

April 17, 2012
Nippon Steel Materials Co., Ltd.
Nippon Micrometal Corporation
Nippon Steel Corporation

**Nippon Steel Group Announces the Licensing of the New-type Copper Bonding Wire
(EX1) to Heraeus Materials Technology GmbH & Co KG**

-The world's top3 leading bonding wire manufacturers provide EX1- type copper bonding wire-

Nippon Steel Materials Co., Ltd. (NSMAT: President Kenji Yamada), an advanced materials company in the Nippon Steel Group, and Nippon Micrometal Corporation (NMC: President Toshio Inoue), a subsidiary of NSMAT and semiconductor packaging materials manufacturer, signed a patent licensing agreement with Heraeus Materials Technology GmbH & Co KG, a leading bonding wire manufacturer in Germany, for a new-type palladium-coated copper bonding wire "EX1" (product name) which is used for LSI packaging. This wire features greatly reduced precious metal usage and lower packaging costs.

The new copper bonding wire, "EX1," the patent of which has been licensed, was invented by Nippon Steel Corporation (NSC) and developed to a mass production level by NMC. "EX1" is the first copper bonding wire in the world that has been successful in practical use, such as for state-of-the-art ultra-high-density LSI packaging. "EX1" has solved all the longstanding problems of copper bonding wire in regard to connectability and reliability through its unique coating structure. "EX1," which is approximately 1/7 the price of gold wire, has already delivered the quality performance demanded for even the most advanced LSI packaging. (This new-type copper bonding wire, "EX1" received the Ichimura Industrial first prize in March 12, 2012 to recognize excellence of the same performance as the gold bonding wire at the low cost.)

Since the start of mass production in the first half of 2009 after the collapse of Lehman Brothers, "EX1" has been formally adopted for ultra-high-density LSI packaging as replacement for gold bonding wire on a wide scale by the world's leading companies, including Taiwanese companies, and it has rapidly been penetrating the leading bonding wire market. "EX1" has already surpassed conventional bare copper bonding wire in the amount used as of 2011, and it is now the global standard. It is expected that the copper bonding wire amount will exceed the existing gold wire amount used by approximately 2014.

The Nippon Steel Group, which has the largest share in the global market for palladium coated copper bonding wire, has filed a total of more than 100 patent applications in various countries around the world, as well as in Japan, concerning the major technologies for the new-type copper bonding wire product group, including "EX1"; and more than 30 of them have already been registered. The group owns almost all the registered patents for current commercially produced new-type copper bonding wire. This time, the group made a contract with Heraeus, in which the patents for the new type copper bonding wire (palladium-coated copper bonding wire) have been licensed to Heraeus, the world-wide leader for bare copper

wire. Consequently, the “EX1-type” new copper bonding wire (palladium-coated copper bonding wire) has been licensed to two manufactures in total—Tanaka Denshi Kogyo K.K. and Heraeus Materials Technology GmbH & Co KG. It is expected that the license agreements will ensure the smooth supply and application of the new-type copper bonding wire to the global market by the world’s top three wire manufacturers, accelerating the further market growth of new-type copper bonding wire and significantly contributing to the development of the semiconductor market—which is further growing, with a focus on emerging countries in the future.

NMC has already increased its production capacity for new-type copper bonding wire in Japan, the Philippines, and China to 300,000 km per month so as to sufficiently meet the growing global market demand. It is also simultaneously strengthening the development of new products that meet new customer need by being supported by the excellent material design and analysis technologies provided by the Nippon Steel Group.

NSMAT and NMC will present a more advanced bonding wire for LSI packaging and various other products made of other materials in the near future in collaboration with the Advanced Technology Research Laboratories of NSC.

[Contacts for inquiries regarding this announcement]

Nippon Steel Materials Co., Ltd., Planning and Coordination Department, General Administration Group, Mr. Shikazawa at 03-6859-6014

Nippon Micrometal Corporation, Sales Promotion Department

Mr. Kawakami

Tel: 04-2934-8086

Email: nmc@nmc-net.co.jp

Nippon Steel Corporation, General Administration Division, PR Center

Mr. Suzuki

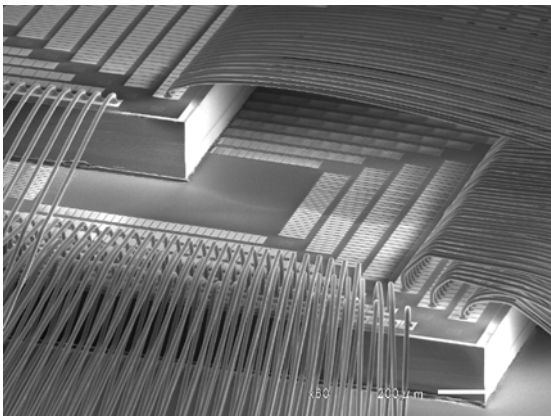
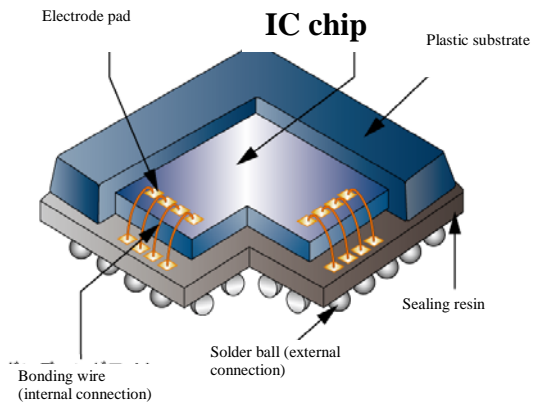
Tel: 03-6867-2135

Nippon Steel Corporation, Technical Development Bureau, Advanced Technology Research Laboratories

Mr. Uno

Tel: 0439-80-2932

- Structure of a semiconductor package, EX1 palladium-coated copper bonding wire, and an example of packaging



Wire thickness: 18 microns, pitch: 50 microns, multi-level connection