

*Press release*

## **A serological test that can simultaneously trace for past infections of COVID-19, Influenza or SARS**

**Neuchatel, 09 April 2020 – Swiss startup Adamant Innotech and CSEM are developing a rapid, highly sensitive serological test to determine if a person has been previously infected with the SARS-CoV-2 virus (the causative agent of COVID-19) and other types of viruses. The device will be based on mature optical microarray technology already used in other medical applications. The new biosensor is intended to give results in one to two hours after simultaneously probing for up to 20 different types of antibodies while tracing for various past infections, such as COVID-19, Influenza or SARS.**

From the beginning of the COVID-19 pandemic, numerous measures have been undertaken to protect populations and various diagnostic screening tests have been deployed to help manage the crisis. Today, increasing attention is being paid to serological tests, which make it possible to know whether an individual has been previously infected with SARS-CoV-2. These tests track the presence of specific antibodies in the blood that the body produces in response to an infection. Once the antibodies have been formed, they help the body neutralizing future infections from the same threat. Establishing who has developed antibodies might be important for determining who has less risk to develop a second infection.

Swiss startup Adamant Innotech specializes in miniaturized optical technologies and has commissioned CSEM to work on a new test that detects, among others, the antibodies binding to the protein of SARS-CoV-2 in a blood sample. The new test will be based on an established technology from CSEM Center Landquart. In the foreseeable future, a first product should be available to the Swiss and Chinese markets. *"Similar methods are being deployed in hospitals, but we offer a high-performance and competitive Swiss solution, which allows a wide range of tests to be carried out simultaneously,"* says Xiaoming Tang, Managing Director of Adamant Innotech, and former manager at CSEM.

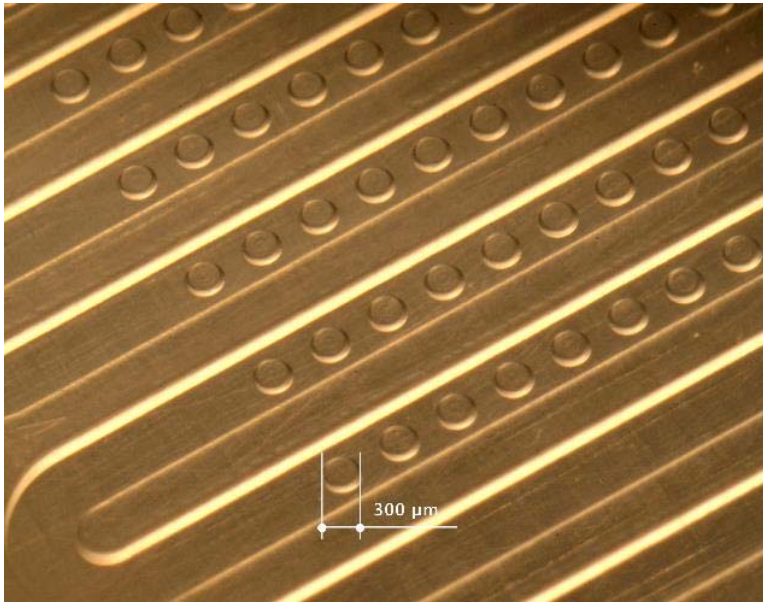
### **Optical microarray biosensing**

The new optical detection-based biosensor will consist of a plastic microarray chip on which the virus-specific proteins are immobilized. When introducing a patient's blood sample, the antibodies generated in response to the viral infection will attach to the chip. It will then be possible to detect the presence of these specific antibodies using a fluorescence reader. To collect the blood sample, a simple fingertip prick test will be required, after which the results will be ready in one to two hours.

The new method should allow up to 20 different types of antibodies to be detected simultaneously on a single chip, thereby offering a simple and relatively fast solution to determine if a patient has suffered from COVID-19, Influenza, SARS or other viral diseases.

After preparation of the biochips at CSEM Center Landquart in the coming weeks, the system will be tested with patient samples by Adamant Innotech's partner laboratories in China. If the tests show a

positive outcome, Adamant Innotech will start intensive work for validation and regulatory clearance. The company envisages future production of the biosensors to take place in both Switzerland and China. The targeted production methods of the chips will be similar to those used in the consumer plastics and microfabrication fields, allowing for relatively low production costs.



*Focus on the biochip showing the microchannels and spots (diameter 300  $\mu\text{m}$ ) where the specific proteins are immobilized. Biochip size: 75 x 25 mm with 384 dots distributed on a microarray of 16 rows and 24 columns.*



*Prototype of the bioanalytical fluidic system. The system allows the simultaneous processing of six biochips for the analysis of six patient samples.*

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### Additional information

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### About CSEM

#### CSEM—technologies that make the difference

CSEM, founded in 1984, is a Swiss research and development center (public-private partnership) specializing in microtechnology, nanotechnology, microelectronics, system engineering, photovoltaics and communications technologies. Around 500 highly qualified specialists from various scientific and technical disciplines work for CSEM in Neuchâtel, Zurich, Muttenz, Alpnach, and Landquart.

Further information is available at [www.csem.ch](http://www.csem.ch)

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