Electronic Supplementary Material (ESI) for Lab on a Chip.

Title: Precise and non-invasive circulating tumor cells isolation based on optical force using homologous erythrocytes binding

Xuejia Hu, Daoming Zhu, Ming Chen, Keke Chen, Hailiang Liu, Wei Liu, and Yi Yang**

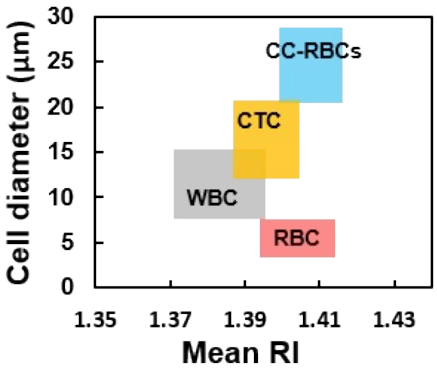

Figure S1. Size and RI distribution of CC-RBCs and other blood cells.

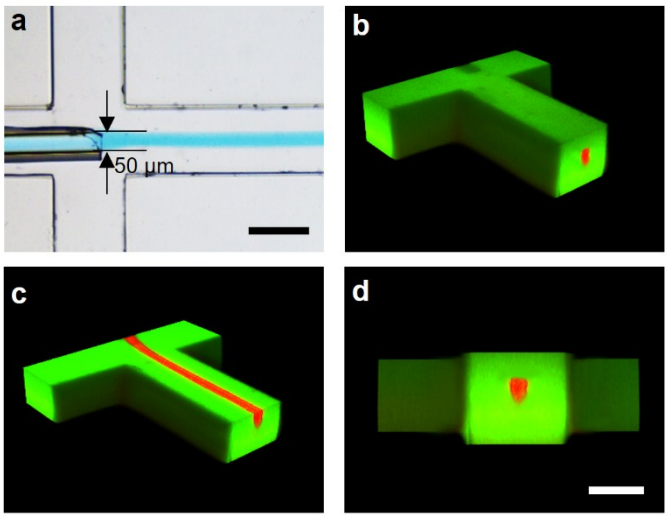

Figure S2. The 3D focusing performance utilizing a micro-capillary sealed in channel. In this experiment, the ratio of sheath flow rate and sample flow rate is 1:2. (a) Bright field of the 3D focusing part, blue ink is used to display the liquid distribution. The scale bar is 150 μm. (b) Confocal image of the liquid profile in this channel. To better reveal the focusing performance, Rhodamine 6G (red) and Rhodamine B (green) are used to dye core flow and sheath flow. Horizontal and vertical section of channel are presented in (c) and (d) respectively. Scale bar: 100 μm.

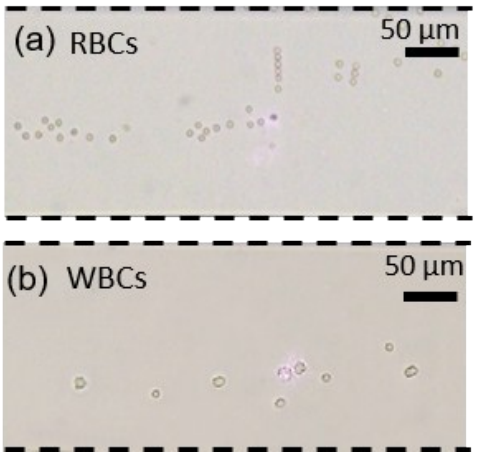

Figure S3. Optical mobility test of RBCs and WBCs, the flow rate is keep the same with of CC-RBCs mobility test. Although RBCs (a) is relatively smaller than WBCs (b), the higher RI resulting in obviously larger displacement.

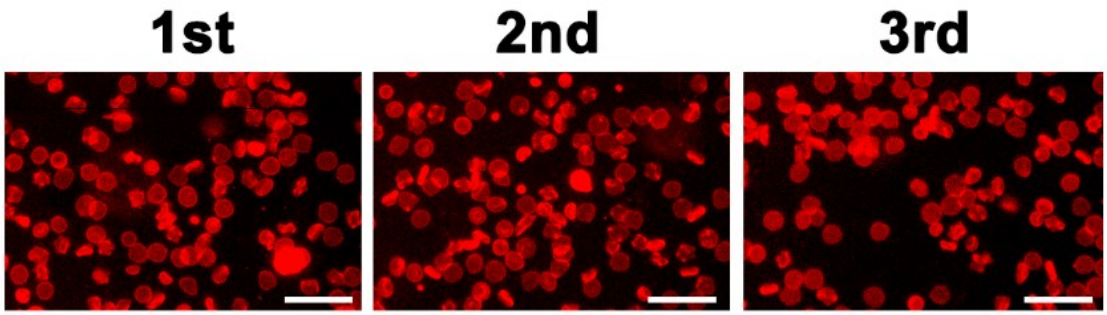

Figure S4. Fluorescence images of RBCs, which are modified with DSPE-PEG-Cy5 and injected into the optofluidic system consecutively by three times. The fluorescence intensity on the membrane indicate there is negligible DSPE loss during the separation process.