

# **UK Society for Biomaterials**

**8<sup>th</sup> Annual Conference and Postgraduate Day**

**2<sup>nd</sup> – 3<sup>rd</sup> July 2009**  
**University of Ulster.**



**Final Programme**

## **Prizes**

### **UKSB President's Prize**

The President's Prize was established to recognise the achievement of specific individuals (either within the UK or by UK nationals working abroad) over the course of a career in biomaterials research.

It is a great pleasure to announce that this year's recipient of the award to be Professor Elizabeth Tanner from the University of Glasgow.

### **Biocompatibles Endowed Award**

The Biocompatibles Endowed Award was established from a generous endowment from Biocompatibles Ltd. and recognises a significant contribution to biomaterials science with particular emphasis on the clinical and/or industrial application of the recipient.

It is a great pleasure to announce this year's recipient of the award to be Prof. David Grant from the University of Nottingham.

### **Student Prizes**

The best student oral presentation – sponsored by the UKSB

The best student poster presentation – sponsored by the UKSB

The best use of microscopy – sponsored by the Royal Microscopical Society

The most novel use of materials – sponsored by the Northern Ireland Bioengineering Society

## General Information

### Conference Dinner

The setting for this year's conference dinner will be the world famous Europa Hotel, located right in the heart of Belfast City Centre. Over the years the Europa has been the preferred choice of Prime Ministers, Presidents and many celebrities on their visit to Belfast. Entertainment will be provided during the meal.



The Europa Hotel.

### The Thompson Dock

The Thompson Dry-Dock and associated Pump-House were once the beating heart of Harland & Wolff during the construction of the great White Star Liners – the Britannic, Olympic and most famously, the Titanic. This short visit to the Thompson Dry Dock prior to the conference dinner will provide a unique opportunity to see the birthplace of the Titanic, the last intact and accessible piece of the Titanic's great legacy in Belfast.



The Thompson Dock.

The UKSB gratefully acknowledges the generous support from the following sponsors:



## Programme for UKSB 2009 Annual Conference and Postgraduate Day

### Postgraduate Day – Thursday 2<sup>nd</sup> July 2009

**8.30 am – 9.30 am** Registration

**9.30 am – 9.45 am** Welcome note and opening remarks  
(Prof Brian J Meenan, Nanotechnology and Integrated Bioengineering Centre,  
University of Ulster)

**9.45 am – 11.00 am** **Student Session 1 (Polymeric Biomaterials)**

**Session Chairs: Dr Dorian Dixon and Dr Colin Scotchford**

Time	Presentation
9.45 – 10.00	<b>Co-Culture of Human Endothelial and Smooth Muscle Cells on Novel Polymeric Coatings; A Potential use as Stent Coatings</b> <u>CM, Nickson, RL Williams, S Dixon, F Laws and I Harrison</u>
10.00 – 10.15	<b>Biodegradable Soy-based Nerve Guide for Peripheral Nerve Repair</b> <u>J Lacey and M Santin.</u>
10.15 – 10.30	<b>Nucleation and Growth of Apatite on NaOH treated PEEK, HDPE and UHMWPE for Artificial Cornea Materials</b> <u>M Pino, N Stingelin-Stutzman and E Tanner</u>
10.30 – 10.45	<b>Synthesis of Hydrogels for Intervertebral Disk (IVD) Constructs</b> <u>E Kemal and S Deb</u>
10.45 – 11.00	<b>Chitosan/Polyglutamic Acid Nanospheres: DNA Encapsulation and Release, Cellular Uptake and Blood Interaction Studies</b> <u>A Mathew, G Réthoré, B Dash, M Monaghan and A Pandit</u>

**11.00 am – 11.30 am** Coffee/Tea and Poster Viewing (Judging)

**11.30 am – 1.00 pm Student Session 2 (Tissue Engineering)**

**Session Chairs: Dr Rachel Williams and Dr Matteo Santin**

Time	Presentation
11.30 – 11.45	<b>Developing Novel Biphasic Co-Culture Systems for Human Embryonic Stem Cell Expansion</b> <u>E Culme-Seymour</u> , AB Tabor and F Veraitch
11.45 – 12.00	<b>Piezoelectric Hydroxyapatite Composites for Bone Graft Substitution</b> <u>FR Baxter</u> , IG Turner, CR Bowen, JP Gittings, and JB Chaudhuri
12.00 – 12.15	<b>Culture Conditions for an Osteochondral Construct: Influence of Foetal Calf Serum on Osteogenic Differentiation of Human Mesenchymal Stem Cells</b> <u>LA France</u> , DM Grant, CA Scotchford and V Sottile
12.15 – 12.30	<b>A Versatile Approach to Scaffold Design for Bone in Growth Structures</b> <u>D Jones</u> , R Williams and CJ Sutcliffe
12.30 – 12.45	<b>Therapeutic Ion Release from Novel Glass-Based Synthetic Bone Grafts</b> <u>S Murphy</u> , D Boyd, S Moane and M Bennett
12.45 – 1.00	<b>A bioactive synthetic bone scaffold with enhanced biomimetic properties using growth modulatory molecules</b> <u>B Buranawat</u> , S Deb, E Tripodaki, RM Palmer and L Di Silvio

**1.00 pm – 1.45 pm** Sandwich Lunch and Poster Viewing (Judging)

**1.45 pm – 2.00 pm** UKSB AGM

**2.00 pm – 3.30 pm Student Session 3 (Surfaces and Interfaces)**

**Session Chairs: Dr Victoria Kearns and Dr Serena Best**

Time	Presentation
2.00 – 2.15	<b>The Production and Characterisation of Novel Bioactive Glass Derived Coatings</b> <u>TEC Marriott</u> , DM Grant, CA Scotchford, GS Walker, D Teer, S Field, H Edwards and M Fay
2.15 – 2.30	<b>Bacterial Adhesion and Proliferation on Titanium Alloys</b> <u>A Wang</u> , RL Sammons, IP Jones, J Mei and YY Tse
2.30 – 2.45	<b>Modelling Human Osteosarcoma Cells during Initial Adhesion on Biomaterial Surfaces</b> <u>JA Ratcliffe</u> , DM Grant, CA Scotchford and JM Oliver
2.45 – 3.00	<b>Raman Spectroscopy of Keratin: A Novel Tool for <i>In Situ</i> Evaluation of Bone Fragility</b> <u>N Cummins</u> and M Towler
3.00 – 3.15	<b>Ultrasonic Angioplasty: Assessing the risk of arterial perforation</b> <u>MP Wylie</u> , GB McGuinness and GP Gavin
3.15 – 3.30	<b>Surface modification of silicon substituted apatite</b> <u>PJ Jiang</u> , PM Mendes, J Bowen and LM Grover

**3.30 pm – 4.00 pm** Coffee/Tea and Poster Viewing (Judging)

**4.00 pm – 5.15 pm                      Student Session 4 (Ceramic and Metallic Biomaterials)**

**Session Chairs: Dr Mark Towler and Dr Peter O'Hare**

<b>Time</b>	<b>Presentation</b>
4.00 – 4.15	<b>Microwave Sintering of Yttria Doped Zirconia Bioceramics</b> <u>C Reidy</u> , S Hampshire, M Towler and T Fleming
4.15 – 4.30	<b>Study of novel ionomer (xCa/ySr)-apatite glasses: The effect of Sr content on crystallization and mechanical properties</b> <u>F Wang</u> , D Holland, O Van der Biest, AK Swarnakar and A Stamboulis
4.30 – 4.45	<b>Comparative Sintering of Hydroxyapatite/Zirconia Composites</b> <u>DJ Curran</u> , TJ Fleming, MR Towler and S Hampshire.
4.45 – 5.00	<b>The release of anti-microbial compounds from glass-ionomer cements</b> <u>K Pawluk</u> , NJ Coleman and JW Nicholson
5.00 – 5.15	<b>An <i>in vitro</i> and <i>in vivo</i> Evaluation of a Novel Glass Polyalkenoate Cement</b> <u>O Clarkin</u> , M Towler, D Boyd, C Freeman, P Farthing and I Brook

- 6.30 pm**                      Coaches depart for UKSB dinner (from the University of Ulster, Turning Circle)
- 6.45 pm**                      Arrive at the Thompson Dock, Belfast
- 7.15 pm**                      Leave Thompson Dock
- 7.30 pm**                      Drinks Reception sponsored by BITECIC (Europa Hotel Belfast)
- 8.00 pm**                      UKSB Conference Dinner sponsored by Invest Northern Ireland (Europa Hotel Belfast)
- 11.00 pm**                      Coaches return to the University of Ulster

**Presidents Day – Friday 3rd July 2009**

**9.00 am – 10.10 am          Session 5**

**Session Chairs: Prof John Nicholson and Dr Medhi Tavikoli**

<b>Time</b>	<b>Presentation</b>
9.00 – 9.25	<b>Surface Modification Strategies for Controlling the Biological Response to Biomaterials</b> Plenary Lecture 1 (Prof BJ Meenan, University of Ulster)
9.25 – 9.40	<b>Long-term urinary catheters – studies of the diffusion of agents through the catheter balloon</b> <u>GJ Williams</u>
9.40 – 9.55	<b>The Antibacterial Properties &amp; Ion Release Profiles of a Novel TSC Modified Glass Polyalkenoate Cement</b> <u>A Wren</u> , DI Boyd, R Thornton, J Cooney and M Towler
9.55 – 10.10	<b>Surface Processing of Collagen Scaffolds to Enhance Cellular Performance</b> <u>C Liu</u> , A Johnston, EW Abel, RH Bradley

**10.10 am – 10.50 am          Session 6 – Presidents Prize** (Prof Elizabeth Tanner, University of Glasgow)

**Title of Presentation: Bone Replacement Biomaterials**

**Session Chair: Dr Lucy DiSilvio**

**10.50 am – 11.20 am          Coffee/Tea and Poster Viewing**

**11.20 am – 1.00 pm          Session 7 – Clinical Matters** (Sponsored by the HSC Public Health Agency)

**Session Chairs: Dr George Burke and Dr Julie Gough**

<b>Time</b>	<b>Presentation</b>
11.20 – 11.45	<b>The Reconstruction of Oro-facial Region; Challenges and Opportunities</b> Clinical Lecture 1 (Prof A Ayoub, Glasgow University Dental School)
11.45 – 12.10	<b>Spinal Vertebral Body Augmentation Using Bone Cements</b> Clinical Lecture 2 (Dr J Yeh, Barts and The London NHS Trust)
12.10 – 12.35	<b>Biotechnological Advances in Cardiovascular Medicine: Are We There Yet?</b> Clinical Lecture 3 (Prof G Manohoran, Royal Victoria Hospital, Belfast)
12.35 – 1.00	<b>Use of Microarray Technology for Gene Expression Biomarker Identification</b> Plenary Lecture 2 (Dr S Moore, Almac Diagnostics)

**1.00 pm – 1.45 pm          Sandwich Lunch** (Sponsored by the HSC Public Health Agency)

**1.45 pm – 2.25 pm          Session 8 – Biocompatibles Endowed Lecture** (Prof David Grant, University of Nottingham)

**Title of Presentation: Biomaterials, Coatings, Surface Modifications and Industry**

**Session Chair: Dr Sanjukta Deb**

2.25 pm – 3.35 pm      **Session 9**

**Session Chairs: Prof Brian J Meenan and Dr Irene Turner**

<b>Time</b>	<b>Presentation</b>
2.25 – 2.45	<b>Three-dimensional collagen-based biomimetic scaffolds for functional tissue reconstruction</b> Plenary Lecture 3 (Dr D Zeugolis, NUI Galway)
2.45 – 3.00	<b>Bioactive Glass Scaffolds for Vascularised Bone Tissue Engineering</b> <u>O Tsigkou</u> , S Lin, MM Stevens, JR Jones
3.00 – 3.15	<b>Plasma induced graft modification of poly(ethylene glycol) onto silicone elastomer for the controlling cellular response</b> <u>RA D'Sa</u> , GA Burke and BJ Meenan
3.15 – 3.35	<b>Treatment of Prosthetic Joint Infection</b> Plenary Lecture 4 (Dr N Dunne Queen's University Belfast)

**3.35 pm Closing remarks**

## List of Poster Presentations

1. Muktar Ahmed – University of Ulster (**FTIR and Raman spectroscopic studies of glycine adsorption on DLC and Nitrogen doped DLC**)
2. Wuraola Akande – University of Brighton (**Structure of Macroporous Monolithic pHEMA Cryogels**)
3. Eliesmaziah Alias – University of Liverpool (**Polyurethane as a substrate for cell transplantation in the treatment of age related macular degeneration (AMD)**)
4. Samantha Booth – University of Greenwich (**The effect of a Thermal Treatment on the properties of Glass-ionomer Cements**)
5. Alan Brown – University of Ulster (**Responses of endothelial cells to hot-embossed microstructured tissue culture polystyrene**)
6. Lindsay Charters – University of Ulster (**Raman Spectroscopy for Monitoring Biological Molecules**)
7. Andrew Collier – **University of Cambridge** (**In Vitro Responses of Human Osteoblasts to Titanium Oxide-Based Surfaces with Varying Topology and Composition**)
8. Aisling Coughlan – University of Limerick (**Antibacterial Analysis of Zinc & Silver Glass Polyalkenoate Cement Coatings**)
9. Andrea di Luca – NUI Galway (**Are Elastin-like Polymers (ELP) an Option for Wound Healing?**)
10. James Dugan – University of Manchester (**Bioactive Cellulose Nanocrystal Films by Layer-by-Layer Assembly**)
11. Obinna Egbuniwe – King's College London (**The Role of Human Dental Pulp Cells in Tissue Repair**)
12. Jie Gao – University of Manchester (**Self-assembly and gelation properties of model peptides for biomedical applications**)
13. Muhammad Sami Hasan – University of Nottingham (**Identification of optimal coupling agents for Phosphate based glass fiber reinforced PLA composite for bone repair applications**)
14. Maria Kerr - University of Ulster (**The grafting of collagen onto a synthetic polymer through dielectric barrier discharge**)
15. Felicity Leng – University of Manchester (**Magnetically controlled patterned vesicle hydrogels and potential biological applications**)
16. Joanne Manson – University of Ulster (**Drying Effects on Bioabsorbable Polymers**)
17. Ashish Mathur – University of Ulster (**Integration of vertically aligned CNTs onto polymeric microfluidic devices using hot embossing**)
18. Lubinda Mbundi – University of Brighton (**Controlled Manufacturing of Chitosan Nanobeads as Target-Specific Carriers of Bioactive Molecules and Contrast Agents**)
19. Mura McCafferty – University of Ulster (**In Vitro Characterisation of Human Mesenchymal Stem Cells Cultured in Osteogenic Media**)
20. Subhadeep Mukhopadhyay – University of Ulster (**Fabrication of microchannel bends and micropillar arrays and their applications for blood cell separation**)
21. Kurt Naudi – University of Glasgow (Histomorphometric evaluation of bone regenerate in a critical-size defect in the rabbit mandible treated with tricalcium phosphate scaffolding loaded with bone morphogenetic protein 7)
22. Chris O'Kane – University of Ulster (**Optimisation of RF Magnetron Sputter Deposition Conditions of Calcium Phosphate Thin Films**)
23. Ross Ormsby – Queen's University Belfast (**Radio Labeling of MWCNTs in PMMA Bone Cement for Nanoparticle Leaching Study**)
24. Conor Sheerin – University of Ulster (**Photocatalytic Inactivation of Clinically Relevant Pathogen**)
25. Cristina-Luminita Tuinea-Bobe – University of Ulster (**Photolithographic structuring of flextronics components for biomedical applications**)
26. Sonya Weber – University of Ulster (**Impedance Analysis of Textile – Based Electrodes in Combination with Hydrogel or SSFL**)
27. John Ward – NUI Galway (**Functionalising the Matrix using Polyethylene Glycol Dendrimeric Systems**)
28. Muhammad Zafar – Nottingham Trent University (**To develop silica based nanocomposite materials for dental applications using spider silk chimeric proteins**)
29. Souma Tahir – University of Birmingham (**Biological Response of Bacterial Cellulose**)
30. Esther Valliant – Imperial College London (**pH Effect On a Novel Calcium Source In a  $\gamma$ -PGA Sol-Gel Scaffold**)
31. Thomas J. Fleming – University of Limerick (**Microwave Sintering of Zirconia Bio-Ceramics**)