Fan-Gang Tseng, J Aeronaut Aerospace Eng 2015, 4:2
http://dx.doi.org/10.4172/2168-9792.C1.010

OMICS International
conferenceseries.com

3rd International Conference and Exhibition on
Mechanical & Aerospace Engineering
October 05-07, 2015 San Francisco, USA

Nano/Micro fluidic systems for Circulating Tumor Cells (CTCs) rapid detection and diagnosis

Fan-Gang Tseng[1,2]
[1]National Tsing-Hua University, Taiwan
[2]Academia Sinica, Taiwan

Despite the recent advancements in biotechnology and pharmaceutical research, cancers remain the leading cause of human mortality. It is vital to diagnose cancers at an early stage because the treatment can dramatically improve prognosis in the early stage. So far, low-cost and easy to operate devices, which allow efficient isolation and sensitive detection of Circulating Tumor Cells (CTCs) for routine blood screening, remain lacking. This presentation will introduce a novel micro fluidic platform which can isolate CTCs from the real blood sample in 30 minutes. This system includes a high throughput blood cell separation chip which can separate white blood cells with CTCs from red blood cells and platelets by inertial and suction actions; a nano structured surface which can allow higher retention rate of CTCs on the surface for sample enrichment by 100 folds from $1/10^7$ upto $1/10^5$ CTCs/WBCs; and the enriched sample will go through a final cells self-assembly process into a densed monolayer on a cell assembly chip for a parallel inspection at high speed. As a result, the CTCs can be identified in 30 minutes by the integration of these three chips altogether. Isolated CTCs will still be vital and can be further characterized and cultivated for the identification of cancer stem cells for prognosis.

Biography

Fan-Gang Tseng received his PhD degree in mechanical engineering from UCLA, USA, in 1998. He is currently a Professor in the ESS Department as well as NEMS I., and the Deputy Director of the Biomedical Technology Research Center at NTHU. He was elected an ASME Fellow in 2014. His research interests are in the fields of BioNEMS, Biosensors, Micro-Fluidics, Tissue Chips, and Fuel Cells. He received 60 patents, wrote 8 book chapters, and published more than 150 SCI journal papers and 360 conference technical papers. He received several awards, including National Innovation Award, Outstanding in Research Award, and Mr. Wu, Da-Yo Memorial Award from MOST, Taiwan, and eight best paper/poster awards.

fangangtseng@gmail.com

Notes: