Conference Venue

ICOPS 2012 will be held at the Edinburgh International Conference Centre (EICC).

Situated at the heart of Scotland's elegant and historic capital city, the EICC is one of the world's outstanding venues for conferences, conventions and exhibitions.

The EICC is readily accessible from all major hotels and is only five minutes from Edinburgh's famous Princes Street – a wonderful shopping location overlooked by the world famous Castle.

Opened in 1995, the purpose-built centre offers the very best in facilities and technology and it has welcomed more than 800,000 delegates through its doors for more than 2,100 events.

The main conference sessions will take place in the Pentland Auditorium – a state of the art facility with comfortable raked seating, its own stage, lighting, sound, projection and full soundproofing.

For more information about the EICC, visit http://www.eicc.co.uk/

Address:
150 Morrison Street

School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China

2P-105 Magnesium Alloy Oxidation Using Atmospheric Pressure Plasma Jet
H. J. Jeong, J. K. Lee
Next Generation Product Research Group, POSCO, Pohang, South Korea

2P-106 Controlled Preparation of Alkaline Anion- Exchange Membranes by Plasma Technology
J. Hu
Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, Anhui, China

2P-107 The Ecton Model of Unipolar Arcing at Fine-Structured Surface
S. A. Barengolts[1], G. A. Mesyats[2], M. M. Tsventoukh[2]
[1]Prokhorov General Physics Institute RAS, Moscow, Russian Federation
[2]Lebedev Physical Institute RAS, Moscow, Russian Federation

2P-108 The Effect of Electron Assisted RF Discharge Plasma on the Surface Propertis of PET Film
Y. Guo
College of Sciences, Donghua University, Shanghai, China

2P-109 Plasma Etching Resistance of Plasma Anisotropic CVD Carbon Films
R. Torigoe[1], T. Urakawa[1], D. Yamashita[1], H. Matsuzaki[1], G. Uchida[1], K. Koga[1,2], M. Shiratani[1,2], Y. Setsuhara[3,2], M. Sekine[4,2], M. Hori[4,2]
[1]Kyushu University, Fukuoka, Japan
[2]JST, CREST, Saitama, Japan
[3]Osaka University, Osaka, Japan
[4]Nagoya University, Nagoya, Japan

2P-110 Diamond-Based Microdischarges: Studying the Role of Wall Materials with Electrical and Optical Diagnostics
S. Mitea[1], M. D. Bowden[1], N. S. J. Braithwaite[1], M. Zeleznik[2], P. W. May[2], N. A. Fox[2], C. Fowler[3], B. Stevens[3,4]
[1]Department of Physical Sciences, The Open University, Milton Keynes, United Kingdom
[2]School of Chemistry, University of Bristol, Bristol, United Kingdom
[3]Micro- and Nano-Technology Centre, STFC Rutherford Appleton Laboratory, Didcot, United Kingdom
[4]School of Science and Technology, Nottingham Trent University, Nottingham, United Kingdom

2P-111 A Model for Plasma Ignition of Solid Propellant
X. Li, R. Li, S. Jia
Xi'an Jiaotong University, Xi'an, China

2P-112 Retardation of Degradation of Biomedical Magnesium Alloy by Plasma-Based Deposition Technique
G. Wu
Department of Physics and Materials Science, City University of Hong Kong, Hong Kong, China

2P-113 Investigation of Preparing Polymer-Base Low-E Film by Pulse Vacuum Arc
Y. Shi, D. Cheng, Z. Zong, Y. Xie
PPAL, Applied Physics Department, College of Science, Donghua University, Shanghai, China

2P-114 Study on Surface Modification of the L-Lactic Acid Films Using Microplasma
K. Shimizu, M. G. Blajan, H. Fukunaga
Innovation and Joint Research Center, Shizuoka University, Hamamatsu, Japan

2P-115 PTFE and C_3F_6 Deposition on the Aisi 1050 Stainless Steel for Lubrication by RF Plasma
E. Teke[1], H. Varol[2], F. Bozduman[3], A. Gulec[4], L. Oksuz[5], S. Manolache[6], E. Camurlu[7], C. Kurbanoglu[8]
[1]Physics, Erdogan Teke, Isparta, Turkey
[2]Machine, Hatice Varol, Isparta, Turkey

RETARDATION OF DEGRADATION OF BIOMEDICAL MAGNESIUM ALLOY BY PLASMA-BASED DEPOSITION TECHNIQUE*

Guosong Wu, Jamesh M, Ying Zhao and Paul K. Chu
Department of Physics and Materials Science, City University of Hong Kong,
Tat Chee Avenue, Kowloon, Hong Kong

Magnesium-based materials have been reconsidered as revolutionary metallic biomaterials due to their favorable biodegradation and Young's modulus similar to that of human bone. However, most magnesium alloys suffer from a biodegradation rate that is too high, particularly in the early stage. Hydrogen bubbles and surface alkalization can also influence tissue growth during the degradation process. Therefore, it is necessary to modify the surface of Mg alloys in order to mitigate degradation in the early stage to ensure proper tissue healing and growth. In this work, ceramic coatings are deposited on biodegradable magnesium alloys by sputtering to reduce the electrochemical activity in the simulated physiological environment. AlO_xN_y ceramic coatings are successfully deposited on AZ31 magnesium alloys with Al or Ti interlayers. Polarization tests and electrochemical impedance spectroscopy (EIS) are conducted to evaluate the corrosion resistance in the cell culture medium. The AlO_xN_y ceramic coating can effectively reduce the electrochemical activity of AZ31 and significantly improve the surface mechanical properties. The Ti interlayer increases corrosion of Mg alloy due to the presence of defects. The Al interlayer compromises the surface mechanical properties, but does not produce negative effects on the degradation in the cell culture media.

* This work is supported by Hong Kong Research Grants Council (RGC) General Research Funds (GRF) no. Cityu 112510