

Abstract Submitted
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Self-separation of blood plasma from whole blood during the capillary flow in microchannel. BHARATH BABU NUNNA¹, SHIQIANG ZHUANG, EON SOO LEE, New Jersey Institute of Technology — Self-separation of blood plasma from whole blood in microchannels is of great importance due to the enormous range of applications in healthcare and diagnostics. Blood is a multiphase complex fluid, composed of cells suspended in blood plasma. RBCs are the suspended particles whose shape changes during the flow of blood. The primary constituents of blood are erythrocytes or red blood cells (RBCs), leukocytes or white blood cells (WBCs), thrombocytes or platelets and blood plasma. The existence of RBCs in blood makes the blood a non-Newtonian fluid. The current study of separation of blood plasma from whole blood during self-driven flows in a single microchannel without bifurcation, by enhancing the capillary effects. The change in the capillary effect results in a change in contact angle which directly influences the capillary flow. The flow velocity directly influences the net force acting on the RBCs and influence the separation process. The experiments are performed on the PDMS microchannels with different contact angles by altering the surface characteristics using plasma treatment. The change in the separation length is studied during the capillary flow of blood in microchannel.

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