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Turning CO₂ into a Valuable Material - New Group Leader at LIKAT for the Application of Electrochemical Reactions

The Leibniz Institute for Catalysis in Rostock, LIKAT, has established a new research group for “Continuous Electrochemical Processes” with a focus on industrial applications. It is headed by Dr. Wen Ju, who has been conducting research at LIKAT since the beginning of the year.

One focus is on the conversion of CO₂ from air and industrial waste gases into basic chemical substances such as carbon monoxide (CO) and ethylene. One elegant way to do this is via electrocatalysis, which basically only requires electrodes under voltage and a suitable catalyst - either dissolved in water or as a layer on the cathode - in addition to the CO₂.

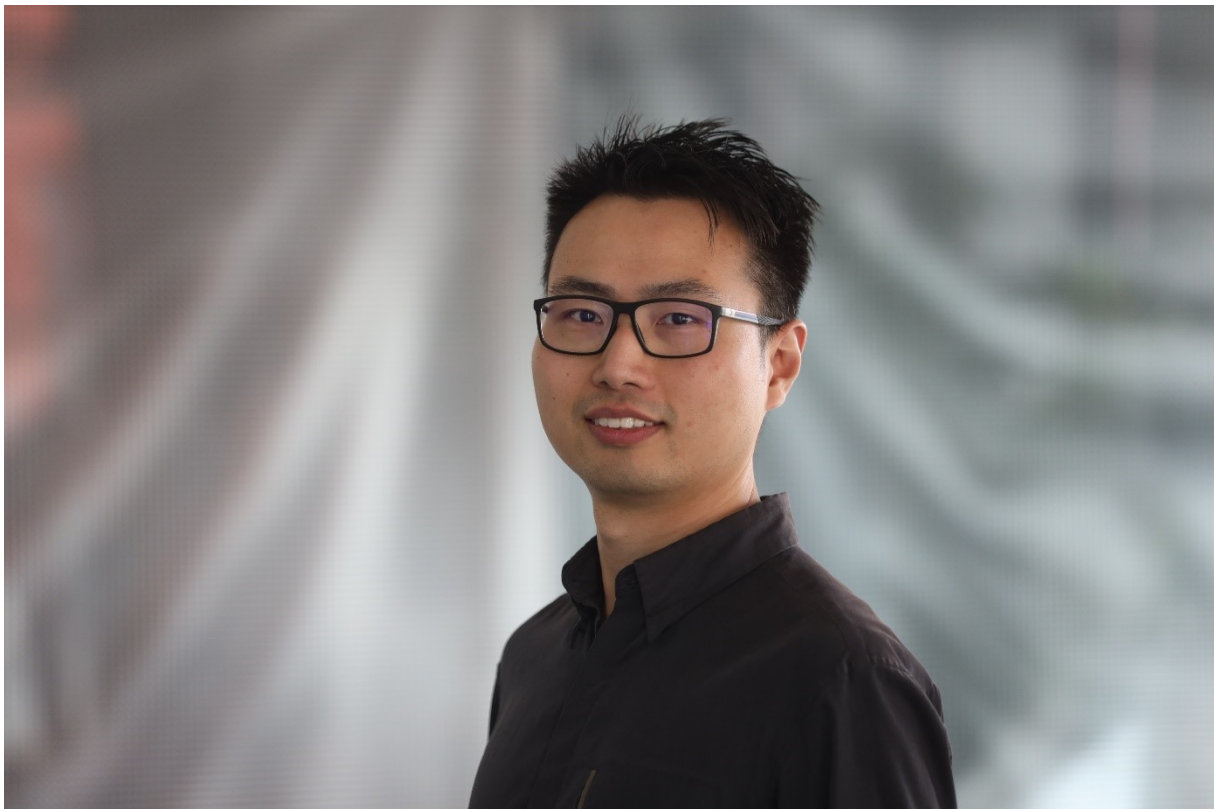


Fig. 1: Dr. Wen Ju

According to Wen Ju, these processes have great potential to curb climate change and conserve natural resources. Carbon monoxide, for example, is needed in large quantities for the production of polycarbonate and polyurethane, which the industry uses to manufacture insulation materials, eyeglasses, protective glass and other important goods. This process

currently consumes huge amounts of fossil fuels and produces large quantities of the greenhouse gas CO₂ as waste gas.

“Electrocatalysis can be a very effective tool to extract the carbon from the stable CO₂ molecule and incorporate it into higher-value products,” says Wen Ju. Carbon is found in most of the goods and energy sources we need every day. The aim is to replace fossil raw materials in their production with the greenhouse gas CO₂ and thus set a carbon cycle in motion. Such technologies have been researched for decades under the heading of “Carbon Capture and Utilization” (CCU). Researchers around the world are working hard to bring their projects to industrial maturity.

Dr. Ju's research group is part of the “Electrochemistry and Catalysis” department headed by Prof. Dr. Robert Francke, the head of the new management team at LIKAT. Wen Ju conducted research at the TU Berlin for more than ten years, most recently as project manager, with close links to industry. His group's cooperation partners include companies that, like LIKAT, are committed to research and development for a climate-neutral economy.

In addition to CO₂ electrolysis, the group deals with other topics, including the electrochemical activation and conversion of various raw materials into valuable chemicals.

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