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For immediate release

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Yokohama Rubber Develops System that Uses AI to Predict Physical Properties of Rubber

Tokyo—The Yokohama Rubber Co., Ltd., announced today that in December 2020 succeeded in developing a proprietary system that utilizes AI to predict the physical properties of rubber compounds. The system is already being used to design rubber compounds for YOKOHAMA tires. Yokohama Rubber expects the system's ability to conduct a large number of virtual experiments will enable it to accelerate compound development, reduce development costs, and develop better performing products. The system also will make it easier for less-experienced engineers to create new compounds.

The system was developed under Yokohama Rubber's new AI utilization concept, HAICoLab*, which was launched in October 2020. The system uses AI to predict a rubber compound's physical properties based on the rubber compound design parameters input by an engineer. In addition, to facilitate engineers' ability to confirm predicted results, the system includes a function that displays the certainty of predicted physical properties and one that searches for a compound composition that will achieve physical properties closest to the targeted ones. The new system enables collaborations between humans and AI that will lead to the acquisition of new knowledge. Going forward, Yokohama Rubber will expand the use of this new system for developing rubber compounds for use in tires to a wide range of the company's other products, including hoses and conveyor belts.

* An acronym for "Humans and AI Collaborate" for digital innovation. It also has the meaning of a laboratory for joint research by humans and AI.

HAICoLab is a new concept aimed at fostering digital innovations by facilitating collaborative efforts that merge human inspiration and creativity with the enormous data processing capability of AI. Yokohama Rubber aims to acquire new knowledge by creating and collecting data based on hypothetical conditions set by humans and then applying AI to predict, analyze and then search for the most optimal result. Yokohama Rubber has been advancing technological developments by using AI in its material and tire design and development processes. For example, in 2017 Yokohama Rubber unveiled a new rubber material development technology that applies materials informatics and a tire design technology that applies informatics technology. Under its new HAICoLab concept, Yokohama Rubber is now using AI to develop innovative products and services as well as processes. Through this effort, Yokohama Rubber will contribute to the realization of "Society 5.0", a future society that will enhance people's experiences and take advantage of innovative technologies such as AI and IoT, as advocated by the Japanese government's Cabinet Office.

HAICoLab conceptual diagram

