

Motivation

Early detection of varying biomarkers (represented by hormones) is useful for health-care management. Ubiquitous sensors, which can measure biomarkers anytime, anywhere and be used by anybody, have potential to advance in health-care management. We are investigating a device called a lab-on-a-chip, which enables us to biological assay from just a small drop of biological analyte.

Originality

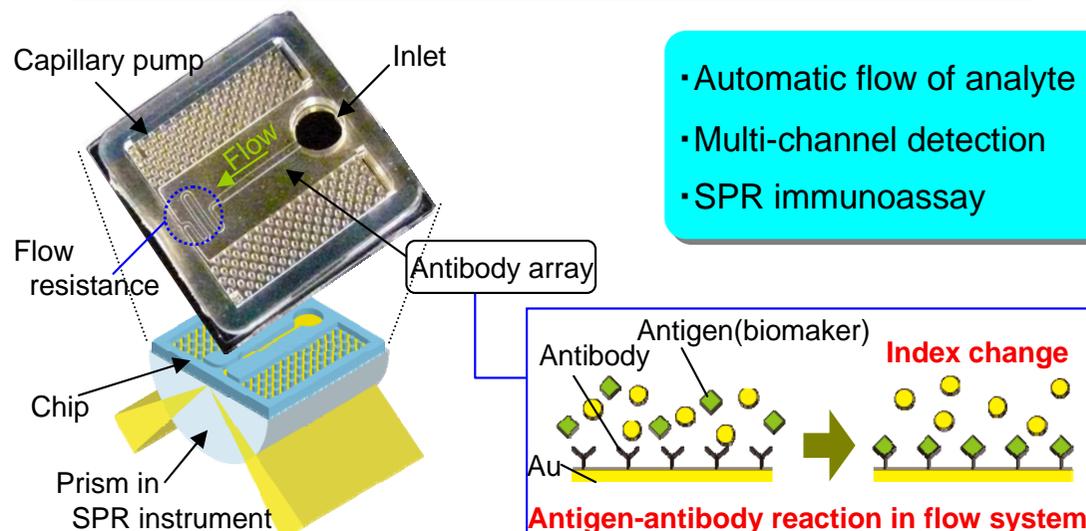
We fabricated a microfluidic chip that can carry out immunoassay with automatic liquid flow, whereas the conventional assay requires a complicated and technical procedure. Surface plasmon resonance (SPR) is used for high-sensitivity detection of antigen-antibody reactions. The cost-effective and disposable chip is fabricated by injection molding. With this technology, mastitis pathogens in raw milk can be discriminated within 10 min, which takes more than 24 hours in conventional culture test.

Impact

Medical checkups now available only at advanced hospitals will become possible at local hospitals or at home. This will lead to the early detection and prevention of disease and the reduction of medical care cost. Because this sensor works for bacteria, viruses and toxicants, it will be helpful in many situations, such as epidemic prevention and hygiene control in disasters.



Features and applications of biosensing technology



- Automatic flow of analyte
- Multi-channel detection
- SPR immunoassay

Applications of sensor

