Electronic Supplementary Material (ESI) for Analyst.

Supplementary figures

Reduced acoustic resonator dimensions improve focusing efficiency of bacteria and submicron particles

Masashi Ugawa[a], Hoyeon Lee[b] Minho Lee[c], Soyun Kim[d,e], OkChan Jeong[f], Yong-Hoon Choi[g], Daewon Sohn[b], Thomas Laurell[h], Sadao Ota*[a], SangWook Lee*[a,i]

[a] RCAST, The University of Tokyo, 153-8904, Tokyo, Japan

[b] Department of Chemistry, Research Institute for Convergence of Basic Science, Hanyang University, Seoul, 04763, Korea

[c] School of integrative engineering, Chung-Ang University, Seoul, 06974, Korea

[d] Convergence Research Institute, Korea University, 02841,Seoul, Korea

[e] *PCL Inc*., 05854, Seoul, Korea

[f] Department of Biomedical Engineering, Inje University, Gimhae-si, 50834, Korea

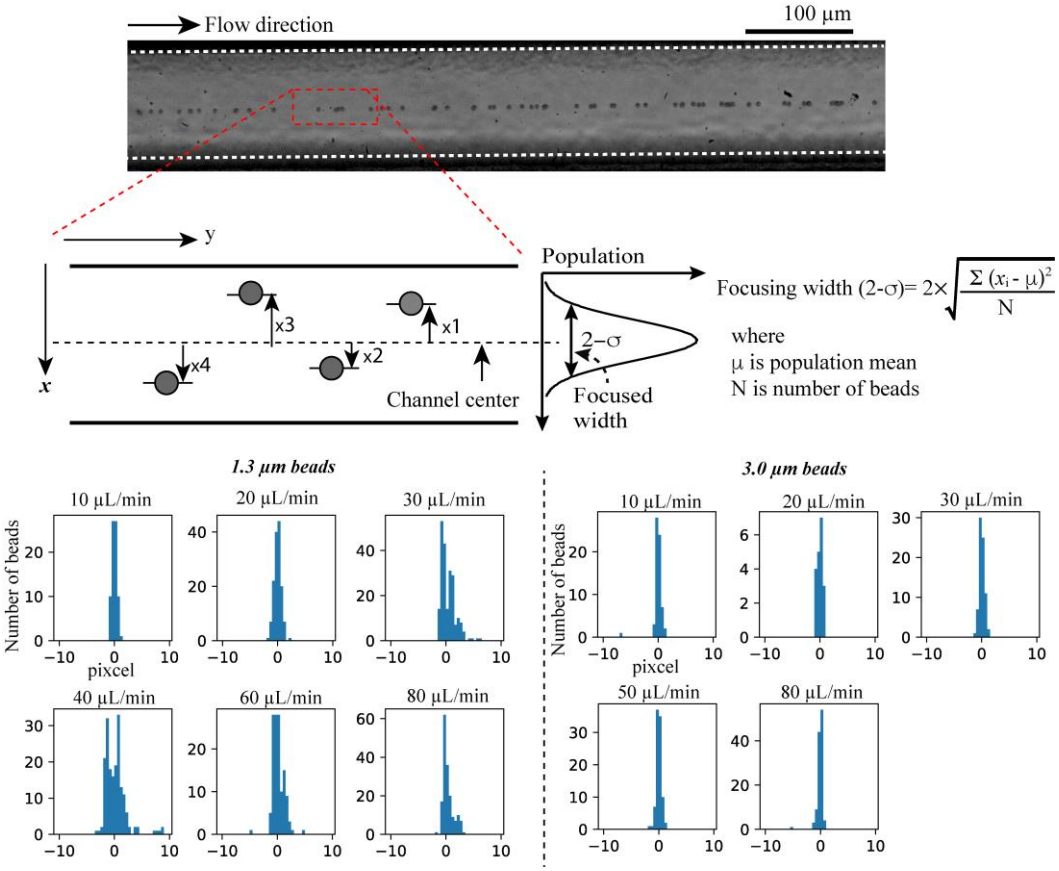
[g] School of Robotics, KwangWoon University, 01897, Korea

[h] Department of Biomedical engineering, Lund University, 22363, Lund, Sweden

[I] Bio-health Product Research Center, Inje University, Gimhae-si, 50834, Korea

Corresponding: sadaota@solab.rcast.u-tokyo.ac.jp & swlee@g.ecc.u-tokyo.ac.jp

S-1. Focusing widths of beads were displayed by different flow condition. 1.3μm and 3μm beads were tested. The beads samples were injected using syringe pumps into inlet of the chip (see Fig. 2) and images of flowing particles were taken from the high-speed camera (1000 fps of frame rate and 20μs exposure time). Each particle`s lateral distribution were measured from the center of the channel and plotted for histogram as in the figures. Based on calculated standard deviation (σ) of each histogram, we plotted 2-standard deviation (2-σ) in the fig.4-b as name of focusing width.



S-2. Focusing widths of bacteria were displayed by different flow condition. Bacteria stream of each flow conditions (see Fig.6-a) were observed and captured by Nikon DS-Ri2 CCD camera (exposure time of 100μs and frame rate of 30fps). The intensity profiles of cross section were obtained. After subtracting the background, peak detection was chosen to obtain the cross section of bacteria at a certain frame. Finally, the position of peaks for each frames were combined to obtain the histogram. . Based on calculated standard deviation (σ) of each histogram, we plotted 2-standard deviation (2-σ) in the fig.6-b as name of focusing width.