

SELF DRIVEN MICROFLUIDIC FILTER FOR SEPERATING LIQUID FROM A LIQUID INCLUDING DEFORMABLE PARTICLES (I.E. PLASMA FROM BLOOD)

This Novel Microfluidic circuit has been developed in MicroTechLab of the Mechanical Engineering Department of UPC. Currently, partners to further develop the system and/or to establish commercial agreements along with technical cooperation are sought.

The Challenge

Nowadays, there is a growing need for lab-on-chip devices especially in clinical analysis and diagnostics. First step in most blood assays is plasma extraction from whole blood. Compared to traditional centrifugation processes "lab-on-a-chip" devices minimize the manipulation errors, reduce the time from blood collection to the test and provide faster and yet less expensive and comprehensive results since the amount of sample and reagents are drastically reduced. Although many researchers have developed plasma separation from whole blood utilizing different techniques, the volume of extracted plasma and the separation time are the two main barriers to implement the current commercial test on microfluidic platforms.

The Technology

This patent presents a novel high throughput blood plasma separation microfluidic chip which has been designed and fabricated to be used as first step in a point-of-care Device to maximize the amount of plasma extracted from a single blood droplet. Hydrodynamic behavior of red blood cells in a Polydimethylsiloxane (PDMS) constriction channel, plasma extraction using a symmetric cross flow filtration MIMP (Microchannel Integrated Micro-Pillars) channel together with electrokinetic techniques are used to maximize the amount of extracted plasma and minimize the time required for a complete separation.

Innovative advantages

The presented microdevice has several advantages

- Maximized amount of extracted plasma (aprox. 15% initial volume)
- Outstanding purity (aprox. 99%)
- Minimized required time (less than 3 minutes)
- Multiple assay integration in a single microfluidic chip

Current stage of development

Prototypes have been developed and tested. An industrial manufacturing process is defined.

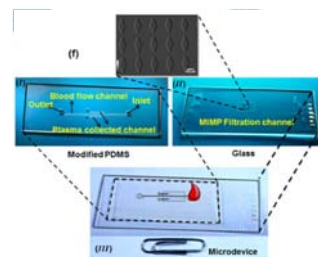
Applications and Target Market

Clinical Laboratories and In Vitro Diagnostic Industry

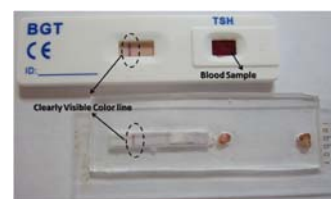
Reference number

MKT13_iBLOOD_H

New Filter For Blood Plasma Separation



Tyroid Stimulating hormone (TSH) test integration



Comparison with a regular lateral flow assay which uses 4 times more sample

Business Opportunity

Technology available for licensing with technical cooperation

Patent Status

US and EP patent application

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