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Nihon Dempa Kogyo Co., Ltd.
Representative Director and President
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Development of quartz crystal sensors and equipment for testing new coronavirus antigens

Nihon Dempa Kogyo Co., Ltd. (Tokyo-based Shibuya-ku, Tokyo) has been developing NAPiCOS series^(*1) of laboratory instruments based on the QCM method^(*2) that uses quartz crystal as a sensors, which has been sold since 2010. We are now developing for testing new coronavirus (SARS-CoV-2) antigens.

We signed a research contract with Saitama Medical University (Moroyama-cho, Inuma-gun, Saitama Prefecture) to conduct a verification test as "Verification the effectiveness of the SARS-CoV2 antigen detection methods by the QCM method^(*3)."

In the future, we will make use of the results of the verification test to develop products as soon as possible.

There are more than 20 million people worldwide infected with the new coronavirus, and there is no indication of convergence. In Japan, test using the PCR method that amplifies genes are commonly performed, but the process of amplifying genes may result in longer testing time and delays the appropriate treatment. Therefore, there is an increasing need for a simple and rapid test methods in clinical practice.

We have been developing a portable size medical device based on "NAPiCOS Lite", a small QCM device sold as a laboratory device, with the aim of providing a simple, rapid, and highly accurate test method. The QCM method detects the amount of molecular substances (pg/mL equivalent)^(*4) in real time as a change in frequencies, and thus provides highly sensitive analytical results in a short time ranging from 5 to 10 minutes. In addition, since it is a simple test method to drip a reaction reagent which is a mixture of the sample and a pretreatment solution into the sensor inlet, and it is also possible to perform tests at small-scale clinics.

Our equipment and sensors using the QCM method are used as the above-mentioned "NAPiCOS series" in research institutions, universities, companies, etc. in Japan, and are mainly used in the biochemical research field. We will continue to contribute to the realization of a safe, secure, and comfortable society by utilizing the knowledge of quartz crystal technology developed in the our crystal device business.

(*1) NAPiCOS series: A laboratory instrument sold by Nihon Dempa Kogyo Co., Ltd. to universities, research institutes, and companies since 2010.

(*2) QCM method: (Quartz Crystal Microbalance method) Measurement method is based on "mass loading effect" in which the frequency decreases proportionally to the mass when the material is adheres to the electrodes of the quartz resonator.

(*3) Saitama Medical University "Verification the effectiveness of SARS-CoV2 antigen detection methods by the QCM method " details are published on the following website.

http://www.saitama-med.ac.jp/hospital/outline/irb_kouhou.html (Japanese)

(*4) pg/mL (picogram per milliliter): pg represents the mass of one trillionth gram

【Product appearance】



“NAPiCOS Lite (current products)

*Development based on this product.

Sensor

*It is a simple test by dropping a sample.

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