

Umicore and Anglo American to develop PGM-based technology to simplify hydrogen storage and use in fuel cell electric vehicles

Umicore and Anglo American, through its PGMs business Anglo American Platinum, announce a research and development collaboration agreement to develop PGM-based catalysts for liquid organic hydrogen carrier (LOHC) applications on fuel cell electric vehicles (FCEVs) and other mobile applications. This catalyst technology has the potential to transform the way hydrogen can be stored and used to power FCEVs.

Today, compressed hydrogen is used to power FCEVs. Insufficient infrastructure and refuelling networks for compressed hydrogen, however, represent one of the main barriers for a more widespread use of hydrogen in the transportation industry. LOHC technologies provide an effective alternative solution by chemically bonding hydrogen to a stable organic liquid carrier, thereby eliminating the need for compression and making it safer, more practical and more cost efficient to transport hydrogen using existing conventional fuel networks.

The joint research and development program targets new PGM-based catalyst technologies for LOHC, that can be installed directly on FCEVs and other mobile applications. This will help to further simplify the fuelling process: the LOHC containing hydrogen can be unloaded directly on the FCEV and the dehydrogenation phase will be carried out onboard the vehicle. The new catalyst technologies will allow to carry out this dehydrogenation step at lower temperatures and pressures, which is required for mobile applications, thereby providing a simpler and cheaper alternative to onboard storage of compressed hydrogen.

Benny Oeyen, Anglo American's Executive Head of PGM Market Development, said: "There is growing enthusiasm for the role that hydrogen can play in tackling global energy challenges. In order to unlock its full renewable energy potential, however, we need to solve the existing transport, logistics and infrastructure challenges. LOHC technology provides a versatile and attractive solution both for the short and long term future, and PGMs have an important role to play in streamlining logistics, offering a better user experience and reducing cost across the entire value chain."

Lothar Mussmann, Senior Vice President New Business Incubation at Umicore said: "We are a leading supplier of catalysts for Proton Exchange Membrane fuel cell electric vehicles. Allowing the use of hydrogen loaded LOHC in mobile fuel cell applications by using advanced LOHC dehydrogenation catalyst technology will help to overcome existing challenges of hydrogen infrastructure and logistics and thereby foster the wider introduction of fuel cell electric vehicles."

Umicore will conduct the research with support from Anglo American's PGM market development program and in cooperation with Prof. Peter Wasserscheid at the University of Erlangen, co-founder of the company Hydrogenious LOHC Technologies, which is a portfolio company of AP Ventures.

A conference call and webcast will be hosted by An Steegen, CTO of Umicore, Joakim Thøgersen, SVP Fuel Cells & Stationary Catalysts, and Lothar Mussmann, SVP NBI Catalysis & Connectivity and IP, on Umicore's position in catalysts to support the green hydrogen economy at **10:00 am CEST** today, 26 April 2021.

Please visit: http://umicore.com/hydrogen_2021

For more information

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About Umicore

Umicore is a global materials technology and recycling group. It focuses on application areas where its expertise in materials science, chemistry and metallurgy makes a real difference. Its activities are organised in three business groups: Catalysis, Energy & Surface Technologies and Recycling. Each business group is divided into market-focused business units offering materials and solutions that are at the cutting edge of new technological developments and essential to everyday life.

Umicore generates the majority of its revenues and dedicates most of its R&D efforts to clean mobility materials and recycling. Umicore's overriding goal of sustainable value creation is based on an ambition to develop, produce and recycle materials in a way that fulfils its mission: materials for a better life.

Umicore's industrial and commercial operations as well as R&D activities are located across the world to best serve its global customer base. The Group generated revenues (excluding metal) of € 3.2 billion (turnover of € 20.7 billion) in 2020 and currently employs 10,800 people.