



TECHNOLOGY AVAILABLE FOR TRANSFER

MICROFLUIDIC FLOW ANALYZER: POINT OF CARE DIAGNOSTIC DEVICE

Microfluidic flow analyzer for Pathological Detection

Value Proposition

- Detects pathogenic cells and also provide quantitative information i.e. level of infection.
- Portable. Approx size of the device will be 20cm by 30 cm and 2 inch thick
- Low volume of sample required for assay ranging from 10-50 μ l
- Time taken for analysis is 5 minutes
- Ease of use
- Simple process for pretreatment of samples.
- High sensitivity. It can detect fluorescence signal from even single cell.
- The device can be run on battery power
- Low cost, approx Rs. 2-4 lakhs as compared to the flow cytometer costing 50-100 lakhs.

Potential Applications

- Pathological Detection
- Periodic monitoring of AIDS patients through CD4 cell count
- Cell culture assay
- Blood count
- Oncological Applications.

State of Development

- Proof of concept tested for both fluorescent and non fluorescent detection. Few samples which includes Cd4/Cd8 cells tested.

Background

The Microfluidic flow analyzer is a platform technology which uses fluidics as a base with opto-electronics for detection. The conventional Flow Cytometers are high cost, bulky, require expensive chemicals, high maintenance cost and experienced medical professionals to operate.

Technology

The microfluidic flow analyzer comprises of plurality of buffer channels, sample channel, central flow channel, plurality of exciting optical channels and plurality of receiving optical channels. The exciting and receiving optical channels are placed at a defined angle to the central flow channel. The optical channels excite cells in the sample solution flowing through the central flow channel. The excited cells produce optical signals which is received by the receiving optical channels which is transmitted to the detectors. The optical signals detected by the detector is received by the computing unit for analysis.

channel is configured in a microfluidic chip. The buffer and the sample channels is coupled with an infusion pump to control the flow of buffer and sample solutions. The channels converge at the entry side of the central flow channel to form a narrow path of flow. The optical channels is coupled with fiber coupled laser source to excite the cells in sample solution. The receiving optical channels are placed at a pre-determined angle to optical axis of exciting optical channels. The plurality of detectors are placed on each of the plurality of receiving optical channels. The waste reservoir is at the exit side of central flow channel to collect sample after the analysis.

Inventor

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Intellectual property

Patent Pending

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Key Features

The buffer channels and the sample

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