

Electronic Supplementary Information

Movie1

Title: Flow Velocity Measurement in the Diffusion Chamber

Legend: Microspheres are positioned in the diffusion chamber by optical tweezers. After all traps are switched off, the microspheres follow the streamlines. Time presented as h:m:s.

Keywords: diffusion chamber, streamlines

Movie2

Title: Diffusion into and out of the Diffusion Chamber

Legend: Top: Methylene blue dye is first introduced in the microchannels and then washed out.
Bottom: Relative concentration profile in the diffusion chamber. Time presented as h:m:s.

Keywords: diffusion chamber, diffusion, 1D diffusion

Movie3

Title: Reversible deflation of GUVs

Legend: Osmolarity around two GUVs in the diffusion chamber is changed from 170mOsm to 290mOsm and back. One GUV exhibits internal membrane protrusions and the other external budding. Time presented as h:m:s.

Keywords: diffusion chamber, lipid vesicle, shape transformation

Movie4

Title: Reversible deflation of a tethered GUV

Legend: A GUV is suspended on thin membrane tubules between two microspheres manipulated by optical tweezers. Osmolarity is then changed from 170mOsm to 239mOsm and back. Time is presented as h:m:s.

Keywords: diffusion chamber, lipid vesicle, shape transformation, tether pulling