UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

FACULTY OF

Science & Engineering

Newsletter

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Irish Lab Awards

The Bernal Institute, won four awards at the Irish Lab Awards gala ceremony which took place in The Ballsbridge Hotel, Dublin on Thursday, March 05. Launched in 2013, the Irish Lab Awards, recognise and celebrate the accomplishments of Ireland's internationally renowned scientists in areas such as innovation, leadership, and collaboration.

- Bernal Biolabs won Start-Up Laboratory of the Year.
- Dr Saeed Shirazian won Young Leader of the Year. Saeed is a Post-doctoral Researcher within the Process Engineering Cluster.
- Dr Luis Padrela won Laboratory Staff Member of the Year. Luis is a Lecturer in Industrial Biochemistry within the Department of Chemical Sciences and a Researcher at the Synthesis and Solid State Pharmaceutical Centre (SSPC).
- Molecule won the Innovation of the Year Award. Molecule are an international think tank, working in collaboration with the Bernal Crystal Engineering group to bring to market a revolutionary new material developed at Bernal which could "help solve the global water crisis" by producing water from air.

Chinese Government Award for Outstanding Students Abroad

A University of Limerick PhD Graduate at the Bernal Institute Dr Guang Ren has received The Chinese Government Award for Outstanding Students Abroad. This academic award is considered the highest award given by the Chinese government to PhD students who study outside China. The number of Chinese students leaving China to study abroad is more than half a million each year, making this prestigious award highly competitive. Only 500 awards [top 0.1%] are granted every year. Established in 2003, this award is developed to encourage research excellence and to recognize the achievements among Chinese students abroad. Ren's PhD research focussed on the development of lead-free solder alloys for next generation electronics packaging. His research was supervised by Dr Maurice Collins, School of Engineering, UL and funded by the Irish Research Council, it is the subject of a royalty earning patent filing, and is expected to be commercialised.

SFI Public Service Fellowship Programme 2019

In May 2020 Dr Kevin Burke, Dept of Mathematics and Statistics, was awarded an SFI Public Service Fellowship (from their 2019 Programme).

SFI Frontiers for the Future Programme 2019

In March 2020 Dr Norma Bargary, from the Department of Mathematics and Statistics, was successfully awarded an SFI Frontiers for the Future Programme 'Project' as lead PI. The project is entitled "Functional data Analysis for Sensor Technologies" and is joint work with Dr Andrew Simpkin (co-PI) from the School of Mathematics, Statistics and Applied Mathematics in NUIG.

European Space Agency Funding for Two-Phase Thermal Device Study

Researchers at Stokes Labs in the Bernal Institute, led by Dr. Colin Butler, have received funding from the European Space Agency to investigate the use of the latest materials and additive manufacturing technology in the development of two-phase thermal management equipment intended for space applications.

The use of additive manufacturing which allows for creating innovative two-phase components, has significant potential to revolutionise designs and improve performance, but requires using other materials than the current conventional ones, and therefore requires further investigation and testing.

The project is intended to run for two years and will include the manufacture and life-testing of thermal management devices to ensure the compatibility of these materials with different two-phase working fluids. Material compatibility is vital for the performance and lifetime of equipment, where the generation of any non-condensable gases inside the devices can severally affect their capability to transfer heat away from onboard mission-critical systems and electronics.

SFI COVID-19 Rapid Response funding success

A project led by Lero at UL was one of 11 research and innovation projects to receive investment under the SFI-coordinated research and innovation response to the COVID-19 pandemic. Minister for Business, Enterprise and Innovation, Heather Humphreys TD last week announced that COVIGILANT, led by Dr Jim Buckley of Lero and University of Limerick, in collaboration with Professor Liam Glynn of UL Graduate Entry Medical School and Professor Derek O'Keeffe of NUI Galway, will gather evidence to inform and optimise Ireland's digital contact-tracing strategy and practice. The first results from the Covigilant research project were announced in June in advance of the release of the HSE's COVID-19 contact tracing app.

Ulysses Award

The Bernal Institute's Dr. Andreas Grabrucker has received a Ulysses award which promotes research partnerships between France and Ireland. This will allow him to collaborate with Sébastien Küry from the Nantes University Hospital Centre to study the role of genetic mutations in key proteins involved in synaptic plasticity in processes such as learning and memory function.

UL Teaching Excellence Award

A team spanning ECE, CSIS and FLC won the UL Teaching Excellence Award with their innovative approach to online learning. The team, led by Dr. Pepijn van de Ven and further consisting of
Ms Maura Griffin, Dr. Nikola Nikolov and Mr David Moloney created an immersive fully online methodology based on the use of best-practice approaches in online learning adapted to the challenging fully online delivery of technical subjects in UL's online part-time MSc in AI. A crucial component of this approach, that has been a significant factor in UL's success with the part-time MSc in AI, is the encouragement of social learning which requires students to engage with each other in smaller moderator-led groups. We sincerely hope that we can continue to provide the necessary moderation resources to preserve this excellent learning experience for our students.

Fulbright Scholarship Scheme

Three PhD students from the Faculty have received Fulbright Scholarships to the US. At a time when international education programmes face huge challenges, the enduring Fulbright Programme, which was established in 1946, will support 36 remarkable academics, professionals and students from Ireland to go to the USA and collaborate with their US counterparts.

The PhD candidates are Michael O'Sullivan, Aleksandra Serafin and PhD student Dylan Storan.

Dylan Storan is a PhD student in the Department of Chemical Sciences, based in the Bernal Institute. He graduated from UL in 2018 with a First Class Honours BSc in Pharmaceutical and Industrial Chemistry. As part of his Fulbright Award, Dylan will visit Professor James Cahoon's laboratory at the University of North Carolina at Chapel Hill. Here, he will focus on optimizing the electrical properties of silicon and germanium nanowires through the fabrication of nanodevices and the subsequent electrical characterization of these devices.

Michael O'Sullivan is a PhD candidate based at the School of Engineering who received his BSc. in Product Design & Technology from UL in 2016 and began his PhD after graduating. He spent the first three years as a researcher on the EU Horizon 2020 Project IBUS and is now part of the Confirm Smart Manufacturing research team. As a Fulbright-Enterprise Ireland Student to Georgia Institute of Technology, Michael will explore how his methodology could be used to inform new design and manufacturing methods and he also hopes to test this with students and companies in Atlanta.

Aleksandra Serafin is a PhD candidate at the School of Engineering, she also holds a B.Eng. in Biomedical Engineering from UL. Her doctoral research focuses on developing and characterising novel materials for use as electroconductive scaffolds for the purpose of spinal cord injury repair. As a Fulbright Student to University of California San Diego, she will further her material research with detailed in-vitro and in-vivo studies.

Enterprise Ireland Funding

Rabah Mouras, Senior research fellow at PMTC**,** was successful in securing funding from the Enterprise Ireland Capital Call 2020 to acquire a cleaning rig to help Irish Pharma industries improve their cleaning process. The award (€250k) will help the development of a cutting-edge cleaning in place (CIP) skid equipped with multiple process analytical (PAT) tools and sensors for cleaning monitoring and verification. The assessment panel noted that cleaning is a critical process in the pharmaceutical industry in particular, and that the cost and downtime involved in cleaning are substantial. The panel also recognised that there was nothing similar in Ireland and that this was a critical piece of Infrastructure.

IRC New Foundations Award

Jennifer was awarded the Irish Research Council New Foundations Award to continue collaborative work in the Ernst Ruska Centre for Microscopy and Spectroscopy with Electrons in Germany.

Dobbin Scholarship

PhD student, Dylan Walshe, Dept. of Biological Science, was successful in his application to the Ireland Canada University Foundation(ICUF) Dobbin scholarship which will allow him to study in Canada for four weeks. Dylan is supervised by Dr. Daniel McInerney (Coillte) and Dr. Ken Byrne, Biological Science.

Two Lero projects shortlisted for The Education Awards 2020

UL's Sarah Beecham, Ita Richardson former UL PhD student Abdur Razzak were among two finalists from Lero in the Best Research Project category in the Education Awards 2020. Launched in 2016, The Education Awards recognise, encourage and celebrate excellence in the third-level education sector on the island of Ireland

2020 AIARG All-Ireland Architecture Research Group

The Ninth Annual Conference of the All-Ireland Architecture Research Group (AIARG) was held in Limerick City on 23 and 24 January 2020. Organized by SAUL faculty (Dr Anna Ryan, Claire Downey, Jan Frohburg, Morgan Flynn) the conference joined international researchers around the theme 'The Earth as Client'. The keynote lecture of this conference was delivered by Yvonne Farrell of Grafton Architects, the 2020 recipients of the RIBA Gold Medal and the Pritzker Prize. Engaging with the community, support for the event came from ESB and Irish Cement, along with the University of Limerick Faculty of Science and Engineering and the School of Design.
For more information please see the conference website: https://aiarg2020.wordpress.com/programme/

Men no better than women at spatial cognition

Men are not better than women at spatial cognition – such as map reading – according to researchers at Lero, the Science Foundation Ireland Research Centre for Software, hosted at University of Limerick (UL). Employing cutting-edge eye-tracking technology researchers Dr Mark Campbell and Dr Adam Toth of the Lero Esports Science Research Lab at UL found that there is no male advantage in mental rotation abilities associated with spatial cognition competences.

Dr Campbell said the skill of spatial cognition or our ability to navigate our environment has been the battleground for almost 40 years for researchers claiming that males have a distinct performance advantage on tests of spatial cognition, notably the mental rotations test.
Studying the cognitive proficiency of individuals and gamers is a key aim of the Lero Esports Science Research Lab which opened in 2019 and is the first of its kind in Ireland.

EU COST Action Writing Urban Places

On Wednesday 11th December, Limerick played host to a meeting of the EU COST Action Writing Urban Places (CA18126); this meeting was organised and hosted by Dr. Anna Ryan of SAUL and Dr. Michael G. Kelly of AHSS Dept. of French, both of whom are members of the Management Committee of this Cost Action. Given the nature of the research, the meetings were purposefully held in the city centre: in Narrative 4, Limerick City Gallery of Art, and Fab Lab. 40 members of the COST Action from 21 countries across Europe travelled to Limerick to attend.
https://www.cost.eu/actions/CA18126/#tabs|Name:overview and
https://writingurbanplaces.eu/

The Microbiology Society is preparing to publish case studies from its members that are working on one or several of the following topics: Antimicrobial Resistance; Soil Health; Circular Economy. The research group of Achim Schmalenberger in the Biological Sciences is partner in the European ReNu2Farm consortium (NWE-Interreg) where two of the three topics are investigated, namely soil health via the analysis of the microbial driven phosphorus cycle in grassland farming and the circular economy by investigating the effect of recycling derived fertilizers onto the soil microbes. The case study was recently published and the link can be found here: https://microbiologysociety.org/our-work/75th- anniversary-a-sustainable-future/soil-health/how- renu2farm-is-supporting-soil-health.html

New High-Performance Molecular Materials Discovered

Associate Professor Damien Thompson of Dept of Physics and Bernal Institute led the development of predictive modelling for the discovery of new high-performance molecular materials. Published in word leading journals Nature Nanotechnology (5-year impact factor 43.3) in March and Nature Materials (impact factor 46.9) in June, Thompson's simulation-guided discoveries of ultra-small device components open the door to energy efficient ultra-high density computing, enabling new technologies in neuromorphic and quantum computing and electronics for soft robotic and medical applications. Funded by Science Foundation Ireland and supported by the Irish Center for High-End Computing, these works resulted from longstanding collaborations between Thompson's group and world-leading researchers at National University of Singapore, University of Central Florida, Indian Association for the Cultivation of Science, and Texas A&M University.

Using Maths in fight against online child abuse

University of Limerick researchers have helped Brazilian police devise one of the best ways of arresting gangs involved in the distribution of videos and photographs of children being sexually abused. The initiative was a first for both Brazilian police and UL and came about after a Brazilian police officer came to Limerick to do a research PhD. Bruno da Cunha's research centred on mathematicians from Limerick working out which paedophiles detectives should go after on the dark web. The team of researchers from the Mathematics Applications Consortium for Science and Industry (MACSI) and the Centre for Social Issues Research, both based at UL, investigated how effective the operation was in disrupting the distribution of the content. He is the postdoctoral researcher at the Centre for Social Issues Research and MACSI who worked with Dr da Cunha, Dr Pádraig MacCarron, Kleber Oliveira, and Prof Gleeson on the research

Two HEIs join Lero's Academic Partners

Lero expanded its research capabilities with the addition of Waterford Institute of Technology (WIT) and Cork Institute of Technology (CIT) as academic partners. Hosted by UL, Lero currently brings together expert software teams from universities and institutes of technology across Ireland in a co-ordinated centre of research excellence with a strong industry focus. Telecommunication Software and Systems Group (TSSG), the internationally recognised WIT-based centre for ICT research and innovation and the country's largest Enterprise Ireland Technology Gateway, will play an instrumental role in the new WIT-Lero partnership. Lero was founded in 2005 with four universities working on the theme of software engineering research and this has now grown to eleven higher-education institutes (HEIs) including WIT and CIT (Trinity College Dublin, University College Dublin, University College Cork, NUI Galway, Maynooth University, Dublin City University, Dundalk Institute of Technology, Institute of Technology Tralee and its host UL).

Divergence in Architectural Research

Claire Downey, a PhD candidate in the School of Architecture and the School of Modern Languages and Applied Linguistics, was selected to present her research at Georgia Tech University, in Atlanta, USA. The International PhD Symposium, 'Divergence in Architectural Research', was held 5-6 March. The event included researchers from 34 universities in 14 countries, and drew over 120 attendees each day. Claire's paper, 'Outside Knowing, Accessing Alterity in Nocturnal Urban Landscapes', reflected ongoing investigation of the opportunities generated by place in a night city that, due to environmental concerns, is slowly growing darker.

COVID-19 Irish Epidemiological Modelling Advisory Group

In Ireland, the Chief Medical Office of the Department of Health has established an expert group to provide advice and expertise in the area of epidemiology data modelling. The function of the group is in an advisory capacity reporting into the National Public Health Emergency Team (NPHET); the group is known as the COVID-19 Irish Epidemiological Modelling Advisory Group (IEMAG).

Professors James Gleeson and Cathal Walsh, from the Department of Mathematics and Statistics, along with applied mathematicians and statisticians from several Irish universities (including University of Limerick, Maynooth University and University College Dublin) are active members of IEMAG. They are working to develop mathematical and statistical models, with a strong emphasis on calibration of models to data. The community of applied mathematicians and statisticians in Ireland have also been very forthcoming with offers of assistance, and the IEMAG members are working to incorporate the range of ideas and skillsets into the ongoing modelling work.

Lero marks 15 years of software research excellence

In 2020, Lero, the Science Foundation Ireland Research Centre for Software celebrates 15 years of excellence in software research. As one of the longest-established SFI research centres, Lero has been marking the occasion over the course of the year by highlighting some of its alumni and the people who have had associations with the centre over that time. “The 15-year milestone offers a good opportunity to reflect on some of the centre’s successes. Of course, we cannot highlight all of the incredible people that have made Lero what it is but we can shine a light on a small and diverse group who form part of the Lero story and who are making an impact in research, academia or industry in Ireland and internationally,” said Professor Brian Fitzgerald, director of Lero.

“Lero has been very fortunate to have had so many superb students, researchers, academics, institutions and industry partners contribute to its success over the past 15 years. The centre was established in 2005 as Ireland’s Software Engineering Research Centre with Professor Hans Juergen Kugler as Industrial Director, Prof. Klaus Pohl as Scientific Director and Prof. Kevin Ryan as Centre Director. I’m not sure they would have predicted that today we would have grown to have 10 academic partner institutes and be ranked joint number one among software research centres worldwide based on SciVal field normalised citations,” he added. The profiles can be viewed on the Lero website at https://www.lero.ie/lero-15.

Architecture Foundation London

SAUL lecturer, Irénée Scalbert gave a lecture for the Architecture Foundation in London on the subject of “Ornament and Politics”. Ornament was the scourge of Modernists. To Modernists, it signified every aspect of the academic legacy of the 19th century which they wished to abolish. In the recent past, ornament has been rehabilitated due in part to the contribution of Postmodernists, and more recently by the possibilities offered by digital technology. But this rehabilitation remains at best one-off experiments. There is today no culture and no sensibility applying to ornament. The knowledge and the discernment required in the design of decorative patterns has yet to be regained or to be invented. And the role of ornament in the broader context of architecture has yet to be imagined afresh. The past offers many examples in which ornament was central to the purpose of architecture and to the conception of the good life. The link can be found here: https://www.youtube.com/watch?v=pkTGT-AZ_h0

New TEM techniques and observations will lead to advanced medicines

Members of the TEMUL group at UL are employing novel in-situ Transmission Electron Microscopy (TEM) techniques, enabling observations of nano-, down to atomic-scale properties of structure, dynamics and reactions in materials under heating, biasing and cryo conditions, as well as in liquid and gas atmospheres. These techniques were for the first time applied to directly observe growth of pharmaceutical crystals to study their nucleation and crystallisation. Crystals in certain materials, although having the same composition, can form different structures, called polymorphs. In pharmaceutical crystals with a particular active pharmaceutical ingredient (API), targeted at curing a specific disease, certain polymorphs of this crystal, although having the same required chemical composition, can severely impact on the efficiency and effects of the drug. They can make the drug ineffective and even produce hazardous effects on the human body, and Pharma Industries can lose billions of euros, if the wrong polymorph crystallises during the production process. Hence uncontrolled polymorphism formation in pharmaceutical drugs can have massive effects on industries, and moreover, on our society. Solutions of these problems require fundamental investigations on the atomic level, which can only be carried out by use of advanced TEM methods.

These unique investigations will now be extended to a larger number of drugs, to ascertain the existence and structure as well as the control over the growth of a certain polymorph. Whatever the outcome, it will help Pharma Industries significantly to control and tailor the efficiency of drugs.

Collaboration between UL and Industry Leads to Europe's Largest Battery Energy Storage Facility.

The construction of 200 MW of electricity grid stabilisation systems in Co. Offaly was officially launched by Mr Richard Bruton, TD (Minister for Communications, Climate Action and Environment) Mr Woon-ki Lyeo (Ambassador of South Korea to Ireland) Mr Mark Foley (CEO, Eirgrid), Mr Du Hyoung Ryoo (CEO, Hanwha Energy Corporation, Korea), Mr Nigel Reams (CEO, Lumcloon Energy Ltd.) and Dr Robert Lynch (Lecturer in Energy, Department of Physics, UL). Based in Lumcloon and Shannonbridge in west Offaly, the two 100 MW battery energy storage plants will involve a combined investment of €150 million and provide more than 120 jobs at construction phase, which will be completed in early 2021. Once completed, this will be one of the largest battery powered grid stabilisation facilities worldwide and the largest facility of its type in the EU. This project is driven by Offaly based Lumcloon Energy Limited and their South Korean partners, Hanwha Energy Corporation.

LEFT: Mr Du Hyoung Ryoo (CEO, Hanwha Energy Corporation, Korea), Mr Richard Bruton, TD (Minister for Communications, Climate Action and Environment), Mr Nigel Reams (CEO, Lumcloon Energy Ltd., Ireland) and Mr Woon-ki Lyeo (Ambassador of South Korea to Ireland) at the official commencement of construction of two energy storage plants, totalling 200 MW of stabilising power, in Co. Offaly.

There are positive impacts of the plants, in particular in terms of reduction in pollution of the environment and of improved energy stability. The two facilities are unobtrusive, almost silent in operation and not power plants in the conventional sense. Robert Lynch (Department of Physics) points out that "Currently, whenever there is a large fraction of power from wind energy penetrating the electricity grid, fossil fuels must be burnt to stabilise the grid while not delivering power. These facilities, and facilities of this type, will allow power coming from renewable energy to reach 70% of the instantaneous power being delivered by the Irish electricity grid while keeping the grid stable, reducing our dependence on imported fuel." Nigel Realms (Lumcloon Energy) highlights that "The project will help the state to greatly mitigate hefty emissions fines threatened by the EU, related to Ireland's failure to fully meet 2020 targets, and will benefit consumers and business alike" and that "Our electricity traditionally came from highly pollutant sources, like coal, peat, gas and oil, which is no longer sustainable. The new plants at Lumcloon and Shannonbridge will help make Offaly and Ireland a world leader and pioneer in renewable energy"

RIGHT: Dr Nathan Quill and Dr Robert Lynch testing the successful proof-of-concept, 0.4-MW system which paved the way for the two storage plants currently under construction.

The University of Limerick is the leading research facility in Ireland in the field of electrochemical energy storage. UL has led this field for over a decade with a large concentration of related research across the Bernal Institute and the Departments of Physics, Chemistry and Electronic and Computer Engineering. The project in Co. Offaly follows on from several research projects between Dr Robert Lynch and Mr Nigel Reams. The research in this area in UL is extensive and conducted by multiple academics. Prof Noel Buckley, Dr Ian Clancy, Dr Robert Lynch and Dr Fernando Rhen in the Department of Physics work on flow batteries, fuel cells, battery control and monitoring and electricity grid stabilisation. Prof. Kevin Ryan, Dr Tadhg Kennedy and Dr Hugh Geaney in the Department of Chemistry work on Li-ion based battery chemistries and electrodes, *i.e.* the chemistry of the batteries in Co. Offaly. Several other members of the University of Limerick, including Prof. Edmond Magner and Dr Micheál Scanlon, in the Department of Chemistry, and Prof. Dan Toal, Dr Thomas Conway and Dr Colin Fitzpatrick, in the Department Electronic and Computer Engineering, amongst others, work on related areas of electrochemistry, energy infrastructure and electrical systems.

SAUL Y3 study trip to Porto

SAUL Y3 Study Trip to Porto and Coimbra focused on an extensive detailed study of exemplar libraries and archives in both cities as a precursor to the design studio project in the Spring Semester of 2020. Students also visited a number of stellar architecture exhibitions on the work of Portuguese Architects, Eduardo Souto Moura and Alvaro Viera Siza.

I Wish Campus Week

In January 2020 the Faculty of Science and Engineering welcomed 40 female transition year students to spend a week in UL as part of an 'I Wish Campus Week'. Organised and led by the Department of Mathematics and Statistics, students participated in a range of interactive workshops on a variety of STEM topics from across the Faculty, a panel discussion from inspiring women in industry, and an industry site visit to Johnson & Johnson, Visoncare.

FabLab Limerick

In late March School of Architecture's Fab Lab together with a group of volunteers from the Midwest makers group responded to a request from Dr. Motherway of the UL Hospitals Group for the prototyping of an 'Aerosol box' to shield doctors against coronavirus while intubating patients. Rapidly a number of different designs were fabricated using standard fab lab equipment such as low cost 3D printers, laser cutters and cnc mills which will allow local distributed production of these devices in other fab labs and maker-spacers across the country

Sourcing Reagents for Covid19

Scientists at the Bernal Institute, Chemical Science and Biological Science depts and SSPC, joined forces with other National Institutes and Pharma companies in sourcing reagents and preparing a solution to test for Covid19. Dr Edel Durack, Instrument Scientist at Bernal Bio Laboratories and a team of technicians prepared a lysis buffer solution (based on a protocol published in 1990 by Boom et al on "Rapid and simple method for purification of nucleic acids") critical for RNA extraction which is required to generate results from patient swabs. The solution was validated at UCHL on 30th March 2020. Pharmaceutical companies can now rapidly produce batches of this solution to help meet the demand for testing patients.

'I'm a Scientist: #stayathome' Dr. Jennifer Cookman, a postdoctoral research in the Bernal Institute and Dept of Physics participated in the "I'm a Scientist: #stayathome" initiative where secondary school science classes interacted with scientists to ask any curious questions based on the scientists profile and lay description of their research and experience

Leaving Cert Computer Science gives students 21st-century life skills

The Covid-19 crisis has highlighted the importance of the new Leaving Certificate subject Computer Science, according to researchers at Lero and UL. Computer Science was available to Leaving Certificate students in 40 schools (13 DEIS Schools) selected via open competition. The subject will be rolled out nationally for Leaving Certificate students commencing in September 2020, for examination in 2022. Lero's Clare McInerney, who is part of a team researching the implementation of the new Computer Science Programme at Leaving Certificate, said it is hard to imagine how we could continue to function as a society without the digital technologies we take for granted. "Right now, digital technologies are playing so many important roles they are frequently overlooked. For example, while most people would agree that software such as Skype or Zoom are poor substitutes for face-to-face meetings, they nonetheless provide us with opportunities to meet and interact that otherwise would not be possible. Computer technology is also playing a critical role in helping us to undertake contact tracing and research the virus to find a vaccine," she added. The research team paid tribute to the dedication of all those involved, particularly the Professional Development Service for Teachers (PDST) and the participating teachers.

Product Design & Technology Showcase

The School of Design are delighted to present our online showcase for 2020.The showcase highlights a selection of the work of the Product Design & Technology and Architecture students at the University of Limerick. This work has been completed under unusual circumstances towards the end of this academic year and is a testament to the resilience and creativity of our students. We would like to acknowledge the hard work, passion and dedication of the staff across the School of Design in supporting the students throughout their education and in particular through the last few months of the pandemic. https://www.ul.ie/scieng/schools-and-departments/school-design/designul-2020

Bronze Athena SWAN Status

The Chemical Sciences Department are delighted to announce that they have been awarded Bronze Athena SWAN status! Athena SWAN (Scientific Women's Academic Network) recognises and celebrates good practice towards the advancement of gender equality: representation, progression and success for all. Established in 2005, it is a charter managed by the British Equality Challenge Unit. Athena SWAN was established to encourage and recognise commitment to advancing the careers of women in science, technology, engineering, and mathematics (STEM) employment in higher education and research. This Bronze award is in recognition of the Chemical Science department's commitment to promoting gender equality and to identifying and addressing gender-related challenges within the department. The department is committed to implementing a four-year action plan to ensure an inclusive culture where all staff and students feel valued, welcome, and integrated, and have equal access to opportunities. The CS Athena Swan committee, led by Chief Technical Officer, Maria Munroe, included a well-rounded group of representatives from all roles and career grades within the department.

International PhD

A specially designed International PhD at University of Limerick will help transform the way teaching and administration at Algerian universities is carried out. This is a result of a long term collaboration of Professor Tewfik Soulimane HoD with the University of Tlemcen through the Erasmus+/ICM.

Women in STEM

Dr. Sarah Mitchell, Head of the Department of Mathematics and Statistics, featured in June's Irish Independent, with an article on initiatives in the Department and at UL to promote more young women to undertake careers in STEM.

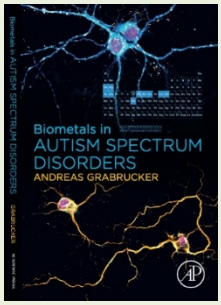
Irish Architecture Foundation Webinar

SAUL Senior Lecturer, Peter Carroll, contributed to the Irish Architecture Foundation Webinar, 'Architects on Lockdown' on 12th May 2020. The webinar had more than 1,000 online participants mostly from Ireland, UK, USA and Canada. The link to the recorded webinar is https://architecturefoundation.ie/news/architects-on-lockdown-live/

Bernal Industry Day

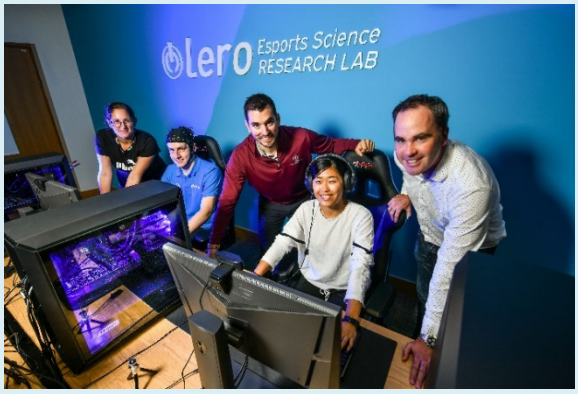
The first Bernal Industry Day took place on January 16th at the University of Limerick. Representatives from 112 industries attended the event, which was sponsored by Analog Devices, Boston Scientific, Stryker, BD, Lab Unlimited, NSP Lab Solutions, Accuscience, Labplan and Regeneron, and 180 delegates attended the event. The conference highlighted the innovative research undertaken by Materials Scientists and Engineers and the world-class characterisation, modelling and manufacturing facilities at the Bernal Institute and provided a clear account of national and European R&D funding available. Munster Rugby Player Development Manager Marcus Horan set the tone for the conference with a candid keynote speech on the importance of influencers, team building and a human touch. Marcus shared memorable stories about playing rugby for Ireland and strategies employed by the team to win matches. Speakers included representatives from Science Foundation Ireland, Enterprise Ireland, Horizon 2020 and Irish Research Council, Mike Morrissey, Director of the Analog Devices Catalyst Centre and, Kurt Francis Chief Technology Officer Molecule. A spokesperson from each of the four Bernal research clusters explained their research activities, findings and initiatives to address grand challenges in health, energy, and environment.

New Book Published



Biometals in Autism Spectrum Disorders by Andreas Grabrucker, published by Academic Press, will be the first to focus on trace metals and autism. Compared to other references examining ASDs or metallomics, a focused presentation of the findings of abnormal metal homeostasis in ASD has not yet come to be. This book provides for readers an overview of current findings on trace metal biology with respect to its role in ASD etiology and discusses how abnormal trace metal biology may be a common factor of several genetic and non-genetic causes of ASDs considered unrelated in the past. This will open new vistas for the development of new therapies based on targeted manipulation of trace metal homeostasis and generate awareness that trace metal levels during pregnancy must be tightly monitored.

Esports Lab



Lero's Esports Science Research Lab located in UL's Tierney Building is the subject of a lengthy write-up in Lab Manager's 'Lab's Less Ordinary Series'. Lab Manager is a publication aimed at private and public laboratory managers and has 43,500 print readers, mainly in the United States, with some in Canada and the UK. The feature is available to read at https://www.labmanager.com/labs-less-ordinary/studying-the-superior-cognition-of-esports-athletes-22877

SAUL Intelligence Unit

Peter Carroll, Senior Lecturer at SAUL made a detailed presentation of SAUL Intelligence Unit to RIAI Design Review Panel of International architects and urbanists selected to make proposals for the Land Development Agency's Colbert Station Quarter on Wednesday March 11th 2020. The Design Review of the Colbert Station Quarter is the commencement of a once in a lifetime opportunity to create a new city quarter which will be an exemplar for potential further urban regeneration in Limerick and other Irish cities.

University of Limerick and Analog Devices announce scholarship programmes

The University of Limerick (UL) and Analog Devices, Inc. (ADI) announced two scholarship programs in honor of Peter Real, ADI's late chief technology officer (CTO) and UL alumnus. The scholarships will be awarded to students in the United States who are pursuing a PhD and undergraduate degrees at the University of Limerick.

The Peter Real Analog Devices Bernal Fulbright PhD Scholarship will be awarded in partnership with the Bernal Institute at UL and the Fulbright Commission. The scholarship will fund post-graduate PhD research with a focus on scientific, biomedical or ecological disciplines and enable a US citizen to complete a fully funded PhD at UL over a period of four years.

Biowill Project: Professor J.J. Leahy, Department of Chemical Sciences (CES), is leading a new EU Intereg research and innovation project called Biowill comprising 9 European partners. The overall value of the project is €3.7M, of which €1.094M comes to UL including a €300K cash contribution from Gas Networks Ireland. Biowill is a zero-waste circular bioeconomy project. It will investigate the potential for using genetically selected natural crops for the extraction and in-vitro and testing of novel anti-inflammatory molecules while using the residues of extraction for production of disposable catering products to replace single use plastics. Post-usage these biodegradable catering products will be used to produce renewable bio-gas for the natural gas network.

Norwegian Ambassador to Ireland visits Lero

The Norwegian ambassador to Ireland met a Smart Cities delegation from Lero earlier this year at UL. A welcome reception for the Norwegian delegation was held at Plassey House and hosted by UL Deputy President, Mr Gerry O'Brien. Her Excellency Else Berit Eikeland, Ambassador of Norway to Ireland then attended a meeting with Lero where Lero Director Professor Brian Fitzgerald delivered a brief presentation on the research centre before Professors Brian Donnellan and Markus Helfert, both Lero researchers in Maynooth University, outlined their ongoing research in the area.

EIT Headstart Competition

neoMimix, a start-up led by Dr Sean Fair has made it into the final of the EIT Headstart competition. In collaboration with Dr David Newport (School of Engineering) and Prof Leonard O'Sullivan (School of Design) the team have developed a best in-class sperm selection technology for use in assisted human reproduction. The innovative microfluidics based technology developed by the team select sperm with better DNA integrity in a more automated process than existing technologies. This will reduce miscarriage rates and improve live birth rates for the one in six couples requiring fertility treatment. The team are working towards a spin-out company to commercialise the technology and the prestigious EIT Headstart competition supports the most innovative European start-ups to accelerate their market launch.

Virtual Talks

Dr. Jennifer Cookman, Bernal Institute and Department of Physics delivered a talk at the "Crystal Engineering: From Molecule to Crystal" virtual conference. She was also invited to deliver a webinar organised by DENSsolutions based on her work using the Liquid Phase Electron Microscopy TEM holder, one of a suite of in-situ TEM holders procured from DENSsolutions. Both Jennifer and Prof Ursel Bangert featured in a UL Talk to introduce Transmission Electron Microscopy and Liquid Phase Electron Microscopy of Pharmaceutical Crystal Nucleation

Dates for your Diary

Autumn Semester	28th September – 18th December 2020
S&E Faculty Board	21st October 2020 2nd December 2020
Winter Exam Board	3rd December 2020

Bereavements

The Faculty extends its deepest sympathies to the following:

Mr. Tom Casey, School of Engineering, on the death of his mother Mrs. Mary Anne Casey

Dr Sean McGrath, Dept of Electronic and Computer Engineering, on the death of his mother Mrs Margaret (Madge) McGrath

Dr David O'Sullivan, Dept. of Mathematics and Statistics, on the death of his father Mr. John O'Sullivan.

Dr. David Corcoran, Dept of Physics, on the death of his mother Mrs Rita Corcoran.

Dr. David Newport on the death of his father Mr. Michael Newport.