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JX Nippon Mining & Metals Corporation

Major Expansion of Electroless Ni/(Pd)/Au UBM Plating Line

JX Nippon Mining & Metals Corporation (head office: 6-3, Otemachi 2-chome, Chiyoda-ku, Tokyo; president: Masanori Okada) has substantially expanded its under-bump metallurgy (UBM)¹ line that uses an electroless (“E-less”) nickel/(palladium)/gold plating process. The new line at the Isohara Works (Kitaibaraki-shi, Ibaraki) is scheduled to commence full operation in February this year. The expansion will enable the Isohara Works to substantially increase its processing capacity from the current about 10,000 wafers per month to between 25,000 and 30,000.

The installation of the new line aims to respond to the rise in demand for flip-chip bonding² for semiconductor devices by further expanding the UBM formation service that JX Nippon Mining & Metals has offered since January 2008. The new line will also make it possible to flexibly adopt this service for large 12 inch wafers as well.

JX Nippon Mining & Metals is now considering enhancing its facility capacity for its solder bump formation service which was started two years ago and constitutes the downstream process for the UBM formation service. JX Nippon Mining & Metals will endeavor to further enhance both its UBM formation service and its solder bump formation service to handle the demand for additional miniaturization of and higher efficiency in electronic devices anticipated going forward.

¹ “Under-bump metallurgy (UBM)” is the metallic layer that forms the base of the solder bumps. UBM protects IC metals and prevents solder diffusing and also ensures superior interconnection with the solder.

² “Flip-chip bonding” is a method for mounting chips on substrates. This method connects the chip surface and the substrate through protruding dot-shaped terminals called “bumps,” without using wire bonding. Flip-chip bonding offers better electrical properties than wire bonding because the bond area is smaller and the wiring is shorter.

(Reference) Standard Specifications of the Service

Wafer Material	Si, GaAs, and others
Wafer Size	4–12 in.
Pad Material	Al, AlSi, AlCu, AlSiCu, Cu
UBM Specifications	Electroless (“E-less”) Ni/Au, Ni/Pd/Au
Ni/Au Specifications	Ni: 1–5 μ m thickness Containing 5–10% of phosphor Au: 0.05–0.5 μ m thickness
Ni/Pd/Au Specifications	Pd plating with 0.05 to 0.1 μ m thickness on the above Ni/Au plating