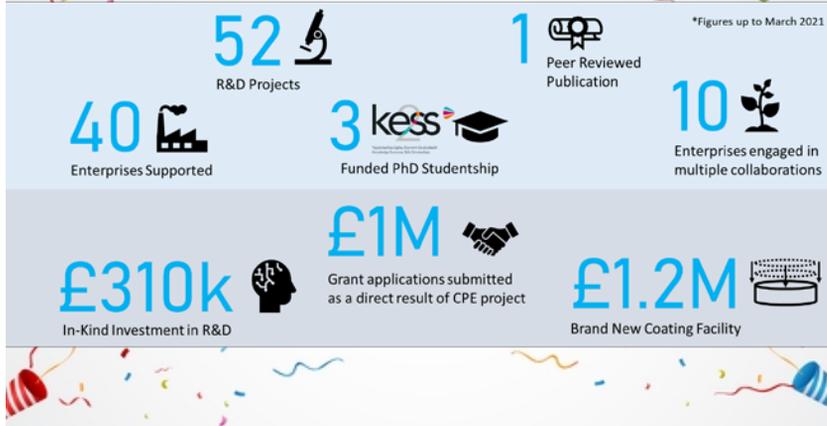


2 Years of CPE



CPE recently reached its 2 year anniversary and the infographic highlights the programme’s main successes and achievements so far.

Looking ahead, we aim to continue the effective work with existing partners, as well as forming collaborations with new enterprises on a wide range of interesting and innovative projects.

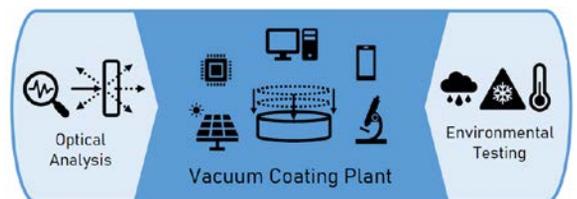
CPE Thin-Film Coating Plant

CPE’s brand new thin-film coating facility is situated at Wrexham Glyndŵr University’s OptIC Centre in St Asaph.

It features an industry benchmark vacuum coating plant along with key supporting equipment for optical analysis and environmental testing. The £1.2M research and development thin film coating facility is the first of its kind in Wales and allows companies within the West Wales and the Valleys region to develop thin film technology products and applications.

CPE’s team of thin film specialists work closely with these companies supporting prototype development as well as production scale commercial R&D developing thin film vacuum deposition processes and products.

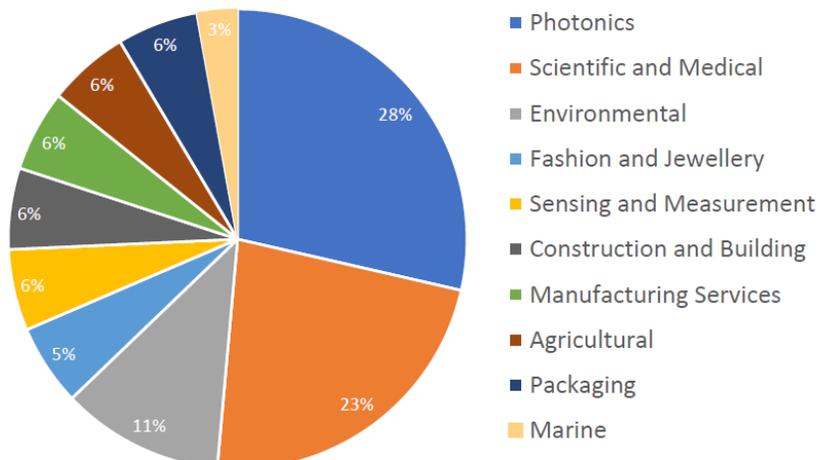
Contact us for more information on how the coating facility could support your engineering requirements.



Did you know...

The majority of the companies we have collaborated through the CPE program are from outside the Photonics industry and had not worked with academic partners previously. Feedback from companies has shown that their engagement was a positive experience with beneficial impacts and with many commencing additional projects with CPE.

Company Sectors



5 Minutes With...Kelvin James

Name & Job Role: Kelvin James, Managing Director
Company: Diamond Centre Wales
Location: Talbot Green, nr Llantrisant



How and where does the story of Diamond Centre Wales begin?

My wife, Sharon, and I started out the business from our home office in 1978 as SNJ Diamond Merchants. Over the years our reputation and ambitions grew for our family business. We established Diamond Centre Wales (DCW) in 2005 and moved to a new site with an office, design studio, workshop and showroom. We're proud to say that today it employs 18 talented individuals, with a wealth of experience, ranging from goldsmithing and setting to prototyping, CAD design, Gemstone, diamond and industry knowledge.

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

Over the years we've grown from strength to strength, and we've loved every minute of it. It truly is an exciting with R&D being crucial to us and where we see the future of DCW. We're collaborating with several universities to explore and implement technological advances in the diamond and jewellery industry.

Tell us about the exciting projects you are working on at DCW.

We've got some great projects with CPE with Bangor University and Aberystwyth University. With the team at Bangor University, we are looking at engraving nano-scale QR codes into a diamond for traceability and identification, right from the diamond mine to the merchant, using secure blockchain technology. The CPE collaboration with Aberystwyth University is looking at precision ways to measure the brilliance of a diamond.

We've also worked with USW on the CEMET project (Centre of Excellence in Mobile and Emerging Technologies) and our customers are now able to use our augmented reality app to create their own jewellery designs. Meanwhile, Sheffield University is helping us to address the

barriers of 3D printing in precious metals and help define new industry standards in additive manufacture (AM) precious metal printing.

Do you have any advice for micro or SMEs looking to invest time in RD&I?

I would say, "Do it!". Innovation is so crucial to our business and if you can find the right collaborator through schemes like CPE, then we see this as a hugely worthwhile investment.

What are you most proud of?

We are so incredibly proud of our staff. We firmly believe they are our biggest assets and want to provide them with every possible opportunity to progress and learn new skills. We provide on-the-job learning through, apprenticeships, Diplomas, PGCEs, and participation in R&D projects through industry and university connections. As such, we have recently enrolled 6 of our employees on an MSc in Advanced Manufacturing with MADE (University Wales Trinity Saint David).

Tell us something others would be surprised to know about you or Diamond Centre Wales

DCW has broken new grounds to create a Jewellery Academy. The team has finished construction on its newest facilities to offer experience days, teaching facilities and an end-to-end bureau service to facilitate the adoption of advanced manufacture into the Jewellery Industry.

We would love to tell you more about our new world innovations that are currently being worked on BUT sorry we can't...it's a SECRET! Though we should be able to release the intricate details on the current six major projects within the next 12 months.

A big thank you to Kelvin for taking the time to speak to us. For more information about Diamond Centre Wales, visit:

www.diamondcentrewales.com

CPE works with Techion UK Ltd to enable AI-capable disease management for the agriculture sector.

“Working with the CPE team at Aberystwyth has helped us identify key areas for improvement to enhance our imaging capabilities. These are already being incorporated in to our imaging device and are resulting in improve image quality from the field. We have found the team to be very practical and they have spent time to understand our business and requirements and we look forward to extend our working relationship”

Eurion Thomas, European Operations Manager

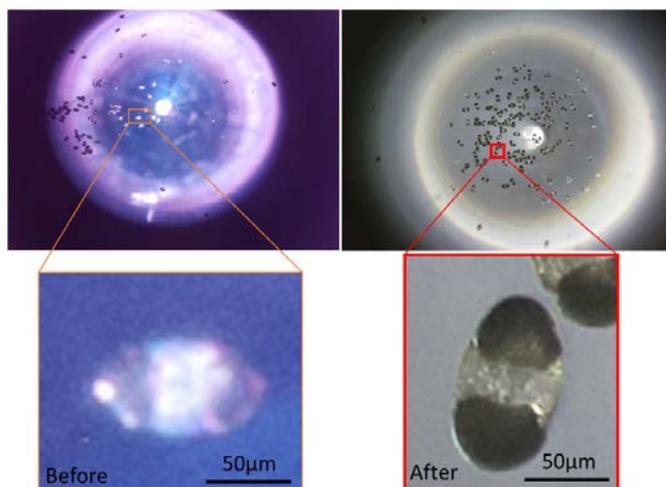


Techion is a manufacturer of systems for disease management in the agricultural sector. They have developed an image based system which identifies parasite infection in livestock (such as sheep and cattle), using a process known as Fecal Egg Counting (FEC). In order to check for a parasite infection, the livestock have to be routinely checked through FEC. Techion have a product that assists with sample preparation and then the sample can be viewed under an imaging device and an image captured in order to carry out the FEC.

Through the support of CPE, Techion improved the optical resolving power of their imaging system to upgrade it from ‘simple’ manual parasite egg counting to an AI powered count and speciation of parasite eggs. This will mean that they would be able to identify mixed infections to ensure the animals are getting the right treatment.

The CPE collaboration with Aberystwyth University involved evaluating the existing design and then making recommendations to improve the optical resolution for a new product design. The picture shows the images of parasite eggs before (left) and after recommendations made by CPE (right). The team achieved a 3-fold improvement in the resolution as well as identifying an opportunity to reduce costs of their image sensor and improve sample illumination.

Aberystwyth University and Techion are now working together to take this collaboration further, beyond the CPE program.



CPE boosts lighting technology for indoor farming with Nutralight

CPE’s collaboration with Nutralight and University of South Wales (USW), featured in the latest issue of Advances Wales this month. Nutralight is an LED manufacturer specializing in smart lighting, sensing and control solutions for the horticultural market. Smart horticultural lighting is a vastly growing market and is integral to the self-sustaining vertical farms that are set to revolutionize the horticulture industry.

The CPE collaboration involved optical modelling to minimise the loss of light ensuring that every photon counts. Peter Rees from USW explained: “When you’re looking at indoor horticulture, every little percentage point of power matters. The lights are running for many hours each day and are quite energy consuming, so there is a lot of benefit to be gained even by small improvements in the efficiency.”

Check out the article in full in Issue 95 of Advances Wales:

<https://businesswales.gov.wales/innovation/advances-wales>





Emerging Tech Fest 2021

The annual Emerging Tech Fest event, hosted by Technology Connected, took place across Tuesday 26th – Thursday 28th January. Over 1000 people signed up to view 180 speakers across 54 different online talks and webinars which showcased exciting emerging technology across Wales and beyond.

CPE were proud to be an official partner for the event, and also hosted 2 separate webinars which focused on how photonics-based technology can boost industry within Wales. Both sessions were very well attended and have so far received over 250 views online.

To view the CPE sessions again, visit the Emerging Tech Fest YouTube channel:

<https://www.youtube.com/channel/UCm8ge3Ut0k6WInsxEcToltw>



Women in STEM – 8th March 2021

As part of International Women’s Day on Monday 8th March, CPE took part in an online Women In STEM event in collaboration with M-Sparc and Bangor University. CPE’s Caroline Gray and Hazel Hung joined a panel of guest female speakers to talk about their careers in STEM and discussed their experiences along the way.

The event was viewed live by over 50 people and can be watched again at any time by visiting.

<https://youtu.be/32mINDScQI4>



Wales StartUp Awards 2021

CPE are proud to be supporting the Wales Start Up Awards this year. Last year saw the “Innovative Start-Up of the Year Award” go to CPE collaborator and Denbighshire based smart valve manufacturer, iVapps. The company has since formed many strong links both nationally and internationally.

Start-ups can choose from a range of 25 categories and have until 31st May to submit their application. Results will be announced during an evening event, on Thurs 9th September at the Depot in Cardiff, celebrating the successes of new businesses across Wales.



<https://www.walesstartupawards.com>

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Centre for Photonics Expertise (CPE)



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