

## News Release

July 10, 2025  
Proterial, Ltd.

### **Proterial's Development of New Copper-based Brazing Filler Metal for Dissimilar Material Welding Wins the JWS Interfacial Joining Research Award at the Technical Commission on Solid Phase Welding and Brazing**

Proterial, Ltd. (hereinafter, "Proterial") won JWS Interfacial Joining Research Award at the Technical Commission on Solid Phase Welding and Brazing hosted by the Japan Welding Society for its development of new copper-based brazing filler metal for dissimilar material welding.\*1

#### **1. Details of the award**

Title: Development of new copper-based brazing filler metal for dissimilar material welding

Award winners\*2: Shun Takano, Yuya Kurihara, Mizuki Endo, Genya Nogawa, Proterial, Ltd.

#### **2. Reason for award**

The research project led to the successful development of new copper-based brazing filler metal enabling dissimilar material welding at lower temperatures than the conventional material, silver(Ag)-based brazing filler metal, by adding varied elements to alloy based on copper (Cu). The following welding applications have been suggested based on the compositional design guide of the new copper-based brazing filler metal and assessment results of its bondability: welding for electronic components including insulating heat-radiating substrates for power modules and submounts for LEDs, working tools including diamond tools, and heat exchangers. Prototyping for welding is underway in anticipation of practical application. The material is expected to be used in multiple fields.



Winners of the JWS Interfacial Joining Research Award (from left to right: Shun Takano, Yuya Kurihara)

#### **3. Outline of the winning research project**

Multi-materialization is advancing for electronic components, including power modules and LEDs, working tools, and heat exchangers, with a view to optimizing thermal efficiency and power consumption in each

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component and reducing mechanical loss. Dissimilar material welding is drawing attention as a technology for supporting multi-materialization. Active brazing filler metal based on silver/copper/titanium (Ag-Cu-Ti)<sup>\*3</sup> has found widespread application, especially as a material for jointing ceramics and metal. Nevertheless, new materials needed to be developed, given the increased resource risk due to the recent surge in silver prices and the growing need for lower bonding temperatures. However, there were few reports on effective substitute materials.

The new copper-based brazing filler metal that Proterial developed is mainly based on copper, which is less expensive than silver. Additionally, it permits a wide range of applications because the melting point is lower than Ag-Cu-Ti-based active brazing filler metal. The material is expected to exhibit excellent properties especially in applications for insulating heat-radiating substrates for power modules requiring high reliability and heat dissipation, working tools requiring a longer life, and high-luminance LEDs and lasers requiring thicker films in the wiring layers.

Proterial will flexibly continue to respond to changes in customer needs to contribute to the realization of a sustainable society through innovative material development and social implementation.

What is the JWS Interfacial Joining Research Award?

The award goes to particularly excellent talks among the research reports at the Technical Commission on Solid Phase Welding and Brazing or those with remarkable achievements recognized so far.

Media Inquiries: Corporate Communications Dept.

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- \*1 Brazing filler metal: An alloy used for jointing metal, ceramics and other materials and melting at lower temperatures than jointed materials.
- \*2 The organizations to which the award winners belong are current as of the time of research report release.
- \*3 Active brazing filler metal: When conventional brazing filler metal is not blended with a material to be jointed (i.e., poor wettability), and jointing is difficult, active brazing filler metal will improve wettability, enabling brazing if active brazing filler metal with active metal such as titanium added is used.

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## ■About PROTERIAL

# PROTERIAL

“Proterial” reflects the essence of our corporate philosophy, which consists of three elements: Mission: “Make the best quality available to everyone;” Vision: “Leading sustainability by high performance;” and Values: “Unflinching integrity” and “United by respect.” It combines “**pro-**” with the word “**material.**”

“Pro-” represents our “three pros”:

- **Professional — work that exceeds expectations**
- **Progressive — a spirit that keeps challenging**
- **Proactive —an enterprising attitude**

“Material” refers to the high-performance materials that our original technologies produce and underpinned by the three pros. With our focus on solving customer issues and bringing new levels of value, we promise to contribute to the realization of a sustainable society through the products and services that embody our philosophy.

## ■Proterial, Ltd. — Company Overview

Established: April 1956

Head office: Toyosu Prime Square, 5-6-36 Toyosu, Koto-ku, Tokyo 135-0061, Japan

Capital : 310 million yen (as of March 31, 2025)

Representative : Sean M. Stack

Representative Director, Chairperson, President, & CEO

Sales revenue: 768.6 billion yen (Term ended March 2025)

History: 1910: Founded as Tobata Foundry Co.

1937: Merged with Hitachi, Ltd.

1956: Established separately as Hitachi Metals Industries, Ltd.

2023: Renamed from Hitachi Metals, Ltd. to Proterial, Ltd.

Proterial is a participant of the United Nations Global Compact and adheres to its principles-based approach to responsible business. In January 2025, Proterial received a Silver rating in the EcoVadis Sustainability Assessment.

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