

PRESS RELEASE



October 29, 2020

TANAKA Holdings Co., Ltd.

National Institutes for Quantum and Radiological Science and Technology

TANAKA Receives 2020 Technology Award from Catalyst Manufacturers Association, Japan

Development of hydrophobic precious metal catalyst that improves hydrogen oxidation reaction and hydrogen infrastructure is evaluated

TANAKA Holdings Co., Ltd. (Head office: Chiyoda-ku, Tokyo; Representative Director & CEO: Koichiro Tanaka) announced today that TANAKA Kikinzoku Kogyo K.K. (Head office: Chiyoda-ku, Tokyo; Representative Director & CEO: Koichiro Tanaka), which operates the TANAKA Precious Metals manufacturing business, has received the 2020 Technology Award from the Catalyst Manufacturers Association, Japan, (CMAJ). The award was in recognition of the company's joint development of a hydrophobic precious metal catalyst in collaboration with the National Institutes for Quantum and Radiological Science and Technology (Headquarters: Chiba-shi, Chiba; President: Toshio Hirano; QST). Hitoshi Kubo, from TANAKA, and Yasunori Iwai, from QST, received the award and gave an acceptance speech at the 2020 CMAJ award ceremony, held online on October 14.



Hydrophobic precious metal catalyst



Hydrophobic precious metal catalyst floating on water

Examples of Hydrophobic Precious Metal Catalyst Products

The hydrophobic precious metal catalyst for which the Technology Award was received was developed through a collaboration between TANAKA and QST. It was developed as an ambient-temperature hydrogen oxidation technology for ITER and other nuclear fusion facilities. With its hydrophobicity enabling the catalytic reaction to be maintained even at ambient temperatures, it is used for hydrogen oxidation reactions. With conventional catalysts, moisture in the reaction gas and water vapor generated during reactions cover the catalyst surface and stop the catalytic reaction, so they must be heated to prevent the water vapor

coating from occurring. Also, normal catalysts use plastic as the carrier, which makes them heat sensitive, causing combustion to occur as the temperature of the catalyst increases through the reaction.

This newly developed catalyst employs an inorganic material, which has better resistance to heat and radiation than plastic, as its underlying carrier. The carrier has a hydrophobic group attached (a substance that is difficult to mix with water), which creates a uniform hydrophobic surface to the carrier to improve its hydrophobic and heat-resistant properties. According to internal testing at TANAKA, a precious metal catalyst consisting of this carrier coated with platinum can maintain hydrophobicity for 24 hours at a temperature of 450 °C.

This catalyst can be used for oxidation reactions of hydrogen and combustible gases, in nuclear fusion facilities and elsewhere, without the need for heaters and other equipment. It also enables reactions in outdoor environments without access to an electric power source or in disaster-affected areas during power failures. Because of the hydrophobic properties of this catalyst, it has potential applications in safety equipment to prevent explosions and other accidents. It is particularly promising for use in infrastructure development for the hydrogen energy society.

2020 Technology Award from Catalyst Manufacturers Association, Japan

- Category: Technology Award
- Recipients: Hitoshi Kubo, TANAKA Kikinzoku Kogyo K.K.
Yasunori Iwai, National Institutes for Quantum and Radiological Science and Technology
- Recognition: Development of a hydrophobic precious metal catalyst

Notes

Catalyst Manufacturers Association, Japan, was founded to promote the sound development of Japan's catalyst industry, including companies manufacturing catalysts, producing catalyst-related materials, and dealing with catalyst products. It is Japan's leading catalyst industry association, with participation by major catalyst manufacturers. 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 through Technology Awards, Distinguished Service Awards, and Special Awards.

ITER is an immense international project that aims to create mankind's first experimental fusion reactor for demonstrating the scientific and technological feasibility of nuclear fusion energy for peaceful purposes. The seven ITER Members—Japan, Europe, the United States, Russia, Korea, China, and India—aim to begin the operation of the reactor by 2025.

■ **TANAKA Kikinzoku Kogyo K.K.**

Headquarters: 22F, Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo

Representative: Koichiro Tanaka, Representative Director & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees: 2,393 (as of March 31, 2020)

Sales: JPY 992,679,879,000 (FY2019)

Main businesses:

Manufacture, sales, import, and export of precious metals (platinum, gold, silver, and others) and various types of industrial precious metals products.

URL: <https://tanaka-preciousmetals.com>

■ **National Institutes for Quantum and Radiological Science and Technology**

Headquarters: 4-9-1, Anagawa, Inage-ku, Chiba-shi, Chiba 263-8555, Japan

President: Hirano Toshio

Established: 2016

Employees: 1,301 full-time staff (as of September 1, 2020)

Business activities: Cancer therapy with charged particles, radiation effects on human bodies, medical applications of radiation, radiation protection and radiation emergency medicine, material science with quantum beams, development of life science with quantum beams, quantum science with high power lasers, nuclear fusion as the ultimate energy source for mankind centered around international collaborations such as the ITER Project and the Broader Approach (BA) Activities.

URL: <https://www.qst.go.jp/site/qst-english/>

<Press Inquiries>

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