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TANAKA PRECIOUS METALS

PRESS RELEASE

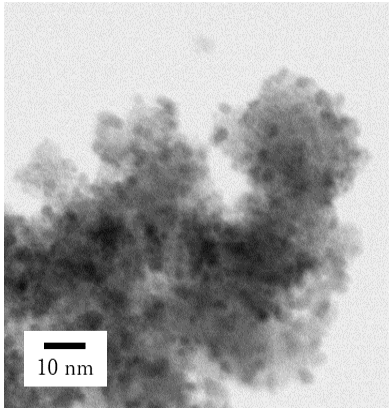
June 6, 2025

TANAKA PRECIOUS METAL GROUP Co., Ltd.

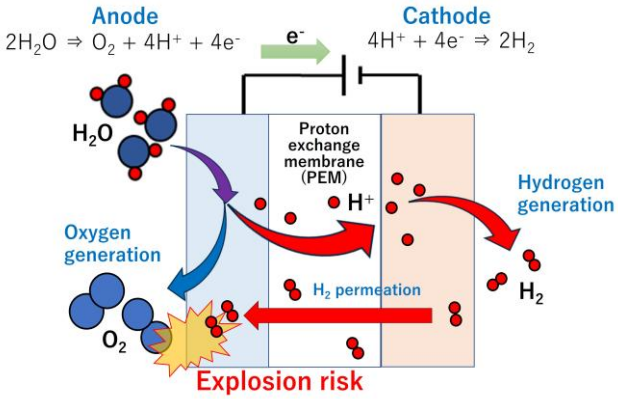
TANAKA PRECIOUS METAL TECHNOLOGIES Receives 2025 Technology Award from Catalyst Manufacturers Association, Japan, for Development and Practical Application of Electrode Catalysts for PEM Water Electrolysis

Newly developed dual-functional catalyst solves hydrogen crossover problem in PEM water electrolysis

TANAKA PRECIOUS METAL TECHNOLOGIES Co., Ltd. (Head Office: Chuo-ku, Tokyo; Representative Director & CEO: Koichiro Tanaka), a company engaged in the industrial precious metals business of TANAKA, **has received the 2025 Technology Award from the Catalyst Manufacturers Association, Japan (CMAJ) for development and practical application of electrode catalysts for PEM water electrolysis**. Ikkei Arima, from TANAKA accepted the award and gave an acceptance speech at the CMAJ award ceremony held on June 5.



TEM image of the catalyst



Conceptual diagram of the water electrolysis reaction and hydrogen crossover phenomenon

■ PEM water electrolysis as an important technology for realizing a carbon-neutral society

Greater use of renewable energy is necessary for realizing a carbon-neutral society. A key challenge with renewable energy lies in the inability to control the timing of power generation. For instance, solar energy can be harnessed only during daylight hours and is dependent on clear weather conditions, limiting its availability when sunlight is insufficient. One way to avoid this timing issue is “power-to-gas” (P2G), a technology that is gaining attention recently. It utilizes technologies such as proton exchange membrane (PEM) water electrolysis to generate and store hydrogen by leveraging surplus electricity from renewable or alternative energy sources. The stored hydrogen can then be used as a clean power source when demand arises. Therefore, PEM water electrolysis is an important technology for realizing both power-to-gas technology and carbon neutrality.

■ New catalyst technology to solve technological problem of hydrogen crossover in PEM water electrolysis

The 2025 Technology Award was granted for the development and practical application of electrode catalysts for PEM water electrolysis, recognizing a newly developed and commercialized dual-functional catalyst working as both an oxygen evolution reaction (OER) catalyst and gas recombination catalyst (GRC). This new catalyst technology succeeds in solving hydrogen crossover, a technological problem in the PEM water electrolysis process, by efficiently lowering the hydrogen concentration on the anode side of a water electrolysis reaction while maintaining high electrolysis efficiency.

Hydrogen crossover poses a significant safety risk, as hydrogen (H_2) produced at the cathode during water electrolysis can permeate the proton exchange membrane (PEM) and migrate to the anode side, where it may come into contact with oxygen (O_2), creating a potential hazard for explosion or fire. Hydrogen crossover has been conventionally controlled by using thicker membranes, but the problem was that resistance increased as membrane thickness increased, which resulted in less efficient electrolysis. Use of this newly developed catalyst enables thinner membranes to be used to significantly improve both safety and electrolysis efficiency. Having been successfully mass produced, this catalyst is now available for customers in Japan and overseas. With a focus on this technology, TANAKA will contribute to realizing a carbon-neutral society, which will become increasingly important going forward.

2025 Technology Award from Catalyst Manufacturers Association, Japan

○Category: Technology Award

○Recipients: Ikkei Arima, Saki Konaka, Mitsuharu Fujita, Mizuki Ito, and Tatsuhiro Yamashita, TANAKA PRECIOUS METAL TECHNOLOGIES Co., Ltd.

○Recognition: Development and practical application of electrode catalysts for PEM water electrolysis

*Catalyst Manufacturers Association, Japan, was founded by companies manufacturing catalysts, producing catalyst-related materials, and dealing with catalyst products to promote the sound development of Japan’s catalyst industry. It is Japan’s leading catalyst industry association, with participation by major catalyst manufacturers. Through Technology Awards, Distinguished Service Awards, and Special Awards, the association’s award system recognizes excellence in advanced catalyst-related technologies and technologies that have made a significant contribution to the catalyst industry each year.

Company Information

■ About TANAKA

Since its foundation in 1885, TANAKA has built a portfolio of products to support a diversified range of business uses focused on precious metals. TANAKA is a leader in Japan regarding the volume of precious metals it handles. Over many years, TANAKA has manufactured and sold precious metal products for industry and provided precious metals in such forms as jewelry and assets. As precious metals specialists, all Group companies in Japan and worldwide collaborate on manufacturing, sales, and technology development to offer a full range of products and services. With 5,591 employees, the group's consolidated net sales for the fiscal year ending December 2024, was 846.9 billion yen.

■ TANAKA Industrial Precious Metal Materials Portal
https://tanaka-preciousmetals.com

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TANAKA PRECIOUS METAL TECHNOLOGIES Co., Ltd.
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