Zeon Corporation
The Yokohama Rubber Co., Ltd.
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Zeon & Yokohama Rubber installing a bench facility for highly efficient production of butadiene from ethanol derived from plant-based materials

Zeon Corporation (President and CEO Tetsuya Toyoshima) and The Yokohama Rubber Co., Ltd. (Chairman & CEO, Chairman of the Board Masataka Yamaishi) today announced that they have agreed to establish a bench facility*1 to demonstrate technology for producing butadiene from ethanol derived from plant-based and other sustainable materials with high efficiency. The facility will be installed at Zeon's Tokuyama Plant (Shunan City, Yamaguchi Prefecture) and is scheduled to begin operating in 2026. It will enable the production of a certain amount of butadiene and facilitate the collection of various data that will be used to establish mass production.

This initiative is aligned with one of two R&D themes*2 selected by the New Energy and Industrial Technology Development Organization (NEDO) in 2022 for its project for the Development of Technology for Producing Raw Materials for Plastics Using CO_2 and Other Sources, one of NEDO's Green Innovation Fund Projects. As part of a cooperative effort headed by the National Institute of Advanced Industrial Science and Technology (AIST), National University Corporation Institute of Science Tokyo (formerly Tokyo Institute of Technology), and the national research and development agency RIKEN, Zeon and Yokohama Rubber are aiming for the social implementation of two technologies that will enable of highly efficient production of butadiene and isoprene from plant-based and other sustainable materials in the 2030s. The bench facility to be installed at the Zeon plant is part of initiatives based on the theme "highly efficient butadiene synthesis using ethanol."

The demonstration experiment at the new bench facility will demonstrate the technology to convert ethanol obtained from plant-based and other sustainable materials into butadiene using a highly efficient catalyst. It will be the first step in establishing the technology's use for the mass production of synthetic rubber from plant-based and other sustainable materials. Zeon will develop a prototype polybutadiene rubber (butadiene rubber) from the butadiene produced at the bench facility, and Yokohama Rubber will develop prototype tires using the butadiene rubber and conduct driving tests using the tires to collect data needed for a more large-scale demonstration of the technology.

Zeon and Yokohama Rubber will continue to collaborate on projects that will make use of both companies' wealth of technologies and know-how to promote a circular economy and carbon neutrality in the tire and rubber industries and help realize a sustainable society.

*1 Bench facility: Large-scale facility to acquire the data necessary to transition to a continuous demonstration facility (pilot facility) for commercialization

Laboratory equipment–generated butadiene rubber prototype

Two NEDO-selected R&D themes (*2)

1.Highly efficient butadiene synthesis using ethanol

■Proposing companies: Zeon and Yokohama Rubber

■Subcontractor / cooperating entity: AIST

■Project overview: Development of technology enabling highly efficient conversion of ethanol derived from plant-based and other sustainable materials into butadiene. This project is using a pilot facility to establish a method to realize social implementation of the technology by 2030 and realize commercialization in 2034.

2.Development of technology for production of butadiene and isoprene from plant-based materials

■Proposing companies: Zeon and Yokohama Rubber

■Subcontractors/cooperating entities: Institute of Science Tokyo and RIKEN

■Project overview: Development of a biotechnology to directly produce butadiene and isoprene from plant-based raw materials that will supplement core chemicals used to produce synthetic rubber that are derived from the recycling of rubber and tires. Aiming to commercialize this technology in 2034.

NEDO's Green Innovation Fund Project

The Green Innovation Fund Project is a program established by the Ministry of Economy, Trade and Industry (METI) to accelerate innovation through structural transformation of energy and industrial sectors and bold investment toward achieving the national goal of "reducing overall greenhouse gas emissions to zero by 2050." The program provides a continuous ten-year support to companies and organizations that pursue this goal as a business commitment in the areas from research and development, demonstration to commercial implementation.

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