

**Additional file 1: Figure S1. Size reference beads with green fluorescence in mean sizes of 100, 500, 800, 1000, 3000 and 6000 nm were used for size estimation.** The fluorescence intensity of beads were in wide range. In addition, the 100 - 800 nm beads were diffused with high amount of particles that didn't present green fluorescence signal (**a**). By contrast, the beads of mean size 1000 - 6000 nm were concentrated with narrow size distribution (**b**) with high fluorescence intensity. Therefore, the green fluorescence parameter was adjusted to place 100 - 800 nm beads in fluorescence intensity range of  $10^2 - 10^5$  (**a**, left panel). **a**. For 100 - 800 nm beads, the green fluorescence positive population was gated (left panel), and plotted to a forward scatter height (FSC-H) versus (vs.) side scatter area (SSC-A) contour plot (right panel). A contour plot of 20 level inverse greyscale was utilized to show the concentrated high density regions. Closely packed contour lines indicated a high concentration of events (**a**, right panel). **b**. For beads of 1000 - 6000 nm, the total events were plotted in a FSC-H vs. SSC-A contour plot (**b**, left panel). Then the beads were gated and plotted to a FSC-H vs. SSC-A contour plot to reduce background noise (**b**, right panel). **c**. Next, the plots of all tested beads were overlaid to one plot.

Supplementary Figure 1

