



2009

Biomaterials
Africa

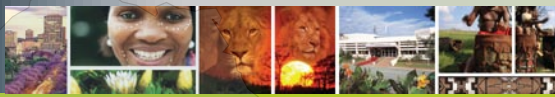


Advancing
Biomaterials
in Africa

PROGRAMME

20 — 22 September 2009





Welcome Note

Dear Conference Delegates,

It is a great pleasure to welcome you to the 1st Biomaterials-Africa conference to be held at the CSIR South Africa, an international conference showcasing the latest technological innovations and research developments in the biomaterials field in Africa as well as to present the latest global trends.

Biomaterials-Africa has drawn participants from at least twenty one countries, including Australia, Austria, Czech Republic, Denmark, Egypt, Ethiopia, Germany, Greece, Iran, India, Japan, Kenya, Kuwait, Mauritius, Nigeria, Poland, South Africa, Tanzania, Thailand, Uganda and the United Kingdom.

The conference will comprise of three plenary lectures from world renowned scientists, seven keynote addresses, eighteen oral and at least twenty five poster presentations. Scientific papers are presented in six theme areas, Biomaterials, Regenerative Tissue Engineering, Nano-Enabled Materials, Stem Cells, Medical Devices as well as Drug Delivery.

We would like to encourage you to take advantage of the conference's high technical standard and to use the opportunity to exchange knowledge and ideas.

On behalf of the organising committee, we express gratitude to the sponsors, the support organisations, the scientific review panel and the Biomaterials Association of South Africa (BioMatASA) for their commitment and hard

work in contributing towards the success of this conference. We also acknowledge TERMIS (www.termis.org) and the Biomaterials Network (www.biomat.net) for endorsing the conference.

We sincerely hope that you enjoy your stay in the beautiful and hospitable city of Pretoria, commonly known as the "Jacaranda City".

Yours faithfully,

Prof Ugo Ripamonti
Conference Scientific Chair
Professor and Director: Bone
Research Laboratory
MRC/University of the
Witwatersrand
South Africa



Prof Rui Krause
BioMatASA President 2009
Associate Professor
Department of Chemical
Technology
University of Johannesburg
South Africa



Ms Avashnee Chetty
Conference Organisation
Chair
Research Group Leader:
Biomaterials
Polymers and Composites,
CSIR
South Africa



General Information

ECM Journal: www.ecmjournal.org

The abstracts of the Biomaterials-Africa 2009 will be published online in a supplement of European Cells and Materials (ECM) journal. The ECM journal has in the region of 5000 registered users.

ECM provides an international and interdisciplinary forum for publication and discussion for researchers in the following fields: Assessment of materials for biomedical use & interaction with tissues/ cells /bacteria; Tissue engineering and regenerative medicine; Structure, function, biology of bone, teeth, cartilage, intervertebral disks & other related connective tissues; Stem and Progenitor Cells.

True Open Access disseminating scientific knowledge world-wide without barriers. It is also the official journal of Swiss Society for Biomaterials and the Tissue & Cell Engineering Society. EUR CELL MATER is published by the AO Foundation, Switzerland.

moyo

Gala Dinner: Moyo, 1 Prince of Wales Drive, Zoo Lake Park, Johannesburg. Tel: 011 646 0058

Amongst green grass, tall pine trees and a tranquil lake, moyo: soul or spirit in Swahili is the unique destination for our Conference Gala Dinner. It is a sophisticated African restaurant experience, inspired by the traditions and values of our ancestors.



Moyo, Zoo Lake, captures the spirit of Africa with its magical landscape, face painters & performing artists. The convergence of pan-African talent & artistry all contribute towards the relaxing vibe of the evening.

We will be welcomed by "Nyenge and Friends", she sings & plays the Mbira/thumb piano, an African instrument, playing a fusion of popular cover songs and traditional African folk music as well as her own compositions, which are very soulful & sung in English & Shona. Nyenge is accompanied by guitar, keyboard, drums & bass guitar, a gifted performer whose music is an eclectic pan-African mix.

Bus to depart from CSIR ICC:

A bus service will be provided for delegates. The bus will leave the CSIR ICC at 17:30. The bus will return from Moyo to the CSIR ICC at 22:00.

Directions to Moyo, Zoo Lake

From Pretoria:

- » Take the N1 South (direction Johannesburg).
- » At the Buccleugh interchange, continue straight, via the M1 to Johannesburg.
- » Continue past the following off-ramps: Woodmead, Marlboro, Grayston, Corlett and Athol-Oaklands.
- » Take the next off-ramp, namely Glenhove.
- » Where the off-ramp meets Glenhove Dr, turn right onto the bridge, passing over the highway and continue with Glenhove Dr.
- » Glenhove Dr crosses Oxford Rd (first traffic light after the bridge) at which point Glenhove Dr changes into Bolton.
- » Continue with Bolton until it crosses Jan Smuts (third traffic light after the Oxford crossing).
- » Turn left into Jan Smuts. Continue with Jan Smuts until you see the Zoo Lake and Moyo signs.
- » Turn right into Westwold until you get Prince of Wales (2nd street on your left), turn left into Prince of Wales and follow the road to Moyo Zoo Lake.
- » *Note: If you miss the Jan Smuts crossing, you can take either Torquay or Glamorgan (1st and 2nd roads after Jan Smuts - end with a T-junction in Westwold).*
- » *If you miss the Jan Smuts/Westwold crossing, you can continue with Jan Smuts to Northwold, the next Westwold junction or Playfair or Lower Park and take the scenic route around Zoo Park.*



Biomaterials-Africa 2009 Conference

Sunday 20 September 2009

- 14:00 Registration
 16:00 *Welcome and Opening Ceremony – Prof Ugo Ripamonti*
 16:30 Cocktail Function (Cash Bar Available)

Plenary Speakers: 45 minutes + 10 minutes questions

Keynote Speakers: 25 minutes + 5 minutes questions

Oral: 15 minutes + 5 minutes questions

DAY 1 Monday 21 September 2009

Time	PROGRAMME
07:00 – 08:30	Late registration / Morning tea/coffee
BIOMATERIALS Chairperson: Dr Sean Moolman	
08:30 – 09:25	Plenary Speaker - Prof Shuguang Zhang Designer Self-assembling Peptide Biological Materials S Zhang
09:25 – 09:55	Keynote address – Dr Hala Zreiqat Ceramics modification for use in skeletal tissue regeneration H Zreiqat
09:55 – 10:15	Dr Claudia Eder Rapid assessment of biomaterials: The HET-CAN assay as screening tool for biomedical tissue engineering C Eder, E Falkner, A Slawik, M Mickel, A Tuschel, M Ogon
10:15 – 10:35	Ms Malgorzata Gonsior Thrombogenicity of Ti(N,C,O) diffusive coating layers developed on Titanium Alloy as the blood contact surface M Gonsior, T Borowski, E Czarnowska, M Sanak, R Kustosz, M Ossowski, T Wierchcon
10:35 – 11:00	Conference Group Photograph – please gather on the front steps of the CSIR ICC Tea/coffee break
DRUG DELIVERY Chairperson: Ms Avashnee Chetty	
11:00 – 11:20	Ms Njabuliso Dlamini Synthesis and characterization of bisphosphonate conjugated carbon nanomaterials as potential treatment of secondary bone cancer NL Dlamini, XY Mbianda, Z Szucs, J Zeervaart

DAY 1 Monday 21 September 2009

11:20 – 11:40	Dr Andre Germishuizen Establishing a platform for spray drying inhalable vaccines in South Africa WA Germishuizen, L Venter, A Khosa, F Mudau, M Kabadi, A Schiermeier, DA Edwards, PB Fourie
11:40 – 12:00	Prof Dhanjay Jhurry Novel self-assembled block copolymers for drug delivery D Jhurry, A Bhaw-Luximon, V Lochee, B Ancharaz, A Veeren, R Jeetah
12:00 – 12:40	Poster session
12:40 – 13:40	Lunch
REGENERATIVE TISSUE ENGINEERING & NANO-ENABLED MATERIALS Chairperson: Dr Hala Zreiqat	
13:40 – 14:35	Plenary Speaker – Prof Tatsuya Shimizu Cell sheet engineering for myocardial tissue repair T Shimizu
14:35 – 15:05	Keynote address – Prof Ugo Ripamonti Self-inducing geometric cues and bone: Formation by autoinduction U Ripamonti
15:05 – 15:25	Ms Valencia Jacobs Electrospun chitosan nanofibre membranes for antimicrobial application: Role of electrospinning processing parameters V Jacobs, A Patanaik, RD Anandjiwala
15:25 – 15:45	Tea/coffee break
REGENERATIVE TISSUE ENGINEERING & NANO-ENABLED MATERIALS Chairperson: Prof Rui Krause	
15:45 – 16:05	Prof Mohammad Ramezani Peptide modified polyethylenimine as vector for gene delivery M Ramezani, H Parhiz, A Hatefi
16:05 – 16:25	Ms Silvie Rimpelova Adhesion and growth of fibroblasts on artificial materials for tissue engineering S Rimpelova, N Kasalkova, V Svorcik, T Ruml
16:25 – 16:45	
17:30	Gala Dinner – Moyo, Zoo Lake. The bus will depart from the CSIR ICC. Dress: Smart Casual Cash Bar Available
18:30 – 22:00	Best Poster Presentation



DAY 2 Tuesday 22 September 2009

Time	PROGRAMME
07:30 – 08:30	Morning tea/coffee
BIOMATERIALS Chairperson: Dr Deon Bezuidenhout	
08:30 – 09:25	Plenary Speaker – Prof Ugo Ripamonti Smart biomimetic matrices induce bone formation without the exogenous applications of soluble osteogenic molecular signals U Ripamonti, B van den Heever, LF Renton, PW Richter, L Kotzé
09:25 – 09:55	Keynote address – Mrs Naseem Theilgaard Functional Orthopedic Devices to Tissue Engineering and Regeneration. N Theilgaard
09:55 – 10:15	Dr David Reid Kidney stone composition by solid state NMR (SSNMR) DG Reid, MJ Duer, G Jackson
10:15 – 10:35	Dr Christiane Wetzel Improvement of cell-adhesion in the medical-surface boundary layer C Wetzel, N Ozkucur, J Schönfelder, TK Monsees, RHW Funk
10:35 – 11:00	Tea/coffee break
BIOMATERIALS Chairperson: Dr John Ramshaw	
11:00 – 11:30	Keynote address – Prof Mona Marei Bone engineering around laser grooved / RGD -Coated Titanium Surfaces MK Marei, MM Saad, RM El-Backly, MA. AlKhodary, RA Bly, DJ Cohen, J Chen, MM Fata, WO Soboyejo, M Nageeb, A Rashad, DK Ahmed, RH Abd El-Aty, SY El-Sonbaty
11:30 – 12:00	Keynote address – Prof William Murphy Title to be announced
12:00 – 12:20	Prof M Jurczyk Hybrid Ti-ceramic bionanomaterials for dental engineering M Jurczyk, K Jurczyk, K Niespodziana, A Miklaszewski
12:20 – 12:40	Prof Jaroslaw Jakubowicz Deposition and properties of Hydroxyapatite on flat and porous Ti J Jakubowicz

DAY 2 Tuesday 22 September 2009

12:40 – 13:35	Lunch/Posters
BIOMATERIALS Chairperson: Prof Mona Marei	
13:35 – 14:05	Keynote address – Dr John Ramshaw Photochemically crosslinked proteins as new medical materials CM Elvin, AG Brownlee, SJ Danon, GA Edwards, NE Liyou, JAM Ramshaw, L Sando, T Vuocolo, JA Werkmeister
14:05 – 14:25	Dr Selvan Govendar A surfactant based approach to multi-functional, biocompatible polymer development S Govender, P Swart
14:25 – 14:45	Dr John Mmari Onyari Properties of Biopolymers containing Polyvinyl alcohol, Lactic acid and Poly (ethylene glycol) J Onyari
14:45 – 15:00	Tea/coffee break
STEM CELLS AND MEDICAL DEVICES Chairperson: Prof Ugo Ripamonti	
15:00 – 15:20	Prof Heidi Abrahamse Low intensity laser irradiation stimulates adipose derived stem cell viability and proliferation: Implications for autologous grafts H Abrahamse
15:20 – 15:40	Dr Deon Bezuidenhout Correlation of crosslink density with calcification of diamine-extended glutaraldehyde-fixed bioprosthetic heart-valve materials D Bezuidenhout, A Oosthuysen, P Human, C Weissenstein, P Zilla
15:40 – 16:00	Dr Suretha Potgieter Microfluidic devices for biological applications S Potgieter, K Land, L Kotzé, R Sparrow
16:00 – 16:30	Closing ceremony – Prof Rui Krause



Poster Presentations

Posters will be on display in the conference foyer, from 20 - 22 September. The poster session will be held on Monday 21 September from 12:00 – 12:40. Presenting authors are kindly requested to be present at their poster to answer questions during this time. The best poster will be announced at the gala diner on Monday, 21 September.

Poster Number	Abstract Number	Title and Authors
1	5	Three Dimensional Finite Element Modeling of Human Skull in response to external loads YF AL-Obaid
2	11	Glycosaminoglycans and lipids in vascular calcification: new insights into mineralogenesis from NMR spectroscopy MJ Duer, MS Ironside, DG Reid, M Schoppet, CM Shanahan
3	13	Biocompatible polymers for metal chelation and protein binding S Govender, WJ Przybylowicz, P Swart
4	14	Liposomes as a drug delivery system in photodynamic therapy for colon cancer treatment K Maduray, AE Karsten
5	15	Biocompatibility of Dendrispheres S Garny, I Gerber, J Jordaan
6	18	Calcium phosphate mineralization in phosphatic brachiopods, and vertebrates DG Reid, MT Neary, MJ Mason, T Frišćić, MJ Duer, M Cusack
7	21	Synthesis of Bio-based Polyester from Sorghum derived 1, 3 – Propanediol CM Obele, OO Ogbobe
8	22	Synthesis of 1, 3 – Propanediol from Sorghum CM Obele, OO Ogbobe
9	24	Determination of the Optical Properties of Rat Tissue A Singh, AE Karsten, RM Smith, G van Niekerk
10	33	Optical Coherence Tomography as a Research Tool for Biomaterials AE Karsten, A Singh, I Ndhundhuma
11	36	Ca/Al Layered Double Hydroxides Hydrothermally Modified for Biomaterials Applications MS Azimi, ZT Birgani, A Darvish, SS Shafiei, MS Hashjin
12	37	Application of Low Level Laser on skin cell lines IM Ndhundhuma

Poster Number	Abstract Number	Title and Authors
13	41	Simple Drug Delivery System Based on PRP and PCL Nanofibres R Jakobová, A Míčková, M Buzgo, M Plencner, E Prosecká, E Filová, E Amler
14	46	Contact angle studies on PDMS surfaces fouled by bovine serum albumin VT Windvoel, MB Mbanjwa, K Land
15	47	Novel injectablebioglass/chitosan composite for bone substitute materials P Khoshakhlagh, R Ravarian, F Moztafzadeh, R Moradi, SM Rabiee, P Heydari, MS Azimi
16	49	Synthesis of silicon carbide nanowires from a hybrid of amorphous biopolymer and sol-gel derived silica AK Mishra, SB Mishra, BB Mamba, RW Krause
17	51	Phantom Skin Absorption Coefficients from Spectrophotometric and Integrating Sphere Methods: Preliminary Comparative Results JE Smit, A Singh, I Tshoke, AF Grobler, RW Sparrow
18	53	Synthesis and characterisation of various polymer composites for applications in water purification GD Vilakati, ST Mthombo, AK Mishra, SB Mishra, BB Mamba
19	54	Preliminary investigation into the use of cyclodextrin-carbon nanotube polymers for drug delivery R Krause
20	56	Comparison of Osteoinduction in Biphasic Hydroxyapatite implanted in Two Different Animal Models LF Renton, RB Parak, PW Richter, L Kotzé, U Ripamonti
21	61	Determining the applicability of the SphereZymes® Immobilised Protease for the biocatalysis of Protein LG Molawa, D Brady, J Jordaan
22	64	Scaled Manufacture of Self-immobilised Pseudomonas fluorescens Lipase Using the SphereZymes™ Technology K Mathiba, D Brady, B Petja, C Simpson, J Jordaan, FS Moolman, RD Gordon
23	66	Optimisation of anti-tuberculosis drugs loaded –PLG nanoparticles L Kalombo
24	69	Biomimetism, Smart Biomimetic Matrices and the Induction of Bone Formation U Ripamonti, LF Renton, R Parak, L Kotzé, PW Richter
25	16	Targeted Plasmid DNA Delivery by Galactosylated Alkyl-Oligoamine Derivatives of PEI A Dehshahri, RK Oskuee, WT Shier, M Ramezani



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BioPAD, Biotechnology Regional Innovation Centre established by the Department of Science and Technology (DST) in 2002 by a group of interested biotechnology stakeholders. The aim is boost biotechnology development in the region. At the core of BioPAD's objectives is the implementation of the National Biotechnology Strategy of South Africa. The centre is governed as a Trust.

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The **Cape Biotech Trust** is a Biotechnology Innovation Centre (BIC) funded by the Department of Science and Technology (DST) with the objective to promote and develop a biotechnology industry in the Western Cape through project investments and capacity development. It forms part of a national network of organizations that collaborate to ensure the growth and development of the biotechnology industry in South Africa by implementing the national biotechnology strategy and managing the allocated funding.

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Ms Belle Nyamboli, Council for Scientific and Industrial Research
Dr Deon Bezuidenhout, University of Cape Town

Scientific Review Panel:

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Dr Deon Bezuidenhout, University of Cape Town, SA
Prof Rui Krause, University of Johannesburg, SA
Dr Sean Moolman, Council for Scientific and Industrial Research, SA
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