

PRESS RELEASE

June 13, 2024

## **HighChem Co., Ltd. and Hokkaido University Establish “HighChem Hokudai R&D Lab” for Industrial Innovation**

### **Accelerating research and development to implement and popularize future PET bottles and fibers that reduce environmental impact**

**June 13, 2024** — HighChem Co., Ltd. (Head Office: Minato-ku, Tokyo; President: Ushio Taka, hereinafter referred to as "HighChem") and Hokkaido University (Location: Sapporo, Hokkaido; President: Kiyohiro Houkin) have established the "HighChem Hokudai R&D Lab" to accelerate bringing biomass-derived functional resins and fibers to social implementation, as alternatives to fossil resource-based general-purpose synthetic resins and fibers. Hokkaido University's collaborative research with private companies on the practical application and dissemination of its cutting-edge biomass resource technology marks a groundbreaking initiative.

Hokkaido University will combine academic knowledge of catalytic process technology with HighChem's accumulated raw material procurement, catalyst and material industrialization technologies in the green chemical field, thus advancing research. Aiming for early business expansion, we will contribute to the spread of green chemicals and resins that do not depend on fossil resources.

#### **Overview of HighChem Hokudai R&D Lab**

Official Name:	HighChem Hokudai R&D Lab
Purpose:	Development of biomass-derived materials to replace fossil-derived synthetic resins and fibers
Duration:	April 1, 2024, to March 31, 2026
Location:	Institute for Catalysis, Catalytic Reaction Research Division, Hokkaido University
Research Director:	Professor Kiyotaka Nakajima, Institute for Catalysis, Catalytic Reaction Research Division, Hokkaido University

## **Challenges in Petroleum-derived PET Bottles and Fibers**

Approximately 80 million tons of polyethylene terephthalate (PET), the material used for PET bottles and fibers, are produced globally. PET is derived from fossil resources such as petroleum, which leads to high environmental impacts including CO<sub>2</sub> emissions. Additionally, there are concerns about the depletion of petroleum and the rising costs. To address these issues, there is a need for the early practical application of bottles and fibers that can replace conventional PET made from petroleum resources. However, many of the developed technologies have not yet become widely adopted.

## **Hokkaido University with Cutting-edge Biomass Technology and HighChem with Practical Application Achievements Collaborate**

The Institute for Catalysis at Hokkaido University is engaged in the development of cutting-edge technology in Japan for catalytic conversion reactions from biomass (plant-derived) to plastic raw materials. Recently, Hokkaido University and HighChem, which has achievements in commercializing biodegradable plastics and fibers derived from corn and in the practical application of ethylene glycol (a raw material for PET) derived from carbon monoxide, have started a joint development project. This collaboration aims for the early practical application of future PET bottles and fibers.

## **Aiming for the Development and Practical Application of New Biomass-based Polyester**

In this joint research with Hokkaido University, HighChem aims to develop highly efficient and selective saccharification processes for biomass raw materials, as well as processes for converting these materials into resin raw materials. Additionally, the collaboration will focus on developing new polymerization methods for plant-derived polyester, which is attracting attention as an alternative to PET (polyethylene terephthalate). By establishing these technologies, HighChem and Hokkaido University aim to contribute to the widespread use of green chemicals and resins, thereby addressing societal demands for reducing CO<sub>2</sub> emissions and fossil resource use.

## **HighChem's Initiatives for the Promotion of Green Chemicals and Fibers**

Since 2019, HighChem has been engaged in a strategic business partnership with the world's largest polylactic acid (PLA) manufacturer, BBKA Group, to develop the Japanese market for biodegradable and bio-based materials, including PLA. In 2021, HighChem introduced its own brand "Highlact®," a new PLA fiber derived from corn, and has been actively expanding its sales activities

in the U.S. and Europe to promote the global adoption of PLA fibers as an alternative to polyester.

HighChem is also working on developing CO<sub>2</sub>-derived fibers that contribute to carbon recycling. In 2020, as part of a NEDO project, HighChem began research and development on the production of paraxylene from CO<sub>2</sub>, with HighChem focusing on the development of catalysts for this project. For monoethylene glycol (MEG), another raw material for polyester, HighChem is working on the licensing to commercial plants of green MEG derived from CO<sub>2</sub>, based on its widely commercialized proprietary SEG® technology.

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