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## Nippon Shokubai Announces Signing of a Business Alliance Agreement with Marine Nano-fiber for Chitin Nanofiber as Cosmetic Ingredients

NIPPON SHOKUBAI CO., LTD. (Headquarter: Osaka-city, Japan, President: Yujiro Goto, hereinafter “Nippon Shokubai”), signed a business alliance agreement and an agency agreement regarding cosmetic ingredients with MARINE NANO-FIBER Co., LTD. (Headquarter: Tottori-city, Japan, President: Shinsuke Ifuku, hereinafter “Marine Nano-fiber”). Under these agreements, Nippon Shokubai has started marketing activities concerning chitin nanofiber and hydrolyzed chitin nanofiber, produced by Marine Nano-fiber, in the area of cosmetic ingredients.

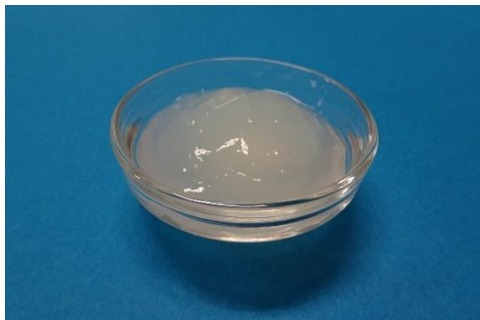


Fig. 1 Chitin nanofiber



Fig. 2 Snow crab



Fig. 3 Pile of crab shells

A Tottori University-initiated venture established by Professor Shinsuke Ifuku of the school of Engineering at Tottori University, Marine Nano-fiber has been engaged in research, development, manufacture and sales of products related to a new material "Marine Nano fiber™" derived from crab shells disposed in large quantities in Tottori Prefecture where crabs are a specialty.

"Marine Nano fiber™" is chitin nanofiber and partially hydrolyzed chitin nanofiber obtained by extracting as ultrafine fiber from the chitin and its hydrolysate which are the main components of crab shell.

"Chitin" is known as a major component of the outer shell of crustaceans such as crabs and shrimps, as well as the cell walls of mushrooms. It is a substance derived from biological resources and is characterized by its sustainability, high level of safety, and biodegradability. Conventional chitin powder had concerning issues with dispersibility and formulating, but "Marine Nano fiber™", which is an ultra-fine fiber, is a novel natural material with various characteristic efficacy such as good dispersibility and formulating as a cosmetic ingredients, excellent film forming ability, excellent wound healing property, giving moisture with quick

affinity to human skin, anti-inflammatory property, antibacterial property, hair growing effect, and improving hair gloss and smoothness. This material is expected to provide a variety of functions to cosmetics.

Nippon Shokubai will clarify these unique effects and efficacy using experimental data and develop formulations for various cosmetic application in order to develop a market.



Fig.4 Conventional chitin powder, left, and Chitin nanofiber

Nippon Shokubai has set a target at cosmetic ingredients business as one of the new business target areas in the 2nd medium-term business plan, “Reborn Nippon Shokubai 2020 NEXT” started in 2017. Nippon Shokubai aims for expanding cosmetic ingredients business with providing cosmetic ingredients to satisfy market needs.

#### 1. Outline of Marine Nano-fiber

Name: MARINE NANO-FIBER Co., LTD.

Headquarter: Incubation room, 4F Tottori University VBL building, 4-101 Koyama-Minami, Tottori, 680-8550, Japan

Representative: President Keisuke Ifuku (Professor, Graduate school of Engineering, Tottori University)

Business: Research and development, Manufacture and sales for chitin nano fiber

Capital: 150 million yen

Established: April 28th, 2016

Website: <https://www.marine-nf.com/>

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About NIPPON SHOKUBAI Co., Ltd.: Since 1941, Nippon Shokubai has grown up its business with unique catalyst technology. Nippon Shokubai has supplied, for example, ethylene oxide, acrylic acid, automobile catalysts, process catalysts and so on. Among all, our global market share of superabsorbent polymer is the largest in the world now. Nippon Shokubai is a global chemical company operating under its corporate mission "TechnoAmenity-Providing affluence and comfort to people and society with our unique technology." <http://www.shokubai.co.jp/en/>

#### 【Contacts】

Investor & Public Relations Dept.,

NIPPON SHOKUBAI CO., LTD.

TEL: +81-3-3506-7605 E-mail: [shokubai@n.shokubai.co.jp](mailto:shokubai@n.shokubai.co.jp)