

Cost-effective microfluidic flow cytometry for precise and gentle cell sorting

Canfeng Yang¹, Chunhua He¹, Huasheng Zhuo¹, Jianxin Wang¹, Tuying Yong², Lu Gan², Xiangliang Yang², Lei Nie³, Shuang Xi⁴, Zhiyong Liu^{1}, Guanglan Liao^{1*}, Tielin Shi¹*

¹State Key Laboratory of Digital Manufacturing Equipment and Technology, School of Mechanical Science & Engineering, Huazhong University of Science and Technology, Wuhan 430074, China

²National Engineering Research Center for Nanomedicine, College of Life Science and Technology, Huazhong University of Science and Technology, Wuhan 430074, China

³School of Mechanical Engineering, Hubei University of Technology, Wuhan 430068, China

⁴College of Mechanical and Electronic Engineering, Nanjing Forestry University, Nanjing, 210037, China

** Address correspondence to (Z. Liu, G. Liao):*

zhiyong_liu@hust.edu.cn, guanglan.liao@hust.edu.cn

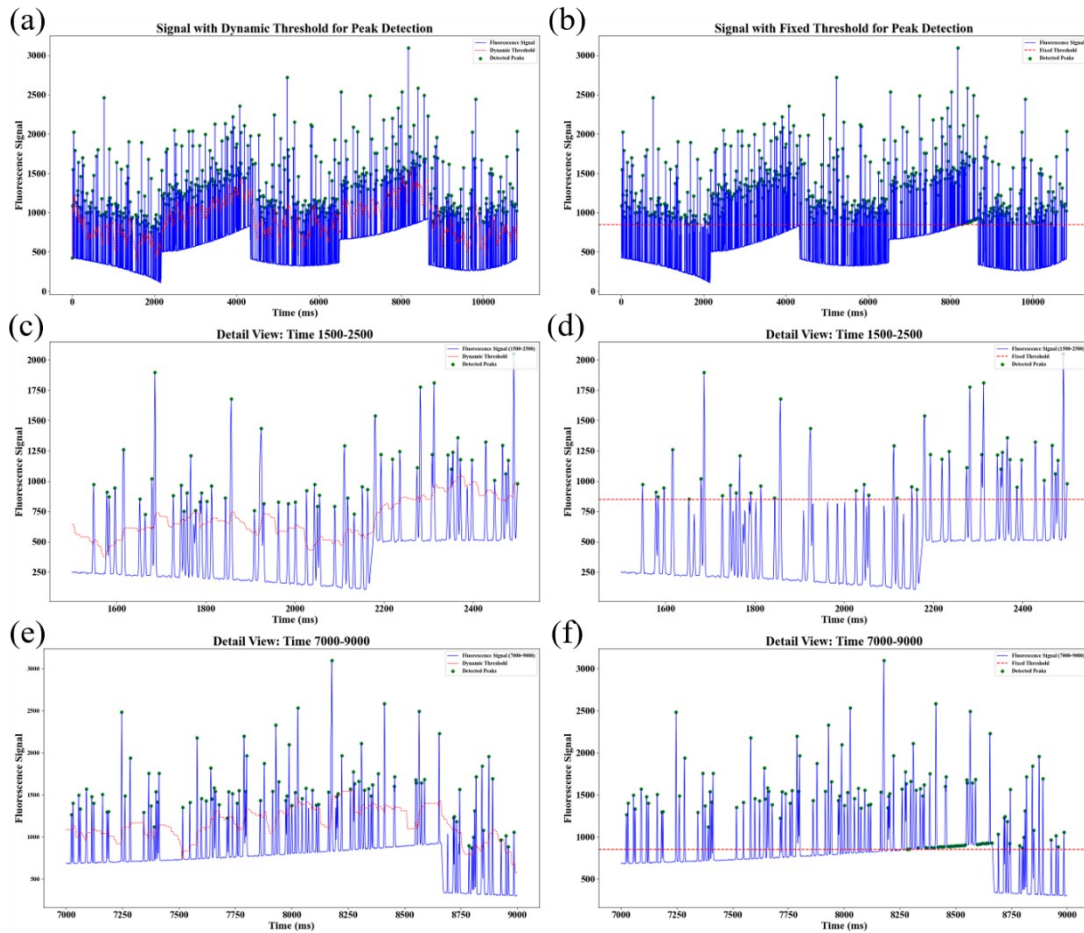


Fig. S1: (a) Plot of the results of detecting the peaks of the acquired fluorescence signals with added baseline noise fluctuations using the dynamic adaptive thresholding method. (b) Plot of the results of detecting the peaks of the acquired fluorescence signals with added baseline noise fluctuations using the fixed threshold method. (c) Zoomed-in view of Fig. S2(a) showing the details of the fluorescence signal peaks detected within the 1500 ms to 2500 ms time interval. (d) Zoomed-in view of Fig. S2(b) showing the details of the fluorescence signal peaks detected within the 1500 ms to 2500 ms time interval. (e) Zoomed-in view of Fig. S2(a) showing the details of the fluorescence signal peaks detected within the 7000 ms to 9000 ms time interval. (f) Zoomed-in view of Fig. S2(b) showing the details of the fluorescence signal peaks detected within the 7000 ms to 9000 ms time interval.

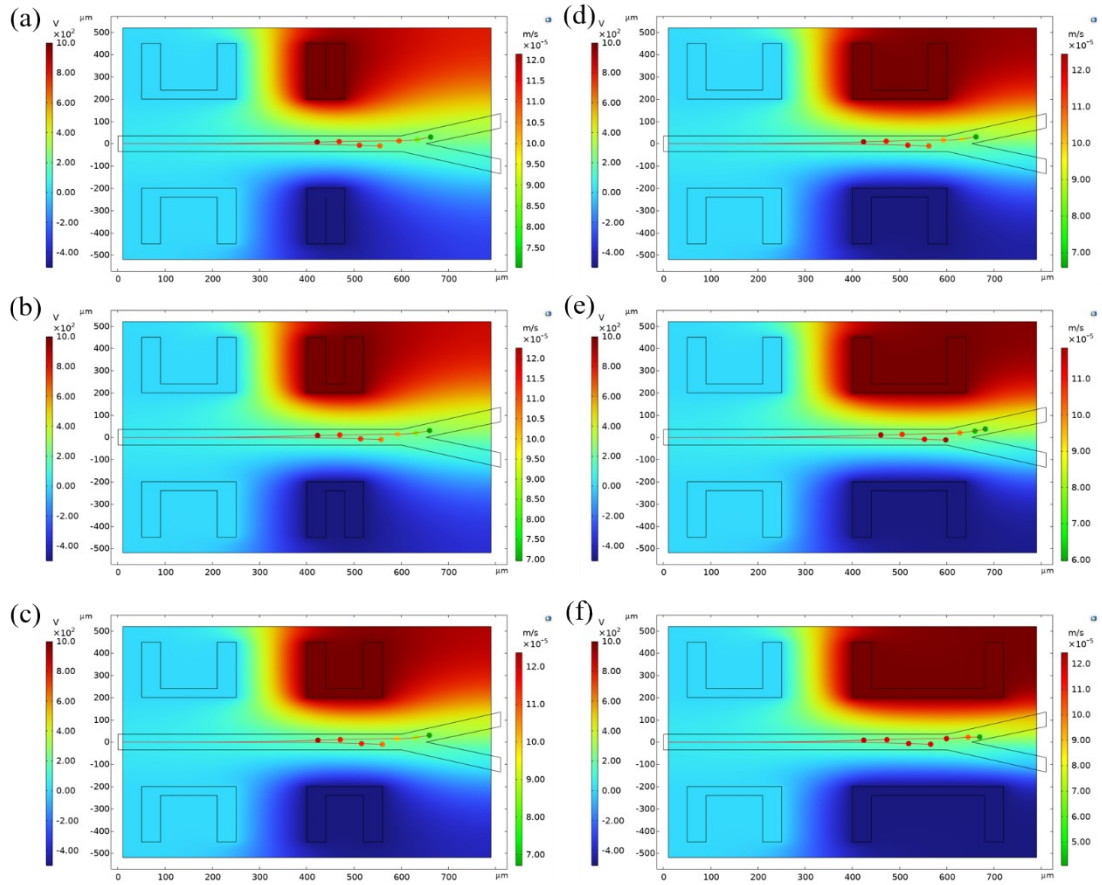


Fig. S2: Simulation results of droplet charging and deflection under different deflection electrode shapes. (a) The length of the deflection electrode is 80 μm . **(b)** The length of the deflection electrode is 120 μm . **(c)** The length of the deflection electrode is 160 μm . **(d)** The length of the deflection electrode is 200 μm . **(e)** The length of the deflection electrode is 240 μm . **(f)** The length of the deflection electrode is 320 μm .

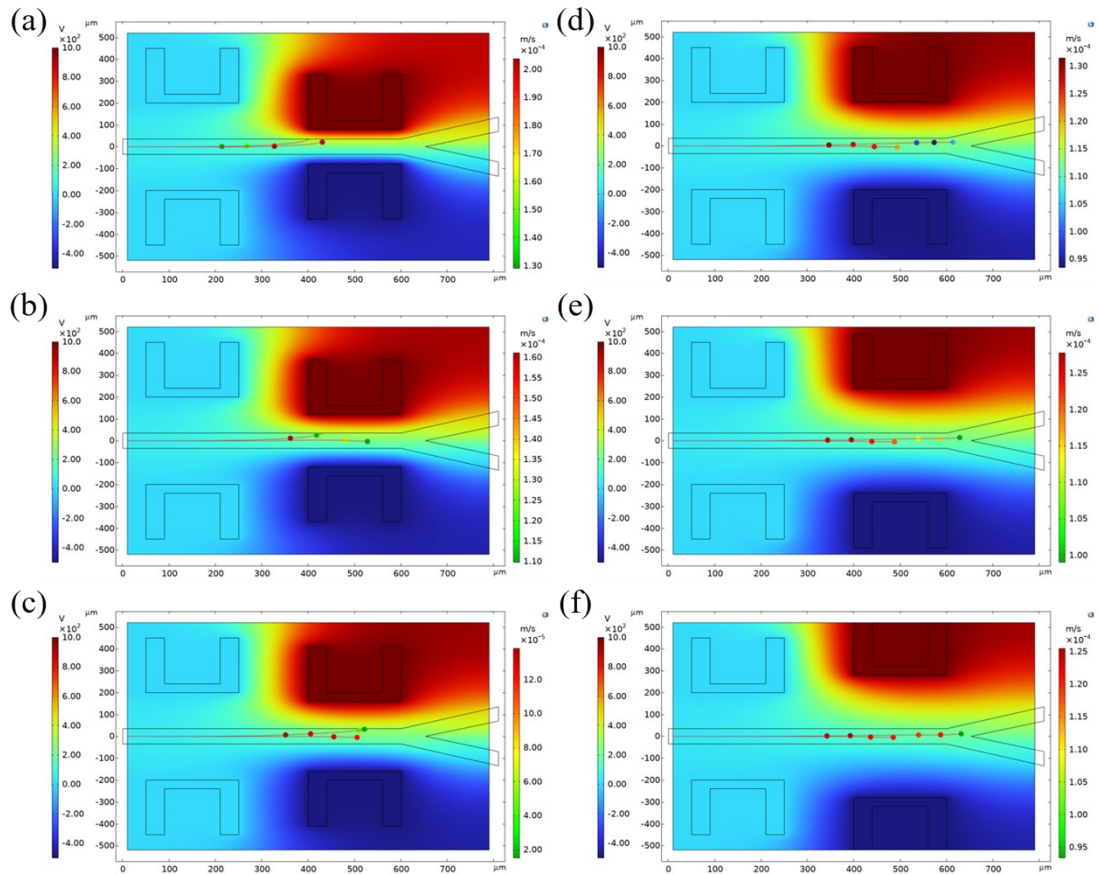


Fig. S3: Simulation results of droplet charging and deflection at different distances between the deflection electrode and the channel center. (a) The distance between the deflection electrode and the channel center is 80 μm . **(b)** The distance between the deflection electrode and the channel center is 120 μm . **(c)** The distance between the deflection electrode and the channel center is 160 μm . **(d)** The distance between the deflection electrode and the channel center is 200 μm . **(e)** The distance between the deflection electrode and the channel center is 240 μm . **(f)** The distance between the deflection electrode and the channel center is 280 μm .