November 28, 2018
Spiber Inc.

Spiber announces plans to establish overseas mass production plant

New Thai plant to be among the world's largest structural protein fermentation facilities

Spiber Inc. (Director and Representative Executive Officer: Kazuhide Sekiyama / Head Office: 234-1 Mizukami, Kakuganji, Tsuruoka City, Yamagata Prefecture) is pleased to announce the planned construction of a mass production plant in Rayong, Thailand[1]. The new plant will allow for large-scale protein fermentation and purification operations, and represents Spiber's latest step towards the mass production of its proprietary structural protein materials. Spiber also concluded a fundraising round in late September in which 5 billion yen was raised through the third-party allocation of new shares to multiple investors, including the Cool Japan Fund. Spiber intends to utilize these funds to propel the construction of the new plant in Thailand.

The construction of the new plant represents Spiber's first expansion to an overseas location. Approximately 100 times larger in scale than the pilot facility operated by Spiber in Tsuruoka, Yamagata, and with a planned production capacity of several hundred tonnes per year, the plant is expected to be the world's largest structural protein fermentation facility (as of November 29, 2018; independent research). As a base of operations for research and development into fermentation and purification technologies for structural proteins, the new plant will also serve as a model for the establishment of further global production facilities. Construction on the plant is scheduled to begin by the latter half of 2019, and commercial production is expected to commence from 2021. Proteins produced at the plant will be shipped to and spun into fibers at Spiber's Tsuruoka spinning facilities, which are also slated for upgrades and expansion.

Thailand abounds in the biomass resources which are essential for fermentation production processes, and serves as a hub for both apparel and automobile manufacturing, two key industries for Spiber's materials. With government-driven initiatives to promote the swift realization of sustainable development goals, Thailand represents a perfect location for Spiber to pursue its mission of addressing global-scale issues and helping to actualize a sustainable global society.

Further developments related to the establishment of the mass production production system in Thailand, along with information concerning plans for product development, will be announced on Spiber's homepage starting from the end of this year.

[1]Eastern Seaboard Industrial Estate (Rayong)
(In Thai: **นิคมอุตสาหกรรมอีสเทิร์นซีบอร์ด (ระยอง)**)

The Eastern Seaboard Industrial Estate in Rayong is an exemplar of the Thai government's Eastern Economic Corridor initiative. Located near Laem Chabang, site of Thailand's largest international port, the Estate is home to a variety of factories belonging to both Japanese and other foreign manufacturers from the automotive and other industries. The estate was established in 1996.

Please address any press-related enquiries to: contact@spiber.jp

About Spiber Inc.

Founded:	September 26, 2007
Location:	234-1 Mizukami Kakuganji Tsuruoka, Yamagata 997-0052, Japan
Representative Executive Officer:	Kazuhide Sekiyama
Business Domain:	New-generation biomaterial development
Paid-in Capital:	¥22.44366 billion (incl. capital reserves, etc.)
Employees:	200 (as of November 28, 2018)
Homepage:	https://www.spiber.jp/en

Established in 2007, Spiber Inc. is a biotech startup based in Yamagata, Japan. Spiber's revolutionary protein materials have garnered wide attention for their potential to serve as sustainable mainstay industrial materials, due to their low environmental impact, biodegradability, and non-reliance on traditional petroleum resources. Spiber's co-founders, Kazuhide Sekiyama and Junichi Sugahara, began researching spider silk protein synthesis in 2004 at the Keio University Institute for Advanced Biosciences in Tsuruoka, Yamagata. Their efforts led to the development of Spiber's proprietary QMONOS® protein material, as well as the successful establishment of the world's first mass production techniques for its production. In addition to fibers, woven and knit textiles, and non-woven fabrics, Spiber's molecularly designed protein materials can also be processed into resins, films, gels, and composites. As a key member of the Japanese Cabinet Office's Impulsing Paradigm Change through Disruptive Technologies Program (ImPACT), Spiber is engaged in the promotion of research and development endeavors with over 40 partner enterprises and research institutes, and is working to create a platform for the development of protein materials which references the latest developments in fields such as information technology, synthetic biology, polymer science, and materials science and engineering. Through its multidisciplinary research and development endeavors, Spiber is comprehensively accumulating vital intellectual property required for the industrialization of protein materials.

About synthetic structural proteins

Proteins, biopolymers which serve as some of the essential building blocks of life, are formed from straight-chain assemblies containing up to 20 types of amino acids. The characteristics of any one protein result from order of these amino acids, and the process of evolution has driven the creation and refinement of the multitude of existing proteins which support life on Earth today.

Some proteins, such as enzymes and antibodies, are responsible for a variety of physiological functions within living creatures. Others, such as those found in the cytoskeleton of cells or in spider silk, play a more structural role. At Spiber, we call the latter type 'structural proteins'. Examples of structural proteins include keratin, found in hair and nails, and collagen, an important component in skin and bones.

Synthetic structural proteins refer to those proteins which, for a specific purpose, have been designed or selected for from within an almost limitless pool of possible amino acid combinations, and then produced via a microbial fermentation process. At Spiber, our proprietary technology allows for the creation of a hugely diverse range of such proteins, each with different features and forms. Due to their non-reliance on petroleum, Spiber's synthetic structural proteins are biological, biodegradable, and accordingly provide a compelling, sustainable solution to the needs of the apparel industry, which is seeking to move away from microplastics and animal-derived materials. They also show great potential for use in lightweight components in the automobile and transportation industries.