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Start for the "Research Factory Hydrogen MV" - Northeast as pioneer for technologies of the energy transition

With the award of the first funding to the Leibniz Institute for Catalysis, LIKAT, the joint project "Research Factory Hydrogen MV" starts. Together with two other research institutions, LIKAT will explore and optimize processes and technologies for CO₂-neutral production cycles on the basis of renewable energies and bring them to application maturity. In addition to LIKAT, the collaborative partners are the Rostock Fraunhofer Institute for Large Structures in Production Engineering, IGP, and the Leibniz Institute for Plasma Research and Technology, INP Greifswald.

With the first tranche of 5.5 million euros, which has now been approved, LIKAT will set up facilities for the so-called PtX transfer. Internationally, this abbreviation stands for the conversion of sustainably generated electrical energy into any x-products of the energy and basic materials industry: "Power to X", as project manager Christoph Wulf from LIKAT explains. Specifically, the project involves the production of hydrogen by means of electrolysis, using electricity from photovoltaic systems. The hydrogen, in turn, is to be processed together with CO₂ into green fuels (e-fuels), as well as energy storage and basic chemicals, such as kerosene and methanol. All of this will be CO₂-neutral, of course, as Christoph Wulf says: "We're extracting the carbon dioxide from the air, and we need appropriate plants for that, too."



Abb.: Freuen sich über den Fördermittelbescheid für das PtX-Transfer-Projekt am LIKAT: Reinhard Meyer, Wirtschaftsminister Mecklenburg-Vorpommerns und Fördermittelgeber (rechts), Bettina Martin, Wissenschaftsministerin, und Prof. Dr. Matthias Beller, Direktor des LIKAT. Der Bescheid wurde am 4. Juli 2022 zur Eröffnung des neuen Technikums am LIKAT überreicht. Foto: LIKAT

The task of LIKAT as part of the "Hydrogen Research Factory MV" is to optimize the necessary chemical processes, from electrolysis and CO₂ capture from the air to processes for products. Until now, CO₂ has been extracted, if at all, from waste gas plumes, for example from waste incineration or in the cement industry. According to Christoph Wulf, capturing it from the air is not ready for the market anywhere in the world. Catalysts would play a special role in the development of each of the corresponding (sub)processes; without them, the processes would not even run. Wulf: "That's our expertise!"

To optimize the catalytic processes for PtX transfer, LIKAT uses its newly built technical center, which was ceremoniously opened in early July in Rostock's Südstadt district. Here, green fuels will soon be produced on a scale of up to 100 liters.

As the chemist further explains, the LIKAT part of the research factory allows entry into the climate-neutral production of higher-value hydrocarbons, such as long-chain alcohols, as well as olefins and starting materials for polymers. "With this joint project, an entire basic materials industry can in principle be put on a sustainable, green footing," says Christoph Wulf.

In addition to LIKAT's new pilot plant, the hydrogen factory will be located at Rostock Harbor and the Technology Park in Poppendorf. On the port site, the IGP will build its hydrogen application center, and in Poppendorf, the INP will develop and test plasma-based processes.

Contact at LIKAT:

Christoph Wulf, E-Mail: Christoph.Wulf@catalysis.de, Phone: +49 (0) 381/1281 124