



An ultra-low-cost automated analyzer enables specimen testing in telemedicine



Abstract

The COVID-19 pandemic has accelerated legal developments related to telemedicine, raising expectations for enabling hospital-grade diagnostic analysis at home. To achieve this goal, several critical challenges must be addressed: eliminating the need for syringes for blood collection, automating the entire analysis process, reducing the cost of devices, ensuring maintenance-free operation, and enabling the mass production of disposable test kits. In this presentation, I will introduce a compact analytical device that successfully tackles all of these challenges and can be powered by a standard mobile battery used for smartphones.

This device utilizes microfluidic and semiconductor manufacturing technologies to achieve high-precision analysis in an extremely small format. It requires only a small drop of blood, such as from a fingertip, and delivers reliable results within a short time. The system is designed for ease of use, making it suitable even for individuals without medical training.

Importantly, this technology is not only applicable to everyday home use for managing chronic conditions like diabetes or cardiovascular disease, but also proves valuable during emergencies. In times of large-scale disasters such as earthquakes, when power and medical infrastructure may be compromised, this device can continue functioning. By quickly transmitting test results from evacuation shelters to medical institutions outside the affected areas, it can play a vital role in ensuring timely and effective emergency medical support.

Date

Online



2025
6/16
Monday
10:00 ▶ 11:00

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Venue

Hiroshima University,
Graduate School of
Advanced Science of
Matter Build A, 6F Seminar
room601-(2)



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