March 31, 2015

Tanaka Precious Metals
Tanaka Holdings Co., Ltd.

Tanaka Precious Metals Announces Recipients of "Precious Metals Research Grants"

Associate Professor Yu-Ching Lin in the field of bonding technology at Tohoku University, and Assistant Professor Tsuyoshi Minami in the field of organic electronics at Yamagata University

Tanaka Holdings Co., Ltd. (Head office: Chiyoda-ku, Tokyo; President & CEO: Akira Tanae) today announced the recipients of the Tanaka Precious Metals' 2014 "Precious Metals Research Grants." After a strict examination of the results, Associate Professor Yu-Ching Lin of Tohoku University and Assistant Professor Tsuyoshi Minami of Yamagata University were selected to receive the 2 million yen "Gold Award." In addition, six others received "Silver Awards."

Tanaka Precious Metals develops and provides a stable supply of a variety of precious metal materials based on the corporate philosophy of "realizing a prosperous society and a beautiful future for our world through precious metals," and is working to contribute to the advancement and stability of industry and the economy in addition to the realization of a prosperous and affluent living environment. This grant program has been implemented every year since 1999 to support the various challenges faced in the "new world opened up by precious metals" as part of these business activities. In the 16th year of the program, there were 136 applications to a call for research in all fields related to research and development aimed at the practical application of new technologies and products to which precious metals can make a contribution. A total of 14 million yen in research grants was awarded for 43 of these research projects.

The names of the two recipients of the Gold Award, their research topics and the reasons for the award are shown below.

■Yu-Ching Lin, Associate Professor, Tohoku University
Low- and Room-Temperature Bonding Technology Using Gold Nano-Structures for Integration of Micro and Nano Devices
This study applies to low temperature bonding techniques for nano-porous gold obtained by dissolving the tin in gold-tin alloy plating film. Along with being able to easily form a pattern using photolithography, high flattening of the bonding surface is not required due to the sponge effect of nano-porous gold, and so there are great practical expectations with application surfaces. Therefore, this study has been highly evaluated as it can lead to new bonding technology with excellent bonding force at a low price.

■Tsuyoshi Minami, Assistant Professor, Yamagata University
Development of Organic Transistor-Type Biosensors Using Gold Gate Electrodes
The printed electronics market is expected to expand in the future, and focusing on organic field effect transistors as flexible sensors, chemical sensors and biosensors using gold gate electrodes for these sensing portions are being developed. This study has been highly evaluated for its growth from foundational technologies into applied and commercialization-conscious development, and contribution to TANAKA's corporate philosophy of "realizing a prosperous society through precious metals".

In addition, 6 Silver Awards and 35 MMS Awards were given, as shown along with the overview of the research grants shown below. Applications for the 2015 research grants are scheduled to open in autumn.

List of Recipients of the 2014 Precious Metals Research Grants

Platinum Award (0 award)	
None granted	
Gold Award (2 awards, 2 million yen each)	
Yu-Ching Lin, Associate Professor, Tohoku University	Low- and Room-Temperature Bonding Technology Using Gold Nano-Structures for Integration of Micro and Nano Devices
Tsuyoshi Minami, Assistant Professor, Yamagata University	Development of Organic Transistor-Type Biosensors Using Gold Gate Electrodes
Silver Awards (6 awards, 500,000 yen each)	
Tsuyoshi Sekitani, Professor, Osaka University	Manufacture of Flexible Electrodes Utilizing Precious Metal Nanowire-Elastomer Composite Materials and Development of Freely Stretching Thin Film Biometric Sensors
Shin-ichi Ohkoshi, Professor, The University of Tokyo	Development of High-Performance Optical Switching Systems and Magneto-Optical Memory Devices Using Rhodium-Iron Alloy
Yamato Hayashi, Associate Professor, Tohoku University	One-Step Synthesis of Precious Metal Nanowire Films for Transparent Conductive Film by Organic Precursor Pain Reduction Methods and its Applications
Hiroshi Naganuma, Assistant Professor, Tohoku University	Research and Development Relating to FePt Epitaxial Ultra-Thin Film Using Sputtering FePt Melting Targets
Tsukasa Torimoto, Professor, Nagoya University	Precise Synthesis of Precious Metal Core-Oxide Semiconductor Shell Nanoparticles and its Applications Toward Electrode Catalysts
Mitsuhiro Ebara, Senior Researcher, National Institute for Materials Science (NIMS)	Development of New Materials for "Treatment of Persistent Cancers" Preventing Recurrent and Metastatic Cancer

MMS Awards (35 awards, 200,000 yen each)	
Nagato Natsume, Professor, Aichi Gakuin University	Song-Zhu Chu, Associate Professor, Iwate University
Takafumi Sato, Associate Professor, Utsunomiya University	Hiromichi Takebe, Professor, Ehime University
Hitoshi Kuniyasu, Associate Professor, Osaka University	Satoshi Seino, Associate Professor, Osaka University
Takashi Fukuda, Associate Professor, Osaka University	Yasuyuki Tsuboi, Professor, Osaka City University
Tatsuro Endo, Associate Professor, Osaka Prefecture University	Masaru Mitsushio, Assistant Professor, Kagoshima University
Yoshiko Miura, Professor, Kyushu University	Taizoh Sadoh, Associate Professor, Kyushu University
Shinya Ikeno, Associate Professor, Kyushu Institute of Technology	Ken'ichi Yokoyama, Associate Professor, Kyushu Institute of Technology
Hisao Yoshida, Professor, Kyoto University	Ken-ichi Fujita, Associate Professor, Kyoto University
Shigeru Watanabe, Professor, Kochi University	Eri Takano, Researcher, Kobe University
Yoshitaro Miyashita, Professor, Kobe City College of Technology	Kazuo Onuma, Chief Senior Researcher, National Institute of Advanced Industrial Science and Technology

Mitsue Takahashi, Senior Researcher, National Institute of Advanced Industrial Science and Technology	Masaki Misawa, Senior Researcher, National Institute of Advanced Industrial Science and Technology
Tatsuya Tsukuda, Professor, The University of Tokyo	Takeo Ohsaka, Professor, Tokyo Institute of Technology
Daisuke Yamane, Assistant Professor, Tokyo Institute of Technology	Hideo Kameyama, Professor, Tokyo University of Agriculture and Technology
Takashi Nakajima, Lecturer, Tokyo University of Science	An-Pang Tsai, Professor, Tohoku University
Takeshi Seki, Assistant Professor, Tohoku University	Yasuhiro Shimizu, Professor, Nagasaki University
Yohsuke Ooyama, Associate Professor, Hiroshima University	Noriyoshi Matsumi, Professor, Japan Advanced Institute of Science and Technology
Hideyuki Mitomo, Assistant Professor, Hokkaido University	Yasuharu Kanda, Assistant Professor, Muroran Institute of Technology
Satoshi Arai, Senior Researcher Fellow, Waseda University	

Overview of the 2014 Precious Metals Research Grants

[Subject]

Research and development aimed at the practical application of new technologies and products to which precious metals can make a contribution

- Precious metals must play an important role in commercialization and/or practical application of the research.
- Development related to precious metals must provide a breakthrough in the progress of the commercialization and/or practical application.

[Grant amounts]

- Platinum Award: 5 million yen (1 award)
- Gold Award: 2 million yen (1 award)
- Silver Awards: 500,000 yen (several awards)
  * The grant amount is treated as a scholarship donation.
  * Each award is given to research deemed to make a particularly large contribution to practical implementation, and awards may not be granted in some cases.

[Eligible candidates]

Personnel who belong to educational research institutions or public research institutes in Japan

- Applicants belonging to research institutions in Japan are eligible regardless of whether they are based in Japan or overseas.

[Application period]

September 1, 2014 (Mon) - 5pm, November 28, 2014 (Fri)

[Conditions]

- When applying with joint research, the representative should apply.
- Students must obtain approval from the person responsible for their laboratory in order to submit an application.
- Clearly state if any joint research is being performed with other precious metal manufactures (including planned).
- Applicants may be required to exchange information with Tanaka Precious Metals about product development, technology development, and guidance through the research.
- Excludes research that has already been commercialized or for which there are such plans.
- Excludes fundamental research such as analysis, evaluation and production technology.

[Inquiries concerning the research grant program]

Precious Metals Research Grants Office
Tanaka Holdings Co., Ltd. Marketing Department, Grants Office
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TEL：03-6311-5596　FAX：03-6311-5529 E-mail: joseikin@ml.tanaka.co.jp
Official website: http://pro.tanaka.co.jp/tanaka/grant/

■**Tanaka Holdings Co., Ltd. (Holding company of Tanaka Precious Metals**)
Headquarters: 22F, Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo
Representative: Akira Tanae, President & CEO
Founded: 1885 Incorporated: 1918 Capital: 500 million yen
Employees in consolidated group: 3,562 (FY2013)
Net sales of consolidated group: 967.6 billion yen (FY2013)
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 Precious Metals),
http://pro.tanaka.co.jp/en (Industrial products)

<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 metal s. 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 Hanbai K.K.
- Tanaka Denshi Kogyo K.K.
- Tanaka Kikinzoku Jewelry K.K.
- Tanaka Kikinzoku Kogyo K.K.
- Tanaka Kikinzoku International K.K.
- Electroplating Engineers of Japan, Limited
- Tanaka Kikinzoku Business Service K.K.