



1ST INTERNATIONAL CONFERENCE ON HIPIMS

PROGRAMME OF EVENTS

6th and 7th of July 2010, Sheffield, UK

Venue: Pennine Lecture Theatre, Level 2, City Campus, Sheffield Hallam University.

Kick-off: Tuesday 6th of July

8:00-8:40 - Registration

8:40-9:00 - Welcome Address

Prof. Cliff Allan, Deputy Vice-Chancellor, Sheffield Hallam University

Mr. Wolfgang Diehl, Deputy Director Fraunhofer IST - Institute for Surface Engineering and Thin Films, Germany

Prof. Chris Care, Director Materials and Engineering Research Institute, Sheffield Hallam University

Dr. Arutiun P. Ehiasarian, Conference Chair - HIPIMS Technology Centre, Materials and Engineering Research Institute, Sheffield Hallam University

Tuesday Morning, 6th July 2010

Moderator: Dr. R. Bandorf, Fraunhofer IST, Braunschweig, Germany	
09:00	<p>Microstructure Evolution During HIPIMS Growth</p> <p><u>I. PETROV</u>¹, A.P. EHIASARIAN², P.EH. HOVSEPIAN², 1 University of Illinois at Urbana-Champaign, IL, USA, 2 Sheffield Hallam U.,UK;</p>
09:20	<p>Structural Aspects of CrAlYN/CrN Nanoscale Multilayer Coatings Deposited by UBM and HIPIMS on Stainless Steel and γ-TiAl</p> <p>P.B. BARNA¹, <u>G. SÁFRÁN</u>¹, L. SZÉKELY¹, P. Eh. HOVSEPIAN², A.P. EHIASARIAN², W. SMARSLY³ 1 Res. Inst. for Technical Physics and Materials Science, Hungary; 2 Sheffield Hallam U.,UK; 3 MTU,Germany</p>
09:40	<p>Titanium Aluminium Nitride Sputtered by HIPIMS</p> <p><u>J. WEICHART</u>, M. LECHTHALER OC Oerlikon Balzers Ltd., LI-9496 Balzers, Liechtenstein</p>
10:00	<p>Influence of HIPIMS Plasma Ionization on the Microstructure of TiN</p> <p><u>A.P. EHIASARIAN</u>¹, A. VETUSHKA¹, Y.ARANDA GONZALVO², G. SAFRAN³, L. SZEKELY³, P. BARNA³ 1 Sheffield Hallam Uni., UK; 2 Hiden Analytical Ltd., UK; 3 Res. Inst. for Technical Physics and Materials Science, Hungary;</p>
10:20	<p>High Power Pulsed Plasmas for Materials Processing: Research Program and Capability at the University of Sydney</p> <p><u>M. BILEK</u>¹, R. SANGINES DE CASTRO¹, O. NOVAK^{1,2}, L. RYVES¹, T.W.H OATES¹, R. TARRANT¹, J. PIGOTT¹ D.R. McKENZIE¹; 1 University of Sydney, Australia; 2 University of West Bohemia, Czech Republic</p>
10:40	<p>Coffee Break</p> <p>Exhibition</p> <p>Posters</p>
Moderator: Dr. A.P. Ehiasarian, Sheffield Hallam University, UK	
11:00	<p>Statistical and Formative Time Lags in High Power Impulse Magnetron Sputtering</p> <p><u>A. ANDERS</u>¹, G.Yu. YUSHKOV² 1 Lawrence Berkeley National Laboratory, USA; 2 High Current Electronics Institute, Russia;</p>
11:20	<p>The Deposition Rate of Copper in HiPIMS is Reduced by the Presence of Sputter Gas</p> <p><u>J. ANDERSSON</u>¹, A. ANDERS² 1 Uppsala University, Sweden; 2 Lawrence Berkeley National Laboratory, USA</p>
11:40	<p>Charged Particle Transport in HiPIMS and its Effects on Thin Film Deposition</p> <p><u>D. LUNDIN</u>¹, S. AL SAHAB¹, N. BRENNING², C. HUO², U. HELMERSSON¹ 1 Linköping University, Sweden; 2 Royal Institute of Technology, Sweden</p>
12:00	<p>Two Types of Pulsed Magnetron Systems – Characterization and Application</p> <p><u>J. VLCEK</u>, J. LAZAR, J. REZEK, P.CALTA AND P. STEIDL University of West Bohemia, Czech Republic</p>
12:20	<p>Characterization of HIPIMS discharges with Tailored Constant Current Phase</p> <p><u>R. BANDORF</u>, H. GERDES, T. WALLENDORF, G. BRÄUER Fraunhofer IST, Germany</p>
12:40	<p>Lunch</p> <p>Exhibition</p> <p>Posters</p>
14:00	<p>Conference photograph</p> <p>please assemble in the square outside the university's main entrance</p>

Tuesday Afternoon, 6th July 2010

Moderator: Dr. A. Anders, Lawrence Berkeley National Laboratory, CA, USA	
14:20	<p>Very-High-Rate Reactive Deposition of Thick, Transparent Silicon Dioxide Coatings by Pulsed AC Dual Magnetron with Molten Targets</p> <p><u>J.MUSIL</u>^{1,2}, V.SATAVA¹, P.BAROCH¹</p> <p>1 University of West Bohemia, Czech Republic; 2 Academy of Sciences of the Czech Republic, Czech Republic</p>
14:40	<p>HIPIMS Discharge Analysis by Energy Resolved Mass Spectrometry in a Reactive Atmosphere with Oxygen Content</p> <p><u>Y.ARANDA GONZALVO</u>¹, A.P. EHIASARIAN²</p> <p>1 Hiden Analytical Ltd., UK; 2 Sheffield Hallam University, UK</p>
15:00	<p>Reactive High Impulse Power Magnetron Sputtering: Hysteresis Behaviour and Process Control</p> <p><u>M. AUDRONIS</u>, V. BELLIDO-GONZALEZ, B. DANIEL</p> <p>Genco Ltd, UK</p>
15:20	<p>Deposition of γ-Alumina by HIPIMS in an Industrial Coating Unit</p> <p><u>S. BOLZ</u>, W. MAY, W. KÖLKER, O. LEMMER, C. SCHIFFERS</p> <p>CemeCon AG, Germany</p>
15:40	<p>Hot Corrosion and Sulphidation of New HIPIMS Nanostructured and Microstructured Coatings on γ-TiAl</p> <p>I. LASANTA, M. TEJERO, A. REY, S. MATO, M.P. HIERRO, <u>F.J. PÉREZ</u>, P. EH. HOVSEPIAN, A.P. EHIASARIAN</p> <p>1. Universidad Complutense de Madrid, Spain; 2. Sheffield Hallam University, UK</p>
16:00	<p>Coffee Break</p> <p>Exhibition</p> <p>Posters</p>
Moderator: Prof. I. Petrov, University of Illinois at Urbana-Champaign, IL, USA	
16:20	<p>Ion Mass Spectroscopy Investigations During High Power Pulsed Magnetron Sputtering of Cr in Ar and Ar/N₂ Atmospheres</p> <p><u>G. GRECZYNSKI</u>, L. HULTMAN</p> <p>Linköping University, Sweden</p>
16:40	<p>New Type HIPIMS Reactive Deposition of Superhard Nanocomposite nc-TiN/a(nc)-SiN Coatings</p> <p><u>B.G. WENDLER</u>, I.F. PROGALSKIY</p> <p>Lodz University of Technology, Poland</p>
17:00	<p>Comparison of the Properties of TiN and CrN Coatings Synthesised by Reactive Arc Evaporation and High Power Impulse Magnetron Sputtering</p> <p><u>A. GUILLAUMOT</u>¹, F. LAPOSTOLLE¹, J.F. PIERSON², D. PILLOUD², A. BILLARD¹</p> <p>1 LERMPS-UTBM, France; 2 IJL, France</p>
17:20	<p>Effect of Substrate Bias Voltage on the Structure and Properties of ZrN Coating Deposited by HIPIMS Technology</p> <p><u>Y.P. PURANDARE</u>, A.P. EHIASARIAN, P.Eh. HOVSEPIAN</p> <p>Sheffield Hallam University, UK.</p>
17:40	<p>Synthesis of Boron Nitride by Reactive High Power Impulse and RF Magnetron Sputtering – Link Between Discharge and Film Properties</p> <p><u>M.A. SOUSSOU</u>¹, M.A. DJOUADI¹, P-Y. JOUAN¹, B.J. GOMEZ², M. GANCIU³</p> <p>1 U. de Nantes, France; 2 Instituto de Física Rosario Argentina; 3 Nat. Inst. for Laser, Plasma and Radiation Physics, Romania</p>
19:30	<p>Conference Dinner at Cutler's Hall, Sheffield.</p> <p>Meet outside university main entrance at 19:15</p>

Wednesday Morning, 7th July 2010

Moderator: Prof. P.Eh. Hovsepian, Sheffield Hallam University, UK	
09:00	<p>High Resolution Studies of Multilayer Coating Structure and Changes Through High Temperature Exposure</p> <p>I.M. ROSS¹, Z. ZHOU¹, <u>W.M. RAINFORTH</u>¹, P.Eh. HOVSEPIAN² 1 University of Sheffield, UK; 2 Sheffield Hallam University, UK</p>
09:20	<p>Development of YSZ Thin Films by Reactive High Power Impulse Magnetron Sputtering</p> <p><u>E. REZUGINA</u>¹, D. MAGNFÄLT², M. AIEMPANAKIT², U. HELMERSSON², P. BRAULT¹ 1 GREMI, Université d'Orléans, France; 2 Linköping University, Sweden</p>
09:40	<p>Oxidation Behaviour of Intermetallic Ti-Al-Cr-Y and Ti-Al-Cr-Zr Coatings Deposited on γ-TiAl by UBM and HIPIMS techniques</p> <p><u>R. BRAUN</u>¹, P.EH. HOVSEPIAN², A.P. EHIASARIAN², Y.P. PURANDARE², M. FRÖHLICH¹ 1 German Aerospace Center (DLR), Germany; 2 Sheffield Hallam University, UK</p>
10:00	<p>Structure Evolution in TiAlCN/VCN Nanoscale Multilayer Coatings Deposited by Reactive High Power Impulse Magnetron Sputtering Technology</p> <p><u>G. KAMATH</u>, A. P. EHIASARIAN, P. EH. HOVSEPIAN, Sheffield Hallam University, UK</p>
10:20	<p>First Decade of HIPIMS: Status and Outlook from an Industrial Perspective</p> <p><u>V.LIEBERMAN</u>, T. ZUFRAH, Systec Vacuum Coatings GmbH &Co. KG, Germany</p>
10:40	<p>Coffee Break</p> <p>Exhibition</p> <p>Posters</p>
Moderator: Dr. T. Krug, Hauzer Techno Coating, The Netherlands	
11:00	<p>HIPIMS Power Supply Equipment – Extremely Reduced Arc Energy</p> <p><u>P. OZIMEK</u>, M. ŻELECHOWSKI, A. KLIMCZAK, P. RÓŻAŃSKI, D. ŚWIERCZYŃSKI HUETTINGER Electronic Sp. z o.o., Poland.</p>
11:20	<p>Time-resolved Investigation of Dual High Power Impulse Magnetron Sputtering System with Closed Magnetic Field During Deposition of Ti-Cu Thin Films</p> <p><u>V. STRANAK</u>^{1,2}, Z. HUBICKA², M. CADA², H. WULFF¹, R. HIPPLER¹ 1 University of Greifswald, Germany; 2 Academy of Sciences of the Czech Republic, Czech Republic</p>
11:40	<p>Dynamics of HIPIMS Discharges Studied by Time- and Species-resolved Plasma Imaging and Emission Spectroscopy</p> <p><u>M. HALA</u>, O. ZABEIDA, J.E. KLEMBERG-SAPIEHA, L. MARTIN Ecole Polytechnique, Canada.</p>
12:00	<p>Mechanical and structural properties of HIPIMS+ sputtered TiN films</p> <p>F. PAPA¹, I. KOLEV¹, A. CAMPICHE¹, P. PEETERS¹, <u>R. TIETEMA</u>¹, E. BERGMANN², T. KRUG¹ 1 Hauzer Techno Coating, The Netherlands; 2 Haute Ecole du Paysage d'Ingénierie et d'Architecture, Switzerland</p>
12:20	<p>High Power Pulse Magnetron Sputtering for Directional Sputtering Applications.</p> <p><u>R. CHISTYAKOV</u>¹, B. ABRAHAM¹, R. MULLAPUDI², B. NINA², P. GUPTA² 1 Zond, Inc. / Zpulser, LLC. USA; 2 Tango Systems, Inc. USA</p>
12:40	<p>Close of conference</p> <p>Lunch</p>

Poster Session

Posters are displayed in the exhibition area
<p>Advanced Control and Monitoring Circuits Create New Possibilities for the HIPIMS Technology <u>P. OZIMEK</u>, <u>M. ŻELECHOWSKI</u>, <u>A. KLIMCZAK</u>, <u>P. RÓŻAŃSKI</u>, <u>D. ŚWIERCZYŃSKI</u> HUETTINGER Electronic Sp. z o.o., Poland.</p>
<p>Flexible Control for Reactive Pulsed Magnetron Sputter Processes <u>S. BRUNS</u>¹, <u>R. BANDORF</u>¹, <u>T. WALLENDORF</u>², 1 Fraunhofer-Institute for Surface Engineering and Thin Films IST, Germany; 2 IfU Diagnostic Systems GmbH, Germany</p>
<p>Optical Emission and Mass Spectroscopy Analysis of Aluminium Nitride HiPIMS Discharge <u>M.A. SOUSSOU</u>¹, <u>M.A. DJOUADI</u>¹, <u>P-Y. JOUAN</u>¹, <u>L. LE BRIZOUAL</u>¹, <u>M. GANCIU</u>³ 1 Universite de Nantes, France; 2 Nat. Inst. for Laser, Plasma and Radiation Physics, Romania</p>
<p>Production of High-Density Capacitive-Discharge Plasma with Ring-Shaped Hollow Cathode for Thin Film Preparation <u>Y. OHTSU</u>, <u>H. URASAKI</u>, <u>T. HOTTA</u>, Saga University, Japan</p>
<p>Investigations on Tailoring the Deposition Conditions in HIPIMS by Varying the Pulse Durations and the Argon Partial Pressure, <u>M. BALZER</u>, <u>M. FENKER</u>, FEM – Research institute for precious metals and metals chemistry, Germany</p>
<p>Time-Resolved Diagnostics of High Power Impulse Magnetron Sputtering System During Deposition of Titania Thin Films, <u>M. ČADA</u>, <u>Z. HUBIČKA</u>, <u>V. STRAŇÁK</u>, <u>Š. KMENT</u> AND <u>L. JASTRABÍK</u>, Institute of Physics of the AS CR, Czech Republic</p>
<p>Investigation of HIPIMS Sputtering Systems Used for the Deposition of TiO₂ and TiO₂:N Thin Films <u>Z. HUBIČKA</u>, <u>M. ČADA</u>, <u>V. STRAŇÁK</u>, <u>Š. KMENT</u>, <u>L. JASTRABÍK</u> Institute of Physics ASCR, Czech Republic</p>
<p>Influence of Plasma Conditions on Self-Assembling of Carbon Nanotubes at Plasma Enhanced Chemical Vapour Deposition of DLC Films, <u>A.H.ARAKELYAN</u>, <u>A.T.DARBASYAN</u>, <u>V.A.MELIKSETYAN</u>, <u>ZH.R.PANOSYAN</u>, <u>S.S.VOSKANYAN</u>, <u>YE.V. YENGIBARYAN</u>, State Engineering University of Armenia, Armenia</p>
<p>Studies of TiN Films Deposited by HIPIMS at Different Substrate Temperatures and Substrate Bias <u>R. HALLMAN</u>, <u>J. ANDERSSON</u>, <u>E. SÄRHAMMAR</u>, <u>T. NYBERG</u>, <u>T. KUBART</u>, <u>S.BERG</u>, Uppsala University, Sweden</p>
<p>Retarding field analysis of the time averaged and time resolved ion energy distribution at a pulsed surface, applicable to HIPIMS research. <u>D. GAHAN</u>, <u>B. DOLINAJ</u>, <u>D. O' SULLIVAN</u> , <u>M. B. HOPKINS</u>, Impedans Ltd., Ireland</p>
<p>Thermal stability and wear of a C/CrC nanocomposite coating, <u>Z.ZHOU</u>¹, <u>L MA</u>¹, <u>W.M.RAINFORTH</u>¹, <u>A.P. EHIASARIAN</u>², <u>P.EH.HOVSEPIAN</u>², 1 University of Sheffield, UK; 2 Sheffield Hallam University, UK</p>
<p>To better understand the measured time dependency of Argon metastable in HIPIMS <u>G.D. STANCU</u>¹, <u>N. BRENNING</u>², <u>M.A. RAADU</u>², <u>C. VITELARU</u>^{1,3}, <u>D. LUNDIN</u>⁴, <u>J. BRETAGNE</u>¹, <u>U. HELMERSSON</u>⁴, <u>T.M. MINEA</u>¹ 1 CNRS - Université Paris Sud-XI, France; 2 Royal Institute of Technology, Sweden; 3 Al I Cuza University, Romania; 4 Linköping University, Sweden</p>
<p>The Influence of Magnetic Field and Pressure on the Shape of the HIPIMS Pulse <u>J. SOLDÁN</u> HVM Plasma, Ltd. Czech Republic</p>
<p>Comparative study of magnetic field effect on HIPIMS, DC and Pulsed DC magnetron discharges <u>A. MISHRA</u>¹, <u>P. KELLY</u>², <u>J. BRADLEY</u>¹ 1 University of Liverpool, UK; 2 Manchester Metropolitan University, UK</p>
<p>HiPIMS deposition of Hf thin films with varying Ar backpressures <u>M.A. LANGE</u>^{1,2}, <u>A.N. REED</u>¹, <u>C. MURATORE</u>¹, <u>A.A. VOEVODIN</u>¹, <u>J.G. JONES</u>¹ 1 Air Force Research Laboratory, Wright-Patterson AFB, USA; 2 Universal Technology Corporation</p>
<p>Microstructure and properties of CrN/AlSiN nanoscale multilayers deposited by UBM and HIPIMS <u>CH. WÜSTEFELD</u>¹, <u>A.P. EHIASARIAN</u>², <u>V. KLEMM</u>¹, <u>U. MÜHLE</u>¹, <u>D. HEGER</u>¹, <u>D. RAFAJA</u>¹, 1 TU Bergakademie Freiberg, Germany; 2 Sheffield Hallam University, UK</p>

Exhibitors

BIOMET, UK

CemeCon, Germany

Gencoa, UK

GfE Metalle und Materiale, Germany

Hauzer Techno Coating, The Netherlands

Henniker Scientific (Impedans), UK

Hiden Analytical Ltd, UK

Huettinger Electronic Sp. z o.o., Poland

IFU Diagnostic Systems GmbH, Germany

Inplas, Germany

Kurt J Lesker, UK

Melec GmbH, Germany

MKS, UK

Pearson Panke, UK - CSM Instruments, Switzerland

Solvix, Switzerland

Systec, Germany

ZPulser, USA

Notes

ANNOUNCEMENT: 2ND INTERNATIONAL CONFERENCE ON HIPIMS 2011

28th and 29th of June 2011, Braunschweig, Germany