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## Northumbria University helps businesses turn waste streams into new products

Following its part in the successful delivery of a £4.7 million, three-year government funded research consortium, Northumbria University aims to engage with companies eager to commercialise their waste streams, increase their efficiency and bolster profitability.

The Government's [Transforming Foundation Industries Research and Innovation \(TransFIRe\) Hub](#), has a focus on UK manufacturing and its supply chain, specifically, those companies that are part of the chemicals, cement, ceramics, glass, metals, and paper industries.

Northumbria University, which has been recognised as Modern University of the Year 2025 by The Times and also recorded the biggest rise in research power of any UK university for the second time in a row in REF2021, is ideally positioned to facilitate real impact through knowledge exchange and collaboration for organisations of all sizes, from multinationals to SMEs, based in the North East of England.

According to a report by BiGGAR Economics, Northumbria's research and knowledge exchange activities contributed £181 million to the UK economy, supporting over 3,100 jobs in the academic year 2021-2022.



Members of Northumbria University's Applied Sciences department

As part of the consortium, Professor Justin Perry and Professor Matt Unthank, from Northumbria's Department of Applied Sciences, led research focussed on the bulk chemicals sector. Their research has showcased that it is not only possible but, also, potentially profitable, to take zero value waste from one industry and turn it into valuable feedstocks or components for another industry.

One of the collaborations established through the research was with coatings specialists AkzoNobel and Jayplas, a specialist in post-consumer plastic recycling, reprocessing and manufacturing. The project showcases what is

achievable by working across discipline boundaries in the manufacturing, polymer and construction industries.

The team has shown that it is possible to further optimise current plastic bottle recycling technology, which recycles a plastic called PET, used in single-use water and soft drink bottles, by taking its currently unrecyclable waste and transforming it into a novel, high-performance protective coating, for industrial applications, using only sustainable feedstocks. This demonstrates it is viable to convert a waste material into a high-value, high-performance product which can supply a coating market with global consumption reported as high as one million tonnes per annum.

Professor Matt Unthank, co-lead on the project for Northumbria University, said: “This research was undertaken to showcase what is attainable when bringing businesses from different industries together to implement science-led, solution-based, projects. We have highlighted that we are well positioned to help businesses across a range of industries to move beyond conceptualisation and small-scale demonstrations into commercial level trials. We aim to help businesses become more sustainable at the same time as creating profitable high value products with them.”

“The UK government is making a real push to enable the manufacturing sector to become more sustainable and investment in research is key. We are keen to help businesses of all sizes develop their R&D to take advantage of sustainability as a driver of profitability. We have shown with this coating how one such ‘waste stream’ can create value for another industry and it is just one step towards a closed loop economy where there is no such thing as waste.”

Together, the foundation industries are worth £52 billion to the UK economy and produce 28 million tonnes of materials per year, accounting for about 10% of the UK total CO<sub>2</sub> emissions.

Ralph Slikkerveer, R&D Director at AkzoNobel’s Marine Protective & Yacht business unit said: “At AkzoNobel, advancing more sustainable coatings is a top priority. Our collaboration with Northumbria University on projects like this is vital for achieving our sustainability ambitions, including 100% circular use of materials in our own operations by 2030.

We are excited about this progress, but we also recognize that our customers



need coatings that deliver long-lasting protection in the most demanding conditions. Although it may take time to fully implement these innovations, they represent more than just exciting advancements—they are essential for inspiring collaboration and driving entire industries toward a brighter, more sustainable future.”

For more information visit [www.northumbria.ac.uk/spin](http://www.northumbria.ac.uk/spin)

The Synthesis Polymer and Innovation (SPIN) group at Northumbria University is a focussed research group led by Professor Matt Unthank and Professor Justin Perry. It supports research and innovation in the field of polymers, composites and coatings, including polymer scale-up and analytical capabilities to support high TRL and commercialisation projects with industrial partners.

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UNIVERSITY OF THE YEAR 2022 (Times Higher Education Awards)

Northumbria is a research-intensive university that unlocks potential for all, changing lives regionally, nationally and internationally.

Two thirds of Northumbria's undergraduate students come from the North East region and go into employment in the region when they graduate, demonstrating Northumbria's significant contribution to social mobility and levelling up in the North East of England.

Find out more about us at [www.northumbria.ac.uk](http://www.northumbria.ac.uk)

--- Please contact [media.communications@northumbria.ac.uk](mailto:media.communications@northumbria.ac.uk) with any media enquiries or interview requests ---

## Contacts



### **Rik Kendall**

Press Contact  
PR and Media Manager  
Business and Law / Arts, Design & Social Sciences  
rik.kendall@northumbria.ac.uk  
07923 382339



### **Andrea Slowey**

Press Contact  
PR and Media Manager  
Engineering and Environment / Health and Life Sciences  
andrea.slowey@northumbria.ac.uk  
07708 509436



### **Rachael Barwick**

Press Contact  
PR and Media Manager  
rachael.barwick@northumbria.ac.uk  
07377422415



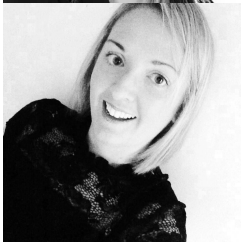
### **James Fox**

Press Contact  
Student Communications Manager  
james2.fox@northumbria.ac.uk



### **Kelly Elliott**

Press Contact  
PR and Media Officer  
kelly2.elliott@northumbria.ac.uk



### **Gemma Brown**

Press Contact  
PR and Media Officer  
gemma6.brown@northumbria.ac.uk