



5th International Warsaw Invention Show

A suitcase type microfluid chip driving measurement system

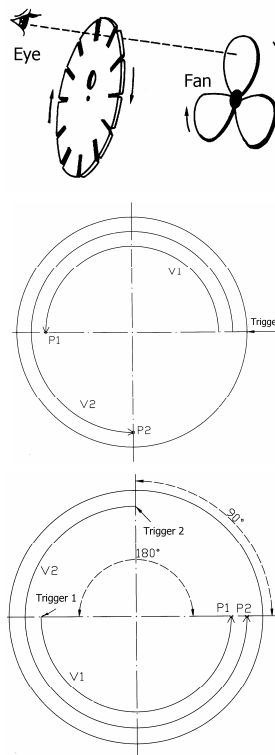
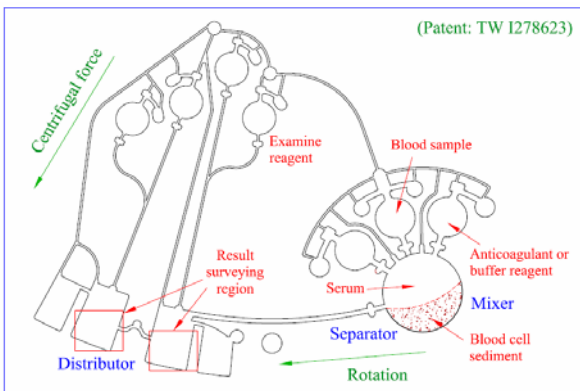
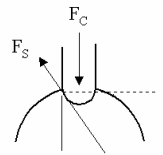
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Principle

- When Centrifugal force > Capillary force : $f_b = \left(\frac{\sigma \cos \theta}{\pi^2 \rho \cdot \bar{h} \cdot R_c \cdot d_H} \right)^{1/2}$
(Burst frequency for Capillary Switch)
- Microfluid chip (Lab-on-a-chip)



Suitcase and notebook—before open



Suitcase and notebook—open and setup

- Image Fixed in rotation :
Stroboscope + compensation

Feature

- can fix the rotation image as a static state and be recorded.
- small volume, light weight, and convenient to carrying.
- can be used for the research of microfluid characteristics, viscosity measurement etc.

Taiwan

手提箱型微流體晶片驅動檢測系統

Patent number

南亞技術學院

Taiwan: TW M397525

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• 本創作的手提箱中有影像擷取界面、攝影機、離心式微流體晶片驅動機、光源與轉速計等，本裝置透過獨創的軟硬體設計，可將一放置於其轉盤中旋轉的微流體晶片，看成是「靜止」的，只剩微流體受離心力影響的運動情形而已，如此可以讓一生物晶片得以進行微流體的分離、混合、分配等程序動作，並可被全程錄影觀測，達到檢測與研究特定流體性質的目的。

• 本系統依設計晶片的不同，可用於微流體黏度量測、特性研究、微量檢測技術的開發等生醫或精密機械領域，讓很多原需要在一整個實驗室東奔西跑操作的體液檢測，可簡化成一個實驗室晶片(Lab-on-a-chip)即可完成。本創作將所有組件整合至單一手提箱中，配合筆記型電腦的使用，可獲致體積小、重量輕、攜帶方便等優點。

• The suitcase contains image acquisition interface, camera, centrifugal microfluid chip driving machine, light source and tachometer, etc. We may regard rotating microfluid biochips on the turntable as a static state and suppose the motion of microfluid affected by centrifugal force through the original software, hardware design and equipment. That makes a microfluid biochips carry separation, mixing and distribution process out, and may be observed the entire process by video recorder for the purpose of detection and studies on specific fluid properties.

• According to the different of chips designed, the system can be used for the research of microfluid characteristics, viscosity measurement, development of liquid sample detection technologies in biomedicine or precision machine field. It is possible to simplify into a Lab-on-a-chip will be completed from originally operating the sample detection bounded on a whole laboratory. The creation integrates all components in a single suitcase and a notebook. It gets small volume, light weight, and convenient to carrying etc.