

PROGRAMME OF ORAL PRESENTATIONS

Thursday, 24 September, 2009 - Morning

Plenary

Chair: Yiannis Ventikos

09:00 to 10:00 page 30
Fritz Vollrath (*Department of Zoology, Oxford, United Kingdom*)
Engineering of (and with) silks

Cardiovascular Methods

Chair: Nic Smith

10:00 to 10:45 *Keynote* page 35
Luca Formaggia (*MOX, Department of Mathematics, Politecnico di Milano, Milano, Italy*)
Mathematical modeling issues in cardiovascular fluid dynamics

10:45 to 11:00 page 44
George Papadakis (*Division of Engineering, King's College London, London, United Kingdom*)
Coupling of 3D and 1D fluid-structure-interaction models for pressure wave propagation in flexible vessels

11:00 to 11:15 page 42
Sehun Chun (*Institute for Mathematical Sciences, Imperial College, London, United Kingdom*), *Darryl D. Holm, Robert M. Kirby, Spencer J. Sherwin*
High-order methods for simulating cardiac electrophysiological phenomena

11:15 to 11:30 page 43
Antonio J. Gil (*Civil and Computational Engineering Centre, School of Engineering, Swansea, United Kingdom*), *A. Arranz Carreño, J. Bonet, O. Hassan*
Development of a new immersed FSI computational algorithm for haemodynamic applications

11:30 to 12:00
 Coffee Break

Musculoskeletal Tissue Mechanics

Chair: Mark Thompson

10:00 to 10:45 Keynote page 34
Richard Aspden (*Division of Applied Medicine, University of Aberdeen, Aberdeen, United Kingdom*)
Tissue Mechanics in Health and Disease

10:45 to 11:00 page 86
Elisa Budyn (*Department of Mechanical Engineering, Chicago, USA*), *Elisa Budyn, Thierry Hoc, Elisa Jonvaux*
Toughness of Micro Cracks in Human Cortical Bone using Physical Imaging

11:00 to 11:15 page 87
Liz Tanner (*Departments of Mechanical and Civil Engineering, Glasgow, United Kingdom*), *Dick Heinegard*
Effects of Chondroadherin on the Mechanical Properties of Murine Bones

11:30 to 12:00
Coffee Break

Targeted Drug Delivery

Chair: Heiko Schiffter

10:00 to 10:45 Keynote page 38

Leonard Seymour (*Department of Clinical Pharmacology, University of Oxford, Oxford, United Kingdom*)

Systemic Delivery of Polymer-Coated Adenovirus to Disseminated Tumours

10:45 to 11:00 page 101

Hanene Ali-Boucetta (*Nanomedicine Laboratory, Centre For Drug Delivery Research-Pharmaceutics Department, The School of Pharmacy, University of London, London, United Kingdom*), *Alberto Bianco, Kostas Kostarelos, Maurizio Prato, Cristian Samori*

Enzymatically Cleavable Carbon Nanotube-Methotrexate Conjugates Enhance Drug Activity

11:00 to 11:15 page 99

Khuloud Al-Jamal (*Nanomedicine Laboratory, Centre for Drug Delivery Research, London, United Kingdom*), *Giuseppe Bardi, Lisa Gherardini, Kostas Kostarelos, Tommaso Pizzorusso*

Carbon Nanotube-mediated Gene Silencing in Rodent Brain leads to Enhanced Rescue from Stroke

11:15 to 11:30 page 100

Wafa Al-Jamal (*Nanomedicine Laboratory, Centre for Drug Delivery Research, The School of Pharmacy, University of London, London, United Kingdom*), *Kostas Kostarelos, Jeroen Van den Bossche*

Engineering pH-sensitive Artificial Envelopes for Efficient Intracellular Delivery of Non-Enveloped Viruses

11:30 to 12:00

Coffee Break

Cardiovascular: Geometry and Structure

Chair: Rob Krams

12:00 to 12:30 *Invited* page 57

Sherwin Spencer (*Department of Aeronautics & Bioengineering, Imperial College London, London, United Kingdom*), *Jordi Alastruey, Denis Doorly, Jennifer Siggers*

Reducing the Data: Analysis of the role of vascular geometry on the features of blood flow

12:30 to 12:45 page 58

Amalia De Luca (*Bioengineering, London, United Kingdom*), *Colin Caro, Gianfilippo Coppola*

Geometric Characterization of the Aortic Bifurcation

Musculoskeletal Mechanobiology

Chair: Richard Aspden

12:00 to 12:30 page 84

Martin Stolz (*Bioengineering Sciences Research Group, Southampton, United Kingdom*), *Ueli Aebi, Attila Aszodi, Werner Baschong, A.U. Daniels, Marcel Dueggelin, Niklaus F. Friederich, Riccardo Gottardi, Raphael Imer, Ivan Martin, Sylvie Miot, Aurelia Raducanu, Roberto Raiteri, Urs Staufer*

Early detection of aging cartilage and osteoarthritis in mice and patient samples using atomic force microscopy

12:30 to 12:45 page 83

Andrés Julián Arias (*Medical School, Telemedicine Center, National University of Colombia, Bogotá, Colombia*), *Diego Alexander Garzón Alvarado, Andrés Tovar Pérez*

Bone Fracture Healing predicted with a Cellular Automaton Algorithm

12:45 to 13:00 page 85

Mark Thompson (*Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom*), *Harvey Burd, Richard Mant*

A microstructural model for tendon mechanobiology

Tissue Engineering I

Chair: Alicia el Haj

12:00 to 12:30 *Invited* page 105

Zhanfeng Cui (*Engineering Science, Oxford University, Oxford, United Kingdom*)

Bioprocessing of Stem Cells for Regenerative Medicine

12:30 to 12:45 page 107

Brian McGovern (*Institute of Biomedical Engineering, London, United Kingdom*), *R. Berlinguer-Palmini, P. Degenaar, E. Drakakis, N Grossman, K Nikolic*

Optogenetic Retinal Prosthesis

Thursday, 24 September, 2009 - Afternoon

Tissue Engineering II

Chair: Molly Stevens

14:00 to 14:30 *Invited* page 103

Dan Bader (*School of Engineering and Materials Science, Queen Mary University of London, London, United Kingdom*),
Tina Chowdhury, Martin Knight, David Lee

The Application of Mechanobiology in Tissue Engineering

14:30 to 14:45 page 106

George Engelmayr (*Department of Bioengineering, The Pennsylvania State University, University Park, USA*)

Tissue Engineering Scaffold Design and Fabrication by Analytical Modelling and Laser Microablation

14:45 to 15:00 page 104

Anthony Callanan (*Department of Mechanical and Aeronautical Engineering, Centre for Applied Biomedical Engineering Research (CABER) and the Material and Surface Science Institute, Limerick, Ireland*), Tim McGloughlin, Michael Walsh

Urinary bladder Matrix under stent loading conditions; an experimental and numerical study on material strength

15:00 to 15:15 page 108

Sammy Sambu (*Engineering Sciences, Oxford, United Kingdom*), ZhanFeng Cui, Yu Liu, Xia Xu

Cryopreservation of Cells Encapsulated in 3D Constructs

15:15 to 15:30 page 111

Weiqi Wang (*Dept. of Engineering Science, Oxford, United Kingdom*), René Bañares-Alcántara, Zhanfeng Cui

Prediction of Mesenchymal Stem Cell Maturation using Data Mining Techniques

15:45 to 16:15

Coffee Break

Cardiovascular: Vascular Disease

Chair: Perumal Nithiarasu

14:00 to 14:30 *Invited* page 59

Jean-Frédéric Gerbeau (*Université Technologique de Compiègne, France*), *C. Bertoglio, M. A. Fernandez, Ph. Moireau*
Fluid-Structure Interaction in Arteries - External Tissue Support and Data Assimilation

14:30 to 14:45 page 61

Dorothea Hollnagel (*Laboratory of Thermodynamics in Emerging Technologies, Department of Mechanical and Process Engineering, ETH Zurich, Zürich, Switzerland*), *Spyros Kollias, Dimos Poulidakos*

Combining MRI with CFD – An Approach to Detailed Hemodynamic Patterns in the Circle of Willis

14:45 to 15:00 page 63

Igor Sazonov (*School of Engineering, Swansea University, Swansea, United Kingdom*), *S. Ashraf, H. Luckraz, P. Nithiarasu, P.H. Saksono, R. van Loon, X. Xie, S.Y. Yeo*

Patient-Specific Numerical Simulation of Blood Flow in an Aortic Aneurysm

15:00 to 15:15 page 56

Emilie Holland (*Institute of Biomedical Engineering, Oxford, United Kingdom*), *Tim Bowker, Mustafa Megahed, Yiannis Ventikos*

Stent evaluation for cerebrovascular disease: Haemodynamic assessment for cerebral aneurysms

15:15 to 15:30 page 60

David Hardman (*University of Edinburgh, Edinburgh, United Kingdom*), *William Easson, Pete Hoskins*

Influence of helical-flow inlet boundary conditions on flow within abdominal aortic aneurysm

15:30 to 15:45 page 62

Philippe Reymond (*Laboratory of Hemodynamics and Cardiovascular Technology Swiss Federal Institute of Technology, EPFL, Lausanne, Switzerland*), *Yvette Bohraus, Fabienne Perren, Daniel Rüfenacht, Nikos Stergiopoulos*

Validation of a Person Specific 1D Model of the Systemic Arterial Tree

15:45 to 16:15

Coffee Break

Cardiovascular: Scales

Chair: Bill Eason

14:00 to 14:15 page 55

Brett Tully (*Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom*), James Byrne, Jaladhar Neelavalli, Yiannis Ventikos

Combining Poroelastic and 3D Hydrodynamics for Anatomically Accurate Hydrocephalus Modelling

14:15 to 14:30 page 50

Andrew Cookson (*Department of Aeronautics, Imperial College London, London, United Kingdom*), Denis Doorly, Spencer Sherwin

Combining Differing Small Amplitude Helical Pipes to Generate Efficient Mixing for Medical Applications

14:30 to 14:45 page 51

Ana Plata Garcia (*Department of Aeronautics, Imperial College London, London, United Kingdom*), Nicolas Foin, Spencer Sherwin, Rob Krams

Shear Stress-dependent Nitric Oxide Production and Transport in Flow Chambers

14:45 to 15:00 page 49

Michael Collins (*School of Engineering & Design, Uxbridge, United Kingdom*)

Wall Shear Stress and Arterial Performance: two approaches based on engineering

15:00 to 15:15 page 52

Fernando Fraternali (*Biomedical engineering research group, Division of Engineering, Kings College London, London, United Kingdom*), Gianluca Marcelli, George Papadakis

From discrete to continuum approaches to the prediction of the elastic moduli of the red blood cell

15:15 to 15:30 page 53

Rana Rezakhaniha (*Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland*), Edouard Fonck, Nikos Stergiopoulos

Role of Elastin Anisotropy to Identify Structural Strain Energy Functions in Intact and Elastin-degraded Arteries

15:30 to 15:45 page 54

Jennifer Siggers (*Department of Bioengineering, Imperial College London, London, United Kingdom*), *Rodolfo Repetto, Alessandro Stocchino*

Model of Vitreous Humour Flow in the Eye: Effect of Domain Shape

15:45 to 16:15

Coffee Break

Orthopaedic Biomechanics Modelling and Measurement

Chair: Richie Gill

14:00 to 14:15 page 81

Alessandra Carriero (*Bioengineering Department, Imperial College London, London, United Kingdom*), *Ilse Jonkers, Gerlinde Lenaerts, Sandra Shefelbine, Julie Stebbins, Tim Theologis, Amy Zavatsky*

Predicting bone deformities in children with cerebral palsy

14:15 to 14:30

page 80

Neil Bianchi (*Department of Engineering Science, University of Oxford, Oxford, United Kingdom*), *Amy Zavatsky*

Solving the Indeterminate Problem in Biomechanics

14:30 to 14:45

page 82

David Simpson (*NDORMS, University of Oxford, Oxford, United Kingdom*), *Harinderjiit Gill, Aashish Gulati, Ben Kendrick, Andrew Monk, David Murray*

Strain Following UKR: a mechanical & clinical study

14:45 to 15:30 Keynote

page 40

Marco Viceconti (*Laboratorio di Tecnologia Medica, Istituto Ortopedico Rizzoli, Bologna, Italy*)

Multiscale modeling of the musculoskeletal system: a review of the state of the art

Tissue Engineering III

Chair: Zhangfeng Cui

16:15 to 16:45 Invited page 109

Molly Stevens (*Institute of Biomedical Engineering, Imperial College London, London, United Kingdom*)

Bio-inspired Nanomaterials for Tissue Regeneration and Sensing

16:45 to 17:00 page 102

Mark Ahearne (*Institute of Science and Technology in Medicine, United Kingdom*), *Alicia El Haj, Kuo-Kang Liu, Saaeha Rauz, Samantha Wilson, Ying Yang*

Influence of Cell Number and Collagen Concentration on the Mechanical Behaviour of Collagen Hydrogel Constructs

17:00 to 17:15 page 110

Fei Wang (*Metallurgy and Materials, University of Birmingham, Birmingham, United Kingdom*), *Diane Holland, Artemis Stamboulis*

Study of novel fluorapatite- celsian ionomer glasses used in dental cements and for bone repair

Cardiovascular: Cellular

Chair: Peter Hoskins

16:15 to 16:30 page 47

Ana Plata Garcia (*Imperial College London, London, United Kingdom*), *Anthony A. E. Hunt, Spencer J. Sherwin, Peter E. Vincent, Peter D. Weinberg*

A Computational Study of Blood Flow in a Realistic Representation of the Rabbit Aorta

16:30 to 16:45 page 48

Takami Yamaguchi (*Dept. Biomedical Engineering, School of Biomedical Engineering, Tohoku University, Sendai, Japan*), *Yohsuke Imai, Takuji Ishikawa*

Simulation of Rosette Formation and Destruction of Malaria Infected Red Blood Cells

16:45 to 17:00 page 46

Gerard B. Nash (*College of Medical and Dental Sciences, Birmingham, United Kingdom*), *Stuart Egginton, Katie Glen, Nguyet Thin Luu, G. Ed Rainger*

Modulation of the Functional Responses of Endothelial Cells by Shear Stress: Role of CD31

17:00 to 17:15 page 45

Alessandro Bellofiore (*National Centre for Biomedical Engineering Science and Department of Mechanical and Biomedical Engineering, National University of Ireland, Galway, Ireland*), *Nathan J. Quinlan*

Measurement of Cardiovascular Device Flow at Scales Approaching Cell Size

Respiratory Biomechanics

Chair: Ross Ethier

16:15 to 16:30 page 95

Donal Taylor (*Bioflow Lab L57, Dept. of Aeronautics, Imperial College London, London, United Kingdom*), *Denis Doorly, Robert Schroter*

Intra-Subject Analysis of Human Nasal Inspiration

16:30 to 16:45 page 94

Gaku Tanaka (*Graduate School of Engineering, Chiba University, Chiba, Japan*), *Esther Blenke, Denis Doorly, Robert Schroter, Donal Taylor*

Assessment of Surgical Rhinoplastic Intervention Using Computational Fluid Dynamics

16:45 to 17:00 page 93

Perumal Nithiarasu (*School of Engineering, Swansea University, Swansea, United Kingdom*), *Perumal Nithiarasu, Prihambodo Hendro Saksono, Igor Sazonov*

Flow through a Geometrically Realistic Human Respiratory Tract

17:00 to 17:15 page 92

Takahito Miki (*Department of Biomedical Engineering, Tohoku University, Sendai, Japan*), *Yohsuke Imai, Takuji Ishikawa, Takami Yamaguchi*

Pulmonary Airflow Simulation of Inspiration and Expiration using a Patient-specific Model

Friday, 25 September, 2009 - Morning

Plenary

Chair: Yiannis Ventikos

08:30 to 09:30 page 29

Peng T Khaw (*Moorfields Eye Hospital and UCL Institute of Ophthalmology, London, United Kingdom*)

On translating innovation to clinical practice

Imaging: Image Guided Therapy

Chair: Julia Schnabel

09:30 to 10:15 Keynote page 37

William Wells (*National Center for Image-Guided Therapy, Boston, USA*)

Image-Guided Therapy - Applications, Algorithms, and Systems

10:15 to 10:30 page 64

Minsi Chen (*Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Oxford, United Kingdom*), *H. S. Gill, S J Mellon, A. P. Monk, D. W. Murray, D. J. Simpson*

A Validation Study on Tracking Patellar Movement Using Tracked Ultrasound Probes

10:30 to 10:45 page 66

Adeala Zabair (*Institute of Biomedical Engineering, Department of Engineering Science, Oxford University, Oxford, United Kingdom*), *Alison Noble*

Segmentation of 2D Stress Echocardiography Sequences Using a Patient-Specific Prior

10:45 to 11:00 page 65

Zaoyang Guo (*Department of Civil Engineering, University of Glasgow, Glasgow, United Kingdom*), *Nenad Bicanic*

A Direct Method for Material Reconstruction in Soft Tissue Elastography

11:00 to 11:30

Coffee Break

Imaging: MR Techniques and Physiological measurement

Chair: Vicente Grau

11:30 to 12:00 Invited page 69

Joseph Hajnal (*Imaging Sciences Department, MRC Clinical Sciences Centre, London, United Kingdom*)

Brain MRI in Moving Subjects - a New Window on the Fetus

12:00 to 12:15 page 67

Steven Fortune (*Medical Physics, University of Edinburgh, Edinburgh, United Kingdom*), *Tom Anderson, Peter Hoskins, Maurits Jansen, Ian Marshall*

The Design of a MRI Rodent Cardiac Phantom

12:15 to 12:30 page 70

Xianghua Xie (*Department of Computer Science, University of Swansea, Swansea, United Kingdom*), *Perumal Nithiarasu, Igor Sazonov, Si Yong Yeo*

Extracting Anatomical Structures from 2D and 3D Medical Data using a Robust Deformable Model

12:30 to 12:45 page 68

Michael J. A. Girard (*Department of Bioengineering, Imperial College, London, United Kingdom*), *C. Ross Ethier, Sauparnika Vijay*

Characterization of Fibre Organization in Rat Sclera Using Small Angle Light Scattering

Personalized Cardiovascular Medicine

Chair: Perumal Nithiarasu

09:30 to 10:15 Keynote page 36

Jos Spaan (*Department of Biomedical Engineering and Physics, Amsterdam, Netherlands*), *Maria Siebes, Jeroen van den Wijngaard, Pepijn van Horssen*

Imaging and modeling the coronary vasculature

10:15 to 10:30 page 90

Pablo Lamata (*Computing Laboratory, University of Oxford, Oxford, United Kingdom*), *Matthew Ginks, Steven Niederer, Reza Razavi, Aldo Rinaldi, Nic Smith*

Will computational heart models reduce diagnose uncertainty and predict response to Cardiac Resynchronization Therapy?

10:30 to 10:45 page 89

Alberto Corrias (*Computing Laboratory, Oxford University, Oxford, United Kingdom*), *Kevin Burrage, Blanca Rodriguez*

The Role of Purkinje System in Drug-Induced Arrhythmias

10:45 to 11:00 page 91

Raoul van Loon (*School of Engineering, Swansea University, Swansea, United Kingdom*), *Rhodri Bevan, Perumal Nithiarasu, Igor Sazonov*

Haemodynamic Modelling of a Patient-Specific Carotid Bifurcation Using the Locally Conservative Galerkin (LCG) Method

11:00 to 11:30

Coffee Break

Self-Regulating Drug Delivery and Sensors

Chair: Kostas Kostarelos

09:30 to 10:00 Keynote page 39

Joan Taylor (*Leicester School of Pharmacy, De Montfort University, Leicester, United Kingdom*), *T S Sahota*

Devising an Automated Basal-Boost Insulin Delivery System

10:00 to 10:15 page 98

Raphaël Trouillon (*Department of Bioengineering, Imperial College London, London, United Kingdom*), *Soo-Ik Chang, Dong-Ku Kang, Danny O'Hare, Hyun Park*

Electrochemical sensing of the effect of angiogenin on nitric oxide release in endothelial cells using a biocompatible microelectrode array

10:15 to 10:30 page 97

Gianluca Marcelli (*Division of Engineering, Kings College London, London, United Kingdom*)

Brownian dynamics model to derive uptake rates in autocrine cell signaling

10:30 to 10:45 page 96

Rongsheng Chen (*Nuffield department of Anesthetics, Oxford University, Oxford, United Kingdom*), *Andrew Obeid, Andrew Farmery, Clive Hahn*

A Novel All Plastic Fibre Optic Oxygen Sensor

Nanoscience for Drug Delivery and Musculoskeletal Disorders

Chair: Heiko Schiffter

11:30 to 12:00 *Invited* page 71

Kostas Kostarelos (*Nanomedicine Laboratory, Centre for Drug Delivery Research, London, United Kingdom*)

Engineering the Pharmacology and Toxicology of Nanomaterials: the Case of Carbon Nanotubes

12:00 to 12:15 page 72

Amit Pujari (*School of Engineering, University of Aberdeen, Aberdeen, United Kingdom*), *Marco Cardinale, Richard Neilson*

Electromyographic Response to Maximum Voluntary Contraction with and without Vibration

12:15 to 12:30 page 73

Sumitra Rajagopalan (*Department of Mechanical Engineering, McGill University, Montreal, Canada*)

Artificial Muscles in Wearable and Implantable Devices

12:30 to 12:45 page 74

Nour Shublaq (*Institute of Biomedical Engineering, Department of Engineering Science, University of Oxford, Oxford, United Kingdom*), *Dr. Penny Probert Smith, Dr. Julie Stebbins*

Use of a Mathematical Model to Improve Accelerometer Output during Stroke Rehabilitation

Orthopaedic Biomechanics - Intervention Assessment

Chair: Richie Gill

11:30 to 12:00 *Invited* page 79

Mark Taylor (*School of Engineering Sciences, University of Southampton, Southampton, United Kingdom*)

Accounting for surgical and patient variability in simulations of orthopaedic biomechanics problems: Approaches and challenges

12:00 to 12:15 page 78

David Simpson (*NDORMS, University of Oxford, Oxford, United Kingdom*), *Harinderjiit Gill, Bart Kaptein, Ben Kendrick, David Murray, Andrew Price, E. Valstar*

A Novel Use of Model Based RSA for Measuring Wear in Unicompartamental Knee Replacement

12:15 to 12:30 page 76

Rhona MacInnes (*Brunel University, Middlesex, United Kingdom*), *Aaron Day, Ian McDermott, Philip Proctor, Geert Von Oldenburg*

A Study of Retrograde Intramedullary Devices for Condylar Fixation

12:30 to 12:45 page 75

Fabien Borocin (*iMBE, University of Leeds, Leeds, United Kingdom*), *Richard Hall, Peter Jimack, Nik Kapur, Ruth Wilcox*

Optimising Cement Delivery in Vertebroplasty

12:45 to 13:00 page 77

Stephen Mellon (*Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, Oxford, United Kingdom*), *H. S. Gill, Y.-M. Kwon, D. J. Simpson*

Wear of metal-on-metal hip resurfacing relative to implant orientation

Bioengineering Newcomers Networking

15.00-16.30

This informal networking event aims to give newcomers to UK Bioengineering at postdoctoral and lecturer level the chance to meet and hear from key organisations about the opportunities exist for an exciting and successful career in UK Bioengineering. Representatives from EPSRC and BBSRC will outline their funding strategies in this interdisciplinary area and provide pointers for successful grant applications; representatives from large industry as well as recent spin outs will outline strategies for successful translation between the academic and commercial worlds and a representative from Isis Innovation, the University of Oxford's highly successful technology transfer company will outline success stories and pitfalls in this exciting process.

PM

Friday

PROGRAMME OF POSTER PRESENTATIONS

Biomaterials and Tissue Engineering

- s1-P-001 page 114
Anthony Callanan (*Department of Mechanical and Aeronautical Engineering, Centre for Applied Biomedical Engineering Research (CABER) and the Material and Surface Science Institute, Limerick, Ireland*), Edel Biggins, Tim McGloughlin
Human Umbilical Vein Endothelial Cell Regulation of Matrix Metalloproteinase's (MMP's) and Degradation when seeded on Acellular Urinary Bladder Matrix
- s1-P-002 page 115
Kawai Chan (*Mathematical Institute, University of Oxford, Oxford, United Kingdom*), Marianne Ellis, Sarah Waters
Modelling of Fluid Flow in a Hollow-fibre Bioreactor for Tissue Engineering Applications
- s1-P-003 page 116
Jakub Kozák (*Faculty of Mathematics and Physics, Charles University in Prague, Prague, Czech Republic*), Eva Filová, František Maršík, Lenka Martinová, David Lukáš, Jirí Michálek, Martin Prádný, Evžen Amler
Theoretical Analysis of Chondrocyte Proliferation on Nanofibrous Scaffolds
- s1-P-004 page 117
Pierre-Alexis MOUTHUY (*Institute of Biomedical Engineering, Department of Engineering Science, University of Oxford, Oxford, United Kingdom*)
Engineering of Osteochondral Grafts
- s1-P-005 page 118
Brenda Russell (*Department of Physiology and Biophysics, University of Illinois at Chicago, Chicago, USA*), Elisa Budyn, Tejal Desai, Thierry Hoc
Microstructures in 3D Affect Cardiac Myocyte Hypertrophy and Shortening
- s1-P-006 page 119
Jie Yang (*Institute of Biomedical Engineering, Department of Engineering Science, Old Road Campus Research Building, University of Oxford, Oxford, United Kingdom*), Robert Brown, Zhan Feng Cui, Xia Xu
Improve the Mechanical Strength of Collagen Scaffolds by Mechanical Compression

Cardiovascular Methods

- s2-P-001 page 120
Fraser Callaghan (*Department of Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland*), R.W. Baumgartner, P. Boesiger, V. Kurtcuoglu, D. Poulidakos, M. Soellinger
Carotid Sinus Compliance during Head Movements and its Relationship to Cervical Artery Dissection
- s2-P-002 page 121
Giulia Di Tomaso (*Mechanical Engineering Department, University College London, London, United Kingdom*), Vanessa Diaz
Primer Study of Blood Clotting Mechanisms in CFX: Implementation of Biological Rules and the Role of NO in the Clotting Mechanism
- s2-P-003 page 122
David Evans (*Medical Physics Group, Cardiovascular Science, University of Sheffield, Sheffield, United Kingdom*), Joerg Bernsdorf, Bastien Chopard, Julian Gunn, Alfons Hoekstra, Rod Hose, Manfred Krafczyk, Patricia Lawford, Dawn Walker
COAST: Multi-scale Simulation of Restenosis
- s2-P-004 page 123
Piotr Orłowski (*Institute of Biomedical Engineering, University of Oxford, Oxford, United Kingdom*), Fahmi Al-Senani, James Byrne, Alison Noble, Paul Summers, Yiannis Ventikos
Treatment Planning for the Embolization of Arteriovenous Malformations of the Brain: Intranidal Vascular Connectivity Extraction
- s2-P-005 page 124
T. Alexander Quinn (*Department of Physiology, Anatomy and Genetics, University of Oxford, Oxford, United Kingdom*), Peter Kohl, Blanca Rodriguez
Integrated Experimental and Computational Research Tools for the Study of Acute Ischemic Effects on Cardiac Mechano-Electrical Interactions
- s2-P-006 page 125
Toshihiro Sera (*Biomechanical Simulation Research Team, RIKEN, Wako, Japan*)
Gas dispersion in multiple branching small airways induced by rhythmical breathing motion

s2-P-007 page 126

Yuji Shimogonya (*Department of Mechanical Engineering, Graduate School of Engineering, University of Hyogo, Himeji, Hyogo, Japan*), Yohsuke Imai, Takuji Ishikawa, Noriaki Matsuki, Takami Yamaguchi

On the Sensitivity of a Hemodynamic Index for Cerebral Aneurysm Initiation, the GON, to Flow Input Waveform

Imaging: Image Guided Therapy

s3-P-001 page 127

Walid Al-Atabany (*Dep. of Bioengineering, Institute of Biomedical Engineering - Imperial College, London, United Kingdom*), Patrick Degenaar, Susan Downes, Muhammed Memon, Bushra Mushtaq

Image enhancements to improve the visual recognition ability of patients with retinal photoreceptor degeneration

s3-P-002 page 128

Julia Dietlmeier (*Centre for Image Processing and page Analysis, Dublin City University, Dublin 9, Ireland*), Paul F. Whelan

Computer-Guided Recognition of Mitochondria in Densely Cluttered Subcellular Environments

s3-P-003 page 129

Yuan Ruan (*Center for Medical Image Computing, Computer Science Department, University College London, London, United Kingdom*), Simon Arridge, Phani Chinchapatnam, Reza Razavi, Kawal Rhode, Maxime Sermesant

Non-invasive Cardiac Electrophysiology Imaging: Boundary Element Formulation for the Forward and Inverse Model

s3-P-004 page 130

Ketheesan Thirusittampalam (*Centre for Image Processing and Analysis, Dublin 9, Ireland*), Ovidiu Ghita, Julius Hossain, Paul Whelan

Automatic Cellular Segmentation in Time-lapse Phase Contrast Images

s3-P-005 page 131

Matthew Toews (*Harvard Medical School, Brigham and Womens Hospital, Boston, USA*), William M. Wells III

Invariant Features for Group Analysis of Brains

s3-P-006 page 132

Mohammad Yaqub (NDORMS, Institute of Biomedical Engineering, Department of Engineering Science, University of Oxford, Oxford, United Kingdom), Cyrus Cooper, Kassim Javaid, Alison Noble

Automatic Fetal Femoral Volume Segmentation on 3D Ultrasound using Random Forests

Orthopaedic Tissue Mechanics

s4-P-001 page 133

Maoyi Tian (*Prince of Wales Medical Research Institute, Sydney, Australia*)

Small effect of knee and ankle angles on stress relaxation of human ankles

s4-P-002 page 88

Shi Xiaohao (*Mechanical Engineering, University of Glasgow, Glasgow, United Kingdom*), Guo Zaoyang

Fibre-Matrix Interaction in Soft Tissue

Sensors & Biomedical Devices

s5-P-001 page 134

Matteo Moretti (*Cell and Tissue Engineering Laboratory, I.R.C.C.S. Galeazzi Orthopedic Institute, Milano, Italy*), Sara Mantero, Giuseppe Talò, Cristian Tomè

A Perfusion Bioreactor With Multiple Independent Chambers And On-Line pH and O₂ Monitoring Capabilities

s5-P-002 page 135

Michelle Rogers (*Department of Bioengineering, London, United Kingdom*), Martyn Boutelle, Andrew deMello, Xize Nui, James Storey

Introducing Digital Microfluidics to a Continuous Online Microdialysis System

Targeted Drug Delivery

- s6-P-001 page 136
Khuloud Al-Jamal (*Nanomedicine Lab, Centre for Drug Delivery Research, London, United Kingdom*), Hanene Ali-Boucetta, Alberto Bianco, Kostas Kostarellos, Maurizio Prato
Design of CNT-Dendron Conjugates for Enhanced Cellular Internalization and Gene Silencing
- s6-P-002 page 137
Hanene Ali-Boucetta (*Nanomedicine Lab-Centre For Drug Delivery Research-Pharmaceutics Department, The School of Pharmacy, University of London, London, United Kingdom*), Khuloud Al-Jamal, Kostas Kostarellos, Karin Muller, Alexandra Porter
Intracellular Translocation of Chemically- Functionalised and Polymer-Coated Carbon Nanotubes & their Toxicological Impact
- s6-P-003 page 138
Yannick Hoarau (*Institut de Mécanique des Fluides et des Solides de Strasbourg, Strasbourg, France*), Philippe Choquet, André Constantinesco, Christian Goetz, Hassan Ilmi Robleh
Particle Deposition in airways using cfd-ace : Validation and application to rat lungs
- s6-P-004 page 139
Antonio Nunes (*Nanomedicine Lab, Department of Pharmaceutics, The School of Pharmacy, University of London, UK, London, United Kingdom*), Kostas Kostarellos, Khuloud T. Al-Jamal
Polymer-Functionalised Carbon Nanotubes for Plasmid DNA Gene Delivery
- s6-P-005 page 140
Bowen Tian (*CDDR, Pharmaceutics, London, United Kingdom*)
Construction of Aptamer-Conjugated Liposomes for Targeted Delivery in Cancer Cells
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