Gonzalez*, Instituto Nacional de Investigaciones Nucleares, Mexico

G5-6

Thermal Stability of Passivated Oxygen Vacancy in Indium Gallium Zinc Oxide with Supercritical Fluid Cosolvent Oxidation, Post Annealing or Oxygen Plasma Treatment, *C. Lin*, *P. Liu*, National Chiao Tung University, Taiwan; *D. Ruan*, National Chiao Tung University, China; *Y. Chiu*, *K. Gan*, *C. Hsu*, National Chiao Tung University, Taiwan; *S. Sze*, National Chiao Tung University, USA

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session G6

Application-Driven Cooperations between Industry and Research Institutions

1:00pm

G6-1

Hard Protective Coatings Inside Narrow Tubes and Cavities in Aircraft Engine Components, *J. Crespo Villegas*, *A. Kilicaslan*, *O. Zabeida*, *E. Bousser*, Polytechnique Montreal, Canada; *J. Klemberg-Sapieha*, Polytechnique Montreal, Canada; *L. Martinu*, Polytechnique Montreal, Canada

G6-2

Prediction of Loss of Barrier Properties in Cracked Thin Coatings on Polymer Substrates Subjected to Tensile Strain, *M. Tavares da Costa*, *E. Gamstedt*, Uppsala University, Angstrom Laboratory, Sweden

G6-3

PALMS - Plasma Additive Layer Manufacture Smoothing, *T. Brzezinka*, *J. Housden*, *A. Fox*, Wallwork Cambridge Ltd, UK; *N. Laugel*, *A. Matthews*, *A. Yerokhin*, The University of Manchester, UK

Surface Engineering - Applied Research and Industrial Applications

Room On Demand - Session GP

Surface Engineering - Applied Research and Industrial Applications (Symposium G) Poster Session

1:00pm

GP-1

Corrosion Induced Diffusion Pathways in Thin Film Materials Investigated by Atom Probe Tomography, *O. Hudak*, CDL-SEC, TU Wien, Austria; *E. Aschauer*, TU Wien, CDL-SEC, Austria; *V. Dalbauer*, FAU Erlangen, Germany; *L. Shang*, *O. Hunold*, *M. Arndt*, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; *P. Polcik*, Plansee Composite Materials GmbH, Germany; *P. Felfer*, FAU Erlangen, Germany; *H. Riedl*, TU Wien, CDL-SEC, Austria

GP-2

Engineered Phase Differences between HiPIMS Power and Substrate Bias for Improved Mechanical Properties of Titanium Nitrides, *Y. Lin*, *W. Wu*, Da-Yeh University, Taiwan

GP-3

Thermally Spayed Coatings with Integrated Sensor Systems for Tribological Load Surfaces, *A. Dörner-Reisel*, Schmalkalden University of Applied Sciences, Germany; *W. Ahmad Akhtar*, *J. Seeger*, *G. Reisel*, Oerlikon Metco WOKA GmbH Barchfeld, Germany

GP-4

Performance Enhancement of pGe MOS device with Pre- and Post-Deposition Microwave Annealing Treatment, *Y. Chien*, National Tsing Hua University, Taiwan; *K. Chang-Liao*, *D. Ruan*, *S. Yi*, National Tsing Hua University, Taiwan; *F. Chu*, National Tsing Hua University, Taiwan

GP-5

Design of Surface Layers with Phase Change with Novel Properties, *R. Basu*, VTU Kundana, Bangalore, India

GP-6

Effect of Cu Content and Melting Temperature on the Oxide Film Formation and the Quality of Molten 6000-Series Aluminum Alloys, *H. Jang*, *P. Youn*, *H. Kang*, *G. Lee*, *J. Park*, *E. Kim*, *J. Jeon*, *S. Shin*, Korea Institute of Industrial Technology (KITECH), Republic of Korea

GP-7

TiO₂-Silicon Nanowire Arrays for Inorganic Solar Cell Applications, *A. Chiou*, National Formosa University, Taiwan

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes

Room On Demand - Session H1

Spatially-resolved and In-Situ Characterization of Thin Films and Engineered Surfaces

1:00pm

INVITED: **H1-1**
 INVITED TALK: Multimodal and *in situ* Electron Microscopy to Understand Local Deformation Mechanics, **J. Kacher**, Georgia Institute of Technology, USA

H1-3
 Development of In-situ Liquid Cell Transmission Electron Microscopy for Quantifying Temperature-Dependent Thin Film and Nanostructure Processing, **S. Lee**, Massachusetts Institute of Technology, USA; **N. Schneider**, Renata Global, USA; **J. Park**, Princeton University, USA; **S. Tan**, F. Ross, Massachusetts Institute of Technology, USA

H1-4
 UHV Specimen Transfer Systems for Analysis of Reactive Materials with Atom Probe Tomography, **R. Ulfing**, **K. Rice**, **T. Prosa**, **D. Reinhard**, **J. Shepard**, CAMECA Instruments Inc., USA; **U. Maier**, Ferrovac GmbH, Switzerland

H1-5
 Cold Sprayed Cr-coating on Optimized ZIRLO™ Claddings: An Atom Probe Tomography Study of the Cr/Zr Interface and its Microstructural and Chemical Evolution after Autoclave Corrosion Testing, **A. Fazi**, **H. Aboufadel**, **H. André**, **M. Thuvander**, Chalmers University of Technology, Gothenburg, Sweden

INVITED: **H1-6**
 INVITED TALK: Multicracking of Thin Films and Nanostructures on Stretchable Substrates; Impact on Magnetic Properties, **D. Faurie**, **F. Zighem**, **S. Merabine**, LSPM-CNRS, Université Paris13, France; **P. Lupo**, **A. Adeyeye**, National University of Singapore

H1-9
 Nano-scale Residual Stress Profiling in Ultra-thin Si₃N₄/ZnO Multilayer Stacks using FIB-DIC Method, **M. Sebastiani**, Roma TRE University, Italy

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes

Room On Demand - Session H2

Advanced Mechanical Testing of Surfaces, Thin Films, Coatings and Small Volumes

1:00pm

H2-1
 Advanced Characterization Techniques for Zinc Based Coatings on Steel Varying from Microstructure Investigation to Mechanical Testing, **H. Chaieb**, Mines ParisTech, PSL Research University, Tunisia; **V. Maurel**, **K. Ammar**, **S. Forest**, **A. Koster**, Mines ParisTech, PSL Research University, France; **F. Nozahic**, **J. De Strycker**, ArcelorMittal Global R&D Gent, Belgium; **J. Mataigne**, ArcelorMittal Global R&D Maizières, France; **A. Tanguay**, LMS, Ecole Polytechnique, Paris-Saclay University, France; **E. Hériprié**, MSSMat, CentraleSupélec, Paris-Saclay University, France

H2-2
 Toward Novel Stretchable Electronics with Nanostructured Metallic Glass Films, **M. Ghidelli**, Max-Planck-Institut für Eisenforschung GmbH, Germany; **H. Idrissi**, Université Catholique de Louvain, Belgium; **A. Orekhov**, University of Antwerp, Belgium; **J. Raskin**, Université Catholique de Louvain, Belgium; **J. Park**, Yonsei University, Republic of Korea; **A. Li Bassi**, Politecnico di Milano, Italy; **T. Pardo**, Université Catholique de Louvain, Belgium

H2-3
 Intrinsic Mechanical Properties of Moderate Temperature Processed Cvd Amorphous Silicon Oxide (SiO₂) and Oxynitride (SiO_xN_y) Thin Films, **M. Puyo**, **C. Lebesgue**, **K. Topka**, Université de Toulouse, France; **B. Diallo**, Univ. Orléans, France; **R. Laloo**, **V. Tura**, **H. Vergnes**, **D. Samelot**, **F. Senocq**, **B. Caussat**, Université de Toulouse, France; **N. Pellerin**, **C. Genevois**, Univ. Orléans, France; **C. Vahlas**, Université de Toulouse, France

H2-4
 New Models and Advancement in Measuring the Elastic Behaviour of Thin Films using Impulse Excitation Technique, **A. Alhoussein**, University of Technology of Troyes (UTT), France; **E. Zgheib**, University of Technology of Troyes (UTT) and Lebanese University (UL), France; **M. Slim**, University of Technology of Troyes (UTT), France; **K. Khalil**, Lebanese University, Lebanon; **M. François**, University of Technology of Troyes (UTT), France

H2-5
 Influence of the Bonding Nature on the Fatigue Resistance of Cr-based Thin Films, **L. Zauner**, **R. Hahn**, TU Wien, CDL-SEC, Austria; **M. Alfreider**, Montanuniversität Leoben, Department of Materials Science, Austria; **O. Hunold**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; **P. Polcik**, Plansee Composite Materials GmbH, Germany; **D. Kiener**, Montanuniversität Leoben, Department of Materials Science, Austria; **H. Riedl**, TU Wien, CDL-SEC, Austria

H2-6
 Development and Application of a Multifunctional Nanoindenter: Coupling to Electrical Measurements and Integration in-situ in a Scanning Electron Microscope, **F. Volpi**, **S. Comby-Dassonneville**, **C. Boujrouf**, **M. Verdier**, SIMaP – Univ. Grenoble Alpes, CNRS, SIMaP, France; **D. Pellerin**, CSI/Scientec, France

H2-7
 X-Ray Photoelectron Spectroscopy Analysis of Electronic Band Structure for MIM Capacitor Interfaces, **S. Hoang**, **T. Ngo**, **E. Januar**, **M. McBriarty**, **A. Lee**, **C. Clavera**, Intermolecular Inc., a subsidiary of Merck KGaA, Germany

INVITED: **H2-8**
 INVITED TALK: Strength and Fracture Toughness at Elevated Temperature of Monolithic and Multilayered Hard Coatings, **J. Molina-Aldareguia**, IMDEA Materials Institute, Spain

H2-10
 The Spinodal Decomposition of Nanolamellar CVD Ti_{1-x}Al_xN recorded by *in-situ* Scanning Transmission Electron Microscopy, **C. Saringer**, **M. Tkadletz**, Montanuniversität Leoben, Austria; **I. Letofsky-Papst**, Institute of Electron Microscopy and Nanoanalysis, NAWI Graz, Graz University of Technology and Graz Centre for Electron Microscopy, Austria; **C. Czettel**, CERATIZIT Austria GmbH, Austria; **N. Schalk**, Montanuniversität Leoben, Austria

H2-11
 Improving the High Temperature Hardness of Nanocrystalline Copper through Tungsten Nanoparticles, **N. Rohbeck**, **T. Edwards**, **E. Huszár**, **L. Pethő**, **X. Maeder**, **J. Michler**, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes

Room On Demand - Session H3

Characterization of Coatings and Small Volumes in Harsh Environments

1:00pm

INVITED: **H3-1**
 INVITED TALK: Investigating Plasticity Effects on Failure and Fracture at the Microscale, **N. Mara**, **K. Schmalbach**, University of Minnesota, USA; **R. Ramachandramoorthy**, **J. Michler**, Empa - Swiss Federal Laboratories for Materials Science and Technology, Switzerland; **W. Gerberich**, University of Minnesota, USA

H3-3
 High Temperature Erosion Performance Evaluation of Advanced Materials, **D. Patra**, **S. Josyula**, **H. Prasanna**, Ducom Instruments, India; **F. Alemano**, **D. Veeregowda**, Ducom Instruments, Europe

H3-4
 Characterization of Selective Solar Absorbing Coatings Under Operating Conditions, **C. D'Alessandro**, **A. Caldarelli**, **D. De Maio**, **E. Gaudino**, UniNA and CNR - ISASI, Italy; **M. Musto**, UniNa - Università degli Studi di Napoli "Federico II", Italy; **D. De Luca**, UniNA and CNR - ISASI, Italy; **E. Di Gennaro**, UniNA - Università degli Studi di Napoli "Federico II", Italy; **R. Russo**, CNR - ISASI, Italy

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes

Room On Demand - Session HP

Advanced Characterization Techniques for Coatings, Thin Films, and Small Volumes (Symposium H) Poster Session

1:00pm

HP-1
 Expanding the Information and Increasing the Reliability of XPS Analysis, **D. Baer**, Pacific Northwest National Laboratory, USA; **K. Artyushkova**, Physical Electronics, USA; **C. Easton**, CSIRO, Australia; **M. Engelhard**, Pacific Northwest National Laboratory, USA; **A. Shard**, National Physical Laboratory, UK

HP-2

Electric Field Strength-Dependent Accuracy of TiAlN Thin Film Composition Measurements by Laser-Assisted Atom Probe Tomography, **M. Hans, J. Schneider**, RWTH Aachen University, Germany

HP-3

Integrated Atom Probe/EBSD for Grain and Phase Boundary Analysis of Coatings and Thin Films, **R. Ulfig, Y. Chen, K. Rice, T. Prosa**, CAMECA Instruments Inc., USA

HP-4

Sub-50 nm X-ray Diffraction Reveals Nanoscale Residual Stress and Microstructure Distributions across the Cutting Edge Area of a TiN Coating on WC-Co, **M. Meindlumer, N. Jäger, S. Spor**, Montanuniversität Leoben, Austria; **M. Rosenthal**, ESRF Grenoble, France; **H. Hruby**, eifeler-Vacotec GmbH, Düsseldorf, Germany; **J. Keckes, C. Mitterer**, Montanuniversität Leoben, Leoben, Austria; **R. Daniel, J. Keckes, J. Todt**, Montanuniversität Leoben, Austria

HP-5

e-Poster Presentation: Nanoindentation Analysis as a Two-Dimensional Tool for Mapping the Mechanical Properties of Complex Microstructures, **N. Randall, J. Breguet**, Alemlis, Switzerland

HP-6

Microstructural Influences on the Fracture Properties of CrN Coatings, **R. Hahn, S. Rosenecker**, CDL-SEC, TU Wien, Austria; **T. Wojcik**, TU Wien, Institute of Materials Science and Technology, Austria; **O. Hunold**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; **S. Kolozsvári**, Plansee Composite Materials GmbH, Germany; **H. Riedl**, TU Wien, CDL-SEC, Austria

HP-9

Thin Film Characterization Utilizing Broad Ion Beam Specimen Preparation and FESEM, **N. Erdman, N. Inoue**, JEOL USA Inc, USA

Topical Symposia

Room On Demand - Session TS1

Anti- and De-icing Surface Engineering

1:00pm

TS1-1

Role of the Thin Coating in the Durability of Icephobic Thin-on-Thick Coating Systems, **S. Brown, J. Lengaigne**, Polytechnique Montreal, Canada; **N. Sharifi, A. Dolatabadi**, Concordia University, Canada; **L. Martinu, J. Klemberg-Sapieha**, Polytechnique Montreal, Canada

TS1-2

Improving the Efficiency of Electro-Thermal De-Icing Systems With Icephobic Coatings, **J. Brierley, X. Hou, B. Turnbull, W. Sun**, University of Nottingham, UK

TS1-3

Icephobic Coatings by Thermal Spraying as Surface Engineering Technique, **H. Koivuloto**, Tampere University, Finland; **R. Khammas, V. Donadei**, Tampere University, Finland

TS1-4

Limitations of Anti-icing Materials for Aeronautic Applications, **P. Garcia**, National Institute of Aerospace Technology, Spain; **J. Mora, Isdefe**, Spain; **A. Agüero**, National Institute of Aerospace Technology, Spain

TS1-5

Fluorination of Aluminum Surfaces as a General Strategy to Induce an Effective Anti-Icing Response, **C. Santos, V. Rico, J. Mora, P. Garcia**, University of Seville, Spain; **A. Agüero Bruna**, Instituto Nacional de Técnica Aeroespacial (INTA), Spain; **A. González-Elipe, C. López-Santos**, Instituto de Ciencia de Materiales de Sevilla (CSIC-USE), Spain

Topical Symposia

Room On Demand - Session TS2

New Horizons in Boron-Containing Coatings: Modeling, Synthesis and Applications

1:00pm

TS2-1

The Industrially Deposited W-B-C Coatings from Segmented Target, **M. Kroker, P. Matej, P. Souček, L. Zábanský, V. Buršíková**, Masaryk University, Czechia; **V. Sochora, M. Jílek, SHM**, Czechia; **P. Vašina**, Masaryk University, Czechia

TS2-2

Thermo-physical Properties of CVD Ti(B,N) Coatings, **C. Kainz, N. Schalk, M. Tkadletz, C. Saringer**, Montanuniversität Leoben, Austria; **M. Winkler**, Fraunhofer Institute for Physical Measurement Techniques IPM, Germany; **A. Stark, N. Schell**, Institute of Materials Research, Helmholtz-Zentrum Geesthacht, Germany; **J. Julin**, Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Germany; **C. Czetti**, Ceratizit Austria GmbH, Austria

TS2-3

Chemical Shift in W-B-C Systems: Experiments and Modeling, **J. Ženišek**, Masaryk University, Czechia; **P. Ondračka**, RWTH Aachen University, Germany; **P. Souček**, Masaryk University, Czechia; **D. Holec**, Montanuniversität Leoben, Austria; **M. Stupavská**, Masaryk University, Czechia; **J. Schneider**, RWTH Aachen, Germany; **P. Vašina**, Masaryk University, Czechia

TS2-4

Superior High-temperature Behavior of Amorphous Coatings from Quinary Hf-B-Si-C-N System, **P. Zeman, S. Zuzjakova, R. Cerstvy**, University of West Bohemia, Czech Republic; **E. Meletis**, University of Texas at Arlington, USA; **J. Vlcek**, University of West Bohemia, Czech Republic

TS2-5

Application of the Heat Balance Integral Method to the Growth Kinetics of Nickel Boride Layers on Inconel 718 Superalloy, **A. Contla-Pacheco**, Instituto Politecnico Nacional, Mexico; **M. Keddam**, Laboratoire de Technologie des Matériaux, Faculté de Génie Mécanique et Génie des Procédés, Algeria; **L. Lartundo-Rojas, M. Ortega-Avilés, I. Mejia-Caballero, I. Campos-Silva**, Instituto Politecnico Nacional, Mexico

TS2-6

Influence of the Diffusion Annealing Process in the Corrosion Susceptibility of Cobalt Boride Layer Immersed in Hank's Solution, **A. Delgado-Brito, I. Mejia-Caballero**, Instituto Politecnico Nacional, Mexico; **M. Palomar-Pardavé**, Universidad Autonoma Metropolitana-AZC, Mexico; **J. Martinez-Trinidad, I. Campos-Silva**, Instituto Politecnico Nacional, Mexico

TS2-7

Pulsed-DC Powder-Pack Boriding: Growth Kinetics of Boride Layers on AISI 316 L Steel and Inconel 718 Alloy, **E. Hernandez-Ramirez, I. Campos-Silva, J. Rosales-Lopez, A. Contreras-Hernandez, E. Valdez-Zayas, I. Mejia-Caballero, J. Martinez-Trinidad**, Instituto Politecnico Nacional, Mexico

TS2-8

Stoichiometry, Structure and Mechanical Properties of Co-Sputtered Ti_{1-x}Ta_xB_{2±Δ} Coatings, **B. Grancic, K. Viskupova, M. Mikula**, Comenius University in Bratislava, Slovakia; **M. Caplovicova**, Slovak University of Technology in Bratislava, Slovakia; **L. Satrapinskyy, T. Roch, M. Truchly**, Comenius University in Bratislava, Slovakia; **M. Sahul**, Slovak University of Technology in Bratislava, Slovakia; **M. Gregor**, Comenius University in Bratislava, Slovakia; **P. Svec Sr.**, Slovak Academy of Sciences, Slovakia; **M. Zahoran, P. Kus**, Comenius University in Bratislava, Slovakia

TS2-9

Effect of MB₂ (M = Zr, Ta, Nb, Hf, Ti, V, Cr) and W₂B₅ Target Composition on Plasma Properties and Thin-Film Stoichiometry During Magnetron Sputtering, **I. Zhirkov**, Linköping University, Sweden; **F. Klimashin**, Linköping University, Sweden; **G. Greczynski**, Linköping University, Sweden; **P. Polcik, S. Kolozsvári**, Plansee Composite Materials GmbH, Germany; **J. Greene**, University of Illinois, USA, Linköping University, Sweden, National Taiwan Univ. Science & Technology, Taiwan; **I. Petrov**, University of Illinois, USA, Linköping University, Sweden; **J. Rosen**, Linköping University, Sweden

TS2-10

Recent Process Development of Magnetron Sputtered Deposited Boron Carbide Thin Films for Neutron Detection at the European Spallation Source, **C. Lai, C. Höglund, P. Svensson**, Detector Group, European Spallation Source ERIC, Sweden; **L. Robinson**, Detector Group, European Spallation Source ERIC, Sweden; **J. Birch, L. Hultman**, Thin Film Physics Division, IFM, Linköping University, Sweden; **R. Hall-Wilton**, Detector Group, European Spallation Source ERIC, Sweden

TS2-11

Thermomechanical Properties and Oxidation Resistance of Ternary W_{1-x}Ta_xB_{2-z} Coatings, **C. Fuger**, TU Wien, CDL-SEC, Austria; **V. Moraes**, Institute of Materials Science and Technology, TU Wien, Austria; **R. Hahn**, TU Wien, CDL-SEC, Austria; **O. Hunold**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; **P. Polcik**, Plansee Composite Materials GmbH, Germany; **P. Mayrhofer**, Institute of Materials Science and Technology, TU Wien, Austria; **H. Riedl**, TU Wien, CDL-SEC, Austria

TS2-12

Fracture-Microstructure Relations of W-diboride Thin Films, **R. Hahn, C. Fuger**, TU Wien, CDL-SEC, Austria; **G. Habler**, University of Vienna, Austria; **H. Bolvardi**, Oerlikon Balzers, Oerlikon Surface Solutions AG, Liechtenstein; **P. Polcik**, Plansee Composite Materials GmbH, Germany; **P. Mayrhofer**, Institute of Materials Science and Technology, TU Wien, Austria; **H. Riedl**, TU Wien, CDL-SEC, Austria

TS2-13

Configurational and Vibrational Thermodynamics of Metastable Ternary $Ti_{1-x}Al_xB_2$ Alloys with Age-Hardening Potential, and their Constituent Binaries, **E. Johansson**, Linköping Univ., IFM, Theoretical Physics Div., Sweden; **N. Nedfors**, Linköping University, IFM, Thin Film Physics Division, Sweden; **F. Eriksson**, Linköping Univ., IFM, Thin Film Physics Div., Sweden; **A. Ektarawong**, Linköping Univ., IFM, Theoretical Physics Div., Sweden; **J. Rosen**, Linköping Univ., IFM, Thin Film Physics Div., Sweden; **B. Alling**, Linköping Univ., IFM, Theoretical Physics Div., Sweden

TS2-14

Design of Under/Overstoichiometric Superhard TaB_{2-x} Films, **V. Šroba**, T. Fiantok, M. Truchlý, Comenius University in Bratislava, Slovakia; **P. Švec, Jr.**, Slovak Academy of Sciences, Slovakia; **T. Roch**, L. Satrapinskyy, M. Zahoran, B. Grančič, P. Kúš, M. Mikula, Comenius University in Bratislava, Slovakia

TS2-15

Vacancies and Related Substoichiometry in Magnetron Sputtered Transition Metal Diboride Thin Films, **V. Moraes**, H. Riedl, P. Mayrhofer, TU Wien, Institute of Materials Science and Technology, Austria

INVITED:

TS2-16

INVITED TALK: Boron-containing Metallic-glass Coating: Unique Properties and Various Applications, **J. Chu**, National Taiwan University of Science and Technology (NTUST), Taiwan

TS2-18

XPS Analysis of TiB_x Thin Films, **N. Hellgren**, Messiah University, USA; **G. Greczynski**, Linköping University, Sweden; **M. Sortica**, Uppsala University, Sweden; **I. Petrov**, University of Illinois at Urbana Champaign, USA; **L. Hultman**, Linköping University, Sweden; **J. Rosen**, Linköping Univ., IFM, Thin Film Physics Div., Sweden

TS2-19

Mechanical Property Evaluation of $VNbMoTaWCrB$ Refractory High-entropy Alloy Thin Films by Micropillar Compression and Nanoindentation, **Y. Chen**, Chinese Culture University, Taiwan; **S. Chang**, National Tsing Hua University, Taiwan; **S. Hung**, C. Wang, National Taiwan University of Science and Technology, Taiwan; **J. Duh**, National Tsing Hua University, Taiwan; **J. Lee**, Ming Chi University of Technology, Taiwan

TS2-20

Effects of Stoichiometry and Individual Layer Thickness Ratio in the Quality of Epitaxial CrB_x/TiB_y Superlattice Thin Films, **S. Dorri**, N. Ghafoor, F. Eriksson, J. Palisaitis, B. Bakhit, L. Hultman, J. Birch, Linköping University, IFM, Thin Film Physics Division, Sweden

INVITED:

TS2-21

INVITED TALK: Boron-based Thin Film Materials for Future Neutron Technologies at the ESS, **J. Birch**, Linköping University, IFM, Thin Film Physics Division, Sweden

TS2-23

Thermal and Mechanical Properties of $(W,Zr)B_{2-z}$ Coatings Deposited by RF Magnetron Sputtering Method, **J. Chrzanowska-Giżyńska**, R. Psiuk, P. Denis, Polish Academy of Sciences, Poland; **Ł. Kurpaska**, National Centre for Nuclear Research, Poland; **T. Mościcki**, Polish Academy of Sciences, Poland

Topical Symposia

Room On Demand - Session TS3

In-Silicio Design of Novel Materials by Quantum Mechanics and Classical Methods (jointly sponsored by ICMCTF and AQS)

1:00pm

INVITED:

TS3-1

INVITED TALK: Computational Modeling of 3D Thin Film Growth Morphology: Influence of Angular and Energy Distribution of Particle Flux, **G. Abadías**, C. Mastail, C. Furgeaud, F. Nita, R. Mareus, A. Michel, Institut Prprime - CNRS - ENSMA - Université de Poitiers, France

TS3-3

Prediction of Composition, Crystalline Structure and Microstructure of Sputtered Multi-Component Coatings by a Virtual Machine, **D. Böhm**, Vienna University of Technology, Austria; **T. Schrefl**, Danube University Krems, Austria; **A. Eder**, MIBA High Tech Coatings GmbH, Austria; **C. Eisenmenger-Sittner**, Vienna University of Technology, Austria

TS3-4

Atomistic Modelling of Diffusion in Quasi-amorphous Nanocomposite Coatings, **G. Nayak**, D. Holec, Montanuniversität Leoben, Austria

TS3-5

Identifying Fingerprints of Point Defects in X-ray Photoelectron Spectroscopy Measurements of TiN and TiON with *ab initio* Calculations, **P. Ondračka**, RWTH Aachen University, Germany; **D. Holec**, Montanuniversität Leoben, Austria; **M. Hans**, J. Schneider, RWTH Aachen University, Germany

TS3-6

Structural Ordering of Molybdenum Disulfide studied via Reactive Molecular Dynamics Simulations, **P. Nicolini**, Czech Technical University in Prague, Czech Republic; **R. Capozza**, Italian Institute of Technology, UK; **T. Polcar**, Czech Technical University in Prague, Czech Republic

TS3-7

Strength, Transformation Toughening and Fracture Dynamics of Rocksalt-structure $Ti_{1-x}Al_xN$ ($0 \leq x \leq 0.75$) Alloys, **D. Sangiovanni**, F. Tasnadi, M. Oden, I. Abrikosov, Linköping University, Sweden

Topical Symposia

Room On Demand - Session TS4

Photocatalytic and Superhydrophilic Surfaces

1:00pm

TS4-1

Bixbyite-based Ta-N-O film: A Promising Candidate for Water Splitting?, **J. Capek**, S. Batkova, S. Haviar, M. Matas, J. Houska, University of West Bohemia, Czech Republic; **F. Dvorak**, University of Pardubice, Czech Republic

TS4-2

Double Perovskite $LaFe_{1-x}Ni_xO_3$ Coating Urchin-like Golden Nanoparticles to Enhance Water Splitting Reaction, **H. Tsai**, Y. Su, National Cheng Kung University (NCKU), Taiwan

TS4-3

Effect of Tungsten-Substitution on the Structure and Photocatalytic Properties of Anatase TiO_2 Thin Films Deposited on Polymer by PECVD, **W. Ravisy**, Université de Nantes, France; **B. Dey**, S. Bulou, P. Choquet, Luxembourg Institute of Science and Technology, Luxembourg; **N. Gautier**, Université de Nantes, France; **A. Goulet**, Université de Nantes, CNRS, France; **M. Richard-Plouet**, A. Granier, Université de Nantes, France

TS4-4

Photocatalytic Activity of a ZnO/Bi_2O_3 Thin Film Heterojunction, **S. Rodil**, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico; **A. Hernandez-Gordillo**, M. Bizarro, Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México; **J. Medina**, Instituto de Ciencias Aplicadas y Tecnologías, Universidad Nacional Autónoma de México

Topical Symposia

Room On Demand - Session TS5

Thin Films on Polymer Substrates: Flexible Electronics and Beyond

1:00pm

TS5-1

Conversion of Aluminium Oxide Coated Films for Food Packaging Applications – From a Single Layer Material to the Finished Pouch, **C. Struller**, Bobst Manchester Ltd., UK; **P. Kelly**, Manchester Metropolitan University, UK; **N. Copeland**, Bobst Manchester Ltd, UK

TS5-2

Functionalised Copper Nanoparticle Catalysts for Electroless Copper Plating on Textiles, **G. Taghavi Pourian Azar**, A. Copley, Coventry University, UK

TS5-3

Low-temperature Plasma Enhanced Atomic Layer Deposition of ZnO and Al_2O_3 Thin Films for Applications in Flexible Electronic Devices, **J. Castillo**, Universidad Autónoma de Baja California, Colombia; **N. Nedev**, Universidad Autónoma de Baja California, Bulgaria; **B. Valdez**, Universidad Autónoma de Baja California, Mexico; **N. Hernandez**, Instituto Politécnico Nacional (IPN), Mexico; **E. Martinez**, Centro de Investigación en Materiales Avanzados (CIMAV), Mexico; **M. Curiel**, Universidad Autónoma de Baja California, Mexico; **M. Mendivil**, M. Martinez, Centro de Investigación en Materiales Avanzados (CIMAV), Mexico

TS5-4

Roll-to-Roll Reactive Ion Etching of Nanoscale Features in Si for Next Generation Flexible Electronics, **Z. Ghaznavi**, Emerson and Renwick Ltd., USA; **N. Butcher**, J. Crowther, Emerson and Renwick Ltd., UK

TS5-5

HiPIMS Metallization of Polymers: Titanium on PEEK, **A. Chacko**, *K. Thorwarth, R. Crockett, U. Müller, H. Hug*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland

TS5-6

Fragmentation of ALD-PVD Multilayers on Flexible Substrates in Uniaxial and Biaxial Tension: Insights from in situ SEM and Synchrotron Diffraction Experiments, **B. Putz**, *T. Edwards, T. Xie, E. Huszar, L. Pethö*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland; *P. Kreiml*, Montanuniversität Leoben, Department of Material Physics, Austria; *M. Cordill*, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; *D. Thiaudiere*, Synchrotron SOLEIL, France; *D. Faurie*, LSPM-CNRS, Université Paris13, France; *P. Renault*, Université de Poitiers, France; *J. Michler*, Empa, Swiss Federal Laboratories for Materials Science and Technology, Thun, Switzerland

TS5-7

Optically Transparent Bacterial Nanocellulose Composites and Fibroin Substrates for Flexible Organic Devices, **M. Cremona**, Pontificia Universidade Católica do Rio de Janeiro, Brazil; *H. Barud*, Universidade de Araraquara, Brazil; *R. Carvalho*, Pontificia Universidade Católica do Rio de Janeiro, Brazil; *A. Cebrian*, UNESP, Brazil; *A. Barreto*, PUC-Rio, Brazil; *F. Maturi*, UNESP, Brazil; *R. Silva*, Chalmers University Technology, Sweden; *C. Legnani*, Universidade Federal de Juiz de Fora, Brazil; *S. Ribeiro*, UNESP, Brazil

Topical Symposia

Room On Demand - Session TSP

Topical Symposia (TS) Poster Session

1:00pm

TSP-1

Transparent nc-ZrB₂/a-BN Films for Protection of Optical Devices, **P. Kiryukhantsev-Korneev**, *A. Kozlova, K. Kozlova, E. Levashov*, National University of Science and Technology "MISIS", Russia

TSP-2

Novel AuAgSI Thin Film Metallic Glasses With Outstanding Electrical and Mechanical Properties, **L. Weniger**, *O. Glushko, C. Mitterer*, Montanuniversität Leoben, Austria; *J. Eckert*, Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Austria

TSP-3

Fe-based Thin Film Metallic Glass Coated on Porous Substrates as an Alternative Photocatalysts for Decolorization of Dye in Industrial Wastewater, **B. Hubert**, National Taiwan University of Science and Technology, Taiwan; *J. Chu*, National Taiwan University of Science and Technology (NTUST), Taiwan; *P. Yiu*, National Taiwan University of Science and Technology, Taiwan

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