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Press release

Scientists set their sights on new catalyst technology to help achieve net zero

Academia and industry experts from the UK are exploring ways of converting carbon dioxide and waste into sustainable fuels and chemicals to meet net zero targets.

bp and Johnson Matthey are partnering with Cardiff University and The University of Manchester in a £9m project that aims to convert CO₂, waste and sustainable biomass into clean and sustainable fuels and products.

A partnership featuring two leading British universities, Cardiff University and The University of Manchester, together with bp and Johnson Matthey, has been launched to explore transforming carbon dioxide, waste products and sustainable biomass into fuels and products that can be used across the energy and transportation sectors. The project is one of eight business-led Prosperity Partnerships announced today in support of the government's ambitious new Innovation Strategy.

Cardiff University, an internationally-leading centre for catalysis research, is leading the project, and The University of Manchester will provide expertise in materials science, characterisation methods and catalysis. They are joined by bp, which is transitioning from an international oil company to an integrated energy company, and Johnson Matthey, a global leader in sustainable technologies. The partnership will devote the next five years to exploring new catalyst technology to help the world get to net zero.

Catalysts are involved in helping to manufacture an estimated 80% of materials required in modern life, so are integral in manufacturing processes. As a result, up to 35% of the world's GDP relies on catalysis.¹ To reach net zero, it will be critical to develop new sustainable catalysts and processes, which will be the main objective for the partnership to explore.

Professor Duncan Wass, Director of the Cardiff Catalysis Institute, said: "The catalysts we use today have been honed over decades to work with specific, fossil fuel resources. As we move to a low carbon, more sustainable, net zero future, we need catalysts that will convert biomass, waste and carbon dioxide into valuable products such as fuels and lubricants.

¹ <https://doi.org/10.1002/0470862106.ia084>

Working in this partnership, we will bring together a wide range of catalysis expertise to uncover new science and contribute towards achieving net zero - perhaps the most pressing objective for us all.”

Dr. Kirsty Salmon, bp vice-president for advanced bio and physical sciences for low carbon energy, said: “We are excited to be working with our longstanding partners Johnson Matthey, Cardiff Catalysis Institute and The University of Manchester in this Prosperity Partnership. It is a great team, which builds on our successful bp International Centre of Advanced Materials (bp-ICAM) partnership, and I am looking forward to seeing them work across scientific disciplines to innovate new low carbon technologies to help the world get to net zero.”

Dr. Elizabeth Rowsell, Corporate R&D Director, Johnson Matthey, added: “We are delighted to be part of the EPSRC-funded Prosperity Partnership which will help to deliver sustainable materials leading to increased circularity in industrial processes. This project will be critical in developing the next generation of enabling catalyst technologies that will be needed in a Net Zero world, so it is entirely aligned with the net zero commitments of both industrial partners.”

Professor Martin Schröder, Vice-President and Dean of the Faculty of Science and Engineering at The University of Manchester, commented: “Net zero is too big a problem for a single institution to tackle on its own and it is critical that industry and academia work together to solve this challenge. Our University is committed to addressing this issue as part of the social responsibility agenda together with our partners. We value these interactions strongly, as shown by our commitment and success in the EPSRC Prosperity Partnership scheme. This collaborative programme builds on a platform of long-term partnership between The University of Manchester and bp through the bp-ICAM.”

The *Sustainable Catalysis for Clean Growth* project has been co-funded with £2.68m from the Engineering and Physical Sciences Research Council (EPSRC), part of UK Research and Innovation, and £5.65m from the companies and University partners. Commencing in October 2021, the work brings together industry experts from bp and JM with academics from Cardiff University and The University of Manchester in this interdisciplinary team.

ENDS

Notes to editors

bp

bp’s purpose is to reimagine energy for people and our planet. It has set out an ambition to be a net zero company by 2050, or sooner, and help the world get to net zero, and recently announced its strategy for delivering on that ambition.

Johnson Matthey

Johnson Matthey is a global leader in science that enables a cleaner and healthier world. With over 200 years of sustained commitment to innovation and technological breakthroughs, we improve the performance, function and safety of our customers’ products and in 2020 we received the London Stock Exchange’s Green Economy Mark, given to companies that derive more than 50% of revenues from environmental solutions. Our science has a global impact in areas such as low emission transport, pharmaceuticals, chemical processing and making the most efficient use of the planet’s natural resources. Today more than 15,000 Johnson Matthey

professionals collaborate with our network of customers and partners to make a real difference to the world around us. For more information, visit www.matthey.com

Cardiff University

Cardiff University is recognised in independent government assessments as one of Britain's leading teaching and research universities and is a member of the Russell Group of the UK's most research intensive universities. The 2014 Research Excellence Framework ranked the University 5th in the UK for research excellence. Among its academic staff are two Nobel Laureates, including the winner of the 2007 Nobel Prize for Medicine, Professor Sir Martin Evans. Founded by Royal Charter in 1883, today the University combines impressive modern facilities and a dynamic approach to teaching and research. The University's breadth of expertise encompasses: the College of Arts, Humanities and Social Sciences; the College of Biomedical and Life Sciences; and the College of Physical Sciences and Engineering, along with a longstanding commitment to lifelong learning. The Cardiff Catalysis Institute (CCI) is an internationally leading centre for catalysis research and will move to into new purpose-built laboratories within the Translational Research Hub building in 2022, part of Cardiff University's £300m Innovation Campus development.

EPSRC

The Engineering and Physical Sciences Research Council (EPSRC) is the main funding body for engineering and physical sciences research in the UK. By investing in research and postgraduate training, we are building the knowledge and skills base needed to address the scientific and technological challenges facing the nation.

EPSRC is part of UK Research and Innovation, a new body which works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish. We aim to maximise the contribution of each of our component parts, working individually and collectively. We work with our many partners to benefit everyone through knowledge, talent and ideas.

The University of Manchester

Part of the prestigious Russell Group of universities, The University of Manchester is the largest single-site university in the UK, with the biggest student community, and also acts as a research powerhouse. [Advanced materials](#) is one of The University of Manchester's [research beacons](#) - and an example of the pioneering discoveries, interdisciplinary collaboration and cross-sector partnerships that are tackling some of the biggest questions facing the planet. #ResearchBeacons The [bp-ICAM](#) partnership's Hub is based at the University. This longstanding partnership between bp and selected globally leading universities is enabling the effective application of advanced materials for the transition to net zero.

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