Knowledge Transfer Office
香港城市大學
City University of Hong Kong

# A Microfluidic Biosensing System for Effective Cancer Diagnostic and Screening

Health & Wellness

Biomedical and Genetic Engineering/Chemical Products

Nanotechnology and New Materials

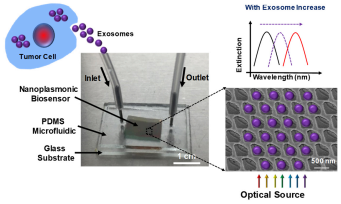


Fig. 1. Schematic of Microfluidic Biosensing System for Exosome Detection.

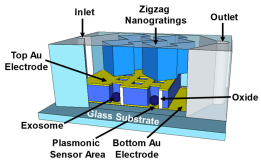


Fig. 2. Schematic of Microfluidic Biosensing Chip.

**Remarks**

Inventions Geneva Evaluation Days (IGED) 2021 - Bronze Medal

**IP Status**

Patent granted

Technology Readiness Level (TRL) ? 6

## Opportunity

Developed a microfluidic biosensing system for effective cancer diagnostic and screening.

This is an advanced portable microfluidic apparatus that captures target exosomes and allows detection by plasmonic biosensor for fast, high-sensitivity, high accuracy, and low-cost cancer screening.

## Technology

- A portable microfluidic biosensing system for detection of cancer at low concentration
- Biosensor capable of trapping small size cancer markers and sensing small changes
- Nanometer-size cancer markers could be detected by the biosensor
- Electrical force could be applied to increase trapping efficiency of cancer markers in order to increases detection sensitivity
- Fabrication technology, materials, and system design needed for the biosensing system
- Very sensitive, low noise optical detection based on resonant peak shift

## Advantages

- Low manufacturing and operating cost compared to existing apparatus with similar function
- More convenient to use since it is portable, small size, and simpler setup
- Fast detection time


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- Low sample volume from tens of ml to µl
- High sensitivity and accuracy to detect low concentration for early stage cancer detection

## Applications

- Early stage in trapping and detection of various biomolecules for early disease diagnostic, such as cancer disease
- Portable system for daily, point-of-care applications with low-cost setup
- Extendable to other disease screening as exosomes