

Aerospace Wales Expo 2021

CPE recently exhibited at the Aerospace Wales Capability Showcase & Supply Chain Event on the 9th December 2021 at Coleg Cambria in Deeside. The team were joined by Photonics Connected, Global Laser, and Glyndŵr Innovations in the “Photonics Zone”. Around 100 exhibitors and over 300 delegates gathered for a series of presentations and a chance to meet with buyers and end-users, as well as browse the stands.

Exhibitors described the Expo as - *“A fantastic place to showcase products and services to major players in the industry and catch up with existing customers and make connections that could prove very fruitful in the future.”*



WaterCo site visit – 30th November 2021

WaterCo, based in Ruthin, specialise in water and environmental assessment and engineering. The company is currently working on a rainfall and flow monitoring system at Dwyran, Anglesey, where they are supporting Anglesey Council and local residents with the development of a Natural Flood Management scheme.

This innovative pilot scheme is operating over a three year period and CPE Research Fellow, John Tomes from Aberystwyth University, is working with the team on a new to company product and process to evaluate the velocity, flow and height of water streams.

300 Miles across Wales in an Electric Car

With the combination of zero-emissions, great efficiency, and zoomy-nature, driving electric should be a no-brainer. But how will a full-electric Vauxhall Corsa perform on a road-trip of over 300 miles? Is the charging infrastructure through A roads in Wales good enough? CPE’s Business Development Manager, Hazel Hung, finds out first-hand.



You can read the full article from our website [here](#), and here’s a sneak peak:

“At the Aerospace Wales Expo, the tale of my electric journey across Wales was a surprising talking point on the exhibition floor. Most thought that five hours for a four-hour journey was pretty good going. Some remarked that a conservative 100-miles-range would get them to where they would want to be on most business trips. Whilst others commented that an hour stop was longer than they would like, and not so good if you’re in a hurry. What if the charging point was occupied or out-of-service? Or an unforeseen detour leaving you stranded in middle-of-nowhere?”



Join us on Instagram!

To further complement our existing social media outlets, CPE recently launched a brand new Instagram page. From here, you can expect to find all current project news, key updates, and various photonics-related content shared via this platform. Join CPE on Instagram by following [cpe_wales](#)

5 Minutes With... Claire Hughes

Name: Claire Hughes
Job Role: Co-Founder and Head of Growth – Pluto.
Company: Space Republic t/a Pluto - www.spacerepublic.com
Location: Conwy



How and where does the story of Pluto begin?

Our parent company, Space Republic was started by two school friends, Luke Aviet and Greig Fensome. Luke had a very successful career in advertising technology and gaming, while Greig was a Goldsmith's-educated furniture designer working on commercial projects like Battersea Power Station. In 2018 they both realised there was a lack of convenient, accessible workspace to support workforce mobility. The realisation came when they were working in a noisy coffee shop, and struggled to find anywhere to take a private call. This was pre-pandemic, but even then, the number of people working remotely was growing every year.

What has the journey been like from the beginning of Pluto to where you are now?

It has been quite the journey with a lot of twists and turns! Prior to the pandemic, we were focusing on designing and manufacturing pre-fabricated work booths for private offices. It's an established and growing market, and one we all understood.

Then in early 2020 the pandemic hit, and the office market completely dried-up. As a start-up with limited funds, that was a very difficult time for us. But we also saw what was happening with the rapid shift to remote work, and realised there could be an opportunity. We started to talking to different universities about the potential for developing COVID-secure technology to include within our pods, and ended-up working with Brunel University London to design what has become the Purifi clean air technology deployed in Pluto pods.

Later that year, we applied for and were subsequently awarded an Innovate UK grant under the Sustainable Innovation Fund. Applying for the grant was a very time-intensive process but ultimately very worthwhile, as it enabled us to develop and launch a MPV of our new product, Pluto. Thanks for the grant funding, we were able to develop a new prototype pod and clean air technology, and launch a pilot in St Albans, Hertfordshire. It was far from plain sailing due to the impact of lockdown and covid restrictions. But the reaction from users was fantastic and we were able to validate our business model, demonstrating very clearly that people are willing to pay to book and access Pluto work pods by the hour.

Tell us about the exciting projects you are working on now.

Right now we are focusing on continuing product development, ahead of launching a 5-store pilot with a major supermarket later this year. This includes an exciting collaboration with CPE – we are working with academics at the University of South Wales to further develop our Purifi clean air technology.

Do you have any advice for micro or SMEs looking to invest time in research, development, and innovation?

As a small business, you need to consider how innovation fits within your strategy. Particularly if you're a micro-business, time is one of your most valuable assets. Before committing time to grant applications, seek advice from people who have been through the process before. Gain input on your business plan and proposals to give you the best possible chance of success, and allow plenty of time to write the application, as it always takes much longer than you'd think. Make the most of fully-funded R&D support projects such as CPE – they don't come around that often!

What are you most proud of?

The feedback from customers who used Pluto during our pilot. We had one customer (a shyness expert) who said she would never have finished writing her book if it wasn't for Pluto. She won a second book deal as a result. We had people teaching sign language lessons, delivering coaching, closing new business deals, one lady even finished her PHD in our pods. It's a great feeling knowing you've helped people, especially over the couple of years we've all had!

Tell us something others would be surprised to know about you or Pluto.

We're a small company with big ambitions. Our vision is for everyone to be within 15 minutes of Pluto, and fully expect to become the largest provider of flexible workspace within 5 years. We're also serious about our sustainability commitments and have started the B-Corp certification process.

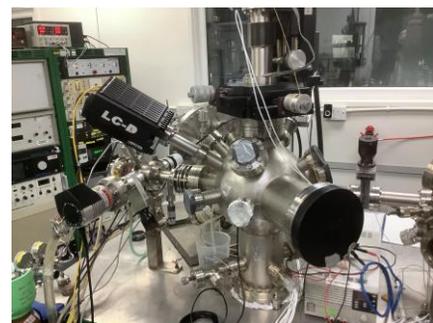
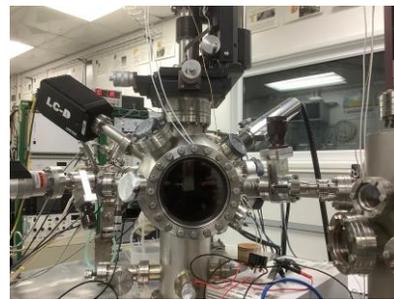
Many thanks to Claire for taking the time to speak to us.



CPE Equipment Spotlight – Aberystwyth University’s XPS System

A state of the art material characterisation system at CPE has been used to analyse product samples from metal coatings to natural minerals providing crucial information to industry collaborators.

X-Ray Photoelectron Spectroscopy (XPS) is an extremely surface sensitive technique, with the ability to probe ultrathin films of less than 10nm thick, providing elemental and chemical state information in a non-destructive way. Conventional XPS is carried out after each experimental step, i.e., heating, deposition, oxidisation.



Aberystwyth University’s CPE team have two dedicated UHV-XPS systems for material characterisation and an exciting development of a unique to Wales, near ambient pressure XPS system under construction. The team have developed real-time XPS to allow us to continually monitor a sample during an experiment. This provides unique information about what is happening at the material’s surface. From the experimental data obtained, we can work out the percentage of each element present and observe small changes in binding energy, which are indicative of chemical state changes.

CPE and Mobilized Construction: Imaging systems for real-time monitoring of road deterioration



Mobilized Construction

Mobilized Construction provides smart solutions for real-time and predictive road deterioration data & analytics. They use smartphones and computer vision to turn any vehicle into a data collector and have deployed their technology across the UK in Northern Ireland, London, Coventry, and in Kenya and Uganda.

Pothole detection and monitoring is a difficult challenge as the road network is large and expansive and the condition changes constantly. Good quality data is critical so local councils can act on it. When CPE met Mobilized Construction in early 2020, the firm provided data using accelerometer based sensors, detecting road vibrations consistent with potholes when a vehicle’s wheels interacted with them. This is an excellent way to monitor roads frequently, however it can miss parts of the roads due to limited interaction between the road surface and the wheel.



Reduction in road glare from wet roads

To address this, CPE worked with Mobilized Construction to review different image-based systems to monitor the road surfaces. Having provided a comprehensive review of a range of techniques seen in the literature, CPE went on to trial four additional methods: using Raspberry Pi based cameras, hi-frame rate cameras used in motor sports, thermal imagery cameras, and polarization sensitive imaging of road surfaces. The latter solution was shown to detect the presence of standing water on road surfaces as well as reduce glare from the sun and is being used to guide development efforts going forward.

This collaboration demonstrated a working solution which would add significant capabilities to their existing system and directed the company to expand on their optical offerings. The company have used their expertise in computer vision and AI to progress the development of this system and continue to trial this with local authorities today and are always eager for new local authority or construction company collaborators to trial their technology.

Visit the Mobilized Construction website for more information: <https://mobilizedconstruction.com/>



CPE Staff Bio – Dr Neil Haigh, Research Fellow

Dr Neil Haigh has recently been appointed to the role of Research Fellow for Wrexham Glyndŵr University's CPE team at the OpTIC Centre in St Asaph. Neil's role at CPE includes oversight of the development of the advanced thin films optical coating technology plant and leading CPE projects which support Welsh businesses based in the West Wales and Valleys region.



Neil has a PhD in Applied Optics (Imperial College, London), allied with over 25 years' experience in UK industry working in photonics fields including optical fibre communications, laser safety, software interface design, LED lighting system design and photonics training.

Neil's industrial experience includes photonics R&D, rapid prototyping, pilot manufacturing, optical calibration and testing, and field installation of photonics systems. Neil is also experienced in the development of scientific control systems using LabVIEW™, having developed the NPL eyeLight LED safety software platform and also a control interface for the Extremely Large Telescope mirror polishing team at the OpTIC Centre.

Neil currently has good collaborative links with several UK universities working in biophotonics and notably the National Physical Laboratory (NPL) in London, with advanced tuneable spectrum LED lighting technology installed in the NPL Biometrology lab. Neil is currently interested in LED light therapy technologies including coloured light therapy for medical and therapeutic purposes.

Upcoming Grant Applications

[DASA - Open Call \(5\)](#) – Innovation to find proposals that address challenges faced by government stakeholders to improve the defence and/or security of the UK. Contract Value: £100k-£350K.

Closing date – 02/03/2022

[Innovate UK Smart Grants: January 2022](#) – UK registered organisations can apply for a share of up to £25million for game-changing and commercially viable R&D innovation that can significantly impact the UK economy. **Closing date – 13/04/2022**

[Automotive Transformation Fund Feasibility Studies: Round 3](#) – Organisations can apply for a share of up to £10 million for business case feasibility studies to support scale up of the UK's zero emission automotive supply chain. **Closing date – 09/03/2022**



Farewell and good luck!

Our South Wales based Business Development Manager, Hazel Hung, is moving on to pastures new! We would like to thank Hazel for all her hard work on the CPE project and wish her all the very best in her new role. Hazel will be greatly missed by her colleagues and industry contacts – she has been an incredibly industrious, professional, creative, diligent colleague and we have all enjoyed working with her. Good luck Hazel!

Contact Us



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