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Whom it may concern

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Nippon Tungsten Co., Ltd. Inc.

Ube Material Industries, Ltd. Inc. and Nippon Tungsten Co., Ltd. Inc. are in collaboration to enter into a "MgO targets" business.

Ube Material Industries, Ltd. Inc. (president Abe Kenichi, referred as "Ube Material" below / head office Ube-shi) and Nippon Tungsten Co., Ltd. Inc. (president Shozo Yoshida, referred to as "Nippon Tungsten" below / head offices Fukuoka-shi) are in collaborative framework and succeeded in the development of Magnesium Oxide(MgO) target with high purity and high-density which is indispensable for spintronics applications.

Ube Material Industries, Ltd. is the biggest producer of calcia related products derived from limestone which is abundant raw material in Japan and the domestic sole manufacturer of magnesia clinker (refractory material) which is made from magnesium raw material taken from sea water.

In recent years, Ube Material has been concentrating on the specialty products, especially on the MgO fine products by original synthetic technology to ensure a stable supply of high quality MgO products to a market including most advanced electronic material and PDP protective films.

Nippon Tungsten Co., Ltd. is the advanced manufacture of rare metal, hardest metal, cemented carbide tool, engineering ceramics, and processed products based on tungsten powdered metallurgy. Especially the alumina titanium carbide system board material (aluminum-TiC) made by full use of special sintering technology and processing technology has been widely used for magnetic heads in the world, and has obtained high acclaim. It has become standard of the magnetic head slider substrate material for hard disks (HDD).

The "MgO targets" succeeded by joint developments this time is by carrying out of the fullest practical use of high purity MgO powder composition / refining technology which Ube Material has cultivated for years, and the special sintering technology which Nippon Tungsten holds. By fusing both manufacturing process, high purity (more than 4N5 or actually 5N) and high density (more than 99% or actually 99.4%) was realized, and simultaneously it became possible to mass-produce stably. Ube Material is to be in charge of the sales of this item. The present suppliability is 1,000 units per year.

Regarding the quality of the MgO targets, the MgO film forming evaluation for the HDD magnetic heads have been evaluated since 2006 fiscal year by Canon Anelva Inc. which is sputtering equipment manufacturer and obtained the evaluation that its performance is sufficient as MgO targets. Furthermore, the evaluation was ended by some HDD makers have completed the evaluation of performance, and it reached the stage of the delivery start.

Moreover, the MgO targets are employed also for research and development of nonvolatile memory MRAM. According to Group Manager Shinji Yuasa, the independent administrative institutions industrials technology Laboratory / electronics research section spintronics research group, “ Regarding the market of the spintronics applicable field using MgO insulation film, it will rise by HDD magnetic head and nonvolatile memory MRAM and the full market will be formed by next generation type masslarge-capacity MRAM (spin RAM). Since formation of thin homogeneous films in large areas films particularly affects the yield for a memory application, it is expected that the requirement for target becomes severer. Furthermore, it has great potential, such as microwave oscillators and spin transistors, as new applications except for nonvolatile memory.”

Supposing a future MRAM formal market, Ube Material and Nippon Tungsten finish development of high quality (high purity, high density) grade and enter into a MgO target business in collaborative framework. From now on, we will aim at the joint evaluation with the MRAM users developing supposed to form the full market by using the background of HDD use evaluation results.

In addition, please give inquiries on Product and Material etc. to Ube Material which becomes a distributor, .on Fabrication Technology to Nippon Tungsten which becomes a manufacturer.



MgO targets

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