



Design of DLD mechanism based microfluidic channel for separating the circulating tumor cells

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Abstract:

Nowadays, due to cancer, the fatal rate of human beings has increased. Cancer is the growth of host cell without control and the host cell growth will produce several diseases to human organs. As a result the person succumbs to it. In United States, the fatal rate attributed to cancer is one for every four deaths. It can be reduced only if it is precisely prognosed. During the previous decades, many researchers and health care professionals have been garnering attention to make precise and low cost device to prognose the count of CTCs from individual patient. As a result, it helps to identify or understand the metastatic process level and development of cancer. In this paper, the micro-channel is designed to separate the rarely available circulating tumour cells (CTC) to prognose the level of cancer. Prognosing the level of Circulating Tumour Cells (CTC) in a patient blood will reduce the cancer related fatal rate of human beings. Size of CTC cells is in the range of 15-30 μm . Deterministic lateral displacement mechanism is used to separate the CTCs from the applied blood sample. 42 μm sized triangular posts were used to separate the CTCs. Further the separation efficiency is analyzed using critical diameter and particle tracing.

Biography:

S Praveen Kumar has completed his PhD at the age of 33 years from Anna University. He is the head of Centre for Micro Nano Design and fabrication (CMNDF) research centre, Saveetha Engineering College, Chennai, Tamilnadu, India. He has published more than 20 papers in reputed journals and presented his work in more than 15 international conferences. He is guiding 5 PhD students and he has been serving as an reviewer in various international journals. His specialization includes MEMS, Microfluidics, Biofilter, Electrochemical methods, etc.



Recent Publications:

1. Praveen kumar, S, Ramesh, R & Aravind, T 2016, 'Isolation and detection of Low density lipoprotein using porous silicon based array of cantilever', International Journal of Printing, Packaging & Allied Sciences, vol. 4, pp. 2488-2497.
2. Praveen kumar, S, Ramesh, R & Aravind, T 2016, 'Analysis of Different Size Microchannel through Particle Tracing for Biomolecule Separation', Journal of Computational and Theoretical Nanoscience (Annexure I).
3. Praveen kumar, S, Ramesh, R & Aravind, T, 'Porous based immunosensor for detection of LDL molecules from blood serum using array of cantilever beam', Journal of advances in chemistry.
4. Praveen kumar, S, Ramesh, R & Aravind, T 2017, 'Study on Different Meander Structured Microchannel: A Biofilter', Biomedical Research, Allied Academics Journals. (Annexure I)
5. Praveen kumar, S, Ramesh, R & Aravind, T, 'Silicon based biofilter for biomolecule separation', Biomedical research, Allied Academics Journals, (Annexure I).

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