HIPIMS 2017

8th International Conference on Fundamentals and Applications of HIPIMS

13TH – 14TH JUNE 2017

BRAUNSCHWEIG

» STADTHALLE BRAUNSCHWEIG« | DE

CONFERENCE PROGRAM

Sponsors & Conference Supporting Organisations:

SVC Society of Vacuum Coaters

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AIP Journal of Applied Physics

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Local organiser: Network of Competence INPLAS e. V. | Bienroder Weg 54E | 38108 Braunschweig | www.inplas.de

VENUE: Fraunhofer Institute IST | Sem. 2 | Bienroder Weg 54 E | 38108 Braunschweig | DE

SUNDAY, 11TH JUNE (full day)
SVC C-323: HIGH POWER IMPULSE MAGNETRON SPUTTERING | Prof. A. P. Ehiasarian, Sheffield Hallam University, UK ; Andre Anders, Lawrence Berkeley National Laboratory, USA

MONDAY, 12TH JUNE (½ day morning)
SVC C-338: APPLICATION OF REACTIVE SPUTTERING | Dr. R. Bandorf; Gerdes, H., Fraunhofer IST, Germany

MONDAY, 12TH JUNE (½ day afternoon)
SVC C-333: PRACTICE & APPLICATIONS OF HIPIMS | Dr. R. Bandorf, Fraunhofer IST; Prof. A. P. Ehiasarian, Sheffield Hallam University, UK

Tuesday, 13th June

Oral Presentations

8:00 Registration

8:30 Opening
Dr. R. Bandorf, Fraunhofer IST
Prof. A. P. Ehiasarian, Sheffield Hallam University

Industrial cases | R. Bandorf

9:00 **Molybdenum Thin Films Deposited by High Power Impulse Magnetron Sputtering for Back Contact Applications**
Ehiasarian, A. P.; Loch, D.A.L.

9:20 **On the industrialization of High Power Impulse Magnetron Sputtering**
Gajewski, W.; Różański, P.; Zelechowski, M.; Ozimek, P.

9:40 **Pure HiPIMS Coatings with 2 µm/hour for Cutting Tool Coatings**
Leyendecker, T.; Lemmer, O.; Kölker, W.; Schiffers, Ch.

10:00 Coffee break

Fundamental aspects of HIPIMS | Prof. A. P. Ehiasarian

10:20 **Correlation of spatially resolved in-vacuum XPS characterisation and optical diagnostic for magnetron targets in HIPIMS plasma**
Layes, V.; Monje, S.; Corbella, C.; Schutz von der Gathen, V.; von Keudell, A.; de los Arcos, T.

10:40 **Simulation of heating of the target during High Power Impulse Magnetron Sputtering**
Karzin, V.V.; Karapets, K.I.

11:00 **Study of spoke rotation, merging and splitting in HiPIMS plasma**
Klein, P.; Hnilica, J.; Lockwood-Estrin, F.; Vašina, P.; Bradley, J. W.

11:20 **Potential Structure of Ionization Zones and Implications for Electron Heating and Ionization Dynamics**
Anders, A.; Panjan, M.

11:40 Conference Photograph

12:00 Lunch

Cathode configuration & operation modes | Jaroslav Vlcek

13:00 **Synchronised external magnetic fields applied in HiPIMS enhance plasma generation and plasma transport**
Bilek, M.; Ganesan, R.; Bathgate, S.; McKenzie, D.R.

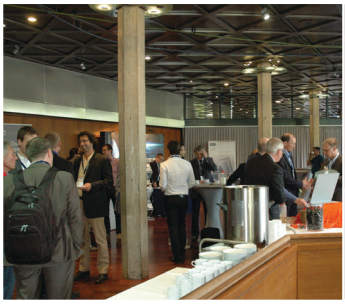
13:20 **Effects of Bipolar Pulses in High Powered Impulse Magnetron Sputtering (HiPIMS)**
Ruzic,D: N.; Haehnlein, I.; McLain, J.; Shchelkanov, I.

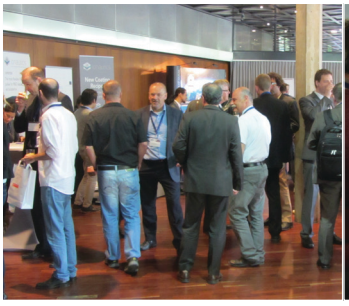
13:40 **Improve the Coating Properties by Modeling and Optimizing the HiPIMS Magnetron Configuration**
Luo, H.; Gao, F.; Billard, A.

14:00 **Unrevealed process enhancements by engaging an Active Positive Voltage reversal in HiPIMS applications**
Eichenhofer, G.; Fernández, I.; Wennberg, A.

14:20 **Improving deposition rate of titanium nitride-based films using a superimposed high-power impulse and middle-frequency magnetron sputtering technique**
Diyatmika, W.; Lee, J.-W.

14:40 Coffee break









15:00 Guided Postersession

1 Slide per poster, max. time for poster introduction: 1 min

P 1 **A controlled high-rate reactive HiPIMS deposition of ZrO2 films: an optical emission spectroscopy study**
Pajdarová, A.D.; Vlček, J.

P 2 **Calorimetric study of secondary electron in sputtering and nitriding PIII process**
Haase, F.; Manova, D.; Mändl, S.; Kersten, H.

P 3 **The Thermal Oxidation of TiAlN High Power Impulse Magnetron Sputtering Hard Coatings as Revealed by Combined Ion and Electron Spectroscopy**
Wiesing, M.; de los Arcos, T.; Grundmeier, G.

P 4 **Raman spectroscopy of titanium nitride films deposited by reactive magnetron sputtering with a hot target**
Komlev, A. A.; Levitskii, V. S.; Shapovalov, V. I.; Smirnov, V. V.; Shutova, E.S.

P 5 **Oxynitrides films model synthesis by the high power reactive sputtering technique**
Komlev, A. A.; Zav'alov, A. V.; Shapovalov, V. I.; Minzhulina, E. A.; Morozova, A. A.

P 6 **Non-contact method of temperature measuring of target surface in high power magnetron sputtering**
Komlev, A. E.; Komlev, A. A.; Uhov, A.A.; Shutova, E.S.

P 7 **Crystalline deposition of GaN and ternary compounds by Pulsed Sputter Deposition of GaN**
Steib, F.; Gülink, J.; Kossev, I.; Ledig, J.; Remmele, T.; Behres, A.; Fündling, S.; Albrecht, M.; Heicke, S.; Müller, T.; Straßburg, M.; Lugauer, H.-J.; Wehmann, H.-H.; Waag, A.

P 8 **HPMF process of Al-doped zinc oxide films from rotatable targets**
Sittinger, V.; Jung, S.; Britze, C.; Gerdes, H.; Schorn, D.; Wallendorf, T.; Bräuer, G.

P 9 **The effect of annealing on mechanical properties and constitution of TiC:H and TiC/a-C:H thin films deposited by high power impulse magnetron sputtering**
Poltorak, Ch.; Leiste, H.; Mikulla, Ch.; Rinke, M.; Wantzen; K.; Pavlides, C.; Burger, W.; Albers, A.; Stüber, M.; Ulrich, S.

P 10 **Measuring the Ionized Fraction of Film Forming species**
Gerdes, H.; Spreemann, D.; Bandorf, R.; Vergöhl, M.; Bräuer, G.

P 11 **Metal-doped DLC layers prepared by HIPIMS/PECVD**
Grein, M.; Bandorf, R.; Bräuer, G.

P 12 **Investigation of the ion to neutral ratio by plasma emission monitoring using metallic and reactive HIPIMS process**
Rieke, J.; Gerdes, H.; Bandorf, R.; Schütte, T.; Vergöhl, M.; Bräuer, G.

P 13 **Coatings for Friction Stir Welding Applications**
Ehiasarian, A.

P 14 **Influence of ion-to-metal flux ratio on the mechanical and tribological properties of TiN coatings deposited by HiPIMS**
Tiron, V.; Velicu, I.-L.; Lupu, N.; Cristea, D.; Stoian, G.; Munteanu, D.

P 15 **Velocity distribution of sputtered species in the ionization region**
Held, J.; Hecimovic, A.; Schulz-von der Gathen, V.

P 16 **High mobility amorphous zinc oxynitride films deposited by reactive HiPIMS**
Ganesan, R.; Akhava, B.; McKenzie, D. R.; Bilek, M. M. M.; Thorwarth, K.; Hug, H.-J.

P17 **Effect of chamber environment on defect generation and their influence on corrosion and tribological properties of HIPIMS deposited CrN/NbN Coatings**
Biswas, B.; Hovsepian, P. Eh.

17:00 End of the scientific program

18:00 Networking Event with Awards Ceremony

Location: »Dornse« at Altstadtrathaus

Wednesday, 14th June

Oral Presentations

8:00 **Admittance**

Reactive HIPIMS | P. Hovsepian

8:40 **An ionization region model of the reactive Ar/O2 high power impulse magnetron sputtering discharge**
Gudmundsson, J. T.; Lundin, D.; Brennig, N.; Raadu, M. A.; Huo, Ch.; Minea, T. M.

9:00 **The role of metal implantation in reactive high power impulse magnetron sputtering**
Kozak, T.; Vlcek, J.

9:20 **r-HiPIMS of magnesium oxide**
Moens, F.; Konstantinidis, S.; Depla, D.

9:40 **High-rate reactive HiPIMS deposition of Hf-O-N films with smoothly controlled composition**
Vlček, J.; Belosludtsev, A.; Houška, J.; Rezek, J.

10:00 **The target condition dependent optical and electronic functionalities of WO3 and WOxNy films deposited . by reactive HiPIMS**
Ganesan, R.; Akhavan, B.; McKenzie, D. R.; Bilek, M. M. M.

10:20 **HIPIMS Peak Power to Affect Film Adhesion of Titanium and Titanium Oxide Films on PET Substrate**
He, J.-L.; Chen, M.-Y.; Chen, Y.-H.

10:40 **Coffee break**

Hard coatings | Prof. G. Bräuer

11:00 **Measurements on a high voltage pulsed substrate (PBII) in a HiPIMS process**
Gauter, S.; Fröhlich, M.; Garkas, W.; Polak, M.; Kersten, H.

11:20 **HiPIMS coatings for SRF cavities: influence of process parameters on film morphology and cavities perfor mances**
Rosaz, G.; Aull, S.; Calatroni, S.; Richard, T.; Sublet, A.; Taborelli, M.; Venturini-Delsolaro, W.

11:40 **HIPIMS deposited CrN/NbN coatings to preserve the mechanical properties of the substrate material and protect against steam oxidation and water droplet erosion attacks**
Hovsepian, P. Eh.; Ehiasarian, A. P.; Purandare, Y. P.; Mayr, P.; Abstoss, K. G.; Schulz, W.; Kranzmann, A.

12:00 **Phenomenological study of the influence of HiPIMS process parameters on the tribomechanical properties of TiAlN coatings**
Tillmann, W.; Grisales, D.; Stangier, D.

12:20 **Adhesion enhancement of DLC hard coatings by HiPIMS metal etching: a comparison between Titanium and Chromium**
Santiago, J. A.; Fernandez-Martínez, I.; Monclús, M.; Molina, J.; Gonzalez-Arrabal, R.; Sanchez-Lopez, J. C.; Rojas, C.; Wennberg, A.

12:40 **HIPIMS-Arc carbon films on 500 mm cathodes**
Bandorf, R.; Rösler, J.; Gerdes, H; Bräuer, G.

13:00 **Closing Remarks**
Bandorf, R.

13:10 **Lunch & End of Conference**

Information for Exhibitors

Setup starts on monday 12th June 2017 from 3 p.m. to 5 p.m. | **Dismantling** starts on Wednesday 14th June 2017 from 2 p.m. (after lunch)

Time and contact information for delivery of exhibition material:
Stadthalle Braunschweig | Leonhardplatz | 38102 Braunschweig | Germany

Earliest date for arrivals of your exhibition material:
6th June 2017, **keyword »HIPIMS 2017«**