

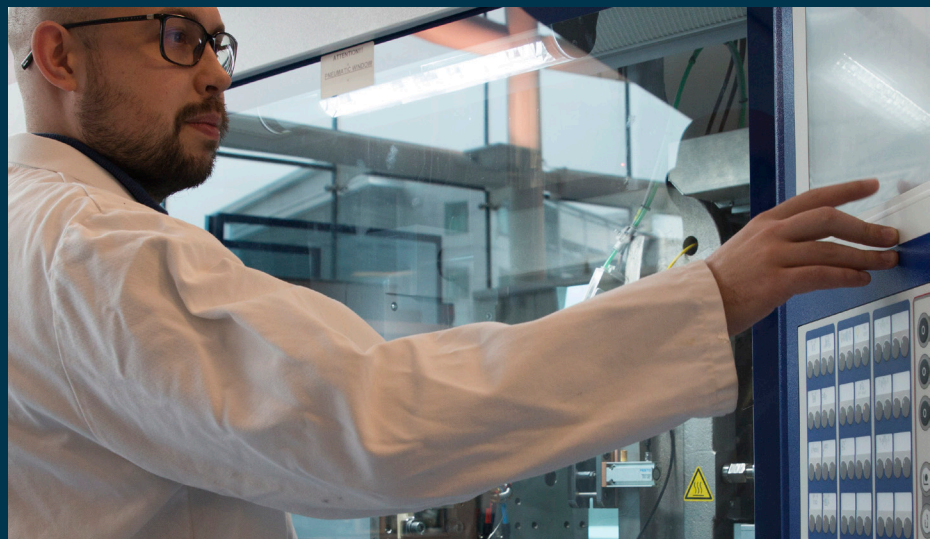


UNIVERSITY of  
**BRADFORD**

Faculty of Engineering  
& Informatics

# Faculty of Engineering and Informatics Newsletter

September 2021



# Welcome from the Dean

We are returning to a full on-campus experience for the new academic year, and this means our students can attend in-person sessions on campus and interact with staff face-to-face. Facilities such as the Sports Centre, Library and Student Union will be open to allow students to meet friends, study and socialise. This is an important first few weeks for all our students and we want to make it as enjoyable as possible as they arrive for the first time on campus or return after a long time away.

Both staff and students are experiencing challenging times at the moment, and we need to be flexible and understanding. The current issues with fuel supply and transportation are exacerbating the situation but are hopefully short term.

To keep each other safe, everyone in our campus community is asked to act responsibly and be considerate of others. We encourage you to: Get the COVID vaccine when it is your turn; Wear a mask, particularly in enclosed or crowded places where you may come into contact with many people; Give others space; Get tested for Covid-19 regularly; Mix outside if possible or let the air in if indoors; Clean or sanitise hands regularly; Isolate and seek a PCR test if you are feeling unwell. Further details [here>>>](#)

I look forward to seeing you all on campus.



## Newsletter summary:

1. Academic in profile
2. RKT News (grants applications, open calls, presentations and awards)
3. Staff and Students' news

## Trust in University to deliver schools' tutoring

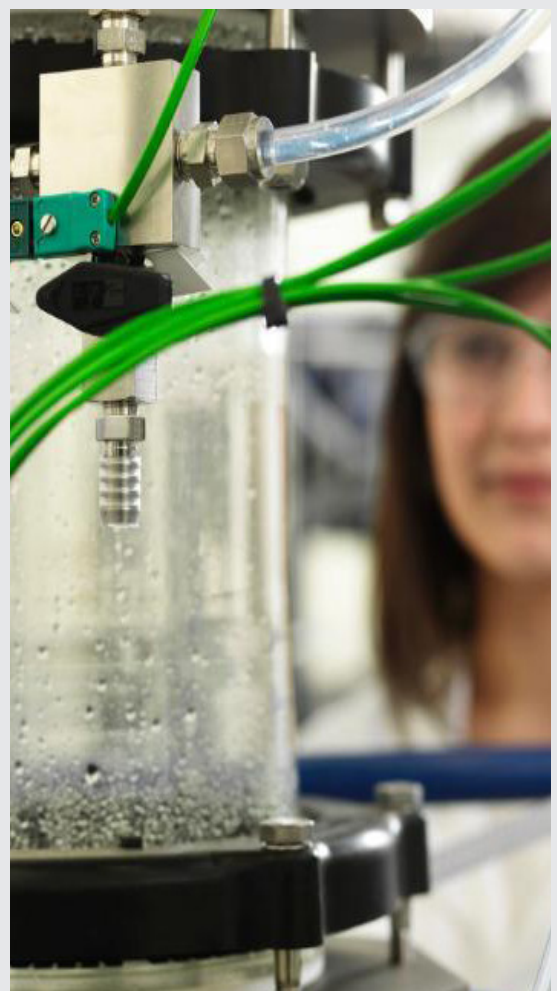
Bradford schools will benefit from high quality tutoring in Maths, English and Science thanks to a partnership between the University, Morrisons Foundation and the Tutor Trust.

The project will enable disadvantaged pupils and vulnerable learners in the city's state schools to fulfil their potential.

Starting in September, Tutor Trust aims to recruit 50 tutors from the University's students to deliver bespoke face-to-face tutoring.

Tutor Trust is a proudly Northern education charity with a mission to 'transform lives through tutoring'.

More [here>>>](#)





# Academic in profile:

## Prof Adrian Kelly



Adrian has held the post of Professor of Process Engineering since 2018, having graduated in Mechanical Engineering before completing an industrially funded PhD in polymer extrusion. He joined the Polymer IRC as a post-doctoral researcher and became a Research Investment Lecturer in 2005. He teaches in materials, thermodynamics, transport processes, polymer engineering and food and pharmaceutical engineering and is the academic lead for industrial placements in engineering disciplines, representing the University on a number of external bodies relating to employability and work based learning.

Adrian's research interests broadly relate to different aspects of polymer engineering, such as pharmaceutical polymer applications, biopolymers, recycling and nanocomposites. In 2010 he co-founded the Centre for Pharmaceutical Engineering Science with colleagues in Engineering and Life Sciences. Adrian has been involved in a number of large research projects including current PI on a joint UK China-project related to recycling of rubber, and previous EPSRC funding related to graphene nanocomposites, pharmaceutical co-crystals, medical devices for soft-tissue fixation and thermal optimisation of polymer extrusion. Other projects have included Knowledge Transfer Partnerships with AstraZeneca, CRP and Kestrel, and a UK-India collaboration related to polymeric drug release. Adrian has supervised 17 PhD students to completion and published over 90 papers in internationally leading journals.



### Current research interests:

- Polymer recycling
- Bio-based polymers
- Pharmaceutical polymer engineering
- Polymer nanocomposites
- Process monitoring

### Research projects:

- Recycling of rubber using solid state shear milling
- Medical devices for soft-tissue fixation
- Development of bio-based PLA blends
- Process monitoring of pharmaceutical extrusion

# Research and Knowledge Transfer

## Projects pipeline:

- Coordinated Control of Offshore Wind Turbines, Gev Mokryani
- Hydrodynamic Weakening Mechanism and Siltation Promotion Effect of Neutral Lattice Covered on Local Scour around Pile, Yakun Guo
- Novel Method of Modifying Microstructure during Friction Stir Weld, Kavian Cooke

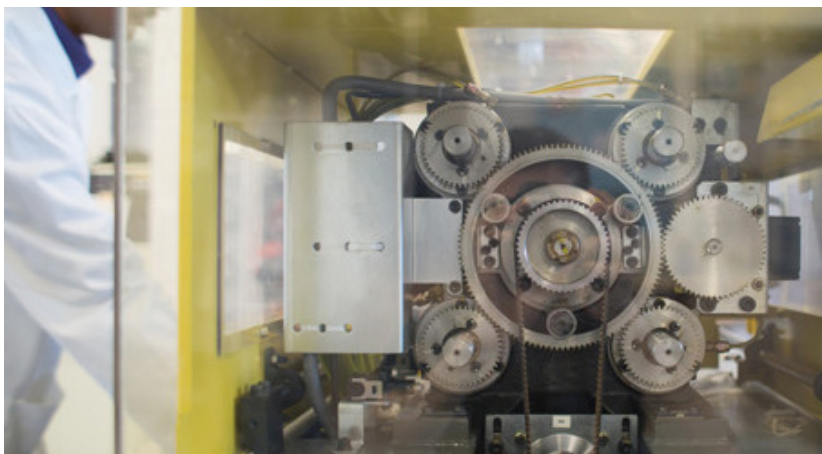


## KTP success with Vision Surgery

This 3-years project will develop an AI-assisted and Computer Vision platform that will process the medical scans and data of patients undergoing cataract surgery to generate the complete set of optical corrections required by surgeons for restoring the best possible spectacle-free vision.

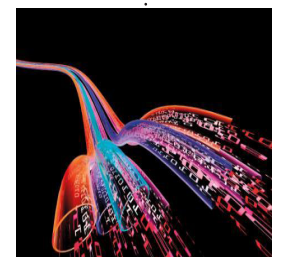
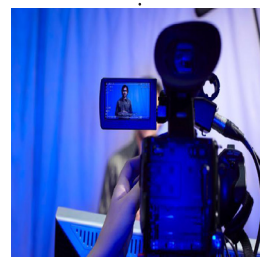
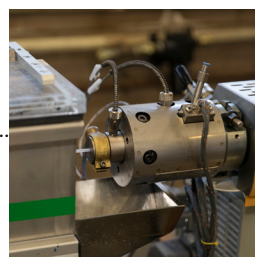
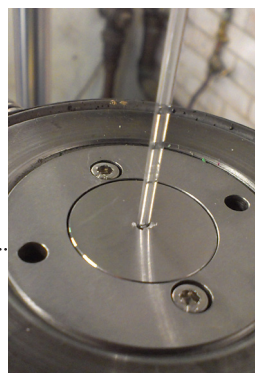
The project is highly challenging as it involves developing and integrating a unique, innovative and highly complex platform into the current business, securing more clients contracts and improved surgical outcome.

The project will be led from Bradford by Professor Qahwaji and from Vision Surgery by Mr Milind Pande, surgical ophthalmologist and founder of Vision Surgery & Research Centre Ltd. The projects builds on Rami's current research on eye disease imaging and diagnostics. Rami will be supported by Prof Abd-Alhameed (system development and integration) and Dr Ibrahim Ghafir (software development and cyber security).



## Open calls for funding:

- Digital security by design: software ecosystem development, Closing date: 8 December 2021 11:00 UK time
- Support the development of research software engineering, Closing date: 2 December 2021 16:00 UK time
- Set up a centre for doctoral training in data intensive science, Closing date: 11 November 2021 16:00 UK time
- Public engagement for information and communication technologies, Closing date: 4 November 2021 16:00



# Staff and Students' news

## Bradford-Renduchintala Centre for Space AI

Bradford is to get its very own space research centre, thanks to a multi-million pound donation from a University of Bradford graduate, Dr Venkata 'Murthy' Renduchintala. Murthy studied at the University from 1983-1991, during which time he gained a BEng degree in Electrical and Electronics Engineering, a PhD in Satellite Communications and a Masters degree in Business Administration. The Centre aims to be recognised as the centre of excellence in Space AI Technology to advance research and to stimulate innovation in the area of distributed computing, automation and information technologies, exploiting the latest artificial intelligence and embedded technologies for applications to space systems. The Centre's longer-term ambition is to establish the Yorkshire & Humber region as the space technology anchor, through collaboration with industries, governments, regional organisations and academia. Part of this donation will be invested in the postgraduate scholarship programme that will complement the launch of an MSc programme in Space Systems Engineering in September 2022

Dr Renduchintala said: "I am delighted to be able make this donation to my Alma Mater. Whatever I have been able to achieve professionally thus far has been built on the solid academic foundation the University provided me with. It therefore seems both fitting and appropriate that I participate in helping the leadership of the University as they take this institute into important fields of research and learning that look towards our future. I am really excited by the ambitions we have for the Centre and am confident that the research it conducts will be both influential and impactful."

Professor Fun Hu, Professor of Wireless Communications and the Centre Director, said: "The generous donation from Murthy has given the University a solid foundation to step out firmly to explore with the rest of the world in this space era. It is an exciting venture and has created a lot of enthusiasm around the University and people with whom I am working. As a University, the Centre will ensure that our researchers and students are equipped with the necessary skills and knowledge that are sought after by the space and related industry."

High profile external experts who have extensive industrial experience in satellite and space system will join the team to deliver the MSc programme, in addition to outreach activities to enhance the profile of the Centre. An Innovation and Skills Advisory Board (ISAB) with representatives from prominent industries and from the public sector will be established, providing steer to the Centre research direction, as well as to identify skill gaps needed in the sector.





# Staff and Students' news

## World Suicide Prevention Day 2021

Friday 10<sup>th</sup> September 2021 marked World Suicide Prevention Day (WSPD). WSPD is an event organised annually by the International Association for Suicide Prevention (IASP) and the purpose is to raise awareness around the globe that suicide can be prevented.

The theme for World Suicide Prevention Day 2021 was 'Creating hope through action'. This aims to inspire confidence and light in all of us and remind us all that our actions, no matter how big or small, may provide hope to those who are struggling.

This was an HR activity and promoted in the Faculty by Carol Vickers as part of her role of FEI Well-being champion.

More [here](#)>>



## Dr Sefat awarded National Biofilms Innovation Centre Proof of Concept funding

The project will look at the development of an electrospun antimicrobial coated tampon for management of bacterial vaginosis. The project will decrease the use of antibiotics, the gold standard treatment which is effective in up to 90% of cases.

Farshid will be supported by Anant Paradkar, Julie Thornton and Stephen Sikkink on the encapsulation of protein with antibacterial properties into the multi-layered electrospun tampon.

Congratulations!

### Bradford-Virustatic Team (Smart Bi-Layer Tampon Project)



**Prof. Julie Thornton (CO-I)**  
Director of the Centre for Skin Sciences & Plastic Surgery and Burns Research Unit



**Dr. Farshid Sefat (PI)**  
Programme Leader in Biomedical Engineering



**Prof. Anant Paradkar (CO-I)**  
Chair in Pharmaceutical Engineering Science & Director of Pharmaceutical Engineering Science



**Mr. Paul Hope**  
(Industrial partner)  
Inventor & founder of Virustatic



**Dr. Anna Stedman**  
(Industrial partner)  
Senior Technical Manager



**Mrs. Suzanne Morton**  
(Industrial partner)  
Research and Development Project Manager

# Staff and Students' news

## Best Theory Paper Award for Dr Kit Zhang

Kit's award is a result of his presentation at the IEEE International Conference on Automation and Computing for the paper 'Dynamic Observer with Complex Coefficient Filter for Fault Detection'.

The work looked at robust fault detection problems, subject to external disturbance with a specific spectrum, employing a new fault detection filter by combing the dynamic observer and a complex coefficient gain. The experimental results show the improved performance of the proposed method, which can effectively attenuate the disturbance at specific frequencies and detect minor faults earlier.



## Hafiz Rauf is Guest Editor Mobile Information Systems

In this special issue of the Hindawi Journal, researchers from academia and practitioners from industry are invited to submit their cutting-edge original research and review articles on machine learning-based methods and techniques for performing data analytics in IoMT systems.

This special issue aims to address advances in machine learning techniques for IoMT systems and improve services based on data analytics, covering topics ranging from enabling technologies to emerging applications and, importantly, industrial experiences.

More [here](#)>>



# Staff and Students' news

## Dr Xianghe Dai presented at the 9<sup>th</sup> European Conference on Steel and Composite Structures (Eurosteel Sheffield 2021)

Dr Dai presented two research papers on behalf of the Civil and Structural Engineering research group and the Bradford Centre of Sustainable Environments - 'Experimental Study of Composite Cellular Beam System using Demountable Shear Connectors' (by Therese Sheehan, Jie Yang, Dennis Lam, Xianghe Dai, Kan Zhou) and 'Numerical Study of Composite Steel Cellular Beam System Using Demountable Shear Connectors' (by Xianghe Dai, Dennis Lam, Therese Sheehan, Jie Yang, Kan Zhou).

The conference was hosted by University of Sheffield, 1<sup>st</sup> – 3<sup>rd</sup> September 2021, and had more than 330 research papers presented.

The 10<sup>th</sup> European Conference on Steel and Composite Structures will be on 12<sup>nd</sup>-14<sup>th</sup> September 2023 in Amsterdam.



## Dr Rahmanian features in the Gas Processes Association (GPA) Europe report

The report comprises a summary of the talks delivered by practitioners and top experts in the gas industry from well-recognised international companies such as Total Energies, BASF SE, Linde GmbH, Costain Oil, Gas & Process.

The topics covered were: gas processing both Green and Blue Hydrogen, CCUS, Energy Transition, Optimisation of LNG Projects, and Membrane Requirements for natural gas processing.

A summary of Nejat's presentation can be found [here](#)>> - Climate Change (page 6) and Industrial Case Study on Gas Hydrate in South Pars Project (page 9).

Our first Virtual Young Professional Training Session kicked off with two presentations on a topic selected by our Young Professional Committee, on carbon capture. A look into possible engineering solutions to combat climate change from Dr Nejat Rahmanian, and examples of separating CO<sub>2</sub> from other gases, including a look at Europe's first Bioenergy with Carbon Capture and Storage (BECCS) demonstration project with Oras Power at Selby from Professor Chris Rayner.

**Our first presentation was by Dr Nejat Rahmanian of the University of Bradford.**



Dr Nejat Rahmanian

**Global Warming and Climate Change: Hoax or reality?**

Climate change is perhaps the most controversial global challenge that has emerged in the last decades and is a top agenda item in terms of its social, economic, political and technical impacts. The Paris Agreement articulates the most recent international effort, negotiated by 195 countries, to combat climate change.

The agreement aims to keep global warming to well below 2°C above pre-industrial level and to pursue efforts to limit it to 1.5°C. The latest UN report published in October 2020 confirmed that atmospheric concentration of carbon dioxide is an increasing concern as it may cause global temperature rises to occur faster than it was previously expected.

Historical meteorological data also shows if the average temperature of the earth has risen since the industrial revolution and the rise in global temperature is positively with unprecedented increases in greenhouse gas emissions and in particular carbon dioxide. However, there remains controversy over whether climate change is really occurring, how much has occurred, if greenhouse gases caused it, if any actions should be taken and its economic impact. This is in spite of the fact that in the scientific literature there is strong consensus that global surface temperatures have increased.

This presentation addressed the above, focusing on the UK and worldwide and presented a number of possible engineering solutions to combat climate change.

**The second presenter was Dr Nejat Rahmanian of the University of Bradford. An industrial and experimental case studies on hydrogen production and utilisation.**

Dr Nejat Rahmanian of the University of Bradford presented an industrial and experimental case studies on hydrogen production and utilisation. The presentation focused on a comparison of the efficacy of Power-to-Gas (PtG) and reforming. The presentation highlighted the challenges of hydrogen and the carbon order which the cost of production, such as reforming and electrolysis (PtG).

The comparison between PtG and electrolysis was the key focus of the presentation and Dr Nejat Rahmanian outlined the challenges of PtG and electrolysis. He also discussed the role of hydrogen in the energy sector and the need for a hydrogen infrastructure.

The study compares the production of hydrogen via steam methane reforming (SMR) and electrolysis. The study also discusses the challenges of hydrogen production and utilisation, such as the need for a hydrogen infrastructure.

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Dr Nejat Rahmanian

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Image from industrial facility

**Note:** University of Bradford is a corporate member of GPA Europe and FREE membership is available for our students, who can subscribe by email to [admin@gpaeurope.com](mailto:admin@gpaeurope.com). More details on membership can be found on [here](#)>>



# Staff and Students' news

## MDPI Materials publishes Dr Sefat work in the field of Vascular tissue engineering

The published work is the result of a UK/China project looking at the degradation and characterisation of Electrospun Polycaprolactone (PCL) and Poly(lactic-co-glycolic acid) (PLGA) Scaffolds for Vascular Tissue Engineering.

The conclusion drawn from this experiment is that PCL and PLGA hold great promise for tissue engineering and regenerative medicine applications

View full text [here>>](#)



## Dr Jaan Pu is the Leading Topic Editor of Frontiers in Environmental Science (Impact Factor 4.581, CiteScore 4.4)

The research topic to be covered is 'The Urban Fluvial and Hydro-Environment System' and aims to minimize the effects of urban development on the fluvial and freshwater system.

The journal welcomes high-quality submissions with an aim to produce a collection targeted to achieve a safer, healthier, and better urban-fluvial environment. We are looking for, but not limited to, innovative theories, advanced technologies, and application examples in this targeted field of study. This journal is ranked Q1 by both JCR and SJR. This Research Topic is edited by various interdisciplinary experts from China, India and Kazakhstan under Jaan's leadership.

Submission Deadlines 5 November 2021 for abstracts and 20 May 2022 for manuscripts.

More [here>>](#)



# Staff and Students' news

## New Staff in the RaIS Business Partnership Team

Stephanie Abraham has taken on the role of Business Partnerships Manager. Steph has extensive and progressive experience within corporate business and she has the capacity to influence decisions with a successful track record in corporate improvement and sustained growth through change. Her role will be to maintain and develop relationships with external organisations that may benefit from our research and innovation capabilities. Steph will support academics to develop their own relationships with external organisations and will develop and manage collaborative research and innovation programmes with those organisations.

Dr Richard Dunn moved to the business partnerships team to support the development of activities across the Digital Health Enterprise Zone (DHEZ).

Richard has been fortunate in his career to work across the healthcare innovation lifecycle from fundamental research to commercialisation in academic and commercial environments, and as a consultant and project manager providing technical, regulatory, business planning, mentorship, and investment due diligence. His career at the University was an intentional route to apply this knowledge and experience and after 5-years leading on research support in the University is a timely move to enhance support towards the impact of our research.

This new role will build capacity and co-ordination to connect organisations with our research and capabilities, with central support to the Faculty for developing contract research, knowledge transfer partnerships, and use of our facilities.

If you are interested in discussing business partnerships, KTPs or other opportunities in Digital Health or Medtech please contact Richard for support: [r.dunn1@bradford.ac.uk](mailto:r.dunn1@bradford.ac.uk) / 01274 233171



# Staff and Students' news

## New staff - Dr Pedro Arcelus Arrillaga

Pedro is joining the Chemical Engineering team as Assistant Professor. His areas of expertise are Reaction Engineering, Chemical Equilibrium, Kinetics and Catalysis.

Pedro research interests are linked with Thermochemical processes for the production of fuel from unconventional and renewable sources, such as heavy oil, vacuum residue, bio-mass, bio-oil, organic waste, etc.

He is skilled in high temperature and high pressure processes such as hydro-treating and super-critical water processing.



## Early Career Research Seminar (ECRF)

Dr Raluca Lefticaru made her presentation this month entitled 'Evolutionary Approaches in Model-Based Testing'.

Dr Cristina Tuinea-Bobe delivered a presentation on the grants approval process. Prof Felician Campean introduced the new Faculty R&I strategy to the group.

Our next meeting is on 20 October 2021, 12 noon.

More [here](#)>>



## The Technician's Commitment

As part of the Technician's Commitment, the Technician Reps organised a Technical week event in August. Guided tours of various labs across Engineering and Informatics, Health Studies, and Life Sciences served as an informal introduction to other work areas and an opportunity to network with other technical staff.

For the Faculty of Engineering and Informatics, Mat Overton led the Media, Design and Technology tour, and Steve Allan, Joanna Wood and Ian MacKay led the Engineering and Polymer IRC tour. The Technician's Commitment has four themes – Visibility, Recognition, Career Development, and Sustainability. By offering or attending a tour and talking to others about their work area, we improved our understanding of the role and contribution within the institution of our colleagues. Visiting other areas provided an opportunity to learn about how they operate, discuss similarities and differences, challenges and successes, and fostered knowledge sharing.





