

- 08:30 - 09:15
Plenary Lecture
PL0006
Chair: Albano Cavaleiro, Coimbra, Portugal
Diagnostics for pulsed depositing plasmas
James Bradley¹
¹ University of Liverpool, Liverpool, United Kingdom
- Oral Session**
Session 18 - Tribological Coatings II
Chairs: Klaus Bewilogua, Braunschweig, Germany
Thomas Krug, Venlo, Netherlands
- 09:25 - 09:55
Keynote Lecture
KN1800
The effect of Si incorporation on the properties of boron carbide sputtered coatings
João Carlos Oliveira¹, Albano Cavaleiro¹, Tomas Kubart², Carlos Patacas¹
¹ SEG-CEMUC - University of Coimbra, Coimbra, Portugal, ² The Angstrom Laboratory, Uppsala, Sweden
- 09:55 - 10:15
OR1801
Influence of PVD coating surface morphology on its tribological properties
Peter Panjan¹, Miha Cekada¹, Matjaz Panjan¹, Darja Merl¹, Franc Zupanic²
¹ Jozef Stefan Institute, Ljubljana, Slovenia, ² University of Maribor, Maribor, Slovenia
- 10:15 - 10:35
OR1802
In situ studies of TiC1-xNx hard coating tribology
Marisa Rebelo de Figueiredo¹, Christopher Muratore², Robert Franz¹, Richard R. Chromik³, Kathryn J. Wahl⁴, Andrey A. Voevodin², Michael O'Sullivan⁵, Markus Lechthaler⁶, Christian Mitterer¹
¹ University of Leoben, Leoben, Austria, ² AFRL, Materials and Manufacturing Directorate, Wright Patterson Air Force Base, Dayton, United States, ³ Department of Mining and Materials Engineering, McGill University, Montreal, Canada, ⁴ Chemistry Division, Molecular Interfaces and Tribology Section, U.S. Naval Research Laboratory, Washington, United States, ⁵ PLANSEE Composite Materials GmbH, Lechbruck, Germany, ⁶ OC Oerlikon Balzers AG, Balzers, Liechtenstein
- 10:35 - 10:55
OR1803
A study of thermal stability, corrosion- and high-temperature oxidation resistance of (Ti,Cr)-(Al,Si,Y)-C-N films
Dmitry Shtansky¹, Philip Kiryukhantsev-Korneev¹, Konstantin Kuptsov¹, Alexander Sheveiko¹
¹ National University of S&T "MISIS", Moscow, Russian Federation
- 10:55 - 11:15
Coffee Break
- 11:15 - 11:35
OR1804
High temperature structure, oxidation and tribological properties of TiAlCrN coatings
Tomas Polcar¹, Albano Cavaleiro²
¹ Czech Technical University in Prague, Prague, Czech Republic, ² SEG-CEMUC, University of Coimbra, Coimbra, Portugal

- 11:35 - 11:55
OR1805 **A new class of coatings for cutting tools: non oxide ceramic coating**
Jörg Vetter¹, M. Isaka², T. Ishikawa², K. Kubota², G. Erkens¹, J. Mueller¹, J. Alami¹
¹ Sulzer Metaplas, Bergisch Gladbach, Germany, ² Hitachi Tool Engineering, Coimbra, Japan
- 11:55 - 12:15
OR1806 **Self-lubricating and Wear Resistant Coatings Based on (Cr,Al,V)N and (Cr,Al,Ti)N Deposited by HPPMS**
Ricardo Henrique Brugnara¹, Kirsten Bobzin¹, Nazlim Bagcivan¹, Mara Ewering¹
¹ Surface Engineering Institute RWTH, Aachen, Germany
- 12:15 - 12:35
OR1807 **Novel micro-lubrication coatings for metal forming tools**
Jari Koskinen¹, Jukka Paro², Peter Andersson², Jukka Kolehmainen³, Sanna Tervakangas³, Wolfgang Buss⁴, Franco Rabezana⁵, Yvonne Gerbig⁶
¹ Aalto University School of Sci & Eng, Espoo, Finland, ² VTT, Aachen, Finland, ³ Diarc Technology Oy, Espoo, Finland, ⁴ Fuchs Europe Schmierstoffe GmbH, Bergisch Gladbach, Germany, ⁵ Metec Innovation Consulting SRL, Leoben, Italy, ⁶ CSEM, Switzerland
- 12:35 - 12:55
OR1808 **Improved properties of Ti6Al4V by means of nitrogen-hydrogen high temperature plasma based ion implantation**
Rogério Oliveira¹, Carina Barros Mello², Graziela Silva³, José Américo Neves Gonçalves², Mario Ueda²
¹ National Institute for Space Research, Sao Jose dos Campos, Brazil, ² INPE - National Institute for Space Research, São José dos Campos, Brazil, ³ ITA - Technological Institute of Aeronautics, São José dos Campos, Brazil
- 12:55 - 14:20
Lunch Break

08:30 - 09:15 Plenary Lecture PL0006, Room Richard-Strauss

Oral Session Session 19 - Corrosion Resistant and Barrier Coatings

Chairs: Erich Bergmann , Geneve, Switzerland

Jean-Francois Pierson , Nancy, France

09:25 - 09:55 **High-temperature stability and oxidation resistance of amorphous coatings based on nitrides**

Keynote Lecture

KN1900

Petr Zeman¹

¹ University of West Bohemia, Plzen, CzechRepublic

09:55 - 10:15 **EROSION AND CORROSION RESISTANCE OF A PRECIPITATION HARDENING STAINLESS STEEL WITH A DUPLEX CVD COATING**

OR1901

Sonia Brühl¹, Eugenia Dalibón², Amado Cabo³, Carlos Lasorsa⁴, Silvia Simison⁵

¹ Universidad Tecnologica Nacional, Concepcion del Uruguay, Argentina, ² UTN-FRCU, Concepción del Uruguay, Argentina, ³ IONAR S.A., Buenos Aires, Argentina, ⁴ CNEA and UTN-FRH, Haedo, Buenos Aires, Argentina, ⁵ INTEMA, Universidad Nacional de Mar del Plata, Mar del Plata, Argentina

10:15 - 10:35 **Changes induced by the process parameters in the oxide layers grown by PEO onto Al and Mg alloys**

OR1902

Amer Melhem¹, Gérard Henrion¹, Thierry Czerwiec¹, Julien Martin¹, Frédéric Brochard¹, Jean Luc Brianchon¹, Thierry Belmonte¹

¹ Institut. Jean Lamour - CNRS - Nancy Univ., NANCY cedex, France

10:35 - 10:55 **Influence of magnetron sputtered ZrO₂-4mol%Y₂O₃ thermal barrier coatings on the high temperature oxidation behaviour of γ -TiAl based Ti-45Al-8Nb alloy**

OR1903

Maik Fröhlich¹, Wolfgang Braue¹, Reinhold Braun¹

¹ DLR - German Aerospace Center, Cologne, Germany

10:55 - 11:15 Coffee Break

11:15 - 11:35 **Development of a (CrAl)N Coating for Precision Glass Lens Moulding and Comparison to an Industrially used Coating**

OR1904

Tobias Münstermann¹, Kirsten Bobzin², Nazlim Bagcivan², Mara Ewering²

¹ Surface Engineering Institute RWTH, Aachen, Germany, ² Surface Engineering Institute, Aachen, Germany

11:35 - 11:55 **Combination of zinc alloy coatings with thin plasma polymer films for novel corrosion protective systems on carbon steel**

OR1905

Jessica Schindhelm¹, Krasimir Nikolov², Miroslaw Giza¹, Nicole Weiher¹, Bernd Schuhmacher¹, Claus-Peter Klages²

¹ Dortmunder OberflächenCentrum GmbH, Dortmund, Germany, ² IOT Institut für Oberflächentechnik, Technische Universität Braunschweig, Braunschweig, Germany

- 11:55 - 12:15
OR1906 **Development of nanostructured advanced barrier hybrid films for organic electronics encapsulation in a continuous roll-to-roll process**
João Gomes¹, Maria Machado¹, Armando Ferreira¹, Joana Branquinho¹, José Silva¹
¹ CENTI, VN Famalicão, Portugal
- 12:15 - 12:35
OR1907 **Characterization of reactively sputtered permeation barrier materials on polymer substrates**
John Fahlteich¹, Waldemar Schönberger¹, Matthias Fahland¹, Nicolas Schiller¹
¹ Fraunhofer FEP, Dresden, Germany
- 12:35 - 12:55
OR1908 **Gas barrier coatings deposited on polymer films by means of atmospheric pressure dielectric barrier discharge**
Julien Bardon¹, Julien Petersen¹, Valérie Toniazio¹
¹ CRP Henri Tudor, Esch Alzette, Luxembourg
- 12:55 - 14:20 Lunch Break

08:30 - 09:15 Plenary Lecture PL0006, Room Richard-Strauss

Oral Session **Session 20 - Plasma Characterization**
Chairs: Achim Lunk, Stuttgart, Germany
Christian R othlein, Kochel, Germany

09:25 - 09:55 **Thomson Scattering Diagnostics of Plasmas for Industrial**
Keynote Lecture **Applications**
KN2000 Kiichiro Uchino¹, Wei-Ting Chen¹, Yuki Kimura¹, Kentaro Tomita¹,
Yoshinobu Kawai¹
¹ Kyushu University, Kasuga, Japan

09:55 - 10:15 **Time resolved emission spectroscopy of the HIPIMS discharge**
OR2001 David R McKenzie¹, Martina Lattemann¹, Daniel Simon¹, Brian James¹,
John Holick¹, Marcela Bilek¹
¹ University of Sydney School of Physics, Sydney, Australia

10:15 - 10:35 **Temporal and spatial distribution of negative ion density in a pulsed**
OR2002 **DC magnetron**
ShaoDong You¹, Robert Dodd¹, James W Bradley¹
¹ University of Liverpool, Liverpool, United Kingdom

10:35 - 10:55 **Ion energy distributions in bipolar pulsed-DC discharges measured**
OR2003 **at the biased electrode**
Carles Corbella¹, Miguel Rubio-Roy¹, Enric Bertran¹, Sabine Portal¹,
Esther Pascual¹, Mari-Carmen Polo¹, Jos e-Luis And ujar¹
¹ University of Barcelona, Barcelona, Spain

10:55 - 11:15 Coffee Break

11:15 - 11:35 **Optical emission spectroscopy of TiN/a-C composite film deposition**
OR2004 **by magnetron sputtering in magnetized sheet plasma source**
Julie Anne Ting¹, Leo Mendel Rosario², Rommel Paulo Vilaoan², Michelle
Marie Villamayor², Roy Tumlos², Henry Ramos²
¹ Plasma Physics Laboratory, Quezon City, Philippines, ² Plasma Physics Laboratory,
University of the Philippines, Quezon City, Philippines

11:35 - 11:55 **Temperature diagnostics by optical emission spectroscopy in**
OR2005 **different gas mixture microwave discharges**
Nikolay Britun¹, Thomas Godfroid², Stephanos Konstantinidis¹, Michel
Moisan³, Rony Snyders⁴
¹ Lab. Inorganic and Analytical Chemistry, Mons, Belgium, ² Materia Nova Research
Center, Mons, Belgium, ³ Groupe de physique des plasmas, Universit  de Montr al,
Montreal, Canada, ⁴ Lab. Inorganic and Analytical Chemistry; Materia Nova Research
Center, Mons, Belgium

- 11:55 - 12:15
OR2006 **Diagnostics of low pressure microplasmas for surface modification**
Sarah Panowitz¹, Jakob Barz¹, Michael Müller¹, Joachim Franzke²,
Christian Oehr¹
¹ Fraunhofer IGB, Stuttgart, Germany, ² ISAS- Institute for Analytical Sciences,
Dortmund, Germany
- 12:15 - 12:35
OR2007 **Radical kinetics in low-pressure fluorocarbon plasmas: Experiments
and modeling**
Jakob Barz¹, Christian Oehr¹, Achim Lunk²
¹ Fraunhofer IGB, Stuttgart, Germany, ² Institute for Plasma Research, University of
Stuttgart, Stuttgart, Germany
- 12:35 - 12:55
OR2008 **Characterization and optimization of a neutral atomic hydrogen
source developed for the study of the specific chemical etching of
highly oriented pyrolytic graphite.**
Thomas Bieber¹, Ludovic de Poucques¹, Jean-Luc Vasseur¹, Robert
Hugon¹, Mohammed Belmahi¹, Jamal Bougdira¹
¹ Institut Jean Lamour, UMR CNRS 7198, Vandoeuvre-lès-Nancy, France
- 12:55 - 14:20 Lunch Break

- 14:20 - 15:05 Chair: Wolfhard Möller, Dresden, Germany
Plenary Lecture **Designing ion energy distributions to control aluminum oxide growth by reactive magnetron sputtering**
 PL0007 Achim von Keudell¹, Tim Baloniak¹, Marina Prenzel¹, Thomas Kuschel¹, Jan Benedikt¹
¹ Ruhr-University Bochum, Bochum, Germany
- 15:15 - 16:25 Poster Session 4, Foyer
- 16:25 - 16:45 Coffee break
- Oral Session** **Session 21 - Film Structure and Composition II**
 Chairs: Raul Gago, Madrid, Spain
 Rony Snyders, Mons, Belgium
- 16:45 - 17:15 **Design of carbide-based amorphous and nanostructured coatings**
Keynote Lecture Ulf Jansson¹, Erik Lewin¹, Matilda Hanson¹, Nils Nedfors¹, Andrej Furlan¹, Benny Andre², Urban Wiklund², Mikael Räsander³, Olle Eriksson³
 KN2100 ¹ Dept. Materials Chemistry, Uppsala University, Uppsala, Sweden, ² Dept. Engineering Sciences, Uppsala University, Uppsala, Sweden, ³ Dept. of Physics, Uppsala University, Uppsala, Sweden
- 17:15 - 17:35 **Surface and layered structures of bulk GaN synthesized in a multi-cusp sputter-type ion source**
 OR2101 Henry Ramos¹, Paul Concepcion², Randolph Flauta², Motoi Wada³
¹ National Institute of Physics, U. Phil., Quezon, Philippines, ² University of the Philippines, Quezon, Philippines, ³ Doshisha University, Kyoto, Japan
- 17:35 - 17:55 ¹
 OR2102 ¹, ,
- 17:55 - 18:15 **Study of metalorganic layers deposited from Zirconium Tert-Butoxide/oxygen mixture in MMP-DECR low pressure plasma.**
 OR2103 Raphael Cozzolino¹, Yvan Segui², Patrice Raynaud²
¹ LAPLACE, Toulouse, France, ² CNRS, Toulouse, France
- 18:15 - 18:35 ¹
 OR2104 ¹, ,

18:35 - 18:55
OR2105

Anisotropy of the elastic and magnetic properties of expanded austenite in AISI 316L stainless steel.

Christophe TROMAS¹, Jean-Charles STINVILLE², Enric MENENDEZ³, Patrick VILLECHAISE², Josep NOGUES⁴, Jordi SORT⁴, Claude TEMPLIER², Jean-Paul RIVIERE², Andrius MARTINAVICIUS⁵, Gintautas ABRASONIS⁵

¹ Institut P' Université de Poitiers, Chasseneuil Futuroscope cedex, France, ² Institut P', Futuroscope, France, ³ Instituut voor Kern- en Stralingsfysica and INPAC, Leuven, Belgium, ⁴ Institució Catalana de Recerca i Estudis Avançats, Bellaterra, Spain, ⁵ Institute of Ion Beam Physics and Materials Research, FDR, Dresden, Germany

14:20 - 15:05 Plenary Lecture PL0007, Room Richard-Strauss

15:15 - 16:25 Poster Session 4, Foyer

16:25 - 16:45 Coffee break

Oral Session Session 22 - Plasma and Ion Sources

Chairs: Peter Awakowicz, Bochum, Germany
Tiberiu Minea, Paris, France

16:45 - 17:15 **Ion beam diagnostics with non-conventional methods**
Keynote Lecture Holger Kersten¹, Viktor Schneider², Alexander Spethmann², Thomas
KN2200 Trottenberg²
¹ University of Kiel, IEAP, Kiel, Germany, ² University of Kiel, IEAP, Kiel, Germany

17:15 - 17:35 **Distributed mini ECR discharges for large plasma or beam**
OR2201 **generation**
Pascal SORTAIS¹, Thierry Lamy¹, Jérôme Médard¹
¹ LPSC, GRENOBLE, France

17:35 - 17:55 **Ion beam extraction from a matrix ECR plasma source by discrete**
OR2202 **ion-focusing effect**
Eugen Stamate¹, Mihai Draghici¹
¹ Technical University of Denmark, Roskilde, Denmark

17:55 - 18:15 **APS Ion Source Characterization and Modelling**
OR2203 Diana Tonova¹
¹ Carl Zeiss Jena GmbH, Oberkochen, Germany

18:15 - 18:35 **Multiple frequency capacitive plasmas for PVD: Tuning techniques**
OR2204 **and influence on ferromagnetic thin films**
Egmont Semmler¹, Stefan Bienholz², Peter Awakowicz², Tim Baloniak³,
Achim von Keudell³
¹ Ruhr-Universität Bochum (ACCP), Bochum, Germany, ² Institute for Plasma
Technology / Ruhr-University Bochum, Bochum, Germany, ³ Workgroup Reactive
Plasmas / Ruhr-University Bochum, Bochum, Germany

18:35 - 18:55 **New RF Power Supplies for Plasma Applications with New Levels of**
OR2205 **Operational Reliability and Energy Efficiency**
Manfred Blattner¹
¹ HUETTINGER Electronics, Freiburg, Germany

14:20 - 15:05 Plenary Lecture PL0007, Room Richard-Strauss

15:15 - 16:25 Poster Session 4, Foyer

16:25 - 16:45 Coffee break

Oral Session Session 23 - Physical Vapour Deposition

Chairs: Sandra Carvalho, Minho, Portugal

Papken Hovsepien, Sheffield, United Kingdom

16:45 - 17:15 **How thin film properties are defined by the arriving species on the substrate ?**

Keynote Lecture
KN2300

Diederik Depla¹, Stijn Mahieu¹

¹ Department of Solid State Sciences, Gent, Belgium

17:15 - 17:35

OR2301

Sputtering with and without a magnetic field

Stephen Muhl¹, Luis Sanchez-Balazar², Luis Escobar-Alarcon³, Enrique Camps³

¹ IIM-UNAM, Mexico, Mexico, ² Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Mexico, Mexico, ³ Departamento de Física, Instituto Nacional de Investigaciones Nucleares, Mexico, Mexico

17:35 - 17:55

OR2302

Preparation of Al-Si-N hard coatings by UBMS using composite targets

Joerg Patscheider¹, Magdalena Parlinska-Wojtan², Aude

Péllisson-Schecker², Peter Polcik³, Peter Pecher⁴

¹ Empa, Dübendorf, Switzerland, ² Laboratory for Nanoscale Materials Science, Empa, Dübendorf, Switzerland, ³ Plansee GmbH, Reutte, Austria, ⁴ Glas Trösch AG, Bützberg, Switzerland

17:55 - 18:15

OR2303

Very-high-rate reactive deposition of thick, transparent oxide coatings by pulsed AC dual magnetron with molten targets

Jindrich Musil¹, Vaclav Satava¹, Pavel Baroch¹

¹ University of West Bohemia, Department of Physics, Plzen, Czech Republic

18:15 - 18:35

OR2304

Detailed numerical study of an Ar/O₂ magnetron discharge with a hybrid model.

Evi Bultinck¹, Annemie Bogaerts¹

¹ University of Antwerp, Wilrijk, Belgium

18:35 - 18:55

OR2305

The Influence of the Target Age on Laterally Resolved Ion Distributions in Reactive Planar Magnetron Sputtering

Thomas Welzel¹, Klaus Ellmer¹

¹ Helmholtz-Zentrum Berlin, Berlin, Germany