Supplementary Material (ESI) for Lab on a Chip

Hydrodynamically tunable optofluidic cylindrical microlens

Xiaole Mao,[ab] John Robert Waldeisen,[a] Bala Krishna Juluri,[a] and Tony Jun Huang*[ab]

[a] Department of Engineering Science and Mechanics, The Pennsylvania State University, University Park, PA 16802, USA. Fax: 814-865-9974; Tel: 814-863-4209; E-mail: junhuang@psu.edu

[b] Department of Bioengineering, The Pennsylvania State University, University Park, PA 16802, USA.

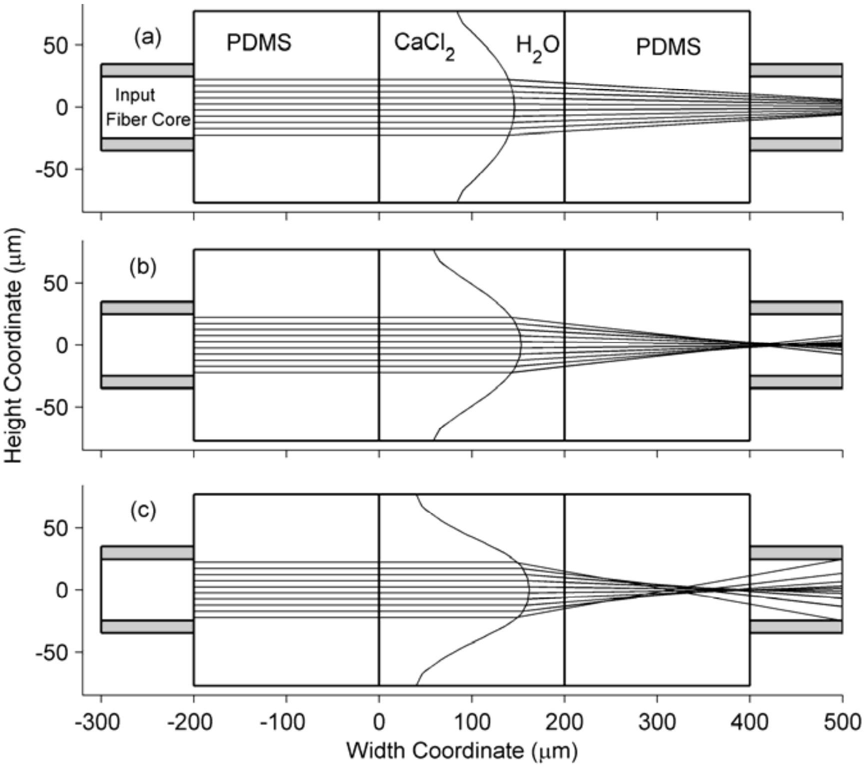

Fig. 1S Ray-tracing simulation for the focusing of perfectly parallel input light beams. The simulation reveals three different focusing patterns: (a) under-focused mode at the flow rate of 150 µl/min, (b) well-focused mode at the flow rate of 250 µl/min, and (c) over-focused mode at the flow rate of 350 µl/min. Less aberration is observed in this case as compared to the simulation with divergent input beams (Fig. 4b)

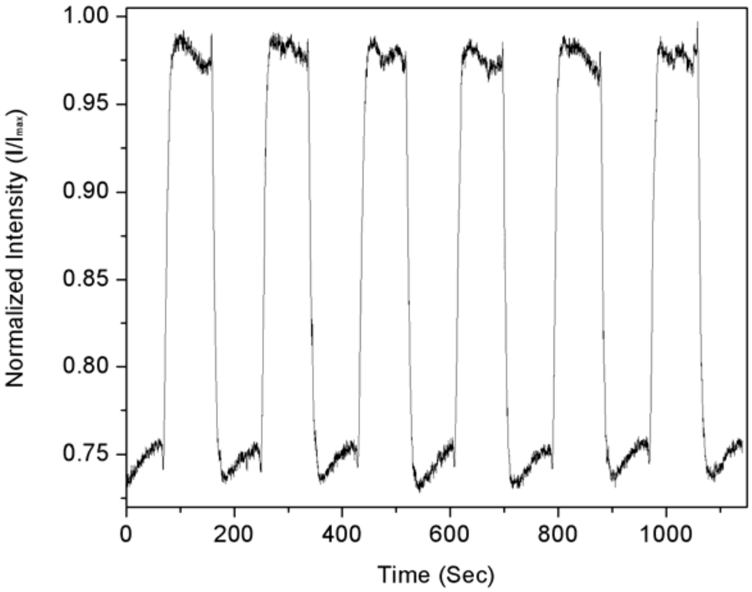

Fig. 2S Changes in the measured output intensity as a result of switching the flow rate between 50 µl/min and 150 µl/min at 90 second intervals.

A normalized light intensity vs. time profile, in which the flow rate oscillated between 50 µl/min and 150 µl/min at 90 second intervals, is shown in Fig. 2S. The profile shows that a new microlens configuration can be established within several seconds in response to the switching of flow rate. The results illustrate the stable and repeatable switching nature of our optofluidic microlens, thus proving the robustness of the tuning mechanism.