



BIOMEDICAL ENGINEERING & REGENERATIVE MEDICINE



Biomechanics Research Centre



OÉ Gaillimh
NUI Galway

UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH



UCC

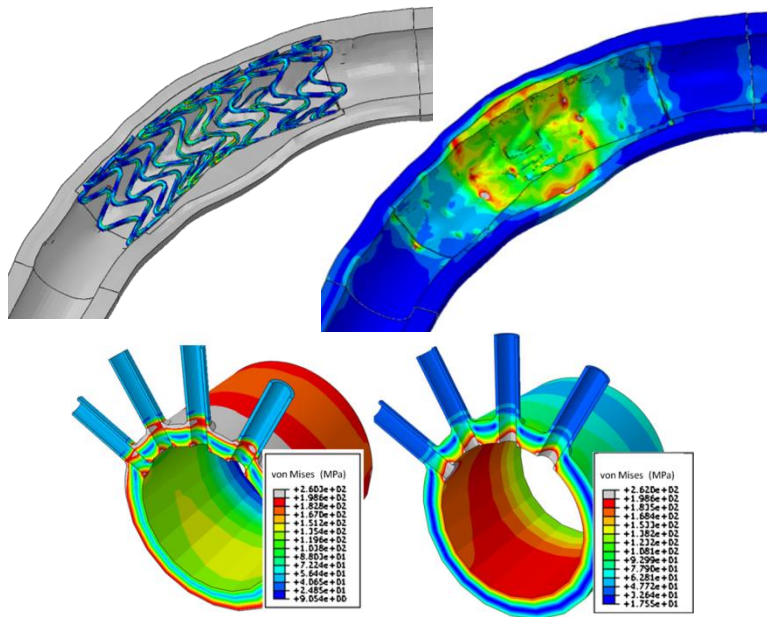
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Biomedical Engineering and Regenerative Medicine

(BMERM) Summer School 2016

Including workshop on

Computational Mechanics



31st August - 2nd September 2016

NUI Galway

For further information, please contact:

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HEA

An tÚdarás um Ard-Oideachas
Higher Education Authority



Ireland's EU Structural Funds
Programmes 2007 - 2013

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European Union

European Regional
Development Fund



An Roinn Post, Fiontar agus Nuálaíochta
Department of Jobs, Enterprise and Innovation

Audience:

Graduate students, postdoctoral researchers and industrial researchers in biomedical and mechanical engineering.

Background:

The BMERM programme was established through funding from the HEA under the Programme for Research in Third Level Institutions Cycle 5, in 2011, and has grown to become a key enabling platform for advanced level research and education in the biomedical engineering domain and beyond. The BMERM Summer Schools are a key component of this and past summer schools have focused on the themes of medical imaging, bioelectronics, and industrial and clinical interaction. This year's Summer School incorporates a workshop on the theme of computational mechanics that underpins a broad range of scientific research and technological developments in engineering and science.

Objectives:

The BMERM Showcase within the Summer School will showcase outputs of the BMERM PhD student projects and present an industry perspective of the future of engineering in medical technology.

The Summer School also includes a computational mechanics workshop that will present the state-of-the-art in a range of advanced topics in computational solid mechanics that underpin its use in biomedical engineering, mechanical engineering, and across the broader engineering and applied science domains. The lectures will cover model generation from imaging data, multiscale modelling, user subroutines for Abaqus, scripting, experimental data fitting, etc.

The summer school will include guest lectures from international experts in computational mechanics and from senior industrialists in medical technology. This year we are particularly fortunate to have contributions from **Professor Francesco Migliavacca** who is an international expert in cardiovascular computational biomechanics who will lecture in the biomedical engineering domain and **Professor Javier Llorca** who is an international expert in computational mechanics of materials who will lecture in the mechanical engineering domain. These lectures will be combined with lectures from **Dr William Ronan**, **Dr Noel Harrison** and **Dr Ted Vaughan**, who will explore a range of relevant detailed topics within the overall theme.

Acknowledgments:

Structured PhD Programme in Biomedical Engineering and Regenerative Medicine (BMERM) is funded under the Programme for Research in Third-Level Institutions (PRTL) Cycle 5 and co-funded under the European Regional Development Fund (ERDF).

Lectures and Lecture Topics:



Prof. Peter McHugh
NUI Galway, Ireland

‘Welcome and Introductory Comments; Overview of Summer School; Computational Mechanics in Biomedical and Mechanical Engineering’



Prof. Francesco Migliavacca
Politecnico di Milano, Italy

‘Engineering Approaches for the Design of Endovascular Devices’



Prof. Javier Llorca
Polytechnic University of Madrid, Spain

‘Multiscale Computational Mechanics of Structural Materials: Composites and Metals’



Dr William Ronan
NUI Galway, Ireland

‘User subroutines with Abaqus, Python scripting in Abaqus’



Dr Noel Harrison
NUI Galway, Ireland

‘Model generation from imaging data; Element by element solution method’



Dr Ted Vaughan
NUI Galway, Ireland

‘Multiscale Damage Modelling - Practical Implementation in Abaqus’

Industry Speakers:



Michael Gilvarry
VP of R&D and Technical Operations
Neuravi, Ireland



Dr Liam Mullins
Co-Founder and former CTO
Embo Medical, Galway, Ireland



Dr Kevin Heraty
R&D Manager
Veryan Medical, Galway, Ireland



Prof. Mark Bruzzi
The **BioInnovate** Ireland Programme, NUI Galway, Ireland

Programme:

Computational Mechanics Workshop				BMERM Showcase		
Time	Wednesday, Aug 31 st	Time	Thursday, Sep 1 st	Time	Friday, Sep 2 nd	
09.00-09.30	Registration ENG-1002	09.00-10.00	Prof. Francesco Migliavacca (Politecnico di Milano) ENG-3035	09.00-09.15	BMERM graduates and students Chair Prof. Peter McHugh ENG-3035	Introduction Prof. Peter McHugh (NUIG)
09.30-10.00	Prof. Peter McHugh (NUIG) ENG-3035			09.15-09.30		Paul Lohan (NUIG)
				09.30-09.45		Eoghan Cunnane (UL)
				09.45-10.00		Reyhaneh Shirazi (NUIG)
10.00-11.00	Prof. Javier LLorca (Polytechnic University of Madrid) ENG-3035	10.00-10.15	Q/A ENG-3035	10.00-10.15		Ian Houlihan (UL)
		10.15-11.15	Dr William Ronan (NUIG) ENG-3035	10.15-10.30		Fiona Griffin (NUIG)
10.30-10.45	Q/A					
11.00-11.15	Q/A ENG-3035	11.15-11.30	Coffee break ENG-1002	10.45-11.30		Coffee break ENG-1002
11.15-11.30	Coffee break ENG-1002					
11.30-12.30	Dr Noel Harrison (NUIG) ENG-3035			11.30-12.30	Dr William Ronan (NUIG) ENG-3035	11.30-12.00
		12.00-12.30	Dr Liam Mullins (Embo Medical)			
12.30-13.30	Lunch Friars, Cairnes Building	12.30-13.30	Lunch Friars, Cairnes Building	12.30-13.30	Lunch Friars, Cairnes Building	
13.30-14.30	Dr William Ronan (NUIG) ENG-G046	13.30-14.45	Dr Ted Vaughan (NUIG) ENG-G046	13.30-14.00	Dr Kevin Heraty (Veryan Medical)	
				14.00-14.30	Prof. Mark Bruzzi (BioInnovate)	
14.30-15.30	Dr William Ronan (NUIG) ENG-G046	14.45-15.00	Coffee break ENG-1002	14.30-15.30	Open Discussion (Future of Engineering in Medical Technology)	
15.30-15.45	Coffee break ENG-1002	15.00-16.45	Dr Ted Vaughan (NUIG) ENG-G046	15.30	Close	
15.45-16.45	Dr Noel Harrison (NUIG) ENG-G046					
16.45-17.15	Q/A ENG-G046			16.45-17.15	Q/A ENG-G046	
		20.00	Social Evening Harbour Hotel			

List of attendees

First name	Surname	Organization
Patrick	Ashton	NUI Galway
Enrico	Bagnoli	NUI Galway
Ross	Blair	Queen's University Belfast
Anna	Bobel	NUI Galway
Enda	Boland	NUI Galway
Gareth	Boyle	University College Dublin
Mark	Bruzzi	BioInnovate
Jamie	Concannon	NUI Galway
Eoghan	Cunnane	University of Limerick
Anne	Deignan	University of Limerick
Ronan	Devaney	NUI Galway
Edward	Fagan	NUI Galway
Karen	Fitzgerald	University College Dublin
Michael	Flanagan	NUI Galway
Milad	Ghasemi	Trinity College Dublin
Michael	Gilvarry	Neuravi
Fiona	Griffin	NUI Galway
Frank	Harewood	Medtronic
Noel	Harrison	NUI Galway
Kevin	Heraty	Veryan Medical
Ian	Houlihan	University of Limerick
Bobby	Huxford	NUI Galway
Daniel	Ilie	Wood Group Digital Solutions
Sarah	Johnson	NUI Galway
Aine	Kilbane	NUI Galway
Javier	LLorca	Polytechnic University of Madrid
Paul	Lohan	NUI Galway
Stefan	Lohfeld	NUI Galway
David	Martin	Medtronic
Eoin	McEvoy	NUI Galway
Donnacha	McGrath	NUI Galway
Peter	McHugh	NUI Galway
Ciara	McKenna	NUI Galway
Cahal	McVeigh	Medtronic
Francesco	Migliavacca	Politecnico di Milano
Liam	Mullins	Embo Medical
Laxmi	Muralidharan	University College Dublin
Ilaria	Nardello	NUI Galway
David	Nolan	Trinity College Dublin
Catherine	O'Connor	NUI Galway
John	O'Connor	Queen's University Belfast
Sinead	O'Halloran	NUI Galway
Eimear	O'Hara	NUI Galway
Cathal	O'Murchu	NUI Galway
Brian	O'Reilly	NUI Galway
Sajad	Rahimpour	Institute of Technology Tallaght
Ana Lucia	Rebelo	NUI Galway

William	Ronan	NUI Galway
Muhammad	Shariq Hassan	NUI Galway
Reyhaneh	Shirazi	NUI Galway
Mohammed	Taj-Eldin	NUI Galway
Ted	Vaughan	NUI Galway
Huidong	Wei	Queen's University Belfast