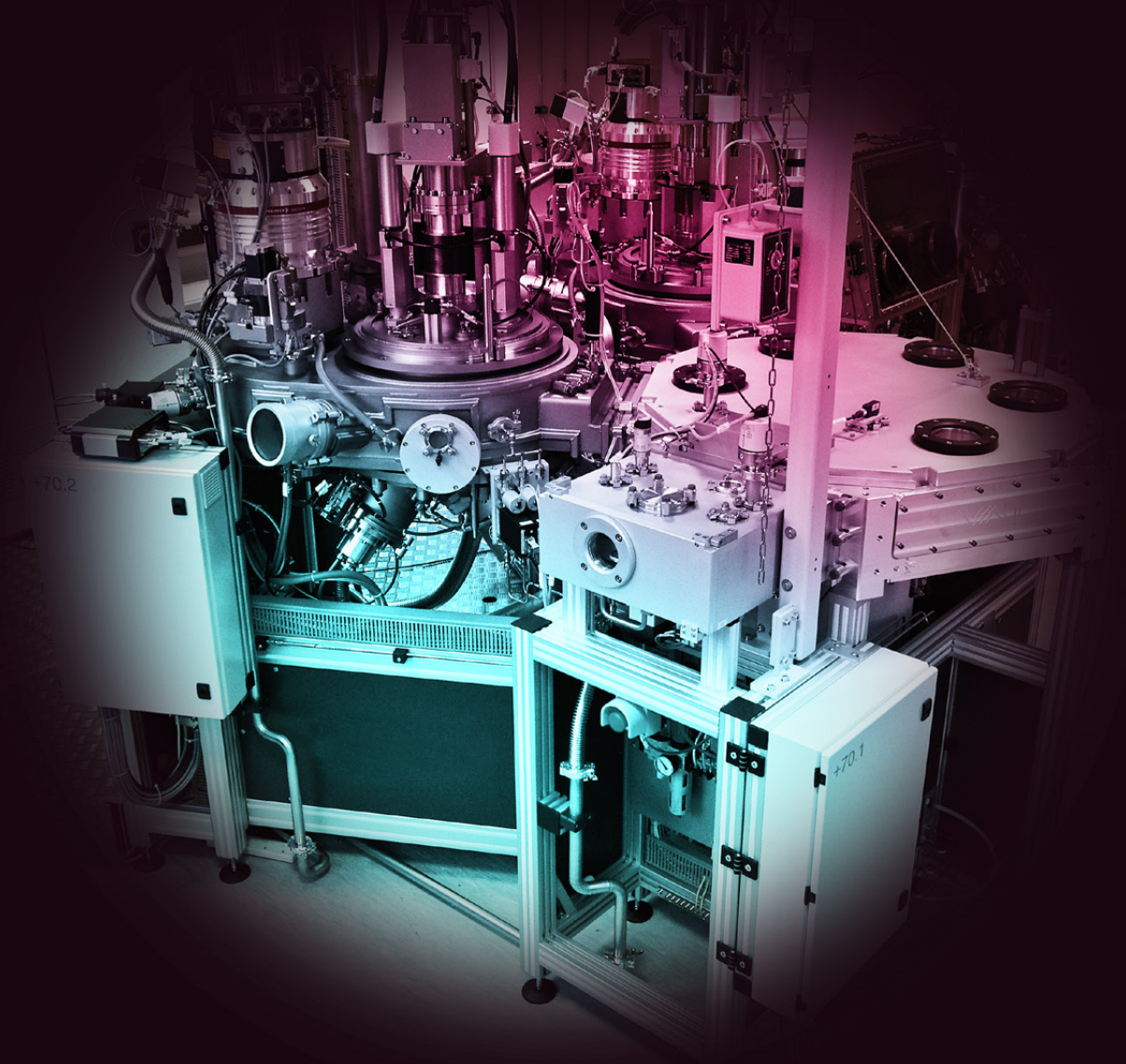
HIPIMS 2016

Seventh International Conference on HIPIMS

Programme of Events

Wednesday 29 June – Thursday 30 June 2016



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VON ARDENNE

ZIMMER BIOMET

Wednesday 29 June 2016

8–8.30am
Registration at Cutlers' Hall

8.30–8.40am
Welcome address by

- Prof. Wayne Cranton, Board member Joint SHU-Fraunhofer IST HIPIMS Research Centre
- Prof. Günter Bräuer, Director Fraunhofer IST
- Prof. Arutiun P. Ehiasarian, Conference Chairman

First morning session

Moderator – Ralf Bandorf, Fraunhofer IST, Germany

8.40–9am
HIPIMS ITO from ceramic and metallic rotating cathodes.

F.C. Carreri[1,2], R. Bandorf[1], H. Gerdes[1], E. Schröder[1], M. Vergöhl[1], G. Bräuer[1]
[1] Fraunhofer Institute for Surface Engineering and Thin Films (IST), Bienroder Weg 54E, 38108 Braunschweig, Germany.
[2] CAPES Foundation, Ministry of Education of Brazil, Caixa Postal 250, Brasília-DF 70040-020, Brazil.

9–9.20am
HiPIMS deposition of tungsten trioxide thin films.

A.Belajevs, M. Zubkins., R. Kalendarev, J. Gabrusenoks, J. Purans
Institute of Solid State Physics, University of Latvia, Kengaraga str 8, LV-1063, Riga, Latvia

9.20–9.40am
High-rate reactive high-power impulse magnetron sputtering of Hf-O-N films with tunable composition and properties

A. Belosludtsev, J. Vlček, S. Haviar, J. Houška, R. Čerstvý, J. Rezek
Department of Physics and NTIS – European Centre of Excellence, University of West Bohemia, Univerzitni 8, 30614 Plzen, Czech Republic

9.40–10am
HiPIMS plasma diagnostic and low temperature deposition of photo-active Titania thin films in an industrial-scale rig.

B. Delfour-Peyrethon, G. West, M. Ratova, P. Kelly, Manchester Metropolitan University, Manchester, United Kingdom

10–10.20am
Electrical insulation performance of aluminum oxide layers on metallic substrates – HiPIMS compared to RF-MS

F. Schmaljohann, D. Hagedorn, F. Löffler
Physikalisch-Technische Bundesanstalt, Bundesallee 100, Braunschweig, Germany

10.20–10.40am
Coffee break, poster session and exhibition

Wednesday 29 June 2016

Second morning session

Moderator – Roel Tietema, Hauzer Techno Coating, The Netherlands

10.40–11am

Target and substrate composition in reactive high-power impulse magnetron sputtering — a modelling study

T.Kozak, J. Vlcek
Department of Physics and NTIS – European Centre of Excellence, University of West Bohemia, Univerzitni 8, 306 14 Plzen, Czech Republic

11–11.20am

Deposition of titanium Oxide films by current-controlled high power impulse magnetron sputtering

A. Heisig[1], D.A.L. Loch[2], P.Eh. Hovsepian[2], A.P. Ehiasarian[2],
[1)] Von Ardenne GmbH, Plattleite 19/29, 01324 Dresden, Germany
[2)] National HIPIMS Technology Centre, Sheffield Hallam University, Howard St., Sheffield, UK

11.20–11.40am

Wave phenomena and instabilities in direct current magnetron sputtering and high power impulse magnetron sputtering plasmas

C. Maszl, A. Hecimovic, J. Benedikt and A. von Keudell
Research Department Plasmas with Complex Interactions, Ruhr-Universität Bochum, Institute for Experimental Physics II, Universitystr. 150, D-44780 Bochum, Germany

11.40–12 noon

Observation of breathing modes in high power impulse magnetron sputtering plasmas

A. Anders[1] and Y. Yang,[1,2]
[1] Lawrence Berkeley National Laboratory, Berkeley, California, USA
[2] School of Materials Science and Engineering, State Key Lab for Materials Processing and Die & Mold Technology, Huazhong University of Science and Technology, Wuhan, China

12–12.20pm

Anomalous cross-B field transport and spokes in HiPIMS plasma

A. Hecimovic, C. Maszl, V. Schulz-von der Gathen, A. von Keudell
Institute for experimental physics II, Research department plasmas with complex interactions, Ruhr-Universität Bochum, Germany

12.20–2pm

Lunch break and conference photograph

Wednesday 29 June 2016

First afternoon session

Moderator – Gerry van der Kolk, IonBond, The Netherlands

2–2.20pm

HiPIMS plasma measurements by triple and target strip probes

F.L. Estrin and James W. Bradley
Dept. of Electrical Engineering and Electronics, University of Liverpool, Brownlow Hill, Liverpool, L69 3GJ, UK

2.20–2.40pm

Optimized magnetic field configuration for high power impulse magnetron sputtering

D. Ruzic[1], P. Raman[1], I. Shchelkanov[1,2], J. McLain[1], M. Cheng[1], B. Jurczyk[3], R. Stubbers[3]
[1] Center for Plasma Material Interactions, University of Illinois, Urbana, USA
[2] Plasma Physics Department, National Nuclear Reassert University (MEPhI), Moscow, Russia
[3] Starfire Industries, LLC, Champaign IL, USA

2.40–3pm

Optical emission spectroscopy of a controlled reactive HiPIMS during a high-rate deposition of densified stoichiometric ZrO_2 films

A.D. Pajdarová, J. Vlček and J. Rezek
Department of Physics and NTIS - European Centre of Excellence, University of West Bohemia,Univerzitni 8, 306 14 Plzen, Czech Republic

3–3.20pm

Plasma analysis of inductively coupled impulse sputtering by investigation of Cu, Ti and Ni species

D. A. L. Loch[1], Y. Aranda Gonzalvo[2], A.P. Ehiasarian[1]
[1] Sheffield Hallam University, HIPIMS Technology Centre, Howard Street, Sheffield, UK
[2] HIDEN Analytical Ltd, Europa Boulevard, Warrington, UK / University of Minnesota, USA

3.20–3.40pm

Space-resolved plasma diagnostics in a dcMS/HPPMS hybrid (Cr,Al)N process

K. Bobzin, T. Brögelmann, N.C. Kruppe, M. Engels
Surface Engineering Institute, RWTH Aachen University, Kackertstr. 15, 52072 Aachen, Germany

3.40–4pm

Coffee break, poster session and exhibition

Wednesday 29 June 2016

Second afternoon session

Moderator – Papken Eh. Hovsepian, Sheffield Hallam University, UK

4–4.20pm

The Effect of Cr content on microstructure and mechanical properties of AlCrTiN films deposited by a hybrid system with HIPIMS and dcMS

H. Zhou[1], J. Zheng[1], B. Gui[1], D. Geng[2], Q. Wang[2]
[1] Lanzhou Insitute of Physics, P.R. China
[2] School of Electromechanical Engineering, Guangdong University of Technology, P.R. China

4.20–4.40pm

High Rate HiPIMS for cutting tool coatings

T. Leyendecker, O. Lemmer, W. Kölker, C. Schiffers
CemeCon AG, Adenauerstrasse 20A4, 52146 Würselen, Germany

4.40–5pm

Performance comparison of DC and HiPIMS TiAlN coatings in metal cutting

J. Kohlscheen[1], Michael Schneeweiß[2]
Kennametal GmbH, Altweiherstr. 27, Ebermannstadt, Germany
University of Applied Sciences, Zwickau, Germany

5–5.20pm

Tribological behaviour of Mo–W doped carbon-based coating

R. Jacobs[1], R. Tietema[1], D. Doerwald[1], G.-J. Fransen[1], A.P. Ehiasarian[2] , P.Eh. Hovsepian[2]
[1] IHI Hauzer Techno Coating B.V., The Netherlands
[2] Sheffield Hallam University, United Kingdom

5.20–5.40pm

Advanced power delivery control in high power impulse plasma magnetron sputtering process

W. Gajewski[1], P. Różański[1], M. Baran[1], P. Ozimek[1], M. Zelechowski[1], L. Zajac[2], M. Jasinski[2]
[1] TRUMPF Huettinger, Marecka 47, 05-220 Zielonka, Poland
[2] Warsaw University of Technology, Institute of Control and Industrial Electronics,Koszykowa 75, 00-662 Warsaw, Polanda

5.40–6pm

HiPIMS power supply technology

G. Eichenhofer[1], Carl. de la Viesca[2], I. Fernandez[3], A. Wennberg[3], Cec. de la Viesca[2]
[1] hiPV c/o 4A-PLASMA, Aichtalstr. 66, D-71088 Holzgerlingen; Germany
[2] hiPV c/o INGENIERIA VIESCA, S.L; E-28802 Alcalá de Henares; Spain
[3] hiPV c/o Nano4Energy S.L.N.E.; E-28006 Madrid; Spain

7.30pm

Conference dinner, Cutlers' Hall, Sheffield

Thursday 30 June 2016

First morning session

Moderator – Arutiun P. Ehiasarian, Sheffield Hallam University, UK

8.30–9am

Influence of high voltage pulsed bias on surfaces treated by HiPIMS

M. Froehlich[1], S. Gauter[2], W. Garkas[1], K.-D. Weltmann[1], H. Kersten[2], M. Polak[1]
[1] Leibniz Institute for Plasma Science and Technology (INP), Greifswald, Germany
[2] Institute of Experimental and Applied Physics, Kiel University, Kiel, Germany

9–9.20am

Low-temperature growth of dense, hard $Ti_{1-x-y}Al_xTa_yN$ alloy films via hybrid HiPIMS/Magnetron co-sputtering using synchronized metal-ion irradiation

O. Tengstrand[1], H. Fager[1], J. Lu[1], S. Bolz[2], B. Mesic[2], W. Kölker[2], Ch. Schiffers[2], O.Lemmer[2], I. Petrov[1,3], J. E. Greene[1,3], L. Hultman[1], G. Greczynski[1]
[1] Thin Film Physics Division, Department of Physics, Chemistry, and Biology (IFM), Linköping University,SE-581 83 Linköping, Sweden
[2] CemeCon AG, Adenauerstr. 20 A4, D-52146 Würselen, Germany
[3] Frederick Seitz Materials Research Laboratory and Materials Science Department, University of Illinois,104 South Goodwin, Urbana, Illinois 61801, USA

9.20–9.40am

Deposition of Cu/Mo multilayers by bias HiPIMS for X-Band accelerating structures

V. Rigato[1], M. Campostrini[1,2], B. Spataro[3]
[1] INFN, Laboratori Nazionali di Legnaro, Legnaro, Italy.
[2] Department of Industrial Engineering- University of Trento, Italy.
[3] INFN, Laboratori Nazionali di Frascati, Frascati, Italy

9.40–10am

Direct Metallization of Plastics by HIPIMS.

R. Bandorf[1], M. Grein[2], S. Waschke[3], G. Grundmeier[3], G. Bräuer[1,2]
[1] Fraunhofer IST, Braunschweig, Germany
[2] Institut für Oberflächentechnik IOT, TU Braunschweig, Braunschweig, Germany
[3] Technische und Makromolekulare Chemie TMC, Uni Paderborn, Paderborn, Germany

10–10.20am

Electrical Conductive Yarn and Fabric Obtained by Using R2R-HIPIMS.

Thu-Trang Nguyen[1], Ying-Hung Chen[1], Thi-Thuy-Nga Nguyen[1], Ming-Yi Chen[1], Kou-Bing Cheng[2], Ju-Liang He[1†*]
[1] Department of Materials Science and Engineering, Feng Chia University, 100 Wen-Hua Road, Taichung 40724, Taiwan, ROC
[2] Department of Fiber and Composite Materials, Feng Chia University, 100 Wen-Hua Road, Taichung 40724, Taiwan, ROC

10.20–10.40am

Coffee break, poster session and exhibition

10.40–11am

Copper thin films deposited under different power deliver modes and magnetron configurations: A comparative study

I.-L. Velicu[1], V. Tiron[1], B.-G. Rusu[2], G. Popa[1]
[1] Faculty of Physics, Alexandru Ioan Cuza University, Blvd. Carol I nr. 11, Iasi-700506, Romania
[2] Department of Pedotechnics, Faculty of Agriculture, University of Agricultural Sciences and Veterinary Medicine "Ion Ionescu de la Brad" of Iasi, Sadoveanu Alley nr. 3, Iasi-700490, Romania

11–11.20am

Time-resolved Ion flux and impedance measurements in reactive high-power impulse magnetron sputtering

M. Čada[1], D. Lundin[2] and Z. Hubička[1]
[1] Institute of Physics ASCR, v. v. i., Na Slovance 2, 182 21 Prague 8, Czech Republic
[2] Laboratoire de Physique des Gaz et des Plasmas — LPGP, UMR 8578, CNRS — Université Paris-Sud, 91405 Orsay, France

Thursday 30 June 2016

Second morning session

Moderator – A.Anders, Lawrence Berkeley National Laboratory, USA

11.20–11.40am

Measurement of deposition rate, ionized flux fraction and ion energy distribution in a pulsed dc magnetron sputtering system using a retarding field analyzer with embedded quartz crystal microbalance

S. Sharma
Impedans Ltd,Chase House, City Junction Business Park, Northern Cross, Dublin 17, D17 AK63, Ireland.

11.40–12.00

Plasma Diagnostics in Reactive High Power Magnetron Sputtering in Ar+H_2S Gas Mixture

Z. Hubička, M. Čada, J. Olejníček, Š. Kment
Institute of Physics AS CR, Na Slovance 2 182 21 Prague 8 Czech Republic

12.00–12.20

Properties and process control of reactively sputtered alumina coatings with a novel HIPIMS approach

F. Papa[1], I. Fernandez[2], A. Wennberg[2], B. Daniel[3], V. Bellido-Gonzalez3
[1] Gencoa USA, Davis, CA, USA,
[2] Nano4Energy, Madrid, Spain
[3] Gencoa Ltd., Liverpool, UK

12.20–2pm

Lunch break

Close of conference

Poster presentations

Exhibition Hall, 29 and 30 June 2016

1. Target poisoning during CrN deposition by mixed high power impulse magnetron sputtering and unbalanced magnetron sputtering technique.
   Y. P. Purandare, A. P. Ehiasarian, and P. Eh Hovsepian
   National HIPIMS Technology Centre, Materials and Engineering Research Institute, Sheffield Hallam University, UK S1 1WB

2. Analysing deposited Au-films on 3D structured aluminum alloy substrates as a function of the HiPIMS parameters
   Sascha Hilt[1], Frank Schmaljohann[1], Daniel Hagedorn[1], Frank Löffler[1], Ralf Bandorf[2], Günter Bräuer[2]
   [1] Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig
   [2] Fraunhofer-Institut für Schicht- und Oberflächentechnik IST, Bienroder Weg 54 E, D-38108 Braunschweig.

3. Optimization of deposition rate in HiPIMS through the control of magnetic field and pulsing configuration
   Vasile TIRON, Ioana-Laura VELICU, Ilarion MIHAILA and Gheorghe POPA
   Iasi Plasma Advanced Research Center (iPARC), Faculty of Physics, Alexandru Ioan Cuza University, Bvd. Carol I nr. 11, Iasi-700506, Romania.

4. Impact of growth defects on the corrosion behaviour of CrN/NbN coatings deposited by HIPIMS/UBM
   B.Biswas, P. Hovsepian
   National HIPIMS Technology Centre, Sheffield Hallam University, Sheffield, S1 1WB, UK

5. Highly ionized deposition of CrN using MPP
   H. Gerdes, A. Themelis, R. Bandorf, G. Bräuer
   Fraunhofer Institute for Surface Engineering and Thin Films IST, Bienroder Weg 54 E, Braunschweig, Germany

6. Investigations on spoke behaviour in reactive HiPIMS with ICCD measurements and energy and time resolved mass spectrometry.
   W. Breilmann, A. Eitrich, C. Maszl, A. Hecimovic, J. Benedikt and A. von Keudell
   Ruhr-Universität Bochum, Germany

7. Current-voltage characteristics of a DC magnetron with a hot target
   A.S. Bondarenko, V.V. Karzin, V.V. Smirnov
   St. Petersburg State Electrotechnical University, Department of Physical Electronics and Technology, 5 Prof. Popov St., St. Petersburg, Russia

8. The model of nitride films deposition using the high power reactive magnetron sputtering technique
   V.V. Karzin, A.S. Bondarenko, A.A. Komlev, I.L. Mylnikov
   St. Petersburg State Electrotechnical University, Department of Physical Electronics and Technology, 5 Prof. Popov St., St. Petersburg, Russia

9. Corrosion behaviour of post-deposition polished droplets-embedded arc evaporated and droplets-free HIPIMS/DCMS coatings

Arunprabhu A. Sugumaran*, Yashodhan Purandare, Arutiun P. Ehiasarian
and Papken Eh. Hovsepian
National HIPIMS Technology Centre, Sheffield Hallam University, Sheffield, UK

10. The Influence of the reactive gas flow on the structure and properties of TiAlCN/VCN films

Anna W. Oniszczuk[1], Arutiun P. Ehiasarian[1], Carl-Fredrik Carlström[2], Mats Ahlgren[2]
[1] HIPIMS Technology Centre, Sheffield Hallam University, Sheffield, UK
[2] Sandvik Coromant, Sweden

11. Effects of charge voltage on fabrication of AlCrN coatings by a high power impulse magnetron sputtering

Jun Zheng[1], Hui Zhou[1], Binhua Gui[1], Haixu Li[2], Qimin Wang[2]
[1] Lanzhou Insitute of Physics, Lanzhou, P.R. China
[2] School of Electromechanical Engineering, Guangdong University of Technology, P.R. China

12. Study of the effects of HIPIMS pulse packages on the peculiarities of carbon nanotubes creation during the growth of diamond like carbon composite matrix

Vachagan Meliksetyan,
Yerevan State University,Yerevan, Armenia

Notes

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