**Applying HyperTaste to Chemical Analysis Services:
Joint Research with IBM with a Targeted Implementation by Fiscal Year 2023**

NAGASE & Co., Ltd. (Chuo-ku, Tokyo; Representative Director and President: Kenji Asakura) and IBM are carrying out joint research on practical applications for a chemical analysis service primarily for liquids based on the IBM Research-developed HyperTaste chemical sensing technology, which leverages artificial intelligence (AI). With a target of the 2023 fiscal year, the goal is to utilize this technology in transactions by NAGASE Group companies involving chemicals and food materials in order to ensure a safe, secure, speedy, and stable supply chain.

The joint research combines the NAGASE Group's experience in handling chemicals and food materials with IBM's expertise in AI and sensor technology. The HyperTaste technology was originally developed as part of the IBM Research Frontiers Institute, a multidisciplinary consortium for foundational research. HyperTaste is an AI-assisted testing technology which uses machine learning to identify the chemical fingerprints of components that make up liquids. HyperTaste enables the analysis of components such as ions in a liquid, based on changes to the electrochemical potentials in a multi-sensor array which can be applied to facilitate precision measurements of chemicals without the need for highly specialized sensor equipment.

Generally, for transactions involving chemicals the quality is assured by a certificate of analysis (COA) provided by the manufacturer, but due to issues such as transcription errors in the analysis data or mistakes in product labelling, there are numerous cases in which the COA and the product do not match, requiring the importer/exporter or customer to confirm what the product is. Currently, specialized analytical equipment is necessary in these cases, and performing the analysis takes time (from one day to several days), with issues such as the cost of the equipment and the space it takes up, and the difficulty of performing real-time analysis.
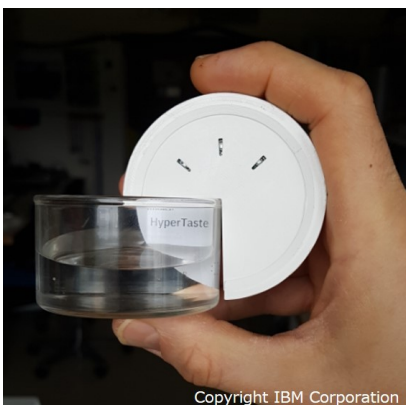


**Hypertaste sensor**

The technology being jointly developed by NAGASE and IBM is a portable sensor that fits in your hand and can be used in mobile applications, enabling nearly real-time measurements anywhere. In the first round of joint research, which began in January 2020, the technology was validated in a laboratory demonstration to identify six elements at a ppm level of 0.0001 percent (*1). By January 2022 the teams will test and measure additional chemicals at the ppb level of 0.0000001 percent. The goal is to have the technology put to use by Group companies by FY 2023, followed by providing it as a service to companies outside the Group in the future.

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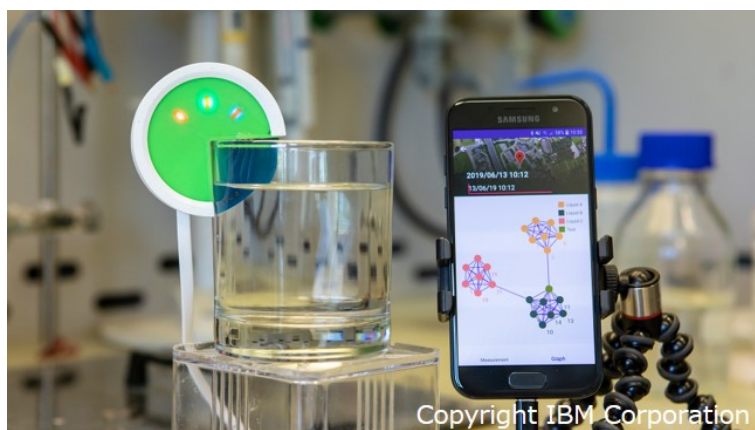
**Liquid analysis by HyperTaste**

(*1) Announced at the Chemical Society of Japan's 10th CSJ Chemistry Festa ("HyperTaste: An AI-assisted e-tongue for fast and portable fingerprinting of complex liquids," Patrick Ruch et al.)

◆**Contact Information for Inquiries**

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