

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201941000637 A

(19) INDIA

(22) Date of filing of Application :07/01/2019

(43) Publication Date : 10/07/2020

(54) Title of the invention : DIELECTROPHORETIC SEPARATION OF PLATELETS AND RBC USING MICROFLUIDIC CHANNEL

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|---|----------------|--|
| (51) International classification             | :G06F<br>21/42 | (71)Name of Applicant :<br><b>1)Shwetha M</b>                |
| (31) Priority Document No                     | :NA            | Address of Applicant :Sai Vidya Institute of Technology      |
| (32) Priority Date                            | :NA            | Department of ECE, Sai Vidya Institute of Technology,        |
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| (86) International Application No             | :NA            | India  |
| Filing Date                                   | :NA            | <b>2)Dr.Narayan K</b>  |
| (87) International Publication No             | : NA           | <b>3)Sai Vidya Institute of Technology</b>                   |
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| (62) Divisional to Application Number         | :NA            | <b>2)Dr.Narayan K</b>  |
| Filing Date                                   | :NA            |  |

(57) Abstract :

A micro-fluidic channel with single inlet is modeled and analysis is carried out for the separation of platelets from blood sample in continuous flow using Dielectrophoresis Field-Flow-Fractionation(DEP-FFF). DEP-FFF is involved in characterization and fractionation of particles with sufficient differences in their size and/or electrical properties. This separation technique avoids the bulky hardware such as centrifuges and flow cytometers which have been found difficult to implement in the microscale. The hydrodynamic focusing in combination with the application of a Dielectrophoretic force allows the separation of platelets from red blood cells due to their size difference more accurately. The proposed model operates with peak to peak voltage of 10V. It could further be implemented for the separation of other cell types based on their size difference, as well as in combination with other sorting techniques to separate multiple cell populations from each other

No. of Pages : 10 No. of Claims : 2