

# Engineer's Newsletter

from the **UCD Engineering Graduates Association**

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## UCD EGA Distinguished Graduate Award Presented to Professor Orla Feely at 2015 EGA Annual Dinner

**Prof. Orla Feely, UCD Vice-President for Research, Innovation & Impact, was the recipient of the 2015 EGA Distinguished Graduate Award, presented at the EGA's Annual Dinner in the National Concert Hall on 28th May 2015.**



The EGA Distinguished Graduate Award recognises a UCD graduate in active service who is making an outstanding contribution to Irish Society. This contribution can be in the fields of Public Policy Development or in Entrepreneurship, Manufacturing, Information Technology, Research Innovation or Job Creation with a strong public profile who can act as a role model for young members of the profession.

Professor Orla Feely is UCD Vice President for Research Innovation and Impact and was Chair of the Irish Research Council from 2012 to 2015 set up by Government to support research across a broad range of scholarship in any academic discipline including Engineering, Science, Business, Law, Medicine, Humanities and Social Science. During her three years, the IRC supported the work of more than 1,400 researchers and made 4,000 awards, about 3,000 of them in support of PhDs and Masters students.

Since becoming UCD Vice President Orla has supported President Andrew Deeks in the new UCD Strategy 2015 - 2020. Orla qualified with an Honours BE Degree in Electronic Engineering in 1986. She then went to Berkeley University California US where she obtained an MS and PhD in Electrical Engineering. She joined UCD as Lecturer in 1992 graduating to Professor of Electronic Engineering in 2010. She became a Fellow of IEEE in 2009, a Fellow of Engineers Ireland by Presidential Invitation in 2012, a Fellow of the Irish Academy of Engineering in 2013 and on the following day to this event she was formally admitted to Membership of the Royal Irish Academy - Ireland's highest academic accolade.

# Lifetime Achievement Award for Professor John Kelly

**Also at the Annual Dinner we presented the Founder of the UCD Engineering Graduates Association Professor Emeritus John Kelly with a Lifetime Achievement Award for his achievement in setting up the EGA in 1980.**

He had the vision to see the benefit of closer university cooperation with industry to further research and innovation and thus set up the University Industry Centre (UIC) with funds raised from engineering graduates and firms.

The UIC was officially opened by Taoiseach Garret Fitzgerald in May 1985 and this in turn contributed to the establishment of NovaUCD and NexusUCD, which now successfully incubate and nurture emerging new spin.out and spin-in companies which create value-added products and jobs for the Irish economy.

John Kelly was UCD Dean of Engineering from 1979 until 1986 when he became UCD Registrar and was later Professor of Chemical Engineering.

## President's Corner

It's been almost 17 months since our last Newsletter and it's amazing to read all the EGA and other UCD 'happenings' since then.

Our thanks to former Hon. Secretary and Editor Dr. Ciaran McNally for the brilliant start he gave our earlier Newsletters.

I'm very grateful to our new Hon. Secretary Dr. Vincent Hargaden for helping to revigorate a new series of Newsletters. This publication speaks for itself in terms of the many 'stories' that Vincent has collated.

The saddest of these, which is covered on my blog, is undoubtedly the Berkeley student tragedy involving six UCD and other Irish third level students due to inadequacy of a balcony structure. May they rest in peace.

P.J. Rudden  
President



EGA founder Professor John Kelly, EGA President P.J. Rudden and UCD Vice President Professor Orla Feely, winner of the 2015 Distinguished Graduate Award

## Rocket Science

A research group led by Dr David Browne (UCD School of Mechanical and Materials Engineering) will be the coordinator on a European Space Agency (ESA) project launching this October. XRMON is an ESA sponsored multidisciplinary international collaboration investigating the effects of gravity on aluminium-based alloy solidification using real-time in situ X-radiography.

UCD has designed and developed a dedicated isothermal furnace (XRMON-SOL) for the forthcoming experiments. The sounding rocket launch date is scheduled for mid-October 2015, from Kiruna, Sweden. This is the first time an Irish scientific team has been asked by ESA to lead such a Microgravity Applications Promotion (MAP) project.

# Fraunhofer President Addresses Industry Forum on 'Challenges and Impact of Industry 4.0 on Next Generation Manufacturing in Europe'

Professor Reimund Neugebauer, President of the Fraunhofer Association, Europe's largest applied research organisation with a staff of 24,000 and a turnover in excess of €2 billion, addressed an industry forum held at UCD recently.

Organised by Professor Gerry Byrne and Professor Denis Dowling (UCD School of Mechanical and Materials Engineering), the forum was entitled Challenges and Impact of Industry 4.0 on Next Generation Manufacturing in Europe. Leaders from some 25 companies based in Ireland were represented at this forum (multinational and SMEs) along with senior representatives from state agencies.

In his address on Germany's High Tech Strategy, Professor Neugebauer outlined the paradigm shift that is anticipated in manufacturing over the next decade with much greater incorporation of ICT and related technologies into production processes. Industry 4.0 is the term that is now used in Germany, and more broadly, to describe this 4th industrial revolution.

This revolution will be based on 'Smart Factories' in which the individual manufacturing operations are directly linked to each other through the web (the Internet of Things), as well as the use of data analytics to help produce more efficient processes. Individual components can be monitored using advanced sensor technologies, while this technology is being applied currently under Industry 4.0 the individual devices are interconnected to provide an overall intelligent system based approach. This is often referred to as the use of cyber-physical systems.

Speaking at NovaUCD, Professor Reimund Neugebauer said, "*The impact of Industry 4.0 will lead to more efficient manufacturing activities with an increase in resource productivity and efficiency. A further impact will be a shift away from mass production of the same product, to facilitate the individualisation/customisation of products, to meet the requirements of end users.*"



Pictured (l-r) at NovaUCD are Professor Mark Ferguson, Director General, Science Foundation Ireland, Professor Reimund Neugebauer, President of the Fraunhofer and Professor Gerry Byrne, UCD School of Mechanical and Materials Engineering

## RIA Charlemont Award for Dr. Aisling Ní Annaidh



Dr. Aisling Ní Annaidh receiving a Charlemont Award from President of the Royal Irish Academy Professor Mary E. Daly

**Dr. Aisling Ní Annaidh, Lecturer in the School of Mechanical and Materials Engineering, was presented with a Charlemont Award on Monday 16th February.**

Awarded by the Royal Irish Academy, the grant is to facilitate short visits to any country to support primary research in any subject area. Dr. Ní Annaidh has chosen to use her award to host an incoming researcher, Dr. Sara Roccabianca from Michigan State University. Together they will begin collaborating on their project entitled 'Skin Mechanics, Growth & Remodelling: Unraveling The Early Development Of Melanoma'.

# UCD EGA Annual Spring Lecture 2015 by President Andrew J Deeks

## Challenges for Engineering Education in the 21st Century

UCD Engineering Graduates Association were delighted to welcome UCD President, Professor Andrew Deeks, to deliver the EGA Annual Spring Lecture on 'Challenges for Engineering Education in the 21st Century', on 13th May 2015 in UCD Sutherland School of Law. The President covered a large number of very topical areas which are continuing areas for debate in Irish engineering circles.

Firstly, do we educate for 'breath or technical depth'? The choices are between the 'Bologna Process' of 4 years bachelors degree and 5 year masters with technical depth or the U.S. System which gives more diversity and flexibility.

Secondly, do we educate to provide theoretical foundations or for applied skills? Professor Deeks' experience is that the larger companies favour the former while the SMEs seek the latter with the need for minimum training.

What of the Educational Fads? There's for example Outcome Based Education (OBE), Problem Based Learning (PBL), Peer Led Team Learning (PLTL) and Massive Open Online Courses (MOOCs)!



UCD President Professor Andrew J. Deeks

He does not regard any of them as a 'silver bullet' especially distance learning.

The advances in technology in the 21st century have radically altered Engineering Education in terms of computerisation, communications, globalisation, mobility and rate of change. We are now in the age of "The Internet of Things" with all the analytical and computational skills which that brings.

Professor Deeks also dealt with the issue of 'emotional intelligence' - to recognise one's own and other people's intelligence and use this as a guide to thinking and behaviour. People with more emotional intelligence are said to perform better.

He spoke of 'capstone experience' where students are encouraged to take time out in the community or internships in industry. He emphasised the importance of group projects and group learning as one approaches degree stage as it better mirrors real life experience. The top universities are research intensive and must adopt this model to grow their collaborative research capability.

A lively Question and Answer session followed with questions from representatives of Trinity College, UCD, DIT, Higher Education Authority and many other senior retired engineers.



UCD College of Engineering staff with President Deeks and Dean of Engineering, Prof. David FitzPatrick. (L to R) Katie O'Neill Marketing Manager, Dr. Aisling Harkin Careers Consultant and Fionnuala McGowan, EGA Administrator



Tom Fitzpatrick EU Commission, Conor Fingleton and Mary White both Fingleton White and PJ Rudden

# Celebrating 30th Anniversary of University Industry Centre



Standing at the new EGA plaque in the NovaUCD is PJ Rudden, UCD EGA President, Prof. John Kelly & Prof. Andrew Deeks, UCD President

Over a four hour period on May 13th 2015, three EGA events took place. The Corporate Members Reception and Spring Lecture was preceded by the unveiling of a plaque by President Andrew Deeks to celebrate the 30th Anniversary of the official opening of the EGA funded University Industry Centre in UCD. The plaque commemorates the founding of the University Industry Centre in 1985 funded entirely by engineering firms and graduates including UCD academic staff.

*In addition over 50 companies, ranging from early-stage high-tech startups to established innovation-led companies are currently located at NovaUCD or NexusUCD and collectively have a staff of over 370 based on the University campus".*

*Professor John Kelly said "we set up the UIC in the 1980s as we thought there should be greater co-operation between the university and industry. The success of the UIC under its Director Pat Frain grew and grew in the 80s and 90s and eventually moved here to Merville as NovaUCD where there has been phenomenal success in terms of Research Innovation and Impact".*



UCD Executive Team with past and present EGA Board members  
(L-R back row): Prof. David FitzPatrick, Prof. John Kelly, Prof. Orla Feely, Prof. Andrew Deeks, PJ Rudden, Dr. Liam Connellan, Dr. Vincent Hargaden. (L-R front row): Sean Murphy, Clodagh O'Donnell, Dr. Pat Frain, Dr. John Bourke, Dr. Tom Hardiman, Eoin O'Cathain

At the event President Deeks said "The opening of University Industry Centre 30 years ago this month with the significant support of the Engineering Graduates Association was a transformational initiative for university-industry co-operation at UCD. Since then our cooperation with industry has gone from strength-to-strength. In the last 10 years over 250 companies have funded research at UCD and over 1,000 companies have collaborated on research programmes.

The attendees at the event spanned the entire history of the EGA, including the first EGA President Tom Hardiman and the first Honorary Secretary Clodagh O'Donnell.

## Professor John Sheridan & Dr James Ryle win UCD Engineering Sprint Award

**An early-stage business idea has won the 2015 UCD Engineering Innovation Sprint Programme for the commercial potential of a device that allows doctors to monitor brain stem activity or alertness by measuring involuntary eye movement.**

Accurate measurement of the movement, known as Ocular MicroTremor, is considered important by doctors in a range of areas, including assessing the effect of concussion or head trauma. It can also be used to predict outcomes in coma patients and to determine dosage in patients under anaesthesia and those with multiple sclerosis or Parkinson's disease. Lack of such movement enables doctors to confirm brain-stem death.

Currently, medics have to use a probe, or needle, against the white of the eye in an invasive and time-consuming procedure. The indirect Brainstem Activity Monitor developed by Professor Sheridan and Dr. Ryle makes no direct contact with the eye, is portable and can deliver a fast reliable result.



Professor John Sheridan (left) and Dr. James Ryle with the UCD Engineering Innovation Sprint Award.

# President's Reception for EGA Corporate Members

**We adopted a new EGA Strategy at the end of 2013 to move to a Corporate Funding model as individual member subscriptions at their current level could never give us a sustainable funding base.**

In Spring 2014, we commenced approaches to engineering companies for a membership fee of €250 to €500 per annum depending on overall numbers of staff. In return we offer advertisement of company logos on our website and events together with 10% reduction on tables at our Annual Dinner. This has been a success as we have enlisted 19 Corporate Members over the past year alone and have a target to achieve more in 2015/2016.

We also promised to seek out other opportunities for companies to get advantage in UCD for Corporate Membership as the opportunity arises. One such opportunity arose on 13th May to have a President's Reception for Corporate Members on the same evening as the Annual Spring Lecture. UCD President Deeks addressed the Corporate Members to tell them that the new UCD Strategy called for closer linkages between the university and industry and to make UCD into Ireland's Global University.

UCD Careers Consultant Dr. Aisling Harkin has been appointed by the Board to act as Liaison Person with the Corporate Members who can arrange for Member Companies to address the Final Year classes at the start of the second semester with a view to graduate recruitment.



Gary O'Callaghan Siemens and Prof. David FitzPatrick, Dean of Engineering



Donal Duggan and Patrick Joy of Suretank with Andrea Ahern Shell

## Master of Engineering with Business wins the 2015 GradIreland Postgraduate Course of the Year in Engineering

**The GradIreland awards were presented at a gala dinner and awards ceremony on Thursday, 30th April 2015 in Dublin's Mansion House attended by 550 of Ireland's leading employers, third level careers services and professional bodies.**

The Postgraduate Course of the Year award, sponsored by the Higher Education Authority is designed to recognise the best Irish postgraduate providers. This award clearly recognises the scale and diversity of the impact the ME with Business course has had both on the student experience and in its contribution to the Irish economy.



Dr Eamonn Ambrose, ME with Business Programme Director

# Biomedical Engineering Awards

**Dr. Eoin O’Cearbhaill from UCD School of Mechanical and Materials Engineering has received two EU funding awards recently.**

The first, a Marie Skłodowska-Curie Fellowship aims to develop novel microneedle patches for pain-free drug delivery applications, using a combination of computational and experimental techniques.



Dr. Eoin O’Cearbhaill

Along with Professor Eoin Casey from UCD School of Chemical & Bioprocess Engineering, Dr. O’Cearbhaill will form part of a consortium aimed at developing new treatments for diabetes. The DRIVE (Diabetes Reversing Implants with enhanced Viability and long-term Efficacy) consortium involves 14 partners from seven European countries and will create 13 jobs in Ireland.

The interdisciplinary consortium includes stem cell biologists, experts in advanced drug delivery, research scientists, clinicians and companies working together to develop therapeutics to address the challenges of treating diabetes. The researchers will optimise adult stem cell therapy using smart biomaterials and advanced drug delivery, and couple these therapeutics with minimally-invasive surgical devices.

# Wireless Sensors to Improve Poultry Production



Dr. Conor Shanahan and Dr. Patrick Jackman, UCD School of Biosystems Engineering, winners of the UCD Agri-Food Sprint Programme, with Siobhan Wall, Associate Director Corporate Finance, Goodbody Stockbrokers, a member of the judging panel

An early-stage business idea focused on using wireless sensors to monitor environmental conditions in chicken barns to improve poultry production has been declared winner of the UCD Agri-Food Sprint Programme.

The promoters of this early-stage business idea are Professor Shane Ward, the principal investigator, Dr. Conor Shanahan, a postdoctoral research fellow, and Dr. Patrick Jackman, a research scientist, in the Smart Systems Unit within the UCD School of Biosystems Engineering, whose research has been funded by Science Foundation Ireland.

This unit specialises in the application of ‘smart farming’ systems to the agri-food and bioresource industries. Smart farming encompasses the use of the latest technologies and systems associated with realising the potential of the ‘Internet of Things’, coupled with the widespread adoption of smartphones, and the suite of capabilities delivered by them.

## 3D Printing

Professor Debra Laefer (UCD School of Civil Engineering) has launched the country’s first, full-service, commercial-level 3D printing hub, U3D. Housed at the School’s Newstead facilities, U3D offers scan to print services, 3D printing classes, and all major 3D printing technologies including metal printing. The hub is available for both academic collaboration and commercial work and currently boasts a staff of four full-time technicians.



Rainbow print using a single head extruder



Members of the Class of 1983 led by Clodagh O’Donnell (fourth from left)

### Organising a reunion or class event?

Send us a short note or photo ([ega@ucd.ie](mailto:ega@ucd.ie)) for inclusion in the Winter 2015 issue.

## Class Events

Organised by Mike Clancy, there was a great turnout from the BE class of 1995 on Saturday 20th June in Toners. There was widespread agreement that all attendees were looking well and not showing any signs of aging after 20 years.

We were also delighted to welcome members of the BE Class of 1983 at the EGA Annual Dinner, led by the first EGA Honorary Secretary Clodagh O’Donnell.

# 2015 EURELECTRIC Student Award

Killian McKenna, a UCD Electrical Engineering Graduate & PhD student, has fought off competition from students from across Europe to win the prestigious 2015 EURELECTRIC Student Award in Berlin.



Picture (l-r) ESB Chief Executive Pat O'Doherty, Killian McKenna and EURELECTRIC Secretary General Hans ten Berge

Entrants to the European stage of the competition were invited to submit an essay with the title 'Dinosaurs of the past or innovators of the future? Designing digital strategies for electricity companies to engage domestic customers.' An expert panel judged Killian's entry to be the overall winner from among those entered across Europe.

Killian was chosen as the Electricity Association of Ireland (EAI) entrant for this year's Award. It followed his success in the national competition sponsored by ESB in which students from Northern Ireland and Ireland participated. Killian's own PhD research is investigating the impact on the distribution network of customers taking greater control over their electricity demand.

## Upcoming Events

**Monday 31st August (9 am)**  
EGA Gold Medal Ceremony and UCD Conferring

**Friday 11th September (7 pm)**  
BE 1975 40th Anniversary Reunion – Shelbourne Hotel

**Wednesday 14th October (7 pm)**  
Autumn Panel Discussion on the Digital Economy led by Minister for Communications Alex White T.D.



# €2m funding for Neuromuscular Systems and Neural Engineering Research

Dr. Madeleine Lowery (UCD School of Electrical, Electronic & Communications Engineering) has been awarded almost €2m from the European Research Council's highly prestigious Consolidator Grant competition for a project entitled Multiscale Modelling of the Neuromuscular System for Closed Loop Deep Brain Stimulation (DBSModel).

The aim is to develop computer models of the central and peripheral nervous system to better understand how DBS affects the activity of networks of neurons within the brain and neuromuscular system.

Using these models, the mechanisms can be explored by which DBS exerts its therapeutic effects and design optimal stimulation patterns that can ultimately be applied in patients to obtain better clinical outcomes.

With 372 awards throughout Europe, seven in Ireland, Dr. Lowery was one of the two successful UCD recipients.



European Research Council Consolidator Grant winner Dr. Madeleine Lowery

# Knowledge Transfer Ireland 2015 Impact Awards



Dr. Eoin Syron (left) and Professor Eoin Casey

Professor Eoin Casey and Dr. Eoin Syron, UCD School of Chemical and Bioprocess Engineering, co-founders of the UCD spin-out company OxyMem were presented with the Spin-Out Company Impact Award 2015.

The award recognises a spin-out company from an Irish publicly-funded research organisation that has achieved a significant event in the previous year. OxyMem's achievements include securing several rounds of investment, successfully delivering field trials of its membrane aerated biofilm reactor (MABR) wastewater treatment technology, creating over 25 full-time jobs at its Athlone facility and securing early orders.

# UCD EGA Corporate Members



## Join the EGA [Click here](#)

Once you've graduated, you don't have to say goodbye to UCD Engineering for good - with UCD's EGA (Engineering Graduates Association) you can still benefit from many of UCD's facilities and maintain a connection with UCD Engineering, its staff and your classmates while you venture into further study or the working world.

To qualify as an Engineering alumnus and apply for EGA membership, you need to be a UCD Engineering graduate or have studied Engineering at University College Dublin for at least one year at either undergrad or postgrad level. Current and former members of staff are also eligible to apply.

Membership of the EGA entitles members to be informed of and attend Engineering-specific events (Annual Lecture, Distinguished Graduate Award, EGA Gold Medal Ceremony, Autumn Panel Discussion), receive the regular EGA newsletter in addition to receiving a copy of UCD's unique alumni magazine, UCD Connections. The magazine is published annually and is a great way to keep in touch with UCD, find out news and stay informed.

As well as this, EGA members can avail of discounted rates on adult education courses and discounted access to UCD's indoor and outdoor courts - tennis, squash, handball amongst other activities. You are also entitled to reduced membership of the new 50 metre pool – we can arrange a free day pass if you would like to try it out before joining.

Membership rates are as follows: €25 – member; €20 – overseas member, €250 / €500 - corporate members. We look forward to welcoming you at an EGA event very soon!

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