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## TANAKA Memorial Foundation Announces Recipients of Precious Metals Research Grants

Tatsuro Goda, Assistant Professor at the Tokyo Medical and Dental University, was presented the Gold Award for development of an iridium oxide microelectrode that can perform localized pH measurements in the body. Also receiving a Gold Award was Shunsuke Fukami, Associate Professor at the Tohoku University, for his creation of an analog nano-spin memory device using CoPt-based nanocomposite material and an application of brain-like information processing. This winning research showcases the technology development for iridium oxide microelectrodes that facilitates the identification of lesions that cannot be distinguished with the naked eye. The application of this technology allows precious metal alloys to be used in sophisticated, low-power consumption electronics, information processing, and communications.

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The TANAKA Memorial Foundation's Representative Director, Hideya Okamoto, announced the recipients of the FY2018 Precious Metals Research Grants. Following a rigorous screening process, two Gold Awards, each valued at 2 million yen, were granted to Tatsuro Goda, Assistant Professor at the Tokyo Medical and Dental University, and Shunsuke Fukami, Associate Professor at the Tohoku University. In addition, five research projects received Silver Awards, and three Young Researcher Awards were granted.

The TANAKA Memorial Foundation undertakes programs designed to foster developments in new precious metal fields while contributing to the advancement of science, technology, and socio-economics for the overall enrichment of society. The research grant program was launched in FY1999 and has continued each year since with the goal of embracing the "new world opened up by precious metals." This year, the program's twentieth year, a total of 188 applications were received in a wide range of fields where precious metals can make contributions to the research and development of new technologies. A total of 16.2 million yen in research grants was awarded for 24 projects.

Gold Award winner, Tatsuro Goda, developed an iridium oxide microelectrode that can perform localized pH measurements in the body. This research suggests that Ir/IrOx can be used to screen for various types of lesions and other purposes by measuring pH. The possibility of quantitatively evaluating the degree of deterioration of dental caries has already been exhibited, and if the research that is currently underway is put to practical use, it may be possible to identify lesions that cannot be distinguished with the naked eye. This is expected to be highly useful for the treatment of cancer and

infectious diseases. This research was highly rated for the contribution that precious metals can make to improving society and its potential for applications in other fields.

Another Gold Award was presented to Shunsuke Fukami for the creation of an analog nano-spin memory device using CoPt-based nanocomposite material and the application of brain-like information processing. This research simultaneously makes use of two properties of the electrons of precious metals—charge (electrical characteristic) and spin (magnetic characteristic)—to investigate the occurrence of new physical phenomena. Previously, charge and spin have only been used separately. This research is expected to lead to the development of high-performance, low-power consumption electronics, as well as information processing and communication devices. It was highly rated for its contribution to the development of new applications for precious metals.

Five Silver Awards, three Young Researcher Awards, and 14 Encouragement Awards were also granted. The recipients and overviews of the Precious Metals Research Grants are indicated below. Applications for the FY2019 research granted are scheduled to open in the fall.

## List of FY2018 Precious Metals Research Grants Recipients

<b>Platinum Award (0 award, 5 million yen)</b>	
Non granted	
<b>Gold Award (2 awards, 2 million yen each)</b>	
Tatsuro Goda, Assistant Professor, Tokyo Medical And Dental University	Development of an iridium oxide microelectrode that can perform localized pH measurements in the body
Shunsuke Fukami, Associate Professor, Tohoku University	Creation of an analog nano-spin memory device using CoPt-based nanocomposite material and application of brain-like information processing
<b>Silver Awards (5 awards, 1 million yen each)</b>	
Katsutoshi Sato, Program-Specific Senior Lecturer, Kyoto University	Elucidation of structure formation and action mechanism of low crystalline ruthenium nano-layer catalysts for ammonia synthesis to be used for renewable energy
Yuichiro Himeda, Chief Senior Researcher, Advanced Industrial Science and Technology	Development of hydrogen formate carrier technology using an iridium catalyst
Yoko Yamabe-Mitarai, Group Leader, National Institute for Materials Science	Design of a platinum group metal high-entropy, high-temperature shape-memory alloy
Shinya Maenosono, Professor, Japan Advanced Institute of Science and Technology	Highly selective magnetic separation of membrane transport carriers and organelles using ligand-coupled multifunctional nano-magnetic beads
Hideyuki Murakami, Professor, Waseda University	Development of an added-value casting process using precious metals
<b>Young Researcher Awards (3 awards, 1 million yen each)</b>	
Hiroyuki Kai, Assistant Professor, Tohoku University	Development of a porous microneedle electrode and application in high-precision transdermal medications
Katsuaki Sugawara, Associate Professor, Tohoku University	Development of an atomic layer spintronics material using precious metal elements
Takeo Miyake, Associate Professor, Waseda University	Development of a metallic nano-hollow tube membrane for puncturing cells and application in intracellular gene introduction
<b>Encouragement Award (14 awards, 300,000 yen each)</b>	
Jun Tatebayashi, Associate Professor, Osaka University	Kohsuke Mori, Associate Professor, Osaka University
Ken-ichi Fujita, Professor, Kyoto University	Akito Ishida, Professor, Kyoto Prefectural University
Jun Komotori, Professor, Keio University	Yuto Moritake, Assistant Professor, Tokyo Institute of Technology
Shohei Tashiro, Associate Professor, The University Of Tokyo	Takumi Kihara, Assistant Professor, Tohoku University
DAO THI NGOC ANH, Assistant Professor, Tohoku University	TSAI An-Pang, Professor, Tohoku University
Shochiku Kure, Associate Professor, Nagoya Institute of Technology	Yasuhide Inokuma, Associate Professor, Hokkaido University
Ichizo Yagi, Professor, Hokkaido University	Tetsu Yonezawa, Professor, Hokkaido University

## Overview of the 2018 Precious Metals Research Grants

### [Theme]

- Research and development for new technologies or practical implementation of products to which precious metals can make a contribution

### [Grant amounts]

- Platinum Award: 5 million yen (1 award)
- Gold Award: 2 million yen (1 award)
- Silver Awards: 1 million yen (4 awards)
- Young Researcher Awards (for researchers of up to 37 years of age): 1 million yen (2 awards)
- Encouragement Award: 300,000 yen (several awards)
- The grant amount is treated as a scholarship donation.
- Each award is given to research deemed to make an unusually significant contribution to commercialization and 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 working in research institutions in Japan are eligible regardless of whether they are based in Japan or overseas.
- Young Researcher Awards are given to young researchers aged up to 37 years old as of April 1, 2018.

### [Application period]

- 9am, September 3, 2018 (Mon) - 5pm, November 30, 2018 (Fri)

### [Application method]

- Enter the necessary information on the application form available on the TANAKA Memorial Foundation website (<http://TANAKA-foundation.or.jp>) and upload details of the research (papers and supplementary material on the theme).

### [Announcement]

- Results will be announced on the TANAKA Memorial Foundation website at about the end of March 2018.
- TANAKA will contact the award recipients directly.

### [Conditions]

- Precious metals must play an essential role in the commercialization and practical implementation of the research.
- Development related to precious metals must provide a breakthrough in the progress of the commercialization and practical implementation.
- When applying with joint research, the representative should apply.
- Students must obtain approval from the person responsible for their laboratory to apply.
- State if the research is being performed with other precious metal manufactures (including planned).
- Applicants may be asked to exchange information with TANAKA about product development, technology development, and guidance through the research.
- Excludes research such as analysis, evaluation and production technology that has already been commercialized or for which there are such plans.

**[Inquiries concerning the research grant program]**

Precious Metals Research Grants Office

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TANAKA Memorial Foundation website: <http://tanaka-foundation.or.jp>

**■ TANAKA Memorial Foundation**

Established: April 1, 2015

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

Representative: Hideya Okamoto (Senior Advisor to TANAKA Holdings Co., Ltd.)

Purpose of Business: To provide grants for research related to precious metals to contribute to the development and cultivation of new fields for precious metals, and to the development of science, technology, and the social economy.

Areas of Business: Provision of grants for scientific and technological research related to precious metals. Recognition of excellent analysis of precious metals and holding of seminars and other events.

**■ 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: 2,246 (as of March 31, 2018)

Sales: 827,040.201 million yen (FY 2017)

Main businesses:

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

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

<Press inquiries>

TANAKA Holdings Co., Ltd.

<https://www.tanaka.co.jp/en/protanaka/inquiry/index.php>