

# SUSPENDED MICROFLUIDIC PLATFORM WITH FLOW PLANE ANGLED TO BENDING PLANE (SMFAB)

Concordia University UCON - 208

## BACKGROUND

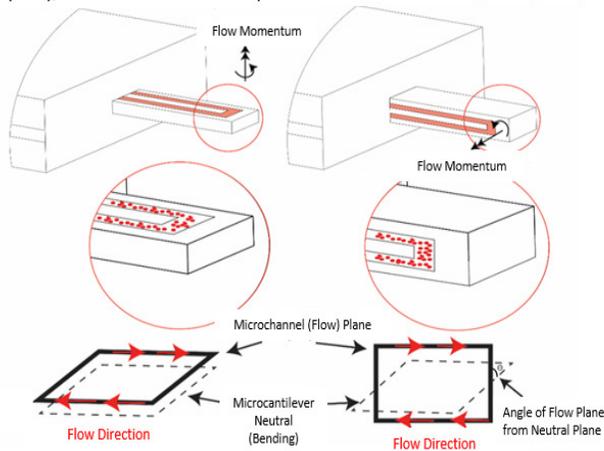
Detection, counting and sorting of cells is generally done by commercial cytometry machines, which are bulky and expensive. The method also necessitates high amounts of sample and requires specialists for sample preparation and post-processing. This motivated scientists to develop less expensive, portable and user-friendly microsystems to address these drawbacks.

Microcantilevers are a type of microsystem that have become increasingly popular for cell detection and counting, however they are limited in their ability to carry more advanced tasks such as measuring biophysical properties of cells or measuring fluid viscosity. The SMFAB technology developed at Concordia University addresses this limitation by proposing a new microchannel design.

## TECHNOLOGY

As shown below, in a typical microcantilever system the flow force is parallel to the cantilever bending plane, whereas in SMFAB the flow force is orthogonal to the plane. Using this new design, variations in flow force arising from the viscoelastic deformation of cells or from changes in fluid viscosity can readily be measured. This makes the proposed SMFAB the only microfluidics platform that is able to detect and analyze a sample through flow forces applied to the microcantilever.

2D Suspended Microchannel System Frequency/Stress based measurement system      3D Suspended Microfluidic System with Flow Angled to Bending Plane (SMFAB)



## COMPETITIVE ADVANTAGES

- This platform is the first 3D suspended microfluidic which is capable of monitoring static and dynamic flow forces.
- This microchannel design increases sensitivity up to 5 times with respect to similar microsystems.

## APPLICATIONS

- Detection and analysis of cells and microparticles (counting, sorting, measurement of dimensions and elastic/biophysical properties)
- Measurement of fluid properties such as kinematic viscosity for Newtonian and non-Newtonian fluids

## TECHNOLOGY DEVELOPMENTAL STAGE

- TRL 3 – The system has been tested in a laboratory environment to measure the kinematic viscosity of a variety of fluids. It was also used to measure biophysical and elastic properties of rigid and flexible microparticles.

## BUSINESS OPPORTUNITY

- The technology is available for licensing

## IP STATUS

- US provisional patent application filed June 30<sup>th</sup>, 2017

## FOR INFORMATION PLEASE CONTACT:

Philippe Hamel, ing.  
Director – Business Development  
Phone: 514-840-1226 # 3009  
E-mail: phamel@aligo.ca