

Wednesday, September 9, 2020

Event D | Carl Zeiss Saal | CongressCenter CC

### Registration

Wednesday, September 9, 2020 | 08:30 - 09:00

09:00 - 09:45  
PL0003  
Plenary Lecture | Halle 1  
**High-Temperature and Aerospace Coatings**  
Christoph Leyens<sup>1</sup>, Stefan Heinze<sup>2</sup>, Andreas Leson<sup>1</sup>, Max Thorhauer<sup>2</sup>,  
Filofteia-Laura Toma<sup>2</sup>, Christoph Leyens<sup>2</sup>  
<sup>1</sup> Fraunhofer IWS, Dresden, Germany, <sup>2</sup> Inst. of Materials Science, TU Dresden,  
Dresden, Germany

10:00 - 11:00  
**Poster Session**  
Entrance East

11:00 - 11:30  
**Coffee Break**  
Exhibition | Foyer Halle 1

### Session D1 | Energy conversion related coatings

11:30 - 11:50  
ORD101  
**Hybrid Reactive High Power Impulse Magnetron Sputtering System used for the Deposition of Semiconductor Thin Films for Photoelectrochemical Applications.**  
Zdeněk Hubička, Martin Čada, Jiří Olejníček, Michaela Dvořáková, Petra Kšířová, Drahošlav Tvarog, Rainer Hippler  
Institute of Physics CAS, Prague, Czech Republic

11:50 - 12:10  
ORD102  
**Chromium nitride deposition onto silicon pyramids for supercapacitor applications**  
Emile HAYE<sup>1</sup>, Abdelouadoud GUERRA<sup>2</sup>, Amine ACHOUR<sup>1</sup>,  
Jean-Jacques PIREAUX<sup>1</sup>, Stéphane LUCAS<sup>3</sup>, , , ,  
<sup>1</sup> UNamur, NAMUR, Belgium, <sup>2</sup> CRTSE, Alger, Algeria, <sup>3</sup> Unamur, NAMUR, Belgium

12:10 - 12:30  
ORD103  
**Renewable Energy for Nitric Acid Production with Atmospheric Microwave Plasma**  
Andreas Schulz<sup>1</sup>, Aina Suphellen<sup>2</sup>, Morten Jensen<sup>2</sup>, Rune Ingels<sup>2</sup>,  
Matthias Walker<sup>1</sup>, Günter Tovar<sup>1</sup>  
<sup>1</sup> University of Stuttgart, IGVP, Stuttgart, Germany, <sup>2</sup> N2 Applied AS, Oslo, Norway

12:30 - 12:50  
ORD104  
**Gliding arc plasmatron- plasma chemical reactor for methane conversion**  
Nikita Bibinov, Simon Böddeker, Peter Awakowicz  
Ruhr University Bochum, Bochum, Germany

12:50 - 13:10  
ORD105  
**Microstructure, optical and electrical properties of p-type copper iodide thin films**  
OSAMA MADKHALI, Jaafar Ghanbaja, Sandrine Mathieu, Sylvie Migot,  
Abdelkrim Redjaimia, Maud Jullien, Jean-François Pierson  
Institute Jean Lamour, Nancy, France

## Wednesday, September 9, 2020

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13:10 - 13:30  
ORD106

**On the bias effect in ZnSnN<sub>2</sub> thin films grown by reactive magnetron co-sputtering.**

Agathe Virfeu<sup>1</sup>, Fahad Alnjiman<sup>1</sup>, Sandrine Mathieu<sup>1</sup>, Jaafar Ghanbaja<sup>1</sup>, Christophe Longeaud<sup>2</sup>, Sylvain Le Gall<sup>2</sup>, Leonardo Kopprio<sup>2</sup>, Jean-Pierre Vilcot<sup>3</sup>, Jean-François Pierson<sup>1</sup>

<sup>1</sup> Institut Jean Lamour, Nancy, France, <sup>2</sup> Group of Electrical Engineering of Paris, Gif-sur-Yvette, France, <sup>3</sup> IEMN, Villeneuve d'Ascq, France

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

### Session D2 | Industrial Workshop: Plasma technology for new energy concepts

14:30 - 15:00  
KND201

**EU vision and initiatives on the Energy Transition**

Paul Rübiger<sup>1, 2, 2, 2, 2, 2, 2, 2, 2, 2</sup>

<sup>1</sup> Former Member European Parliament, Wels, Austria, <sup>2</sup>, , -

15:00 - 15:30  
ORD201

**Plasma activated electrochemical conversion for the electrification of the (chemical) industry**

Richard van de Sanden<sup>1</sup>, Richard van de Sanden<sup>2</sup>

<sup>1</sup> EIRES, Eindhoven University of Technology, Eindhoven, Netherlands, <sup>2</sup> DIFFER - Fundamental Energy Reserach, Eindhoven, Netherlands

15:30 - 16:00  
ORD202

**Industrial equipment and coating solutions for the challenges of the energy-transition**

Jörg Neidhardt

Von Ardenne GmbH, Dresden, Germany

**16:00 - 16:30**  
**Coffee Break**  
Exhibition | Foyer Halle 1

16:30 - 17:00  
ORD203

**Overview of developments of hydrogen technology**

Roel Bosch<sup>1</sup>, Jörg Karstedt<sup>2, 3, 3, 3, 3, 3, 3, 3</sup>

<sup>1</sup> IHI Hauzer Techno Coating B.V., Venlo, Netherlands, <sup>2</sup> Zentrum für BrennstoffzellenTechik GmbH, Duisburg, Germany, <sup>3</sup>, ,

17:00 - 17:30  
ORD204

**Coatings of metal bipolar plates for PEM fuel cells and electrolyzers with high durability performance**

David Kolenaty, Gerrit-Jan van der Kolk, Ton Hurkmans, Ivailo Dolchinkov

IHI Ionbond Netherlands b.v., Venlo, Netherlands

Event E | Halle 1

Registration

Wednesday, September 9, 2020 | 08:30 - 09:00

09:00 - 09:45  
PL0003  
Plenary Lecture | Halle 1  
**High-Temperature and Aerospace Coatings**  
Christoph Leyens<sup>1</sup>, Stefan Heinze<sup>2</sup>, Andreas Leson<sup>1</sup>, Max Thorhauer<sup>2</sup>,  
Filofteia-Laura Toma<sup>2</sup>, Christoph Leyens<sup>2</sup>  
<sup>1</sup> Fraunhofer IWS, Dresden, Germany, <sup>2</sup> Inst. of Materials Science, TU Dresden,  
Dresden, Germany

Session E1 | PVD 1 - Magnetron sputtering

10:00 - 10:30  
KNE101  
**Energetic Tailoring of Magnetron Sputtering Deposition Processes for Defect-sensitive Materials: Transparent Conductive Oxides and other Semiconductors**  
Klaus Ellmer, Stefan Seeger  
Optotransmitter-Umweltschutz-Technologie, Berlin, Germany

10:30 - 10:50  
ORE101  
**Hot hollow cathode discharge as a tool for high-rate plasma deposition of oxide thin films**  
Jiří Olejníček, Jiří Šmíd, Michal Kohout, Martin Čada, Roman Perekrestov,  
Petra Kšířová, Drahoslav Tvarog, Zdeněk Hubička  
Institute of Physics ASCR, Prague, Czech Republic

10:50 - 11:10  
ORE102  
**Reactive HiPIMS deposition of Ti-Al-N: Influence of the deposition parameters on the cubic to hexagonal phase transition**  
Lukas Zauner<sup>1</sup>, Tomasz Wojcik<sup>2</sup>, Tomáš Kozák<sup>3</sup>, Jiří Čapek<sup>3</sup>, Hamid Bolvardi<sup>4</sup>, Szilárd Kolozsvári<sup>5</sup>, Paul Heinz Mayrhofer<sup>2</sup>, Helmut Riedl<sup>1</sup>  
<sup>1</sup> CDL-SEC, TU Wien, Wien, Austria, <sup>2</sup> Institute of Materials Science, TU Wien, Wien, Austria, <sup>3</sup> Department of Physics and NTIS, Pilsen, Czech Republic, <sup>4</sup> Oerlikon Surface Solutions AG, Balzers, Liechtenstein, <sup>5</sup> Plansee Composite Materials GmbH, Lechbruck am See, Germany

11:10 - 11:30  
ORE103  
**PARTICLES IN VACUUM COATING TECHNOLOGY**  
Dieter Wurczinger  
Wurczinger Engineering, Bad Vilbel, Germany

**11:30 - 12:30**  
**Lunch Break**  
Exhibition | Foyer Halle 1

Session E2 | PVD 2 - Magnetron sputtering

12:30 - 13:00  
KNE201  
**Mechanical properties and thermal stability of reactively sputtered multicomponent Hf-Ta-Ti-V-Zr nitrides**  
Alexander Kirnbauer<sup>1</sup>, Andreas Kretschmer<sup>1</sup>, Christian M. Koller<sup>1</sup>,  
Tomasz Wojcik<sup>1</sup>, Marcus Hans<sup>2</sup>, Jochen M. Schneider<sup>2</sup>, Peter Polcik<sup>3</sup>,  
Paul H. Mayrhofer<sup>1</sup>, <sup>2</sup>, <sup>2</sup>  
<sup>1</sup> TU Wien, Wien, Austria, <sup>2</sup> RWTH Aachen, Aachen, Germany, <sup>3</sup> Plansee Composite Materials GmbH, Lechbruck am See, Germany

## Wednesday, September 9, 2020

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13:00 - 13:20  
ORE201

### **Enhancing the corrosion protection capability TiN and CrN PVD coated mild steels by addition of Mg-Rare Earth**

Holger Hoche, Thomas Ulrich, Casper Pusch, Matthias Oechsner  
MPA-IW, TU-Darmstadt, Darmstadt, Germany

13:20 - 13:40  
ORE202

### **Improving phase stability, hardness and oxidation resistance of reactive magnetron sputtered (Al,Cr,Nb,Ta,Ti)N thin films by Si-alloying**

Andreas Kretschmer<sup>1</sup>, Kumar Yalamanchili<sup>2</sup>, Helmut Rudigier<sup>2</sup>, Paul Heinz Mayrhofer<sup>1</sup>

<sup>1</sup> TU Wien, Materials Science Division, Vienna, Austria, <sup>2</sup> Oerlikon Surface Solutions AG, Balzers, Liechtenstein

13:40 - 14:00  
ORE203

### **Magnetron sputtering of Sn acetylacetonate coatings for sensor applications**

Jiří Bulír<sup>1</sup>, Lenka Volfová<sup>1</sup>, Michal Novotný<sup>1</sup>, Jan Lancok<sup>1</sup>, Premysl Fitl<sup>2</sup>, Martin Vrnata<sup>2</sup>, Michal Bodnár<sup>3</sup>, Vlastik Moravec<sup>3</sup>

<sup>1</sup> Institute of Physics, CAS, Prague, Czech Republic, <sup>2</sup> University of Chemistry and Technology, Prague, Czech Republic, <sup>3</sup> Tesla, Blatna, Czech Republic

14:00 - 14:20  
ORE204

### **Monitoring structure and physical features of NiTiO3 thin films grown by RF-magnetron sputtering**

Mariam Chettab<sup>1</sup>, Quentin Simon<sup>1</sup>, Patrick Laffez<sup>1</sup>, Mustapha Zaghrioui<sup>1</sup>, Richard Retoux<sup>2</sup>, Micka Bah<sup>1</sup>

<sup>1</sup> GREMAN - University of Tours, Blois, France, <sup>2</sup> CRISMAT - Normandy University, Cean, France

**14:30 - 15:00**

### **Coffee Break**

Exhibition | Foyer Halle 1

## Session E3 | Plasma diffusion

15:00 - 15:30  
KNE301

### **Are plasma nitriding treatments effective in changing wettability and evaporation of sessile water droplets on austenitic stainless steel surfaces?**

Thierry Czerwiec, svetlana Tsareva, Aurore Andrieux, Grégory Marcos, Laourine Ferial, Grégory Marcos  
IJL, nancy, France

15:30 - 15:50  
ORE301

### **Plasma surface interaction and modification on the nanoscale - Towards in situ TEM studies**

Niklas Kohlmann<sup>1</sup>, Luka Hansen<sup>2</sup>, Ulrich Schürmann<sup>1</sup>, Holger Kersten<sup>2</sup>, Lorenz Kienle<sup>1</sup>

<sup>1</sup> Inst. Materials Science, Kiel University, Kiel, Germany, <sup>2</sup> IEAP, Kiel University, Kiel, Germany

15:50 - 16:10  
ORE302

### **Newest developments in Plasma Diffusion Treatment**

Peter Kaestner, Guenter Braeuer  
IOT, TU Braunschweig, Braunschweig, Germany

16:10 - 16:30  
ORE303

### **In-situ XRD for details on expanded austenite formation**

Stephan Mändl, Patrick Schlenz, Jürgen W. Gerlach, Darina Manova, , ,

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Leibniz Institute of Surface Engineering, Leipzig, Germany

Wednesday, September 9, 2020

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**Event F | Panorama Saal**

**Registration**

Wednesday, September 9, 2020 | 08:30 - 09:00

09:00 - 09:45  
PL0003

Plenary Lecture | Halle 1  
**High-Temperature and Aerospace Coatings**  
Christoph Leyens<sup>1</sup>, Stefan Heinze<sup>2</sup>, Andreas Leson<sup>1</sup>, Max Thorhauer<sup>2</sup>, Filofteia-Laura Toma<sup>2</sup>, Christoph Leyens<sup>2</sup>  
<sup>1</sup> Fraunhofer IWS, Dresden, Germany, <sup>2</sup> Inst. of Materials Science, TU Dresden, Dresden, Germany

**10:00 - 10:30**  
**Coffee Break**  
Exhibition | Foyer Halle 1

**Session F1 | Plasma and ion source technologies**

10:30 - 11:00  
KNF101

**Time-resolved Langmuir probe diagnostics of a bipolar high power impulse magnetron sputtering discharge.**  
Rainer Hippler, Martin Cada, Zdenek Hubicka  
Institute of Physics CAS, Prague 8, Czech Republic

11:00 - 11:20  
ORF101

**Optimizing the deposition rate and ionized flux fraction by tuning the pulse length in high power impulse magnetron sputtering**  
Martin Rudolph<sup>1</sup>, Nils Brenning<sup>2</sup>, Michael A. Raadu<sup>2</sup>, Hamid Hajihoseini<sup>3</sup>, Jón Tómas Guðmundsson<sup>3</sup>, André Anders<sup>4</sup>, Daniel Lundin<sup>5</sup>  
<sup>1</sup> Leibniz Institute of Surface Engineering, Leipzig, Germany, <sup>2</sup> KTH Royal Institute of Technology, Stockholm, Sweden, <sup>3</sup> Science Institute, University of Iceland, Reykjavik, Iceland, <sup>4</sup> Institute of Surface Engineering (IOM), Leipzig, Germany, <sup>5</sup> Linköping University, Linköping, Sweden

11:20 - 11:40  
ORF102

**Effect of pulsed arc discharge energy on properties of doped ta-C films**  
Ivailo Dolchinkov<sup>1</sup>, Gerrit Jan van der Kolk<sup>2</sup>  
<sup>1</sup> IHI Ionbond AG, Olten, Switzerland, <sup>2</sup> Ionbond Netherlands b.v., Venlo, Netherlands

11:40 - 12:00  
ORF103

**Deposition of hard and dense nanocomposite Ti-Si-N films by DOMS without the need of energetic bombardment**  
João Oliveira<sup>1</sup>, Filipe Fernandes<sup>1</sup>, Sebastian Calderon<sup>2</sup>, Paulo Ferreira<sup>3</sup>, Albano Cavaleiro<sup>1</sup>  
<sup>1</sup> SEG-CEMMPRE, University of Coimbra, Coimbra, Portugal, <sup>2</sup> INL - International Iberian Nanotechnology, Braga, Portugal, <sup>3</sup> University of Texas, Austin, United States

12:00 - 12:30  
ORF104

**HiPIMS with positive pulses as a new tool to tailor film properties**  
Ivan Fernandez<sup>1</sup>, Ambjorn Wennberg<sup>2</sup>, Jose Antonio Santiago Varela<sup>3</sup>  
<sup>1</sup> NANO4ENERGY SL, MADRID, Spain, <sup>2</sup> Nano4Energy SL, MADRID, Spain, <sup>3</sup> Nano4energy SL, MADRID, Spain

**12:30 - 13:30**  
**Lunch Break**  
Exhibition | Foyer Halle 1

**Wednesday, September 9, 2020**

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**Session F2 | Plasma and particles**

13:30 - 14:00 **Plasma and Laser enabled metallurgy of Nanoparticles: Reshape the microstructure to reshape Plasmons**  
KNF201

Alexandre Nomine<sup>1</sup>, Natalie Tarasenko<sup>2</sup>, Valentin Milichko<sup>3</sup>, Alena Nevar<sup>2</sup>, Stephanie Bruyere<sup>1</sup>, Jaafar Ghanbaja<sup>1</sup>, Nikita Kulachenkov<sup>3</sup>, Nikolai Tarasenko<sup>2</sup>, Thierry Belmonte<sup>1</sup>

<sup>1</sup> Institut Jean Lamour, Nancy, France, <sup>2</sup> National Academy of Sciences of Belarus, Minsk, Belarus, <sup>3</sup> ITMO University, St Petersburg, Russia

14:00 - 14:20 **A microwave plasma torch for CO2 conversion**

ORF201  
Katharina Wieggers, Irina Kistner, Andreas Schulz, Matthias Walker, Günter Tovar  
IGVP, University of Stuttgart, Stuttgart, Germany

14:20 - 14:40 **Development of an AP-DBD plasma assisted CVD process with submillimetre resolution: Experimental and Simulation approach**  
ORF202

Kishor Acharya<sup>1</sup>, Simon Bulou<sup>2</sup>, Thomas Gaulain<sup>2</sup>, Joris Kadok<sup>2</sup>, Mathieu Gérard<sup>2</sup>, Patrick Choquet<sup>2</sup>

<sup>1</sup> Luxembourg Institute of Science and Tech, Belvaux, Luxembourg, <sup>2</sup> LIST, Belvaux, Luxembourg

14:40 - 15:00 **A scalable linear PECVD microwave source for transparent films**

ORF203  
Tobias Radny, Klaus-Dieter Nauenburg, Rolf Schäfer  
robeko GmbH & Co. KG, Mehlingen, Germany

15:00 - 15:20 **Power-to-X Applications Performed by Atmospheric Microwave Plasma Torches**  
ORF204

Joachim Schneider<sup>1</sup>, Jens Hofmann<sup>1</sup>, Moritz Gorath<sup>1</sup>, Klaus Baumgärtner<sup>1</sup>, Irina Kistner<sup>2</sup>, Andreas Schulz<sup>2</sup>, Matthias Walker<sup>2</sup>, Günter Tovar<sup>2</sup>

<sup>1</sup> Muegge GmbH, Reichelsheim, Germany, <sup>2</sup> University of Stuttgart, IGVP, Stuttgart, Germany

**15:30 - 16:00 Coffee Break**

Exhibition | Foyer Halle 1

**16:00 - 17:00 Poster Session**

Entrance East