



Sent on behalf of Professor Perumal Nithiarasu, Associate Dean for Research, Innovation and Impact

Dear Colleagues,

Please read below about some of the Faculty's most recent success stories. We would particularly like to see more from our Professional Services staff for the next email!

Staff News

AI-powered self-healing asphalt: A step toward sustainable net-zero roads



Self-healing asphalt roads, made from biomass waste and designed with the help of artificial intelligence (AI), could offer a promising solution to the UK's pothole problem, which is estimated to cost £143.5 million a year.

A team of scientists from Swansea University and King's College London, in collaboration with scientists in Chile, is designing a new type of self-healing asphalt that can mend its own cracks without the need for maintenance or human intervention.

Cracks form when bitumen—the sticky black material in the asphalt mixture—hardens through oxidisation, but the exact processes behind this are not entirely known.

The team has found a way to reverse cracking and develop methods to "stitch" asphalt back together, creating more durable and sustainable roads.

Dr Jose Norambuena-Contreras, a Senior Lecturer in the Department of Civil Engineering at Swansea University and an expert in self-healing asphalt, said: "As part of our interdisciplinary study, we have brought together experts in civil engineering, chemistry, and computer science, combining this knowledge with the state-of-the-art AI tools of Google Cloud.

[Read More Here](#)

New book published by Kevin Rees (Geography Department)



The Thin Edge of Innovation: Metro Vancouver's Evolving Economy (UBC Press) by Roger Hayter, Jerry Patchell and Kevin Rees, was published in February.

The economy of Metro Vancouver is changing, but along its own trajectory and shaped by its distinct geographic context. Shifting away from resource-based activities, Metro Vancouver's economy has evolved into a diverse range of 'high-tech' and creative industries offering the potential of high-income jobs in an innovation-focused, post-industrial city.

This diversification has been driven from the bottom up through entrepreneurial initiatives, bolstered by spinoffs, patents and skilled graduates flowing out of local universities. Yet diversification has been thinly spread and lacks deep local roots or dominant anchor companies, despite attracting substantial foreign investment. The thinness of Vancouver's innovation is most apparent in the low impact on local development. However, this thin diversification offers advantages of varied job opportunities, resilience, and strong global connections.

Vancouver's attraction to high-tech is not surprising. Its favourable urban and environmental amenities helped make it one of the world's most 'livable' cities. Its west coast location has fostered lifestyle innovators and 'place-selling' strategies which have further increased wealth, jobs and attracted talent, but this has been accompanied by

increasing housing costs and congestion in the city, threatening its livability and “high-road” innovation aspirations.

The book draws on over one hundred case studies of signature local businesses and multinational corporations in sectors including aerospace, renewable energy, video games, film, biotechnology, telecommunications, engineered wood, fashion apparel, and craft beer to evaluate the transition. Through these examples we examine the distinctive opportunities, challenges and conundrums facing Metro Vancouver in its pursuit of sustained, broadly beneficial innovation-based development.

The book is available from UBC Press: [UBC Press | The Thin Edge of Innovation - Metro Vancouver's Evolving Economy, By Roger Hayter, Jerry Patchell and Kevin Rees](#)

Dr. Rajesh Ransing Joins International Team to Celebrate 10 Years of the Royal Academy of Engineering's TSP Program



Group photograph of participants celebrating 10 years of TSP at Royal Academy of Engineering, London.

Dr. Rajesh Ransing (from Swansea University's Mechanical Engineering Department), a former RAEng Industry Fellow [1] and UK partner in the Transforming Systems through Partnership (TSP) program with the University of South Africa, recently joined an international team at the Royal Academy of Engineering to celebrate the program's 10th anniversary.

As part of his TSP project, Dr. Ransing co-organised the International Conference on Smart and Sustainable Manufacturing (ICSSM 2024) in Cape Town in December 2024 [2]. The conference provided a platform for academics, researchers, and industry professionals to showcase the latest advancements in smart manufacturing technologies (Industry 4.0), with a strong focus on their role in achieving sustainability goals within the manufacturing sector. Discussions explored how engineering innovations can address environmental challenges and promote sustainable practices in global manufacturing. The event also fostered collaboration, networking, and joint participation among delegates.

Building on these discussions, the TSP attendees have begun planning another major conference in Thailand in 2026, which will focus on sustainable systems. This upcoming event aims to further drive global efforts toward greener, more efficient manufacturing solutions.

Stay tuned for more updates on these exciting developments!

[1] <https://raeng.org.uk/programmes-and-prizes/programmes/meet-the-researchers/dr-rajesh-ransing>

[2] <https://icssmconf.com/>

Meritorious Service Award by the Afan Valley Angling and Conservation Club



Professor Carlos Garcia de Leaniz (CSAR Director, BioSciences) has been awarded a Meritorious Service Award by the Afan Valley Angling and Conservation Club (AVACC) in recognition of his scientific research and support to the club over the years. The award was presented at Swansea University by the secretary and the president of the club last Friday 14th March.

[Learn more about the AVACC here](#)

Student News

Award for Contribution at Cryogenic Hydrogen Research Conference



Aerospace PhD student Jac Clarke recently attended the first UK Cryogenic Hydrogen Research Conference and received the 'Highly Commended Contribution in the Field of Cryogenics' award. This recognition was for his research presentation on modeling the highly transient multiphase cryogenic hydrogen fluid mechanics developed by our team.

The Aerospace Technology Institute's (ATI) Hydrogen Capability Network (HCN), in partnership with the Civil Aviation Authority (CAA), hosted a cryogenic hydrogen research conference in London on Wednesday 8 January, 2025. This inaugural single day event brought together academics, students, and engineers in industry working in the field of cryogenic hydrogen to share knowledge and expertise and build a community.

On his research, Jac stated *"As industries worldwide push towards decarbonisation, hydrogen has emerged as a promising alternative fuel. However, its use in aviation faces challenges due to the need for cryogenic storage. My research focuses on computational fluid dynamics (CFD) simulations of cryogenic hydrogen jet flows, aiming to advance fundamental understanding. These insights will be crucial for the future of hydrogen storage, transmission, and combustion technologies, paving the way for more efficient and sustainable aviation solutions."*

REF2029 Canvas Hub

A reminder that a new Canvas hub has been published. Developed by the REF Officers team, this is a central repository for the REF2029 documentation, guidance, resources and news.

The joining link is <https://canvas.swansea.ac.uk/enroll/BDY36G>. Please enable notifications as this site will be updated with guidance, news, consultations etc as they are received.

Keep in Touch!

If you are aware of any recent achievements to share, either for yourself or for any members of your team, we would love to hear about them! We're interested in stories from academic and professional services communities. Please email any

news to **FSE Research** (fse-research@swansea.ac.uk). **Deadline for submissions: 15th of each month.**

If you would like to promote a research event on the FSE Events webpage, please contact fse-reception@swansea.ac.uk

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