

February 13, 2020

TANAKA PRECIOUS METALS

TANAKA HOLDINGS Co., Ltd.

TANAKA to Exhibit at FC EXPO 2020

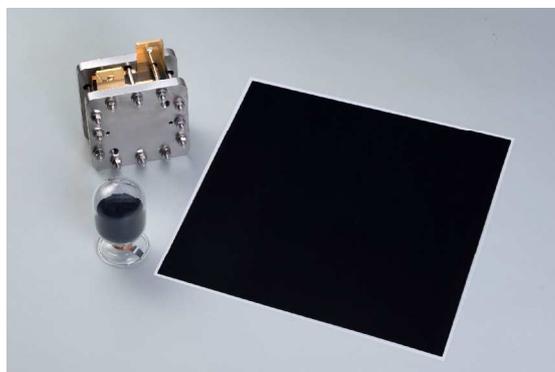
First exhibition of a large catalyst coated membrane sample for evaluating electrode catalysts for water electrolysis and precious metal plating technology
TANAKA will present hydrogen-related technology



<Artist's rendering of booth>

TANAKA HOLDINGS Co., Ltd. (Head office: Chiyoda-ku, Tokyo; Representative Director & CEO: Akira Tanae) announced that TANAKA KIKINZOKU KOGYO K.K. (Head office: Chiyoda-ku, Tokyo; Representative Director & CEO: Akira Tanae), which operates TANAKA PRECIOUS METALS manufacturing business, will exhibit at “FC EXPO 2020 – 16th International Hydrogen and Fuel Cell Expo,” one of the world’s largest fuel cell exhibitions, which will be held at Tokyo Big Sight from Wednesday, February 26 until Friday, February 28, 2020.

TANAKA has started offering large evaluation samples of Catalyst Coated Membrane (CCM) used in solid polymer water electrolysis for manufacturing hydrogen from renewable energy and will exhibit this technology for the first time. The provision of large-sized CCMs for a coating surface of up to 1000 × 1000 mm, according to design requirements, will make it possible for equipment and infrastructure manufacturers to conduct large-sized tests in the initial development stages, thereby greatly contributing to shortening the time taken for technology development.



<Large evaluation CCM sample for water electrolysis electrode catalysts>

Having such manufacturers use CCM with reliable performance as a benchmark in the development stages will also aid in developing more efficient solid polymer water electrolysis equipment.

Precious metal plating is essential for the metal parts used in fuel cell stacks and water electrolysis cell stacks to maintain strong electrical conduction properties. TANAKA has long engaged in developing Au, Pt, Pd, Rh, Ru, and Ir plating technology for base materials such as titanium and stainless steel. This is the first time that it will exhibit highly corrosion-resistant precious metal plating technology and rare precious metal plating technology.

Overview of FC EXPO 2020—16th International Hydrogen and Fuel Cell Expo

Dates: 10 a.m.–6 p.m., February 26 (Wed.) to February 28 (Fri.), 2020 (closes at 5 p.m. on final day)

■Venue: Tokyo Big Sight West 4 Hall, TANAKA KIKINZOKU KOGYO K.K., booth number/ W27-31

■Official exhibition website: <https://www.fcexpo.jp/en-gb.html>

TANAKA will also exhibit various fuel cell-related products made using precious metals. These include its **electrode catalysts for fuel cells** that boasts a world-class shipment volume and is used in polymer electrolyte fuel cells (PEFCs), **electrode catalysts for water electrolysis** that are required to produce hydrogen, **palladium hydrogen permeable films**, which enable high purity hydrogen refinement, **reforming catalysts**, which can be used to produce hydrogen from hydrocarbons such as natural gases, **PROX catalysts**, which can selectively perform oxidation removal of carbon monoxide when hydrogen is generated, and **combustion purifying catalysts** that purify and deodorize impure gases generated during the hydrogen refinement process at low temperatures. (See the table below for a list of the main exhibits).

In recent years, a global trend toward the use of renewable energy as an alternative to fossil fuels is apparent and stems from the international framework provided by the Paris Agreement, adopted at COP21 with the purpose of eliminating greenhouse gases. Hydrogen energy is positioned as a central technology in this movement, with progress being made in the practical application of manufacturing hydrogen from renewable energy, storing and transporting energy by means of hydrogen, and utilizing hydrogen with fuel cells. Amid these global trends, TANAKA continues to proactively engage in the development of new technologies and contributes to the realization of a hydrogen-based society as a leading company in precious metal products.

■Main contents of exhibit: Products marked with “◎” will be exhibited for the first time

Electrode catalysts for water electrolysis	Electrode catalysts for anodes (oxygen generating electrodes) use an oxidation Ir system, while electrode catalysts for cathodes (hydrogen generating electrodes) utilize a Pt system. The catalysts offered have a large specific surface area and low electrolysis overpotential.
◎Electrode catalysts for water electrolysis Evaluation CCM	Evaluation CCMs used for TKK electrode catalysts can be utilized as a standard CCM for development. It can now be offered for coating surfaces of up to 1000 × 1000 mm. These CCMs can even be utilized for intricate coating shapes and in small amounts.
◎Precious metal plating products and electrodes	Substrate processing and precious metal plating are offered for products of various shapes, including for use as feeder plates for solid polymer electrode films. The amount of precious metals used can be reduced by making the plating thinner, using partial plating, and recoating technology.
Electrode catalysts for fuel cells	Electrode catalysts that are both active and durable have been developed by means of precious metal catalyst technology and electrochemical technology cultivated over many years. Highly active catalysts are provided for fuel cell cathodes, while catalysts with excellent carbon monoxide (CO) poisoning-resistant properties are provided for anodes.
Palladium alloys, hydrogen permeable films	In fuel cell hydrogen production, we utilize palladium, the only metal that allows the sole permeation of hydrogen gas, thus enabling removal of impure gases from hydrogen gas materials. With TANAKA's original ultra-thin film processing technology and advanced cleaning technology, we are able to offer purified hydrogen gas that is highly reliable with maximum hydrogen permeability.
Reforming catalyst	A reforming catalyst is used to generate hydrogen from hydrocarbon such as natural gas. High active properties are maintained at a wide range of temperatures while suppressing the deposition of carbon, which tends to be problematic in reforming reactions. Catalysts that can suppress ammonia, a byproduct of nitrogen in reforming gas, are also available.
PROX catalysts	PROX catalysts perform selective oxidation removal on carbon monoxide to 10 ppm or below from hydrogen and carbon monoxide generated by means of reforming reactions. Displaying high active properties at a wide range of temperatures from low to high, these catalysts are supported by small amounts of precious metals, making it possible to offer them at a low cost.
Oxidation catalysts	These catalysts are used to convert toxic carbon monoxide and highly flammable hydrogen etc. that are ultimately discharged in fuel cell systems into harmless and safe carbon dioxide and water vapor by means of an oxidation reaction. Plating a metal honeycomb structure with a high-performance catalyst makes it possible to display high active properties from low temperatures without impairing the flow of processed gas.
Precious metal compounds	Precious metal compounds are used in numerous industrial fields as plating chemicals and catalysts. TANAKA can flexibly produce a range of products from general compounds such as gold potassium cyanide and palladium chloride to intricate organic precious metal compounds according to the use under comprehensive quality control systems.

■ **TANAKA HOLDINGS Co., Ltd. (Holding company of TANAKA PRECIOUS METALS)**

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

Representative: Akira Tanae, Representative Director & CEO

Founded: 1885

Incorporated: 1918*

Capital: 500 million yen

Employees in consolidated group: 5,123 (FY2018)

Net sales of consolidated group: 925,259 million yen (FY2018)

Main businesses of the group:

Strategic and efficient group management and management guidance to group companies as the holding company at the center of TANAKA PRECIOUS METALS.

Website: <https://www.tanaka.co.jp/english/>

* TANAKA HOLDINGS adopted a holding company structure on April 1, 2010.

■ **TANAKA KIKINZOKU KOGYO K.K.**

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

Representative: Akira Tanae, Representative Director & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees; 2,332 (including overseas subsidiaries) (as of March 31, 2019)

Sales: 765,869,423,000 yen (FY2018)

Main businesses:

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

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

<About TANAKA PRECIOUS METALS>

Since its foundation in 1885, TANAKA PRECIOUS METALS has built a diversified range of business activities focused on precious metals. TANAKA is a leader in Japan regarding the volumes of precious metals handled. Over the course of many years, TANAKA has not only manufactured and sold precious metal products for industry but also provided precious metals in such forms as jewelry and resources. As precious metals specialists, all Group companies within and outside Japan work together with unified cooperation between manufacturing, sales, and technological aspects to offer products and services. Additionally, to make further progress in globalization, TANAKA KIKINZOKU KOGYO welcomed Metalor Technologies International SA as a member of the Group in 2016.

As precious metal professionals, TANAKA PRECIOUS METALS will continue to contribute to the development of an enriching and prosperous society.

The five core companies that make up TANAKA PRECIOUS METALS are as follows.

- TANAKA HOLDINGS Co., Ltd. (pure holding company)
- TANAKA KIKINZOKU KOGYO K.K.
- TANAKA DENSHI KOGYO K.K.
- ELECTROPLATING ENGINEERS OF JAPAN, LIMITED
- TANAKA KIKINZOKU JEWELRY K.K.