

July 10, 2012

Tanaka Precious Metals
Tanaka Holdings Co., Ltd.

Tanaka Precious Metals opens supply centers in Taiwan, Korea and U.S.A. for thin-film material used in miniaturization technology for next-generation semiconductors, halving delivery times and costs

For mass production using sub-10nm process - dispersing risks in supply chain

Tanaka Holdings Co., Ltd. (a company of Tanaka Precious Metals, Head office: Chiyoda-ku, Tokyo; President & CEO: Hideya Okamoto) today announced that Tanaka Kikinzoku Kogyo K.K. (Head office: Chiyoda-ku, Tokyo; President & CEO: Hideya Okamoto), which operates the Tanaka Precious Metals' manufacturing business, has opened supply centers in Taiwan (Hsinchu City), South Korea (Incheon Metropolitan City) and the United States (Connecticut State) for the thin-film material (precious metal precursor^{(*)1}) used in the miniaturization technology for next-generation semiconductors, and will begin supply in July 2012.

In addition to halving delivery times compared to exporting precious metal precursors from Japan to local customers in Asia and the United States where semiconductor manufacturers are concentrated, it will also enable customers to halve the total cost of precursors. As Tanaka Kikinzoku Kogyo has already procured three years' supply of ruthenium used in precious metal precursors, therefore, the company can stably supply the ruthenium precursors. Furthermore, as each center is able to store product inventory, it is possible to disperse risk throughout the product supply chain in response to natural disasters and problems with social infrastructure.

■ **Ruthenium precursors required in sub-10 nanometer semiconductor manufacturing processes**

Ruthenium is gaining attention as a base for fine copper wiring in semiconductors and a material used in DRAM (Dynamic Random Access Memory) capacitor electrodes. A circuit line width of sub-30 nanometers (one nanometer is one billionth of one meter) is currently the mainstream in the progressively miniaturized semiconductor market, and mass production of sub-20-nanometer next-generation semiconductors will begin after 2012, while it is believed that sub-10-nanometer mass production will begin by the end of 2013.

As various miniaturization technology is developed to realize fine wiring utilizing sub-10-nanometer processes, semiconductor manufacturers are considering a method of improving the embedding of copper plating by laying a thin layer of ruthenium, which has low resistance and excellent compatibility with copper, as a base for copper plating. Tanaka Kikinzoku Kogyo is developing and providing a variety of ruthenium precursors used as materials for deposition technology such as chemical vapor deposition (CVD)^{(*)2} and atomic layer deposition (ALD)^{(*)3} utilized at miniaturization technologies, and is currently shipping samples to semiconductor manufacturers.

Delivering ruthenium precursors overseas previously took 20 days from order until delivery because containers filled with ruthenium precursors were manufactured in Japan needed to be transported to local customers. The opening of these centers will enable delivery times to be shortened to 10 days or less because precursors manufactured in Japan can be filled in containers stored as inventory at each of the centers. Furthermore, as it is possible to reduce precursor costs by lowering shipping costs the total cost of precursors can be halved by customers compared to using conventional supply system.

■ **Three years' supply of ruthenium procured and recycling processes established**

Reduced material costs and stable supply are essential in the semiconductor industry, which is intensely competitive in terms of both price and technology. As starting local supply of the material, Tanaka Kikinzoku Kogyo procured three years' supply of ruthenium used in precious metal precursors in order to establish a stable supply structure for ruthenium precursors. Furthermore, the company has also established and patented a recycling process able to refine ruthenium precursors that are discarded without being recovered as valuable resources by converting them into renewed ruthenium precursors without the need to revert them to bare metal. This not only enables material costs to be reduced by approximately 20%, but also enables semiconductor manufacturers to further reduce the total cost of semiconductor manufacturing by mitigating the risk of metal price fluctuations.

The company aims to achieve sales of ruthenium precursors valued at 1 billion yen per year by 2017. Future consideration will be given to the supply of other film forming materials such as platinum, iridium and nickel, which are used in miniaturization technology, in these three supply centers, while strengthening the customer support system for addressing customers' development needs.

<Glossary>

(*1) Precursor: A material preceding the creation of another material.

(*2) Chemical Vapor Deposition (CVD): A method of creating a thin film on a wafer by sublimating a material.

(*3) Atomic Layer Deposition (ALD): A method of creating a thin film on a wafer on an atomic level.

■**Tanaka Holdings Co., Ltd. (Holding company of Tanaka Precious Metals)**

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

Representative: Hideya Okamoto, President & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees in consolidated group: 3,456 (FY2010)

Net sales of consolidated group: 891.0 billion yen (FY2010)

Main businesses of the group:

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

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

■**Tanaka Kikinzoku Kogyo K.K.**

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

Representative: Hideya Okamoto, President & CEO

Founded: 1885

Incorporated: 1918

Capital: 500 million yen

Employees: 1,532 (FY2010)

Sales: 865.4 billion yen (FY2010)

Businesses:

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

Website: <http://pro.tanaka.co.jp/en>

<About the Tanaka Precious Metals>

Established in 1885, the Tanaka Precious Metals has built a diversified range of business activities focused on the use of precious metals. On April 1, 2010, the group was reorganized with Tanaka Holdings Co., Ltd. as the holding company (parent company) of the Tanaka Precious Metals. In addition to strengthening corporate governance, the company aims to improve overall service to customers by ensuring efficient management and dynamic execution of operations. Tanaka Precious Metals is committed, as a specialist corporate entity, to providing a diverse range of products through cooperation among group companies.

Tanaka Precious Metals is in the top class in Japan in terms of the volume of precious metal handled, and for many years the group has developed and stably supplied industrial precious metals, in addition to providing accessories and savings commodities utilizing precious metals. As precious metal professionals, the Group will continue to contribute to enriching people's lives in the future.

The eight core companies in the Tanaka Precious Metals are as follows.

- | | |
|--|--|
| - Tanaka Holdings Co., Ltd. (pure holding company) | - Tanaka Kikinzoku Kogyo K.K. |
| - Tanaka Kikinzoku Hanbai K.K. | - Tanaka Kikinzoku International K.K. |
| - Tanaka Denshi Kogyo K.K. | - Electroplating Engineers of Japan, Limited |
| - Tanaka Kikinzoku Jewelry K.K. | - Tanaka Kikinzoku Business Service K.K. |

<Press inquiries>

Global Sales Dept., Tanaka Kikinzoku International K.K. (TKI)

e-mail: [tki-contact \(at\) ml.tanaka.co.jp](mailto:tki-contact@ml.tanaka.co.jp)