

Supplemental material

Video 1 shows the movement of microbeads inside the PDMS microfluidic channel with an input flow rate of 1 $\mu\text{l}/\text{min}$.

Figure 1 (a) shows a video frame clipped from video 1. Due to the fast velocity of the particles inside the channel and the limited frame rate of the capturing camera, both 1 μm and 15 μm particles exhibit motion blur. The 15 μm particles essentially move by following the main flow profile inside the channel in two trajectories: 1) moving in a wave-like trajectory near the corrugated wall, and 2) moving parallel to the filtering membrane, as illustrated by the yellow-dashed lines. Part of the 1 μm particles which move near the filtering membrane diffuse into the filtering slit and enter into the sample outlet channel, as illustrated by white-dashed lines. We note that a few 15 μm particles are lodged into the filter slit opening due to initial pressure when connecting the input tube to the inlet of the PDMS chips. However, the 1 μm particles are still able to pass through the filtering slit on top of the clogged 15 μm particles, as illustrated in Figure 1(b).

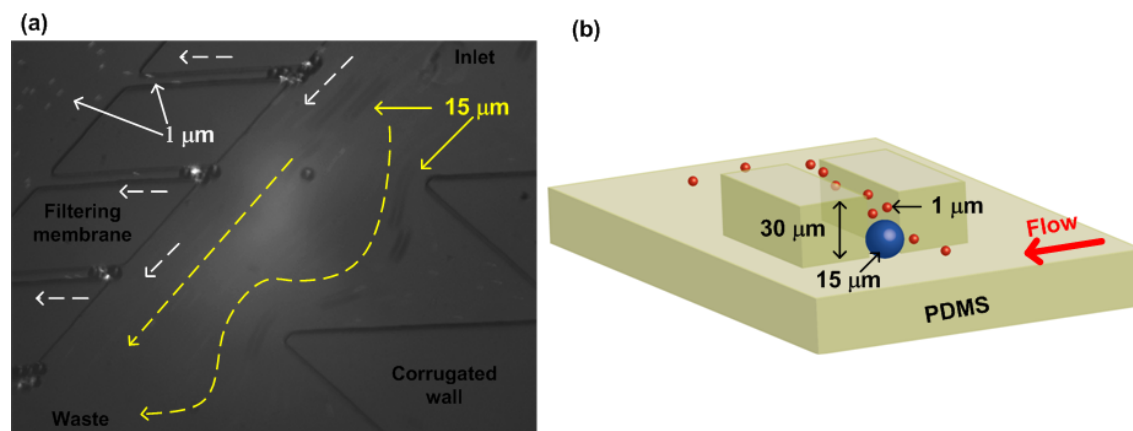


Figure 1 (a) A video frame clipped from video1. (b) Schematic of 15 μm and 1 μm particles at the opening of the filtering slit.