

March 9, 2023

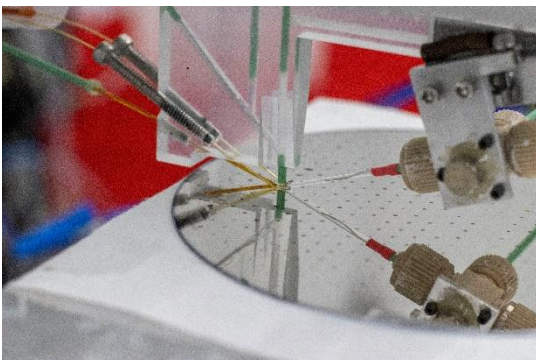
Tokyo Gas and H2U Technologies Enter Joint Agreement to Develop Low Cost Electrolyzers

Tokyo Gas Co., Ltd.

Tokyo Gas Co., Ltd. (President: UCHIDA Takashi; “Tokyo Gas”) and H2U Technologies (CEO: Mark E. McGough; “H2U”), a U.S.-based start-up which offers a proprietary Catalyst Discovery Engine™ (CDE™), have partnered under a multi-year Joint Development Agreement (JDA) to discover and develop novel catalysts and apply them to membranes to reduce the cost of Proton Exchange Membrane (PEM) electrolyzers.

Energy suppliers and manufacturers across the globe are taking the initiative to scale up electrolyzer manufacturing, especially for Proton Exchange Membrane (PEM) electrolyzers. However, a major hurdle stands in the way. Contemporary PEM electrolyzer designs rely on rare, costly platinum group metals (PGMs) like iridium, a very expensive element with highly constrained supply. That’s where H2U’s proprietary CDE comes into play. The CDE allows scientists to rapidly discover and develop novel catalysts that are composed of abundant materials costing a fraction of the price of precious metals in use today. For instance, by using H2U’s technology, it only takes about one minute for composition and evaluation per sample, while taking a week using the conventional process.*¹ By collaborating with H2U and utilizing the CDE and AI, Tokyo Gas aims to develop low cost, high performance, non-iridium catalysts and catalyst coated membranes, to substantially lower the cost of PEM electrolyzer stacks. Tokyo Gas plans to utilize hydrogen produced from electrolysis directly or use it to manufacture e-methane.

<Evaluation of reaction activity of electrocatalysts composed by CDE>



(Source: H2U)

Mark E. McGough, CEO of H2U, stated:

“Our CDE is a great opportunity for energy suppliers, renewable hydrogen project developers, and electrolyzer manufacturers, like Tokyo Gas, to discover and develop efficient, active, and lower-cost replacements for PGM-based electrocatalysts within a joint development approach. The cost of producing green hydrogen today is too high and the reliance on rare and costly catalyst materials is not sustainable. Through scientific collaboration, our CDE will allow Tokyo Gas to rapidly discover optimum materials so they can bring their own PEM electrolyzers to market and produce renewable hydrogen at affordable cost. We’re very pleased to work with Tokyo Gas to help them accelerate the delivery of green hydrogen to their customers.”

YAKABE Hisataka, Executive officer, Director of Hydrogen & Carbon Management Technology Strategy Dept. of Tokyo Gas stated:

“We’re very pleased to initiate this joint development agreement with H2U Technologies to discover and evaluate new electrocatalyst compositions. Undertaking electrolyzer catalyst discovery with H2U scientists presents an opportunity to leverage their unique and proprietary CDE and AI, and collaborate to test these low cost, non-iridium materials in commercially relevant conditions.”

“Tokyo Gas Group will continue advancing efforts for early development of decarbonization technologies and also lead the efforts towards achieving Net-Zero CO₂ in its “challenge to achieve Net-Zero CO₂” set forth in Tokyo Gas Group’s Management Vision, “Compass 2030”. We will thus contribute to the Japanese government’s goal of realizing a “carbon neutral and decarbonized society by 2050.”

Overview of H2U Technologies

Company name	H2U Technologies, Inc.
Representative	Mark E. McGough
Date of Establishment	July 2020
Headquarters location	California, USA
Activities	Development of water electrocatalysts and water electrolyzers

*1: Estimated by Tokyo Gas Co., Ltd.