

Tuesday, September 8, 2020

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Event A | Carl Zeiss Saal | CongressCenter CC | EG

### Registration

Monday, September 7, 2020 | 15:00 - 15:45

Tuesday, September 8, 2020 | 08:40 - 09:00

### 09:00 - 09:15 Opening of Special PSE 2020 | Halle 1

09:15 - 10:15 Opening lecture | Halle 1

PL0001

**CO<sub>2</sub>-neutral mobility as a challenge and opportunity for plasma surface technology throughout the energy chain**

Tim Hosenfeldt

Schaeffler AG, Herzogenaurach, Germany

### Session A1 | Simulation and modelling of growth, structure and properties

10:30 - 10:50

ORA101

**Development of a model to predict the s-phase thickness of plasma nitrided austenitic steels**

Phillip Marvin Reinders, Rohit Roopchand Patel, Günter Bräuer

Institute for Surface Technology, Braunschweig, Germany

10:50 - 11:10

ORA102

**Securing in-line layer thickness measurements by using spectroscopic plasma monitoring for real-time control and adjustment of refractive indices in production processes**

Thomas Schütte, J.-P. Urbach, P. Neiß, , , , , ,

PLASUS GmbH, Mering, Germany

11:10 - 11:30

ORA103

**Magnetron sputtering into deep grooves**

Pavel Mareš<sup>1</sup>, Jiří Vyskočil<sup>1</sup>, Martin Čada<sup>2</sup>, Zdeněk Hubička<sup>2</sup>

<sup>1</sup> HVM PLASMA, Praha 5, Czech Republic, <sup>2</sup> Czech Academy of Sciences, Praha 8, Czech Republic

11:30 - 12:30

**Lunch Break**

Exhibition | Foyer Halle 1

### Session A2 | Analytics of film structures & properties

12:30 - 13:00

KNA201

**Surface characteristics underpinning fretting wear performance of duplex chameleon/PEO coatings on Al under high contact loads**

Aleksey Yerokhin<sup>1</sup>, Mengyu Lin<sup>1</sup>, Andrey Voevodin<sup>2</sup>, Andras Korenyi-Both<sup>3</sup>, Tomasz Liskiewicz<sup>4</sup>, Allan Matthews<sup>1</sup>

<sup>1</sup> University of Manchester, Manchester, United Kingdom, <sup>2</sup> University of North Texas, Denton, United States, <sup>3</sup> Colorado School of Mines, Golden, United States, <sup>4</sup> Manchester Metropolitan University, Manchester, United Kingdom

13:00 - 13:20

ORA201

**Thermal stability of nanoparticle thin films characterized by x-ray scattering methods**

Tereza Košutová, Lukáš Horák, Jan Hanuš, Ondřej Kylián, Andrei

Choukourou, Miroslav Cieslar, Hynek Biederman, Milan Dopita

Charles University, Prague, Czech Republic

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13:20- 13:40  
ORA202

**High temperature stable ZrN-based thin films for plasmonic applications**

Jean-Francois PIERSON, Marius GIPPERICH, Zil FERNANDEZ, David PILLOUD, Thomas EASWARAKHANTHAN, Hervé RINNERT  
Institut Jean Lamour, NANCY, France

13:40 - 14:00  
ORA203

**Directionally Resolved Characterization of Sputter Processes with Force Probes and Quartz Crystal Microbalances**

Mathis Klette, Manuel Maas, Thomas Trottenberg, Holger Kersten  
Kiel University, Kiel, Germany

14:00 - 14:20  
ORA204

**Adhesion of Coatings vs. Strength of Composite Materials – A Review of Applications Evaluated by Centrifugal Adhesion Testing (CAT)**

Uwe Beck<sup>1</sup>, Gundula Hidde<sup>1</sup>, Stefan Hielscher-Hofinger<sup>1</sup>, Thorid Lange<sup>1</sup>, Matthias Weise<sup>1</sup>, Uwe Rietz<sup>2</sup>, Dietmar Lerche<sup>2</sup>  
<sup>1</sup> BAM, Berlin, Germany, <sup>2</sup> LUM GmbH, Berlin, Germany

**14:30 - 15:00**

**Coffee Break**

Exhibition | Foyer Halle 1

**Session A3 | Plasma diagnostics and simulation of plasma processes**

15:00 - 15:30  
KNA301

**Time-resolved optical emission spectroscopy of a unipolar and a bipolar pulsed magnetron sputtering discharge operated in an argon/oxygen gas mixture**

Martin Cada, Rainer Hippler, Vitezslav Stranak, Zdenek Hubicka  
Institute of Physics CAS, v. v. i., Prague 8, Czech Republic

15:30 - 15:50  
ORA301

**Scaling Particle-based Simulations of Plasma Processes to Industrial Applications using HPC**

Stephen M. Coppystone<sup>1</sup>, Paul Nizenkov<sup>1</sup>, Asim Mirza<sup>1</sup>, Marcel Pfeiffer<sup>2</sup>  
<sup>1</sup> Institute of Space Systems, boltzplatz, Stuttgart, Germany, <sup>2</sup> Institute of Space Systems, Stuttgart, Germany

15:50 - 16:10  
ORA302

**Computer-aided engineering of industrial PVD and PECVD coating chambers: past victories, future challenges**

Adam Obrusnik, Petr Zikan, Martin Kubečka, Kryštof Mrázek  
PlasmaSolve s.r.o., Brno, Czech Republic

16:10 - 16:30  
ORA303

**Collisional-radiative model of argon plasma for industrial PECVD tool for solar cells production**

Lazhar Rachdi<sup>1</sup>, Vladimir Sushkov<sup>1</sup>, Marc Hofmann<sup>1</sup>, Thomas Schütte<sup>2</sup>  
<sup>1</sup> Fraunhofer ISE, Freiburg im Breisgau, Germany, <sup>2</sup> PLASUS GmbH, Mering, Germany

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**Plenary Lecture & Partner Country Session | Halle 1**

16:45 - 17:15 Partner Country Session

17:15 - 18:00 **Pathways for the preparation of functional coatings by simulations at various scales**

PL0002

Jiri Houska<sup>1, 2, 2, 2, 2, 2, 2, 2, 2</sup>

<sup>1</sup> University of West Bohemia, Plzen, Czech Republic, <sup>2</sup>, ,

**Event B | Halle 1**

**Registration**

Monday, September 7, 2020 | 15:45 - 16:30

Tuesday, September 8, 2020 | 08:20 - 08:40

**09:00 - 09:15 Opening of Special PSE 2020 | Halle 1**

09:15 - 10:15 Opening lecture | Halle 1

PL0001

**CO<sub>2</sub>-neutral mobility as a challenge and opportunity for plasma surface technology throughout the energy chain**

Tim Hosenfeldt

Schaeffler AG, Herzogenaurach, Germany

**10:30 - 11:00 Coffee Break**

Exhibition | Foyer Halle 1

**Session B1 | Protective and tribological coatings 1**

11:00 - 11:30

KNB101

**Ternary transition metal diborides – Next generation protective coating materials?**

Helmut Riedl<sup>1</sup>, Christoph Fuger<sup>1</sup>, Rainer Hahn<sup>1</sup>, Tomasz Wojcik<sup>2</sup>, Paul Mayrhofer<sup>2</sup>, Peter Felfer<sup>3</sup>, Hamid Bolvardi<sup>4</sup>, Peter Polcik<sup>5</sup>

<sup>1</sup> CDL-SEC, TU Wien, Wien, Austria, <sup>2</sup> Institute of Materials Science, TU Wien, Vienna, Austria, <sup>3</sup> FAU Erlangen, Werkstoffwissenschaften, Erlangen, Germany, <sup>4</sup> Oerlikon Surface Solutions AG, Balzers, Liechtenstein, <sup>5</sup> Plansee Composite Materials GmbH, Lechbruck am See, Germany

11:30 - 11:50

ORB101

**Influence of the compound layer composition of steel to the adhesion of DLC films**

Christian Kipp<sup>1</sup>, Günter Bräuer<sup>1</sup>, Martin Weber<sup>2</sup>

<sup>1</sup> Institute for Surface Technology, Braunschweig, Germany, <sup>2</sup> Fraunhofer IST, Braunschweig, Germany

11:50 - 12:10

ORB102

**Analysis of the MoS<sub>2</sub> supply mechanism of triboactive (Cr,Al)N+Mo:S coatings**

Matthias Thiex, Kirsten Bobzin, Tobias Brögelmann, Christian Kalscheuer  
Institut für Oberflächentechnik, IOT, Aachen, Germany

12:10 - 12:30

ORB103

**Low temperature PVD hard coatings**

Hannes Joost, Florian Welzel, Heiko Frank  
GFE Schmalkalden e.V., Schmalkalden, Germany

**12:30 - 13:30**

**Lunch Break**

Exhibition | Foyer Halle 1

**Tuesday, September 8, 2020**

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**Session B2 | Protective and tribological coatings 2**

- 13:30 - 14:00  
KNB201      **Tribological properties of diamond-like carbon coatings deposited by deep oscillation magnetron sputtering in Ar-Ne discharges**  
Fabio Ferreira, Amílcar Ramalho, Albano Cavaleiro, João Oliveira  
University of Coimbra, Coimbra, Portugal
- 14:00 - 14:20  
ORB201      **Effect of HiPIMS impulse shape on DLC films deposition: process and mechanical properties**  
Ricardo Serra<sup>1</sup>, Fábio Ferreira<sup>2</sup>, Albano Cavaleiro<sup>2</sup>, João Carlos Oliveira<sup>2</sup>  
<sup>1</sup> CEMMPRE, University of Coimbra, Coimbra, Portugal, <sup>2</sup> CEMMPRE - University of Coimbra, Coimbra, Portugal
- 14:20 - 14:50  
ORB202      **Tribomechanical properties of doped DLC coatings deposited by HiPIMS**  
Jose Antonio Santiago Varela<sup>1</sup>, I. Fernandez-Martinez<sup>1</sup>, A. Wennberg<sup>1</sup>, M. Monclus<sup>2</sup>, J. Molina<sup>2</sup>, M. Panizo-Lai<sup>3</sup>, JC. Sanchez Lopez<sup>4</sup>, TC. Rojas<sup>4</sup>, S. Goel<sup>5</sup>, JL. Endrino<sup>6</sup>  
<sup>1</sup> Nano4Energy, Madrid, Spain, <sup>2</sup> IMDEA Materials, Getafe, Spain, <sup>3</sup> UPM, Madrid, Spain, <sup>4</sup> ICMSe-CSIC, Sevilla, Spain, <sup>5</sup> Cranfield University, Cranfield, United Kingdom, <sup>6</sup> Ikerbasque, Bilbao, Spain
- 14:50 - 15:10  
ORB203      **Tribological Study of Tribocatalytically Active PVD Mo-X-N Coating**  
Ricardo Henrique Brugnara, Edgar Schulz, Ladislaus Dobrenizki, Romina Bächstädt, Astrid Heckl, Nazlim Bagcivan  
Schaeffler Technologies AG & Co. KG, Herzogenaurach, Germany
- 15:10 - 15:30  
ORB204      **Coating thickness nonuniformity on cutting tools, deposited using different PVD techniques**  
Miha Cekada, Peter Panjan, Aljaz Drnovsek, Matej Drobnic  
Jozef Stefan Institute, Ljubljana, Slovenia
- 15:30 - 16:30**      **Poster Session**  
Entrance East

**Plenary Lecture & Partner Country Session | Halle 1**

- 16:45 - 17:15      Partner Country Session
- 17:15 - 18:00  
PL0002      **Pathways for the preparation of functional coatings by simulations at various scales**  
Jiri Houska<sup>1, 2, 2, 2, 2, 2, 2, 2, 2</sup>  
<sup>1</sup> University of West Bohemia, Plzen, Czech Republic, <sup>2</sup> , ,

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**Event C | Panorama Saal | CongressCenter CC | 3.OG**

**Registration**

Monday, September 7, 2020 | 16:30 - 17:15

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09:15 - 10:15 Opening lecture | Halle 1

PL0001

**CO<sub>2</sub>-neutral mobility as a challenge and opportunity for plasma surface technology throughout the energy chain**

Tim Hosenfeldt

Schaeffler AG, Herzogenaurach, Germany

**10:30 - 11:30** **Poster Session**

Entrance East

**Session C1 | Plasma polymerisation**

11:30 - 11:50

ORC101

**Adhesive-free bonding of web-like plastic-metal combinations at low temperatures**

Annika Mann<sup>1</sup>, Annika Mann<sup>1</sup>, Hannes Meyer<sup>1</sup>, Kristina Lachmann<sup>1</sup>, Andreas Lehm<sup>2</sup>, Diana Romstedt<sup>2</sup>, Marko Eichler<sup>1</sup>, Michael Thomas<sup>1</sup>

<sup>1</sup> Fraunhofer IST, Braunschweig, Germany, <sup>2</sup> FILK, Freiberg, Germany

11:50 - 12:10

ORC102

**Versatility and Deposition Mechanism of Siloxane-Based Plasma Polymer Films**

Dirk Hegemann, Ezgi Bülbül, Sandra Gaiser

Empa, St.Gallen, Switzerland

12:10 - 12:30

ORC103

**Plasma polymerization from Ar-HMDSO mixtures by single-filament dielectric-barrier discharges**

Lars Bröcker<sup>1</sup>, G. Perlick<sup>1</sup>, R. Brandenburg<sup>2</sup>, D. Loffhagen<sup>2</sup>, C.-P. Klages<sup>1</sup>

<sup>1</sup> Institut für Oberflächentechnik, Braunschweig, Germany, <sup>2</sup> Leibniz-Inst. f. Plasmaf. u. Tech. (INP), Greifswald, Germany

12:30 - 12:50

ORC104

**Analysis and control of the nanoporosity of PE-ALD and PE-CVD SiO<sub>x</sub>-films on polydimethylsiloxane (PDMS) membranes**

Christian Hoppe<sup>1</sup>, Felix Mitschker<sup>2</sup>, Peter Awakowicz<sup>2</sup>, Lukas Mai<sup>2</sup>, Anjana Devi<sup>2</sup>, Oskar Liedke<sup>3</sup>, Andreas Wagner<sup>3</sup>, Teresa de los Arcos<sup>1</sup>, Guido Grundmeier<sup>1</sup>

<sup>1</sup> University of Paderborn, Paderborn, Germany, <sup>2</sup> Ruhr-University Bochum, Bochum, Germany, <sup>3</sup> Helmholtz-Zentrum Dresden-Rossendorf, Dresden-Rossendorf, Germany

12:50 - 13:10

ORC105

**Plasma polymerization on porous materials: role of sticking coefficients on the penetration depth**

Lenka Zajickova<sup>1</sup>, Miroslav Michlíček<sup>1</sup>, Lucie Blahová<sup>1</sup>, Eva Dvořáková<sup>1</sup>, David Nečas<sup>1</sup>, Anjar Angraini Harumningtyas<sup>2</sup>, Satoshi Hamaguchi<sup>2</sup>

<sup>1</sup> CEITEC Masaryk University, Brno, Czech Republic, <sup>2</sup> CAMT, Osaka University, Osaka, Japan

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13:10 - 13:30 **Wetting, de-icing and anti-icing behavior of roll-to-roll structured and plasma coated PU-films**  
ORC106

Georg Umlauf, Jakob Barz, Joachim Mayer, Jan Hinnerk Henze, Christian Oehr, , , , ,  
Fraunhofer IGB, Stuttgart, Germany

**13:30 - 14:30 Lunch Break**  
Exhibition | Foyer Halle 1

**Session C2 | Thermochromic and sensoric coatings**

14:30 - 14:50 **A new thin film printing process for direct metal deposition for MEMS applications using the novel atmospheric pressure sputtering technology**  
ORC201

Jan Bickel<sup>1</sup>, Ha Duong Ngo<sup>1</sup>, Martin Schneider-Ramelow<sup>2</sup>, Klaus Dieter Lang<sup>2</sup>, Joachim Scherer<sup>3</sup>, Roland Gesche<sup>4</sup>  
<sup>1</sup> HTW - Berlin, Berlin, Germany, <sup>2</sup> Fraunhofer IZM, Berlin, Germany, <sup>3</sup> Aurion, Seligenstadt, Germany, <sup>4</sup> Beaplas, Berlin, Germany

14:50 - 15:10 **Oxidation of sputter-deposited vanadium nitride epitaxial films: a novel approach to obtain thermochromic VO<sub>2</sub> films**  
ORC202

Alexis Carlos García Wong, David Pilloud, Stéphanie Bruyère, Ludovic Pasquier, Stéphane Andrieu, Jean-François Pierson, Fabien Capon  
Institut Jean Lamour, Nancy, France

15:10 - 15:30 **Passive Sensor Coatings to Detect Critical Temperature-Conditions in High-Performance Fiber Applications**  
ORC203

Martin Amberg<sup>1</sup>, Henning Galinski<sup>2</sup>, Daniel Leutenegger<sup>2</sup>, Fabio Krogh<sup>2</sup>, Yolker Schnabel<sup>2</sup>, Manfred Heuberger<sup>1</sup>, Ralph Spolenak<sup>2</sup>, Dirk Hegemann  
<sup>1</sup> Empa, St.Gallen, Switzerland, <sup>2</sup> ETH Zurich, Department of Materials, Zürich, Switzerland

15:30 - 15:50 **Reactive magnetron sputtering of epitaxial grown aluminum nitride on sapphire**  
ORC204

Robert Rückriem, Matthias Nestler  
scia Systems GmbH, Chemnitz, Germany

15:50 - 16:10 **Tailored ITO deposition at room temperature for optical and electrochemical bio-sensors**  
ORC205

Petr Sezemský<sup>1</sup>, Jiri Kratochvil<sup>1</sup>, Vadym Prysiashnyi<sup>1</sup>, Dariusz Burnat<sup>2</sup>, Mateusz Smetana<sup>2</sup>, Pawel Niedzialkowski<sup>3</sup>, Robert Bogdanowicz<sup>4</sup>, Harm Wulff<sup>5</sup>, Vit Stranak<sup>1</sup>  
<sup>1</sup> University of South Bohemia, České Budějovice, Czech Republic, <sup>2</sup> Warsaw University of Technology, Warsaw, Poland, <sup>3</sup> University of Gdansk, Gdansk, Poland, <sup>4</sup> Gdansk University of Technology, Gdansk, Poland, <sup>5</sup> University of Greifswald, Greifswald, Germany

**Plenary Lecture & Partner Country Session | Halle 1**

16:45 - 17:15 Partner Country Session

17:15 - 18:00 **Pathways for the preparation of functional coatings by simulations at various scales**  
PL0002

Jiri Houska<sup>1, 2, 2, 2, 2, 2, 2, 2, 2, 2</sup>

<sup>1</sup> University of West Bohemia, Plzen, Czech Republic, <sup>2</sup> , ,

