



Biomaterials Symposium

**Lancaster Conference Centre, Lancaster
University, United Kingdom, 11-12/2/2019**

Symposium booklet



SYMPOSIUM

Biomaterials

11th-12th February 2019, Lancaster, UK
Lancaster Conference Centre, Lancaster University

Scientific topics may include, but are not limited to:

- Biomaterials for tissue regeneration and wound healing
- Antimicrobial biomaterials
- Bioinspired materials
- Cell-biomaterial interactions
- Biomaterials for drug delivery

Keynote speakers:

- **Prof. Ihtesham Ur Rehman, Lancaster University** "Biomaterials: Repair to Regeneration"
- **Prof. Vitaliy Khutoryanskiy, University of Reading** "Designing novel hydrogels for wound care applications: chemical and physical cross-linking of water-soluble polymers"
- **Dr. Bogdan Parakhonskiy, Saratov State University** "Composite hydrogel-based materials functionalized with calcium carbonate for drug delivery and tissue engineering."
- **Prof. Alan Smith, University of Huddersfield** "Structuring Biopolymer Hydrogels for Medicinal Applications"
- **Prof. Marek Kowalczyk, University of Wolverhampton** "Biomaterials in terms of forensic engineering of advanced polymeric materials".
- **Dr. Marloes Peeters, Manchester Metropolitan University** "Replacing Antibodies with Bioinspired Nanoscale Materials"
- **Dr. Annalisa Tirella, University of Manchester** "Biomaterials for in vitro models and drug delivery"

This UK-Russia symposium is funded by the British Council. Participation is free, but registration is required. If you wish to attend and/or present, please contact the symposium organiser, Dr. Timothy Douglas, Lancaster University, (t.douglas@lancaster.ac.uk). **Looking forward to seeing you in Lancaster!**

Scientific Programme

Monday 11th February 2019

Lancaster Conference Centre, Lancaster University, Lancaster

Time	Speaker	Affiliation	Title
09:50	Timothy Douglas	Lancaster University	Introduction
10:00	Ihtesham Ur Rehman	Lancaster University	KEYNOTE: Biomaterials: Repair to Regeneration
10:35	Mahdi Forouharshad	University of Surrey	Improved porphyrin-loaded stereocomplex-poly (lactic acid) as an organic additive of electrospun PLGA nanofiber mat by nanoprecipitation method
10:50	Maria Lomova	Saratov State University	Directions of possible practical applications of polymeric microcontainers.
11:05	COFFEE BREAK		
11:35	Annalisa Tirella	University of Manchester	KEYNOTE: Biomaterials for in vitro models and drug delivery
12:10	Mohamed Elsayy	University of Central Lancashire	Ultra-short B-sheet forming peptides: a platform for fabrication of soft biomaterials
12:25	Rob Short	Lancaster University	KEYNOTE: Plasma technology in wound healing
13:00	LUNCH		
14:00	Marloes Peeters	Manchester Metropolitan University	KEYNOTE: Replacing Antibodies with Bioinspired Nanoscale Materials
14:35	Antonios Kelakaris	University of Central Lancashire	C-dots for biomedical applications
14:50	Marta Krysmann	University of Central Lancashire	Advanced nanostructured antimicrobial materials
15:05	Alexey Ermakov	Saratov State University	Films based on polyelectrolytes and carbon dots for biocompatible and light-responsive microchambers
15:20	Daria Trushina	National Research Center, Moscow	Heat-Driven Size Reduction of Biodegradable Polyelectrolyte Multilayer Capsules Assembled on CaCO ₃ Template
15:35	COFFEE BREAK		
16:05	Bogdan Parakhonskiy	Saratov State University	KEYNOTE: Composite hydrogel-based materials functionalized with calcium carbonate for drug delivery and tissue engineering
16:40	Monika Ziminska	Queen's University Belfast	an injectable Chitosan-PNIPAAm hydrogel for in situ delivery of hydroxyapatite nanoparticles for enhanced bone regeneration
16:55	Fatma Kocak	Lancaster University	Thermosensitive chitosan based, pro-

			angiogenic and bioactive hydrogels for bone regeneration
17:10	Susan Clarke	Queen's University Belfast	Screening marine organisms for osteogenic compounds
17:30	Pamela Walsh	Queen's University Belfast	3D Printed Bioresorbable Scaffolds with Marine Additives for Bone Repair
17:45	Fahad Alhamoudi	Lancaster University	Bioactive Composite PU/HA for Orbital Floor Repair
18:00	POSTER SESSION WITH REFRESHMENTS		
18:30	CLOSE		
19:00	SYMPOSIUM DINNER AT LANCASTER HOUSE HOTEL (ADJACENT TO LANCASTER CONFERENCE CENTRE)		
20:30	DISCO		

Tuesday 12th February 2019

Lancaster Conference Centre, Lancaster University, Lancaster

Time	<i>Speaker</i>	<i>Affiliation</i>	<i>Title</i>
09:30	Alan Smith	University of Huddersfield	KEYNOTE: Structuring Biopolymer Hydrogels for Medicinal Applications
10:05	Carmen Piras	University of York	Spatial and temporal control of multicomponent self-assembled gels
10:20	Esmat Jalalvandi	Heriot-Watt University	Biopolymer-based hydrogels as localized drug delivery systems.
10:35	Abhishek Gupta	University of Wolverhampton	Fabrication and characterisation of bacterial cellulose hydrogels of curcumin encapsulated in cyclodextrins for wound dressing applications
10:50	COFFEE BREAK		
11:20	Vitaliy Khutoryanskiy	University of Reading	KEYNOTE: Designing novel hydrogels for wound care applications: chemical and physical cross-linking of water-soluble polymers
11:55	Pallavi Deshpande	University of Liverpool	Antimicrobial peptide hydrogels as bandage contact lenses
12:10	Marek Kowalczyk	University of Wolverhampton	KEYNOTE: Biomaterials in terms of forensic engineering of advanced polymeric materials
12:45	LUNCH		
13:45	Agata Lapa	Universität Erlangen-Nürnberg	Phosphate Glass Fibres with Therapeutic Ions Release Capability
14:00	Olga Sindeeva	Saratov State University	Biocompatible and biodegradable microchambers arrays sensitive to external stimuli for controlled drug release
14:15	Iza Radecka	University of Wolverhampton	Poly- γ - glutamic acid (γ -PGA) - bacterial polymer of commercial interest.

14:30	Mikhajlo Zubko	Manchester Metropolitan University	Searching for alternative antimicrobials from plant resources.
14:45	Masoomeh Bazzar	University of Hull	Antibacterial evaluation on new triazole polymers and polymer composites
15:00	COFFEE BREAK		
15:30	Alex Hudson	Manchester Metropolitan University	Development of a Polymer-Based Sensing Platform for the Thermal Detection of Pathogenic Bacteria
15:45	Jack Campbell	Nottingham Trent University	Can multilayer bio-capsules shrink at ambient conditions? The fundamentals and potential applications
16:00	Olga Eframova	University of Hull	Octahedral metal clusters as precursors for versatile applications for medical research
16:15	Anastasia Kozlova	Saratov State University	Magnetite submicron drug delivery carriers with tunable contrast for magnetic resonance imaging
16:30	Timothy Douglas	Lancaster University	Concluding remarks
16:45	END		

Posters

<i>Speaker</i>	<i>Affiliation</i>	<i>Title</i>
Eddie Baird	Queen's University Belfast	Identifying toxicity of bioactives from marine algal extracts
Marek Bocian	AGH University of Science and Technology, Krakow	Mineralised gellan gum / whey protein isolate hydrogel scaffolds for bone tissue engineering
Ella Gibbons	University of Central Lancashire	Layer-by-Layer Assemblies With Superior Antibacterial Activity
Raj Kaur	University of Liverpool	Dual functional antimicrobial mesoporous silica nanoparticles
Man "Miley" Li	University of Liverpool	Nitric oxide releasing Titanium surfaces for antimicrobial applications
Agata Makas	Lancaster University	Isotachophoresis (ITP) – low energy water quality monitoring.
Kiran Mann	University of Liverpool	Gelatin Microcapsules Decorated with Antimicrobial Peptides for Wound Healing Applications
Anais Pitto-Barry	University of Bradford	Materials for on-demand release of CO: towards the design of selective CORMs
Rebecca Rabe	Christian-Albrechts-Universität zu Kiel	Fibril Formation of Whey Protein Isolate
Xiaoning Shan	University of Reading	Synthesis of poly(2-oxazolines) for pharmaceutical applications
Joanna Stachowska	University of Central Lancashire	Multifunctional iron-based C-dots with exceptional antimicrobial, magnetic and optical properties
Nur Adeelah Binti Che Ahmad Tantowi	Lancaster University	Identification of collagen type I synthesis by osteoblast-like cells stimulated with proinflammatory cytokine interleukin 1 β
Dominika Zabiegaj	Northumbria University	Open porous materials for the future biofiltration application.

Keynote speaker profiles

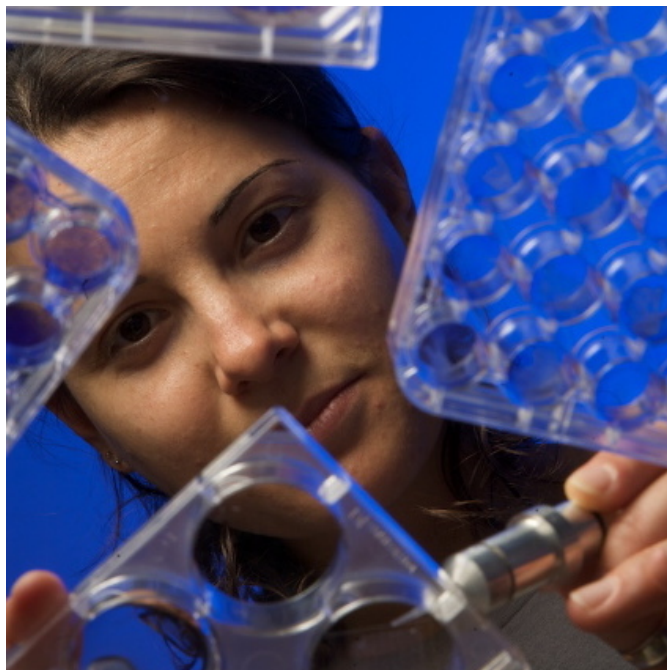


Ihtesham Ur Rehman

Lancaster University, UK

“Biomaterials: Repair to Regeneration”

Ihtesham Ur Rehman is Professor of Bioengineering at Lancaster University. His expertise covers a wide range of research topics relating to biomaterials and spectroscopy, including chemical structural evaluations of cells (cancer cells) and tissues using FTIR and Raman spectroscopic techniques, the use of vibrational spectroscopy to study, microbial interactions with blood, tissues or surfaces and creation of bioactive functionalised materials with improved chemical, mechanical and biological properties.



Annalisa Tirella

University of Manchester, UK

“Biomaterials for in vitro models and drug delivery”

Annalisa received her PhD in Materials for Environment and Energy from the University of Roma II developing a 3D printing system for cells and hydrogels. As Research Fellow, her research interests moved on the use of biomaterials with mechanical and physico-chemical properties similar to human tissues to model physiologically relevant in vitro systems.

Annalisa joined the University of Manchester within the Division of Pharmacy and Optometry as a lecturer in 2014. Annalisa established a solid network of academic/industrial collaborations, and she is part of the North-West Centre for Advanced Drug Delivery (NoWCADD). Her research group works at the interface with multiple disciplines, with two main research areas: 1) manufacturing of nano/micro-technologies for drug delivery and 2) design of (bio)engineered in vitro 3D models.



Rob Short

Lancaster University, UK

“Plasma technology in wound healing”

Rob Short is Professor and Director of the Material Science Institute at Lancaster University

Rob has a track record of research and commercialisation in the fields of thin film coatings, biomaterial science and life science tools research.

Over a 25 year career in academia and industry, he has published over 200 papers and is an inventor on 10 distinct patents that underpin products sold globally.

He studied Chemistry (BSc) and Physical Chemistry (PhD) at the University of Durham (UK) and joined the University of Sheffield in 1988, where he held the Chair of Material and Biomaterial Chemistry from 2001.

In 2006 Rob joined the University of South Australia, where he held the positions of Director of a Research Institute, Dean of Research and Pro Vice Chancellor and Vice President.

At the invitation of the Minister he served on the Australian Research Council's College of Experts 2008-10.

In 2013, he was elected to the Australian Academy of Technological Sciences and Engineering. He is also a fellow of the RSC and IMMM (UK).



Marloes Peeters

Manchester Metropolitan University, UK

“Replacing Antibodies with Bioinspired Nanoscale Materials”

Molecularly Imprinted Polymers (MIPs) are synthetic antibody mimics: similar to antibodies they possess high affinity for a chosen template molecule. However, they have distinct advantages over their natural counterparts such as low-cost, superior chemical and thermal stability, and straightforward production process. In this contribution, we will discuss the use of nanoMIPs that are synthesized via a solid-phase approach. The high affinity nanoparticles prepared by this technique are water-soluble, meaning it is simple to directly functionalize them onto thermocouples via dipcoating. These functionalized thermocouples were subsequently inserted into a home-made heat-transfer device that measures the temperature of the liquid in a flow cell. It was shown that binding of the target to the MIP layer increased the resistance at the solid-liquid interface, leading to a lower temperature being recorded by the functionalized thermocouple. This approach has been followed to develop a sensor platform that can simultaneously record three cardiac biomarkers, which can be a useful clinical tool within a GP’s practice or in the clinical emergency department.



Bogdan Parakhonskiy

Saratov State University, Russia

“Composite hydrogel-based materials functionalized with calcium carbonate for drug delivery and tissue engineering”

Bogdan Parakhonskiy obtained his PhD from Moscow State University, Department of Physics, in 2009. From 2010 until 2014 he held a Marie Curie Postdoc fellowship at the University of Trento, Italy. After this, he has had 4 years' experience as group leader in the theranostic laboratory in Saratov State University, Saratov, Russia. Since 2015 he has been a holder of a prestigious FWO fellowship at Ghent University, Belgium.

His research interests focus on the design of synthesis and modification of colloidal particles; investigation of cell uptake mechanisms; crystallography of calcium carbonate, and anticancer drug delivery systems. He is a pioneer in the development of different types of containers such as calcium carbonate particles in the vaterite phase, hydrogel matrices, and hydrogel capsules.



Alan Smith

University of Huddersfield, UK

“Structuring Biopolymer Hydrogels for Medicinal Applications”

Alan Smith is a Professor of Biopolymer Science in the Department of Pharmacy at the University of Huddersfield. Prior to this he held research fellow positions in the School of Pharmacy at Aston University, The School of Dentistry and The School of Chemical Engineering at the University of Birmingham and as a Polysaccharide Chemist in Wellington, New Zealand. His research group focuses on the characterisation and application of biopolymers, using a “from source to application approach” whereby the materials are extracted, chemically characterised, physically characterised, and potential applications evaluated. During his career, Professor Smith has worked extensively on a wide range of biopolymers applying them to a diverse range of applications that include drug delivery, tissue engineering and 3D bioprinting. He is also interested in the fundamental science behind the mechanical behaviour of biopolymers and how they are influenced by physiological conditions



Vitaliy Khutoryanskiy

University of Reading, UK

“Designing novel hydrogels for wound care applications: chemical and physical cross-linking of water-soluble polymers”

Prof Vitaliy Khutoryanskiy (VK) has been Professor of Formulation Science since 2014, having previously been Associate Professor in Pharmaceutical Materials (2010-2014) and Lecturer in Pharmaceutics (2005-2010) at University of Reading (UoR) School of Pharmacy. VK has researched broadly in the area of new biomaterials for pharmaceutical and biomedical applications, with a particular emphasis on drug delivery, mucoadhesive materials, hydrogels, and stimuli-responsive polymers. He was the recipient of the 2012 McBain Medal from the Society of Chemical Industry and Royal Society of Chemistry for his imaginative use of colloid, polymer and interface science in the development of novel biomedical materials.



Marek Kowalczyk

University of Wolverhampton, UK

“Biomaterials in terms of forensic engineering of advanced polymeric materials”

Marek Kowalczyk received his Ph.D. degree from the Faculty of Chemistry, Silesian University of Technology and D.Sc. degree in 1994 at the same University. He was a visiting lecturer at the University of Massachusetts in Amherst, MA, U.S.A. and Marie Curie fellow at the University of Bologna, Italy. Currently, he is professor at the University of Wolverhampton, UK and at the Centre of Polymer and Carbon Materials, Polish Academy of Sciences. His research involves structural studies of biocompatible copolymers and blends of controlled biodegradability containing natural PHA and/or their synthetic analogues as well as forensic engineering of advanced polymeric materials.

Practical Information

Venue and Accommodation

The workshop will take place at the Lancaster Conference Centre on the campus of Lancaster University, Lancaster, United Kingdom:

<https://www.lancaster.ac.uk/conferences/spaces-facilities/venues/the-conference-centre>



Lancaster Conference Centre

Accommodation has been booked for participants at Lancaster House Hotel, immediately adjacent to the Conference Centre.

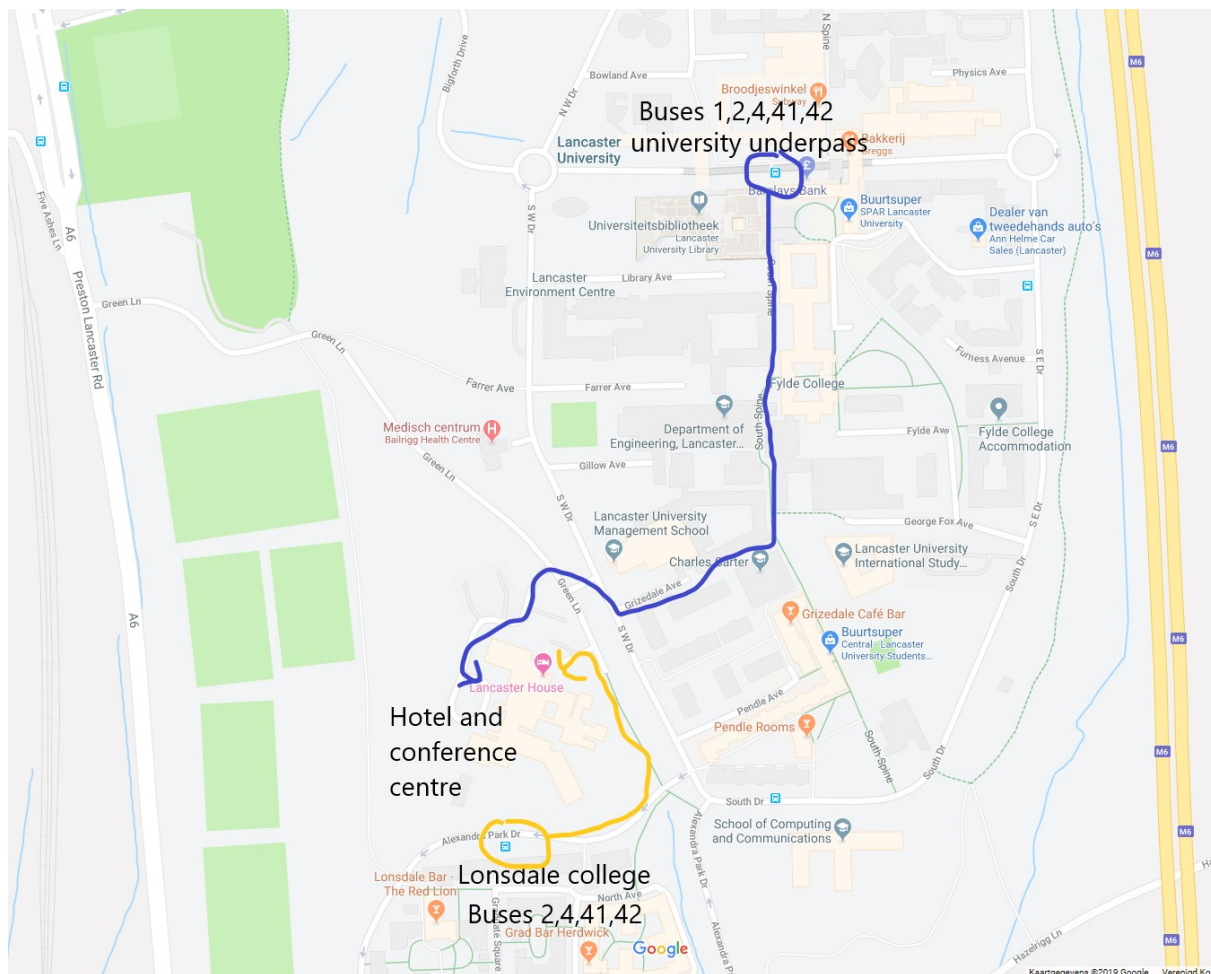


Lancaster House Hotel

Arrival

Registration will be possible from 9.00 am on Monday 11/2.

Both the Lancaster Conference Centre and Lancaster House Hotel are situated on the Campus of Lancaster University (see map on following page). You can take buses 1,2,4,41 or 42 to the bus stop “University underpass” then follow the purple arrow on the or 2,4,41 or 42 to the stop “Lonsdale college” and follow the orange arrow.



Map of Lancaster University campus

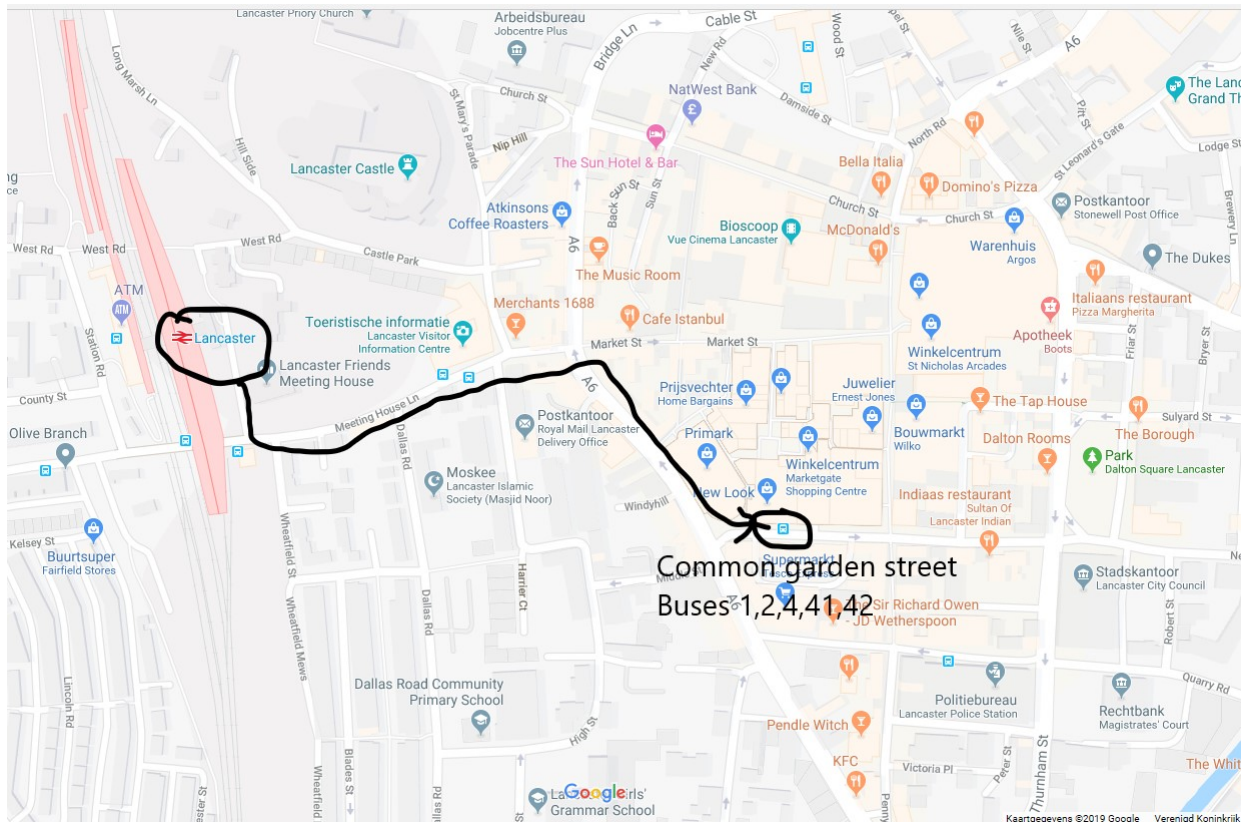
If you are arriving by train, you are advised to walk about 200 meters to the stop “Common Garden Street” in Lancaster City Centre (see map on following page). You can take buses 1, 2, 4, 41 or 42 to the bus stop “University underpass” or 2, 4, 41 or 42 to the stop “Lonsdale college”. A taxi from the station costs approximately 10 pounds, however the cost of the taxi cannot be refunded.

More information can be found on the webpage of Lancaster University:

<https://www.lancaster.ac.uk/contact-and-getting-here/maps-and-travel/>

Bus timetable information can be found on the website of Stagecoach:

<https://www.stagecoachbus.com/>



Route from Lancaster Lancaster Rail station to bus stop “Common Garden street”

Registration

Registration will be possible from 9.00 am on Monday 11/2.

Catering

Lunch will be provided at the venue on both days.

Coffee/tea/drinks will be provided before the start of the opening session on Monday 11th February, and during the breaks in the morning and afternoon sessions on both Monday 11th and Tuesday 12th February.

Presentations

A laptop will be provided. You may bring your presentations on USB sticks.

Standard Oral presentations: 15 minutes + 5 minutes for questions

Keynote presentations: 30 minutes + 5 minutes for questions

Posters boards (A0) will be made available.

Photography

Please do not take photographs or film during the presentations.

Evening program

Dinner will be offered in the Dalton suite of Lancaster House hotel at 19.00 on Monday 11th February. A disco is planned from 20.30 until midnight.



Dalton Suite, Lancaster House Hotel