

INCONTINENCE: THE ENGINEERING CHALLENGE XII

Institution of
**MECHANICAL
ENGINEERS**

Biomedical Engineering Division
Conference

13–14 November 2019
One Birdcage Walk, London

KEY SPEAKERS INCLUDE:

Matthew Carré, Reader in Mechanical Engineering
University of Sheffield

Cathy Murphy, Senior Research Fellow, School of Health
Sciences
University of Southampton

Angie Rantell, Lead Nurse Gynaecology
King's College Hospital, London

Avril McCarthy, MedTech Theme Lead
NIHR Devices for Dignity MedTech Co-operative

Shaheen Hamdy, Professor of Neurogastroenterology
University of Manchester

Denise DeLuca, Director of the MA in Sustainable Design
Minneapolis College of Art and Design



SUPPORTING ORGANISATIONS:



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PROGRAMME

DAY 1	WEDNESDAY, 13 NOVEMBER 2019
08:45	REGISTRATION AND REFRESHMENTS
09:15	WELCOME AND INTRODUCTION CHAIRS: Peter Culmer Associate Professor in Surgical Technologies, University of Leeds Alan Cottenden, Emeritus Professor of Incontinence Technology, University College London
	KEYNOTES I CHAIR: Alan Cottenden, Emeritus Professor of Incontinence Technology, University College London
09:30	CHOOSING THE RIGHT CONTINENCE PRODUCTS: DIFFERENT PEOPLE, DIFFERENT NEEDS Cathy Murphy, Senior Research Fellow, School of Health Sciences, University of Southampton
10:00	TOWARDS A SYNTHETIC SKIN SIMULANT FOR TRIBOLOGICAL ASSESSMENT OF INCONTINENCE PADS Matthew Carré, Reader in Mechanical Engineering, University of Sheffield
10:30	THE PROBLEM OF PLASTIC WASTE - HOW TO MAKE A DIFFERENCE Mark Miodownik, Professor of Materials and Society, University College London
11:00	NETWORKING REFRESHMENT BREAK
11:30	RESEARCH POSTER FLASH-PRESENTATIONS I CHAIRS: Nicola Irwin, Lecturer in Pharmaceutical Materials Science, Queen's University Belfast Peter Culmer, Associate Professor, Incontinence Management and Prevention through Engineering and Sciences (IMPRESS) Network, University of Leeds Two-minute overview presentations of displayed research posters.
12:00 PANEL DISCUSSION	PANEL DISCUSSION: PERSONAL LIFE EXPERIENCE OF PRODUCT USERS CHAIRS: Margaret Macaulay, Senior Research Nurse, School of Health Sciences, University of Southampton A panel discussion with people who live with incontinence – or care for those who do - will share their experiences and describe their unmet product needs to inspire future research and development.
13:00	NETWORKING LUNCH
14:00	RESEARCH POSTER FLASH-PRESENTATIONS II CHAIRS: Nicola Irwin, Lecturer in Pharmaceutical Materials Science, Queen's University Belfast Peter Culmer, Associate Professor in Surgical Technologies, University of Leeds Two-minute overview presentations of displayed research posters.
	THE CHALLENGE OF CATHETERISATION CHAIR: Lesley Orme, New Product Development Manager, CliniMed Ltd
14:30	INVESTIGATION OF URINARY CRYSTALLISATION USING A NOVEL SCREENING PLATFORM C Olympiou, N Irwin, C McCoy, Queen's University Belfast, J Rimer, K Doyoun, and B Alamani, University of Houston
14:40	TOLERABILITY AND PATIENT ACCEPTABILITY STUDY OF AN ANTIMICROBIAL URINARY CATHETER FOR LONG-TERM USE R Bayston, K Belfield, University of Nottingham, R Parkinson and H Betts, Nottingham University Hospitals NHS Trust
14:50	THE USE OF THE NANOVIORONIX® UROSHIELD® AND LOW FREQUENCY ACOUSTIC WAVES TO PREVENT BIOFILM FORMATION IN URINARY CATHETERS: AN IN VITRO LABORATORY STUDY S Wilks and C Bryant, University of Southampton
15:00	NEW STRATEGY FOR FIGHTING CATHETER ASSOCIATED URINARY TRACT INFECTIONS M Alm and P Thomsen, Biomodics ApS
15:10	QUESTION AND ANSWER SESSION
15:20	NETWORKING REFRESHMENT BREAK
	MODELLING FLUID FLOW: WITH SPECIAL CONTRIBUTION BY THE ENIUS NETWORK CHAIR: Nicola Irwin, Lecturer in Pharmaceutical Materials Science, Queen's University Belfast
15:50	EVALUATING THE USABILITY, ACCEPTABILITY AND POTENTIAL EFFECTIVENESS OF A SMARTPHONE APP TO SUPPORT THE MANAGEMENT OF URINARY INCONTINENCE IN YOUNG PEOPLE C Joinson, K Whale, L Beasant, University of Bristol

PROGRAMME

16:00	A PHYSICAL MODEL OF THE URINARY SYSTEM REPLICATING THE PHYSIOLOGICAL MICTURITION CYCLE D Carugo, University of Southampton
16:10	MATHEMATICAL MODELLING FOR FLUID FLOW IRRIGATION IN URETEROSCOPES J Williams, D Moulton, S Waters, B Turney, University of Oxford
16:20	QUESTION AND ANSWER SESSION
	CONTINENCE PRODUCTS: ARE USERS INFLUENCING YOUR R&D ENOUGH?
16:30	PLENARY INTRODUCTION
16:50 ROUNDTABLES	ROUNDTABLE DISCUSSIONS Using collective expertise of multidisciplinary groups, the roundtables will gather insights to consider the value of patient and professional user input. The discussions will look to improve incontinence technology development and design and highlight how and when to seek this involvement. LECTURERS AND FACILITATORS: Katherine Jeays-Ward, Innovation Manager, NIHR Devices for Dignity MedTech Co-operative, Sheffield Teaching Hospitals NHS Foundation Trust Gemma Wheeler, Design Researcher, Lab4Living, Sheffield Hallam University
17:30	RECEPTION, RESEARCH POSTERS
18:00	POSTER PRIZE GIVING CHAIRS: Nicola Irwin, Lecturer in Pharmaceutical Materials Science, Queen's University Belfast Peter Culmer, Associate Professor in Surgical Technologies, University of Leeds
19:00	END OF DAY ONE

DAY 2	THURSDAY, 14 NOVEMBER 2019
08:30	REGISTRATION AND REFRESHMENTS
09:00	WELCOME AND INTRODUCTION CHAIR: Peter Culmer, Associate Professor in Surgical Technologies, University of Leeds
	KEYNOTES II CHAIR: Peter Culmer, Associate Professor in Surgical Technologies, University of Leeds
09:05	INCONTINENCE PRODUCT DESIGN: LESSONS FROM THE SPORTSWEAR AND LINGERIE SECTORS Kanishka Fernando, Technology Entrepreneur, MAS Holdings, Sri Lanka.
09:35	UNMET NEEDS FOR INTRAVAGINAL AND EXTRAVAGINAL DEVICES FOR PELVIC ORGAN PROLAPSE Angie Rantell, Lead Nurse Gynaecology, King's College Hospital, London
10:05	REGULATORY FACTORS IMPACTING THE ROUTE TO MARKET FOR YOUR CONTINENCE PRODUCT Avril McCarthy, MedTech Theme Lead, NIHR Devices for Dignity MedTech Co-operative, Sheffield Teaching Hospitals
	MONITORING FOR SELF-MANAGEMENT CHAIR: Dudley Robinson, Consultant Urogynaecologist, King's College Hospital, London
10:35	DEVELOPMENT OF A LOW COST, SIMPLE 'LOZENGE' FOR EARLY WARNING OF URINARY CATHETER BLOCKAGE T Jenkins, S Milo, H Hathaway, University of Bath, B Jones, and J Nzakizwanayo, ConvaTec Ltd
10:45	GAINING BLADDER CONTROL BY ALERTING WHEN BLADDER IS FULL M Armengol, S Ather, C Hyun, J Bergmann, University of Oxford
10:55	QUESTION AND ANSWER SESSION
11:05	NETWORKING REFRESHMENT BREAK

For the most up-to-date and detailed programme for the event, please visit:
www.imeche.org/incontinence

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

11:30	<p>BIOMIMICRY – A METHOD FOR LEVERAGING NATURE'S DESIGN SOLUTIONS CHAIR: Denise DeLuca, Director of the MA in Sustainable Design Program at the Minneapolis College of Art and Design</p> <p>After an introductory presentation, Denise DeLuca will facilitate a workshop in which groups of delegates will have the chance to try their hands at generating innovative ideas for continence by emulating nature's strategies.</p>
12:45	NETWORKING LUNCH
13:35	<p>FEEDBACK ON CONTINENCE PRODUCTS WORKSHOP: ARE USERS INFLUENCING YOUR RESEARCH AND DEVELOPMENT ENOUGH? Katherine Jeays-Ward, Innovation Manager, NIHR Devices for Dignity MedTech Co-operative, Sheffield Teaching Hospitals NHS Foundation Trust Gemma Wheeler, Design Researcher, Lab4Living, Sheffield Hallam</p>
	<p>KEYNOTES III CHAIR: Katherine Jeays-Ward, Innovation Manager, NIHR Devices for Dignity MedTech Co-operative, Sheffield Teaching Hospitals NHS Foundation Trust</p>
13:50	<p>UNDERSTANDING THE PROBLEM OF FAECAL INCONTINENCE: FROM CLINICAL NEED TO NEW INNOVATION Shaheen Hamdy, Professor of Neurogastroenterology, University of Manchester</p>
	<p>THE STENT STORY: WITH SPECIAL CONTRIBUTION BY THE ENIUS NETWORK CHAIR: Lesley Orme, New Product Development Manager, CliniMed Ltd</p>
14:20	<p>DEVELOPING A URETERIC STENT FOR ONCOLOGY PATIENTS: EVOLUTION OF A SOLUTION B Turney, University of Oxford</p>
14:30	<p>DEVELOPMENT OF A BIOLOGICALLY INSPIRED IN-VITRO PLATFORM FOR LONG-TERM ASSESSMENT OF COMMERCIAL AND INNOVATIVE URETERAL STENTS F Clavica, S Zheng, University of Bern, D Obrist, Y Civet, Y Perriard, Ecole polytechnique fédérale de Lausanne, D Carugo, Ali Mosayyebi, University of Southampton, S Waters, F Burkhard, University Hospital, Bern</p>
14:40	<p>DOES FLOW DYNAMICS GOVERN DEPOSITION OF ENCRUSTATION IN URETERIC STENTS? A Mosayyebi, A De Grazia, D Carugo, University of Southampton, F Clavica, University of Bern, D Lange, University of British Columbia, B Somani, University Hospital Southampton NHS Foundation Trust, C Manes, Politecnico di Torino</p>
14:50	<p>MATHEMATICAL MODELLING OF STENTED URINARY TRACT FLUID MECHANICS S Waters, University of Oxford</p>
15:00	QUESTION AND ANSWER SESSION
15:10	NETWORKING REFRESHMENT BREAK
	<p>CLOSING CORNUCOPIA CHAIR: Peter Culmer, Associate Professor in Surgical Technologies, University of Leeds</p>
15:30	<p>INVESTIGATION INTO THE USE OF MAGNETOMETER TECHNOLOGY TO DIAGNOSE URINARY TRACT INFECTIONS J Barnett, P Wraith, J Kiely, R Luxton, University of the West of England, N Morris, M Drake, A Lovering, K Jacobson, Southmead Hospital, K Jeays-Ward, NIHR</p>
15:40	<p>IMPEDANCE PUMPING AS ANON-INVASIVE TREATMENT FOR UNDERACTIVE BLADDER? AN EX-VIVO PROOF-OF-CONCEPT-STUDY IN PORCINE BLADDERS F Clavica, J Roth, D Obrist, University of Bern, M Schneider, F Burkhard, Bern University Hospital, Y Civet, Y Perriard, Ecole polytechnique fédérale de Lausanne</p>
15:50	<p>MAGNETIC RESONANCE IMAGING TO ESTIMATE TISSUE DEFORMATION DURING PENILE CLAMP APPLICATION P Worsley, J Lemmens, J Broadbridge, M Macaulay, M Fader, D Bader University of Southampton, A Gefen, Tel Aviv University, R Rees, University Hospital Southampton, C Everett M Drake, University of Bristol</p>
16:00	<p>NATURAL HOMOLOGOUS BIOMATERIALS FOR RECONSTRUCTIVE BIOENGINEERING OF THE LOWER URINARY TRACT D Morgante, A Radford, J Southgate, University of York, R Subramaniam, Leeds Children's Hospital, J Fisher, E Ingham, A Ward, University of Leeds</p>
16:10	QUESTION AND ANSWER SESSION
16:20	<p>CHAIR'S CLOSING REMARKS Peter Culmer, Associate Professor in Surgical Technologies, University of Leeds</p>
16:30	END OF CONFERENCE

INCONTINENCE: THE ENGINEERING CHALLENGE XII

13–14 November 2019, One Birdcage Walk, London

THE 12TH EDITION OF THE INSTITUTION OF MECHANICAL ENGINEERS' CONFERENCE, INCONTINENCE: THE ENGINEERING CHALLENGE, TAKES PLACE ON 13–14 NOVEMBER 2019 AT ONE BIRDCAGE WALK IN LONDON.

Join this collaborative effort between engineers, scientists, clinicians, researchers, commercial designers/producers and product users to help solve the problems that patients and caregivers face.

This two-day conference features a unique mix of sessions on the latest engineering challenges, solutions, technologies and research managing the problem of incontinence. Delegates can also take advantage of many interactive sessions aimed at stimulating discussion and sharing ideas, including workshops and patient and clinician Q&A sessions.

Both newcomers and previous attendees will appreciate the great combination of learning opportunities and networking offered at this event. This conference has been carefully designed to provide delegates with the richest and most informative experience possible.

KEY PROGRAMME HIGHLIGHTS:

- Put forward your questions to a panel of experienced product users and take part in a multi-disciplinary workshop to **find out how user experience can influence your R&D**
- Discover what the results of capturing and passing on product user experience entails from authors including **University of Southampton, University of Leeds** and **NIHR Devices for Dignity MedTech Co-operative**
- Learn about the challenges of urinary catheters from authors including **Queen's University Belfast; University Nottingham; University of Southampton** and **BioModics ApS, Denmark**
- Learn about the possibilities of monitoring urinary incontinence to enable self-management from authors including **University of Bath** and **University of Oxford**
- Understand how bowel concerns are influencing treatment innovation with insights from authors including **King's College Hospital, London** and **University of Manchester**

ATTEND THIS EVENT TO:

- Find out more about the latest innovative engineering research, developments and technologies for the management of incontinence
- Gain key insights on incontinence challenges across the globe and how they are being managed
- Learn about the users' experience and how to incorporate it into your solutions
- Share your ideas during our roundtable and panel discussions as patients and carers describe their unmet product needs to inspire future research and development
- Engage directly with academics, health professionals, patients and solution providers

NAME OF COMMITTEE:

Biomedical Engineering Division
Institution of Mechanical Engineers

MEMBER CREDITS:

Alan Cottenden, Emeritus Professor of Incontinence Technology
University College London

Peter Culmer, Associate Professor, Surgical Technologies Lab, School of Mechanical Engineering
University of Leeds

Katherine Jeays-Ward, NHS Innovation Manager
NIHR Devices for Dignity MedTech Co-operative

Davina Richardson, Children's Specialist Nurse
Bladder and Bowel UK

Nicola Irwin, Lecturer in Pharmaceutical Materials Science
Queen's University Belfast

Lesley Orme, New Product Development Manager
CliniMed Limited

Margaret Macaulay, Research Nurse
University of Southampton

Dudley Robinson, Consultant Urogynaecologist
King's College Hospital, London

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FEES AND CHARGES

Registration fees include entry to the sessions, refreshments and a copy of the conference proceedings.

Fees and charges	Standard Rates
Member, Institution of Mechanical Engineers / Supporting Organisation	£390 + VAT = £468
Non-member	£550 + VAT = £660
Full-time Student/Retired	£120 + VAT = £144
Author/Carer/Patient/Clinician	£120 + VAT = £144

THREE WAYS TO BOOK

- 1 Online:
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- 2 Email:
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Please inform us of any special requirements, ie dietary or access, on the relevant section of the booking form or email eventenquiries@imeche.org

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For a refund (minus £25+VAT admin charge), cancellations must be received at least 30 days prior to the event. Replacement delegates are welcome at any time. The Institution reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. In the event that the Institution postpones an event for any reason and the delegate is unable or unwilling to attend on the rescheduled date, they will receive a full refund of the fee paid. The Institution is not

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Please note that while speakers and topics were confirmed at the time of publishing, circumstances beyond the control of the organisers may necessitate substitutions, alterations or cancellations of the speakers and/or topics. The Institution reserves the right to alter or modify the advertised speakers and/or topics if necessary without any liability to you whatsoever. Any substitutions or alterations will be updated on the event's webpage as soon as possible.

LIABILITY

The organisers do not accept liability for any injuries or losses of any nature incurred by delegates and/or accompanying persons, nor for loss or damage to their luggage and/or personal belongings.

CONFERENCE VENUE

Institution of Mechanical Engineers
One Birdcage Walk
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1 Birdcage Walk
Westminster
London
SW1H 9JJ

T +44 (0)20 7222 7899
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ANOTHER EVENT TO LOOK FOR



ENGINEERING THE FUTURE IN PHARMACEUTICAL MANUFACTURING

14 November 2019, London

The Royal Academy of Engineering's 'Engineering Better Care' study demonstrates how a new approach, focusing on the pillars of people, systems, design, and risk, can deliver effective tools for transformation and continuous improvement across all facets of healthcare. This lecture will outline the engineering methods developed through this study, with a focus on their application to pharmaceutical products and processes.

www.imeche.org/pharmamanufacturing



INSTITUTION OF MECHANICAL ENGINEERS ANNUAL DINNER 2019

21 November 2019, Manchester

This year the Institution of Mechanical Engineers Annual Dinner takes place at the Science and Industry Museum in Manchester. Home to a cornucopia of engineering heritage – including Whitworth's planing machine, one of the world's largest collections of working steam mill engines and one of the first ever rechargeable batteries – the museum will provide an inspirational backdrop to the evening's festivities.

www.imeche.org/annualdinner

The Institution of Mechanical Engineers organises over 120 events a year, including free-to-attend lectures as well as conferences, seminars, annual luncheons and dinners. Please visit www.imeche.org/events for the complete list of events.

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