

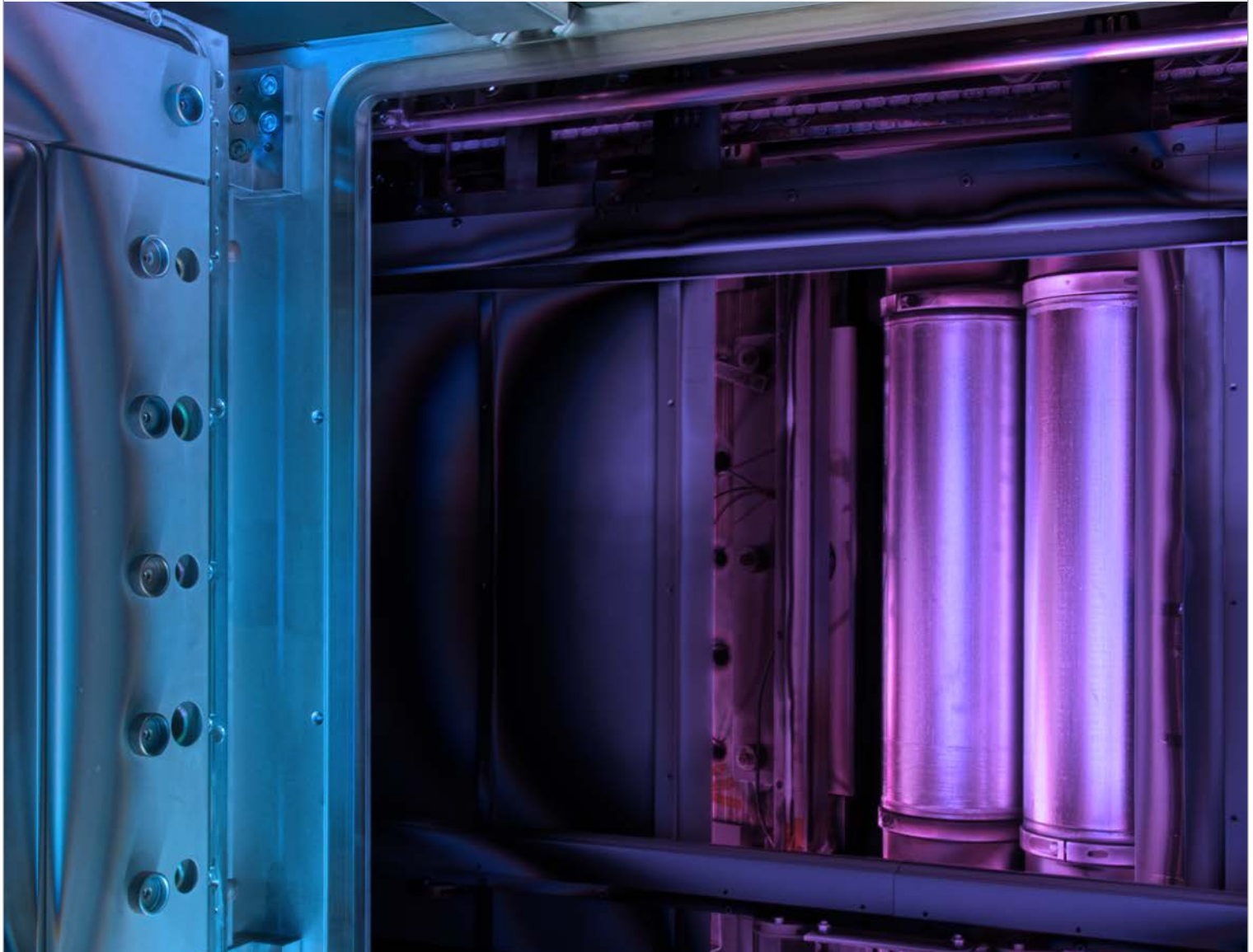


6TH INTERNATIONAL CONFERENCE ON HIPIMS

CONFERENCE PROGRAM

6TH INTERNATIONAL CONFERENCE ON FUNDAMENTALS AND APPLICATIONS OF HIPIMS

10TH – 11TH JUNE 2015 | BRAUNSCHWEIG, CIVIC CENTER | DE



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MONDAY, 8TH JUNE (FULL DAY) SVC C-323: High Power Impulse Magnetron Sputtering
Prof. Arutiun P. Ehasarian, Sheffield Hallam University, Sheffield, UK

TUESDAY, 9TH JUNE (½ DAY MORNING) SVC C-317: The Practice of Reactive Sputtering
Dr. Ralf Bandorf and Holger Gerdes, Fraunhofer IST, Germany

TUESDAY, 9TH JUNE (½ DAY AFTERNOON) SVC C-333: HIPIMS Applications
Dr. Ralf Bandorf, Fraunhofer IST, Germany | Prof. Arutiun P. Ehasarian, Sheffield Hallam University, Sheffield, UK

The Society of Vacuum Coaters is presenting 3 tutorial courses. Take advantage of learning from these outstanding, internationally recognized instructors and getting answers to your practical vacuum coating problems.

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

Wednesday Morning, 10th June

8:00 Registration

8:30 Opening

Dr. R. Bandorf, Fraunhofer IST
Prof. A. P. Ehasarian, Sheffield Hallam University

Industrial Session

9:00 Development of nanostructured CrN/NbN coatings for medical prosthesis using HIPIMS
Hovsepian P. Eh., Ehasarian A. P., Purandare Y., Sugumaran A., Khan I.

9:20 HIPIMS in Full Face Erosion Circular Cathode Semiconductor Applications
Papa F., Li H., Azzopardi A., Brindley J., Vetushka A., Bellido-Gonzalez V., Fernandez I., Wennberg A., Ngo H. D.

9:40 Advanced coating architectures based on HiPIMS and Arc: High Ionization Triple
Vetter J., Mueller J., Krienke T., Willach M., Rudigier H.

10:00 Designing the HiPIMS Process for Cutting Tool Coatings
Schiffers C., Leyendecker T., Lemmer O., Kölker W., Bolz S.

10:20 High quality hard coatings produced by S3p™
Krassnitzer S., Kurapov D., Arndt M., Kalss W., Rudigier H.

10:40 HiPIMS power supplies – challenges and development
Gajewski W., Róžański P., Baran M., Ozimek P., Zelechowski M., Zajac L., Jasinski M.

11:00 Coffee break | Exhibition & poster

Reactive HIPIMS of Oxides

11:20 Deposition of rutile TiO₂ films by pulsed and high power pulsed magnetron sputtering Coatings
Bartzsch H., Schönberger W., Schippel S., Bachmann T.

11:40 Pulse length and frequency control of target poisoning in reactive HiPIMS: application to amorphous HfO₂
Ganesan R., Murdoch B., Treverrow B., Ross A. E., Falconer I. S., Kondyurin A., McCulloch D. G., Partridge J. G., McKenzie D. R., Bilek M. M. M.

12:00 Oxide semiconductor thin film deposition by HIPIMS reactive magnetron sputtering
Hubička Z., Brunclíková M., Kment Š., Olejníček J., Čada M

12:20 Reactive HiPIMS pulse optimization strategies in fabrication of all-dielectric optical coatings

Hála M., Čapek J., Vernhes R., Zabeida O., Klemberg-Sapieha J. E., Martinu L.

12:40 Conference Photograph

13:00 Lunch | Exhibition & Poster

Wednesday Afternoon, 10th June

Fundamental Aspects of HIPIMS

14:00 Exploring the structure zone transition in energetic deposition of Cu thin films by modulated pulsed power magnetron sputtering

Zheng B. C., Meng D., Che H. L., Lei M. K.

14:20 Ionized fraction and plasma parameters investigation in HiPIMS with Ti, Al and C target

Čada M., Lundin D., Hubička Z.

14:40 Cathode voltage and discharge current oscillations and spoke behavior during HiPIMS discharge

Klein P., Hnilica J., Vašina P., Hubička Z., Čada M.

15:00 Correlation between Ion Transport and Plasma Oscillations in DC and HiPIMS discharges

Hecimovic A., Maszl C., Schulz-von der Gathen V., Winter J., von Keudell A.

15:20 High-current impulse magnetron discharge with liquid target

Kaziev A. V., Tumarkin A. V., Khodachenko G. V.

16:00 Coffee break | Exhibition & poster

Guided Postersession

16:20 Guided postersession and coffee break
1 Slide per poster, max. time for poster introduction: 1 min

P 1 HiPIMS Deposition of Tungsten Trioxide Thin Films
Belajevs A., Purans J., Zubkins M., Kalendarev R.

P 2 Investigation of discharge structure inhomogeneities observed in high-current quasi-stationary magnetron discharge
Kaziev A. V., Kharkov M. M., Khodachenko G. V.

P 3 Industrial Scale Deposition of Diamond-like Carbon Thin Films using Ne-based HiPIMS Discharge
Aijaz A., de Campos Carreri F., Sabelfeld A., Gerdes H., Bandorf R., Kubart T., Bräuer G.

P 4 Highly Ionized Gas Flow Sputtering of Alumina Coatings
Bandorf R., Gerdes H., Ortner K., Bräuer G.



- P 5 Tailoring the microstructure and properties of CrN thin films by HiPIMS in Deep Oscillations Magnetron Sputtering (DOMS) mode**
Ferreira F., Oliveira J. C., Cavaleiro A.
- P 6 HIPIMS ITO films from a rotatable target for applications in strain gauges**
Carrerri F. C., Schröder E., Bandorf R., Bräuer G.
- P 7 Superconducting Cavities Nb coating with biased HiPIMS technology**
G. Rosaz, G. Terenziani, D. Sonato, S. Calatroni, S. Aull, W. Delsolaro Venturini, M. Taborelli
- P 8 Influence of HiPIMS on the morphology of chromium nitride (CrN_x) films**
Decho H., Mehner A., Zoch H.-W., Stock H.-R.
- P 9 Manipulating HiPIMS deposition rates using magnetic field strengths**
Bradley J. W., Mishra A., Kelly P. J.
- P 10 Deposition of TiSiN films by HIPIMS-DOMS: controlling the bombardment conditions by changing the Peak Power**
Oliveira J. C., Fernandes F., Ferreira F., Cavaleiro A.
- P 11 Mechanical Bending of the Indium Tin Oxide Films on Polyethylene Terephthalate Deposited by High Power Impulse Magnetron Sputtering**
Chen Y.-H., Chen Y.-C., He J.-L.
- P 12 TiO₂ thin film deposition by reactive multi-pulse HiPIMS**
Tiron V., Demeter A., Samoila F., Vasilovici O., Sirghi L.
- P 13 Corrosion and contact resistance characteristics of TaNx films deposited by HPPMS on AISI 316L metallic bipolar plates in polymer electrolyte membrane fuel cells**
Mendizabal L., Kongstein O. E., Oedegaard A., Barriga, J.
- P 14 Oxidation resistance properties of TiAlSiN nanocomposite coatings on titanium alloy prepared by modulated pulsed power magnetron sputtering**
Li Y. G., Wu B., Lei M. K.
- P 15 Preparation and characterization of high purity Ti thin films by high power impulse magnetron sputtering deposition**
Meško M., Munnik F., Heller R., Grenzer J., Hübner R., Krause M.
- P 16 Influence of pulse off time on temporal evolution of sputtered species densities in HIPIMS discharge**
Fekete M., Hnilica J., Vašina P.
- P 17 Nanomechanical properties of nanocomposite coatings developed by HIPIMS and unbalanced sputtering**
Kassavetis S., Spiliotis A., Karamanidis S., Logothetidis S.
- P 18 Comparative study DCMS vs HIPIMS depositions of TiO₂-flexible surfaces showing self-cleaning properties**
Rtimi S., Pulgarin C., Kiwi J.
- P 19 Comparison of TiN and Ti(C,N) coatings produced by HiPIMS and d.c. magnetron sputtering in an industrial coating facility**
Ulrich S., Ye J., Schweiger S., Stüber M., Leiste H., Mark G., Mark M.
- P 20 Growth and mechanical properties of (Ti, Al) N films at inner wall of sub-millimeter scale small holes deposited by HIPIMS**
Shimizu T., Teranishi Y., Morikawa K., Kondo Y., Nagasaka H., Yang M.
- P 21 New Magnet Pack and Power Supply for High-Power Pulsed Magnetron Sputtering**
Raman P., Shchelkanov I., Ruzic D., Jurczyk B., Stubbers R., Armstrong S.
- P 22 Structure and wear mechanism of novel CrAlBYCN/AlSiCN PVD coating deposited using a combined UBM and HIPIMS process in a reactive gas mix.**
Morton T. J., Ehasarian A. P., Carlström C.-F., Ahlgren M.
- P 23 Plasma Pretreatment of Tungsten Carbide and Steels by High Power Impulse Magnetron Sputtering**
Ehasarian A. P., Oniszcuk A., Morton T. J., Carlstrom C.-F., Ahlgren M.
- P 24 Time resolved ion energy distributions during HiPIMS of chromium: transition from rotating spokes to a homogeneous torus at high plasma powers**
Breilmann W., Maszl C., Eitrich A., Hecimovic A., Benedikt J., von Keudell A.
- P 25 Laser scattering investigations of plasma turbulence in HiPIMS**
Tsikata S., Minea T.
- 18:00 End of the scientific program**

Evening Event

Special conference Dinner at football stadium (casual dress)

19:10 Departure at tram station »Leonhardplatz« next to the civic center

Fixed departure time by special tram!

23:00 Return to the civic center by special tram





Thursday Morning, 11th June

8:00 Admittance

Modeling of HIPIMS

8:20 **A Feedback Model of Magnetron Sputtering Plasmas in HIPIMS**

Ross A.E., Ganesan R., Bilek M.M.M., McKenzie D.R.

8:40 **A Model of Reactive HIPIMS Applied to Bipolar Dual Magnetron HIPIMS. Deposition of Oxides and Nitrides of Ti**

Čapek J., Kadlec S.

9:00 **Reactive high-power impulse magnetron sputtering of films – a process control and modelling**

Vlcek J., Kozak T., Rezek J.

9:20 **A parametric model for reactive high-power impulse magnetron sputtering**

Kozak T., Vlcek J.

9:40 **Coffee break | Exhibition & poster**

Carbon based processes

10:00 **Deposition carbon-based hemocompatible and biofunctionalisable coatings for cardiovascular applications using HiPIMS**

Bilek M., Hiobb M., Ganesan R., Kondyurin A., McCulloch D. G., McKenzie D.R.

10:20 **Characterization of the mixed-mode carbon HIPIMS process**

Tucker M. D., Ganesan R., Marks N.A., Bilek M.M.M., McKenzie D.R.

10:40 **W-DLC coatings for industrial application deposited by a combination of HIPIMS and unbalanced magnetron sputtering at low temperature**

Ballo V., Frkáň J., Drábik M., Truchlý M., Mikula M., Kůš P.

11:00 **Synthesis of Tetrahedral Amorphous Carbon by Mixed Mode HiPIMS Deposition**

Ganesan R., McCulloch D.G., Tucker M.D., Marks N.A., Bilek M.M.M., McKenzie D.R.

11:20 **Coffee break | Exhibition & poster**

Thursday Morning, 11th June

Nitride Coatings

11:40 **TiCN(H) nano-composites deposited by two gases reactive HiPIMS**

Patelli A., Colasuonno M., Grigoletto S., Bazzan M.

12:00 **HiPIMS AlTiN Coatings**

Deambrosis S. M., Miorin E., Montagner F., Zin V., Fabrizio M. Sebastiani M., Bemporad E.

12:20 **Influence of High Power Pulse Magnetron Sputtering pulse parameters on the reactive gas N₂ in the deposition process of (Cr,Al)N coatings**

Bobzin K., Brögelmann T., Brugnara R.H., Kruppe N.C., Chromy S.

12:40 **Highly Ionized Deposition of CrN**

Gerdes H., Täsch M., Bandorf R., Bräuer G.

13:00 **Target Poisoning in Mixed Ar, N₂ and CH₄ Atmosphere, in Processes Using Different Target Materials for HIPIMS/DC and DC Cathode Modes.**

Oniszcuk A. W., Ehasarian A. P., Carlström C.-F., Ahlgren M.

13:20 **Closing remarks**

R. Bandorf

13:30 **Lunch**

14:30 **End of conference**

INFORMATION FOR EXHIBITORS

Setup starts on tuesday 9th June 2015 from 3 p.m. to 5 p.m. | **Dismantling** starts on thursday 11th June 2015 from 2 p.m. (after lunch)

Time and contact information for delivery of exhibition material:

Stadhalle Braunschweig | Leonhardplatz | 38102 Braunschweig | Germany

Earliest date for arrivals of your exhibition material:

5th June 2015, keyword »HIPIMS 2015«