HIPIMS 2013
4th International Conference on HIPIMS
& Final Event COST Action MP0804

Thursday Morning, 13th June

Prof. P. Hovsepian
Sheffield Hallam University, UK

8:30 **Ionization zones, plasma flares, self-organization, and the asymmetric ejection of particles in high power impulse magnetron sputtering**
Anders A., Ni P., Panjan M.

9:00 **Mechanism of the instabilities in HIPIMS discharge**
Hecimovic A., de los Arcos T., Schulz-von der Gathen V., Böke M., Winter J.

9:20 **Global modeling of the azimuthally rotating structure in HIPIMS**
Gallian S., Brinkmann R. P., Hitchon W. N. G.

9:40 **Dynamics of the fast – HIPIMS discharge during FINEMET-type films deposition**
Tiron V., Velicu I-L., Costin C., Popa G.

10:00 **Spokes modelling by pseudo 3D PIC MCC**
Revel A., Costin C., Minea T.

10:20 **Kinetic modelling of an Ar-Cu preionized HIPIMS discharge**
Bretagne J., Vitelaru C., Fromy P., Minea T.

10:40 **Coffee Break**
Exhibition & Poster

Prof. W. Diehl
Fraunhofer IST, DE

11:00 **Balance of powers delivered to magnetrons and balance of deposition rates in reactive bipolar pulsed HIPIMS of aluminum oxide**
Kadlec S. , Čapek J., Kousal J., Vyskočil J.

11:20 **Reactive high-power impulse magnetron sputtering of optically transparent zirconium dioxide films**
Rezek J., Vlcek J., Houska J., Cerstvy R., Kozak T., Kohout J.

11:40 **Reactively grown TiN and Ti-Si-N films with high deposition rate using chopped HIPIMS**
Barker P. M., Lewin E., Patscheider J.

12:00 **High power impulse magnetron sputtering Of Cn_x**
Nouvellon C., Michiels M., Roobroeck A., Konstantinidis S., Snyders R.

12:20 **Deposition of highly insulating aluminium nitride (AlN) by DC and HIPIMS technique: Comparison of the two techniques according to plasma investigations and physical analysis**
Camus J., Ait Aissa K., Simon Q., Jouan P-Y., Le Brizoual L., Djouadi M. A.

12:40 **Effect of nitrogen flow rate on the corrosion resistance of ZrN coatings deposited by HIPIMS technology**
Purandare Y. P., Ehiasarian A. P., Hovsepian P. Eh.

13:00 **Lunch**
Close of conference

Thursday Afternoon, 13th June

14:00 **Formal COST session reporting – Open for all Attendees**

14:20 **COST Action MP0804**
HIPP Processes
Bandorf R.

14:40 **Report of working group 1:**
Generation of HIPP plasmas
Konstantinidis S.

15:00 **Report of working group 2:**
Characterisation of HIPP plasmas and coatings
Sarakinos K.

15:20 **Report of working group 3:**
Simulation of HIPP processes
Costin C.

15:40 **Report of working group 4 + 5:**
Non-reactive HIPP processes / Reactive HIPP processes
Kelly P.

16:00 **Coffee break**

16:20 **Closed cost session reporting**
MC-delegates of COST MP0804 only

18:00 **End of the final cost event**

INFORMATION FOR EXHIBITORS

Setup starts on tuesday 11th June 2013 from 3 p.m. to 5 p.m. | **Dismantling** starts on thursday 13th June 2013 from 4 p.m. (after coffee break)

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

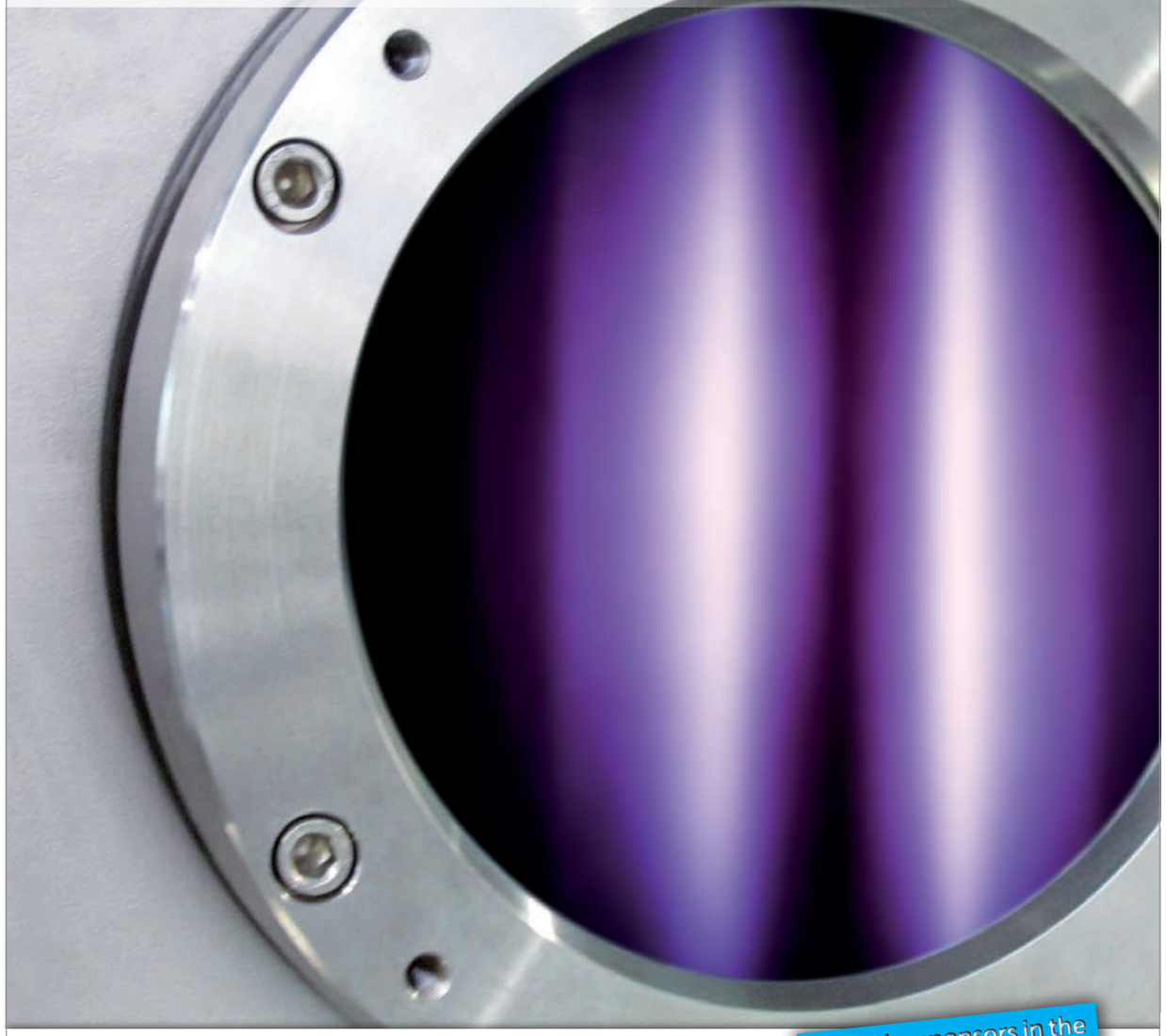
Earliest date for arrivals of your exhibition material:
6th June 2013, **keyword »HIPIMS«**

HIPIMS 2013
4th International Conference on HIPIMS
& Final Event COST Action MP0804

10th – 13th June 2013
Stadthalle Braunschweig
Address for Navigation System:
Leonhardplatz | 38102 Braunschweig
Coordinates: 52°15´29 N / 10°37´25 O

CONFERENCE PROGRAM

4th International Conference on Fundamentals and Applications of HIPIMS
& Final Event COST Action MP0804



Sponsors & Conference Supporting Organisations

Meet the sponsors in the Exhibition!

Society of Vacuum Coaters
TRUMPF HÜTTINGER Elektronik generating confidence
Hauzer
ionbond

Organisation:
Network of Competence INPLAS
Fraunhofer IST
Sheffield Hallam University
cost European Cooperation in Science and Technology

Local Organiser: Network of Competence INPLAS | Bienroder Weg 54 E | 38108 Braunschweig | **www.inplas.de**

HIPIMS 2013
4th International Conference on HIPIMS
& Final Event COST Action MP0804

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 Germany

MONDAY, 10TH JUNE (FULL DAY) **SVC C-323: High Power Impulse Magnetron Sputtering**
Prof. Arutiun P. Ehiasarian, Sheffield Hallam University, Sheffield, UK | **Dr. Andre Anders**, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

TUESDAY, 11TH JUNE (½ DAY MORNING) **SVC C-317: The Practice of Reactive Sputtering**
Dr. Ralf Bandorf, Fraunhofer IST, Germany

TUESDAY, 11TH JUNE (½ DAY AFTERNOON) **SVC C-333: HIPIMS Applications**
Dr. Ralf Bandorf, Fraunhofer IST, Germany | **Prof. Arutiun P. Ehiasarian**, Sheffield Hallam University, Sheffield, UK

SVC Society of Vacuum Coaters

Wednesday Morning, 12th June

8:00 **Registration**
+ presentation of the award winning INPLAS movie »Plasma – a bright advantage«

8:30 **Opening**
Prof. G. Bräuer, Fraunhofer IST
Prof. R. Eccleston, Sheffield Hallam University
Dr. R. Bandorf, Fraunhofer IST

Prof. A. P. Ehiasarian, Sheffield Hallam University, UK

9:00 **HIPIMS as a tool to understand the time-domain and energetic bombardment effects on the nucleation and coalescence of thin metal films on amorphous substrates**
Magnfält D., Elofsson V., Abadias G., Helmersson U., Sarakinos K.

9:20 **High ionization triple: an innovative PVD process for advanced coating architectures based on HIPIMS and arc**
Vetter J., Mueller J., Krienke T., Schmidt-Mauer M., Erkens G.,

9:40 **Advances in process technology and deposition equipment for HIPIMS coatings for cutting tools**
Leyendecker T., Lemmer O., Kölker W., Schiffers C.

10:00 **TiN for forming applications**
Alami J., Maric Z.

10:20 **Coffee break | Exhibition & poster**

Dr. R. Bandorf, Fraunhofer IST, D

10:40 **Influence of ion bombardment energy on the growth of CrN films by reactive magnetron sputtering and high power impulse magnetron sputtering**
Ehiasarian, A. P., Howe, B., Petrov, I.

11:00 **Corrosion protection by HIPIMS+ deposited CrN-based coatings**
Eerden M., Papa F., Tietema R., Aresta G., Krug T.

11:20 **HIPIMS process with oscillatory voltage pulse shapes for directional sputtering applications**
Chistyakov R., Abraham B.

11:40 **Electrical characteristics of S3p™ HIPIMS discharge**
Krassnitzer S., Kurapov D., Rudigier H.,

12:00 **New development of HIPIMS power supply with best in class technology and new features**
Ozimek P., Klimczak A., Rozanski P., Glazek W., Lesiuk P.

12:20 **Conference Photograph**

12:40 **Lunch | Exhibition & Poster**

Wednesday Afternoon, 12th June

Dr. A. Anders, Lawrence Berkeley National Laboratory, USA

13:40 **Deposition rates and oxygen negative ion energy distributions during reactive HIPIMS of titanium in Ne/O_2, Ar/O_2, Kr/O_2 and Xe/O_2 gas mixtures**
Bowes M., Bradley J. W.

14:00 **Plasma characterisation of the HIPIMS instabilities by energy resolved mass spectrometry**
Gonzalvo Y. A., Hecimovic A., Winter J., de los Arcos T.

14:20 **A novel, deposition-tolerant, Langmuir probe suitable for plasma parameter measurement in HIPIMS discharges**
Gahan D. , Scullin P. , O' Sullivan D., Hopkins M. B.

14:40 **Fe_2O_3 thin films for water splitting application prepared by high power pulsed magnetron and pulsed hollow cathode systems**
Hubička Z., Kment Š., Čada M., Olejníček J.

Guided Postersession

Prof. G. Bräuer, Fraunhofer IST, D

15:00 **Guided postersession and coffee break**
1 Slide per poster, max. time for poster introduction: 1 min

P 1 **Can HIPIMS Cr_xN serve as alternative for hard chromium?**
Truijen I., Cosemans P.

P 2 **Correlation between the Rockwell indentation test and the progressive load scratch test for assessment of coating adhesion**
Randall N., Favaro G., Hess M.

P 3 **Target implantation and redeposition processes during high power impulse magnetron sputtering of aluminium**
de los Arcos T., Will A., Corbella C., Hecimovic A., von Keudell A., Winter J.

P 4 **Mechanical properties of TiSiN coatings processed by HIPIMS-pulsed DC hybrid process**
Arab Pour Yazdi M. , Lomello F., Sanchette F., Schuster F., Billard A.

P 5 **Gyrokinetic description of technical plasmas**
Brinkmann R. P., Gallian S., Schröder B., Eremin D.

P 6 **Influence of the Y-doping on the oxidation and mechanical properties of AlCrN-based coatings**
Lomello F., Arab Pour Yazdi M., Sanchette F., Steyer P., Schuster F., Billard A.

P 7 **Study of wear mechanism of chromium doped DLC coating by Raman spectroscopy in boundary lubrication condition**
Mandal P., Ehiasarian A. P., Hovsepian P. Eh.

HIPIMS 2013
4th International Conference on HIPIMS
& Final Event COST Action MP0804

P 8 **Correlation between mass-spectrometer measurements and thin film characteristics using HIPIMS discharges**
Ferrec A., Jacq S., Kenardel J., Schuster F., Jouan P.-Y., Fernandez M.-C., Djouadi A.

P 9 **The study of titanium nitride films deposited using a hybrid system combining cathodic arc deposition and high power impulse magnetron sputtering**
Chi-Lung C., Wan-Yu W., Chun-Ta H., Ping-Hung C., Wei-Chih C., Da-Yung W.

P 10 **Time-resolved optical emission spectroscopy of a vanadium HIPIMS plasma**
Treverrow B., McKenzie D., Bilek M.

P 11 **HIPIMS vs DCMS technology to produce tungsten coatings for fusion applications**
Deambrosis S. M., Miorin E. , Agresti F., Montagner F., Zin V., Fabrizio M.

P 12 **HIPIMS deposition of TiAlN films on microforming die and ist tribological properties in progressive micro-deep drawing**
Shimizu T., Komiya H., Watanabe T., Teranishi Y., Nagasaka H., Yang M.

P 13 **Titanium carbide oxide and nitride HIPIMS and DCMS processes compared from the OES point of view**
Patelli A., Colasuonno M., Bazzan M., Mattei G., Rigato V.

P 14 **Enhancement of TaN film properties by different approaches: multilayer TaN films deposited by multi step MPPMS or Ta-Si-N films deposited by hybrid MPPMS/pulsed dc processes**
Mendizabal L., Ruiz de Gopegui U., Bayon R., Barriga J.

P 15 **Investigations of very short pulse sequences in HIPIMS mode for reactive deposition of Silica**
Gerdes H., Bandorf R., Preller T., Bräuer G.

P 16 **Nb coatings for superconducting RF applications by HIPIMS**
Terenziani G., Calatroni S., Ehiasarian A. P.

P 17 **The structure and tribological properties of tungsten containing hydrogenated diamond-like carbon coatings**
Zheng J.

P 18 **Titanium-doped MoS_2 lubricating coatings for space precision ball bearings**
Sang R.-P.

P 19 **Overcoming HIPIMS deposition rate limitations by hybrid RF / HIPIMS co-sputtering and its relevance for NbSi films**
Holtzer N., Antonin O., Minea T., Marnieros S.

P 20 **The structure and mechanical properties of Cr_2N coatings deposited by HIPIMS technology**
Zhou H.

P 21 **ZrSiN and NbN coatings deposited by HIPIMS for hard coating corrosion protection on aluminum**
Colasuonno M., Patelli A., Mattei G., Rigato V.

P 22 **Tungsten coatings by HIPIMS as plasma facing material for nuclear fusion reactor applications**
Gordillo N. , Panizo-Laiz M., Fernandez-Martinez I., Tejado E., Rivera A., Briones F., Pastor J. Y., Perlado J. M., Gonzalez-Arrabal R.

P 23 **Optimization of HIPIMS photocatalytic titania coatings on polymeric substrates**
Kelly P. J., Ratova M., West G. T.

P 24 **Deposition of Nickel by Inductively Coupled Impulse Sputtering (ICIS)**
Loch D., Ehiasarian A. P.

P 25 **Growth of carbon – tungsten nanocomposites by high power impulse magnetron sputtering from compound targets**
Abrasonis G., Kumar R. Y., Munnik F., Heller R., Hübner R., Möller W.,

P 26 **Ellipsometric characterization of transparent nickel oxide deposited by reactive DC magnetron sputtering and HIPIMS**
Nguyen D. T., Ferrec A., Keraudy J., Richard-Plouet M., Goullet A., Cattin L., Brohan L., Jouan P.-Y.

P 27 **The reactive high power impulse magnetron sputtering process for the synthesis of CF_x thin films using CF_4 and C_4F_8**
Schmidt S., Goyenola C., Gueorguiev G. K., Jensen J., Greczynski G., Czigány Z., Hultman L.

P 28 **Compressive stress generation through adatom insertion into grain boundaries in low mobility metal films deposited by high power impulse magnetron sputtering**
Magnfält D., Abadias G., Sarakinos K.

P 29 **High power impulse magnetron sputter deposition of ITO and AZO thin films**
Ecis A., Macevskis E., Zubkins M., Kalinko A., Kalendarevs R., Vilnis K., Azens A., Kozlovs V., Purans J.

P 30 **Uniform, adhesive, robust Cu/TiO_2 DCP and HIPIMS sputtered films inducing fast bacterial / viral inactivation under low intensity solar irradiation**
Rtimi S., Kiwi J., Pulgarin C., Sanjines R.

P 31 **Optical emission spectroscopy of aluminum nitride thin films deposited by pulsed laser deposition**
Pérez J. A., Vera L. P., Riascos H, Caicedo J. C.

P 32 **Carbon ion production using a high-power impulse magnetron sputtering (HIPIMS) glow plasma**
Yukimura, K., Ogiso, H., Nakano, S.

P 33 **The blood platelet behavior of titanium-copperFilms by High Power Pulsed Magnetron Sputtering**
Jing, F., Tai, Y., Yukimura, K., Sun, H., Yao, L., Leng, Y., Nan, H.

P 34 **Film deposition using a 1 inch-sized HIPIMS system**
Ogiso, H., Yukimura, K., Nakano, S.

P 35 **Time- and space- resolved laser-induced fluorescence spectroscopy in a short-pulse HIPIMS discharge**
Britun, N., Palmucci M., Konstantinidis, S., Snyders, R.

P 36 **Angle- and time-resolved ion velocity distributions in HIPIMS**
Cada, M., Adamek, P., Stranak, V., Olejnicek, J., Kment, S., Hubicka, Z., Hippler, R.

P 37 **Deposition rate enhancement in HIPIMS without compromising the ionized fraction of the deposition flux**
J. Capek, M. Hala, O. Zabeida, J.E. Klemberg-Sapieha, L. Martinu

P 38 **Amorphous Carbon Matrix – Carbon Nanotube Nanocomposites**
V. A. Meliksetyan, A. P. Ehiasarian

17:00 **End of the scientific program**

18:00 **Guided city tour**

19:30 **Conference dinner, Location »Dornse«, please see city map**

23:00 **End of the day**