

# 9<sup>th</sup> Symposium on Vacuum based Science and Technology

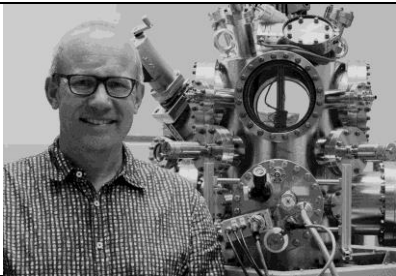
Kołobrzeg, November 16-19, 2015

*Marine Hotel\*\*\*\*\*, Kołobrzeg*

## MONDAY November 16

<i>Conference room: SAMUM, 5<sup>th</sup> floor</i>	
8:30 – 16:30	<b>SVC Tutorial Course:</b> “Application of Reactive Sputtering” Instructors: <b>Ralf Bandorf</b> and <b>Holger Gerdes</b> Fraunhofer Institute for Surface Engineering and Thin Films Braunschweig, Germany
8:30 – 10:30	<b>Part I</b>
10:30 – 10:50	<b>Coffee break</b>
10:50 – 12:50	<b>Part II</b>
12:50 – 14:00	<b>Break</b>
16:00 – 16:30	<b>Part III</b>
15.00 –	<b>Registration of Symposium participants</b>
18.00 –	<b>Get together - Hotel restaurant PERMARE, ground floor</b>

## TUESDAY November 17

7.30 – 9.00	<b>Breakfast</b>
<b>Session A - Conference room ORKAN, ground floor</b> <i>Session Chair: Witold Gulbinski</i>	
9:30 – 9:40	<b>Opening of the Symposium - welcome addresses</b>
9:40– 10:00	<b>Rudolf Jaeckel Award Ceremony</b> <i>Chair: Michael Kopnarski, President of the DVG</i> Laudation and presentation of the Rudolf Jaeckel-Prize 2015 of the German Vacuum Society to <b>Professor Dr. Franz Giessibl</b>
	
10:00 – 10:30	<b>DVG – Lecture of the laureate – Franz J. Giessibl</b> New frontiers of atomic force microscopy from vacuum to ambient condition
10.30 – 10:50	<b>Coffee break</b>
10:50 – 11:20	<b>INV1 – Holger Gerdes, R. Bandorf, M. Vergöhl, G. Bräuer,</b> Reactive HIPIMS: challenges and industrial solutions
11:20 – 11:40	<b>O1 – W. Gajewski, P. Lesiuk, K. Ruda, M. Żelechowski, P. Ozimek,</b> Power supply technology for cutting-edge plasma applications
11:40 – 12:00	<b>O2 – T. Leyendecker, Ch. Schiffers,</b> Advances in deposition equipment and process technology for HIPIMS coatings for cutting tools

12:00 – 12:20	O3 – <i>P. Malinovskis, J. Palisaitis, Per O. Å. Persson, E. Lewin, U. Jansson</i> , Synthesis and characterisation of MeB <sub>x</sub> (Me=Cr, Nb, Mo) thin films by non-reactive dc magnetron sputtering
12:20 – 12:40	O4 – <i>D. Bociąga, M. Kamińska, A. Sobczyk-Guzenda, K. Jastrzębski, L. Świątek, A. Olejnik</i> , Surface properties and biological evaluation of Si-DLC films fabricated by a multi-target DC-RF magnetron sputtering
13.00 – 14.00	<b>Lunch</b>
<p><b>Session B - Conference room ORKAN, ground floor</b>  <b>Session Chair: Michael Kopnarski, Krzysztof Zdunek</b></p>	
15.00 – 15.30	<b>INV2 – Allan Matthews</b> , A perspective on developments in plasma assisted PVD processes
15.30 – 15.50	O5 – <i>A. Bartnik T. Pisarczyk, P. Wachulak, T. Chodukowski, T. Fok, Ł. Węgrzyński, Z.Kalinowska, H. Fiedorowicz, R. Jarocki, J. Kostecki, W. Skrzeczanowski, A. Szczurek, M. Szczurek, E.Krousky, M. Pfeifer, J. Skala, J. Ullschmied, J. Dostal, R. Dudzak, J. Hrebicek, T. Medrik, J. Cikhardt, B. Cikhartova, D. Klir, K. Rezac</i> , EUV induced low temperature photoionized plasma
15.50– 16.10	O23 – <i>H. Plöchinger</i> , Vacuum Measurement - Pirani Without Zero Pressure
16.10 – 16.30	O7 – <i>K.W. Marszałek, R. Mania, J. Morgiel</i> , Nanocomposite TiN-Si <sub>3</sub> N <sub>4</sub> coatings on textiles
16.30 – 16.50	O8 – <i>J. Rymarczyk, P. Dłużewski, M. Kozłowski, E. Czerwosz</i> , Multilayer carbon-palladium films for hydrogen detection
16.50 – 17.10	<b>Coffee break</b>
17.10 – 17.40	<b>INV3 – Sam Zhang</b> , Towards hard yet tough ceramic coatings
17.40– 18.00	O9 – <i>J. Lösch, D. Priestersbach, A. Brodyanski, E. Kerscher, M. Kopnarski</i> , Crack initiation and propagation in the very high cycle fatigue regime of the high-strength steel 100Cr6: Vacuum experiments as a simulation tool for VHCF failure
18.00 – 18.20	O10 – <i>D. Bociąga, A. Sobczyk-Guzenda, W. Szymanski, A. Jędrzejczak, A. Olejnik, A. Kowal, K. Jastrzębski</i> , Mechanical properties and chemical analysis of Si-incorporated carbon coatings prepared by magnetron sputtering on Ti6Al7Nb substrate, for potential biomedical applications
18.20 – 18.40	O11 – <i>P. Nolbrzak, B. Wendler</i> , Effect of relative humidity of the environment onto tribological properties of nanocomposite low friction coatings
19.30 –	<b>Dinner</b>

## WEDNESDAY November 18

7.30 – 9.00 Breakfast	
<b>Clausius Session</b> <b>Educational Programme</b> <b>Conference room MARINGO</b> <b>(level -1)</b> <b>Chair: Witold Gulbinski</b>	<b>Presentation of industry exhibitors</b> <b>Conference room ORKAN</b> <b>Moderator: Bogdan Warcholiński</b>
10.00 – 10.40	<b>Sam Zhang,</b> <i>Singapore University (SG)</i> <b>Transparent Solar Cells for Windows</b>
10.40 – 11 .20	<b>Holger Kersten,</b> <i>Kiel University (DE)</i> <b>The Universe - a world of plasma</b>
	9.00 – 10.30 <ul style="list-style-type: none"> <li>• AMP sp. z o.o.</li> <li>• AP Vacuum sp. z o.o.</li> <li>• ArtVAC</li> <li>• EDVAC</li> <li>• Edwards Vacuum</li> <li>• FHR</li> <li>• Hiden Analytical Ltd.</li> <li>• Prevac</li> <li>• TEPRO S.A.</li> <li>• VAT Vacuum Valves AG</li> </ul>
	10.30 – 10.50 <b>Coffee break</b>
	<b>BalticNet PlasmaTec Session</b> <b>Conference room ORKAN</b> <b>Moderator: Alexander Schwock</b>
	10.50 – 11.10 BNPT0 – <i>Alexander Schwock, Katherina Ulrich</i> , BalticNet-PlasmaTec a cluster supporting international cooperation
	11.10 – 11.30 BNPT1 – <i>I. Jögi, J. Raud</i> , Mid-pressure RF discharge for radical production
	11.30 – 11.50 BNPT 2 – <i>J. Procelewska, Y. Musayev</i> , Added value trough surface technology
	11.50 – 12.10 BNPT 3 – <i>F. Faupel, T. Strunskus, O. Polonsky, M. Elbahri</i> , Plasma deposition of functional nanocomposites
	12.10 – 12.30 BNPT 4 – <i>H. Kersten</i> , On the role of the energy influx during plasma- surface processes
11.25 – 12.00	<b>Coffee/Sandwich break</b>
13.00 – 14.00	<b>Lunch</b>
<b>Session D - Conference room ORKAN, ground floor</b> <b>Session Chair: Ewa Dobruchowska</b>	
15.00 – 15.30	<b>INV4 – <i>Hana Baránková, L. Bardos</i></b> , Hollow cathode based plasma sources for reduced and atmospheric pressures
15.30 – 16.00	<b>INV5 – <i>Christoph Eisenmenger-Sittner, A. Eder, G. H. S. Schmid</i></b> , Deposition, characterization and applications of thin films on granular substrates
16.00 – 16.20	<b>O12 – <i>S.Passlack, A.Brodyanski, M.Kopnarski</i></b> , Fe-nanoclusters: generation via magnetron sputtering and characterization by SNMS and TEM
16.20 – 16.40	<b>O13 – <i>T. Borowski, A. Brojanowska, B. Adamczyk-Cieślak</i></b> , Unprecedented increase of 316l steel corrosion resistance after cathodic cage plasma nitriding and carbonitriding in a sodium chloride solution

16.40 – 17.00	O14 – <i>J. Piwowarczyk, R. Jędrzejewski, K. Kwiatkowski, J. Baranowska, ,</i> PTFE thin films obtained by pulsed electron beam deposition and pulsed laser deposition methods
17.00 – 17.20	O15 – <i>A. Schütz, J. Heeg, H. Litschke, M. Wienecke,</i> Adhesive porous DLC-coatings by modified PECVD process
17.20 – 18.00	<b>Coffee break</b>
17.30 – 18.30	<b>Poster Session – Conference room ORKAN, ground floor</b> <i>Chair: Witold Gulbinski</i>
<b>20.00 –</b>	<b>Conference Dinner sponsored by TEPRO S.A.</b>

## THURSDAY November 19

7.30 – 9.00	<b>Breakfast</b>
<b>Session F - Conference room MONSOON, 6<sup>th</sup> floor</b> <i>Session Chair: Elżbieta Czerwosz, Bogdan Wendler</i>	
9.00 – 9.30	INV6 – <i>Roland Hergenröder, N. Esser, A. Jürgensen,</i> Photoelectron spectroscopy under reactive conditions
9.30 – 9.50	O17 – <i>I. Firytova-Elkina, A. Chakrabarti, M.R. Nelson, K. V. Esham, Sh. M. Stanley, N. S. Hosmane, S.F. Mitura,</i> Nanocomposite graphene - hexagonal boron nitride
9.50 – 10.10	O18 – <i>B. Lesiak, L. Stobinski, M. Mazurkiewicz, A. Malolepszy, J. Zemek, P. Jiricek, I. Bieloshapka,</i> Chemical and structural surface properties of carbon nanomaterials decorated with Pd – electron spectroscopy and quases analysis
10.10 – 10.30	O19 – <i>J. Heeg, P. Fedtke, A. Schütz, M. Leprich, M. Wienecke,</i> Graphene nano platelet films at bio implant materials by modification of PECVD process and it's electrode behaviour
10.30 – 10.50	O20 – <i>K. Nowakowska-Langier, R. Chodun, P. Konarski, K. Sobczak, K. Zdunek,</i> Specific coating/substrate interface formed during coating deposition with the use of modified IPD method
10.50 – 11.10	<i>O21 – M.St. Węglowski, S. Błacha, A. Phillips,</i> Electron beam welding – techniques and trends – a review
11.10 – 11.30	O22 - <i>M. Tacikowski, J. Kamiński, M. Pisarek, K. Roźniatowski, T. Wierzchoń,</i> Improving the performance properties of the PVD produced nitride layers on light alloys using a hydrothermal treatment
11.30-11.50	O23 – <i>M. Pancielejko, A. Czyżniewski, V. Zavaleyev ,</i> Optimization of the deposition parameters of Cr/DLC coatings with the modified cathodic vacuum arc method for sintered carbides tools
11.50	<b>Closure of the Symposium</b>
11.55 – 12.30	<b>Coffee break / Sandwich break</b>
12.30 –	Departure of participants

## *List of posters*

<b>P1</b>	<i>Piotr Firek, Izabela Stepińska, Jerzy Kalenik, Mirosław Kozłowski, Elżbieta Czerwosz, Jan Szmidt, Ewa Kowalska</i>	INFLUENCE OF Ti LAYER AND Si SUBSTRATE ON THE PROPERTIES OF THE C-Ni/Ti/Si MULTILAYER
<b>P2</b>	<i>M. Strafela, H. Leiste, K. Seemann H.J. Seifert, S. Ulrich,</i>	INFLUENCE OF THE SUBSTRATE TOPOGRAPHY ON THE CONSTITUTION OF Li-RICH Li-Ni-Mn-Co-O THIN FILM BATTERIES
<b>P3</b>	<i>M. Wilhelmi, T. Radny, R. Schäfer, M. Kopnarski</i>	ENHANCING THE Pt-COATING PROCESS ON ABS BY PLASMA TREATMENT
<b>P4</b>	<i>Kivilcim Koseoglu<sup>1</sup>, Irmak Karaduman<sup>1</sup>, Selim ACAR<sup>1</sup>, Bahtiyar Salamov<sup>1,2</sup></i>	ENERGY STORAGE PLASMA ELECTRONIC DEVICES WITH POROUS ZEOLITE CATHODES
<b>P5</b>	<i>F. Haase, D. Lundin, S. Bornholdt, H. Kersten</i>	INCREASED IONIZATION DURING MAGNETRON SPUTTERING
<b>P6</b>	<i>Erik von Wahl, Alexander M. Hinz, Thomas Strunskus, Holger Kersten</i>	ELECTRICAL MEASUREMENTS FOR THE CONTROL OF NANOPARTICLE GROWTH IN AN ACETYLENE PLASMA
<b>P7</b>	<i>S.Krawczyk, E.Czerwosz, M.Kozłowski, E. Kowalska P. Dłużewski</i>	C/Ni/Pd NANOCOMPOSITE FILMS FOR CO <sub>2</sub> AND NH <sub>3</sub> SENSING
<b>P8</b>	<i>J. Narojczyk, D.Morozow I Z. Werner, M. Barlak, M. Łagodziński</i>	DURABILITY CHANGES OF COBALT-TUNGSTEN CARBIDE TOOLS AFTER ION IMPLANTATION
<b>P9</b>	<i>J. Rymarczyk, M. Kozłowski, K. Sobczak, E. Czerwosz</i>	ELECTRON MICROSCOPY STUDIES OF C-Pd FILMS
<b>P10</b>	<i>Betiuk M. Pokorska I., Gilewicz A., Warcholiński B.</i>	QUALITY EVALUATION OF HS6-5-2 TOOL STEEL / CrN/CrCN AREOLOGICAL SYSTEMS WITH VARIOUS MODULATION PARAMETER $\lambda$ USING RECASTEST METHOD
<b>P11</b>	<i>V. Zavaleyev, J. Walkowicz, R. Rogowska, A. Zykova, V. Safonov</i>	MODIFICATION OF SURFACE PROPERTIES OF Ta-C COATINGS BY THE SUBSTRATE BIAS VOLTAGE ADJUSTMENT
<b>P12</b>	<i>V. Zavaleyev, J. Walkowicz</i>	INVESTIGATIONS OF CARBON CATHODE SURFACE BEFORE AND AFTER THE PASSAGE OF COMBINED DC VACUUM-ARC WITH SUPERIMPOSED HIGH-CURRENT ARC PULSES
<b>P13</b>	<i>P. Myśliński, A. Gilewicz, Ł. Szparaga, R. Olik, K. Mydlowska, J. Ratajski</i>	THERMOMECHANICAL ANALYSIS OF THE IMPACT OF THE NITRIDING OF STEEL SUBSTRATE ON THE THERMAL STABILITY OF THE SUBSTRATE – CrCN COATING SYSTEMS
<b>P14</b>	<i>P. Myśliński, G. Greczyński, P. Kamasa</i>	THE INFLUENCE OF THE COMPOSTION OF THE TiAIN ANTI-WEAR COATING ON THE COURSE OF THERMOMECHANICAL INTERACTION TO THE SUBSTRATE IN THE FUNCTION OF TEMPEARATURE
<b>P15</b>	<i>L.Skatkov, V.Gomozov</i>	ROLE OF METAL IMPURITIES IN GENERATION OF DEFECTS IN ANODIC COATINGS Nb <sub>2</sub> O <sub>5</sub>
<b>P16</b>	<i>Yeghiazaryan Artush, Yeghiazaryan Arman</i>	VACUUM PUMPS AND THEIR EFFECTIVE APPLICATIONS

<b>P17</b>	<i>W. Pawlak, A. Rylski, A. Sobczyk-Guzenda, M. Makowka, K. Włodarczyk-Kowalska, P. Nolbrzak, J. Wozniak, P. Domanowski, W. Satora, S. Owczarek</i>	RHENIUM-BASED COATINGS BY CVD AND PVD TECHNIQUES
<b>P18</b>	<i>P. Ceynowa, K. Mitura, M. Dudek, W. Zinka, S. Mitura</i>	PROPERTIES OF THE DETONATION DIAMONDS NANOPOWDER (DND) MODIFIED WITH MW PECVD+R SYSTEM
<b>P19</b>	<i><u>Artur Wiatrowski</u><sup>1</sup></i>	THE INFLUENCE OF MAGNETRON DISCHARGE POWER ON THE SINGLE PROBE LANGMUIR MEASUREMENTS AND RESULTED PLASMA PARAMETERS OF TITANIUM SPUTTERING PROCESSES
<b>P20</b>	<i>Katarzyna Włodarczyk-Kowalska, Marcin Makówka, Piotr Nolbrzak, Bogdan Wendler</i>	THE EFFECT OF DEPOSITION METHOD ONTO PROPERTIES OF NANOCOMPOSITE, LOW FRICTION nc-TiC/a-C(:H) COATINGS
<b>P21</b>	<i>S. Fryska, P. Giza, J. Baranowska,</i>	THE NITROGEN STABILIZED AUSTENITE COATINGS DEPOSITED BY REACTIVE MAGNETRON SPUTTERING WITH THE DIFFUSIVE SUB-LAYER
<b>P22</b>	<i><u>Irmak Karaduman</u><sup>1</sup>, Metin Özer<sup>1</sup>, Selim Acar<sup>1</sup></i>	TUNABLE SENSITIVITY UNDER ULTRA-VIOLET LIGHT IRRADIATION FOR ROOM TEMPERATURE NO <sub>2</sub> SENSING
<b>P23</b>	<i>Nizar Jawad Hadi<sup>1</sup>, Dhey Jawad Mohamed<sup>2</sup></i>	THE RELATION BETWEEN PHYSICAL AND MORPHOLOGICAL PROPERTIES OF ZNO/WASTE POLYSTYRENE NANO FLUID
<b>P24</b>	<i>Najim A. Saad<sup>1</sup>, Adwaa Mohammed<sup>2</sup></i>	EFFECT OF FIBRES REINFORCED ON CRYSTALLINITY AND FATIGUE BEHAVIOUR OF (POLY ETHER ETHER KETONE) COMPOSITE IN AEROSPACE APPLICATIONS