



Frontiers of Engineering for Development – Symposium

Welcome Pack

Date: 13th February to 15th February

Location: Royal College of Surgeons, Edinburgh

Welcome from the Chairs

As Chairs, we are delighted to welcome you to the second Royal Academy of Engineering *Frontiers of Engineering for Development* Symposium.

You have been invited to this event because you are amongst the future leaders in engineering. Your participation in this symposium will open doors to a global network of talented researchers and provide you with career opportunities. You are also joining a broader network of people who aim to make a real difference. We hope you will take this opportunity to talk, share ideas and explore interdisciplinary approaches to address grand challenges faced by our planet.

Engineering and technology can contribute to addressing the world's most pressing development challenges, from provision of essential water and energy services, to enhancing resilience to natural hazards and opening up opportunities for trade and growth. This symposium aims to promote international development, encourage collaborative work and facilitate cross-disciplinary thinking among the next generation of engineering leaders.

Challenge-led research at the frontiers of traditional disciplines is particularly likely to lead to real economic and social impacts. If we want to resolve these challenges, we need to connect the future leaders in engineering by building strong links between academia, business and government from all over the world. The Academy, through its *Frontiers of Engineering for Development symposia* and its *seed funding*, is proud to promote capacity building and pathways to impact for engineers who are tackling global challenges.

We hope that the symposium is enjoyable, exciting and productive, and we wish you every success.

Mercedes Maroto-Valer
Heriot Watt University

Gareth Harrison
University of Edinburgh

Introduction to the Royal Academy of Engineering

As the UK's national academy for engineering, the Royal Academy of Engineering brings together the most successful and talented engineers from across the engineering sectors to advance and promote excellence in engineering.

The Academy is a delivery partner of the UK Government's *Global Challenges Research Fund* to support cutting-edge research that addresses the challenges faced by developing countries. In this regard, the Academy has developed several programmes, including the *Frontiers of Engineering for Development*.

Introduction to Frontiers of Engineering for Development

Frontiers of Engineering Symposia aim to bring together the best early-career researchers from industry, academia and government in multidisciplinary workshops that address fundamental development challenges.

The objectives of these symposia are to encourage collaborative work which fulfils international development objectives, promotes international development and cross-disciplinary thinking among the next generation of engineering leaders. A competitively allocated Seed funding is available to strengthen the collaborations developed at the symposium.

Structure of the symposium

The symposium will consist of 3 sessions over 2.5 days interspersed with networking opportunities, receptions and dinners.

Themes

- **Economic Sustainability**
- **Clean Water**
- **Clean Energy**

The themes are described in more detail via [this link](#)

Networking opportunities

- Networking dinner
- Participant countdown
- Monday dinner
- Making connections
- Away afternoon – a bus tour of Edinburgh followed by a tour of a whisky distillery and whisky tasting
- Linking up
- Writing proposals – Seed funding

All the networking sessions will be described in more detail on page 7.

Funding opportunity - Frontiers of Engineering for Development – Seed funding 2016/2017

A £20,000 Seed funding for interdisciplinary pilot research will be available for the participants of the symposium.

You will find more details via [this link](#), and in the guidance note, attached.

IMPORTANT

Before you travel

Travel to UK

Your travel in or to the UK should be arranged by Key Travel. If it is not already arranged, please contact them directly referencing "ZRF9XV". You can email eventtravel@keytravel.com or call +44 (0)161 819 6863.

Please note that if you are travelling from outside of the UK, you are responsible for arranging and paying for your own transport to and from your airport of origin.

Accommodation

Unless you have made other arrangements or it has been otherwise specified, you will be booked into the [Ten Hill Place Hotel](#). Airport transfer will be arranged for you. However, if you are arriving by train, please be advised that the hotel is a short walk from Edinburgh Waverly Station (please see the map at the end of this pack).

Travel Insurance

The Academy will not provide travel insurance. Please make sure you have arranged your own travel insurance.

What to Prepare

1-minute presentation (without slides)

On the first day, you are invited to present yourself and your work. Please make sure you have prepared this before you arrive.

What to expect

The symposium aims to develop capacity, encourage challenge-led interdisciplinary research as well as providing the right conditions for future funding bids. To make the most of the event, make sure you:

- Check out the participant list
- We encourage you to leave your phone and emails behind during the day
- Participate fully
- Attend all of the sessions and all the activities

Funding opportunity

Frontiers of Engineering for Development – Seed funding 2016/2017

A £20,000 Seed funding for interdisciplinary pilot research will be available for the participants of the symposium. More details are available [here](#), and attached.

Deadline: **2pm, Wednesday 22nd February 2017.**

What to bring

Equipment

Please bring your personal laptop, plug adaptor (for UK power sockets) and writing equipment. **Please contact the Academy if you do not have access to your own laptop.** The winter weather in Scotland is likely to be **very cold and wet**, so please also ensure you bring appropriate warm clothing as well as rain gear or a raincoat.

Business Cards

Please be sure to bring your business cards.

Documentation

Any material you might need about your research/innovation/technology during the symposium.

Personal belongings and dress code

Please do not forget your passport and visa if required. The dress code is business casual – you can leave your suit at home! You will have an external activity so please do bring cash to cover your personal costs.

AGENDA

SUNDAY		
From 15.00	Participants arrive and check-in	Hotels
17.00	Registration and Reception	Spoon restaurant
18.00	Ice breaker	Spoon restaurant
19.00	<i>Welcome Dinner</i>	Spoon restaurant
MONDAY		
09.00	Welcome	Prince Philip Building, Deacon Suite (DS)
09.30	Participant Countdown	Deacon Suite
11.00	<i>Tea and coffee break</i>	Charter Suite
11.30	Session 1: Economic Sustainability	Deacon Suite
13.30	Lunch	Charter Suite
14.30	Session 2: Clean Water	Deacon Suite
16.30	<i>Tea and coffee break</i>	Charter Suite
17.00	Free Time	
18.00	Dinner	Playfair Hall
TUESDAY		
09.00	Session 3: Clean Energy	Deacon Suite
11.00	<i>Tea and coffee break</i>	Charter Suite
11.30	Making Connections	Deacon Suite
13.00	Lunch	Charter Suite
14.30	Bus tour of Edinburgh	Collection from outside the venue
16.00	Free time	
17.30	Whisky tour and tasting	The Scotch Whisky Experience 354 Castlehill, EH1 2NE
18.30	Dinner at Amber restaurant	The Scotch Whisky Experience 354 Castlehill, EH1 2NE
WENDESDAY		
09.00	ODA Funding Landscape, and Seed funding opportunities	Deacon Suite
10.30	<i>Tea and coffee break</i>	Charter Suite
11.00	Linking up – planning the proposals	Deacon Suite
12.00	Writing Proposals – Seed Funding <i>Working lunch will be served from 13.00</i>	Deacon Suite / Charter Suite
14.00	Departure	

THEMES

Economic Sustainability

Session co-chairs: Smeeta Fokeer

Session co-chairs: Meng Ni

Speaker: Nicola Cantore

Speaker: Javier Ealo

Speaker: Queena Qian

Speaker: Dave Betts

Clean Water

Session co-chairs: Patrick Thomson

Session co-chairs: Askwar Hilonga

Speaker: Alison Parker

Speaker: Wendy Jepson

Speaker: Hans Komakech

Speaker: Richard Rushforth

Clean Energy

Session co-chairs: Mercy Manyuchi

Session co-chairs: Namrata Sengar

Speaker: Urbain Nzotcha

Speaker: Christos Markides

Speaker: Pranav Gadhia

Speaker: Beatriz Fidalgo

Please follow [this link](#) to download the session abstracts and speaker bios

NETWORKING ACTIVITIES

To download all of the materials, please [follow this link](#) and scroll to the bottom of the page

Participant countdown

Participant countdown is the first networking activity, and provides a chance for all participants to introduce themselves and their work. The participants will be divided into four groups of 15 people. During the first 15 minutes, each member of group A will have 1 minute to introduce themselves to the rest of the symposium attendees. Then, after all 15 group A participants have spoken, there are 15 minutes when people are free to approach those who have just spoken to ask further questions. Rounds of 15 minutes of presentations and 15 minutes of discussions will follow for groups B, C and D until all the participants have introduced themselves.

Making connections

'Making connections' is a session for you to have more detailed conversations with a few other participants in order to investigate potential collaboration opportunities.

Each person will be given a card with six slots of ten minutes. Over the first day and second morning please can you arrange meetings in these slots with people who you may be interested to collaborate with. You can find the *making connections* slot card in your welcome pack or by following the link above.

Linking up

The 'linking up' session aims to provide you with the building blocks for interdisciplinary collaboration. During this session, you will work with the participant(s) you would like to start an interdisciplinary collaboration with to complete the *Linking up* sheet. This will help you to clarify your ideas, aims and start building a plan.

In this session, each collaboration will be given the opportunity to pitch their ideas to the rest of the room for feedback, and/or for other people working on a similar project to join forces.

You will find the *Linking up* sheet in your welcome pack or by following the link above.

Writing proposals – Seed funding

Frontiers of Engineering for Development – Seed funding will be launched during the symposium. The funding is addressed to all participants of the Frontiers of Engineering symposium, and supports a collaborative interdisciplinary pilot research project. You can find details of the scheme in your welcome pack or by following the link above.

To apply to the scheme (after 13.02.17) – please log in to our online portal by following [this link](#) and select "Frontiers of Engineering Seed Funding" on [this page](#).

Deadline: 2pm, Wednesday 22nd February 2017.

SESSION CO-CHAIRS

Economic Sustainability

Smeeta Fokeer is an Industrial Development Officer with the United Nations Industrial Development Organization (UNIDO), responsible for project development and implementation of sustainable industrial policies. She is also involved in related research work, including the sustainable assessment of industry sectors as evidence for policy-making and industrial energy efficiency assessments. She regularly engages in global forum events for the advocacy of sustainable industrialisation. Previously she was a research associate at Rolls Royce UTC, where she was responsible for linking the aerodynamics properties of new jet engine fuel injector design to its performance. Smeeta holds a BEng in Environmental Engineering, an MSc in Environmental Management and a PhD in Environmental Fluid Dynamics from the University of Nottingham.



Meng Ni received his PhD in Mechanical Engineering from The University of Hong Kong in 2007 and now he is a full Professor in The Hong Kong Polytechnic University. Professor Ni's research focuses on solid oxide fuel cells and batteries for energy conversion/storage. He is serving as an associate editor for 4 scientific journals and a member of editorial board for 7 journals. Prof. Ni received the Young Scientist Award in Hong Kong in 2007. He is a Humboldt Fellow.

Clean Water

Patrick Thomson is Lead Researcher for the Water Programme at Oxford University's SSEE. Patrick's research focuses on the use of improved data to drive institutional change and improved public health in the rural water sector. Patrick invented the first 'Smart Handpump' and leads the continuing technical development and operational implementation of the Smart Handpumps research. He is a Chartered Engineer with an MEng and MSc from the University of Oxford



Askwar Hilonga appeared on the RAEng "Because Engineering" Video with Bill Gates and other world renowned dignitaries like His Royal Highness the Duke of York, Prince Andrew. He is the winner of five reputable awards, including the Africa Prize for Engineering Innovation 2015. Sponsored by the British Royal Academy of Engineering, Hilonga invented the "Low-Cost Water Filter (Nanofilter®)". He published 41 Articles and is a role model for "Academia for Society and Industry", an approach promoted by NM-AIST

Clean Energy

Namrata Sengar worked as CSIR- research fellow, and was awarded a Ph.D. in the field of solar energy utilization from University of Rajasthan in 2009. Since 2012 she is working as an Assistant Professor at Department of Pure and Applied Physics, University of Kota, Rajasthan, India. She is also coordinator of course M. Tech. (Solar Energy). She is Lead Representative from University of Kota in Newton-Bhabha Higher Education Partnership Project, entitled: "Enhancing teaching and research and development in solar energy materials and technologies through capacity building and collaborative research projects".



Mercy Manyuchi is a professional Chemical Engineer and is a research expert in waste to energy technologies, mainly biogas and bio pellets. Mercy is part of the University of Johannesburg's Bioenergy Technology Research Group. She has worked at Harare Institute of Technology as Head of Department in the Chemical and Process Systems Engineering Department, as well as a Lecturer. Dr. Mercy's research interests lies in sustainable technologies that looks at mitigating climate change, focusing on biomass renewable energy. Dr. Manyuchi is an alumni to the prestigious German Green Talents Fellowship and the Africa Prize for Innovation. Dr. Mercy is also part of the World Energy Council Future Energy Leaders.

FULL ATTENDANCE LIST

Name	Organisation
Crispin Angood	Dulas Ltd
Ralf Bauer	University of Strathclyde
Dave Betts	One Acre Fund
Richard Bowman	Waterscope/Bath University
Nicola Cantore	UNIDO
Hannah Chalmers	University of Edinburgh
Youngho Chang	Nanyang Technological University
Ksenia Chmutina	Loughborough University
Fernando Colmenares	Universidad Cooperativa de Colombia
Peter Culmer	University of Leeds
Mirella Di Lorenzo	University of Bath
Javier Ealo	Bosch
George Edwards	Gas-Sense
Mohammed El-Hajjar	University of Southampton
Beatriz Fidalgo Fernandez	Cranfield University
Smeeta Fokeer	UNIDO
Andrew Fox	Plymouth University
Greg Francis	BOXARR Ltd
Samantha Frost	RAEng
Pranav Gadhia	VCare Global Pvt.Ltd.
Rebecca Gaitch	RAEng
Alejandro Guerra Orraca	Novum Energia
Christina Guindy	RAEng
Gareth Harrison	University of Edinburgh
Georg Hartung	Fresenius Kabi
Askwar Hilonga	Nelson Mandela African Institution of Science and Technology
Wendy Jepson	Texas A&M University
Chris Johnson	bio-nano-consulting
Katie Jones	RAEng
Karthikeyan Kandan	De Montfort University
Ifeyinwa Kanu	Heriot-Watt University
Hans Komakech	
Satheesh Krishnamurthy	Open University
Martin Lavery	University of Glasgow
Kitty Liao	Ideabatic
Mercy Manyuchi	Harare Institute of Technology
Christos Markides	Imperial College London
Alice Marks	RAEng
Mercedes Maroto-Valer	Heriot-Watt University
Paul Mativenga	University of Manchester

Steve McLaughlin	Heriot-Watt University
Idiris Mehamud Aliyi	Adama Science and Technology University
Meng Ni	Hong Kong Polytechnic University
Urbain Nzotcha	Africa Co. LTD
Tadhg O'Donovan	Heriot-Watt University
Jing Pang	Neuron Technology
Alison Parker	Cranfield University
Francesca Pianosi	Bristol
Queena Qian	TU Delft
Jo Rose	University of York
Rodolfo Rueda	Fomentomexicano Energy
Richard Rushforth	
Devin Sapsford	Cardiff University
Namrata Sengar	University of Kota
Cindy Smith	University of Glasgow
Patrick Thomson	University of Oxford
Manish Tiwari	UCL
Phan Anh Tuan	Hanoi University
Anand Upadhyay	TERI
Lucy Wheeler	RAEng
Ross Wilkins	Coventry University
Jin Xuan	Heriot-Watt University
Amanda You	CustoMem
Zhibin Yu	University of Glasgow

Key contact information

Symposium Venue: Royal College of Surgeons, Edinburgh

Address: Surgeons Hall, Nicholson Street, Edinburgh, EH8 9DW

Phone: +44 131 527 3434

Email: events@surgeonshall.com

Webpage: <https://www.surgeonshall.com/>

Royal Academy of Engineering

Address: Prince Philip House, 3 Carlton House Terrace, London SW1Y 5DG

Mobile: +44 (0) 7 54 293 6772 – Alice

Phone: +44 (0) 20 7766 0600 – Ask for Neeshé or Suzannah

Webpage: <http://www.raeng.org.uk/>

Email: alice.marks@raeng.org.uk or research@raeng.org.uk

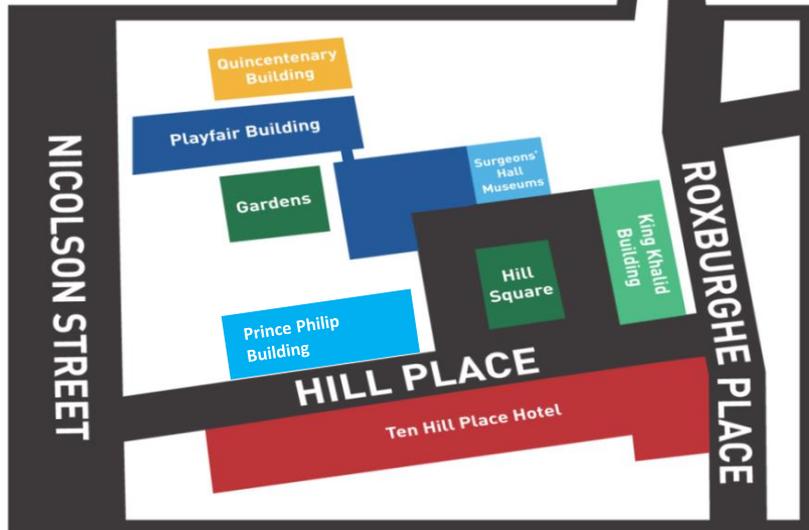
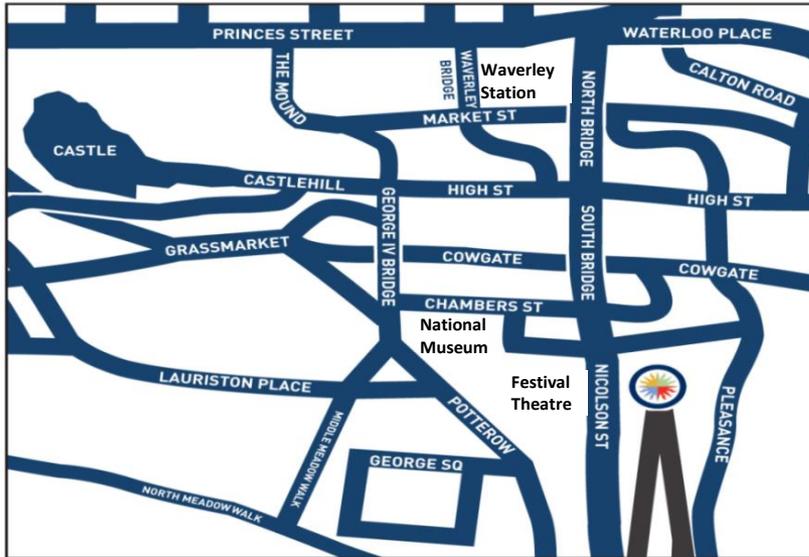
Emergency contacts:

If in an emergency, and you are in need of an emergency service (Fire brigade, Police, or ambulance) call: 999

If you are not in an emergency, but require healthcare service you may call: 111

Our Location

Centrally located, the Royal College of Surgeons is approximately 10 minutes walk from Waverley Station and the Tram Station at the east end of Princes Street.



Arriving by Bus

Buses from Princes Street (stops on the side of the street lined by shops- [north]) are very frequent. Services passing the College include numbers 3, 5, 7, 8, 14, 30, 31 and 33.

Arriving by Train

Edinburgh Waverley Station is 10 minutes walk from the College. Exit Waverley via the **Market Street** opening. Take a right and then 1st left onto **Cockburn Street** and follow the road/hill until the top. Take a left of the top of Cockburn Street onto **The Royal Mile**. At the 1st set of lights, take a right onto **North Bridge** and continue along this route until the College is on your left.

Taxi from Waverley Station

A Taxi to Surgeons' Hall will cost around £4.00

Parking

There are metered parking spaces on Roxburgh Place, Richmond Place, and Chambers Street.

Ten Hill Place Hotel: Limited parking is available at our hotel and is available on a first come first served basis. The cost is £15 per day

St John's Hill NCP: Ten Hill Place have a discount scheme with NCP at St John's Hill. There is a validation machine located in the hotel reception. Please bring your car parking ticket before going to collect and **10%** discount will be given.

Mosque Kitchen: This private car park is located opposite the College to the South side of Nicolson Square. Parking is approximately £15 per day.



THE PLACE TO MEET.
CELEBRATE AND STAY