LAUNCHING "CHO-GOKIN Co., Ltd. " FOR THE CONTRIBUTION OF CO_2 EMISSION REDUCTION IN THERMAL POWER GENERATION AND JET ENGINES

-A Joint Venture Business Certified by the National Institute of Materials Science (NIMS)-

April 28, 2010

The National Institute of Materials Science

Brief Summary

In September 2009, the National Institute of Materials Science (NIMS, President Sukekatsu Ushioda) established a company named "Cho-Gokin Co., Ltd." (President Itaru Tamura, located in Ryugasaki-shi, Ibaraki-ken), as a "NIMS joint venture business" entity, where Cho-Gokin means superalloy in Japanese. Since then, after concluding a license agreement with NIMS for the development of superalloy and obtaining permission for the use of superalloy manufacturing facilities and the business space required, this company started full-fledged operation and has already received several orders from manufacturers in Japan.

"Cho-Gokin Co., Ltd." promotes the early practical application of superalloy developed by NIMS as well as an effective reduction in emission of CO_2, so as to contribute to achieving the national mid-term target of Japan for reducing 2020 CO_2 emissions by 25% (below 1990 levels). To be more precise, within the framework of the license agreement with NIMS concerning various types of superalloy (single crystal, directionally solidified, forged, etc.), this company is engaged in the manufacture and sales of testing materials (round bars, plates, etc.) that possess high temperature properties that are requested in large quantities by domestic and overseas enterprises, universities, and research institutes. It is thus expected that assessment of these materials and establishment of a database in each enterprise, university and research institute will be accelerated, resulting in the further promotion of their practical application.

At the same time, this company will also be involved in the design, manufacture and sale of equipment (directional solidification furnaces, ultra-high temperature rapid cooling vacuum heat treatment furnaces, ceramic coating equipment (EBPVD), and high temperature oxidation & corrosion testing apparatus (burner rigs)) developed in the course of superalloy research & development by NIMS, thus contributing to the efficient assessment testing of superalloys.

The management group consists of the following 4 members:

President Dr. Itaru Tamura
Director Ms.Tomoko Arai
Director Dr. Toshiharu Kobayashi
Director Dr. Hiroshi Harada

The aims and significance of "Cho-Gokin Co., Ltd."

The NIMS High Temperature Materials Center has been engaged in promoting the High Temperature Materials 21 (National) Project, with the aim of enhancing thermal power station heat efficiency to 56% or more (currently 42% on average and 52% maximum) and also that of jet engines for civil aircraft, so as to realize a reduction in CO_2 emissions through decreasing the amount of fuel used. The Center has so far taken the lead in global research work through developments such as an Ni-base single crystal superalloy with the world highest temperature capability of

1,100°C, which is to be used as a key technology for a gas turbine rotor blade material. The Center is also currently engaged in joint research with both domestic and foreign enterprises with the intention of practically applying these new materials.

Gas turbines for power generation and jet engines are the best fields to effectively apply this high performance super alloy. The superalloy developed for power generation is already under testing intended for practical application in cooperation with several domestic utilities. The use of such material by enterprises throughout the world will surely contribute to a further reduction in CO_2 emissions. The development of superalloys has progressed in line with the development of jet engines. It is our burning desire to make use of NIMS world leading superalloy to retake lead in the development of jet engine technology that has fallen behind its World War II peak. It is also our wish that our technology be fully applied and evaluated. Dealing with a point not addressed in detail in the Kyoto Protocol, on 25 September last year, the International Air Transport Association (IATA) prepared an action program to reduce 2050 CO_2 airline industry emissions by 50% (below 2005 levels). Since the introduction of a large number of new airplanes equipped with low fuel consumption engines is an essential factor for the realization of this action program, it is expected that there will be a further increase in demand for superalloys with a higher temperature resistance that allows for improved engine efficiency.

In order to ensure a wider field of application for NIMS high performance superalloy in power generation and jet engine gas turbines, "Cho-Gokin Co., Ltd." is planning to expand its operation as a NIMS venture business to include the supply of testing materials as well as consulting services on the basis of its rich experience and knowledge in the field. The company also aims at making a social contribution by reducing CO_2 emissions through the enhancement of the thermal efficiency of gas turbines for power generation and jet engines.

Products & services

"Cho-Gokin Co., Ltd." focuses primarily on the manufacture and sale of testing materials intended for collecting basic data in order to promote the dissemination and practical application of heat resistant materials such as the super alloy developed by NIMS. The company's business also includes mediation of the design, manufacture and sale of material testing equipment developed by NIMS in the course of research & development to those who are interested in use of the equipments. In the future the company also plans to be involved in consulting based upon the knowledge accumulated in the field of heat resistant materials.

The following provides specific descriptions on company products & services:

1) Products

(1) Cast superalloy materials, such as superalloy testing materials (round bars, plates, etc.) made by single crystal solidification or directional solidification with appropriate heat treatment, intended for turbine blades (refer to Single crystal: Separate Document).

(2) Forged superalloy materials, such as alloys to be used for turbine disks.

(3) Processing/testing apparatus for high temperature materials, such as ceramic coating equipment (EBPVD), high temperature oxidation & corrosion testing apparatus (e.g., kerosene burner rig testing apparatus), ultra-high temperature rapid cooling vacuum heat treatment furnaces and directional solidification furnaces.

2) Services

Future plans include expanding our business to cover academic and technical consultation on general high temperature materials.

For general inquiries:
Public Relations Office
NIMS
1-2-1 Sengen, Tsukuba, Ibaraki, Japan
305-0047
Tel: +81 (0)29-859-2026

For specific business matters:
Toshiharu Kobayashi
High Temperature Materials Group, High Temperature Materials Center
NIMS
Tel: +81 (0)29-859-2519
Fax: +81 (0)29-859-2501
E-mail: KOBAYASHI.toshiharu@nims.go.jp